Environmental Statement:
Volume 3 – Technical Appendix

For Wain Estates (Land) Limited | 23-657

Outline application for up to 275 dwellings and associated open space and infrastructure - Land off Church Street/Scobell Street, Walshaw, Bury

Project:	23-657
Site Address:	Land off Church Street/Scobell Street, Walshaw, Bury
Client:	Wain Estates (Land) Limited
Date:	March 2025
Author:	Helen Leggett
Approved by:	John Coxon

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1 - Introduction

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9 July 2024
EP ref: 23-657

By e-mail: development.control@bury.gov.uk

Dear Sir or Madam

Re: EIA Screening Request for Wain Estates (Land) Ltd – Land off Church Street/Scobell Street, Walshaw, Bury

On behalf of our client Wain Estates (Land) Ltd, we write to request a Screening Opinion pursuant to Regulation 6 of the Town and Country Planning (Environmental Impact Assessment) (EIA) Regulations 2017 in relation to the proposed residential development of 'Land off Church Street/Scobell Street, Walshaw, Bury'.

The intention of this letter is to seek confirmation that an EIA for the purposes of the 2017 regulations is **not required** in respect of the proposed development of the site.

It is envisaged the development would involve the erection of approximately 300 dwellings on 11.3 hectares (ha) of agricultural land. The site forms parts of a wider draft allocation for residential development in the emerging Places for Everyone Joint Development Plan Document (PfE). Policy JP Allocation 9 (Walshaw) (JPA9) of the PfE Modifications Version 2023 is a site allocation for the delivery of around 1,250 dwellings in the Walshaw area of Bury.

As required by the Regulations, this request is accompanied by *'a plan sufficient to identify the land',* as well as a description of the development and the aspects of the environment likely to be significantly affected by the development. To the extent the information is available, we also provide a description of any likely significant effects of the proposed development on the environment and measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment, having regard to paragraph 6, regulation (2)(a)-(e) of the Regulations.

Description of the site and proposals

The proposed development site comprises approximately 11.3 ha of land on the eastern edge of Bury. It is currently in use for pastoral farming. The fields are divided by hedgerows interspersed with trees.

The site is enclosed by Scobell Street and residential properties to the north; Tottington Road and residential properties to the north-east; woodland to the east; the Best Western Bury Bolholt Country Park and Stables Country Club to the south-east; a farm complex, Walshaw Brook and agricultural fields to the south-west (these agricultural fields comprise part of the wider allocation); and Church Street, residential properties, garaging and a cattery to the west.

The proposal would be for a residential development on the land edged red on the enclosed site location plan (also shown in Figure 1 below). The precise quantum of development is yet to be determined but is likely to be approximately 300 dwellings. 25% affordable housing would be provided in accordance with emerging Policy JPA9.

It is envisaged that the application would be made in outline, with all matters reserved save for access. Vehicular access would be taken via Scobell Street to the north.

Figure 1 below identifies the extent of the site:

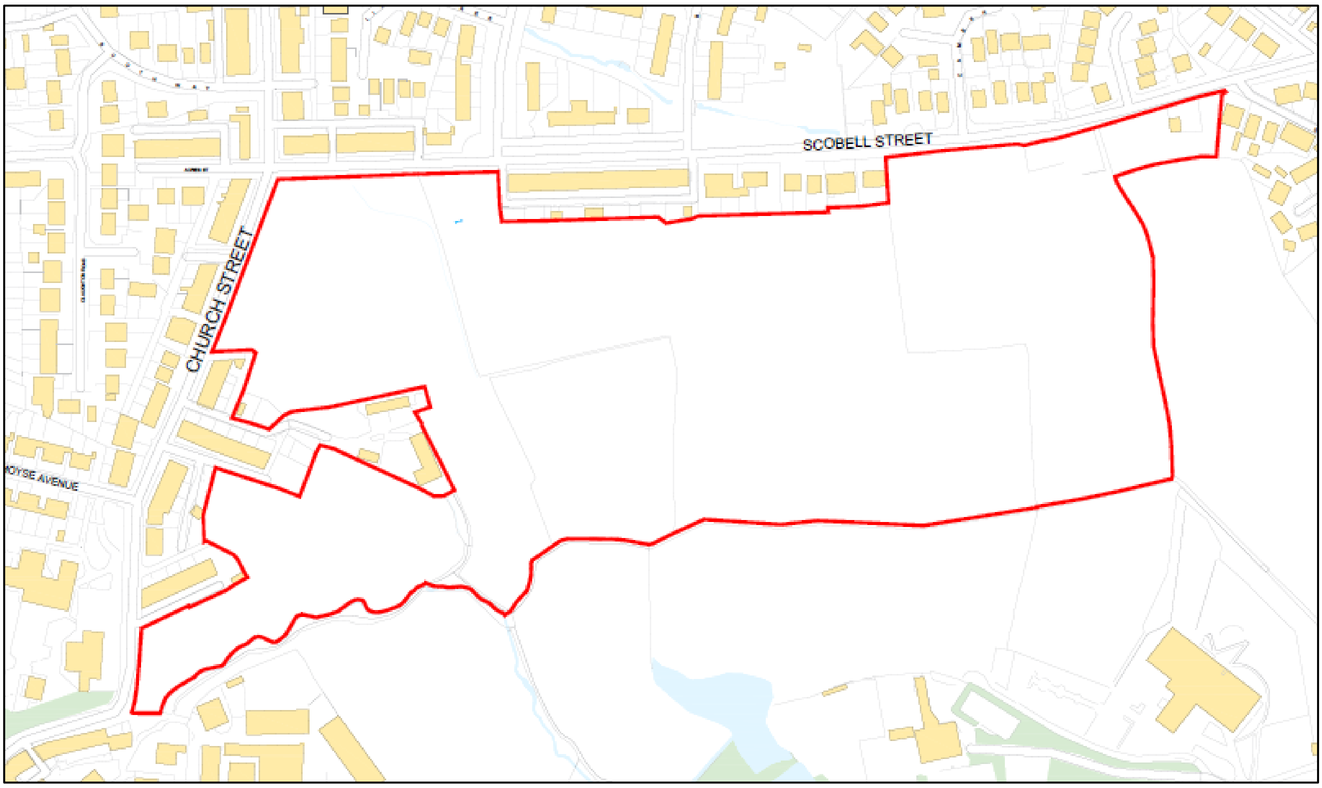
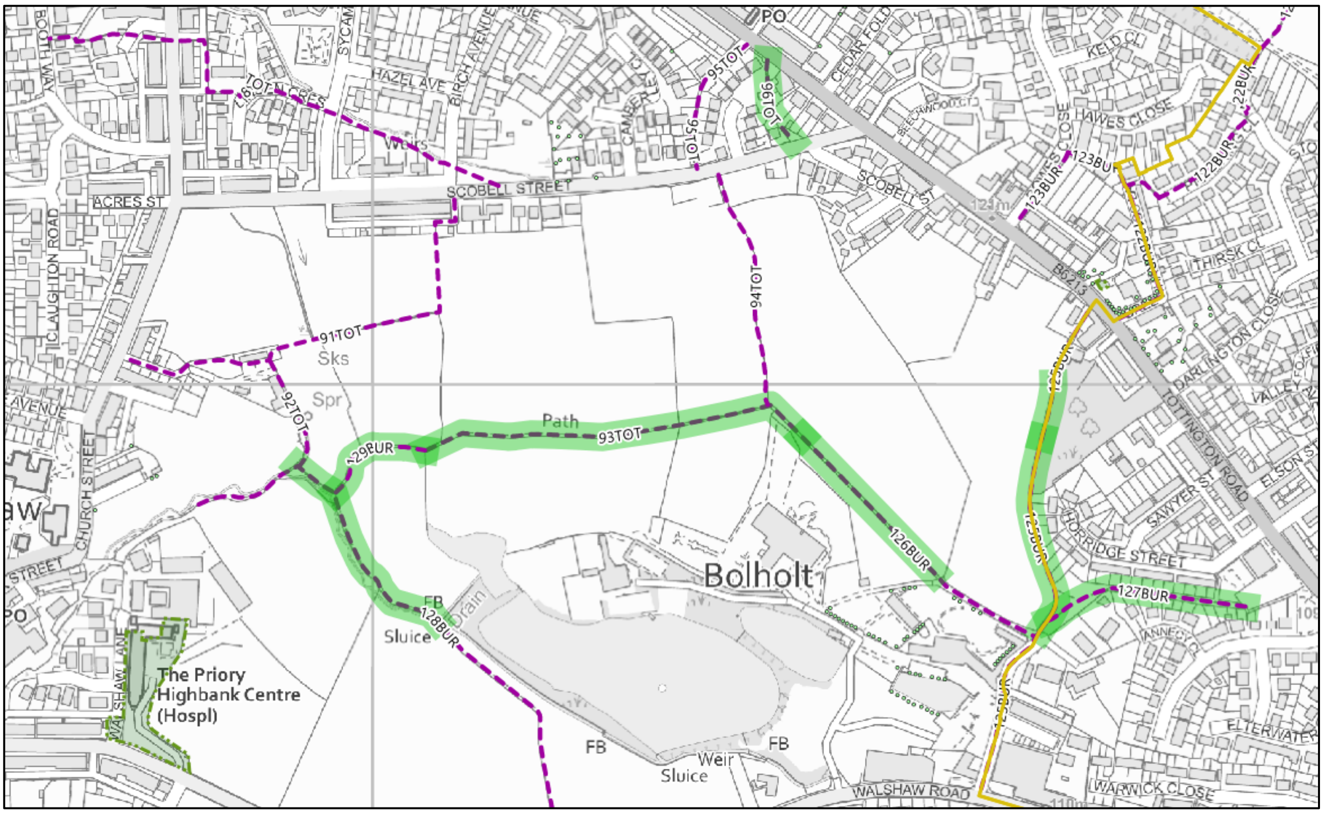


Figure 1: Site location Plan extract (source: Wain Estates (Land) Ltd)

The site location plan is also enclosed.

The site is currently designated as Green Belt in the Bury Unitary Development Plan (UDP), which was adopted by the Council in 1997. However, the land is part of a strategic site allocation for development in the emerging Places for Everyone (PfE) Plan as discussed above. Therefore, assuming that the PfE is adopted, the site will be removed from the designated Green Belt and allocated for housing development.

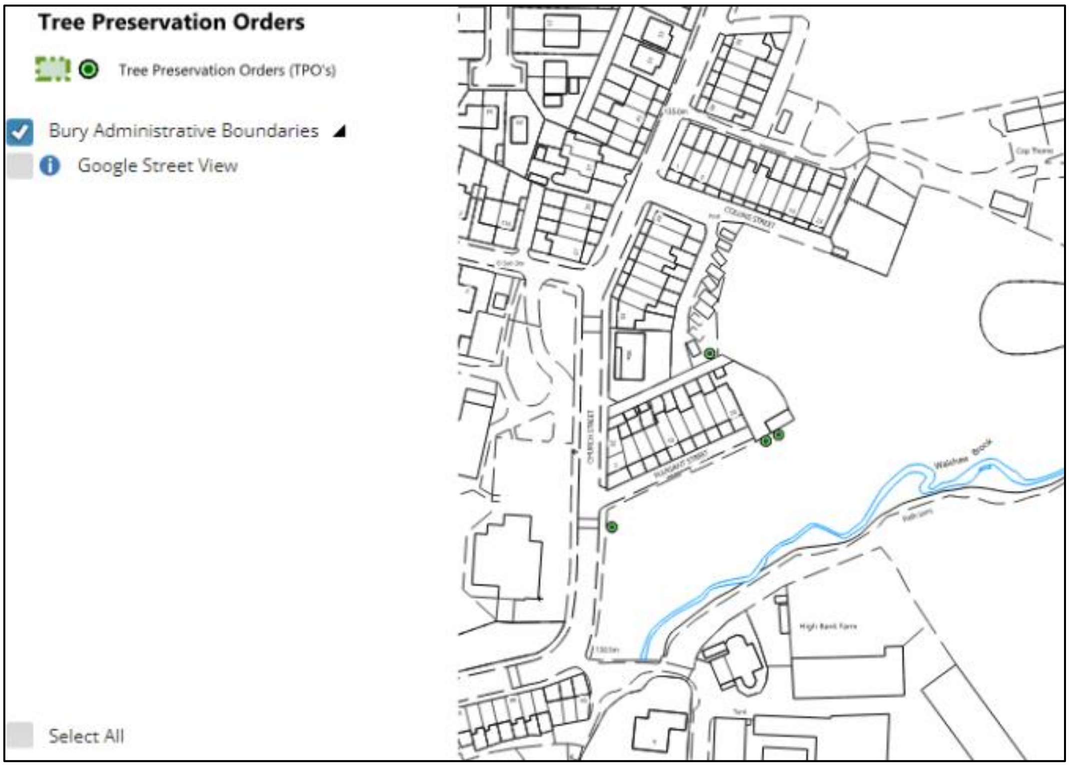
The land is privately owned. Several public rights of way cross or adjoin the site, including 91TOT, 92TOT, 93TOT, 94TOT, 125BUR, 126BUR AND 129BUR. These are shown on Figure 2 below:



SCOBELL STREET
91TOT
92TOT
93TOT
94TOT
95TOT
96TOT
129BUR
126BUR
127BUR
128BUR
122BUR
123BUR
125BUR
Path
Bolholt
The Priory Highbank Centre (Hospl)
WALSHAW ROAD
TOTTINGTON ROAD
CHURCH STREET
ACRES ST
HAZEL AVE
BIRCH AVENUE
HAWES CLOSE
THIRSK CL
DARLINGTON CLOSE
SAWYER ST
HORRIDGE STREET
WARWICK CLOSE
ELTERWATER
Sluice
Weir
FB

Figure 2: Public Right of Way map (source: Bury Council online map system)

Other than the public footpaths, there is no permitted public access to the site. There is no notable woodland within the site, but there are four trees in the south-west corner of the site which are subject to Tree Preservation Orders. These trees could be retained as part of the proposed development. An extract from the Council's online mapping system is provided below:



Tree Preservation Orders
Tree Preservation Orders (TPO's)
☑ Bury Administrative Boundaries
☐ Google Street View
☐ Select All
Walshaw Brook

Figure 3: Tree Preservation Order Map (source: Bury Council online map system)

Defining the project in the context of the wider allocation

The site forms part of a wider allocation in the emerging PfE under Policy JPA9: Walshaw. The total wider allocation is for 1,250 dwellings and associated infrastructure, including the provision of a new a new strategic through road (to enable an alternative to Church Street, Bank Street and High Street), a new one-form entry primary school, a new local centre to serve purely local needs, and green and blue infrastructure.

Paragraph 4-025 of the NPPG states:

> "How should multiple applications be treated?
>
> An application should not be considered in isolation if, in reality, it is an integral part of a more substantial development (Judgment in the case of R v Swale BC ex parte RSPB [1991] 1PLR 6). In such cases, the need for Environmental Impact Assessment must be considered in the context of the whole development. In other cases, it is appropriate to establish whether each of the proposed developments could proceed independently (R (Candlish) v Hastings Borough Council [2005] All ER (D) 178 (Jul); Baker v Bath & North East Somerset Council [2009] All ER (D) 169 (Jul))."

We do not consider that the wider allocation can be considered as a single project for the purposes of the EIA Regulations. The case of R (Leckhampton Green Land Action Group Ltd) v Tewkesbury BC [2017][1] involved the development of part of a wider draft allocation. The Judgment concluded that the development of part of the draft allocation was not dependent upon development on the remainder of the strategic site. The question as to what constitutes the 'project' is further addressed in the judgement of Wingfield, R v Canterbury City Council [2019][2]. The Judgement identifies at paragraph 64 that relevant factors to this include the following:

- Common ownership - where two sites are owned or promoted by the same person, this may indicate that they constitute a single project.
- Simultaneous determinations - where two applications are considered and determined by the same committee on the same day and subject to reports which cross refer to one another, this may indicate that they constitute a single project.
- Functional interdependence - where one part of a development could not function without another, this may indicate that they constitute a single project.
- Stand-alone projects - where a development is justified on its own merits and would be pursued independently of another development, this may indicate that it constitutes a single individual project that is not an integral part of a more substantial scheme.

In this case:

- The application is made by Wain Estates (Land) Ltd. The company does not control any other parts of the wider allocation or any other land within the local area. The site can be delineated from the wider site by Walshaw Brook which runs along the southern boundary.
- It cannot be known whether other applications from within the allocation will be submitted and/or determined at the same time as this proposal, but it can be reasonably assumed that the not all of the allocated site will be brought forward concurrently given that the parcels are being promoted separately.

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[1] Leckhampton Green Land Action Group Ltd), R (On the Application Of) v Tewkesbury Borough Council [2017] EWHC 198 (Admin) (09 February 2017)

[2] Wingfield, R (On the Application Of) v Canterbury City Council [2019] EWHC 1975 (Admin) (24 July 2019)

- Whilst there will be a degree of interdependency between parts of the allocation in relation to infrastructure provision (the through road, school and local centre), fundamentally development within the application site can function and be delivered independently of the wider allocation.

Therefore, the tests set out in Wingfield, R v Canterbury City Council [2019] are met and the development can be considered as a separate project from the wider allocation for the purpose of the EIA Regulations and this screening request. However, cumulative impacts (including the wider allocation) must still be considered, and we address this in the cumulative impacts section of this request. Furthermore, even if the Council takes an alternative view and considers that the development of the allocation comprises one project for the purpose of the EIA Regulations, we consider that an EIA is still not required for the reasons we set out in the cumulative impacts section of this request.

EIA Screening Analysis

In accordance with the 2017 Regulations, it is a requirement of all local planning authorities to consider whether planning applications submitted to them are significant enough in effect to require an EIA.

In assessing whether an EIA is required, we have followed the Regulations and guidance published in the National Planning Practice Guidance (NPPG). The main considerations are set out in a logical order as follows:

Step 1 – Is the proposal Schedule 1 development?

According to the EIA Regulations and Guidance, the application does not constitute Schedule 1 development.

Step 2 – Is the proposal Schedule 2 development?

The proposed development would exceed the 150 dwelling threshold and the developed site area at approximately 11.3 ha would exceed the 5ha size threshold. The development is therefore Schedule 2 development by virtue of its nature and size (i.e. an Urban Development Project relating to section 10(b) of Schedule 2). We have therefore applied the appropriate tests laid down in Schedule 3 of the Regulations and the NPPG below.

Step 3 – Is the proposal in a sensitive area?

According to the Regulations and NPPG sensitive areas are defined as:

- Sites of Special Scientific Interest (SSSI's);
- National Parks;
- The Broads;
- Areas of Outstanding Natural Beauty;
- World Heritage Sites;
- Scheduled Monuments; and,
- European sites within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010.

The NPPG makes clear that all developments in, or partly in, such areas should be screened. It goes on to state: *"An Environmental Impact Assessment is more likely to be required if the project affects the features for which the sensitive area was designated. However, it does not follow that every Schedule 2 development in (or affecting) these areas will automatically require an Environmental Impact Assessment. It will be necessary to judge whether the likely effects on the environment of that particular development will be significant in that particular location."*[3]

The site is not within, or partly within, a National Park, Area of Outstanding Natural Beauty, World Heritage Site or a Scheduled Monument.

An Ecology Technical Note by Tyler Grange forms part of the PfE evidence base[4]. This confirms that there are no European designated sites within 10km of the site.

Therefore, the site is not within a sensitive area as defined within the Regulations and the NPPG. The sensitivities relating to the ecology of the area (as well as all the other material considerations) can be dealt with through adherence to the Council's adopted planning policies, without the necessity for a full Environmental Statement to be prepared.

As such, a full EIA is not necessary in these circumstances in relation to Step 3.

Step 4 – Is the proposal likely to have 'Significant Effects' on the environment?

To address this, it is necessary to screen Schedule 2 developments against the specific 'indicative criteria and thresholds' listed in the Annex: Indicative Screening Thresholds of the NPPG (paragraphs 4-057 & 4-058). In addition, Schedule 3 of the EIA Regulations sets out the selection criteria which must be applied when determining whether a development is likely to have significant effects on the environment which may justify an EIA.

There are three key tests which are to be undertaken:

- consideration of the characteristics of the development;
- consideration of the location of the development; and,
- consideration of the characteristics of the potential impact.

Accordingly, we have considered these tests and applied the sub-criteria for each in turn:

Characteristics of the Development

(i) Size of the development

In relation to the size thresholds identified in the Annex, the site is over 5 hectares. However, the development would not yield in excess of 1,000 dwellings (indeed it falls significantly below that threshold). Therefore, the proposed development itself would not have a significant urbanising effect as defined by the guidance of the NPPG Annex reference above.

(ii) Cumulative effects with other developments

Paragraph 4-024 of the NPPG states:

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[3] Paragraph: 032 Reference ID: 4-032-20170728

[4] 10.03.40 - JPA9 - Walshaw HIMOR and VHW Ecology Technical Note, 2020.pdf

> “**When should cumulative effects be assessed?**
>
> Each application (or request for a screening opinion) should be considered on its own merits. There are occasions, however, when other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development.”

Cumulatively, the allocation is for a quantum of development which exceeds the indicative threshold of 1,000 dwellings identified in the Annex, potentially triggering the need for an EIA. However, even if the allocation is considered as one project for the purpose of the EIA Regulations, the NPPG makes clear that it should not be presumed that developments above the indicative thresholds should always be subject to assessment. Paragraph 4-057 of the NPPG states:

> “**Thresholds and Criteria for the identification of Schedule 2 development requiring Environmental Impact Assessment and indicative values for determining significant effects**
>
> The criteria and thresholds in column 2 represent the ‘exclusion thresholds’ in Schedule 2 of the Regulations, below which Environmental Impact Assessment does not need to be considered (subject to the proposal not being in a sensitive area). The figures in column 3 are indicative only and are intended to help determine whether significant effects are likely. However, when considering the thresholds, it is important to also consider the location of the proposed development.
>
> In general, the more environmentally sensitive the location, the lower the threshold will be at which significant effects are likely. It follows, therefore, that the thresholds below should only be used in conjunction with the general guidance on determining whether Environmental Impact Assessment is required and, in particular, the guidance on environmentally sensitive areas. Column 4 illustrates the issues that are most likely to need to be considered for different development types. However, there will be other issues which will be specific to the nature of the environmental receptor. For example, ecological impacts are likely to be an issue for all development which is proposed to be located in a Site of Special Scientific Interest designated for its wildlife value.”

As such, it is necessary to consider the location, wider context and likely effects of a specific development on the environment in more detail. In particular, it is necessary to establish whether the proposed development is within a sensitive area.

In this case, the entirety of the allocation is not located within a sensitive area as defined within the Regulations and the NPPG, and there is unlikely to be any adverse impacts upon any sensitive areas. That is of critical importance when screening a development which only just exceeds the indicative threshold in the Annex.

In considering the location and wider context of the entire allocated site and whether its development would have significant urbanising effects in a previously non-urbanised area, it is important to note that the allocation is for an urban extension adjacent to an existing urban area, with site being effectively surrounded by existing development on all sides. Clearly, the development would have urbanising effects in a previously non-urbanised area, but those effects would be largely limited to the change on the site itself, viewed within a much wider urban context. Therefore, in terms of the EIA Regulations and the screening thresholds, we do not consider that the urbanising effects would be significant.

The EIA Thresholds Table also sets out the key issues to consider if a development does exceed the indicative thresholds. For an urban development project, the table identifies the key issues to consider as being the "*physical scale of such developments, potential increase in traffic, emissions and noise*". In relation to the wider allocation:

- At 1,250 dwellings, the scale of the allocation is only marginally above the indicative screening threshold of 1,000 dwellings.
- The increase in traffic arising from the proposed development can be adequately assessed as part of a Transport Assessment. However, it is important to note that the evidence base for the PfE has already assessed traffic impacts through a borough wide Locality Assessment[5]. This demonstrates that allocations (including JPA9: Walshaw) can be accommodated without significant adverse impacts on the highways network, subject to further assessment via a Transport Assessment at the planning application stage.
- The increase in emissions and noise would largely be limited to, and inextricably linked with, the increase in traffic associated with the proposed residential use. The new through road may assist in alleviating existing local issues. These matters can be adequately assessed through the normal development management process. Furthermore, the PfE evidence base includes:
    - A Noise Screening Assessment[6], which concludes that the noise impact of the development is limited to road traffic noise and is unlikely to be significant. Wardell Armstong reviewed the Noise Screening Assessment in February 2024, and have confirmed that using just local mitigation measures if required, and the noise impact is unlikely to be significant.
    - An Air Quality Assessment[7], which concludes that concentrations of NO2 and PM10 are likely to be below the relevant air quality objectives (AQOs) at the development location and, as such, the site is suitable for the proposed use from an air quality perspective.

A range of other technical documents relating to ecology, flood risk, drainage, ground conditions, the historic environment, landscape and visual impact, trees and utilities are included within the PfE evidence base[8]. None of the reports indicate that development of the wider allocation is likely to result in significant environmental effects for the purpose of the EIA Regulations.

In terms of cumulative impacts with other planned development in the wider area, there are three other allocations in the emerging PfE within 5km of the site:

- JPA7 Elton Reservoir (1.5km to the south): The draft allocation is for around 3,500 dwellings. There is potential for some cumulative impacts in relation to highways, due to the scale of the proposed allocations and their proximity. Cumulative highways impacts would be assessed through a Transport Assessment, which would then inform other assessments such as air quality. No other cumulative impacts leading to significant environmental effects are considered likely.

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[5] 09.01.09 Transport Locality Assessments - Bury - GMSF 2020.pdf

[6] 10.03.36 - JPA9 - Walshaw Noise Screening Assessment, 2020.pdf

[7] 10.03.42 - JPA9 - Walshaw Air Quality Assessment, 2019.pdf

[8] Supporting documents 2021: 10.03 Site Allocations - Bury\JPA9 Walshaw

- JPA8 Seedfield (2km to the east): The draft allocation is for 140 dwellings. Site JPA8 is sufficiently distant from the subject site such that other cumulative impacts leading to significant environmental effects are considered unlikely.
- JPA1.1 Heywood / Pilsworth (Northern Gateway) (5km to the south-east): The draft allocation is for 1,200,000 sqm of industrial and warehousing floorspace and 1,200 dwellings. Site JPA1.1 is sufficiently distant from the subject site such that other cumulative impacts leading to significant environmental effects are considered unlikely.

Aside from the schemes listed above, we consider that there are no other significant developments planned in the surrounding area which would generate any significant cumulative impacts.

Having regard to the above, whilst any relevant potential cumulative effects will be addressed in the relevant technical assessments and considered as part of the normal planning process, it is not considered that the proposed development would have any adverse cumulative impact on the area for the purposes of an EIA.

Finally, it is important to note to note that all PfE allocations (including site JPA9: Walshaw), have been subject to Strategic Environmental Assessment (SEA) through the PfE process, via the 'Integrated Assessment' reports. The only negative impacts identified in the Integrated Assessment of site JPA9: Walshaw are in relation to using and regenerating previously developed land (i.e., the score is negative because the site is greenfield)[9]. These negatives are related to the plan-making objective of using land efficiently, and do not give rise to the need for an EIA on an individual planning application.

(iii) Use of natural resources

The site is Grade 4 agricultural land[10] primarily used for pastoral farming. It is not considered that the loss of this relatively small area of Grade 4 agricultural land, which is not Best and Most Versatile agricultural land, would have a significant impact on local or national agricultural purposes.

Whilst the site is located within a Mineral Saferguarding Area, it is also allocated for residential development. Furthermore, the site has a number of constraints that make mineral extract of the underlying sand & gravels and shallow coal both environmentally unacceptable or uneconomically viable. The site is bounded by residential properties to the north and west, is likely to contain shallow groundwater, and has previously been used as an extraction site for a neighbouring brickworks. This matter would be addressed further through the planning application process via a Minerals Assessment Report.

The proposals will not result in the use of any natural resources that are of short supply and there are no other likely effects on the use of natural resources in the area and it is not considered that the loss of the land would be significant for the purposes of an EIA.

The declaration of Bury Council of a climate emergency is noted and as part of any planning application consideration would be given to reducing the impacts of the proposal on climate change in terms of energy efficiency and low carbon design or use of renewable technologies where possible. The application will be accompanied by documentation addressing compliance with emerging PfE policies in relation to energy efficiency and climate change.

(iv) Production of waste

The proposed development will inevitably generate waste during the construction and operational stages, and this will be recycled and re used wherever possible.

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[9] Main Modifications: Integrated Assessment (Appendix D, pages 51-57)
[10] Provisional Agricultural Land Classification (ALC) dataset, Natural England (December 2023)

The proposed development would not result in the significant production of waste, hazardous materials or polluting materials during the construction period nor through the operational phase.

Such matters can be managed through normal planning processes using SWMP/CEMP. As such, it is not considered that production of waste would be significant for the purposes of EIA.

(v) Pollution and nuisances

Due to the proposed residential end use, there is no likelihood of significant pollution or nuisance arising from the proposed development for purposes of an EIA.

The Noise Screening Assessment identifies that road traffic noise from the surrounding road network will be the only source of noise which is likely to affect the proposed residential units. However, the daytime and night-time noise guideline criteria could be achieved across the entire development, using just local mitigation measures if required, and the noise impact is unlikely to be significant. Additional road traffic generated by the development is unlikely to result in a perceptible change in noise levels at existing sensitive receptors.

The application would also be accompanied by an Air Quality Assessment, the content of which will be agreed with the council's Air Quality Officer. As set out above, the PfE evidence base includes an Air Quality Assessment[11], which concludes that concentrations of NO2 and PM10 are likely to be below the relevant AQOs at the development location and, as such, the site is suitable for the proposed use from an air quality perspective. Again, no significant effects for the purposes of EIA are anticipated.

The site clearance and construction of operations can be controlled through suitable Environmental Management Plans (EMPs) or Construction Standards, which can be required and easily enforced by planning conditions.

(vi) The risk of accident

As far as we are aware there are no hazardous installation consultation zones within the vicinity of the site.

(vii) Risks to human health

As far as we are aware there are no risks to human health within the vicinity of the site and non would arise from the proposed residential development.

Location of the development

(i) The existing land use

The existing land use is described as above.

It is not located in a 'Sensitive Area' as defined by the EIA Regulations.

It will be shown through the application that the incorporation of such land for the development package would accord with the relevant provisions of the Framework and would not significantly affect the setting of any protected or significant buildings, features or landscapes or public rights of way.

ii) Impact on a relevant abundance, quality and regenerative capacity of natural resources in the area

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[11] 10.03.42 - JPA9 - Walshaw Air Quality Assessment, 2019.pdf

The site is Grade 4 agricultural land used for pastoral farming. As set out above, agricultural land is abundant in the local area and the loss of this relatively small parcel, which is not Best and Most Versatile agricultural land, is not considered to be significant for the purposes of EIA.

iii) Absorption of the natural environment

There are no known features of historical or archaeological importance within the application site.

The site lies within Flood Zone 1 and is a low risk of flooding. It is however, more than 1ha in size and as such the proposals will be accompanied by a Flood Risk Assessment in accordance with the requirements of the Framework/NPPG.

Heritage consultants Lanpro have considered available archaeological, historical, topographic and land-use information in order to clarify the significance and archaeological potential of the site. In summary:

- Christ Church on High Street is a Grade II* listed building. Views of the church dominating its surrounding landscape can be maintained within the study site with consideration of the height of the proposed built form in order to maintain its prominence over the roofscapes of the dwellings, rather than narrowing the views into 'key views' along the proposed road network. Due to the importance of the interrelationship within its environs, any impact on the setting of the Grade II* Christ Church by the proposed development is likely to affect its significance but this can be mitigated by appropriate design. Further consideration of the effects of the proposed development on the setting of the designated heritage asset of Christ Church will be needed once the final detailed layout is issued.
- There is no evidence to suggest that the study site contains, or has the potential to contain, any archaeological remains of sufficient importance to preclude or constrain development.

The application would be supported by a Historic Environment Assessment which considers potential impacts and necessary mitigation further, in accordance with the requirements of the Framework/NPPG. However, none of the heritage issues identified suggest that the proposed development would have significant environmental effects such that the requirement for an EIA is triggered.

Therefore, in terms of the absorption capacity of the natural environment, there are not considered to be any significant impacts that cannot be managed through normal planning procedures and therefore does not necessarily trigger the requirement for EIA.

Characteristics of potential impact

(i) Extent of impact

The magnitude and spatial extent of impacts is considered to be local except in the case of impacts on climate change which in all cases would have transboundary impacts.

The extent of likely impacts is not considered to be significant for the purposes of an EIA.

(ii) Nature of the impact

The majority of impacts will be associated with the construction phase of the development. Visual and potentially ecological impacts continuing into the operational phase, as well as highways related impacts (traffic, noise and air quality). Good construction and site operations will ensure minimal effect to the local environment. Possible impacts can be dealt with through the normal planning process.

(iii) Transboundary nature of the impact

The scale of the proposed development ensures that transfrontier impacts will be not applicable in EIA terms. Good construction and site operations will ensure minimal effect to the local environment.

Ground contamination can be dealt with through the normal planning process. Any affects will be mainly limited to the site itself.

(iv) Intensity and complexity of the impact

The proposed development will likely involve a single phase of development which is not considered as complex or significant for the purposes of EIA.

(v) Probability of the impact

It is certain that the proposed development will generate impacts which will require some level of mitigation. It is however, considered that these can be addressed through the normal planning process.

(vi) Expected onset, duration, frequency and reversibility of impact

As set out above the majority of impacts will be associated with the construction phase of the development and will therefore be relatively short term.

It is considered that any impacts can be managed through the normal planning process and the use of ecological mitigation plans, SWMP/CEMP etc.

(vii) Cumulation of the impact with other existing and /or approved development

As set out above, cumulative impacts will be assessed by each technical discipline as relevant. However, it is not considered that cumulative impacts of known committed or planned development are likely to be significant for the purposes of EIA.

(viii) Possibility of effectively reducing the impact

It is considered that all likely impacts of the proposed development can be adequately mitigated through the normal planning process and use of planning conditions to secure any necessary mitigation such as ecology, highways, noise, flood risk and air quality. As such, it is considered that mitigation options exist which would ensure the development does not require EIA.

Summary/Conclusions

In summary, the proposed development falls outside Schedule 1 and may be referred to as Schedule 2 development within the EIA Regulations. As such, the tests as set out in Schedule 3 of the EIA Regulations were applied through this screening exercise to ensure that the likelihood of significant effects warranting an EIA were considered.

The site forms part of a wider draft allocation in the emerging PfE (JPA9: Walshaw), the totality of which (1,250 dwellings) is of a slightly greater scale than the indicative EIA threshold for this type of development (1,000 dwellings). However, taking into account the scale of the development proposals, the environmental sensitivity of the site (including the absence of any sensitive areas for the purpose of the EIA Regulations) and the mitigation measures that will be put in place to minimise any impacts, it is considered unlikely that the development poses a risk of having significant adverse effects on the environment in this location and **would not be significant** for the purposes of the EIA Regulations 2017. The same conclusion can be formed whether the site is considered individually, or cumulatively with the entirety of draft allocation JPA9: Walshaw.

Any future application will be prepared in full accordance with relevant policies of the adopted and emerging development plan, as well as all the other material planning considerations. We therefore consider that these matters can be adequately addressed through the normal planning process.

We would be grateful to receive the council's opinion of this by way of a formal 'screening opinion' within the requisite 21 days of receipt. If you require any additional information in order to adopt an opinion, please do not hesitate to contact me.

Yours sincerely
Emery Planning

John Coxon

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Director

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Enc: Site location plan (plan ref: 333100672-DWG01, dated 22.02.2024)

Town and Country Planning
(Environmental Impact Assessment) Regulations 2017
Screening Opinion Under Regulation 5

Planning Ref. No:-	**70953**
Site Location:	Land off Church Street/ Scobell Street, Tottington, Bury, BL8 3DE
Proposed Development:	EIA Screening Opinion' under Regulation 6 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) for proposed residential development of up to 300 dwellings

Q1. Is the development of a type described in Schedule 1 of the 2017 Regulations?

No

Q2. Is the development described in Column 1 of Schedule 2 of the 2017 Regulations?

Yes

10 (b). Urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas.

Q3. Is the development to be located within a sensitive area?

No

The site is not located within a 'sensitive area' as defined by Regulation 2(1) of the EIA Regulations.

The site is not designated as a Site of Special Scientific Interest and European site, a national park, the Broads or Area of Outstanding Natural Beauty. It is not a World Heritage site or a scheduled monument site as described within paragraph 32 of the NPPG.

The applicant refers to an Ecology Technical Note by Tyler Grange, which formed part of the evidence base for the Places for Everyone Joint Development Plan. This confirms that there are no European designated sites within 10 km of the site.

There is a Site of Biological Interest, which would be 692 metres from the red edge site, but would be adjacent to the allocation boundary.

Q4. - Does it meet any of the relevant thresholds and/or criteria in column 2 of Schedule 2?

Yes

However, the Planning Practice Guidance (PPG) provides guidance on EIA screening and how to assess whether a development is likely to give rise to significant environmental effects based on the criteria set out in schedule 3 of the Regulations. This will inform whether an EIA is required.

The proposed development of 300 dwellings would be above the threshold of 150 dwellings and the site area of 11.3 hectares would be above the threshold of 5 hectares. It should also be noted that the proposed development would form part of a wider allocation of 1,250 dwellings and other infrastructure including a strategic through road, a new one form entry primary school, a new local centre to include a range of appropriate retail, health and community facilities (Policy JPA 9 - Walshaw, Places for Everyone Joint Development Plan Document adopted 21st March 2024). Policy JPA 9 requires a comprehensive site masterplan and an integrated approach to the delivery of infrastructure to support the scale of the whole development.

Given the requirement for the allocation as a whole to provide a strategic through road and the other infrastructure listed, the proposed development of 300 dwellings would be functionally interdependent upon the wider site from which it cannot be divorced. The proposal is an integral part of a more substantial development and could not proceed independently as a stand-alone project due to the need for an integrated approach to the delivery of a range of infrastructure. The JPA 9 allocation should be considered as a single project for the purposes of the EIA Regulations.

Q5. - Taking Account of the selection criteria in Schedule 3, is the proposal likely to have significant effects on the environment?

Yes, An Environmental Impact Assessment IS (Positive Opinion) therefore required.

The physical scale of the proposed development would have a significant urbanising impact in a previously non-urbanised area and the increase in traffic, emissions and noise associated with the 1,250 dwellings and the associated infrastructure (primary school, local centre, including a range of appropriate retail, health and community facilities) would need to be considered comprehensively as one project for the purposes of the EIA Regulations.

Signed: H Leach **Date: 01/08/2024**

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Ms Helen Leach
Bury Metropolitan Borough Council
Town Hall
Knowsley Street
Bury
Lancashire
BL9 0SW

13 August 2024
EP ref: 23-657

Dear Ms Leach

Re: EIA Screening Opinion (LPA ref: 70953) - Proposed residential development of up to 300 dwellings. Land off Church Street/ Scobell Street, Tottington, Bury, BL8 3DE ("the Site").

Thank you for providing the LPA's Screening Opinion, dated 01/08/2024, which concludes an Environmental Impact Assessment (EIA) is required in relation to the above proposed development. To be clear, our client's Screening Request and the Council's response treated the relevant proposal for the purposes of the EIA Regulations as being "proposed residential development of up to 300 dwellings".

The Screening Opinion concludes that:

> *"The physical scale of the proposed development would have a significant urbanising impact in a previously non-urbanised area and the increase in traffic, emissions and noise associated with the 1,250 dwellings and the associated infrastructure (primary school, local centre, including a range of appropriate retail, health and community facilities) would need to be considered comprehensively as one project for the purposes of the EIA Regulations."*

We accept that the development proposed (up to 300 homes) could reasonably be considered EIA development. As such, we will proceed to undertake such an assessment on that basis. Nonetheless, it is important to note that our Screening Request was not made on the basis of the whole JPA 9 allocation of around 1,250 homes, but instead in relation to the proposed development of the northern parcel of the allocation as a functionally independent project. For ease of reference, we shall call the proposed development area associated with the Screening Request and Opinion "the Site" in order to distinguish it from the wider JPA 9 allocation.

The Site plainly has a connection to the wider allocation. The EIA for the current proposals will have the clearest regard to the cumulative effects as the EIA Regulations require. Indeed, we would expect such matters to be considered as part of the scoping exercise in relation to the EIA for up to 300 homes.

For the reasons set out below we would ask you to please revisit your Screening Opinion, and as permitted by the PPG[1] and the EIA Regulations amend it to make clear that the development should be assessed as a standalone project for up to 300 dwellings and associated works (having regard to relevant cumulative impacts of the wider allocation) and not as a development for 1,250 dwellings and associated infrastructure and works.

We shall explain our reasoning below.

The legal position is relatively well settled. An individual 'project' which is functionally independent from the wider allocation stands to be considered by way of a stand-alone EIA.

How should multiple applications be treated?

In consideration of the above question the PPG states:

> *"An application should not be considered in isolation if, in reality, it is an integral part of a more substantial development (Judgment in the case of R v Swale BC ex parte RSPB [1991] 1PLR 6). In such cases, the need for Environmental Impact Assessment must be considered in the context of the whole development. In other cases, it is appropriate to establish whether each of the proposed developments could proceed independently (R (Candlish) v Hastings Borough Council [2005] All ER (D) 178 (Jul); Baker v Bath & North East Somerset Council [2009] All ER (D) 169 (Jul)).*
>
> *Paragraph: 025 Reference ID: 4-025-20170728"*

Although the PPG makes reference to case law of a certain vintage, the general principles hold good and have been upheld since, including by the Court of Appeal in *R. (on the application of Together Against Sizewell C Ltd) v Secretary of State for Energy Security and Net Zero* [2023] EWCA Civ 1517. The Council will also be aware of the Court of Appeal's ruling in *R (Larkfleet Limited) v South Kesteven District Council* [2015] EWCA Civ 887), which concerned a proposal for a bypass on which significant residential development was dependent and *R(Wingfield) v Canterbury City Council and another [2019] EWHC 1975 (Admin), [2020] JPL 154,* which relates to outline planning permission for a mixed use development of up to 370 dwellings, local centre, open space etc.

The court in *Larkfleet* referred to the relevant EU legislation and case law, in accordance with which the EIA Regulations were to be interpreted:

> *"What is in substance and reality a single project cannot be "salami-sliced" into a series of smaller projects, each of which falls below the relevant threshold criteria according to which EIA scrutiny is required".*

This is not what is proposed in this instance. The Applicants are content to accept EIA is required for the proposed development and, as such, full "EIA scrutiny" will be brought to bear in relation to the proposal for up to 300 dwellings, thereby avoiding the mischief identified by the Court in *Larkfleet*.

In *Larkfleet*, the court found that the construction of the bypass and the carrying out of the residential development were to be treated as separate "*projects*": (our emphasis below). Paras 36 – 38 of the judgment elicit a number of key points:

- Merely because two sets of proposed works may have a cumulative effect on the environment does not render them a single 'project' (§36);

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[1] Can a screening opinion or direction be changed?
There may, exceptionally, be cases where a screening opinion or direction has been issued but it becomes evident that it needs to be changed, for example, because new evidence comes to light.
Paragraph: 021 Reference ID: 4-021-20170728

- The established case law in relation to assessing whether a single project is at play is directed at preventing the absence of any scrutiny under the EIA regime (§36);
- The EIA Directive and the jurisprudence of the Court of Justice recognise that it is legitimate for different development proposals to be brought forward at different times, even though they may have a degree of interaction, if they are different "projects" (§37);
- The EIA Directive has a number of different objectives, which includes the need to apply appropriate EIA scrutiny but also to avoid undue delay in the operation of the development management regime (§38);
- It is worth repeating verbatim the following passage in the *Larkfleet* judgment since it reflects very closely the circumstances in which our clients find themselves. We draw particular attention to the fact that the allocation as a whole was subject to scrutiny at a strategic environmental through the SEA for PfE, as well as careful consideration of the justification for the release of the land from the Green Belt:

> *38 ………**Where two or more proposed linked sets of works are in contemplation, which are properly to be regarded as distinct "projects", the objective of environmental protection is sufficiently secured under the scheme of the Directive by consideration of their cumulative effects, so far as that is reasonably possible, in the EIA scrutiny applicable when permission for the first project (here, the link road) is sought, combined with the requirement for subsequent EIA scrutiny under the Directive for the second and each subsequent project. The adequacy and appropriateness of environmental protection by these means under the EIA Directive are further underwritten by the fact that alternatives will have been assessed at the strategic level through scrutiny of relevant development plans (here, the Core Strategy and Masterplan) from an environmental perspective under the SEA Directive."***

Lang J, in her judgment in R(Wingfield) v Canterbury City Council and another *[2019] EWHC 1975 (Admin), [2020] JPL 154, ("Wingfield")* stated at [63] that:

> *"The question as to what constitutes the "project" is a matter of judgment for the competent planning authority, subject to challenge on grounds of Wednesbury rationality or other public law error.*

At [64] she set out a non-exhaustive list of potentially relevant criteria, which serves as a useful aide-memoire. These include whether the sites are owned or promoted by the same person, functional interdependence, and stand-alone projects. In relation to the last of these factors she said:

> *"…where a development is justified on its own merits and would be pursued independently of another development, this may indicate that it constitutes a single individual project that is not an integral part of a more substantial scheme".*

Conclusion

Drawing together the various legal strands that emerge from the case law outlined above, one can reach the following conclusions with a high degree of confidence:

- The factual position is that whilst the current proposals will at some point in time link to the wider allocation and will, as required by PfE, provide a portion of the strategic through-road and contribute financially to the wider infrastructure of the allocation (matters that can properly be controlled via planning conditions and a S106 Agreement) the application does not have a functional interdependence with other proposals – *i.e.* the current proposals could, and would, be likely to proceed in the absence of the wider proposals and are not dependent upon the infrastructure of the wider allocation (school, services, southern access etc)(see *Wingfield* §64(iii), which suggests that a lack of functional interdependence tends against a conclusion that there is a 'single project' for EIA purposes);

- It is relevant to note that our client does not control the wider allocation and, as such, is unable to provide any timeline for the delivery of the wider parcels of land or how they will be laid out. There is no "common ownership", which was a factor to which Lang J made reference in *Wingfield* (§64(i));
- Similarly, there will not be any "simultaneous determination" of the current proposals with any part of the wider allocation (*Wingfield* §64(ii));
- There is no question but that the current proposal for up to 300 homes will receive full scrutiny in accordance with the EIA Regulations and associated regime. As such, the 'salami-slicing', which can prevent *any* such scrutiny, so rightly deprecated by the Courts will not occur;
- Whilst it is fundamental that the proposed development and EIA have regard to other phases of development, and the ES will include assessment of cumulative effects, in so much as we have information available, we cannot predict what will come forward on the wider site, or when. As such, the ES which will accompany the Application will demonstrate the development is acceptable as a single entity;
- Without question the cumulative effects of the wider allocation will be addressed by the Environmental Statement for the current proposal. This, as the case law establishes, is a perfectly legitimate approach;
- The approach adopted by our client recognises that there should be appropriate scrutiny of projects under the EIA regime but without imposing undue delay on bringing projects forward that have already been assessed at a number of different levels, including under the SEA Directive (as here);

It is not necessary – or even possible - for the LPA to consider the environmental effects of the whole allocation at present. What matters is that the LPA as decision makers arrive at a reasoned and rational conclusion as to the extent of the project for the purposes of the EIA Regulations. As such, having regard to the information above and extensive relevant case law on this matter, we would please ask you to change the Opinion to conclude that an EIA is required for the proposed development as a functionally independent project for the delivery of up to 300 dwellings and associate works.

Should you have any queries regarding the above we would welcome an opportunity to discuss these with you ahead of any further response being provided.

Yours sincerely
Emery Planning

John Coxon

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Pre-application Service
Development Management
Bury Council
Town Hall
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Bury
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BL9 0SW

30 July 2024
EP ref: 23-657

Dear Sir/ Madam

Re: Pre-application enquiry for Wain Estates – Land off Church Street/Scobell Street, Walshaw, Bury

We are instructed by our client, Wain Estates, to progress a pre-application enquiry in relation to land off Church Street/Scobell Street, Walshaw, Bury.

The application

The application will be made in outline and will be for up to 270 dwellings. All matters will be reserved save for access. Access for the purposes of the application will relate to the two proposed vehicular access points to be taken from the corner of Church Street and Scobell Street, and Scobell Street, only. The internal road layout, the strategic through road and non-vehicular access points will be resolved through a future reserved matters application.

Policy context

The site forms part of a strategic site allocation for development in the Places for Everyone (PfE) Plan, which was adopted on 21 March 2024. The site has consequently been removed from the Green Belt and is identified for housing development in the PfE.

Policy JP Allocation 9 (Walshaw) (JPA9) requires the delivery of around 1,250 homes on the allocated site. This policy states that development shall be in accordance with a masterplan approved by the LPA and criteria are set out to guide individual planning applications. Our client's site forms part of this site allocation, and Wain Estates formed part of the consortium with VHW and Redrow that promoted the site through the plan-making process.

Of the potential housing land supply identified within the PfE for Bury of 9,660 dwellings, some 4,900 dwellings (51% of the supply) are to be delivered from the PfE allocations, and 1,250 dwellings (13% of the supply) are to be delivered from Walshaw. The delivery of the allocation is critical to the delivery of the plan.

The evidence presented to the PfE examination stated that first completions on Walshaw would be achieved in 2025/26 (i.e., from April next year)[1]. This is reflected in the housing requirement for Bury in the PfE, which ramps up significantly from 246 dwellings per annum for the period 2022 – 2025, to 452 dwellings per annum for the period 2025 – 2030, and then 520 dwellings per annum from 2030 onwards. Therefore, achieving delivery on the site from 2025/26 is critical to the Council being able to demonstrate a 5 year housing land supply.

Masterplanning considerations

Whilst Policy JP9 of the PfE requires development to be in accordance with a Masterplan approved by the LPA, it does not say that a Masterplan must necessarily be approved by the Council prior to consideration of an individual planning application, and there is flexibility in terms of the scope and process for a Masterplan. The key question is whether a proposal would prejudice the comprehensive development of the allocation.

As discussed above, the early delivery of the site is critical to Bury being able to maintain its housing trajectory and achieve a 5 year housing land supply. The PfE anticipates delivery (meaning completions) from the allocations in Bury from 2025/26 when the housing requirement ramps up to 452 dwellings per annum.

Wain Estates therefore wish to work positively and proactively with the LPA in bringing this site allocation forward for development, with early phases critical to the housing trajectory being maintained. Bearing in mind that the PfE needs to be read as a whole, the masterplan must not prevent the early delivery of the site and the achievement of the Council’s housing requirement.

In terms of process, it may be that the Masterplan is subject to separate public consultation and formal approval by the Council as part of a separate process to the planning application, or it may be that a Masterplan is presented to Planning Committee at the same time as the individual planning application in question. We would like to discuss the Masterplan process with officers as part of this pre-application enquiry and agree a way forward, to ensure that the site can be delivered within the timeframes anticipated in the PfE, whilst also ensuring the whole allocation comes forward in a sustainable and comprehensive manner.

The promoters for the Walshaw allocation produced an Illustrative Development Framework Plan as part of the emerging PfE to show how proposed development could come forward. This included a vision and indicative layout of the development, including the location of the residential parcels, green and blue infrastructure and key pedestrian and vehicular access.

Stantec continues to act on behalf of all the landowners in relation to the masterplan. Work in relation to this is progressing and the Council has recently been presented with an initial draft masterplan by Stantec.

Wain Estates is developing its proposals for its own land alongside the masterplanning process. A draft Development Framework plan by FPCR is enclosed with this pre-application enquiry. This plan aligns with the current draft masterplan that has been prepared by Stantec, and demonstrates how the development could accommodate:

- up to 270 dwellings;
- the new through road / link road insofar as it relates to Wain Estates’ land;
- green infrastructure including open space (including a new play area), landscaping and drainage attenuation features; and,
- the retention of existing public rights of way.

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[1] Examination document M8.1 – GMCA response to IN9: Matters, Issues and Questions [Matter 8 Places for Homes]

We seek the Council's views on the acceptability of the Development Framework plan through the pre-application discussions. It is proposed that the plan would be an approved document, providing parameters for future reserved matters applications.

Technical considerations

The draft masterplan option has been informed by ongoing technical work as well as a number of technical documents that were submitted by the site promoters through the PfE process, which highlight the following considerations for a planning application:

- **Highways:** Off-site junction improvements are likely to be required as part of any planning application. In accordance with criterion 2 of Policy JPA9A, the route of a new strategic through road is shown through the application site providing a potential connection from Scobell Street/Church Street, heading south towards Walshaw Road where it would connect via VHW's land. The need for a connection to Lowercroft Road would be considered through the masterplanning process in consultation with the Local Highways Authority, but as that relates to the section through VHW's land it should not affect Wain Estates' planning application. As noted above, details of the internal road layout, the through road, and non-vehicular access points will be secured through a future reserved matters application.

  The applicant is also committed to a comprehensive Travel Plan, linked to a Monitor and Manage Strategy, that can be established for this application, and then grow/expand as more of the site allocation comes forward.

  Whilst our highways consultants will look to engage with the Local Highways Authority and TfGM separately, we consider that it would be useful for them to be part of the pre-application discussions given the issues and their relationship with planning.

- **Flood risk & drainage:** There is potential for discharge to 3 no. ordinary watercourses, namely Walshaw Brook, Elton Brook and an unnamed watercourse to the north of Scobell Street. Our client's site is mostly to drain to Walshaw Brook given the topography of the land at pre-existing greenfield rates and subject to agreement by the LLFA.

- **Ecology:** There is limited biodiversity value for our client's site, with the Cyrus Ainsworth Nurseries and Parker Lodge Site of Biological Value located some distance further to the south of the site, beyond Walshaw Road. The site comprises agricultural pastureland, some scattered trees and intact and defunct hedgerow. The application would provide for a biodiversity net gain in accordance with the requirements of the Environment Act and policy.

- **Trees:** There are no significant arboricultural constraints. There is no notable woodland within the site, but there are trees in the south-west corner of the site which are subject to Tree Preservation Orders. The masterplan shows that these trees could be retained as part of the proposed development.

- **Heritage:** There are no conservation areas or designated heritage assets within influencing distance aside from Christ Church on High Street, which is a Grade II* listed building. Due to the importance of the interrelationship within its environs, any impact on the setting of the Grade II* Christ Church by the proposed development is likely to affect its significance but this can be mitigated by appropriate design. Views of the church can be maintained within the site with consideration of the height of the proposed built form to maintain its prominence over the roofscapes of the dwellings, rather than narrowing the views into 'key views' along the proposed road network. Further consideration of the effects of the proposed development on the setting of the designated heritage asset of Christ Church will therefore be required at the reserved matters stage.

- **Housing mix:** The Council does not currently have an up-to-date local development plan policy on housing mix. Paragraph 11.142 of the PfE states that the site has the potential to provide a diverse mix of house types and affordable housing provision for the local area. Wain Estates intend to propose a mix of high-quality family housing (2, 3, 4 and 5 bedrooms), albeit with the precise mix to be determined at the reserved matters stage. We would welcome input from the Council on the proposed mix of housing, including the mix of affordable housing (tenure and sizes).
- **Coal mining:** The location of former mineshafts will influence the alignment of the strategic through road and development. Furter coal mine assessment work is currently ongoing, and will be provided to the Council should it become available during the pre-application process. The masterplan currently proposes for the local centre and school to be delivered elsewhere within the allocation. We anticipate that there will be a need for Section 106 contributions towards the delivery of the school.

Additional technical work has also been undertaken since the adoption of the PfE and is summarised below:

- **Archaeology:** A Historic Environment Desk-based Assessment carried out by Lanpro Ltd concludes there is no evidence to suggest that the site contains, or has the potential to contain, any archaeological remains of sufficient importance to preclude or constrain development.
- **Noise Screening Assessment:** The assessment carried out by Wardell Armstrong has found that any noise impact is unlikely to be significant and noise guideline criteria could be achieved across the entire development using local mitigation measures where required.
- **Contamination:** Initial assessments have identified that the site is at low to moderate risk of contamination. Appropriate further investigations would be carried out to inform technical details approval where required.

Green Belt compensatory improvements

We seek clarification from the Council as to how it intends to apply Policy JPA9 in relation to compensatory improvements for accessibility and environmental quality of the remaining Green Belt. The PfE evidence document: *Identification of Opportunities to Enhance the Beneficial Use of the Green Belt Appendix B* (2020) provides examples of such potential measures including improving connectivity to exiting footway and cycle routes and the potential for circular routes.

Minerals extraction

The PfE includes a requirement to address the potential for minerals extraction prior to development. It appears from desk-based assessments carried out that the site is subject to coal seams. However, extraction is not feasible prior to development given the Government’s position on coal extraction and proximity to residential properties. Having regard to sand and gravel, an assessment carried out by Betts Geo has found that extraction would be both environmentally unacceptable and economically unviable. In both cases, it is likely that historic mining removed all of the viable minerals and coal.

Planning application documents

We seek confirmation as to what documents will be required for an outline planning application in the terms described above. We have set out a draft schedule of application documents below:

- Site Location Plan.
- Existing Block Plan.
- Development Framework Plan.
- Detailed access drawings for the two proposed vehicular access points.
- Planning Statement.
- Affordable Housing Statement.
- Transport Assessment & Framework Travel Plan.
- Phase 1 Contaminated Land Report to include Coal Mining Report & Minerals Safeguarding Assessment.
- Flood Risk Assessment and Drainage Strategy Report.
- Ecology Assessment.
- Tree Survey and AIA.
- Landscape and Visual Impact Assessment.
- Crime Impact Statement.
- Air Quality Screening Assessment.
- Noise Screening Assessment.
- Carbon and Energy Statement.

Section 106 contributions

We note that the Council is currently consulting upon an Education SPD (SPD17). We seek clarification on the Council's position on the calculation of contributions towards the delivery of the school, and any other necessary Section 106 contributions / requirements, through the pre-application discussions.

We intend to submit the planning application in September 2024 and would therefore request a meeting and written feedback from the Council at the earliest opportunity.

We trust that this letter is of assistance, and we look forward to hearing from you in relation to officer availability for a meeting. In the meantime, please do not hesitate to contact us if you have any queries.

Yours sincerely
Emery Planning

John Coxon

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Enc: Development Framework Plan by FPCR

Our Ref:	03003E
Your Ref:	
Date:	20 November 2024
Please ask for:	Helen Leach
Direct Line:	0161 253 5322
Email:	h.leach@bury.gov.uk

Wiktoria Sypnicka
Emery Planning
204 South Park Court
Hobson Street
Macclesfield
SK11 8BS

Dear Wiktoria Sypnicka

Proposal: Outline application for up to 270 no. dwellings
Location: Land off Church Street/Scobell Street, Walshaw, Bury

I am writing following receipt of your enquiry on 31 July 2024 in connection with the above proposal and to provide the Council's view of the issues discussed.

The details within this note are provided as guidance in the event of a formal application being submitted.

Should you wish to discuss any of the issues contained within this note, then please contact the above case officer.

Yours sincerely

Helen Leach
Team Leader - Development Management

Accompanying/Supporting Information

To accompany any application for planning permission, the following documents, in the first instance, should be submitted in line with both national and Local Validation Procedures. Failure to do so would mean that any application without these would not be validated.

Application form and certificate
Location plan
Plans - existing & proposed site plan, parameters plan, section plan, detailed plans of any junction alterations/improvements
Planning statement
Section 106 proforma and up to date title documents
Affordable housing statement
Amenity space/recreational space
Heritage statement
Transport assessment, including the impact of the proposal on Holcroft Moss and details of the mitigation required, including detailed plans
Parking & servicing details
Air quality report
Noise report
Contaminated land report
Flood risk assessment
Archaeological report
Ecology assessment and BNG
Tree survey
Hard and soft landscaping details
Statement of community involvement
Existing and proposed levels
Crime impact statement
Coal mining report
Carbon and energy statement
Density statement
Health impact assessment
Digital connectivity statement

Planning Policies

In the consideration of the proposals, the following policies are relevant to the scheme and would be taken into consideration should any application be formally submitted:

H1/2	Further Housing Development
H2/1	The Form of New Residential Development
H2/2	The Layout of New Residential Development
H4/1	Affordable Housing
EN1/2	Townscape and Built Design
EN1/5	Crime Prevention
EN1/7	Throughroutes and Gateways
EN3	Archaeology
EN3/1	Impact of Development on Archaelogical Sites
EN3/2	Development Affecting Archaeological Sites
EN6/3	Features of Ecological Value
EN7/2	Noise Pollution
EN7/3	Water Pollution

EN7/4	Groundwater Protection
EN7/5	Waste Water Management
EN8/2	Woodland and Tree Planting
RT2/2	Recreation Provision in New Housing Development
RT3/4	Recreational Routes
HT2/1	The Strategic Route Network
HT2/2	Improvements to the Strategic Route Network
HT2/3	Improvements to Other Roads
HT3/1	Schemes to Assist Bus Movement
HT5/1	Access For Those with Special Needs
HT6/1	Pedestrian and Cyclist Movement
HT2/4	Car Parking and New Development
HT6/3	Cycle Routes
CF1/1	Location of New Community Facilities
SPD1	Open Space, Sport and Recreation Provision
SPD5	DC Policy Guidance Note 5: Affordable Housing
SPD6	Supplementary Planning Document 6: Alterations & Extensions
SPD11	Parking Standards in Bury
SPD16	Design and Layout of New Development in Bury
SPD 9	Conversion and Re-use of Buildings in the Green Belt
SPD 17	Developer Contributions for Education
Draft SPD18	Development Frameworks for Strategic Site Allocations at Elton Reservoir and Walshaw
JP-S1	Sustainable Development
JP-S2	Carbon and Energy
JP-S4	Flood Risk and the Water Environment
JP-S5	Clean Air
JP-H1	Scale of New Housing Development
JP-H2	Affordability of New Housing
JP-H3	Type, Size and Design of New Housing
JP-H4	Density of New Housing
JP-G1	Landscape Character
JP-G2	Green Infrastructure Network
JP-G3	River Valleys and Waterways
JP-G5	Uplands
JP-G7	Trees and Woodland
JP-G8	A Net Enhancement of Biodiversity and Geodiversity
JP-P1	Sustainable Places
JP-P2	Heritage
JP-P3	Cultural Facilities
JP-P5	Education, Skills and Knowledge
JP-P6	Health
JP-P7	Sport and Recreation
JP-C1	Our Integrated Network
JP-C2	Digital Connectivity
JP-C3	Our Public Transport
JP-C4	Strategic Road Network
JP-C5	Streets For All
JP-C6	Walking and Cycling
JP-C8	Transport Requirements of New Development
JPA9	Walshaw
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guide

Issues

NPPF - The National Planning Policy Framework (NPPF) states that 'Area-based character assessments, design guides and codes and masterplans can be used to help ensure that land is used efficiently while also creating beautiful and sustainable places".

The NPPF is supported by the Planning Practice Guidance (PPG) which states that 'Masterplans set the vision and implementation strategy for a development. They are distinct from local design guides by focusing on site specific proposals such as the scale and layout of development, mix of uses, transport and green infrastructure. Depending on the level of detail, the masterplan may indicate the intended arrangement of buildings, streets and the public realm…' and that 'A range of other plans and technical reports may be needed alongside a masterplan, to provide supporting evidence and set out related proposals, such as a local character study, landscape assessment, transport assessment and proposals for securing biodiversity net gain. An implementation strategy could also be included, especially where development is expected to be brought forward in a number of phases'. (Paragraph: 006 Reference ID: 26-006-20191001).

Places for Everyone - The Places for Everyone Joint Development Plan Document (PfE) is a joint plan covering nine of the ten Greater Manchester districts, including Bury, provides the overarching framework to strategically manage growth across the boroughs.

All nine Councils adopted PfE with effect from 21 March 2024 which means that the Plan is now part of the statutory development plan for Bury and holds full weight in regard to planning applications.

Policy JPA9 (Walshaw) allocates the site within a wider residential allocation which could deliver around 1,250 homes to diversify the type of accommodation within the Walshaw area.

Policy JPA 9 states that any proposals for this allocation must be in accordance with a comprehensive masterplan that has been approved by the Local Planning Authority (LPA). It shall include a clear phasing strategy as part of an integrated approach to the delivery of infrastructure to support the scale of the whole development in line with Policy JP-D1 Infrastructure Implementation.

The allocation of the Walshaw site through PfE establishes the principle of residential development on the site and the purpose of the comprehensive masterplan and phasing strategy is to bridge the gap between this allocation and the subsequent detail of the planning and development strategy that will then pave the way for planning applications on the site and subsequent development.

Fundamentally, the purpose of the masterplan and phasing strategy is to ensure that there is an agreed position on a comprehensive and coordinated approach to the development of the site, including the delivery of infrastructure and any necessary mitigation measures, design and placemaking principles. By planning strategically across the site as a whole, the masterplan would seek to ensure that no parts of the site are sterilised and that the whole development and the necessary supporting infrastructure could be delivered successfully, addressing all policy and other requirements. This needs to be demonstrated that this can be achieved - across the site and not limited to individual parcels.

The masterplan would also seek to establish the parameters against which future planning applications would be considered and would enable the LPA to determine whether separate applications on parts of the site are consistent with plans for the wider Walshaw site, particularly in terms of the delivery of the necessary strategic infrastructure required to support the development of the Walshaw site as a whole. By factoring in key issues at an early stage, the masterplan should enable any applications to be progressed in a timelier manner.

It is vital that the masterplan is prepared on an 'ownership-blind' basis i.e. that location of the infrastructure that is necessary to support the development as a whole (e.g. schools, highways, open space, sustainable urban drainage systems, ecological mitigation and local centres) takes no account of land ownership. Significant complications can arise around this issue unless there is an agreement in place to 'equalise' the land and delivery costs between all parties involved in the wider Walshaw allocation. You will be aware that there is a Walshaw consortium of developers/landowners where this issue has been discussed at length over the years, including the period before PfE was adopted.

Draft Supplementary Planning Document 18 (Development Frameworks for Strategic Site Allocations at Elton Reservoir and Walshaw) sets out more detailed guidance on what the Council will expect in terms of the specific requirement for a comprehensive masterplan and phasing strategy. In particular, draft SPD18 requires the masterplans and phasing strategies to be supported by detailed evidence to justify the approach and that this is presented collectively as a Development Framework for the site.

Given the requirement in PfE Policy JPA9 for any development to be in accordance with a comprehensive masterplan and a clear infrastructure phasing strategy, a planning application would be deemed to be premature and contrary to PfE Policy JPA9 until such time as a masterplan and phasing strategy has been approved by the Local Planning Authority. As above, the LPA has been consistent in its narrative at the Walshaw Steering Group meetings with the Walshaw consortium that it would be preferential for the LPA to work alongside the consortium on the masterplanning and phasing. Whilst it is understood that a masterplan is being produced in the background, the danger is that the LPA is unable to fully assess this with full supporting evidence on how the masterplan reflects the constraints and issues in and around the site. It is likely to take some considerable time and resource to enable the LPA to do this, if the intention is for the consortium to submit this at some point in the future. There is also then, the wider issue of how this is consulted on and subsequent approval of this.

You should also be mindful that there is another large housing allocation in the vicinity of Walshaw and the LPA will seek to ensure that the cumulative impacts of these two developments are considered together, as the masterplanning and phasing of on and off site mitigation comes forward. In particular, transport modelling will need to be undertaken for both allocations to determine mitigation and how this will be brought forward. At this site, it is unclear what detailed modelling has been undertaken by the Walshaw consortium and how an early planning application could respond to this and the wider development in this location.

The following sections set out the planning policies that would be relevant to the development of the Scobell Street/Church Street site. However, as stated above, it is not possible to apply many of these policies without having considered the application site within the context of the wider Walshaw site allocation.

Principle - Residential and Housing Land Supply - The NPPF should be treated as a material planning consideration and it emphasises the need for local planning authorities to boost the supply of housing to meet local housing targets in both the short and long term. The NPPF states that unless they have an adopted plan that is less than five years old that identified a five year supply of specific deliverable sites at the time of conclusion of the examination, then local planning authorities should identify and update annually a supply of specific developable sites to provide either a minimum of five years' worth of housing, or a minimum of four years' worth of housing in certain circumstances set out in NPPF paragraph 226.

PfE was adopted with effect from 21 March 2024 and sets the up-to-date housing requirement for Bury against which the deliverable supply of housing land must be assessed. PfE Policy JP-H1 sets the following stepped targets for Bury:
- 246 homes per year from 2022-2025;
- 452 homes per year from 2025-2030; then
- 520 homes per year from 2030-2039.

Bury's Strategic Housing Land Availability Assessment sets out the latest housing supply position, which is made up of sites that have an extant planning permission and sites that have potential to obtain planning permission in the future. This shows that there are a number of sites within the Borough with the potential to deliver a significant amount of housing.

Following the adoption of Places for Everyone, the Council is able to demonstrate a deliverable 5-year supply of housing land when assessed against the adopted PfE housing requirement.

The site is part of PfE JP Allocation 9: Walshaw. This site is allocated for residential development (of around 1,250 dwellings across the whole allocation) and is outside the Green Belt. Residential development of this site is acceptable in principle. However, as set out in PfE Policy JPA9, any proposals for this allocation must be in accordance with a comprehensive masterplan that has been approved by the LPA. It shall include a clear phasing strategy as part of an integrated approach to the delivery of infrastructure to support the scale of the whole development.

At this point in time, there is no approved masterplan for this site and no clear phasing strategy setting out an integrated approach to the delivery of infrastructure to support the scale of the whole development. In the absence of this, the approval of this scheme could prejudice the delivery of the remainder of the JPA9 Allocation and wider infrastructure and other elements essential to the successful delivery of the site. It is therefore considered premature and contrary to PfE Policy JPA9 due to the risk to the delivery of the allocation as a whole, in the absence of a comprehensive masterplan approved by the LPA.

Principle - Recreation - PfE Policy JP-P7 Sport and Recreation requires public realm that provides frequent opportunities for play, and new and/or improved existing facilities commensurate with the demand they would generate. Recreational facilities should be located and designed in relation to housing to ensure that they are accessible, but also minimise potential for complaints due to disturbance.

The principle of securing provision for open space, sport and recreation in conjunction with new housing development is also established through saved UDP Policy RT2/2. Policy RT2/2 requires all proposals for new housing consisting of 10 units or more to make provision for the recreational needs of the prospective residents.

The provision of open space, sport and recreation should be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature and location of on-site provision.

Heritage - Criteria 12 of Policy JPA9 requires proposals within the allocation to take appropriate account of relevant heritage assets and their setting, including Christ Church, Grade II* Listed Building, in accordance with Policy JP-P2.

It is considered that given the location of the proposed development, it is unlikely to impact upon the setting of Christ Church, the Grade II* listed building to the extent that it would cause any loss of significance and architectural and historic interest as a listed building. However, this would depend on the detail of the eventual application and proposals for development in the site.

The application site partly coincides with the Historic Environment Record (HER) for Access road to Cop Thorns (MGM10031). A heritage statement should be provided to assess the impact upon the HER and whether any investigations are required. Comments from GM Archaeological Advisory Service are awaited.

Design and layout

Design - Criterion 8 of Policy JPA9 requires the design and layout of proposals within the allocation to allow for effective integration with surrounding communities, including active travel links and connections to the recreation areas at Dow Lane, Elton Vale, Whitehead Lodges as well as Walshaw Village and Bury Town Centre.

The provision of a network of safe cycling and walking routes through the site needs to be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature, location and design of any necessary provision.

Type, Size and Design of New Housing - PfE Policy JP-H3 - Seeks to provide an appropriate mix of dwelling types and sizes. All new dwellings must

1. comply with the nationally described space standards and
2. be built to the 'accessible and adaptable standard in Part M4(2) of Building Regulations unless specific site conditions make this impracticable.

The accessible and adaptable standard in Part M4(2) of Building Regulations will need to be secured by condition.

PfE Policy JPA9 requires the allocation as a whole to deliver an appropriate mix of house types and sizes, accommodation for older people, and provision of plots for custom and self-build housing (subject to local demand as set out in the Council's self-build register). As the proposal is outline only, this would need to be addressed in a statement with the final layout of the house types would need to be addressed at the reserved matters stage.

Density - PfE Policy JP-H4 - Requires new housing development to be delivered at a density appropriate to the location, reflecting the relative accessibility of the site by walking, cycling and public transport and the need to achieve efficient use of land and high-quality design. Policy JP-H4 sets out minimum densities that should be considered. The site falls in an area where a minimum density of 35 dwellings per hectare applies.

Affordable Housing - In accordance with PfE Policy JPA9 this development would be required to make provision for affordable housing in accordance with local planning policy requirements, equivalent to at least 25% of the dwellings proposed on the site and across a range of housing types and sizes. 60% of the affordable homes are required to be social or affordable rented and 40% for affordable home ownership.

NPPF currently requires 10% of the total homes to be for affordable home ownership and 25% of affordable housing to be delivered as First Homes. This is proposed to change in the

2024 NPPF consultation but is current Government policy.

The Council would wish to secure nomination rights for the affordable housing. The affordable housing should be secured through a condition at Outline, and subject to a Section 106 Agreement at the Reserved Matters stage.

Landscape Character - The site is designated as part of Affetside and Ainsworth Urban Fringe Farmland Landscape Character Area under PfE Policy JP-G1.

Development within landscape character areas should reflect and respond to the special qualities and sensitivities of the key landscape characteristics. The interface of new development with the surrounding countryside/landscape is of particular importance. These transitional areas require well-considered and sensitive treatment.

Green Belt Compensation - The NPPF states that plans should set out ways in which the impact of removing land from the Green Belt can be offset through compensatory improvements to the environmental quality and accessibility of remaining Green Belt land.

This is reflected in PfE Policy JP-G2 which states that development which involves the removal of land from the Green Belt (including allocations proposed in the plan) will be required to offset the impact of removing land from the Green Belt through identifying and delivering compensatory improvements to the environmental quality and accessibility of remaining Green Belt in the vicinity of the site. Details of specific sites and projects will be established in discussion with the Local Planning Authority.

Criterion 10 of the PfE policy for Walshaw (JPA9) states that development within this allocation will need to make provision for compensatory improvements to the environmental quality and accessibility of remaining Green Belt in the vicinity of the site in accordance with Policy JP-G2.

Provision for compensatory improvements to the environmental quality and accessibility of remaining Green Belt should be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature and location of such provision.

Impact upon residential amenity - SPD6 provides guidance on aspect standards between residential properties and as such, would be relevant in this case. The aspect standards states that there should be a minimum of 20 metres between directly facing habitable windows and 13 metres between a habitable room window and a two storey blank wall. These distances are based upon 2 storey properties on a level site. For each additional storey or 2.5 metre difference in levels across the site, a further 3 metres should be added to the distance.

The relationship between existing dwelling and proposed dwellings must meet the aspect standards set out above.

Ecology/BNG - The main issues relate to breeding birds, invasive species, BNG, protection of the watercourse and enhancing the natural environment.

Proposed Layout - The indicative layout is in keeping with previous discussions with regards the priorities for green infrastructure. There is minor pinch point created along the Walshaw Brook corridor towards the west where there is block of development proposed. I recommend that this area of development is pulled back to a line from the NW corner of the proposed pond to the eastern end of the hedge line along the north of the development plot.

See screenshot below.

Ecological Survey Requirements - Given the scale of the development a full extended phase 1 habitat survey should occur. Specific issue that will need addressing (these should not be regarded as exhaustive) include:

- breeding birds, with identification of any colonial breeders on adjacent buildings, such as house sparrow, swift and starling to inform any bird box strategy;
- invasive species and;
- the mature trees and hedges that are currently present.

There should also be an assessment of the cumulative effect of any wildlife losses with the wider PfE allocation and the recreational effect on sites such as Cyrus Ainsworth SBI and the West Pennine Moors SSSI.

Biodiversity Net Gain (BNG) - Every grant of planning permission in England is deemed to have been granted subject to the biodiversity gain condition. The commitment to provide 10% net gain is noted. Whether or not this is feasible on this phase is difficult to determine at this stage, given the potential loss of hedge and proximity to watercourses.

No masterplan
Should the applicant proceed to application without engaging in the masterplanning process then the applicant would need to provide a net gain of 10% within the site boundary (relating to each application) which could lead to a reduction in the number of houses that can be delivered. Given river units will potentially be required, naturalisation of the unnamed watercourse running approximately north to south should be considered. It is currently straight which is presumably due to historic land drainage.

Masterplan
As this is just one phase, within a wider development/allocation GMEU would recommend that information is provided on a wider biodiversity net gain strategy for the entire site. GMEU consider that each phase need not achieve 10% independently as long as the entire PfE allocation achieves 10%. This would be secured via the submission of an overall gain plan for the allocation, and individual phase plans for each of the phases.

A BNG strategy for the full site would enable a more strategic approach to delivery of the required habitats as it is envisaged that the BNG in the northern half of the allocation would be centred around the lodges, which would enable more development to take place on this site.

Protection of Watercourse - Whilst direct impacts within the riparian zone will be dealt with through the biodiversity gain plan, there is a risk of indirect effects downstream during and post construction from sediment release, pollutants etc. Therefore, it is recommended that a CEMP for the watercourses is provided as part of any application.

Contributing to and Enhancing the Natural Environment - Section 180 of the NPPF 2023 states that the planning policies and decisions should contribute to and enhance the natural and local environment. As noted above, BNG should resolve mitigation and enhancement for direct loss of vegetated habitats but not indirect effects due to hydrological connectivity or increased recreational pressure on biodiversity assets off-site. These effects are cumulative with other phases of the development and therefore a combined recreational and drainage strategy is recommended and not just for effects on ecology.

With regards wildlife, a bird box strategy is recommended, given nesting habitat will be lost. If farmland birds are to be displaced a compensation site should be identified given displacement is not an option for this site. There may also be amphibian and bat issues to address subject to the findings of the ecological surveys and other issues currently not anticipated. Permeability of the site for wildlife should also be maintained.

Green infrastructure - In accordance with Policy JPA9, this development would be required to make provision for new, high quality, publicly accessible, multi functional green and blue infrastructure within the site, including the integration and enhancement of the existing green infrastructure corridors and assets at Walshaw Brook. It should be demonstrated how Walshaw Brook and the surrounding Blue and Green Infrastructure will be enhanced to support key ecosystem services such as flood management in accordance with Policy JP-G2 Green Infrastructure Network.

In accordance with Policy JP-G2 Green Infrastructure Network, any development on the site should consider the opportunities identified within the emerging Local Nature Recovery Strategy. It should also be considered how the Green Infrastructure Network can be enhanced on the site to support active travel, food growing and recreational activities.

Wherever practicable, opportunities to integrate new and existing green infrastructure into new development should be taken. Where new or improved green infrastructure is delivered as part of the development, the applicant should make appropriate provision for its long-term management and maintenance.

The provision of green and blue infrastructure should be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature and location of such provision.

Trees - There are a number of trees and hedgerows on the site and as such, an arboricultural survey should be submitted as part of any application. PfE Policy JP-G7 states that where development would result in the loss of existing trees, requiring replacement on the basis of two new trees for each tree lost, or other measures that would result in a net enhancement in the character and quality of the treescape and biodiversity value in the local area, with a preference for on-site provision.

As such, any trees removed would need to be replaced on a 2 for 1 basis.

Flood risk/Drainage - PfE Policy JP-S4 relates to flood risk and the water environment and states that flood risk will be managed through a variety of methods including:

- Working with natural processes and adopting a natural flood management approach to slow the speed of water drainage;
- Locating and designing development so as to minimise the impacts of current and future flood risk; and
- Expecting developments to manage surface water runoff through sustainable drainage systems and as close to source as possible. Development should achieve greenfield run-off rates.
- Ensuring that sustainable drainage systems:
    i. Are designed to provide multifunctional benefits wherever possible, including for water quality, nature conservation and recreation;
    ii. Avoid adverse impacts on water quality and any possibility of discharging hazardous substances to ground;
    iii. Are delivered in a holistic and integrated manner, including on larger sites split into different phases; and
    iv. Are managed and maintained appropriately to ensure their proper functioning over the lifetime of the development.
- Securing the remediation of contaminated land and the careful design of developments

to minimise the potential for urban diffuse pollution to affect the water environment; and

- As a minimum, residential development should meet the mandatory water efficiency standard of 125 litres/person/day as set out in Building Regulations.

There have been several incidents of surface water flooding around the site, particularly on Scobell Street, which occurs when intense rainfall overwhelms existing drainage systems. Hydraulic modelling should be undertaken to support the masterplanning of the wider site and to inform the design and layout of the development, including methods of surface water management.

To reduce the risk of flooding, the development should minimise the risk associated with inadequate sewer capacity and minimise and control the rate of surface water run-off through an appropriate drainage strategy in accordance with PfE Policy JP-S4 and, where possible, safeguard land within the allocation for flood storage. Measures such as rainwater recycling, green roofs, water butts and permeable driveway surfaces should be considered to mitigate the impact of potential flood risk both within and beyond the site boundaries. As a green and blue infrastructure network will provide more sustainable options discharge surface water, only foul flows should connect with the public sewer.

Issues around flood risk should be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature and location of any necessary flood risk mitigation measures.

Transport requirements - Policy JP-C8 - Transport Requirement of New Developments - this policy requires new development to be located and designed to enable and encourage walking, cycling and public transport use, to reduce the negative effects of car dependency, and help deliver high quality, attractive, liveable and sustainable environments.

Whilst the full site allocation is substantially more than the development quantum proposed under this application, mitigation to improve sustainable trips should be provided from first occupation. This is to reduce reliance on private car trips and encourage the use of sustainable modes from the outset. This should be considered as part of the wider transport modelling/modal shift proposals that should relate to the whole of the site and also the wider development in the area (including the Elton site).

Criterion 2 of the PfE policy for Walshaw (JPA9) states that development in this allocation will be required to make provision of a new strategic through road to enable an alternative to Church Street, Bank Street and High Street that is designed to be suitable for buses and incorporates active travel and is in line with local design standards.

This should involve the provision of a new strategic highway through the site with new junction arrangements at either end i.e. at Scobell Street/Church Street/Acres Street and at Walshaw Road. Whilst, the precise nature and specification of the new highway, junction arrangement and the specific route of the through road will need to be informed by detailed transport modelling and design work, we consider that the primary junction at Walshaw Road needs to come forward as part of the first phase of any development. This junction forms the access to the most direct route back to the Key Route Network, especially Bury Bridge/M66.

Criterion 4 of the PfE policy for Walshaw (JPA9) states that development in this allocation will be required to make provision for other new and improved sustainable transport and highways infrastructure having regard to the indicative transport interventions set out in Appendix D in accordance with Policy JP-C8. The precise nature and specification of these interventions will be informed by detailed transport modelling and design work. It would be expected that a full detailed designed junction would need to form part of an outline planning application and this would also need to demonstrate how this would then facilitate the spine road through the site to ensure that it was dir for purpose for the whole site. We would need to understand the details of the whole road layout as a result and, importantly, how this would be delivered through the different development parcels.

A full Transport Assessment should be provided as part of the future planning application. This Transport Assessment should be undertaken as part of the Master Plan process, aligned with an infrastructure phasing and delivery strategy. However, until this Master Plan work is completed, and an associated Transport Assessment and infrastructure phasing and delivery strategy have been produced, it is not possible to determine what infrastructure would be required to facilitate individual parcels of development, when they would be required.

Policy JP-C8 also requires planning applications which are accompanied by a Transport Assessment to consider air impacts on Holcroft Moss within the Manchester Mosses Special Area of Conservation (SAC). Should the proposals result in increased traffic flows on the M62 past Holcroft Moss of more than 100 vehicles per day or 20 Heavy Goods Vehicles (HGVs) per day then a scheme-specific range of measures to reduce reliance on cars, reduce trip generation and promote ultra-low emission vehicles may need to be devised and a contribution towards restoration measures may need to be provided in accordance with the Holcroft Moss Habitat Mitigation Plan.

Transport interventions need to be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature, location and design of any necessary interventions.

Active Travel - Policy JP-C1 - An Integrated Network requires developments to be located and designed to deliver a significant increase in the proportion of trips that can be made by walking, cycling and public transport. Developments should prioritise pedestrians, cyclists and public transport users. Consideration should therefore be given to providing pedestrian and cycling infrastructure to ensure that there is safe and attractive pedestrian and cycle access to the proposed development sites.

Criterion 3 of the PfE policy for Walshaw (JPA9) states that the development should make provision for a network of safe cycling and walking routes through the allocation linking neighbourhoods with key destinations, incorporating Leigh Lane and Dow Lane.

The provision of a network of safe cycling and walking routes through the site needs to be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature, location and design of any necessary provision.

Highways issues

Transport for GM have confirmed that a full Transport Assessment (TA) would be required as part of any application. The TA would need to contain the following:

1. Site specific comments
    - A trip generation and distribution note should be produced as soon as possible, before the submission of a full planning application and TA.
    - It is critical that the PfE model should not be used for the purposes of the TA.
    - Strategic model flows should not be used to inform junction assessments or for trip distribution purposes. Traffic counts should be collected accordingly with queue surveys.
    - Details on local traffic congestion at peak hours and late Saturday morning should be

provided.

- Any junctions which are predicted to have an increase of over 30 vehicles per/hour should be assessed. The junctions to be assessed should be confirmed with TfGM and the Local Authority prior to any data collection and subsequent analysis.
- Traffic modelling should use signal timing information provided by TfGM UTC unit – signal timing information can be provided from gmutc@tfgm.com.
- It should be noted that a number of the potential junctions are oversaturated in traffic terms during peak periods and as such the traffic counts would not reflect the actual traffic volumes. This is because the counts would only record the flows proceeding through the green at the junction and not reflecting the traffic not clearing the junction. Care should be taken in the specification of the counts to ensure that the true traffic demand is recorded. TfGM will be able to advise as necessary in more detail.
- Following the analysis of the impact of the development traffic, then suitable mitigation should be identified. If there are changes proposed at existing traffic signal installations (junctions and crossings) or there are new traffic signal installations, then TfGM would be happy to meet to discuss any proposals prior to submission of the full planning application and TA.
- Suitable and substantive sustainable measures should be provided – these should provide real and attractive alternatives to use of the private vehicle trips.
- It is noted that the junction of Ainsworth Road / Cockey Moor Road currently does not have any signalised pedestrian facilities. It is strongly suggested that these are provided at this junction to better allow for pedestrian journeys to and from the site, including trips by public transport.
- A review of public transport is required to identify provision for either existing re-routed or new services to support the development.
- Whilst the full site allocation is substantially more than the development quantum proposed under this application, mitigation to improve sustainable trips should be provided from first occupation. This is to reduce reliance on private car trips.
- In order to determine if sites were suitable to be allocated in the Places for Everyone Plan from a transport perspective; high level strategic transport modelling was undertaken using GM wide strategic trip rates. This enabled the development of high level indicative transport mitigation for a single strategic “worst-case” scenario being identified in relation to the Plan allocations. These are contained in Appendix D of the plan and an extract is shown below.
- For each PfE allocation, there is now a need for more detailed TA work to be undertaken as part of the Master Plan process, aligned with an infrastructure phasing and delivery strategy. This TA work should set out a transport vision for the total quantum of development proposed on the allocation site and then test a set of detailed scenarios, underpinned by local traffic counts and appropriate site-specific trip rates for all modes, to determine the optimum design and transport infrastructure requirements to mitigate the impacts. When developing effective detailed mitigation, sustainable interventions that support active travel and facilitate access to public transport should be considered in the first instance. Highway interventions should only be considered to mitigate the impact of development, once the effectiveness of sustainable interventions is understood. Until this Master Plan work is completed and an associated TA and infrastructure phasing and delivery strategy have been produced, it is not possible to determine what infrastructure would be required to facilitate individual parcels of development, when they would be required and how they will be funded.
- Additional mitigation beyond that defined in the PfE JPA 9 may be required.

2. General comments
   - A description of current baseline traffic conditions in the area.

- An analysis of injury accidents during a recent five-year period, commenting on whether there are any underlying patterns of injury accidents that might be affected by the development.
- Up-to-date traffic counts should be used in any assessments - scope to be agreed with the Local Highway Authority (LHA), TfGM UTC and HFAS. TfGM UTC can be contacted in respect of the availability of any traffic counts in the area that could be used for the assessment.
- A clear estimate of the level of new traffic likely to be associated with the development, based on an inspection of similar (and similarly-located) developments across the UK (excluding London) via the TRICS (or similar) database. The assessment work should be undertaken using a person-trip approach and applying the appropriate modal share percentages from local Census data. Other methodologies to determine trip rates are acceptable but these should be fully explained in the TA.
- A clearly defined methodology for determining the distribution / assignment of development trips onto the network i.e. understanding of where such new traffic is likely to distribute to/from, based on data sources such a Census Journey-to-Work statistics and/or vehicle turning proportions at nearby junctions.
- An assessment of traffic levels and impacts at the specified year of opening of the development, and at a future year at least five years later, with due regard for traffic growth (if any).
- An understanding of the likely impacts of the proposed development considered alongside any other nearby committed developments.
- In the relevant TA, clear diagrams should be provided illustrating the following elements, each individually:
  - Base Flows
  - Committed Development Flows
  - Proposed Flows
  - Proposed Distribution
  - Base plus Committed plus proposed development
  - Future plus Committed plus proposed development
- TfGM HFAS recommends an increase of about 30 vehs/hr at a junction as an appropriate threshold for considering the necessity of a traffic impact assessment; this is in preference to a percentage-increase threshold, which tends to favour development in already heavily-trafficked areas.
- The scope of the junctions to be assessed by detailed modelling should be agreed with TfGM (UTC) and the LHA in advance and will depend upon the outcome of the trip assessment and distribution exercise. For this reason, TfGM would advise that a trip generation and distribution exercise should be issued before submission of the planning application. Once this is undertaken it will be possible to finalise TfGM requirements in terms of the TA. This will largely depend on the amount of trip generation.
- Clear details of proposed vehicular access arrangements including general servicing arrangements. An engineering drawing should be supplied showing the changes to the road network to fully understand the impact of the proposed development.
- A swept path analysis should be provided for any vehicular access.
- A review of Traffic Regulation Orders on the surrounding streets in the vicinity of the development.
- An assessment of the likely environmental/traffic impacts of HGVs during the construction process.

3. Site accessibility by sustainable modes
4. Mitigation measures
5. Travel plan
6. Other

- If there are any changes planned for bus infrastructure, for example relocation of existing bus stops or the creation of new bus parking areas, TfGM would request that the applicant liaise directly with TfGM's bus infrastructure team who can be contacted at Shelters@tfgm.com.

Once the impacts upon traffic flows and junctions are known, a detailed design of the mitigation measures for the impacted junctions should be submitted, preferably at pre-application stage, so the local highways team will be able to comment.

Public rights of way - There are a number of Public Rights of Way (PROW) that pass through the site (92 TOT, 94 TOT) or pass along the boundary (93 TOT, 126 BUR).

The proposed masterplan indicates that the existing PROWs would be able to remain on their current lines and would be away from the estate roads in most cases, which is welcomed. The relocation of PROWs onto estate roads should be avoided and should be a priority in the planning stage.

Parking - SPD11 states that the maximum parking standards for dwellings should be:
- 1 space per 1 bed dwelling
- 1.5 spaces per 2 bed dwelling
- 2 spaces per 3 bed dwelling
- 3 spaces per 4 bed dwelling and above

Any deviation from the parking standards would need to be justified and evidenced.

Carbon and energy - Policy JP-S2: Carbon and Energy requires new development to be net zero carbon in relation to the developments operational carbon emissions. Development proposals should set out how this has been achieved in a Carbon and Energy statement in accordance with the energy hierarchy.

The policy also requires new development to incorporate adequate Electric Vehicle Charging (EVC) points.

In residential developments, the policy states that energy demand reductions, in terms of space heat demand and hot water demand, and the delivery of on-site renewable energy generation should be achieved (in accordance with Table 5.1 in the plan which provides best practice thresholds for reducing demand and on-site energy generation).

Digital connectivity - Policy JP-C2: Digital Connectivity requires development to have full fibre to premises connections unless infeasible or unviable, with multiple-ducting. The policy supports the provision of free, secure, high-speed public wi-fi connections, particularly in the most frequented areas. A statement demonstrating how the proposals will comply with this policy should be submitted.

Clean air - Policy JP-S5: Clean Air requires developments to be located and designed to reduce reliance on forms of transport that generate air pollution. Regard will need to be had to air quality guidance and a construction management plan will be required.

Health and wellbeing - PfE Policy JP-P6 relates to how new developments should contribute to improved health outcomes and requires the provision of new or improved health facilities proportionate to the additional demand generated by the development. The level of housing growth planned at Walshaw will require the improvement of off-site primary care facilities to cope with the needs generated by the development site, in accordance with policy JP-P6.

Consideration will need to be given to the requirements for off-site primary care facilities and whether a financial contribution towards off-site provision of additional primary care capacity will be required as part of this application.

Policy JP-P6 also requires new developments to be supported by a Health Impact Assessment where due to their location, nature or proximity to sensitive receptors, are likely to have a notable impact on health and wellbeing.

As the proposals will be required to be screened for an Environmental Impact Assessment, in accordance with Policy JP-P6, a Health Impact Assessment will be required to support the future planning application. The Health Impact Assessment will need to demonstrate that the proposals will not have a detrimental impact on the health and wellbeing of surrounding residents.

Education - Criterion 2 of PfE Policy JP-P5: Education, Skills and Knowledge seeks to ensure the delivery of sufficient school places to respond to the demands from new housing.

Education provision needs to be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature and location of such provision, if this is required on-site.

In the absence of an education provision on site, it should be noted that a contribution in accordance with SPD 17 will be required. As the application is in outline, it is expected that this would be dealt with by a condition on the outline application and secured through a Section 106 agreement at reserved matters stage.

Local centre - Criteria 7 of PfE policy JPA9 requires proposals within the allocation to make provision for a new local centre in an accessible location which includes a range of appropriate retail, health and community facilities required to serve purely local needs and ensure that it is integrated within existing communities.

The provision of a new local centre needs to be considered comprehensively across the whole allocation as part of the masterplanning process which should determine the extent, nature and location of such provision.

Minerals - Criteria 13 of Policy JPA9 requires proposals within the allocation to consider the extraction of any viable mineral resources within Mineral Safeguarding Areas, in accordance with Policy 8 of the Greater Manchester Joint Minerals Plan.

Planning obligations

The following planning obligations would be required:

- Recreation provision in accordance with Policy RT2/2 of the Bury Unitary Development Plan and the supporting SPD1.
- 25% of the total number of dwellings should be affordable in accordance with Policy H4/1 of the Bury Unitary Development Plan.
- Education contribution in accordance with Policy JP-P5 of the Places for Everyone Joint Development Plan and the supporting SPD17.
- If the draft Holcroft Moss SPD is adopted, a contribution would be required in accordance with Policy JP-C8 of the Places for Everyone Joint Development Plan.
- Biodiversity net gain

Consultations

Traffic Section
Drainage Section
Environmental Health - Contaminated land
Public Rights of Way Officer
Waste Management
GM Ecology Unit
Active Travel England
United Utilities
The Coal Authority
Transport for GM
GM Archaeological Advisory Service

8 - Ecology

FPCR | environment & design

ECOLOGICAL APPRAISAL

Client
Wain Estates

Project
Scobell Street,

Bury

Date
December 2024

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Rev	Issue Status	Prepared/Date	Reviewed/Date	Approved/Date
-	Draft	SH/14/08/24	ET/20/09/24	AJB/09/10/24
	Final	SH/05/12/24		
	A	SH/17/12/24		

NON-TECHNICAL SUMMARY

This Ecological Appraisal has been prepared by FPCR Environment and Design Limited (FPCR) on behalf of Wain Estates and provides baseline information of a Site at Scobell Street, Bury (hereafter referred to as the Site, see figure 1).

The assessment draws from a desk study, a UKHab survey and preliminary protected species survey of the Site, as well as further surveys for great crested newts (GCN), breeding birds, bats and reptiles.

During the habitat survey in May 2024 the Site was predominantly modified grassland, hedgerows, scrubs trees and woodland as shown on figure 2.

The report identified the following ecological features which could be affected by the proposals or warrant consideration due to legal protection:

- Kirklees Valley Local Nature Reserve
- Kirklees Brook
- Cyrus Ainsworth's Nurseries and Parkers Lodges
- Cockey Moor Wood Pasture and Marsh SBI
- Hedgerows
- Lines of trees
- Individual trees
- Walshaw brook
- Himalayan balsam *Impatiens glandulifera*
- Breeding hedgerow birds
- Commuting and foraging Bats
- Hedgehogs

A separate net gain strategy document has been produced and should be read in conjunction with this report (FPCR, 2024).

1.0 INTRODUCTION

1.1 This report has been prepared by FPCR Environment and Design Limited on behalf of Wain Estates. It provides ecological baseline information for a Site at Scobell Street, Bury (Central grid reference SD780120).

1.2 The report provides the results of a UKhab survey, completed in May 2024 along with results of breeding bird surveys, a scoping winter bird survey, great crested newt surveys, bat surveys and reptile surveys in the appropriate seasons in 2024.

1.3 The report provides a detailed account of the methodologies and results of the above ecological assessments, with an assessment of the relevant value of each ecological receptor to be assessed in the ecological chapter of the Environmental Statement (ES). As such, this document should be read in conjunction with the ES chapter. In addition, the proposed Site is subject to Biodiversity Net Gain and a separate report has been prepared and should also be read in conjunction with this report.

Site Context

1.4 The Site comprises approximately 11.3ha of grassland fields with scrub, hedgerows, trees, woodland and two watercourses. To the north and west of the Site are the residential areas of Tottington and Walshaw. To the east and south of the Site is open countryside leading to further residential development.

Development Proposals

1.5 The proposals are for an outline application for up to 275 dwellings with associated infrastructure and landscaping and the baseline and assessment are based on the Framework plan (12221-FPCR-XX-XX-DR-A-0001-P06).

2.0 LEGISLATION AND POLICY

2.1 Detail on the relevant national and local policy and legislation for ecology in relation to the development site are provided in ecological chapter of the Environmental Statement. A summary of the national policy and legislation most relevant here are listed below:

- Environment Act 2021.
- The Conservation of Habitats and Species Regulations ("The Habitats Regulations") (Amendment) 2017 (as amended) in relation to the European Protected Species (EPS) great crested newt, (GCN), bats (all species); and European protected Sites i.e. Special Areas of Conservation (SAC), Special Protection Areas (SPAs) and Internationally protected "Ramsar Sites" (collectively known as "Natura 2000 Sites"). Annex II bat species of particular relevance in relation to SACs designated for bats.
- The Wildlife and Countryside Act 1981 (WCA) (as amended) in relation to all wild birds (including Schedule 1 species), other animals (notably Schedule 5 species), flora (those listed in Schedules 8 and 9) and Sites of Special Scientific Interest (SSSI);
- Protection of Badgers Act 1992;
- Natural Environmental and Rural Communities (NERC) Act 2006 in relation to various priority species and habitats;
- Hedgerow Regulations 1997 made under Section 97 of the Environment Act 1995;
- National Planning Policy Framework (NPPF) (2024);
- Local Nature Reserves (LNR) as designated most recently by the NERC Act 2006;
- Non-statutory protected local Sites including County Wildlife Sites (CWS), Sites of Importance
- for Nature Conservation (SINC), Local Wildlife Sites (LWS) and Ancient Woodland Inventory (AWI) Sites;
- Local Biodiversity Action Plans (LBAP); and
- Birds of Conservation Concern (BoCC).

3.0 METHODOLOGY

Desk Study

3.1 To support the field surveys and further compile existing baseline information relevant to the Site, ecological information was sought from third parties, including records of protected or notable species and Sites designated for nature conservation interest. Organisations contacted included:

- Greater Manchester Ecology Unit

3.2 In addition, the following resources were checked for additional information and context:

- Multi Agency Geographic Information for the Countryside (MAGIC) website [1;]
- Colour 1:25,000 OS base maps[2] ;
- Aerial photographs from Google Earth[3].

3.3 The search area for biodiversity information was related to the significance of sites and species and potential zones of influence, as follows:

3.4 A minimum of a 10km radius around the Site was searched for Sites with an international statutory designation; Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar Sites;

3.5 A minimum of a 2km radius around the Site for Sites of national/regional importance with a statutory designation of Site of Special Scientific Importance (SSSI) or National Nature Reserve (NNR);

3.6 Up to a 1km radius around the Site for Sites of local importance with statutory designation of Local Nature Reserve (LNR), or non-statutory designation of Site of Importance for Nature Conservation (SINC) or the equivalent Local Wildlife Site (LWS); and

3.7 A 1km radius around the Site for records of notable / protected species (i.e., including Species of Principal Importance [SPI] under S41 of the Natural Environment and Rural Communities [NERC] Act (2006) and local biodiversity action plan species).

3.8 Aerial imagery from Google Earth and government websites 'MAGIC' were used to search for ponds within 500m of the Site.

3.9 When reporting consultation data, records were filtered to include only those from the previous twenty years (since 2004).

3.10 Further consideration of potential zones of influence in relation to statutory designated Sites of International and National importance was made using Natural England's SSSI Impact Risk Zone Tool which outlines the likely zone of influence from impacts for a range of development types.

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[1] https://magic.defra.gov.uk/MagicMap.aspx

[2] www.ordnancesurvey.co.uk

[3] https://earth.google.com/web

Field Survey

Baseline Habitats and River Corridor Assessment

3.11 A UKHab survey and River Corridor Assessment were undertaken on 7TH May 2024. The survey was undertaken by Francesca Sykes, a suitably experienced Ecologist with four years' experience working in the environmental sector. Francesca is experienced and accredited in conducting MoRPh surveys and holds a personal level 1 (CL17) survey licence for bats.

3.12 Survey methods broadly followed UKHab methodology (Butcher et al., 2023[4]) and comprised a systematic walk over the Site to classify the broad habitat types and identify any Habitats of Principal Importance (HPI) for the conservation of biodiversity as listed within Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006) and identify a representative species list and condition assessment for each habitat. Habitats were mapped in the field using Qfield.

3.13 The hedgerows were assessed against the Wildlife and Landscape criteria contained within Statutory Instrument No: 1160 – The Hedgerow Regulations 1997[5] to determine whether they qualified as 'Important Hedgerows' under the Regulations.

3.14 The River Condition Assessment (RCA) field survey was completed by Francesca Sykes, a Ecologist with over 4 years' experience in ecological consultancy, and accredited in conducting River Condition Assessment survey using MoRPh methodology.

3.15 The field survey was undertaken on 7th May 2024, working downstream during medium flow with weather conditions as 20% cloud cover, gusts of up to 3mph, and a max temperature between 16°C and 18°C.

Great Crested Newt (GCN)

Habitat Suitability Index Assessment

3.16 A GCN habitat suitability index assessment for was undertaken on accessible waterbodies on Site and within 500m of the Site on 1st May 2024.

3.17 These assessments provide a measure of the likely suitability that a waterbody has for supporting GCN. Whilst not a direct indication of whether or not a waterbody will support GCN, generally those with a higher score are more likely to support GCN than those with a lower score, and there is a positive correlation between HSI scores and waterbodies in which GCN are recorded. Ten separate attributes are assessed for each waterbody to calculate the suitability of the waterbodies to support GCN:

- geographic location;
- area;
- frequency of drying;
- water quality;
- shade;
- presence of waterfowl;
- presence of fish;
- number of linked waterbodies;
- terrestrial habitat; &
- coverage of macrophytes.

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[4] Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2023). The UK Habitat Classification Version 2.0 at http://www.ukhab.org

[5] DEFRA (1997) The Hedgerow Regulations 1997: A Guide to the Law and Good Practice, London, HMSO

3.18 A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. Habitat suitability is then determined according to the scale set out in Table 1, below. Using the index score the predicted presence of great crested newts being found within a pond can be made, based on the proportion of waterbodies typically occupied at that suitability level.

Table 1: HSI score and suitability for supporting great crested newts

HSI score	Pond Suitability
<0.5	Poor
0.5 - 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

Presence / absence surveys

3.19 The approach employed was to undertake traditional aquatic presence/ absence surveys in tandem with eDNA sampling. Both methods can be used to determine presence / absence of GCN and however, if presence is identified, then a total of six aquatic surveys are required to establish the population size class. As absence was determined through eDNA it was not necessary to complete the full suite of aquatic surveys.

Aquatic surveys

3.20 A total of four waterbodies were surveyed following the methods recommended by Natural England as detailed in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). No access was permitted for P5. Prior to receiving results of the eDNA sampling two individual survey visits were performed in the 'peak' GCN aquatic survey season (mid-April to mid-May). In the event the presence of GCN was confirmed a further four surveys would be undertaken (with half of the surveys within the 'peak' survey period). These additional surveys allow population size class assessments to be undertaken. Appropriately licensed ecologists from FPCR completed all of these surveys during suitable conditions i.e. when the ambient air temperature exceeded 5ºC, with little/no wind or rain. Survey conditions for each occasion are detailed in Table 2

Table 2: Survey Conditions

Survey Date	Survey Conditions					
	Wind	Rain	Evening temp (°C)		Morning temp (°C)	
			Air pm	Water pm	Air am	Water am
9.04.24	2	none	8	8	5	8
22.04.24	1	Drizzle shower	8	8	5	9

3.21 On each survey occasion three of a possible four different techniques (egg search, sweep net, bottle-trap and torch) were used where possible, unless GCN were confirmed, in which case only two methods (bottle trapping and torching) are required to determine population size class. A summary of each is provided below:

Bottle Trapping

3.22 Bottle traps were set within the waterbody in the evening at densities of one trap per two metres of shoreline (where feasible) and left overnight for inspection in the morning. Traps were partially submerged in the water leaving an air bubble in the bottle and secured by a cane marked with a high visibility tape to ensure relocation the following day. Care was taken to ensure that trapping did not occur during excessively warm weather, when the temperature inside the trap could rise considerably, reducing oxygen levels and potentially suffocating the newts.

Sweep Netting

3.23 Long handled sweep-nets were used to sample the margins of the pond for GCN, with approximately 15 minutes of netting per 50m of shoreline. Great Crested Newt Report

Torch Light Survey

3.24 Torching involved searching the waterbody after dusk using high-powered torches to scan the margins and potential display areas for newts. The perimeter of the pond was walked slowly to record any newts observed. Torch surveys are unsuitable within heavily vegetated and/or turbid ponds or after periods of heavy rain as visibility is diminished.

Egg Searching

3.25 Newts lay single eggs on leaves of aquatic plants or other suitable pliable material, after which the material is folded over the egg to protect it. GCN eggs can be distinguished from those of the other newts by their size, shape and colour. Submerged vegetation was examined for newt eggs and folded leaves gently opened to check for eggs. If a GCN egg had been identified, no further leaves would have been examined thereby minimising any further potential disturbance.

Limitations

3.26 No access was granted to P5. It is considered unlikely that GCN would be present in this pond due to the isolation from other ponds by the existing road network.

eDNA Sampling

3.27 eDNA sampling was undertaken on 22nd April 2024 in accordance with the protocol recommended by Natural England. This comprised taking samples of agitated water from 20 locations around each waterbody and mixing thoroughly. 15 ml of this water was then placed into each of six sterile sample tubes containing preservative, precipitates and a DNA sequence that was used for degradation control. This was then transported under suitable conditions to ADAS for analysis. Following analysis, results provided by the laboratory could have one of three outcomes which are described in Table 3, below.

Table 3: Description of Possible Results of eDNA Analysis

Result	Description
Positive	A positive result means that eDNA from gcn was detected and they have been present within the water in the 20 days preceding sampling. An eDNA score would be provided indicating the number of positive replicates from a series of twelve.
Negative	DNA from gcn was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive	Controls indicate degradation or inhibition of the sample, therefore the lack of detection of gcn DNA is not conclusive evidence for determining the absence of the species in the sample provided. Degradation can occur through poor storage of the samples or kits and inhibition can occur through unexpected chemicals in the sample.

Surveyor information

3.28 The HSI assessments and aquatic surveys were undertaken by appropriately experienced ecologists and led by a surveyor who holds a current Natural England Class Licence CL08 (surveying for great crested newts for scientific or education purposes).

Reptiles

3.29 The reptile presence / likely absence survey was undertaken within the area as shown on Figure 13, considering the methodologies detailed in a range of published guidance[6,7,8], This involved the placement of 1x0.5m refugia tiles made from roofing felt. These were placed in locations that offered the most suitable habitat for common reptiles, i.e., structurally diverse vegetated habitats close to areas of bare ground/short vegetation. Figure 13 also shows the distribution of refugia.

3.30 The refugia were then left to 'bed-down' for at least a two-week period. Following the 'bed-down' period, a series of six surveys involved a search for basking reptiles on or under the refugia, on or under naturally occurring refugia and within suitable habitat.

3.31 Guidelines recommend that reptile surveys be undertaken during the following periods:

- Air temperatures of between 9°C – 18°C; and
- On sunny/cloudy days with little or no wind.

3.32 In addition, the surveys also followed the guidelines' recommendations by:

- Using regularly spaced roofing felt (1x0.5m) as artificial refugia, with a black upper side;
- Approaching refugia from downwind and avoiding casting a shadow and with care so as to not disturb basking animals when checking; and

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[6] Edgar, Foster & Baker, (2010), *Reptile Management Handbook*, Amphibian and reptile Conservation, Bournemouth

[7] Edgar, Foster & Baker, (2010), *Reptile Management Handbook*, Amphibian and reptile Conservation, Bournemouth

[7] Amphibian and Reptile Groups of the United Kingdom (2018) Advice Note 10 Reptile Survey and Mitigation Guidance for Peatland Habitats

[8] Froglife (1999) Reptile Survey: *An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10.

- That lifting and replacing tins, to check for the presence of reptiles underneath in hot weather is undertaken with care, to avoid potential harm to any animals underneath.

3.33 The first survey commenced in April 2024 and surveys were completed by the end of July 2024. Surveys were undertaken by suitable qualified ecologists. On each visit the prevailing weather conditions, including: relative wind speed; cloud cover; ambient temperature; and any other notable conditions, were recorded. These are presented in Table 4. Reptile refugia were collected in after the final survey.

Table 4: Survey Conditions

Survey No	Date	Surveyor	Time	Temp	Wind	Cloud Cover	General cond
1	30.04.24	CG	10:00	13	1/2	50-60	sunny, bright
2	08.05.24	CG	10:05	13	1/2	40-50 - reduced throughout survey	sunny/cloudy, bright
3	13.05.24	CG	17.46	19	1/2	50-60	cloudy/sunny
4	21.05.24	FS	10:00	14	0	50-60	bright after rain
5	06.06.24	CG	9:00	11	1/2	50-60	sunny/cloudy after rain
6	21.06.24	CG	6:55	13	1/2	15	sunny, bright
7	08.07.24	CG/LW	09:25	14	0	0-10	Clear and bright

Birds

Breeding Bird Surveys

3.34 The methodology employed was broadly based on territory mapping[9] used for the British Trust for Ornithology (BTO) Common Bird Census (CBC). Standard BTO species codes and symbols for bird activities were used to identify birds and denote activity, sex, and age where appropriate. Birds were considered to be holding a territory and therefore likely to be utilising the Site for breeding activities if they were displaying breeding behaviour, such as: singing, nest building, food carrying or territorial defence. If birds did not display such behaviour, e.g., they were only recorded flying over the Site, they were considered non-breeders. Breeding evidence used follows EOAC[10] guidelines 1979.

3.35 To provide a reasonable level of accuracy for determining the population status of the breeding birds on the Site, three surveys were undertaken. Dawn survey were undertaken, which began within half an hour of sunrise, which is in line with the newly published Bird Survey Guidelines[11]

3.36 A route was mapped out prior to the surveys being undertaken, paying particular attention to any linear features, such as hedgerows and watercourses, and other features such as ponds and scrub. Bird surveys were not undertaken in unfavourable conditions, such as heavy rain or persistent strong wind, (conditions which can negatively affect the results). Table 5 provides details of the survey dates and weather conditions.

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[9] Bibby, C.J., N.D. Burgess & D.A. Hill, 2000: Bird Census Techniques: 2nd Edition. London: Academic Press

[10] European Ornithological Atlas Committee, 1979. Categories of Breeding Bird Evidence. European Ornithological Atlas Committee.

[11] Bird Survey & Assessment Steering Group. (2023). Bird Survey Guidelines for assessing ecological impacts, v.1.1.0. https://birdsurveyguidelines.org

Table 5: Breeding Bird Survey Dates and Conditions

Survey	Date	Start	Sunrise /Sunset	Cloud (%)	Rain	Wind	Visibility
1	09.04.24	06:30	06:22	0	0	0	Excellent
2	08.05.24	05:35	05:19	50	0	0	Good
3	12.06.24	04:35	04:36	40	0	2	Excellent

Species & Assemblage Assessment

3.37 Chartered Institute of Ecology and Environmental Management (CIEEM) guidance assesses nature conservation importance within a geographical context[12]. To attain each level of importance, an ornithological resource or one of the features (species population or assemblage of species) should meet the criteria set out in Table 9. In some cases, professional judgment may be required to increase or decrease the allocation of importance, based upon local knowledge.

3.38 The most recent county annual bird report, Birds in Greater Manchester 2012 (Greater Manchester Bird Recording Group), was consulted to inform the assessment. The abundance of species referred to by this report follows the following criteria:

- vagrant: less than 2 records in the past 20 years
- Very rare: less than 10 records in the past 20 years
- rare: occurs less than annually;
- scarce: one or two records each year, or restricted to specific habitats;
- uncommon: occurs in small numbers
- fairly common: occurs in moderate numbers in suitable habitat
- common: occurs regularly, or widely distributed in suitable habitat
- abundant: occurs in large numbers in suitable habitats and seasons

3.39 'Notable species' as referred to within the report are considered those which are specially protected (Schedule 1, WCA [1981]), appear on the RSPB BoCC as declining (red or amber lists) and/or are identified as SPI under S41 of the NERC Act 2006.

Table 6. Evaluation Criteria

Nature Conservation Value	Examples of Selection Criteria
International	A species which is part of the cited interest of a Special Protection Area (SPA) and which regularly occurs in internationally or nationally important numbers. A species present in internationally important numbers (>1% of international population).

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[12] CIEEM, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland. Winchester: Chartered Institute of Ecology and Environmental Management. [Online]. Available at: https://cieem.net/wp-content/uploads/2019/02/Combined-EclA-guidelines-2018-compressed.pdf

Nature Conservation Value	Examples of Selection Criteria
National	A species which is part of the cited interest of a Site of Scientific Interest (SSSI) and which regularly occurs in nationally or regionally important numbers. A nationally important assemblage of breeding or over-wintering species. A species present in nationally important numbers (>1% UK population). Rare breeding species (<300 breeding pairs in the UK).
Regional	Species listed as Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), which are not covered above, and which regularly occurs in regionally important numbers. Species present in regionally important numbers (>1% of regional population). Sustainable populations of species which are rare or scarce within a region. Species on the BoCC Red List and which regularly occurs in regionally important numbers.
County	Species listed as Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), which are not covered above and which regularly occurs in county important numbers Species present in county important numbers (>1% of county population). Sustainable populations of species which are rare or scarce within a county, or listed as priority species for nature conservation under S41 of the NERC Act. A site designated for its county important assemblage of birds (e.g. a LWS Site). Species on the BoCC Red List and which regularly occur in county important numbers.
Local	Other species of conservation interest (e.g. all other species on the BoCC Red and Amber List or listed as Species of Principal Importance under Section 41 of the NERC Act (2006) which are not covered above) regularly occurring in locally sustainable populations. Sustainable populations of species which are rare or scarce within the locality.
Site	Species which are common and widespread.

Limitations

The individual surveys were not constrained.

Winter Bird Scoping Survey

3.40 The wintering bird populations at the Site were assessed by an initial scoping survey in January 2024 to assess the number of species, and individuals thereof, utilising the habitats present with the results of this survey used to determine the need for further survey effort. A route was mapped prior to the surveys being undertaken, paying particular attention to any linear features, such as hedgerows and watercourses, and other features such as ponds and scrub. Bird surveys were not undertaken in unfavourable conditions, such as heavy rain or persistent strong wind (conditions which can negatively affect the results). Table 7 provides details of the survey dates and weather conditions.

Table 7: Survey Date and Conditions

Survey	Date	Cloud Cover %	Rain	Wind (Beaufort	Visibility
Scoping	09.01.24	20	0	2	excellent

3.41 The methodology employed for the scoping survey was broadly based on territory mapping used for the British Trust for Ornithology (BTO) Common Bird Census (CBC). Standard BTO species codes and symbols for bird activities were used to identify birds and denote activity, sex, and age where appropriate.

Limitations

3.42 The individual surveys were not constrained.

Bats

Roost Assessment

Trees - Preliminary Roost Assessment (ground level)

3.43 Preliminary Roost Assessments (PRA) were undertaken from ground level, with the aid of binoculars on 07th May 2024 by a suitably experienced ecologist from FPCR. Potential Roosting Features (PRFs) (based on p.16, British Standard 8596:2015 Surveying for bats in trees and woodland, October 2015) which were sought included:

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems;
- Woodpecker holes;
- Cracks/splits in stems or branches (horizontal and vertical);
- Partially detached, loose or platy bark;
- Cankers (caused by localised bark death) in which cavities have developed;
- Other hollows or cavities, including butt rots;
- Compression of forks with occluded bark, forming potential cavities;
- Crossing stems or branches with suitable roosting space between;
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk); and
- Bat or bird boxes.

3.44 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings, and its location in respect to other features may enhance or reduce the potential value.

3.45 Using professional judgement, the ground-based PRA assessment classified any trees identified based upon the presence of suitable features as set out in Bat Surveys for Professional Ecologists: Good Practice Guidelines (BCT, 2023[13]) in which the general bat roost potential groups are defined (refer Table 4.2 of the guidelines) and provided in Table 8 below.

---

[13] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

Table 8: Suitability of trees for bats

Suitability	Description
NONE	Either no potential roost features or highly unlikely to be any.
FAR	Further Assessment Required to establish if Potential Roost Features are present.
PRF	A tree with at least one Potential Roost Feature.

Buildings and Structures-Preliminary Roost Assessment

3.46 An external and internal building assessment was carried out on the buildings on the 11th June 2024, by Steve Coyne, a licenced/accredited ecologist from FPCR Environment and Design Ltd (Level 2 bat survey licence CL18: 2015-17501-CLS-CLS). The assessment was completed considering the guidance provided in chapters 4 and 5 of the Bat Surveys for Professional Ecologists, Good Practice Guidelines, 2023[14].

3.47 The exterior of the buildings was/were visually assessed for potential access points and evidence of bat activity. Features such as small gaps under barge/soffit/fascia boards, raised or missing ridge tiles and gaps at gable ends, which have potential to be used as access points, were sought. In addition, structural features were noted that could provide suitable hibernation potential or not. Evidence that bats actively used potential access points includes staining within gaps and bat droppings or urine staining under gaps, a note being made wherever these were present. Where they could be safely accessed crevices were inspected for the presence of bats or their signs using torches, mirrors and endoscopes.

3.48 The interior of the buildings, including all accessible roof voids, were also visually assessed with the aid of an endoscope, mirrors and torches to identify potential or actual bat access points and roosting places and for evidence of current or past bat roosts. Definitive evidence of a bat roosts was determined by the presence of:

- Dead or live bat(s); and/or
- Droppings.

3.49 Other less definitive signs were also sought as indicators of potential roosting bats, these included:

- Urine staining;
- Fur-oil staining;
- Feeding remains such as moth wing fragments;
- Audible calls;
- Bat-fly (*Nycteribiid)* pupal cases; or
- Odour

3.50 The absence of any of the above evidence was not considered to be definitive evidence that no roosts were present as bats may leave no visible sign of their presence particularly where they occupy inaccessible or hidden spaces within a building.

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[14] Collins, J. (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition).* The Bat Conservation Trust, London.

3.51 Subsequently, the buildings (or where relevant, sections of) were categorised according to their suitability to support roosting bats and whether they provide classic or non-classic hibernation potential or not. These were classified according to the features present within the buildings (see Table 6).

Potential Bat Roosting Suitability

3.52 Following the internal and external assessments each/ the buildings was/ were assigned a category according to its roosting suitability which is based on Table 4.1 of Collins (2023), this potential suitability is used to indicate the likely requirements for any further surveys to determine the presence or absence of roosting bats. Table 9: Building bat roost habitat classifications (based on Table 4.1 Collins, 2023).

Table 9:Building Bat Roost Habitat Classifications

Roost Suitability	Description of Roosting Habitats	Further Survey Requirements to Provide Confidence in the Likely Absence of Roosting Bats Within a Structure
None	No habitat features on site that are likely to be used by bats at any time of the year.	No further surveys or consideration of roosting bats is required.
Negligible	No obvious habitat features are present that are likely to be used by roosting bats, but features may be present where a bat could theoretically roost but it is considered very unlikely.	No further surveys are required, but some vigilance may be required if the feature is impacted.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or classic hibernation roost).	Up to one single dusk emergence survey undertaken between May and August. (requirement is based on professional judgment). Precautionary method statement if works are to be undertaken during the winter period (where non-classic hibernation potential exits).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Two separate dusk emergence surveys undertaken between May and September and at least one between May and August and spread at least 3 weeks apart. Precautionary method statement if works are to be undertaken during the winter period (where non classic hibernation potential exits).

Roost Suitability	Description of Roosting Habitats	Further Survey Requirements to Provide Confidence in the Likely Absence of Roosting Bats Within a Structure
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support High conservation status roosts such as those used for maternity or hibernation (classic site).	Three separate dusk emergence surveys undertaken between May and September and at least two between May and August and spread at least 3 weeks apart. Where classic hibernation potential is present hibernation surveys should be undertaken during the winter period.
A classic hibernation site is considered to provide stable climatic conditions including temperature humidity, and light level such as, but not exclusively limited to underground structures which are subject to low levels of disturbance or species specific habitual requirements such as where brown long-eared bats often use a the same roosts for maternity and hibernation purposes. A non-classic hibernation site is a location which does conform to the criteria above but could be used by individual hibernating bats. It usually not possible to identify non-classic hibernation sites through surveys work.		

Bat Activity

Habitat Assessment

3.53 This assessment was undertaken to identify the suitability of the Site to foraging and commuting bats or areas which may be important for exhibiting various social behaviours. This was informed by the results of the initial UKHabs survey and from information gathered in the desk study to ensure that potential effects are considered in the context of the onsite habitats within the wider area.

3.54 The Site was also categorised for its habitat suitability for bats, which would inform the necessary survey effort. The habitat suitability was assessed using guidance from 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (Bat Conservation Trust, 4th Edition, 2023). Table 4.1 of those guidelines provides an outline for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape. This should be applied using professional judgement. This groups a site into five categories based on habitat suitability for foraging and commuting bats which has been further summarised in 10, below:

Table 10: Criteria for Assessing Habitat Suitability for Commuting and Foraging Bats - Based on table 4.1 (Collins, 2023)

Suitability	Potential Flight Paths and Foraging Habitat	Proposed Further Survey Requirements
None	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines or generate/shelter insect populations available to foraging bats).	No further surveys required
Negligible	No obvious habitat features on site likely to be used as flightpaths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.	

Suitability	Potential Flight Paths and Foraging Habitat	Proposed Further Survey Requirements
Low	Habitat that could be used by small numbers of bats as flightpaths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.	Automated static detector monitoring and nighttime bat walkover surveys (flight path and transect) on a seasonal* basis.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for flightpaths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.	Automated static detector monitoring on a monthly basis and nighttime bat walkover surveys (flight path and transect) on a seasonal* basis.
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.	

*Seasonal surveys should be increased to monthly where Annex II species are expected/ detected or if significant commuting routes are identified.

Bat Activity Surveys

3.55 Habitats on Site provided moderate suitability for foraging and commuting bats, however the proposals seek to retain the majority of hedgerow and trees. A single internal hedgerow and a small number of individual trees will require removal to facilitate the development. Given the above it was considered proportionate to deviated from the guidelines and undertake seasonal statics surveys rather than monthly.

3.56 These surveys were undertaken to identify the value of the Site to foraging and commuting bats or areas which may be important for exhibiting various social behaviours so that the effects of the proposals can be assessed.

3.57 In order to inform an impact assessment, where possible the bat activity surveys aim to identify:

- The presence or absence of bats, abundance and species using the Site whilst away from the roost;
- The usage of the habitats on the Site by bats;
- The temporal (both seasonally and nightly) and spatial distribution of recorded bat activity on site and any associations in terms of timings or particular features;
- Any connectivity in terms of habitats within the Site and/or the surrounding area;
- The effect of any existing lighting on the existing bat population.

3.58 Bat activity surveys were designed and lead by an ecologist with expertise meeting the BCT level 3 competency.

Static Monitoring

3.59 Static (passive) monitoring was undertaken using an automated logging system (Wildlife Acoustics Inc. Song Meter® SM4BAT FS bat detectors with SMM-U2 microphones). During the survey period four static recording devices were positioned within the Site to record bat registrations for at least five consecutive nights per season. These were deployed to sample the following habitat types Other neutral grassland, mixed woodland, streams, and scrub.

3.60 The number of static detectors to be used and location of deployment was determined so that a representative sample of habitats within the Site could be monitored. The locations were subjectively predetermined using professional judgment to be positioned at least 15m away from any known or likely roosts and also in consideration of likely impacts. In order to provide rigorous analysis, static detectors were placed in the same location during each survey and these are shown on Figure 9.

3.61 The devices were deployed for 5 consecutive nights during suitable weather conditions that were typical for the season/month of deployment and were programmed to activate 30 minutes before sunset and record continuously until 30 minutes following sunrise.

3.62 Static detectors were deployed during the following periods;

- 08h to 13th May 2024;
- 03th to 08th July 2024; 08th to 16th July 2024
- 01st September to 6th September 2024

3.63 The data were analysed as soon as possible after retrieval of the static units using the SonoBat UK software package to assess the amount of bat activity on Site by recording the number of bat registrations. Auto-analysis using SonoBat UK was undertaken and subsequent manual vetting was then carried out based on internal statistical analysis to ascertain a robust confidence level in the auto-analysis process. The vetting process took measurements including peak frequency, inter-pulse interval, call duration and end frequency were taken to aid in species identification. This analysis was completed by a suitably experienced ecologist (Analysts are audited internally for quality control purposes and to maintain consistent results).

Nighttime Bat Walkover (Flightpath / Transects Surveys)

3.64 In line with current guidance (Collins, 2024) nighttime bat walkovers are undertaken in two parts. The first part is undertaken by stationary surveyors positioned on habitat features most likely to be utilised as commuting routes by bats. Once conditions become too dark to see or once commuting activity has been observed and has largely ended, surveyors begin a walked transect sampling all areas and habitats within the Site noting any bat activity that is heard or observed along the way. Whilst this includes two elements it is one survey designed to record information to provide further context to elements that static detectors cannot always identify such as bat behaviour or abundance of bats.

3.65 The first part of the survey to observe flightpaths involved 2 surveyors being positioned at predetermined locations as shown on Figure 9. The survey started just before sunset and lasted for between 30 minutes and one hour after sunset. After this the walked transect was started and continued until two to three hours after sunset. The route followed during each transect was repeated on each survey occasion, however the starting point was varied throughout the season. Figures 10-12 shows the route of the transect and the start/ end points of each survey.

3.66 Surveyors were equipped with Wildlife Acoustics Inc. Echo Meter Touch® bat detectors in conjunction with Echo Meter Touch® app and Samsung Galaxy Tab Active 3® during the transect surveys to detect bats and aid species identification. And during the survey noted any bat activity observed during the survey.

Table 11: Nighttime Bat Walkover Timings

Survey Date	Sunset Time	Start Time (Flightpath)	Start Transect	End Transect
08.05.24	20:53	20:53	21:53	22:55
03.07.24	21:41	21:41	22:41	23:45
02.10.24	18:42	18:42	19:42	20:42

Table 12: Nighttime Bat Walkover Conditions

Survey Date	Start Temp	Wind (Beaufort Scale)	Rain	Cloud Cover (%)
08.05.24	14°C	1	Dry	100%
03.07.24	14°C	3	Dry	90%
02.10.24	10°C	1	Dry	30%

3.67 The data from the nighttime Bat Walkover survey was analysed as soon as possible after the survey using the SonoBat UK software package to assess the amount of bat activity on Site by recording the number of bat registrations. and subsequent manual vetting was then carried out based on internal statistical analysis to ascertain a robust confidence level in the auto-analysis process. The vetting process took measurements including peak frequency, inter-pulse interval, call duration and end frequency were taken to aid in species identification. This analysis was completed by a suitably experienced ecologist (Analysts are audited internally for quality control purposes and to maintain consistent results).

Limitations

3.68 During the spring static detector survey, one of the detectors recorded for 4 nights, not 5, possibly due to interference. Additionally, during the July survey one of the detectors was vandalised meaning that it didn't record for the full five nights. A further detector was redeployed, in order to get five consecutive nights of data. During this period some light rain occurred, so the detectors were left out for 3 extra nights. During the autumn survey vandalism again occurred, and given the persistent nature of the vandalism it was decided that further detectors would not be redeployed. However, given the level of survey effort undertaken this is not considered a significant constraint as a reasonable amount of data was gathered and therefore a proportionate assessment of the value of the Site in terms of bat activity could be made.

3.69 Where calls could not be identified to species level, for example due to the lower quality of those recordings or where there are similarities between species echolocation calls (particularly for *Myotis* and *Pipistrellus* genus bats) making a definitive identification difficult, a likely species identification is provided. This based on the features displayed by the calls when analyses using the Kaleidoscope© data analysis software package and considering the geographical location of the Site and the habitats present. It was therefore considered that:

- *Pipistrelle* species bats were either common or soprano pipistrelle;
- *Nyctalus* species bats were most likely to be noctule; and
- Given the known species distributions of *Myotis* species locally, *Myotis* species bats were likely to be whiskered/ Brandt's, Natterer's or Daubenton's.

Badgers

3.70 As part of the habitat survey all suitable habitat within the Site and immediately adjacent to the Site boundary, were searched for evidence of badger activity. The standard methodology was used, as outlined by Harris, Creswell and Jefferies (1991) . This involved a thorough search for evidence indicating the presence of badgers, including:

- setts, including earth mounds, evidence of bedding and runs between setts.
- latrines, often located close to setts, at territory boundaries or adjacent to favoured feeding areas.
- prints and paths or track ways.
- hairs caught on rough wood or fencing; and
- other evidence including snuffle holes, feeding and playing areas and scratching posts.

3.71 The identification of snuffle holes, scratching posts or feeding signs on their own is not necessarily conclusive evidence of the presence of badgers. A number of such signs may need to be seen in conjunction before they can be said to be conclusive of badger activity.

Invasive/ Non Native Species

3.72 Consideration was given as to the presence of invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA 1981)

Scope of Assessment

Assessment Approach

3.73 This assessment has been prepared with reference to The Guidelines for Ecological Impact Assessment (EcIA) in the United Kingdom published in 2018 by CIEEM. Baseline information and potential impacts have been quantified as far as practical to inform the assessment, supported by professional judgement and experience as appropriate. Where uncertainties exist, a precautionary approach has been adopted and a 'worse case' scenario approach assumed for the purposes of assessing impacts and recommending mitigation.

3.74 The significance of ecological impacts in relation to a proposal can be considered in relation to the importance of affected ecological features and the predicted magnitude of impact upon them.

3.75 This report considers statutory and non-statutory protected Sites, habitats -including hedgerows, and consideration has been given to NERC Section 41 species, any rare or notable species or habitats and any non-native plants listed under WCA Schedule 9.

Zone of Influence

3.76 The CIEEM guidelines require the identification of a 'zone of influence' (ZoI) within which the ecological features that may be affected by the proposed scheme can be identified. This will identify the potential impact of the development not just to the Site but beyond the boundaries of proposed scheme.

3.77 The ZoI is determined by the source / type of impact, a potential pathway for that impact and the location and sensitivity of the important ecological feature beyond the boundary. For the majority of impacts identified as part of the proposed scheme, the ZoI is generally considered as the application Site and immediately surrounding areas.

3.78 However, the ZoI can also vary considerably depending upon the species potentially affected by the proposed scheme. For example, some species may be confined to a specific location whilst others, such as bats and birds are more mobile and can occupy much larger home ranges. The presence of dispersal barriers can also have an effect on the ZoI such as roads or rivers which may either reduce the potential of animals crossing it or could cause a potential means of killing or injury. As such, this could isolate areas of potentially suitable habitat within the proposed scheme due to fragmentation. In each case this is considered in association with the nature and scale of the proposed scheme and informed by best practice guidance and professional judgement.

3.79 Specific study areas were identified for the desk study and field surveys to inform the valuation of ecological features and the selection of 'key' ecological features material to the assessment.

Limitations

3.80 This assessment aims to provide baseline ecological data for the Site and as such presents an overview of the habitats and features present. Due to the transient and complex nature of ecosystems, no investigation can provide a complete representation or prediction of the natural environment present, however every effort has been made to ensure an accurate description of the Site in presented following best practice guidance, experience, and professional judgement.

3.81 The UKHab map (Figure 2) has been reproduced from detailed field notes and informed by aerial imagery, OS mapping and Site maps provided by the client. The accuracy of this figure is therefore ultimately guided by the accuracy of these sources and can only be relied upon to a certain degree of resolution.

3.82 Data provided by third party sources collated during the desktop study is generally made up from a wide range of sources including (but not limited to) those submitted by ecological consultancies, wildlife conservation organisations and volunteers. As such, these data are typically focused on areas of known nature conservation, are reliant upon formal surveys having been undertaken within an area or the presence of an expert within the locality (particularly for invertebrate records) and as such these data can never be fully relied upon as a complete ecological dataset for any given area. Rather, these data are used as a guide to likely presence of notable ecological features and can never be relied upon for likely absence.

4.0 ECOLOGICAL BASELINE

Desk Study

4.1 A summary of the relevant information is provided below; original data provided by the consultees has not been included in this report. Locations of statutory and non-statutory designated Sites referred to in the following section are illustrated on Figure 1.

Designated Sites

4.2 A single Special Area of Conservation (SAC) was present just outside the 10km search area. The Rochdale Canal SAC is located c. 10.1km east of the Site. It is designated for its populations of submerged aquatic plants and emergent vegetation. It is noted for its colonies of the nationally scarce floating water-plantain *Luronium natans* and the presence of nine species of pondweed *Potomogeton spp*.

4.3 No statutory designated sites of national nature conservation importance are located within 2km of the survey Site. The nearest Site of Special Scientific Interest (SSSI) West Pennine Moors is located approximately 3.8km north and west of the Site. The West Pennine Moors SSSI[15] is designated for the following;

- blanket bogs;
- wet and dry heathlands;
- acid and lime-rich flushes;
- rush pastures and mire grasslands;
- acid grasslands;
- neutral hay meadows and pastures;
- wet and dry broadleaved woodlands and scrub;
- diverse assemblages of upland moorland, in-bye and woodland breeding birds;
- breeding black-headed gulls *Chroicocephalus ridibundus*, Mediterranean gulls *Larus melanocephalus* and grey herons *Ardea cinerea*; and
- populations of starry lady's-mantle *Alchemilla acutiloba*, large-toothed lady's-mantle *A.subcrenata* and floating water-plantain *Luronium natans*.

4.4 A single statutorily designed site of local importance was recorded within 1km of the Site. The Kirklees Valley Local Nature Reserve is located c. 280m north of the Site. Habitats present include woodland, grassland, heathland, ponds, lodges and streams. Protected species within the LNR include great crested newts *Triturus cristatus*, six species of bats, and kingfisher *Alcedo atthis.*

4.5 Three non-statutorily designated sites for nature conservation interest were identified within the 1km search area. Cockey Moor Wood Pasture and Marsh Site of Biological Importance (SBI) is located approximately 850m South west of the Site and is designated for its wood pasture and grassland. Cyrus Ainsworth's Nurseries and Parkers Lodges SBI is located approximately 700m south of the Site. Kirklees Brook SBI is located approximately 300m north east of the Site and is designated for its small lodges, bats and aquatic in vertebrates. There is a lot of overlap between the Kirklees Brook SSSI and the Kirklees Valley LNR. All SBIs are considered to be of value at a Local Level.

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[15] West Pennnine Moors SSSI citation, available from https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/2000830.pdf last accessed on 23.10.24

Protected Species

4.6 Records of protected and priority faunal species derived from the desk study consultees are provided in Table 13 below. Species records have been filtered to comprise protected and / or notable species within 1 km of the Site boundary from the last 20 years.

Table 13: Summary of Relevant Species Records from the Greater Manchester Ecology Unit

Species	Conservation Status	Num of Records within 1km	Location / Minimum distance of records from Site boundary
Amphibians			
Great crested newt *Triturus cristatus*	Regs, WCA Sch5, SPI, LBAP	2	Record of eggs within ponds on the LNR (se above) from 2006 and 2010 located 780m north of the Site
Birds			
Kingfisher *Alcedo atthis*	WCA Sch 1	2	Recorded in 2007 and 2015 located between 300-400m north east of the Site
Dunnock *Prunella modularis*	BoCC Amber	4	Spread north east to south west of the Site recorded between 2011 and 2020. The record on Site is only provided to an accuracy of a 4 figure grid reference and states that the record is from the Kirklees Trail, Tottington located approximately 300m from the Site boundary
House sparrow *Passer domesticus*	BoCC Red	3	Located c. 500 and 750m south east and south of the Site. The record on Site is only provided to an accuracy of a 4 figure grid reference and states that the record is from the Kirklees Trail, Tottington located approximately 300m from the Site boundary. Records are from 2011, 2013 and 2020
Song thrush *Turdus philomelos*	BoCC Red	2	The record on Site is only provided to an accuracy of a 4 figure grid reference and and states that the record is from the Kirklees Trail, Tottington located approximately 300m from the Site boundary. The other record is from the same area. Records are from 2015 and2020
Starling *Sturnus vulgaris*	BoCC Red	3	Located c. 500 and 750m south east and south of the Site. The record on Site is only provided to an accuracy of a 4 figure grid reference and states that the record is from the Kirklees Trail, Tottington located approximately 300m from the Site boundary. Records are from 2011, 2013 and 2020

Species	Conservation Status	Num of Records within 1km	Location / Minimum distance of records from Site boundary
Bullfinch *Pyrrhula pyrrhula*	BoCC Amber	2	Located c. 500 and 750m south east and south of the Site. The record on Site is only provided to an accuracy of a 4 figure grid reference and states that the record is from the Kirklees Trail, Tottington located approximately 300m from the Site boundary. Records are from 2011, and 2020
Mammals			
Bat – not identified to species level.	Regs, WCA, Sch5 LBAP	2	Two unidentified bat roosts located 270m south west and 240m east of the Site. Records are from 2011 and 2012.
Brown long-eared *Plecotus auritus*	Regs, WCA, Sch5, LBAP	2	Record of a roost 780m south of the Site from 2018 and a commuting BLE in the same location from 2015
Common Pipistrelle *Pipistrellus pipistrellus*	Regs, WCA, Sch5 LBAP	43	Common and wide spread in the survey area. Records ranged from 2008 to 2022. Records include injured bats, roosts of up to 20 bats, commuting bats and 1 bat hibernating. The closest record was 40m north of the Site for an injured male bat in 2022
Soprano Pipistrelle *Pipistrellus pygmaeus*	Regs, WCA, Sch5, LBAP	7	Distributed around the Site, with the closest record been 200m west of the Site. Records are from between 2005 and 2021 and are for largely injured bats
Pipsitrelle Species *Pipistrelle sp*	Regs, WCA, Sch5, LBAP	9	The record on Site is only provided to an accuracy of a 4 figure grid reference and states that the record is from the Kirklees Trail, Tottington located approximately 300m from the Site boundary. Records are well distributed around the Site and the closest record c. 20m from the Site boundary and is for a roost of 12 bats in a disused building in 2008. Other records are from between 2004 and 2022 and include maternity roost, roosts, and observed in flight. A maternity roost of 130 bats was present in a property located 330m east of the Site in 2014.
Noctule *Nyctalus noctula*	Regs, WCA, Sch5, LBAP	3	Records were located to the north, east and south of the Site and included bats in flight in 2013, 2016 and 2018. Records are located 500m to 600m from the Site.
Myotis species *Myotis sp*	Regs, WCA, Sch5, LBAP	2	Two records of commuting adults located 800m south of the Site in 2015

Species	Conservation Status	Num of Records within 1km	Location / Minimum distance of records from Site boundary
Hedgehog *Erinaceus europaeus*	SPI	10	Records are widespread in the search area with the closest record been for a single hedgehog in 2020 located 100m west of the Site boundary.
Moths and Butterflies			
Buff ermine *Spilosoma lutea*	SPI	1	A single sighting observed in 2011 c. 270m south west the Site
Cinnabar *Tyria jacobaeae*	SPI	1	A single sighting observed in 2020 adjacent to the northern Site boundary
White Ermine *Spilosoma lubricipeda*	SPI	1	A single sighting observed in 2011 c. 270m south west the Site

Status Key: Regs = The Conservation of Habitats and Species Regulations 2010 (as amended). WCA = Wildlife and Countryside Act 1981 (as amended). Sch5 = Schedule 5 of WCA., LBAP = Greater Manchester Action Plan, SPI = Habitat/species of principle importance under the Natural Environment and Rural Communities Act 2006.

Field Study - Habitats and Flora

4.7 The habitats within the Site are mapped on Figure 2. The Site primarily comprises modified grassland of which, on the southern aspect, specifically is wet. The Site has small areas of mixed and bramble scrub and a small area of mixed woodland. There is a network of hedgerows and lines of trees and two watercourses one identified as a wet ditch in the north of the Site and one identified as Walshaw Brook in the south of the Site.

Modified grassland

4.8 Modified grassland (MG) was the most dominant habitat on Site. Six areas of MG were identified. All MG parcels were not subject to any grazing at the time of the survey and appeared to receive limited management. MG parcels 1, 2 and 4 had a varied sward height with good structural diversity.

4.9 All the MG parcels failed the broad definition for other neutral grassland habitat which included not meeting the criteria of <8 species per m^2 and <20% of broadleaved herbs and sedges. The MG parcels do have some other neutral grassland indicator species present, such as; ribwort plantain *Plantago lanceolata*, creeping thistle *Cirsium arvense* and *creeping buttercup Ranunculus repens.* However, these are all at low frequencies and fail to meet the 'other neutral grassland'frequency criteria. The dominant grass species present is meadow *foxtail Alopecurus pratensis* which is a fast growing grass identified on wetter Sites, and similar to perennial rye-grass *Lolium perenne*, which is often identified on drier Sites.

4.10 All areas are of low distinctiveness and are species poor, generally comprising an average of less than 5 species per m^2. All six areas were in 'poor' condition at the time of surveying. Modified grassland habitats within the Site are therefore not considered to be an important ecological feature within the context of this assessment.

Mixed Scrub

4.11 There were three areas of mixed scrub, one located in the central part of the Site and two in the north eastern corner. MS1 appeared to be an outgrown hedgerow between compartments of MG. Species comprised English oak *Quercus robur*, hawthorn *Crataegus monogyna*, wild cherry *Prunus avium* and holly *Ilex aquifolium*. Mixed scrub 2 was a group of self set elder *Sambucus nigra*, hawthorn and holly. Mixed scrub 3, located on the northern boundary of the Site, was dense and unmanaged. Species comprised blackthorn *Prunus spinosa* crack willow *Salix fragilis*, goat willow *Salix caprea*, hazel *Corylus avellana* and holly *Ilex aquifolium*. Area MS1 and MS3 were considered to be in 'poor' condition failing on 3 of the five criteria, while MS2 was considered to be in moderate condition failing on two criteria. As such the conservation value of the mixed scrub on Site in considered to be low and is not considered an important ecological feature within the context of this assessment.

Willow Scrub

4.12 There were two small areas of willow dominated scrub in the north eastern corner of the Site. WS1 was in moderate condition and WS2 was in poor condition. Willow scrub area 1 mainly comprised of goat willow with *crack willow*, ash, hawthorn and holly. Willow scrub area 2 comprised self set crack willow and goat willow. WS1 was considered to be in moderate condition while WS2 was in 'poor' condition. Willow scrub within the Site is therefore not considered to be an important ecological feature within the context of this assessment.

Bramble Scrub

4.13 Five areas of bramble dominated scrub were located in the northern half of the Site. The first area was a small patch located on the north western boundary adjacent to Scobell Street. A second linear area ran along the watercourse running north to south across the Site. A small bramble patch was present next to T1 and a further patch was located in the south west corner near to pleasant Street. The final larger patch was present in the norther eastern corner of the Site. The condition of bramble scrub is fixed within the matrix and therefore not required. bramble scrub habitat within the Site is therefore not considered to be an important ecological feature within the context of this assessment.

Other Woodland; Mixed

4.14 A small area of other woodland; mixed habitat was present in the south west corner of the Site. It provides a buffer between the industrial area to the south and the Site. The watercourse Walshaw brook ran through the woodland. The canopy layer was dominated by sycamore with abundant conifer species and frequent hawthorn and ash. Hawthorn was present as a frequent understory species with elm *Ulmus minor* being rare. Sycamore was the only species present as young trees. The Schedule 9 invasive species (INNS) Himalayan balsam *Impatiens glandulifera* was present in the ground flora layer. The woodland returned a condition score of 'poor', scoring poorly on age structure, presence of invasive plant species, species richness, regeneration, vegetation and ground flora and veteran trees. Consequently, the intrinsic conservation value of the woodland would be considered to be low and woodland on Site is considered to be less than local level value, as such in not considered an important ecological feature within the context of this assessment (INNS are dealt with separately).

Bare ground

4.15 An area of bare ground in the form of an access track was present in the north east of the Site. This is not considered to be an important ecological feature.

Hedgerows

4.16 A total of nine native hedgerows were present on Site. All hedgerows are considered to be relatively species poor, characterised by an abundance of hawthorn along with elder, *Sycamore*, sessile oak *Quercus petraea*, ash, rowan *Sorbus aucuparia*, holly and hazel *Corylus avellana*.

4.17 None of the hedgerows would be considered important under the Hedgerow Regulations 1997 due to the low number of woody species present. All hedgerows were in 'good' condition except H3 which was considered to be in 'moderate'. However, all hedgerows supported at least 80% native canopy species and therefore meet the criteria as a Habitat of Principal Importance under the NERC Act 2006. Hedgerows are a local and national BAP habitat. Despite this status, hedgerows are a common habitat type both nationally and locally, they would therefore be considered important at a **local** scale.

Lines of Trees

4.18 There were 5 lines of trees across the Site. These were situated between compartments of MG. LT 1 was located on the southern Site boundary and comprised elder English oak, hawthorn, sycamore and holly. Lt 2 was located adjacent to a large area of bramble scrub and close to the onsite ditch. It comprised of elder, hawthorn, holly and wild cherry. LT 3 was possible a remnant of a hedgerow present on an internal field boundary, it comprised of elder hawthorn and holly. LT4 was also a potential remnant of a hedgerow and comprised elder hawthorn and wild cherry. LT 5 was a line of semi-mature and young plum *Prunus domestica* trees was located south-west of hedgerow H8.

4.19 All five were assessed as 'moderate' condition due to the lack of trees with veteran features and/or natural ecological niches. Given the moderate condition of the lines of trees these are considered to be important at a **local** scale.

Individual Trees

4.20 The Site supports several individual trees, the majority of which were recorded within the hedgerows, although a number of freestanding trees were noted. A total of 29 individual trees were identified during the habitat survey. The majority of the trees (11 in total) were assessed as 'good' condition with the remaining 16 been in 'moderate' condition and 1 in poor condition.

4.21 The mature trees present increase the structural and habitat diversity of the Site and are likely to be of value to local wildlife including bats, birds and invertebrates. As such they are considered to be an important ecological feature important at a **local** scale.

Ditch

4.22 On the northern section of the Site a ditch is flowing from north to south into a sink hole in the center of Site (SD 77947 12044). In regard to the Tributary of Kirklees Brook, this watercourse is not visible on the majority of mapping reviewed, however is shown on the OS mastermap layer, where it flows from north to south into a sink hole in the center of Site (SD 77947 12044). It is not specifically identified in the EA catchment explorer and is shown to fall within the catchment of Kirklees Brook, although flow direction would suggest that this may not be the case. From a desk study perspective there is a reasonable probability that this is an artificially created channel for drainage purposes and could be considered a ditch. Therefore, the tributary of Kirklees Brook is not considered a river and will not be considered so within the statutory BNG metric but assessed via the ditch condition criteria which places it in poor condition.

4.23 The ditch is approximately 1.5m wide at the widest point with bank depth of approximately 0.5m. At some points the modified grassland floodplain was level with the ditch with no bank present. The ditch substrate was large rocks and pebbles with some earth. Some marginal vegetation was present. The ditch flowed through scrub and adjacent to a line of trees which provided the ditch with significant shade.

4.24 It is therefore not considered an ecological important feature and is scoped out of further assessment.

Invasive Non Native Species

4.25 Himalayan balsam was widespread throughout the Site, largely associated with the on-site ditches and streams but also present along hedgerows and has started to spread into the open fields (see figure 3). A large area of Himalayan balsam was noted in the north east field compartment and was present over much of the central field section. Whilst this in not considered an ecological feature in terms of Ecological Impact Assessment it should be included within the assessment.

Watercourses /River Corridor Assessment

4.26 The watercourse Walshaw Brook ran along the southern boundary from east to west, it measured <5m wide with a survey length of approximately 250m within the redline boundary. This resulted in 1 sub-reach being surveyed with 5 x 10m modules (MoRPh5). These surveys were undertaken from a mix of the right and left banks. The details of the river condition assessment are included within the BNG report.

4.27 Walshaw brook desk study identified as “other river and stream’ (type C) Walshaw brook is a non-priority river type and is of high distinctiveness. It is therefore considered to be an important ecological feature and is of importance at a **local** scale.

Field Study - Fauna

Invertebrates

4.28 Habitats on Site offer limited value for invertebrates. Trees, woodland, grassland and hedgerow boundaries will hold higher value for some common invertebrate species but are unlikely to provide habitat for any Species of Principal Importance (SPI).

4.29 Invertebrates are therefore not considered further in the assessment.

Amphibians.

4.30 The Desk Study returned two great crested newt (GCN) *Triturus cristatus* records within 1km of the Site boundary, both from within the Local Wildlife Site at least 760m to the North.

4.31 There are seven ponds within 250m of the Site as shown on Figure 4. Ponds P6 and P7 were not surveyed because of the presence of extensive urban development[16] is present within the intervening area. In addition, it was not possible to obtain access to P5. As such P1 top P4 were surveyed which included habitat suitability Index assessments and eDNA surveys. Great crested newts were recorded as absent in these ponds. No access was granted to Pond 5. However, it is considered unlikely that GCN would be present in this pond due to the isolation from other ponds by the existing road network.

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[16] Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook, Froglife, Halesworth.

4.32 Pond 1 was considered to be of 'average' suitability to great crested newts while the remaining three ponds were of 'poor' suitability. The gives a predicted presence of 55% and 3% (see appendix C for detailed HSI results).

Table 14: Habitat Suitability Index Results

Pond	SI -1		SI - 2		SI -3		SI -4		SI -5		SI -6	
	geographical location		pond area		pond drying		water quality		shade (perimeter)		fowl	
	Field result (A,B,C)	SI score	Field result (m2)	SI score	Field result	SI score	Field result	SI score	Field result (% cover)	SI score	Field result	SI score
P1	A-optimal	1	1260	0.9153	Rarely	1	Moderate	0.67	10	1	Minor	0.67
P2	A-optimal	1			Never	0.9	Moderate	0.67	2	1	Major	0.01
P3	A-optimal	1	4275	0.4533	Never	0.9	Good	1	10	1	Major	0.01
P4	A-optimal	1	1875	0.8229	Never	0.9	Good	1	20	1	Major	0.01

4.33 Prior to undertaking eDNA survey two aquatic surveys were undertaken on 16th April on ponds 1-4 during which no amphibians were observed.

4.34 Despite the presence of GCN within the Local wildlife Site to the north, there is significant urban development within the intervening area and therefore limited habitat connectivity between the Site and the area for GCN. As all of the ponds with direct habitat connectivity with the site were eDNA sampled and returned negative results it is considered unlikely that GCN utilise the Site and therefore GCN and other amphibians are therefore unlikely to pose a constraint to proposals and are scoped out of further assessment

Reptiles

4.35 No records for reptiles were returned in the Data search. Additionally, reptile presence / likely absence surveys were undertaken by FPCR on seven occasions between April and July 2024. . During these surveys, no evidence of any reptile species was recorded.

4.36 It is therefore considered unlikely that reptiles would pose a constraint to proposals, and they are scoped out of further assessment.

Breeding Birds

4.37 The data study returned records of six notable bird species from within 1km of the Site boundary. None of these records were directly related to the Site.

4.38 The hedgerows and scrub areas on Site offer breeding and foraging habitat for birds. The grassland on Site offers limited breeding opportunities but does offer some foraging opportunities. The Site is in close proximity to housing,and is subject to recreational disturbance (presence of public footpaths) and disturbance from cattle grazing, indicating low potential for species other than common generalists who are more tolerant of disturbance.

4.39 A total of 28 bird species were recorded across all breeding bird surveys (for a complete list see Appendix D) (see figures 5-7). Of these, 11 met the criteria of at least one of the following pieces of legislation/classifications discussed above; Section 41 of the NERC Act 2006; and BoCC Red or Amber lists. These species are referred to as 'notable' species, and are listed below in Table 15.

Table 15: Notable species recorded and their Recent Status within Greater Manchester

Species	Legal / Conservation status	Peak Count / Survey Occasions Recorded	Recent Status in Greater Manchester
Mallard *Anas platyrhynchos*	BoCC Amber	3 / 3	Abundant resident.
Swift *Apus Apus*	BoCC Red	2 / 1	Common summer migrant: declining.
Woodpigeon *Columba palumbus*	BoCC Amber	24 / 3	Abundant resident and passage migrant.
Whitethroat *Sylvia communis*	BoCC Amber	1 / 1	Common summer visitor.
Wren *Trogolodytes trogolodytes*	BoCC Amber	11 / 3	Abundant resident.
Song Thrush *Turdus philomelos*	BoCC Amber NERC S.41	1 / 1	Common resident and winter visitor.
House Sparrow *Passer domesticus*	BoCC Red NERC S.41	5 / 3	Abundant resident.
Dunnock *Prunella modularis*	BoCC Amber NERC S.41	5 / 2	Abundant resident.
Greenfinch *Chloris chloris*	BoCC Red	5 / 2	Common resident.
Reed Bunting *Emberiza schoeniclus*	BoCC Amber NERC S.41	2 / 2	Fairly common resident and partial migrant.

4.40 The grassland on Site provides negligible breeding opportunities for the species recorded, but provides suitable foraging habitat for swift, woodpigeon and song thrush. The relatively poor species assemblage recorded in this habitat indicates it should be considered of Site importance for its' bird assemblage, as this falls below the threshold of at least 'Local' importance for inclusion within the assessment will not be included within the scope.

4.41 The hedgerows and trees on Site provide breeding and/or foraging habitat for a variety of common and widespread species. Whilst the assemblage did have a number of notable species, they were mostly seen in low numbers and are deemed either common or abundant within the county. These included whitethroat, wren, house sparrow, dunnock, song thrush and greenfinch. The Site is therefore considered to be of **Local** importance for its' hedgerow breeding assemblage.

Wintering Birds

4.42 The data search returned no Sites designated for wintering or passage birds within 10km of the Site.

4.43 A single scoping survey was carried out, during which it was determined that the habitat on Site was largely unsuitable for wintering birds. Only common, generalist species were seen utilising hedgerows on Site during this survey. Therefore the presence of wintering birds on Site are not considered to be a constraint to the proposals and they are scoped out of further assessment.

Bats

4.44 The data search with the Greater Manchester Ecology Unit provided no bat records directly relating to the Site. The majority of the bat records were for the residential areas surrounding the Site and included brown long-eared *Plecotus auritus*, common and soprano pipistrelle *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*, pipsitrelle species *Pipistrelle sp*, noctule *Nyctalus noctula*, myotis species *Myotis sp* and two records not identified to species level. No records of Annexe II species were returned.

4.45 Data from MAGIC shows that Natural England have not issued a mitigation licence for bats within 1km of the Site.

Roosting Bats

4.46 There are no trees or buildings present at the Site containing features suitable for roosting bats. Buildings comprised a number of glass houses, metal and small wooden sheds.

4.47 It is therefore considered unlikely that roosting bats would pose a constraint to proposals, and they are scoped out of further assessment.

Activity Surveys

4.48 The Site was considered to provide moderate habitat suitability for bats. Therefore, it was proposed that seasonal surveys were undertaken. The flightpaths surveyor locations, transect routes, and static locations are provided in Figures 9-12 and tables 16-26.

Static bat detectors (see Figure 9)

4.49 Four static detectors were deployed on Site in spring and summer 2024, These detectors were deployed around the Site on woodland/stream edge (static 1), ditch habitat with corresponding scrub (static 2), line of trees and scrub (static 3), and native hedgerow (static 4). A summary of the results is shown in table 16 below

Table 16: Summary of Statics Data

Static Reference	Average Bat registrations per hour			Total registrations		
	Spring	Summer	Autumn	Spring	Summer	Autumn
1 (Woodland/ Stream)	87.288	18.502	33.047	4035	757	1914
2 (ditch/ scrub)	14.927	11.512	54.406	690	471	3151
3 (Line of trees)	41.968	8.315	24.052	1940	347	1393

Static Reference	Average Bat registrations per hour			Total registrations		
	Spring	Summer	Autumn	Spring	Summer	Autumn
4 (native hedgerow)	64.808	12.465	65.663	2404	510	3803

4.50 A breakdown of the species composition across all static surveys is proved in table 17 below

Table 17: Species breakdown across all static surveys

Species	Count	Percentage
Common Pipistrelle	21,015	98.132%
Pipistrelle Species	247	1.153%
Myotis Species	82	0.383%
Nathusius' pipistrelle	53	0.247%
Soprano Pipistrelle	17	0.079%
Brown Long-eared	1	0.005%

Flight Path Surveys

4.51 During each survey the surveyors were positioned at points 'A' and 'B' (see Figure 9), the results of each survey are summarised in the following paragraphs.

Spring

4.52 The spring survey took place on the 8th May 2024 (see table 3 and 4). In each position low levels of common pipistrelle activity was recorded, all of which were from. Surveyors observed that a low number of bats were commuting across the Site from north to south using the on Site ditch/ line of trees 2 (position A) and hedgerows H3 and H5 in the same direction. A single common pipistrelle was observed foraging over the north eastern field compartment. There was no obvious correlations between the times the bats were observed between the two surveyor positions.

Table 18: Results from location 'A' May Flightpath Survey

Species	Time	Behaviour	Passes	Comments
Common pipistrelle	21:21	Commuting	1	
Common pipistrelle	21:25	Commuting	1	
Common pipistrelle	21:27-21:39	Foraging	11	Single bat foraging
Common pipistrelle	21:46	Commuting	1	

Table 19: Results from Location 'B' May Flightpath Survey

Species	Time	Behaviour	Passes	Comments
Common pipistrelle	21:25	Commuting	1	Heard Not Seen
Common pipistrelle	21:23	Commuting	1	Heard Not Seen
Common pipistrelle	21:34	Foraging	1	
Common pipistrelle	21:34	Foraging	1	

Species	Time	Behaviour	Passes	Comments
Common pipistrelle	21:38	Foraging	1	
Common pipistrelle	21:41	Foraging	4	
Common pipistrelle	21:41	Unknown	1	Heard Not Seen
Common pipistrelle	21:45	Unknown	2	Heard Not Seen
Common pipistrelle	21:48	Unknown	1	Heard Not Seen

Summer

4.53 The summer survey took place on the 3rd July 2024 (see table 18 and 19). Only low levels of common pipistrelle activity was again recorded. As per the spring survey this species was observed commuting across the Site using the ditch, line of trees 2 and hedgerows H3 and H5, a single common pipistrelle was observed foraging adjacent to the Site boundary around trees. A subtle correlation between times that bats were observed suggests that a small number of bats commute across the centre of the site from west to east

Table 20: results from location 'A' July Flightpath Survey

Species	Time	Behaviour	Passes	Comments
Common pipistrelle	22:20	Commuting	1	South from LT2
Common pipistrelle	22:23	Commuting	1	North towards LT2
Common pipistrelle	22:24	Commuting	1	Commuting east from offsite buildings towards LT3
Common pipistrelle	22:27	Commuting	1	South from LT2 then heading east
Common pipistrelle	22:32	Commuting	1	Commuting east from offsite buildings towards LT3
Common pipistrelle	22:40	Foraging	6	Foraging offsite to the west

Table 21: results from location 'B' July Flightpath Survey

Species	Time	Behaviour	Passes	
Common pipistrelle	22:27	Commuting	1	Heard Not Seen
Common pipistrelle	22:32	Commuting	1	Flying eastwards towards T18
Common pipistrelle	22:34	Commuting	1	Heard Not Seen

Autumn

4.54 In Autumn the numbers of bats (all common pipistrelle) recorded were comparable to previous surveys, the greater proportion that were heard but not seen may be attributable to the light fading quicker after sunset at this time of the year. However, the bat contacts were single passes and it was therefore reasonable to conclude that this behaviour was largely commuting, however it wasn't possible to observe the direction of flight

Table 22: results from location 'A' October Flightpath Survey

Species	Time	Behaviour	Passes	
Common pipistrelle	18:59	Commuting	1	Heard Not Seen
Common pipistrelle	19:07	Commuting	1	Observed flying west from LT3
Common pipistrelle	19:09	Commuting	1	Observed flying west over open from H3
Common pipistrelle	19:18	Foraging	1	Foraging near LT2
Common pipistrelle	19:26	Commuting	1	Heard Not Seen
Common pipistrelle	19:35	Commuting	1	Heard Not Seen
Common pipistrelle	19:40	Foraging	2	Foraging near LT2

Table 23: results from location 'B' October Flightpath Survey

Species	Time	Behaviour	Passes	
Common pipistrelle	18:53	Commuting	1	Heard Not Seen
Common pipistrelle	19:00	Commuting	1	Flying eastwards
Common pipistrelle	19:20	Foraging/ commuting	3	Heard Not Seen (could have been a single bat foraging or three bats commuting
Common pipistrelle	19:29	Commuting	1	Heard Not Seen
Common pipistrelle	19:44	Commuting	1	Heard Not Seen
Common pipistrelle	19:47	Commuting	1	Heard Not Seen
Common pipistrelle	19:49	Foraging	Continuous	Foraging close to T18

Transects

Spring (see Figure 10)

4.55 Low numbers of common pipistrelles were observed widely distributed across the Site. Contacts were for individual bats and largely assiocated with linear features of the Site. Table 24 below provide results of the survey.

Table 24: Results of Spring Night time Bat Walkover

Ref	Species	Time	Behaviour	Passes
1	Common Pipistrelle	22:00	Foraging	5
2	Common Pipistrelle	22:14	Social calls	2
3	Common Pipistrelle	22:28	Unknown	4
4	Common Pipistrelle	22:37	Unknown	2
5	Common Pipistrelle	22:41	Unknown	2
6	Common Pipistrelle	22:45	Foraging	2
7	Common Pipistrelle	22:47	Foraging	3

Ref	Species	Time	Behaviour	Passes
8	Common Pipistrelle	22:50	Foraging	4
9	Common Pipistrelle	22:53	Foraging	2

Summer (see Figure 11)

4.56 Only two bats were observed during the summer transect, both common pipistrelles, a further 3 common pipistrelles were recorded but not observed. Table 25 below provide results of the survey.

Table 25: Results of Spring Night time Bat Walkover

Ref	Species	Time	Behaviour	Passes
	Common Pipistrelle	22:44	Pass	1
	Common Pipistrelle	22:47	Pass	1
	Common Pipistrelle	22:54	Pass	1
1	Common Pipistrelle	23:12	Foraging	5
2	Common Pipistrelle	23:17	Unknown	3

Autumn (see Figure 12)

4.57 During the Autumn transect there were just three bat contacts recorded these comprised just individual common pipistrelle bats in the south west of the site. Table 26 below provide results of the survey.

Table 26: Results of Spring Night time Bat Walkover

Ref	Species	Time	Behaviour	Passes
1	Common Pipistrelle	19:58	Foraging	3
2	Common Pipistrelle	20:03	Foraging	3
3	Common Pipistrelle	20:38	Unknown	1

Badgers

4.58 The Site provides suitable habitat for badgers, however no evidence of this species was observed during the surveys, Therefore the presence of Badgers on Site is unlikely to pose a constraint to the proposals and are therefore scoped out of further assessment.

Water vole

4.59 The Site provides suitable but poor habitat for water voles due to the shallow nature of the ditch and the over shading of the Walshaw brook. No records of the species were returned for the search area and American mink *Neovison vison* where observed locally during the great crested newt surveys. As such the presence of water vole are unlikely to pose a constraint to development of the Site and are therefore scoped out of further assessment.

Other mammals

4.60 Tussocky grassland, mature trees, hedge bases and scrub provide suitable habitat for a range of small mammals including hedgehog.

4.61 Presence is assumed so no further surveys are considered necessary. Hedgehogs are a Species of Principal Importance and are therefore considered an important ecological feature at a **Local level**.

5.0 DISCUSSION

5.1 The proposals have been reviewed against the current ecological baseline and the framework plan (12221-FPCR-XX-XX-DR-A-0001-P06) to identify any important ecological features.

Desk Study

Statutory Designated Sites

5.2 Rochdale Canal SAC is located c. 10.1 east of the Site. It is designated for its populations of submerged aquatic plants and emergent vegetation. There is no direct hydrological link from the Site to the SAC, given that and the distance between the SAC and Site there is not considered a pathway to impact and the SAC is **scoped out** of any further assessment.

5.3 The West Pennines Moors SSSI is located 3.8km north and west of the Site. Given the location and distance from the Site its considered that there will be no direct impacts to the SSSI. The pressures on the West Pennine Moors SSSI have been identified for recreation as a 'medium' risk with a 'potential' status, it is not identified as an active pressure[17]. However, the Impact Risk Zone[18] indicates that the only development activities at the Sites location which are likely to impact the SSSI are aviation infrastructure projects and air pollution from livestock and poultry units above a specific size. As there are no impact pathways identified impacts on the West Pennine Moors SSSI are **scoped out** of further assessment.

5.4 The Kirklees Valley Local Nature Reserve is located c. 280m north of the Site. There is potential for an increase in visitor pressure from up to 275 new dwellings, therefore the LNR is considered to be an Important Ecological Feature at a **local** scale and therefore will be brought through to the Environmental Statement.

5.5 The Kirklees Brook SBI is located c.300m north of the site. It is separated from the Site by residential development and no direct impacts from the construction phase are anticipated. There is potential for an increase in visitor pressure from up to 275 new dwellings, therefore the SBI is considered to be an Important Ecological Feature at a **local** scale and therefore will be brought through to the Environmental Statement.

5.6 The Cyrus Ainsworth's Nurseries and Parkers Lodges SBI is located approximately 700m south of the Site. Stand alone effect from development from this site are not expected given the distance from it however there maybe a cumulative effect from visitor pressure when the whole allocation site is taken into account. Therefore, the SBI is considered to be an Important Ecological Feature at a **local** scale and therefore will be brought through to the Environmental Statement.

5.7 The Cockey Moor Wood Pasture and Marsh SBI is located approximately 850m South west of the Site. Stand alone effect from development from this site are not expected given the distance from it however there maybe a cumulative effect from visitor pressure when the whole allocation site is taken into account. Therefore, the SBI is considered to be an Important Ecological Feature at a **local** scale and therefore will be brought through to the Environmental Statement.

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[17] SSSI Site Pressure available at https://designatedsites.naturalengland.org.uk/SitePressures.aspx?SiteGuid=7cb995e3-5a50-e411-a6ba-000d3a2004ef&SiteCode=S2000830&SiteName=West%20Pennine%20Moors%20SSSI last accessed 23.10.24

[18] Impact Risk Zones for Sites of Special Scientific Interest, Natural England, available at Impact Risk Zones - Threshold check, last access 23.10.24

Habitats

5.8 The majority of the Site comprises of modified grassland with scrub. Modified grassland habitat is considered to be of low intrinsic and conservation importance on account of its intensively managed nature. Habitats on Site which are considered Important Ecological Features ay a local scale are hedgerows, lines of trees, individual trees and Walshaw Brook. Habitat losses will mostly be limited to areas of modified grassland, with the exception of hedgerows 3, 5, 6, line of trees 4. A small section of line of trees 2 and seven individual trees (2, 9, 11, 12, 13, 14, 18). The compensation for loss of habitats is accounted for within the Biodiversity Net Gain Assessment.

5.9 All water courses within the Site will be retained and buffered from development, as such no impacts are expected to occur. As water courses are present within the Site boundary a 10% net gain in terms of water courses will need to be provided as part of the BNG.

5.10 The proposed attenuation in the south-east corner and south-west of the Site should be permanently wet and designed specifically to maximise biodiversity value with wide shallow draw down zones, scalloped edges and deep central areas. The waterbody should be planted with locally native marginal and aquatic vegetation to provide habitat for herpetofauna, inverts and small mammals.

5.11 During construction works, all retained trees and hedgerows will be protected through the implementation of appropriate measures including root protection areas and protective fencing in accordance with BS 5837 (2012) Trees in Relation to Design, Demolition and Construction and/or as indicated by any Arboricultural Assessment.

5.12 Himalayan balsam is present over much of the Site (see Figure 3). As part of the Construction Environmental Management Plan (CEMP) a strategy for eradication / control and monitoring of Himalayan balsam prior to, during and after development. This will include reference to the Environment Agency's (2003) *Guidance for the Control of Invasive Species in or near Fresh Water* and Defra's (2013) *Guidance on Japanese Knotweed, Giant Hogweed and Other Invasive Species.* Any substrate removed which contains plant material from this species should be treated as 'controlled waste' and disposed of at a registered landfill Site.

Fauna

5.13 Principal pieces of legislation protecting wild species are Part 1 of the Wildlife and Countryside Act 1981(as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Some species, for example badgers, also have their own protective legislation (Protection of Badger Act 1992). The impact that this legislation has on the Planning system is outlined in ODPM 06/2005 Government Circular: Biodiversity and Geological Conservation – Statutory obligations and their Impact within the Planning System. In addition to protected species, there are those that are otherwise of conservation merit, such as Species of Principal Importance for the purpose of conserving biodiversity under NERC Act 2006. The implications that various identified species or those that are thought reasonably likely to occur may have for developmental design and programming considerations are outlined below.

Breeding Birds

5.14 The indicative layout of the development includes the loss of the majority of area based habitat within the Site, and the loss of hedgerows (3, 5, and 6), line of trees (4 and a section of 2) and individual trees (2, 9, 11, 12, 13, 14, 18). . Given the limited suitability of the grassland habitat, and the availability of hedgerow habitat within the wider Site, this loss is anticipated to have a negligible impact on these species at the Local level.

5.15 Proposed garden planting and planting of urban trees and hedgerows within the Site will, in the long term, provide enhancements for a wide range of species. Such species could include great spotted woodpecker *Dendrocopos major*, blackbird *Turdus merula*, blackcap *Sylvia atricapilla*, chiffchaff *Phylloscopus collybita*, long-tailed tit *Aegithalos caudatus*, robin *Erithacus rubecula*, wren *Troglodytes troglodytes*, treecreeper *Certhia familiaris*, chaffinch *Fringilla coelebs* and house sparrow *Passer domesticus*. It is therefore anticipated that the proposed development will have a beneficial effect on these common generalist species.

5.16 Development plans also include two new attenuation ponds which will again provide further enhancements to species present on Site, such as mallard and reed bunting, alongside species like grey heron, coot and moorhen. Increased insect activity around the attenuation areas will also provide foraging habitat for species such as swift, swallow, warblers and tits. Therefore, it is anticipated that the proposed development will have a beneficial effect on these species.

5.17 As a result of the special protection afforded to breeding birds, in the event that any removal of woody vegetation (including trees and scrub) is necessary, it is recommended that this takes place outside of the bird breeding season (March to August inclusive) to minimise the risk of disturbance to breeding birds. If this is not possible, such vegetation should be checked prior to removal by a suitably experienced ecologist. If active nests are found, vegetation should be left untouched and suitably buffered from works until all birds have fledged. Specific ecological advice should be sought prior to undertaking the clearance.

5.18 Following construction, the development has the potential to impact upon local populations of breeding birds in the following ways:

- Disturbance of breeding birds due to increased presence of people and dogs; and
- Disturbance of breeding birds as a results of increased presence of domestic cats.

5.19 It is reasonable to expect that the increased numbers of people and domestic dogs will result in some disturbance to local breeding bird populations, both within the application Site and in the surrounding area. Research indicates that impacts are most likely from dogs, particularly those off the lead, where they may increase opportunistic predation of birds by other predators. This disturbance therefore has the potential to decrease breeding success as birds are either predated or temporarily displaced from valuable resources. Therefore, it is considered that the impact of people and dogs upon the breeding assemblages will be negative, but considering the assemblages present this is likely to be **not significant** at the **local** level.

5.20 Research has shown that domestic cats may impact upon wild bird populations, especially locally, within 100m of each cat's home[19]. However, a precautionary approach is advised, as the bird species involved are very productive and cats are also most likely going after birds that are in poor condition[20]. It is considered likely that areas of suitable bird habitat that are likely to be affected by cat predation would comprise the gardens, hedgerows, trees, scrub, and some areas of farmland in the surrounding landscape. In the absence of mitigation, it is considered that any increase in bird predation on these areas as a result of the proposed development would only result in a **negative** impact of up to **local** level.

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[19] Animal Conservation (2020) *The small home ranges and large local ecological impacts of pet cats*. R . Kays,R. R. Dunn,A. W. Parsons,B. Mcdonald,T. Perkins,S. A. Powers,L. Shell,J. L. McDonald,H. Cole,H. Kikillus,L. Woods,H. Tindle,P. Roetman

[20] Pet cats: should they be kept indoors? | BBC Science Focus Magazine (Accessed 16/08/2022)

5.21 In order to deter encroachment of domestic cats into any offsite sensitive areas and onsite GI, it is recommended that the boundaries around the development are strengthened through the planting of native thorny plant species such as blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna*.

5.22 The inclusion of tree and hedgerow planting within the GI, will provide further nesting habitat for a range of generalist species. This planting will comprise native species, preferably those that are fruit or nut bearing.

5.23 In accordance with British Standard BS42021:2021 – Integral nest boxes – Selection and installation for new developments, the specification is provided on the number and type of bird boxes that should be sought within new developments. Under BS42021:2021 all new residential developments should provide new and enhanced opportunities for nesting via the installation of integrated nest boxes with the number of boxes to be at least equal to the number of dwellings. These boxes should be installed in clusters of 3-5 on suitable aspects close to open areas with scattered trees and shrubs.

5.24 Although targeting swifts the provision of integral nest sites through hollow chambers fitted into the fabric of a building while in construction will also be used by house sparrows, tits and starlings so are considered a ‘universal brick".

5.25 External nest boxes are additional enhancements to the BS42021:2021 guidance and do not contribute towards the one nest box per dwelling requirement. Such enhancements that could be integrated with the on-going management of the site include the erection of a mixture of nest box types within the retained scrub-woodland. The following provides details of suggested suitable nest box types:

- A mixture of small hole (26mm and 32mm) boxes placed along the retained woodlands to the south of the site will provide nesting opportunities for a range of tit species. These boxes generally have a high uptake rate.
- Small open fronted nest boxes again should be placed throughout the site especially on trees which support a climber such as ivy which provides a degree of concealment. These boxes typically attract robin and blackbird.
- Consideration should also be given to stock dove nest boxes within the more established boundary habitats including mature tree standards.

5.26 Consideration should subsequently be given to the provision of nest boxes for birds found in built environments, including house sparrow *Passer domesticus*, and house martin *Delichon urbicum.*

Bats

5.27 The activity surveys recorded a minimum of five species (listed in order of abundance) common pipistrelle, pipistrelle species, myotis species, Nathusius’ pipistrelle, soprano pipistrelle and brown long-eared bat. All species recorded are known to be resident in the Manchester area. Nathusius pipistrelles are known to favour habitats near large waterbodies, a number of which are present to the south of the Site. Therefore, these results are as expected.

5.28 The commuting route aspect of the assessment confirmed that the two parallel corridors of vegetation linking the northern and southern site boundaries provide a commuting route across the site, but the usage of these across the seasons was only used by a relatively small number of common pipistrelle's. During survey design these were identified as the most likely features to provide a significant commuting route from potential roosting habitat in the north to the higher value foraging habitat around the ponds and woodland in the Bolholt area to the south of the Site. This was found not to be the case, and it is not considered that these linear features provide a significant resource. Therefore, the construction of a road across these features is not likely to have a significant impact on the local bat population.

5.29 Overall activity levels on Site where low with less than 500 registrations per night. Activity at static location 1 peaked at 01:00 to 02:00am in May indicating that the area in the south west of the Site is used foraging. Generally, bats were most active on Site during an 1 to 2 hours after sunset. The most frequently used and, therefore, important Site habitat for bats are the hedgerows, woodland and trees and watercourses.

5.30 Considering the numbers of bats and species using the Site, it has been valued at a **local** value for foraging/commuting bats.

5.31 The approach to mitigation

- Retention and protection of hedgerows, tree lines, trees and watercourses where possible
- the provision of compensatory habitats, including attenuation features.
- A range of bat boxes suitable for a variety of species; and
- A sensitive lighting regime to ensure that retained and created habitats remain dark.

Hedgehogs

5.32 Given the habitats on Site it is assumed that hedgehogs are present. As a result of their declining status of this species and their sensitivity to development activity they have been considered **Site** level importance and will therefore be **scoped out** of the EIA assessment. However, the CEMP will include control measures to reduce the likelihood of harm through measures such as: installing escape routes or covering trenches overnight, and pre-clearance checks of suitable vegetation by an Ecological Clerk of Works. In addition, during the operational phase, hedgehog friendly fencing should be installed as part of the development, to allow movement of hedgehog through the Site.

Summary of Important Ecological Features

5.33 A summary of the ecological features that have been determined as requiring detailed assessment is provided in table 14. This assessment will be undertaken as part of the accompanying Environmental Statement Ecology Chapter.

Table 14: Summary of important Ecological features and their Relative Geographical Importance

Ecological Feature	Geographical / Ecological Frame of Reference
Kirklees Valley Local Nature Reserve	Local
Kirklees Brook SBI	Local

Ecological Feature	Geographical / Ecological Frame of Reference
Cyrus Ainsworth's Nurseries and Parkers Lodges	Local
Hedgerows	Local
Lines of trees	Local
Individual trees	Local
Walshaw brook	Local
Himalayan balsam *Impatiens glandulifera*	N/A – included due to legislation
Breeding hedgerow birds	Local
Bats	Local

6.0 ENHANCEMENTS

6.1 In line with NPPF and local policy, it is recommended that the development of the Site results in a gain in value for wildlife by incorporating biodiversity in and around the development via the use of ecological enhancement measures. Opportunities exist within the scheme for general biodiversity enhancements to be undertaken, and the following are recommended for this specific Site:

- an ecological management plan will be produced and adhered to for all retained and created habitats in order for them to maintain existing value and/or realise enhanced value, making sure that management is appropriate and ongoing for the life of the development;
- the proposed development also provides an opportunity to increase the potential roosting prospects for bats through the erection of bat boxes. Woodcrete bat boxes (Schwegler or similar design) are recommended, to increase roosting opportunities.
- hedgehog gaps should be incorporated within garden fences, to allow hedgehogs to move through the Site unimpeded;
- deadwood piles could be created in areas of retained open space to provide a habitat niche for amphibians and small mammals as well as deadwood for invertebrates such as saproxylic beetles.

APPENDIX A: BIRD SPECIES LIST

Species: British Common Name	Species: Latin name	Survey 1	Survey 2	Survey 3	Conservation Status & Protection	Breeding status[24]
Canada Goose	*Branta canadensis*	2	2		Not Listed	Non-breeder
Mallard	*Anas platyrhynchos*	2	3	1	Amber List	Possible H
Swift	*Apus apus*	2			Red List	Non-breeder
Feral Pigeon	*Columba livia f. domestica*	2			*Not Listed*	Non-breeder
Woodpigeon	*Columba palumbus*	24	9	13	Amber List	Probable P
Collared Dove	*Streptopelia decaocto*		3	2	Green List	Non-breeder
Jay	*Garrulus glandarius*	1			Green List	Non-breeder
Magpie	*Pica pica*	9	7	6	Green List	Probable P
Jackdaw	*Coloeus monedula*		3	2	Green List	Non-breeder
Carrion Crow	*Corvus corone*		4	6	Green List	Non-breeder
Blue Tit	*Cyanistes caeruleus*	7	1	2	Green List	Probable P
Great Tit	*Parus major*		1	2	Green List	Possible H, S
Swallow	*Hirundo rustica*		1	1	Green List	Non-breeder
Long-tailed Tit	*Aegithalos caudatus*		1	4	Green List	Confirmed FL
Chiffchaff	*Phylloscopus collybita*			1	Green List	Possible H, S
Whitethroat	*Curruca communis*		1	1	Amber List	Possible H, S
Wren	*Trogolodytes trogolodytes*	4	11	2	Amber List	Possible H, S
Starling	*Sturnus vulgaris*	4	2		Red List NERC S.41	Non-breeder
Song Thrush	*Turdus philomelos*		1		Amber List NERC S.41	Possible S
Blackbird	*Turdus merula*	5	7	6	Green List	Probable P
Robin	*Erithacus rubecula*	1	2	1	Green List	Possible H

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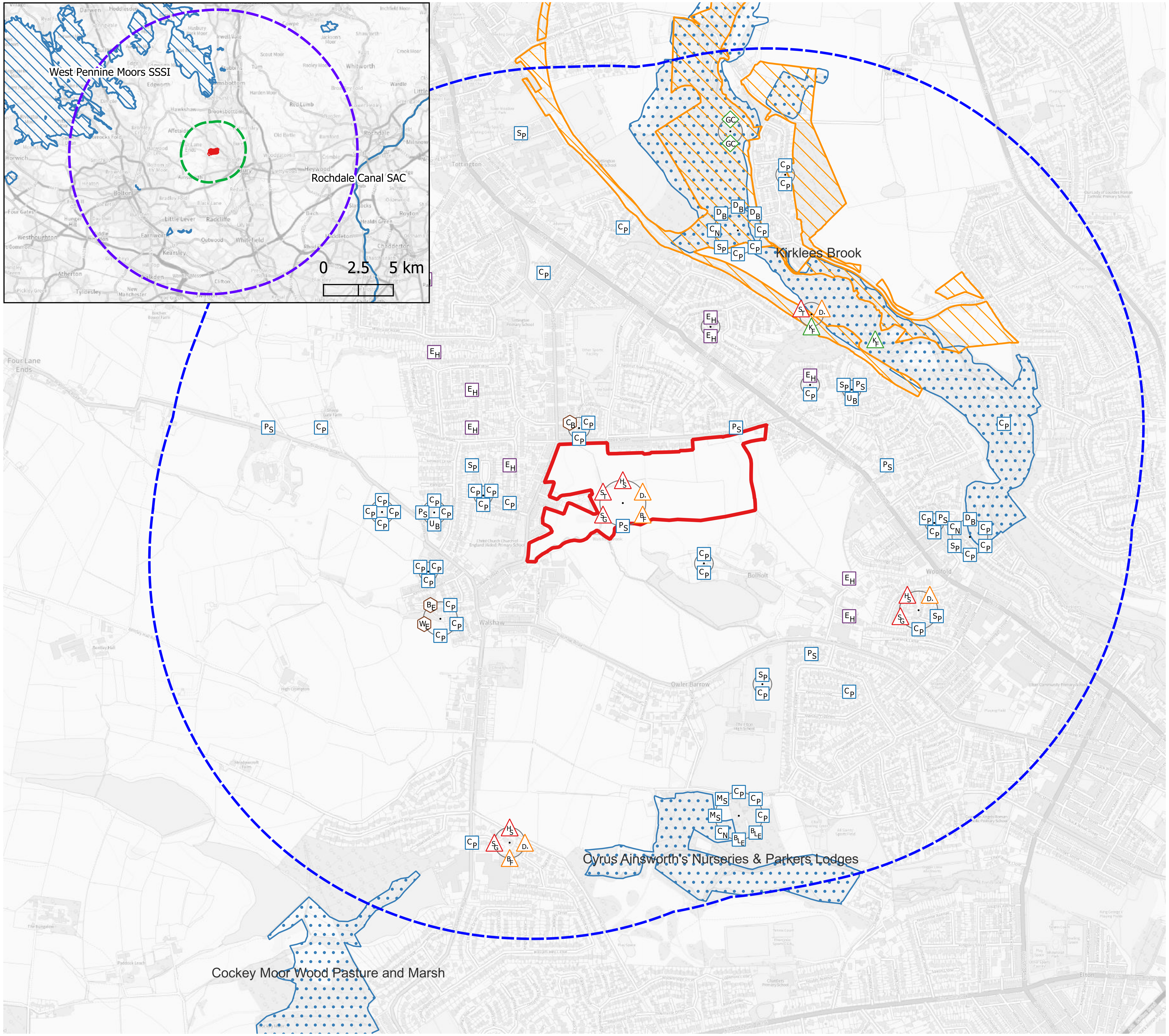
[24] European Ornithological Atlas Committee, 1979. *Categories of Breeding Bird Evidence*. European Ornithological Atlas Committee.

Species: British Common Name	Species: Latin name	Survey 1	Survey 2	Survey 3	Conservation Status & Protection	Breeding status[24]
House Sparrow	*Passer domesticus*	4	5	1	Red List NERC S.41	Confirmed FF
Dunnock	*Prunella modularis*	5		1	Amber List NERC S.41	Possible H, S
Pied Wagtail	*Motacilla alba*			2	Green List	Non-breeder
Chaffinch	*Fringilla coelebs*			1	Green List	Possible H
Greenfinch	*Chloris chloris*	5	2		Red List	Probable P
Goldfinch	*Carduelis carduelis*		1		Green List	Non-breeder
Reed Bunting	*Emberiza schoeniclus*	2		1	Amber List NERC S.41	Possible H
Total No. Species	28	16	20	20		


West Pennine Moors SSSI
Rochdale Canal SAC
0 2.5 5 km
Kirklees Brook
Cyrus Ainsworth's Nurseries & Parkers Lodges
Cockey Moor Wood Pasture and Marsh

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N

0 100 200 m

Key:

- 🟥 Red Line Boundary
- ▭ 10km buffer
- ▭ Special Area of Conservation
- ▭ 1km Site Buffer
- ▨ Sites of Special Scientific Interest
- ▨ Local Nature Reserve (LNR)
- CP Common pipistrelle
- SP Soprano pipistrelle
- PS Pipstrelle species
- CN Common noctule
- BLE Brown long-eared
- MS Myotis species
- DB Daubenton's bat
- UB Unknown bat species
- EH Western European hedgehog
- GC Great crested newt
- SG Starling
- ST Song thrush
- KF Kingfisher
- D. Dunnock
- BF Bullfinch
- HS House Sparrow
- CB Cinnabar Moth
- WE White Ermine
- BE Buff Ermine

date 23/10/24

drwn/chkd SH/AJB

client
Wain Estates

project
Scobell Street,
Bury

title
SITE LOCATION AND
CONSULTATION PLAN

scale 1:10,000 @ A3

number
FIGURE 1

rev
-

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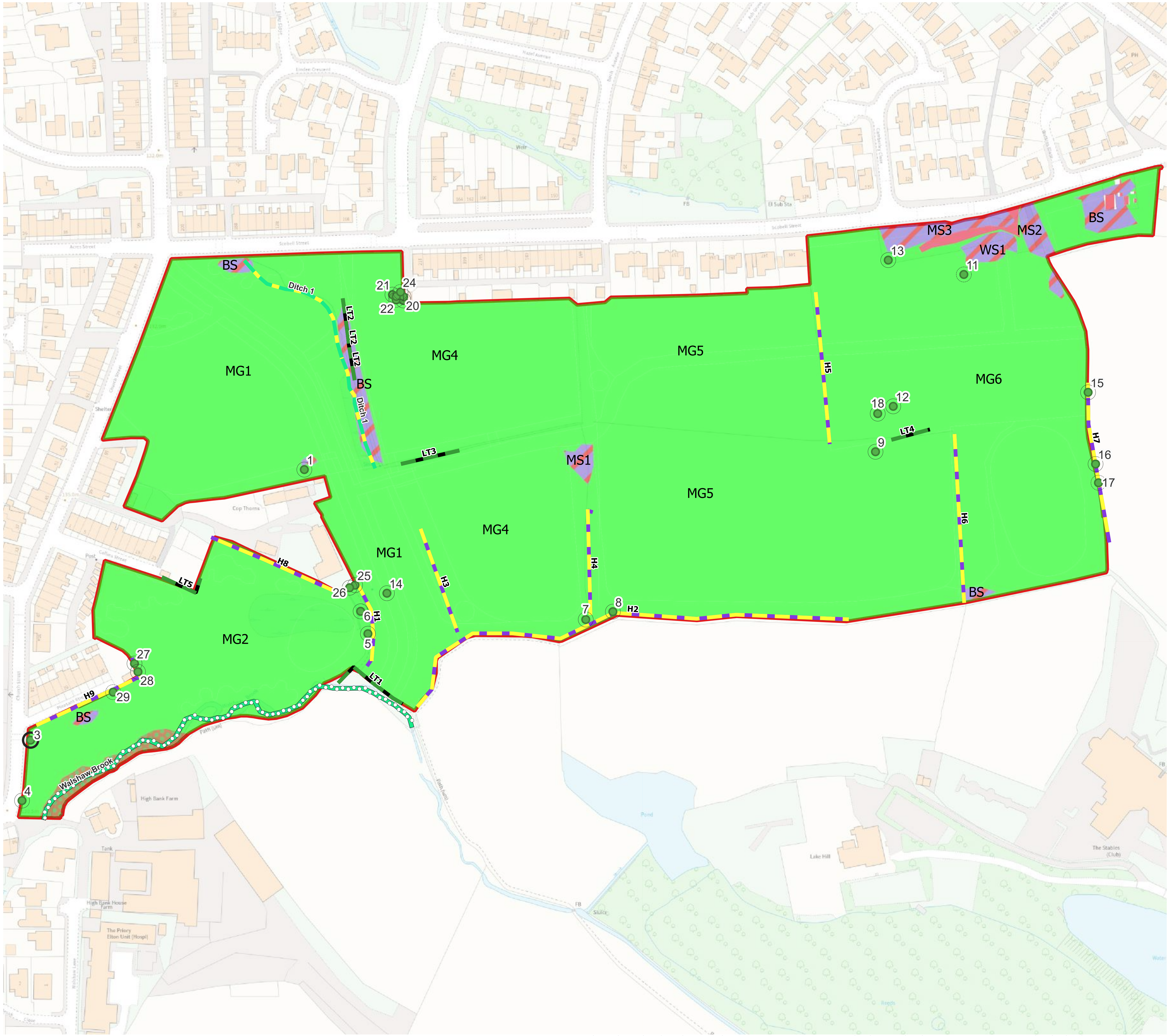
BS
Ditch 1
21
24
22
20
LT2
LT2
LT2
MG1
MG4
MG5
MG6
BS
Ditch 1
LT3
MS1
1
MG5
MG4
MG1
H3
H4
H5
H6
H7
H8
LT5
25
26
14
H1
6
5
7
8
H2
MG2
27
28
H9
29
BS
LT1
3
4
Walshaw Brook
MS3
MS2
WS1
BS
13
11
15
16
17
18
12
9
LT4
BS

N

0 0.05 0.1 km

Key

- 🟥 Site Boundary
- ● Existing Large Rural Tree
- ● Existing Medium Rural Tree
- ● Existing Small Rural Tree
- ▨ Bramble scrub
- ▨ Developed land; sealed surface
- ▨ Mixed scrub
- 🟩 Modified grassland
- ▨ Other woodland; mixed
- ▨ Willow scrub
- 🟥 Bare ground
- — Line of trees
- — Native hedgerow
- — Ditches
- — Other rivers and streams

date
09/12/24

drwn/chkd
HK / SH

client
Wain Estates

project
Scobell Street,
Bury

title
UK HABITAT PLAN

scale
1:2,100@ A3

number
FIGURE 2

rev
-

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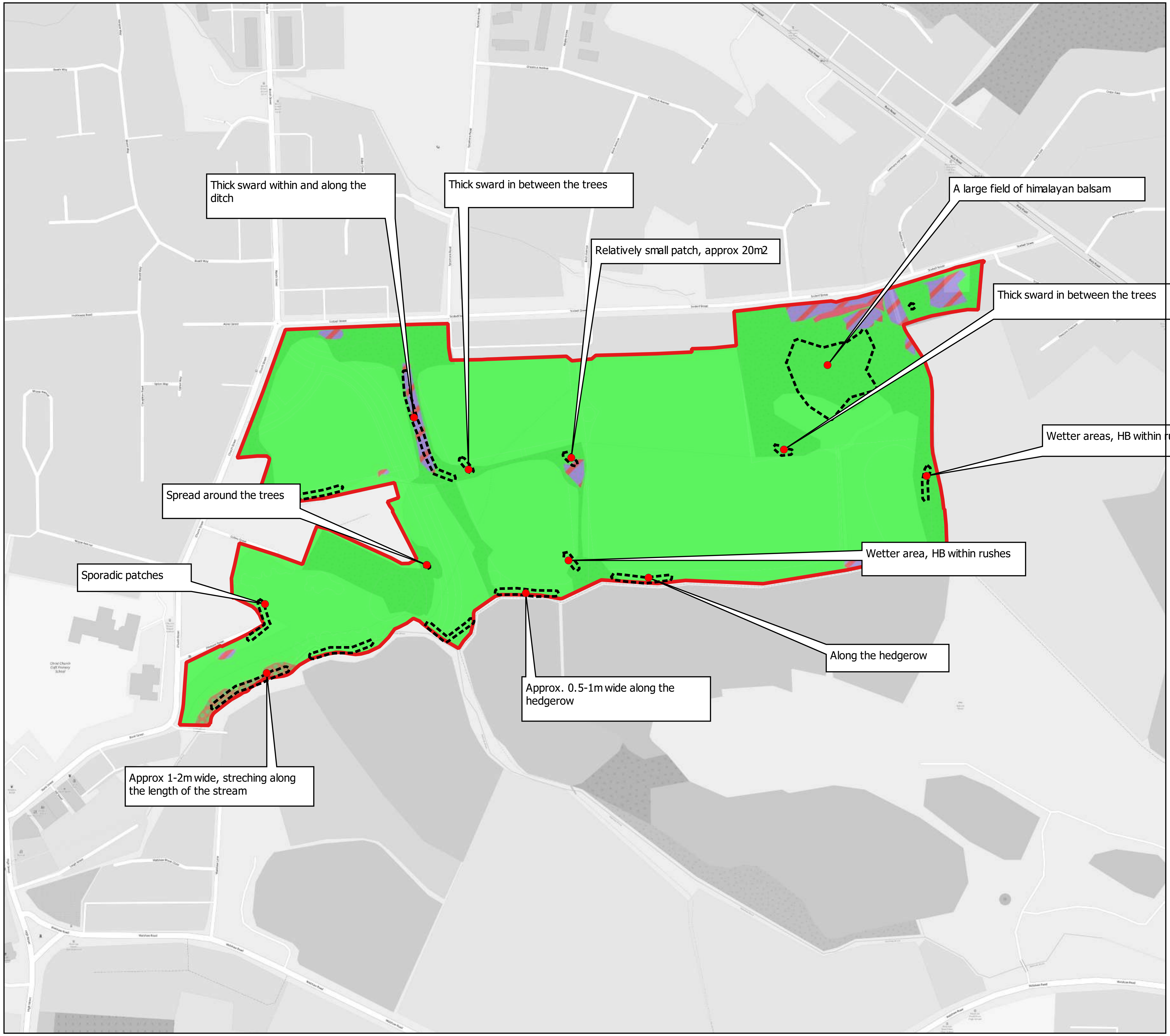
Thick sward within and along the ditch
Thick sward in between the trees
Relatively small patch, approx 20m2
A large field of himalayan balsam
Thick sward in between the trees
Wetter areas, HB within rushes
Spread around the trees
Wetter area, HB within rushes
Sporadic patches
Along the hedgerow
Approx. 0.5-1m wide along the hedgerow
Approx 1-2m wide, streching along the length of the stream

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N

0 100 200 m

Key:

🟥 Red Line Boundary (QFIELD)

⬚ Approx. locations of Himilayan Balsam

date
09/10/24

drwn/chkd
HK / SH

client
Wain Estates

project
Scobell Street
Bury

title
Invasive Non-native Plan

scale
1:5,000 @ A3

number
FIGURE 3

rev
-

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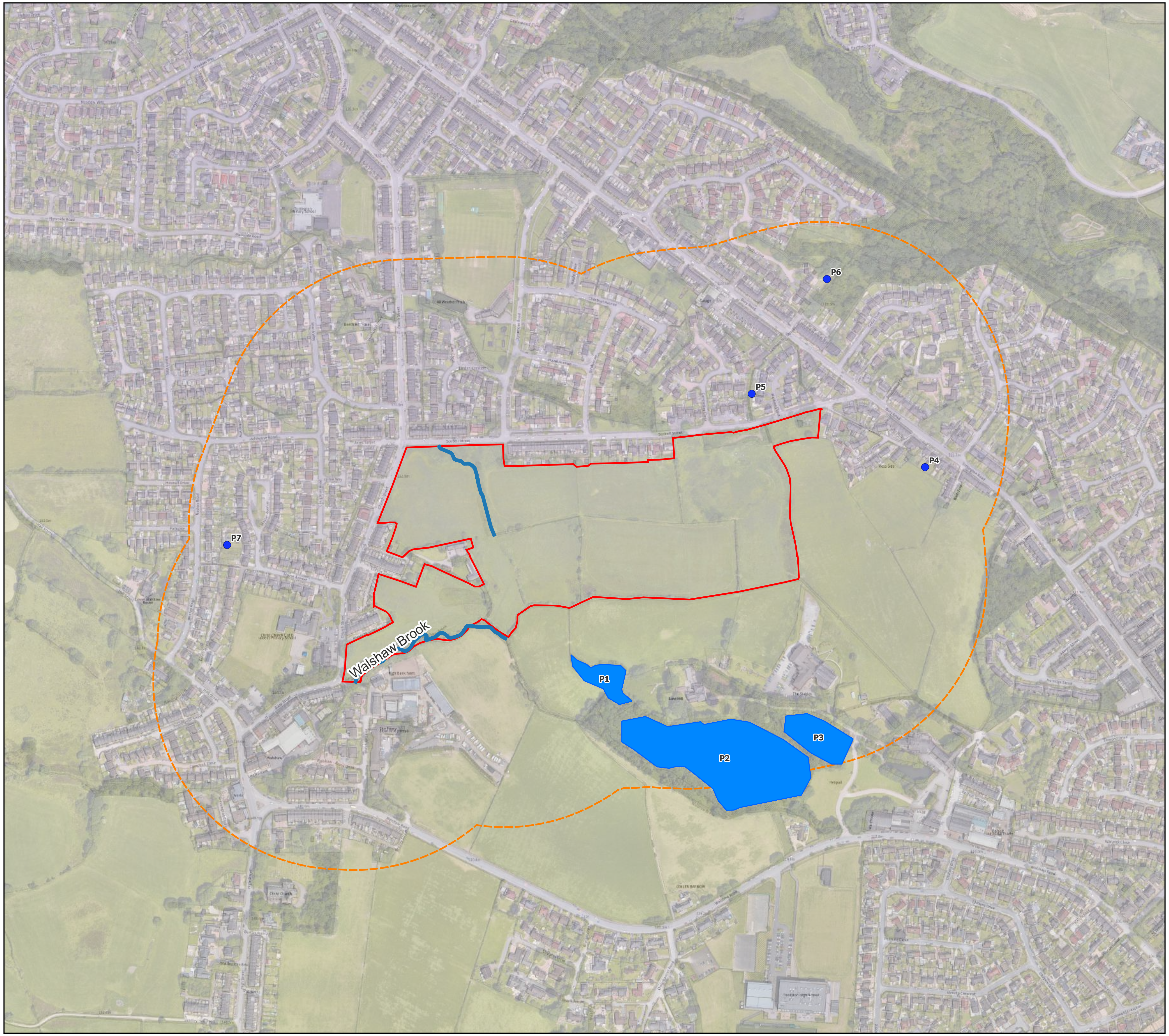

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N

0 100 200 m

Key:

🟥	Site Boundary
▭	250m buffer
🟦	Pond (with reference 1-3)
—	Waterbodies (with reference WB1-2)
●	Pond (with reference 4-7)

date
23/09/24

drwn/chkd
HK / SH

client
Wain Estates

project
Land at Scobell Street
Bury

title
POND LOCATION PLAN

scale
1:5,000 @ A3

number
FIGURE 4

rev
-

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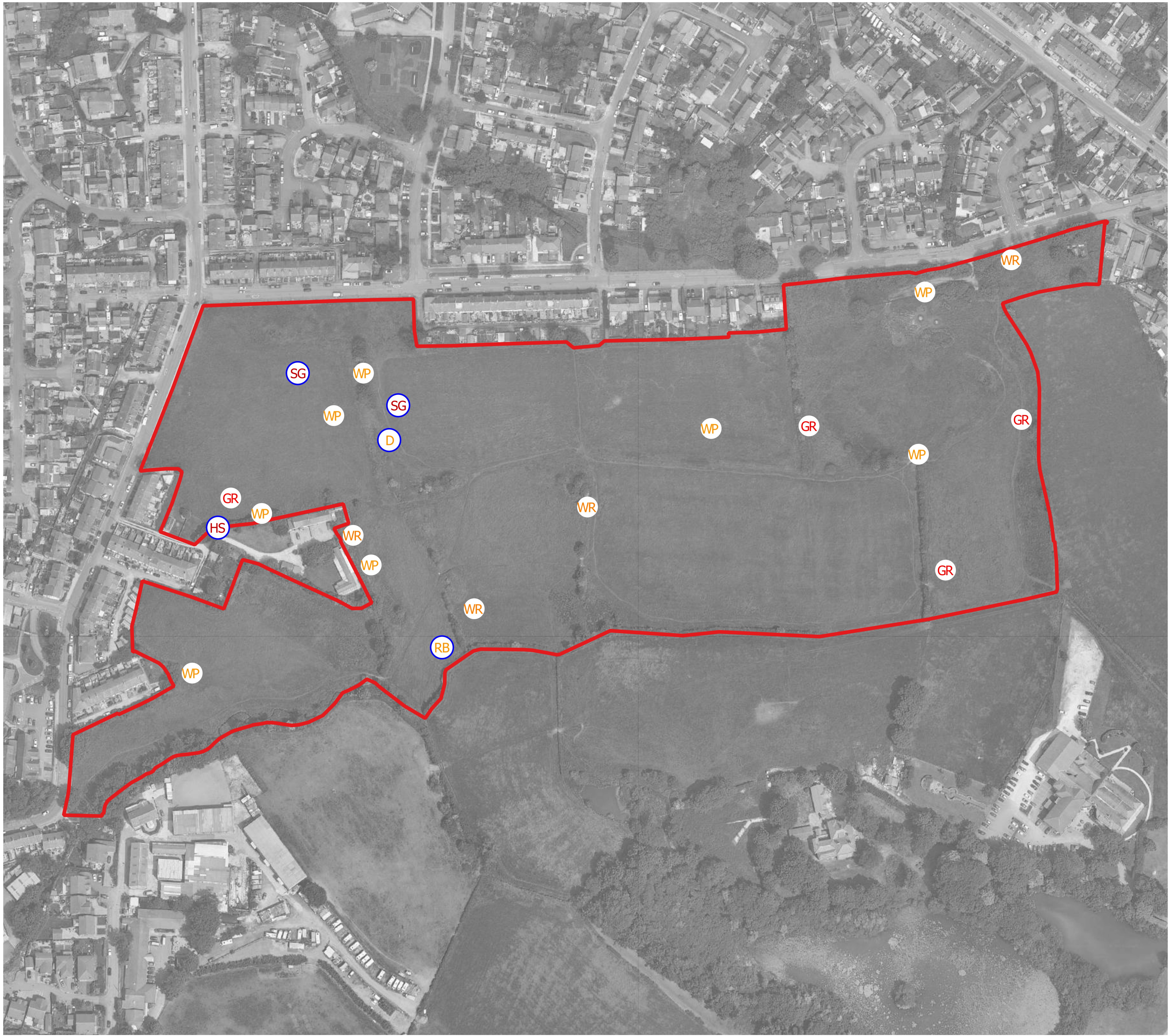

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N

0 50 100 m

□	Site Boundary

BoCC Red List Species

HS	House Sparrow
SG	Starling
GR	Greenfinch

BoCC Amber List Species

D	Dunnock
RB	Reed Bunting
WP	Woodpigeon
WR	Wren

Additional Protections

○	NERC Species of Principal Importance
○	Schedule 1 Species

date	drwn/chkd
24/09/24	ERG

client
Wain Estates

project
Scobell Street,
Bury

title	scale
BREEDING BIRD SURVEY PLAN 09.04.24	1:2,303@ A3

number	rev
FIGURE 5	-

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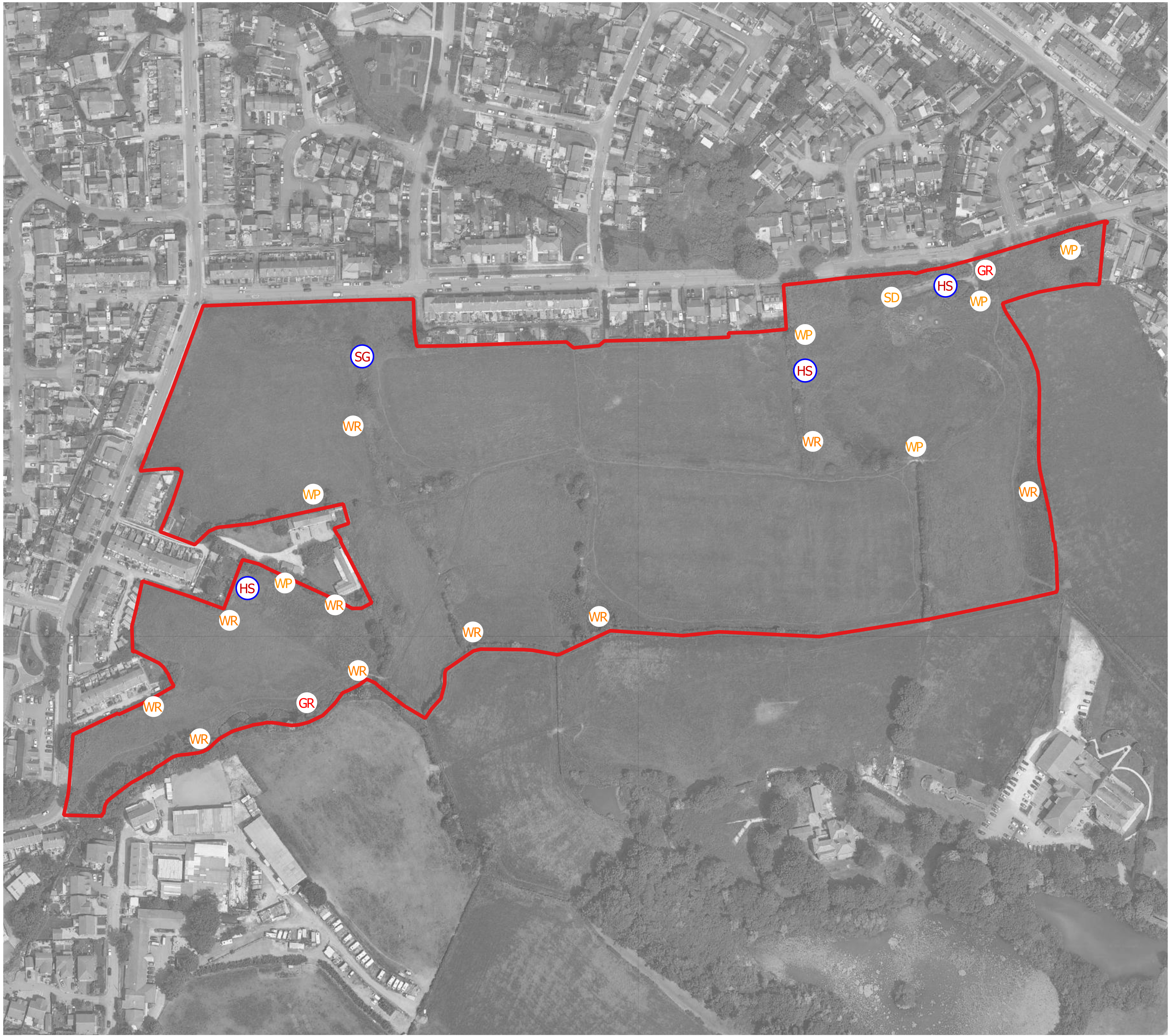

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N

0 50 100 m

🟥 Site Boundary

BoCC Red List Species

HS	House Sparrow
SG	Starling
GR	Greenfinch

BoCC Amber List Species

SD	Stock Dove
WP	Woodpigeon
WR	Wren

Additional Protections

○ NERC Species of Principal Importance

○ Schedule 1 Species

date
24/09/24

drwn/chkd
ERG

client
Wain Estates

project
Scobell Street,
Bury

title
BREEDING BIRD SURVEY PLAN
08.05.24

scale
1:2,303@ A3

number
FIGURE 6

rev
-

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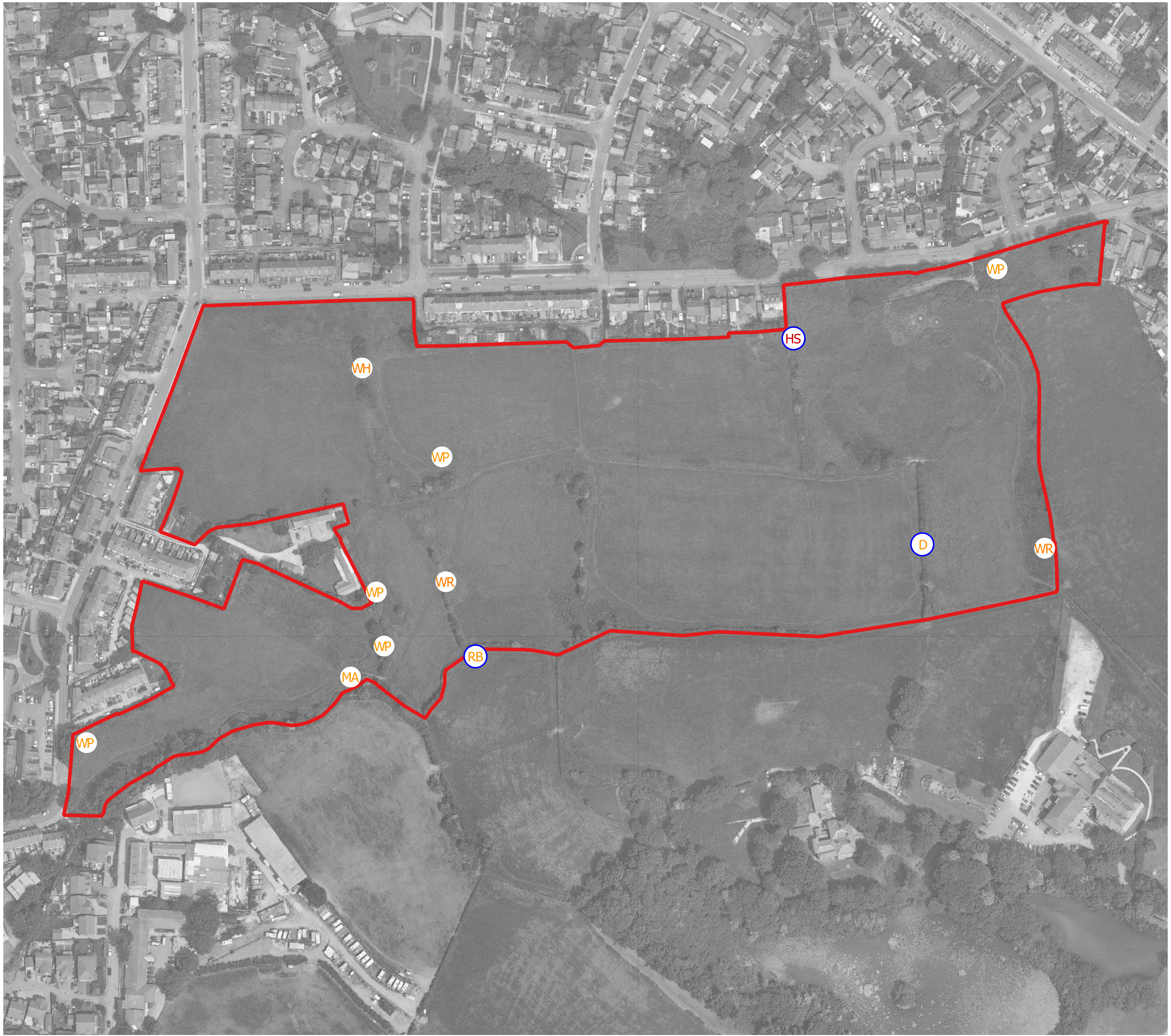

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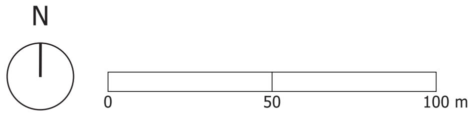

🟥 Site Boundary

BoCC Red List Species

HS	House Sparrow

BoCC Amber List Species

D	Dunnock
MA	Mallard
RB	Reed Bunting
WH	Whitethroat
WP	Woodpigeon
WR	Wren

Additional Protections

○ NERC Species of Principal Importance

○ Schedule 1 Species

date	drwn/chkd
24/09/24	ERG

client
Wain Estates

project
Scobell Street,
Bury

title	scale
BREEDING BIRD SURVEY PLAN 12.06.24	1:2,303@ A3

number	rev
FIGURE 7	**-**

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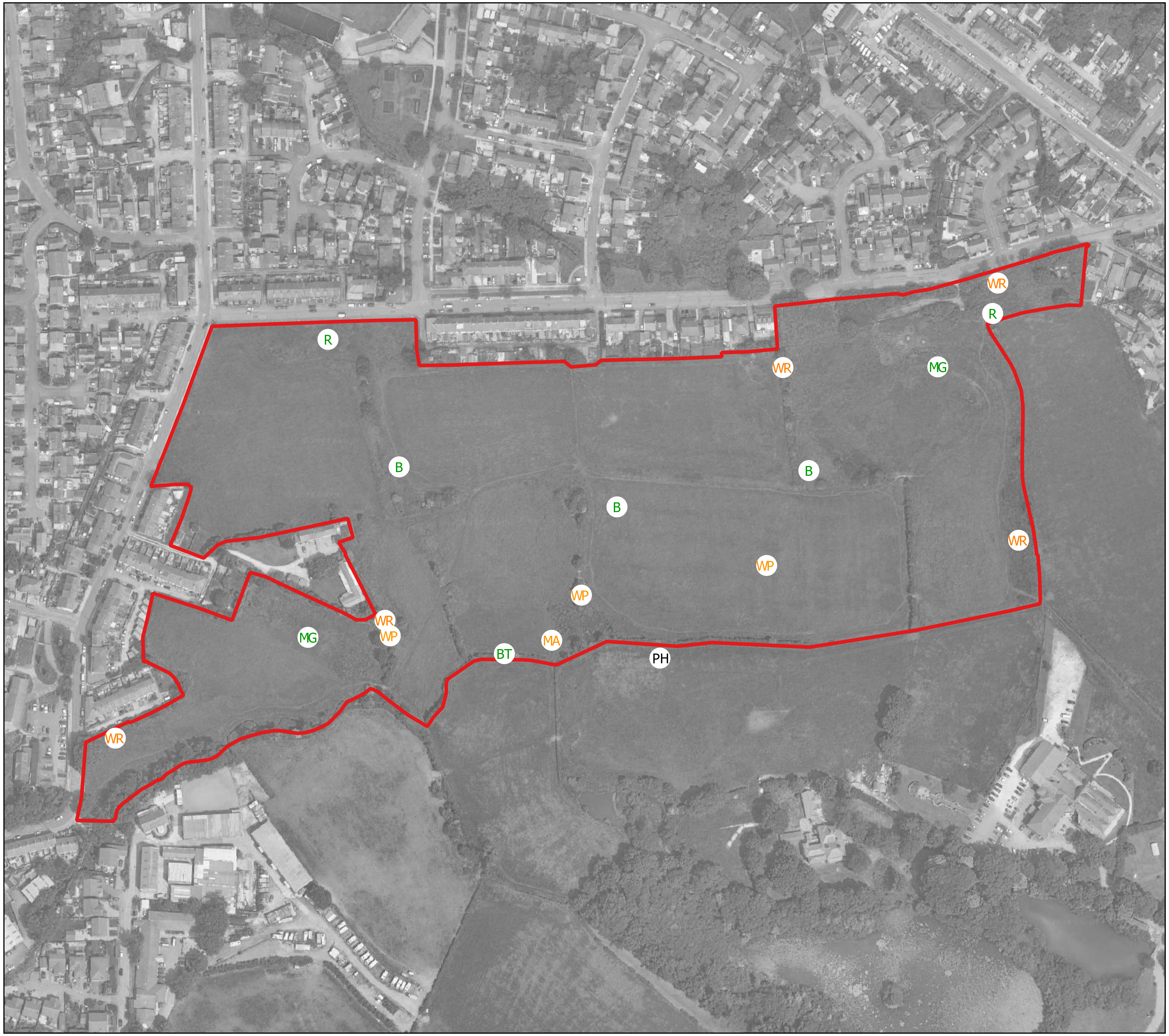

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N

0 50 100 m

Key:

🟥 Site Boundary
B Blackbird
BT Blue Tit
MG Magpie
MA Mallard
PH Pheasant
R Robin
WP Woodpigeon
WR Wren

date 09/10/24
drwn/chkd HK / SH

client
Wain Estates

project
Scobell Street

title
WINTER BIRD SURVEY PLAN 09.01.24

scale 1:2,368 @ A3

number
FIGURE 8

rev -

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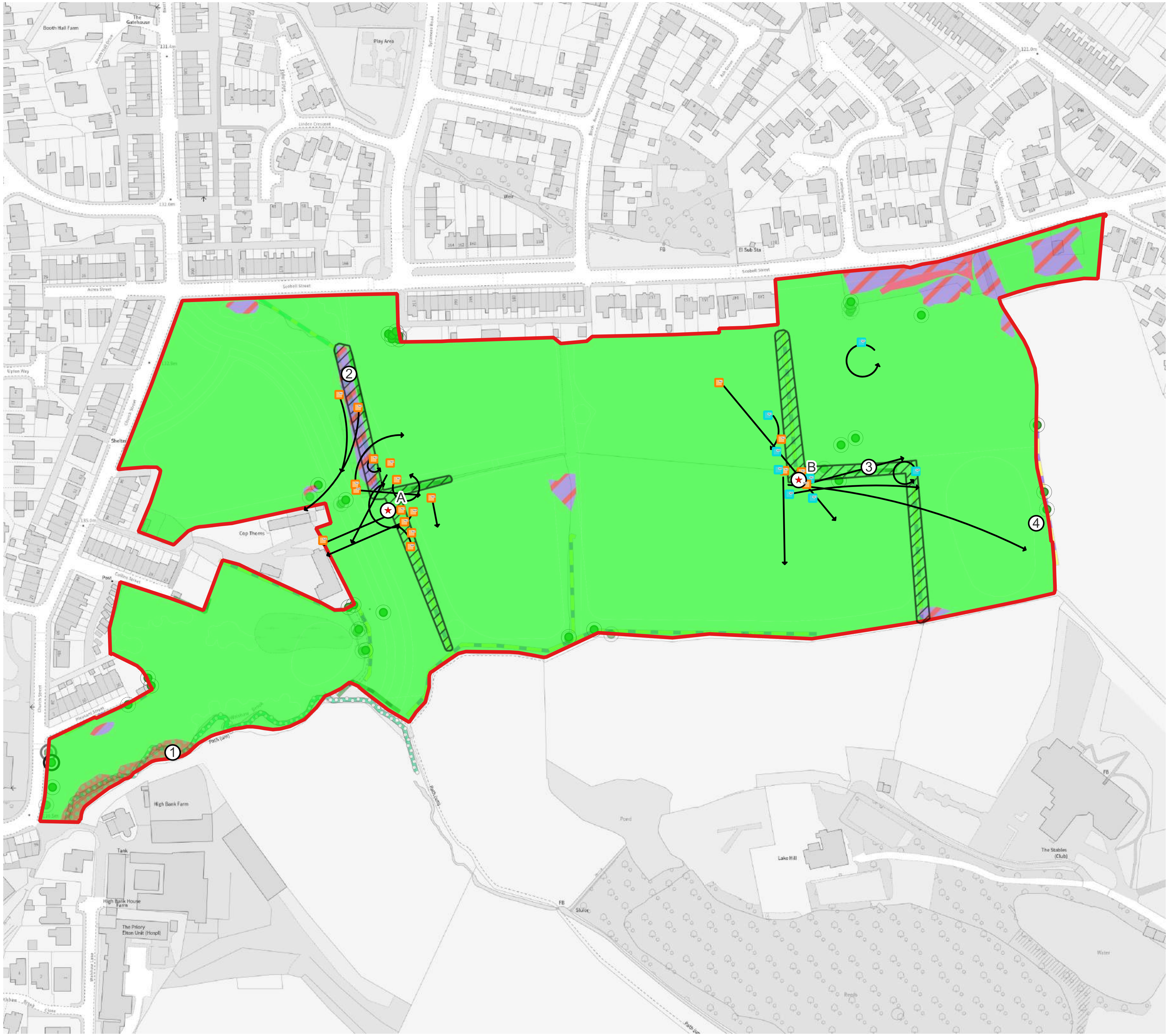
Booth Hall Farm
The Gatehouse
Play Area
Linden Crescent
Weir
FB
El Sub Sta
Scobell Street
Acres Street
Shelter
Cop Thorns
Post
Collins Street
Path (um)
High Bank Farm
Tank
High Bank House Farm
The Priory Elton Unit (Hospl)
Pond
Lake Hill
Sluice
The Stables (Club)
Water
1
2
3
4
A
B

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N

0 50 100 m

Notes:

HABITAT SYMBOLOGY ON FIGURE 2

Key

🟥 Site Boundary
⊛ Flight Line Survey Locations
▨ Communtig Routes
🟧 Common Pipistrelle
🟦 Pipistrelle Species
○ Static Locations

date
17/10/24

drwn/chkd
XXX / XXX

client
Wain Estates

project
Scobell Street
Bury

title
FLIGHT PATH SURVEYS AND
STATIC LOCATIONS PLAN

scale
1:2,250 @ A3

number
FIGURE 9

rev
-

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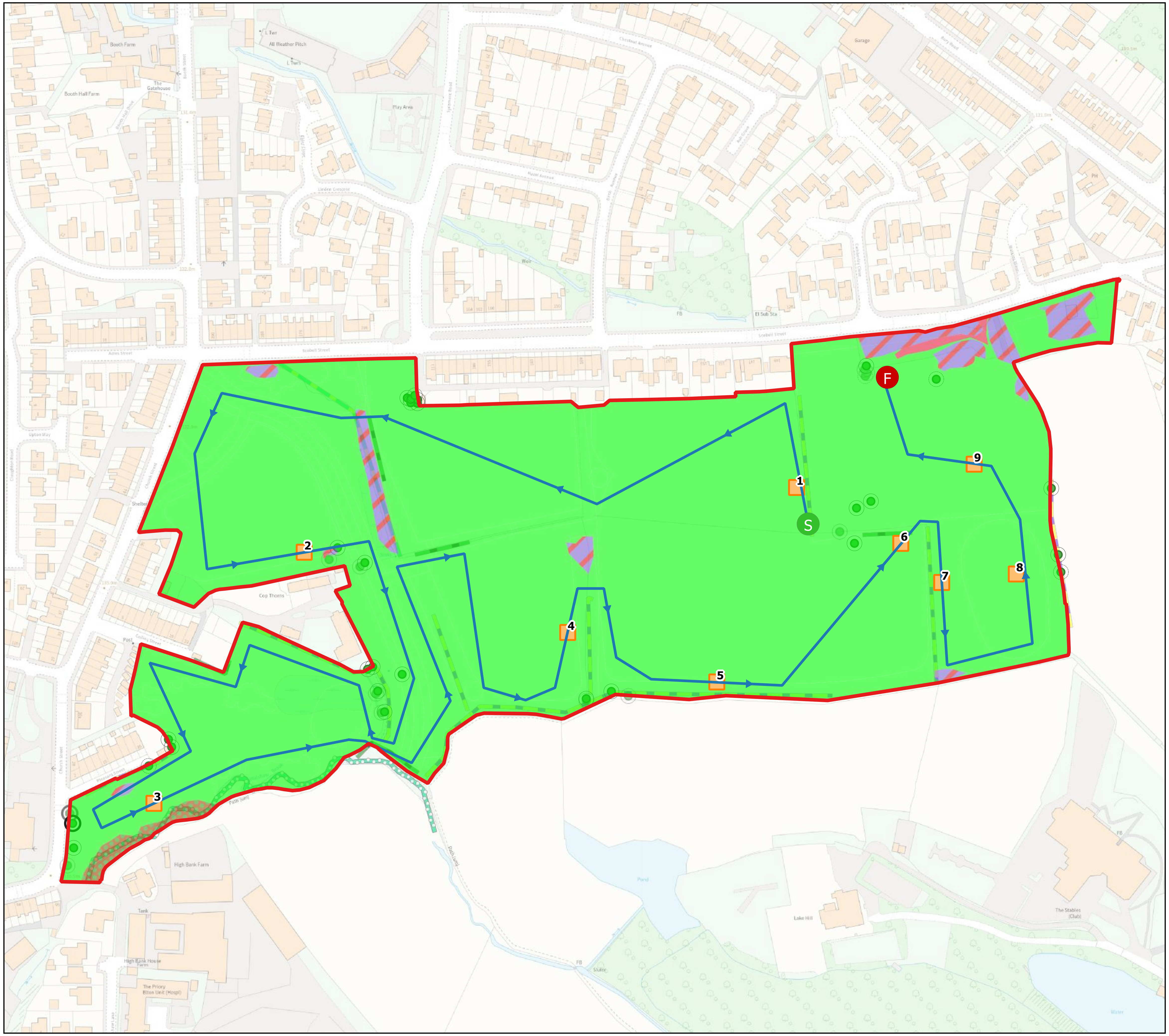

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N

0 50 100 m

Key:

🟥 Site Boundary

S Start point

F Finish point

Transect Route

Flight path

Bat Contacts

🟧 Common Pipistrelle

date
24/09/24

drwn/chkd
HK / SH

client
Wain Estates

project
Scobell Street
Bury

title
Spring Night Time Bat Walkover

scale
1:2,264 @ A3

number
FIGURE 10

rev
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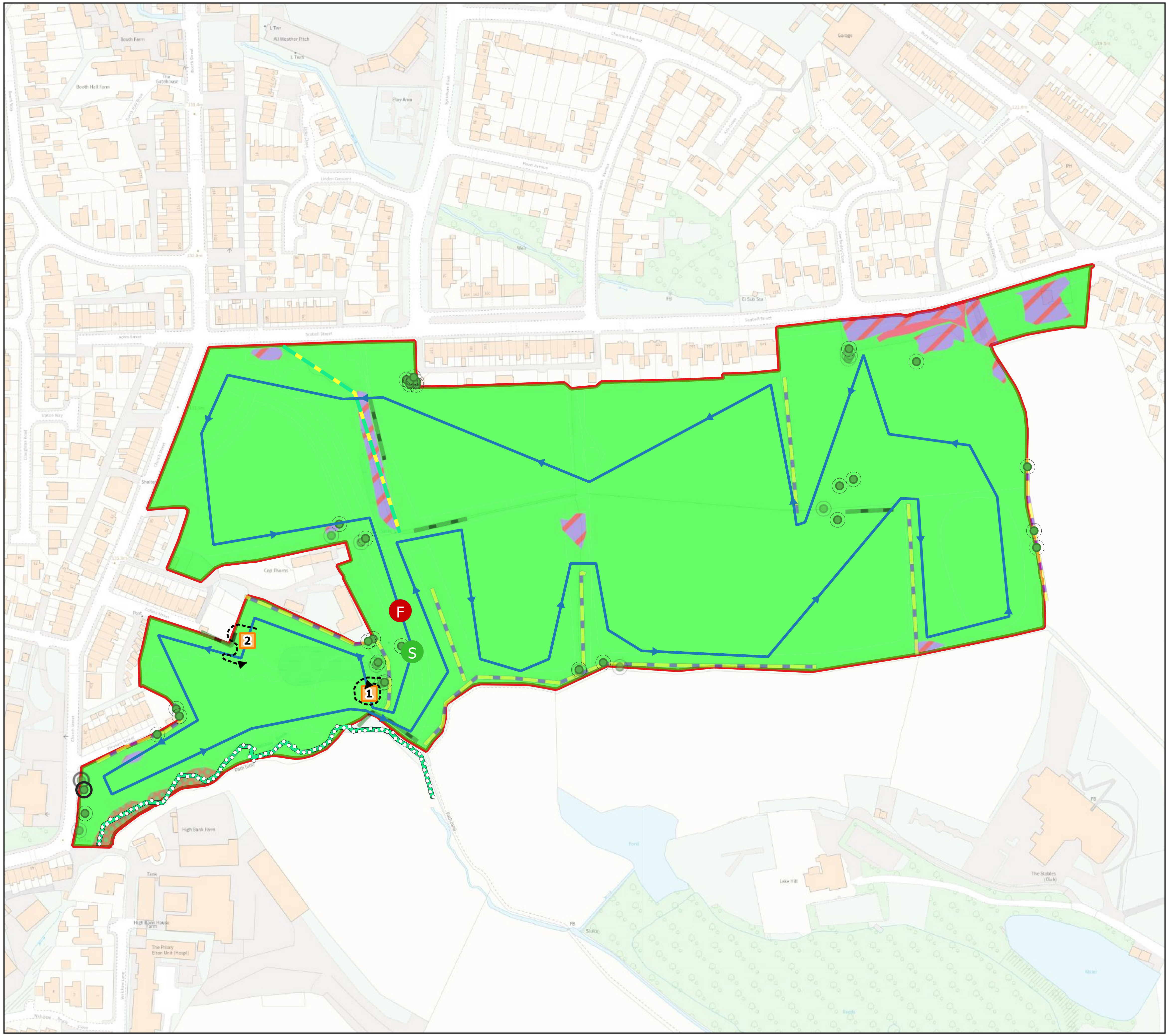
Booth Farm
Booth Hall Farm
The Gatehouse
All Weather Pitch
Play Area
Scobell Street
Cop Thorns
Garage
F
S
1
2
High Bank Farm
High Bank House
The Priory
Pond
Lake Hill
The Stables (Club)

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N

0 50 100 m

Key:

S Start point

F Finish point

Transect Route

Flight path

Bat Contacts

🟧 Common Pipistrelle

date
17/10/24

drwn/chkd
HK / SH

client
Wain Estates

project
Scobell Street
Bury

title
Summer Night Time Bat Walkover

scale
1:2,348 @ A3

number
FIGURE 11

rev
-

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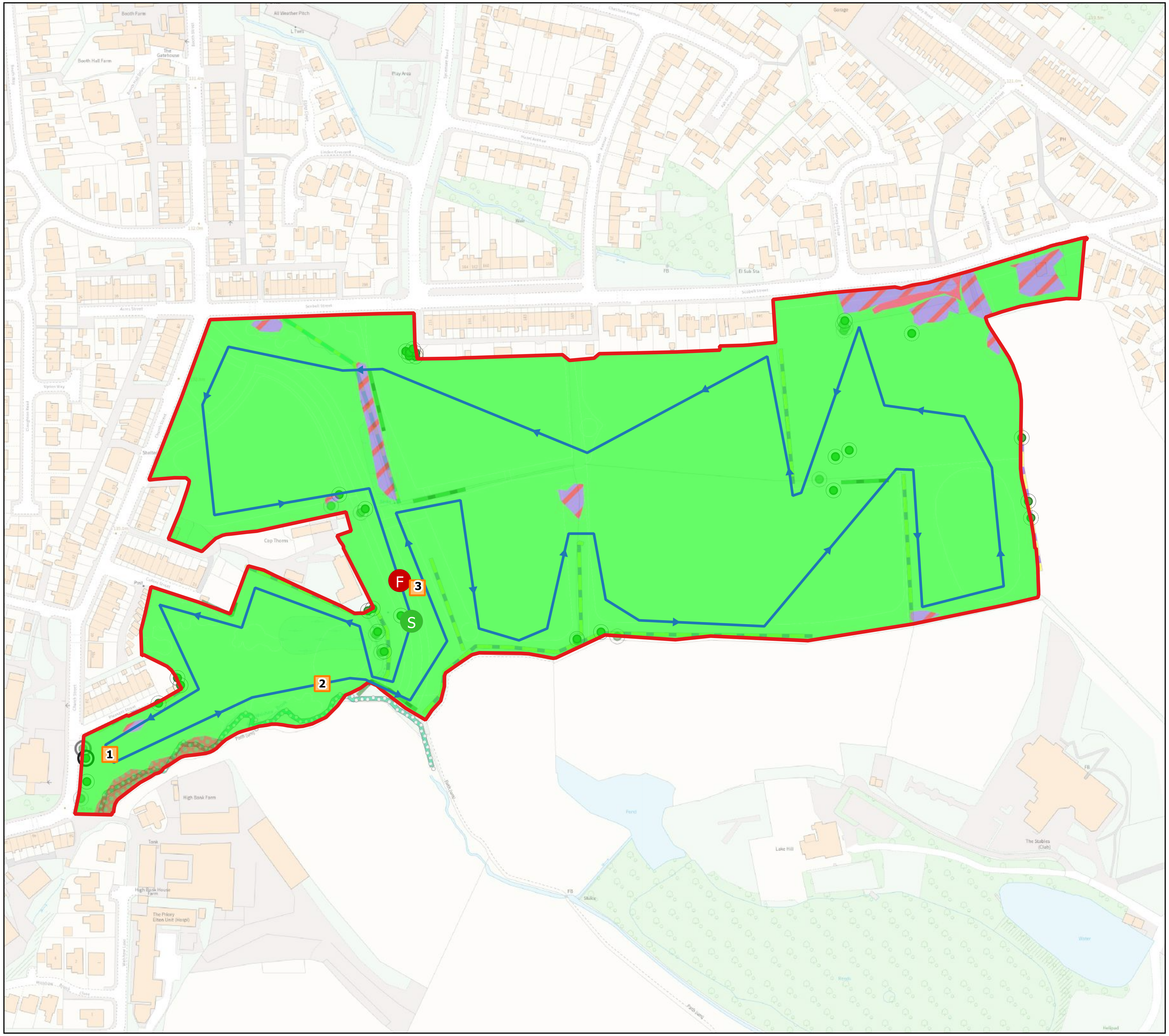
L:\12200\12221\ECO\QGIS\QGIS 2.14\Plans\Bat Figures\12221-E-01 Transect Plan 1 (03.07.24).qgz

t: 01509 672772 e: mail@fpcr.co.uk w: www.fpcr.co.uk



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N

0 50 100 m

Key:

☐ Site Boundary

S Start point

F Finish point

▶ Transect Route

Bat contacts

🟧 Common Pipistrelle

Ref	Time	Species	Behaviour	Passes
1	19:58	Ppi	Foraging	3
2	20:03	Ppi	Foraging	3
3	20:38	Ppi	Unknown	1

date
16/10/24

drwn/chkd
HK / SH

client
Wain Estates

project
Scobell Street
Bury

title
Autumn Transect Plan

scale
1:2,368 @ A3

number
FIGURE 12

rev
-

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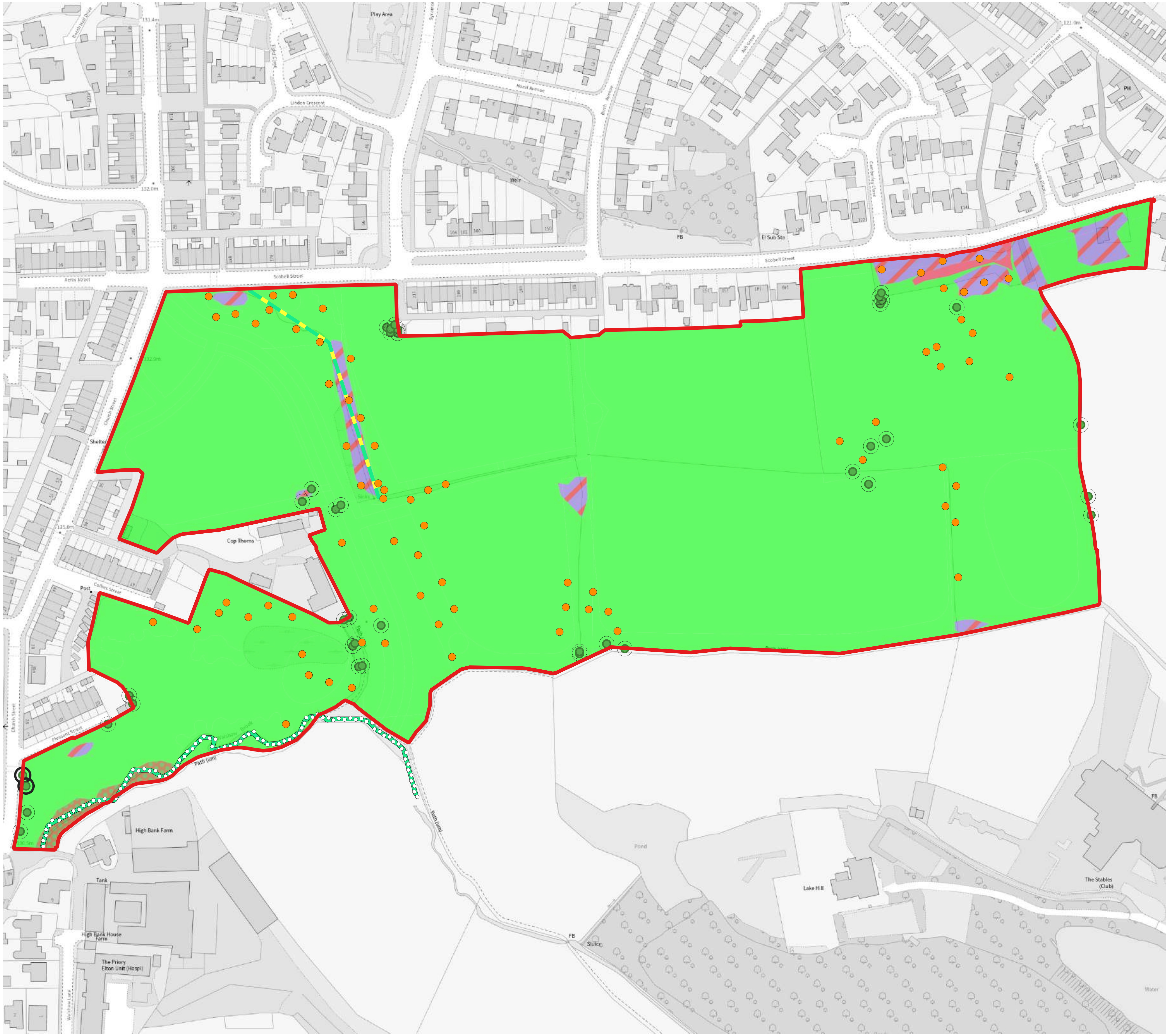
Play Area
Linden Crescent
Mount Avenue
Weir
FB
El Sub Sta
Scobell Street
Acres Street
PH
Shelter
Cop Thorns
Post
Path (um)
High Bank Farm
Tank
High Bank House Farm
The Priory
Elton Unit (Hospl)
Pond
Lake Hill
The Stables (Club)
Sluice
Water

N

0 0.05 0.1 km

Google Satellite

Key

Site Boundary 🟥

Reptile Refugia ●

Please refer to Figure 2 for habitat key.

date
24/09/24

drwn/chkd
BC / SH

client
Wain Estates

project
Scobell Street,
Bury

title
REPTILE REFUGIA LOCATIONS

scale
1:2,103 @ A3

number
FIGURE 13

rev
-

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ECOLOGY
Biodiversity Net Gain Strategy

Client

Wain Estates

Project

Scobell Street,

Bury

Date

December 2024

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Appendix A: Condition Assessment

Appendix B: River condition Assessment Results

Appendix C: River Condition Assessment - Potential Enhancement Areas

Rev	Issue Status	Prepared/Date	Approved/Date
-	Draft	FS/29.10.24	IH / 07.11.24
A		SH / 05/12/24	
B		SH / 11.02.25	IH / 19.02.25

1.0 INTRODUCTION

1.1 This report has been prepared by FPCR Environment and Design Limited on behalf of Wain Estates. It provides ecological baseline information for a Site at Scobell Street, Bury (Central grid reference SD780120).

1.2 This report details the results of an UKHab Survey which was used to establish the pre-development biodiversity value of the Site. The report goes on to provide an illustrative Biodiversity Net Gain Calculation in order to demonstrate that the delivery of a 10% net gain is feasible for the project. The calculation is based on the Development Framework plan (12221-FPCR-XX-XX-DR-A-0001-P06). The report outlines a realistic and deliverable series of habitat creation and enhancement measures based on the Development Framework Plan, which could contribute towards the delivery a 10% gain in Biodiversity Value.

1.3 The Calculations provided in this report are indicative, with the final biodiversity net gain being secured by condition on any planning permission.

Site Context

1.4 The Site comprises approximately 11.3ha of grassland fields with scrub, hedgerows, trees, woodland and two watercourses. To the north and west of the Site are the residential areas of Tottington and Walshaw. To the east and south of the Site is open countryside leading to further residential development.

Development Proposals

1.5 The proposals are for an outline planning application for a residential development of up to 275 dwellings with associated infrastructure and landscaping.

Legislative and Policy Context

1.6 In England, biodiversity net gain is now required under statutory frameworks introduced by Schedule 7A of the Town and Country Planning Act 1990 (inserted by the Environment Act 2021). Under this framework, every grant of planning permission will be deemed to have been granted subject to a general biodiversity gain condition. This will require an objective for developments to deliver at least a 10% increase in biodiversity value relative to the pre-development biodiversity value of all onsite habitats.

1.7 The Greater Manchester Combined Authority Local Plan adopted 21/3/24[1] requires net gains in biodiversity as per Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity, which is provided in Table 1 below.

---

[1] https://www.greatermanchester-ca.gov.uk/media/9578/places-for-everyone-joint-development-plan-document.pdf. [Accessed on 30.09.24]

Table 1: Policy JP-G8:

Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity

Through local planning and associated activities a net enhancement of biodiversity resources will be sought, including, where relevant, by:

1. Increasing the quality, quantity, extent and diversity of habitats, particularly priority habitats identified in national or local biodiversity action plans and those that support priority species;

2. Improving connections between habitats, to protect and enhance the provision of corridors, ecological networks (including Nature Recovery Networks) and steppingstones that enable the movement of species, especially as the climate changes;
3. Enhancing the management of existing habitats, including through habitat restoration, avoiding habitat fragmentation and combating invasive species;

4. Protecting sites designated for their nature conservation and/or geological importance, with the highest level of protection given to international and then national designations;

5. Facilitating greater access to nature, particularly within urban areas;

6. Supporting the development and implementation of the Great Manchester Wetlands Nature Recovery Network; and

7. Safeguarding, restoring and sustainably managing our most valuable soil resources, tackling soil degradation/erosion and recovering soil fertility, Places for Everyone Joint Development Plan 2022 to 2039 Version presented to Council meetings for Adoption with effect from 21 March 2024 180 particularly to ensure protection of peat-based soils and safeguard 'best and most versatile' agricultural land.

Development will be expected to:

a. Follow the mitigation hierarchy of:

i. Avoiding significant harm to biodiversity, particularly where it is irreplaceable, through consideration of alternative sites with less harmful impacts, then
ii. Adequately mitigating any harm to biodiversity, then
iii. Adequately compensating for any remaining harm to biodiversity

b. Avoid fragmenting or severing connectivity between habitats;
c. Achieve a measurable net gain in biodiversity of no less than 10%
d. Make appropriate provision for long-term management of habitats and geological features connected to the development;
e. Where appropriate, development should: mitigate air pollution impacts on Manchester Mosses SAC; mitigate urban edge, functionally linked land and recreation disturbance impacts on the South Pennine Moors SAC/SPAs; and assess and potentially mitigate boat movement, water pollution, and light spillage and shading impacts on the Rochdale Canal SAC; and
f. Development proposals should be informed by the findings and recommendations of the appropriate biodiversity/ecological assessment(s) in the PfE evidence base and/or any updated or appropriate biodiversity/ecological assessments submitted as part of the planning application process. Consistent with the biodiversity of the site and contribute to the resilience and coherence of local ecological networks.

2.0 METHODOLGY

Field Survey – Baseline Habitat

2.1 Baseline habitats were initially identified and mapped by broadly following the UKHab Classification system[2], with minor departures from this methodology to allow for compatibility with the Defra metric where applicable. The survey comprised a walkover of the site, mapping the principal habitat types present and identifying a representative species list for each habitat along with additional notes regarding the current as per the Statutory Metric User Guide[6.] The survey was undertaken in May 2024 by a suitably experienced ecologist.

Biodiversity Net Gain Calculation

2.2 The biodiversity net gain metric is an MS Excel spreadsheet that is used to quantify the predicted net-change in biodiversity value ("biodiversity units") of a proposed development site before and after development. It treats the area-based habitats and linear features such as hedgerows and lines of trees separately, and is based on pre-determined values, along with published written guidance set by a Natural England-led team of experts. The Statutory Metric was used for this assessment.

2.3 The development Site was surveyed and mapped, as described above. Habitats were defined using the UK Habitat Classification, with each habitat parcel described by its location, area, distinctiveness and condition. This information was then imported into Statutory Biodiversity Metric QGIS Template, with the existing habitats identified and areas automatically generated.

2.4 On-site post-development habitats were determined from the Development Framework plan (12221-FPCR-XX-XX-DR-A-0001-P06), with proposed habitats mapped and digitised into the Statutory Biodiversity Metric QGIS Template to generate areas for each of the habitats proposed for enhancement.

2.5 These pre- and post-enhancement habitat areas were then inputted into the Statutory Metric Calculation tool. The metric then provides a habitat distinctiveness score for each of the baseline and proposed habitats which are pre-assigned scores based on the habitat type.

2.6 The metric then assigns a range of pre-assigned factors to each of the proposed habitats. These have been advised by subject knowledge experts and are universal multipliers generated by the metric itself for the following variables relevant to habitat creation, enhancement or restoration proposals:

- difficultly of creating or restoring/enhancing a habitat: This pre-assigned score is based on how difficult a particular habitat type is to create or restore/enhance.
- temporal risk: this is the 'time to target condition' for any particular habitat and determines how long a particular habitat type is likely to take to reach the condition score that the desired condition score assigned to it.

---

[2] UKHab Ltd. (2023). UK Habitat Classification Version 2.0 at https://www.ukhab.org

[6] The Statutory Biodiversity Metric User Guide. DEFRA available at: https://assets.publishing.service.gov.uk/media/65c60e0514b83c000ca715f3/The_Statutory_Biodiversity_Metric_-_User_Guide_.pdf

- spatial risk: this score is based on the distance between the site of habitat loss and any habitats creation or enhancement proposals at any offsite offsetting solutions.

2.7 Full details of the calculation methodology are provided in Statutory Biodiversity Metric – User Guide.

3.0 BIODIVERSITY IMPACT ASSESSMENT

Strategic Significance

3.1 There are three levels of strategic significance:

- Highly strategically significant ('formally identified in local strategy') – pre and post development habitats are subject to a 15% multiplier;
- Medium strategic significance (Location Ecologically Desirable but not in Local strategy) - pre and post development habitats are subject to a 10% multiplier; and,
- Low strategic significance (Area not in local strategy) – No multiplier.

3.2 The Local Nature Recovery Strategy (LNRS) for the area, which is the relevant strategic policy which would define strategic significance, is yet to be published. Prior to the publication of the LNRS, strategic significance is determined by existing strategic biodiversity policies and the position of the Site in relation to designated site for biodiversity.

3.3 The Site lies approximately 280m north of Kirklees Valey Local Nature Reserve. Habitats present include; woodland, grassland, heathland, ponds, lodges and streams. The area between the Site Kirklees Valey Local Nature Reserve is fragmented by residential development. No priority habitats or designated sites are identified within the immediate surrounding of the Site. No additional information has been identified within the supplementary planning documents on the protecting of the habitats identified on site. Therefore, all habitats are considered to be of low strategic significance.

Existing Habitats

3.4 Figure 1 and Table 2 & 3 shows the baseline habitats recorded during the survey, together with the parcel reference codes, with Figure 4 showing the Baseline habitat distinctiveness and condition.

Table 2: Baseline Area habitats

Parcel	Habitat	Description	Condition	Distinctiveness
MG1,MG2, MG3,MG4, MG5.MG6.	Modified Grassland	Modified grassland (MG) was the most dominant habitat on Site. Six areas of MG were identified. All MG parcels were not subject to any grazing at the time of the survey. MG parcels 1, 2 and 4 had a varied sward height with good structural diversity. All areas are of low distinctiveness and are species poor, generally comprising an average of less than 5 species per m2. All six areas were in 'poor' condition at the time of surveying	Poor	Low
MS1 & MS3	Mixed Scrub	MS1 appeared to be an outgrown hedgerow between compartments of MG. Species comprised English oak *Quercus robur*, hawthorn *Crataegus monogyna*, wild cherry *Prunus avium* and holly *Ilex aquifolium*. Mixed scrub 3, located on the northern boundary of the Site, was dense and unmanaged. Species comprised blackthorn *Prunus spinosa* crack willow *Salix fragilis*, goat willow *Salix caprea*, hazel *Corylus avellana* and holly. Area MS1 and MS3 were considered to be in 'poor' condition failing on 3 of the five criteria	Poor	Medium
MS2	Mixed Scrub	Mixed scrub 2 was a group of self set elder *Sambucus nigra*, hawthorn and holly. MS2 was considered to be in moderate condition failing on two criteria.	Moderate	Medium
WS1	Willow Scrub	Willow scrub area 1 mainly comprised of goat willow with crack willow, ash, hawthorn and holly. This was located in the north eastern corner of the Site. WS1 was considered to be in moderate condition failing on two criteria.	Moderate	Medium
WS2	Willow Scrub	Willow scrub area 2 comprised self set crack willow and goat willow. WS1 was considered to be in poor condition failing on three criteria.	Poor	Medium
BS1,BS2, BS3, BS4&BS5	Bramble Scrub	Five areas of bramble dominated scrub were located in the northern half of the Site. The first area was a small patch located on the north western boundary adjacent to Scobell Street. A second linear area ran along the watercourse running north to south across the Site. A small bramble patch was present next to T1 and a further patch was located in the south west corner near to pleasant Street. The final larger patch was present in the norther eastern corner of the Site. The condition of bramble scrub is fixed within the matrix and therefore not required.	N/A	Medium

Parcel	Habitat	Description	Condition	Distinctiveness
W1	Other Woodland Mixed	The canopy layer was dominated by sycamore with abundant conifer species and frequent hawthorn and ash. Hawthorn was present as a frequent understory species with elm Ulmus minor being rare. Sycamore was the only species present as young trees. The Schedule 9 invasive species (INNS) Himalayan balsam *Impatiens glandulifera* was present in the ground flora layer. The woodland returned a condition score of 'poor', scoring poorly on age structure, presence of invasive plant species, species richness, regeneration, vegetation and ground flora and veteran trees.	Poor	Medium
U1	Bare ground	An area of bare ground in the form of an access track was present in the north east of the Site. U1 was considered to be in poor condition failing on four criteria.	Poor	Low
T1, T3-T4, T7-T9, T11 , T12, T27 &T28	Individual rural tree	The Site supports several individual trees, the majority of which were recorded within the hedgerows, although a number of freestanding trees were noted.	Good	Medium
T5,T6 ,T13-T16 ,T18,-T29	Individual rural tree	The Site supports several individual trees, the majority of which were recorded within the hedgerows, although a number of freestanding trees were noted.	Moderate	Medium

Table 3: Baseline Linear Habitats

Parcel	Habitat	Description	Condition	Distinctiveness
D1	Ditch	The ditch is approximately 1.5m wide at the widest point with bank depth of approximately 0.5m. At some points the modified grassland floodplain was level with the ditch with no bank present. The ditch substrate was large rocks and pebbles with some earth. Some marginal vegetation was present. The ditch flowed through scrub and adjacent to a line of trees which provided the ditch with significant shade. D1 was considered to be in poor condition failing on three criteria.	Poor	Medium
H3	Native hedgerow	All hedgerows are considered to be relatively species poor, characterised by an abundance of hawthorn along with elder, Sycamore, sessile oak Quercus petraea, ash, rowan Sorbus aucuparia, holly and hazel Corylus avellana.	Moderate	Low
H1 , H2 , H4 – H9	Native hedgerow	All hedgerows are considered to be relatively species poor, characterised by an abundance of hawthorn along with elder, Sycamore, sessile oak Quercus petraea, ash, rowan Sorbus aucuparia, holly and hazel Corylus avellana.	Good	Low

Parcel	Habitat	Description	Condition	Distinctiveness
LT1 – LT3 & LT5	Line of trees	These were situated between compartments of MG. LT 1 was located on the southern Site boundary and comprised elder English oak, hawthorn, sycamore and holly. Lt 2 was located adjacent to a large area of bramble scrub and close to the onsite ditch. It comprised of elder, hawthorn, holly and wild cherry. LT 3 was possible a remnant of a hedgerow present on an internal field boundary, it comprised of elder hawthorn and holly. LT 5 was a line of semi-mature and young plum *Prunus domestica* trees was located south-west of hedgerow H8	Moderate	Low
Line of trees associated with bank or ditch	LT4	Potential remnant of a hedgerow and comprised elder hawthorn and wild cherry.	Moderate	Low
Walshaw Brook	Other river and stream	Measured <5m wide with a survey length of approximately 250m for the redline boundary. This resulted in 1 sub-reach being surveyed for each watercourse with 5 x 10m modules (MoRPh5). These surveys were undertaken from a mix of the right and left banks. Walshaw brook desk study identified as "other river and stream' (type C) Overall, the watercourse scored well for its bank face features which includes tree feature richness, natural bank profile extent and natural bank profile richness. Additionally, the channel bed had well scoring areas of; tree feature richness and channel bed material richness. Low scoring areas for the length of the watercourse were invasive species throughout the watercourse and bank top managed ground cover. The results of the RCA survey assessed that Walshaw Brook is in fairly poor condition. However, was considered to be over deep. Therefore, has been downgraded from fairly poor to poor condition. See Appendix B for results.	Poor	High

Baseline Habitat Value

3.5 The baseline value of the Site has been calculated at 26.27 area habitat units, 1.03 watercourse units and 5.67 hedgerow units. Therefore, a total of 28.89 habitat units, 1.13 watercourse units and 6.24 hedgerow units will be required to deliver a 10% net gain within the Site. Note: a 10% gain will need to be provided for the habitat and linear units separately, i.e., a gain in hedgerow units cannot be used to offset a deficit in habitat units.

4.0 PROPOSED HABITATS

4.1 The proposals are an outline application for a residential development of up to 275 dwellings with associated infrastructure and landscaping.

Habitat Retention

4.2 Figure 3 shows the habitat retention plan. The majority of the area-based habitats are to be lost to proposals, with the habitat principally comprising of are low distinctiveness - modified grassland habitat in poor condition. The exceptions are the proposed meadow area to the south west and some marginal area habitats which are to be retained and enhanced as part of proposals.

4.3 Additionally, five individual trees, two native hedgerows, one line of trees and another line of trees associated with bank or ditch will be lost to facilitate the development.

Habitat Creation and Enhancement

4.4 The habitats proposed are shown in Figure 3 with the proposed habitat distinctiveness and condition shown on Figure 4. The proposed habitat classification and condition have been interpreted from the Development Framework plan (12221-FPCR-XX-XX-DR-A-0001-P06), with assumptions made where necessary.

4.5 Tables 4 and 5 set out the outline details of the proposed habitats within the development together with their target conditions. Habitat creation and ongoing management prescriptions are outlined to demonstrate how target habitat type and condition could be achieved through the management period, with the implementation of a detailed biodiversity management plan, to be secured by condition.

Table 4: Proposed area-based habitats

Habitat	**Outline Habitat Creation and management prescriptions**	Target Condition
Other neutral grassland	Other Neutral Grassland in good condition is proposed within the large area of Public open space to the south-west and around the SUDS basin to the south-east. The existing grasslands will be cut hard in September/October then raked or harrowed expose >60% bare earth. The grasslands will then be seeded with a wildflower rich seed mix. The wildflower mix should include yellow rattle, which will control excessive grass growth. On-going management will involve a single cut after flowering in July (with late June-August acceptable), removing arisings after they have dried. Once every four years cut the grassland in September to allow late flowering species to set seed. If grass growth is vigorous a second cut may be required in late autumn early summer. In order to target good condition, 20% of the grassland should be left unmown each year on-rotation to introduce structural diversity into the sward. Soil nutrient testing is recommended to ensure the target habitat and condition is achievable in this area and to inform the seed mix used in creation.	Good
Other neutral grassland	The remaining areas of Other Neutral Grassland within the Site are anticipated to receive greater degree of recreational use and unmown and as such moderate condition is targeted. Prescriptions will follow those outlined above, without the requirement to leave 20% of the sward unmown.	Moderate

Habitat	**Outline Habitat Creation and management prescriptions**	Target Condition
Mixed scrub	New scrub should be planted between October and March, avoiding periods of inundation or prolonged ground frost. The overriding principles being the creation of a structurally diverse scrub community. The woody species mix will incorporate a range of locally native scrub species planting at variable densities. Ongoing management should aim to limit growth of pernicious weeds and periodic felling / coppicing to ensure mixture of age classes. Annual – biennial strimming of edges to limit scrub encroachment and encourage botanical diversity	Moderate
Modified grassland	The formal grassland areas bordering the major road routes have been targeted as modified grassland in moderate condition. This is equivalent to a 'flowering lawn' a grassland which responds well to regular mowing, but with increased species diversity which is left unmown for 6-8 weeks in spring to allow flowering. These areas will be seeded using a flowering lawn mix, such as Emorsgate EL1 - flowering lawn mix that responds well to regular mowing. The grassland can be mown as usual during the growing season, with mowing relaxed for two months during May-June to allow flowering.	Moderate
Sustainable drainage system	Provisionally the SUDS basins have been targeted in moderate condition, which requires the planting of suitable wetland and/or riparian species, with a varied vegetation structure. The details of the detailed drainage strategy may allow for either the creation of permanent standing water or an area of wet grassland, which will be of great biodiversity value.	Moderate
Rural trees	The Development framework plan currently accounts for the planting of 87 new trees, although it is expected that this number will increase with the detailed design. The trees have been assumed to be native species which allows moderate condition to be targeted.	Moderate
Artificial unvegetated, unsealed surface	Creation of a play areas	N/A
Built linear Feature	The proposed major roads have been mapped as built linear features, which have no biodiversity value.	
Developed land; sealed surface	As the proposed development is an outline application, the development plots have been mapped as 'Developed land; sealed surface', but entered into the metric as 70% developed land and 30% vegetated garden, ln line with the metric guidance.	N/A

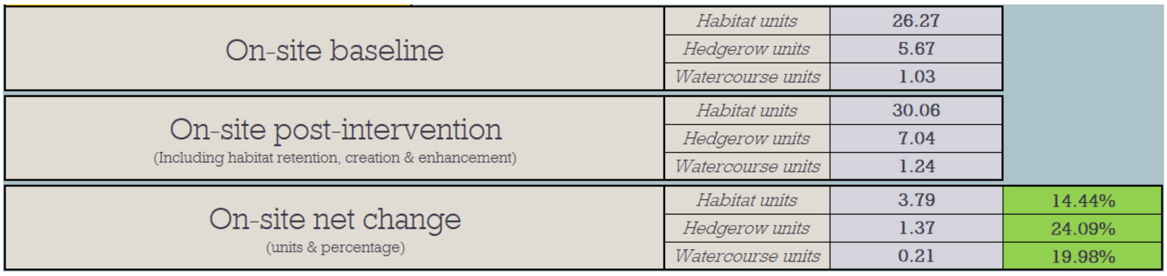
Table 5: Proposed linear-based habitats

Habitat	Outline Habitat Creation and management prescriptions	Target Condition
Enhancement		
Species rich native hedgerow	The calculations have accounted for the existing native hedgerows to be enhanced to species rich native hedgerows, through the laying and replanting of additional native woody species. Management should allow for hedgerow growth of at least 1.5m in height and width. At least 1m of ground cover either side of the hedgerow should remain undisturbed, and hedgerow cutting should only occur where absolutely necessary.	Good - moderate

Habitat	Outline Habitat Creation and management prescriptions	Target Condition
Other river and stream	Low scoring areas for the length of the watercourse were invasive species throughout the watercourse and bank top managed ground cover. Enhancement of Walshaw brook would be to enhance specific low scoring features. For this exercise the following areas have be targeted for enhancement, bank top vegetation structure, bank face riparian vegetation structure and bank top and bank face invasive species cover. Please see appendix C for specified RCA potential enhancement areas.	Fairly poor
Ditch	Retained ditch will be enhanced by improving riparian encroachment through the creation of medium distinctiveness grassland within 5m of the bank top. A new length of ditch in poor condition is proposed to be created at the southern extent of the Site.	Poor

5.0 BIODIVERSITY NET GAIN CALCULATION

5.1 The Statutory metric for the project is attached, with the headline summary results given below.



On-site baseline	Habitat units	26.27	
	Hedgerow units	5.67	
	Watercourse units	1.03	
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	30.06	
	Hedgerow units	7.04	
	Watercourse units	1.24	
On-site net change (units & percentage)	Habitat units	3.79	14.44%
	Hedgerow units	1.37	24.09%
	Watercourse units	0.21	19.98%

5.2 On-site post intervention consists of 30.08 habitat units, 7.04 hedgerow units and 1.24 watercourse units. As such, the development will result in a 14.44% gain in habitat unit, 24.09% hedgerow gain and 19.98% watercourse gain.

Habitat Trading

5.3 The habitats to be lost – bramble scrub, mixed scrub, modified grassland, bare ground, willow scrub, individual trees, native hedgerow and line of trees associated with bank or ditch - are of medium to low distinctiveness. The proposed habitat creation and enhancement adequately compensate for these losses and as such the trading rules have been met.

Table 6: Trading summary

Trading Summary for habitats		
Distinctiveness Group	Trading Rule	Trading Satisfied?
Very High	Bespoke compensation likely to be required	Yes
High	Same habitat required	Yes
Medium	Same broad habitat or a higher distinctiveness habitat required	Yes
Low	Same distinctiveness or better habitat required	Yes

6.0 CONCLUSION

6.1 Baseline habitats were identified, mapped using the UKHab Classification system during surveys in May 2024 (Figure 1). Condition Assessments were undertaken, based on condition criteria as set out in the Statutory Biodiversity Metric User Guide. An illustrative Biodiversity Net Gain calculation was then completed for the Site, using the Statutory Biodiversity Metric. Post-development habitats were interpreted from the Development Framework plan (12221-FPCR-XX-XX-DR-A-0001-P06), with realistic and deliverable habitat creation and enhancement measures proposed.

6.2 The baseline value of the Site has been calculated at 26.27 area habitat units, 1.03 watercourse units and 5.67 hedgerow units. On-site post intervention consists of 30.08 habitat units, 7.04 hedgerow units and 1.24 watercourse units. As such, the development is capable of delivering a 14.44% gain in habitat units, 24.09% hedgerow gain and 19.98% watercourse gain.

6.3 Given the above, it is concluded that proposals can deliver a biodiversity net gain for the scheme, which would be secured by the Biodiversity Net Gain Condition, attached to any planning permission for the proposed development.

APPENDIX A: CONDITION ASSESSMENTS

Grassland Condition assessment

Condition Criteria	Grassland Reference					
	MG1	MG2	MG3	MG4	MG5	MG6
A. "There are 6-8 vascular plant species per m2 present, including at least 2 forbs Note - this criterion is essential for achieving Moderate or Good condition.	Fail	Fail	Fail	Fail	Fail	Fail
B. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	Pass	Pass	Fail	Pass	Fail	Fail
C. "Some scattered scrub (including bramble Rubus fruticosus agg.) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type."	Pass	Pass	Pass	Pass	Pass	Pass
D. Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Pass	Pass	Pass	Pass	Pass	Pass
E. Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens)2.	Pass	Pass	Fail	Fail	Pass	Pass
F. Cover of bracken Pteridium aquilinum is less than 20%.	Pass	Pass	Pass	Pass	Pass	Pass
G. There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981).	Fail	Fail	Fail	Fail	Pass	Fail
Essential criterion achieved (Yes or No)	No	No	No	No	No	No
Condition	Poor	Poor	Poor	Poor	Poor	Poor

Scrub Condition assessment

Condition Criteria	Scrub Reference				
	S1	S2	S3	WS1	WS2
The parcel represents a good example of its habitat type - the appearance and composition of the vegetation closely matches its UKHab description (where in its natural range).1 - At least 80% of scrub is native, - There are at least three native woody species2, - No single species comprises more than 75% of the cover (except hazel Corylus avellana, common juniper Juniperus communis, sea buckthorn Hippophae rhamnoides or box Buxus sempervirens, which can be up to 100% cover).	Pass	Pass	Pass	Pass	Pass
Seedlings, saplings, young shrubs and mature (or ancient or veteran2) shrubs are all present.	Fail	Fail	Fail	Fail	Fail
There is an absence of invasive non-native plant species3 (as listed on Schedule 9 of WCA4) and species indicative of sub-optimal condition5 make up less than 5% of ground cover.	Fail	Pass	Pass	Fail	Pass
The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	Fail	Fail	Fail	Pass	Fail
There are clearings, glades or rides present within the scrub, providing sheltered edges.	Pass	Pass	Fail	Pass	Fail
Condition	Poor	Moderate	Poor	Moderate	Poor

Ditch Condition assessment

Condition Criteria	Ditch Reference
	D1
The ditch is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.	Pass
A range of emergent, submerged and floating leaved plants are present. As a guide >10 species of emergent, floating or submerged plants in a 20 m ditch length.	Fail
There is less than 10% cover of filamentous algae and/or duckweed (these are signs of eutrophication).	Pass

Condition Criteria	Ditch Reference
	D1
A fringe of marginal vegetation is present along more than 75% of the ditch.	Pass
Physical damage evident along less than 5% of the ditch, such as excessive poaching, damage from machinery use or storage, or any other damaging management activities.	Pass
Sufficient water levels are maintained: as a guide a minimum summer depth of approximately 50 cm in minor ditches and 1 m in main drains.	Pass
Less than 10% of the ditch is heavily shaded.	Fail
There is an absence of non-native plant and animal species.	Fail
Condition	Poor

Line of trees Condition assessment

Condition Criteria	Line of trees			
	LT1	LT2	LT3	LT4
At least 70% of trees are native species.	Pass	Pass	Pass	Pass
Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.	Fail	Pass	Pass	Pass
One or more trees has veteran features and or natural ecological niches for vertebrates and invertebrates, such as presence of standing and attached deadwood, cavities, ivy or loose bark.	Fail	Fail	Fail	Fail
There is an undisturbed naturally-vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other human activities (excluding grazing). Where veteran trees are present, root protection areas should follow standing advice.	Pass	Pass	Pass	Pass
At least 95% of the trees are in a healthy condition (deadwood or veteran features valuable for wildlife are excluded from this). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	Pass	Pass	Pass	Pass
Condition	Moderate	Moderate	Moderate	Moderate

Urban Condition assessment

Condition Criteria	Urban
	U1
Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	Fail
The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.	Fail
Invasive non-native plant species (listed on Schedule 9 of WCA1) and others which are to the detriment of native wildlife (using professional judgement)2 cover less than 5% of the total vegetated area3.	Pass
Note - to achieve Good condition, this criterion must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Fail
Condition	Poor

Woodland Condition assessment

Condition Criteria	Woodland
	W1
Age Distribution of Trees 3 - three age classes 2 - two age classes 1 - one age class	1
Herbivore Damage 3 - no significant browsing 2 - significant browsing pressure <40% 1 - significant browsing pressure >40%	3
Invasive Plant Species 3 - No invasive species 2 - invasive species <10% cover AND NO rhododendron or Cherry Laurel Present 1 - invasive species >10% cover or/and Rhododendron or cherry laurel present.	1
Number of Native Species 3 - 5+ native trees and/or shrubs 2 - 3-4 native trees and/or shrubs 1 - 2- native trees and/or shrubs	1
Cover of Native Species 3 - >80% of canopy & understorey native 2 - 50-80% of canopy & understorey native 1 - <50% of canopy & understorey native	2
Open Space 3 - 10-20% temporary open space If woodland area <10ha 0-20% temporary open space = Good 2 - 21-40% temporary open space 1 - <10% or >40% temporary open space	2
Woodland Regeneration 3 - 3 age classes 2 - 1-2 age classes 1 - No classes or coppice regrowth	1
Tree Health 3 - <10% mortality, no pests/disease, no dieback 2 - 11-25% mortality, low risk pest or disease present 1 - >25% mortality, high risk pest or disease present	2

Condition Criteria	Woodland
	W1
Vegetation & Ground Flora 3 - Recognisable NVC community including ancient flora specialists 2 - Recognisable NVC community at ground level 1 - No recognisable NVC community	1
Woodland Vertical Structure 3 - Three or more storeys or a complex woodland 2 - Two storeys 1 - One or no defined storeys	2
Veteran Trees 3 - 2+ veteran trees per ha 2 - 1 veteran tree per ha 1 - no veterans	1
Amount of Deadwood 3 - 50%+ of plots have deadwood 2 - 25-50% of plots have deadwood 1 - <25% of plots have deadwood	3
Disturbance and enrichment 3 - No nutrient enrichment or damaged gorund 2 - <1ha of nutrient enrichment and /or less than 20% of woodland has damaged ground 1 - >1ha of nutrient enrichment and/or >20% of woodland has damaged ground	3
Total score	23
Condition	Poor

APPENDIX B: RIVER CONDITION ASSESSMENT RESULTS

Positive and Negative scores for Walshaw Beck

Watercourse ID:	Walshaw Brook
Site Name/Location	12221 Bury
GPS of MoRPh5 Midpoint	SD 77792 11871
River Section Length	250
RCA River type	C

Watercourse Description for Full River Section

Watercourse – Walshaw Brook. 254m

- River type C. Fairly Poor Condition.
- River Shape 0.279– likely overdeep
- The EA hierarchy structure is as listed-
- North West River Basin District
- Irwell Management Catchment
- Croal Irwell Operational Catchment
- Within catchment of Irwell (Roch to Croal) Water Body

This watercourse is listed as the Walshaw Brook however it is not specifically identified in the EA catchment explorer and is shown to fall within the catchment of Irwell (Roch to Croal) Water Body. The watercourse runs eastwards and appears to enter a culvert when it reaches Walshaw road (SD 78405 11653)

The watercourse runs through an area of fields. The fields appear to be intermittently mown and grazed. High bank farm forms an area of developed land to the south (right) bank at the western extent of site. This reaches to just over 8m from the mapped bank and is likely to constitute minor moderate encroachment (10-25% of the riparian **zone).**

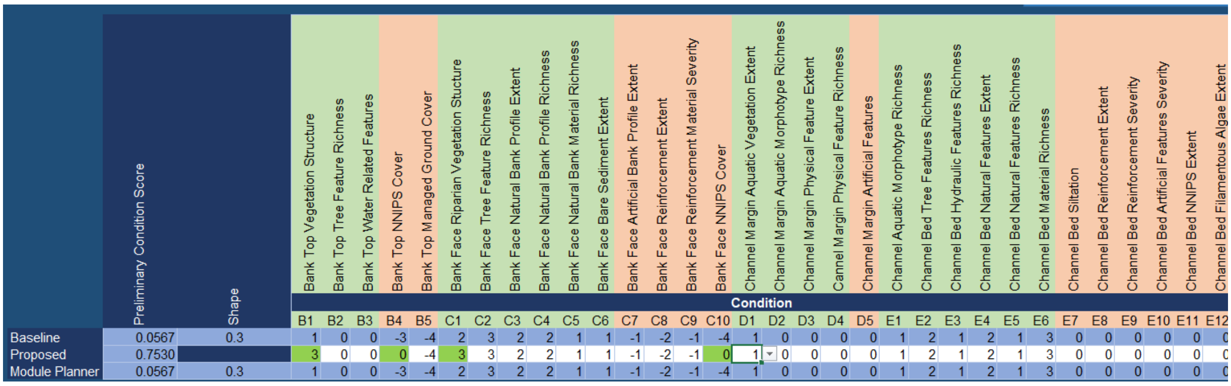
Elsewhere agricultural management comes within 4m of the banktop on both bank and so is considered to represent major encroachment. In the metric these areas have been be split to two lines in the metricthat adjacent to the farm minor/major encroachment. The remainder major/major encroachment.

Condition Assessment Criteria		**RCA Index Values**
RCA Index ID	**RCA Index Name** **Green = Positive and Red = Negative scoring indices**	**Baseline Score**
Bank Top		
B1	**Bank top vegetation structure**	**1**
B2	**Bank top tree feature richness**	**0**
B3	**Bank top water-related features**	**0**
B4	**Bank top NNIPS cover**	**-3**
B5	**Bank top managed ground cover**	**-4**
Bank face		
C1	**Bank face riparian vegetation structure**	**2**
C2	**Bank face tree feature richness**	**3**
C3	**Bank face natural bank profile extent**	**2**
C4	**Bank face natural bank profile richness**	**2**
C5	**Bank face natural bank material**	**1**
C6	**Bank face bare sediment extent**	**1**
C7	**Bank face artificial bank profile extent**	**-1**
C8	**Bank face reinforcement extent**	**-2**
C9	**Bank face reinforcement material**	**-1**
C10	**Bank face NNIPS* cover**	**-4**
Channel Margin		
D1	**Channel margin aquatic vegetation**	**1**
D2	**Channel margin aquatic morphotype**	**0**
D3	**Channel margin physical feature extent**	**0**
D4	**Channel margin physical feature**	**0**
D5	**Channel Margin artificial features**	**0**
Channel Bed		
E1	**Channel aquatic Morphotype richness**	**1**
E2	**Channel bed tree features richness**	**2**
E3	**Channel bed hydraulic features richness**	**1**
E4	**Channel bed nature features richness**	**2**
E5	**Channel bed natural features richness**	**1**
E6	**Channel bed material richness**	**3**

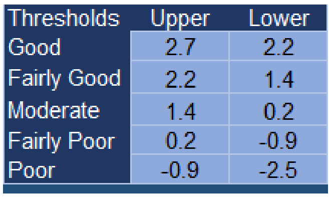
E7	**Channel bed siltation**	**0**
E8	**Channel bed reinforcement extent**	**0**
E9	**Channel bed reinforcement severity**	**0**
E10	**Channel bed artificial features severity**	**0**
E11	**Channel bed NNIPS extent**	**0**
E12	**Channel bed filamentous algae extent**	**0**
Is the Watercourse Over Deep?		**Yes**
Final Condition Score (including over deepness assessment)		**Poor**
Summary Description of Positive and Negative Indices		
Bank faces score well. Invasive species and managed ground cover, as well as artificial bed features are main negative indicators.		

APPENDIX C - RIVER CONDITION ASSESSMENT - POTENTIAL ENHANCEMENT AREAS

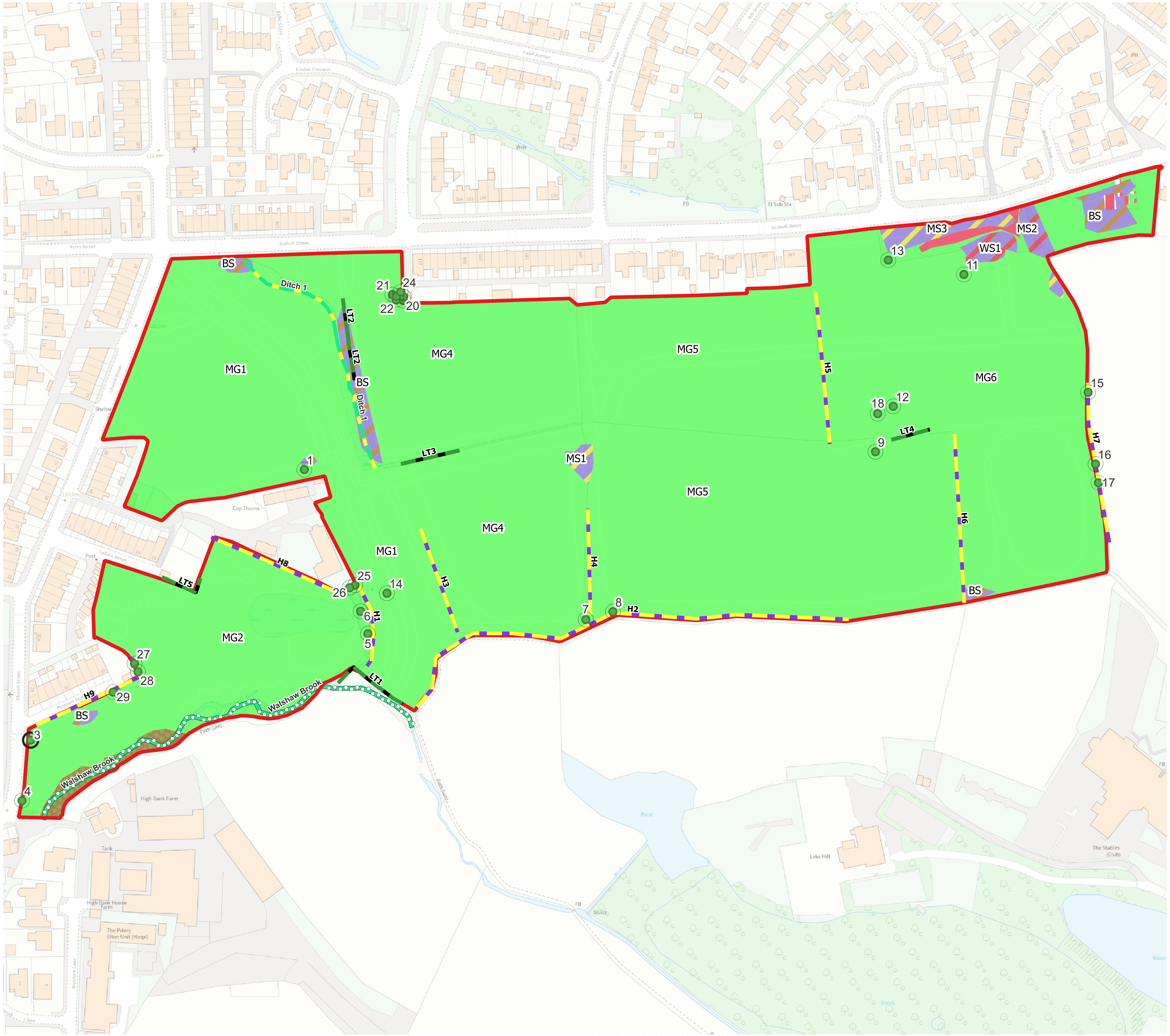
Areas targeted for enhancement for Walshaw Brook

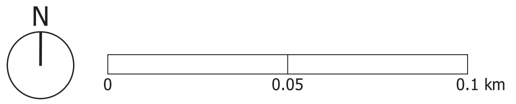


	Preliminary Condition Score	Shape	Bank Top Vegetation Structure	Bank Top Tree Feature Richness	Bank Top Water Related Features	Bank Top NNIPS Cover	Bank Top Managed Ground Cover	Bank Face Riparian Vegetation Stucture	Bank Face Tree Feature Richness	Bank Face Natural Bank Profile Extent	Bank Face Natural Bank Profile Richness	Bank Face Natural Bank Material Richness	Bank Face Bare Sediment Extent	Bank Face Artificial Bank Profile Extent	Bank Face Reinforcement Extent	Bank Face Reinforcement Material Severity	Bank Face NNIPS Cover	Channel Margin Aquatic Vegetation Extent	Channel Margin Aquatic Morphotype Richness	Channel Margin Physical Feature Extent	Cannel Margin Physical Feature Richness	Channel Margin Artificial Features	Channel Aquatic Morphotype Richness	Channel Bed Tree Features Richness	Channel Bed Hydraulic Features Richness	Channel Bed Natural Features Extent	Channel Bed Natural Features Richness	Channel Bed Material Richness	Channel Bed Siltation	Channel Bed Reinforcement Extent	Channel Bed Reinforcement Severity	Channel Bed Artificial Features Severity	Channel Bed NNIPS Extent	Channel Bed Filamentous Algae Extent
			Condition																															
			B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	D1	D2	D3	D4	D5	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
Baseline	0.0567	0.3	1	0	0	-3	-4	2	3	2	2	1	1	-1	-2	-1	-4	1	0	0	0	0	1	2	1	2	1	3	0	0	0	0	0	0
Proposed	0.7530		3	0	0	0	-4	3	3	2	2	1	1	-1	-2	-1	0	1	0	0	0	0	1	2	1	2	1	3	0	0	0	0	0	0
Module Planner	0.0567	0.3	1	0	0	-3	-4	2	3	2	2	1	1	-1	-2	-1	-4	1	0	0	0	0	1	2	1	2	1	3	0	0	0	0	0	0



Thresholds	Upper	Lower
Good	2.7	2.2
Fairly Good	2.2	1.4
Moderate	1.4	0.2
Fairly Poor	0.2	-0.9
Poor	-0.9	-2.5


BS
Ditch 1
21
24
22
20
LT2
MG1
MG4
MG5
MS3
MS2
WS1
BS
13
11
H5
MG6
15
18
12
LT4
9
H7
16
17
Ditch 1
BS
LT3
1
MS1
MG5
H6
MG4
MG1
H8
LT5
25
26
14
H3
H4
7
8
H2
BS
6
H1
5
MG2
27
28
29
H9
BS
LT1
Walshaw Brook
3
4
Walshaw Brook
Cop Thorns
Scobell Street
Hazel Avenue
Lindee Crescent
Weir
FB
El Sub Sta
Acres Street
Collins Street
Post
Shelter
Church Street
High Bank Farm
High Bank House Farm
The Priory Elton Unit (Hospl)
Tank
Path (um)
Pond
Sluice
Lake Hill
The Stables (Club)
Reeds
Water
PH



Key

- 🟥 Site Boundary
- ● Existing Large Rural Tree
- ● Existing Medium Rural Tree
- ● Existing Small Rural Tree
- ▨ Bramble scrub
- ▨ Developed land; sealed surface
- ▨ Mixed scrub
- 🟩 Modified grassland
- ▨ Other woodland; mixed
- ▨ Willow scrub
- 🟥 Bare ground
- — Line of trees
- — Native hedgerow
- — Ditches
- — Other rivers and streams

date
10/12/24

drwn/chkd
HK / SH

client
Wain Estates

project
Scobell Street,
Bury

title
BASELINE HABITAT PLAN

scale
1:2,100@ A3

number
FIGURE 1

rev
-

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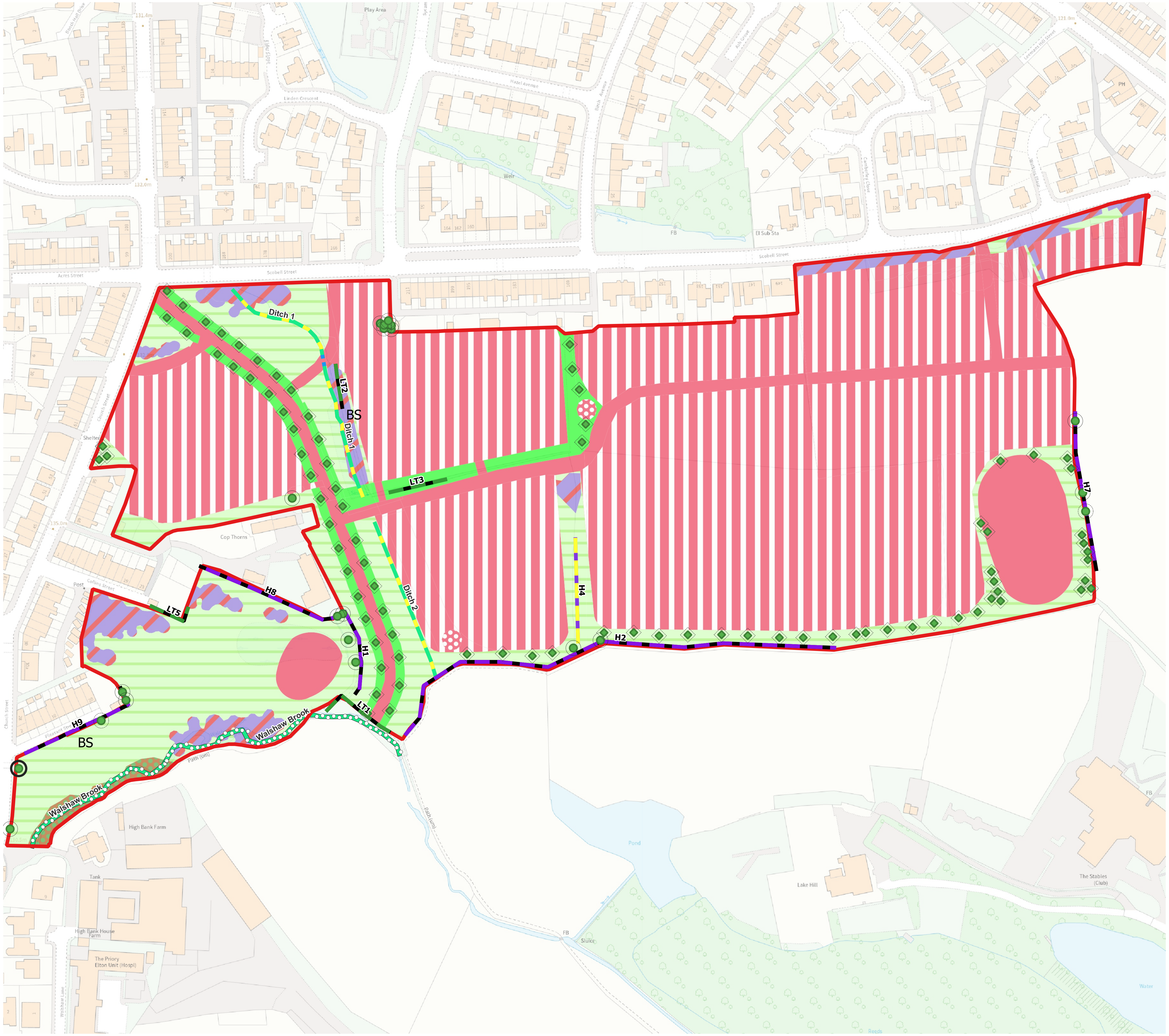

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N

0 50 100 m

Key:

🟥 Site Boundary

INDIVIDUAL TREES
● Proposed Large Rural Tree
● Proposed Medium Rural Tree
◆ Proposed Small Urban Tree
● Proposed Small Rural Tree

HEDGEROWS
Line of trees
Native hedgerow
Species-rich native hedgerow

WATERCOURSES
Ditches
Other rivers and streams

HABITATS
▨ Artificial unvegetated, unsealed surface
🟥 Built linear features
▨ Developed land; sealed surface
▨ Mixed scrub
🟩 Modified grassland
▨ Other neutral grassland
▨ Other woodland; mixed
🟥 Sustainable drainage system
▨ Willow scrub

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11/02/25

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Scobell Street
Bury

title
PROPOSED HABITAT PLAN

scale
1:2,100 @ A3

number
FIGURE 2

rev
-

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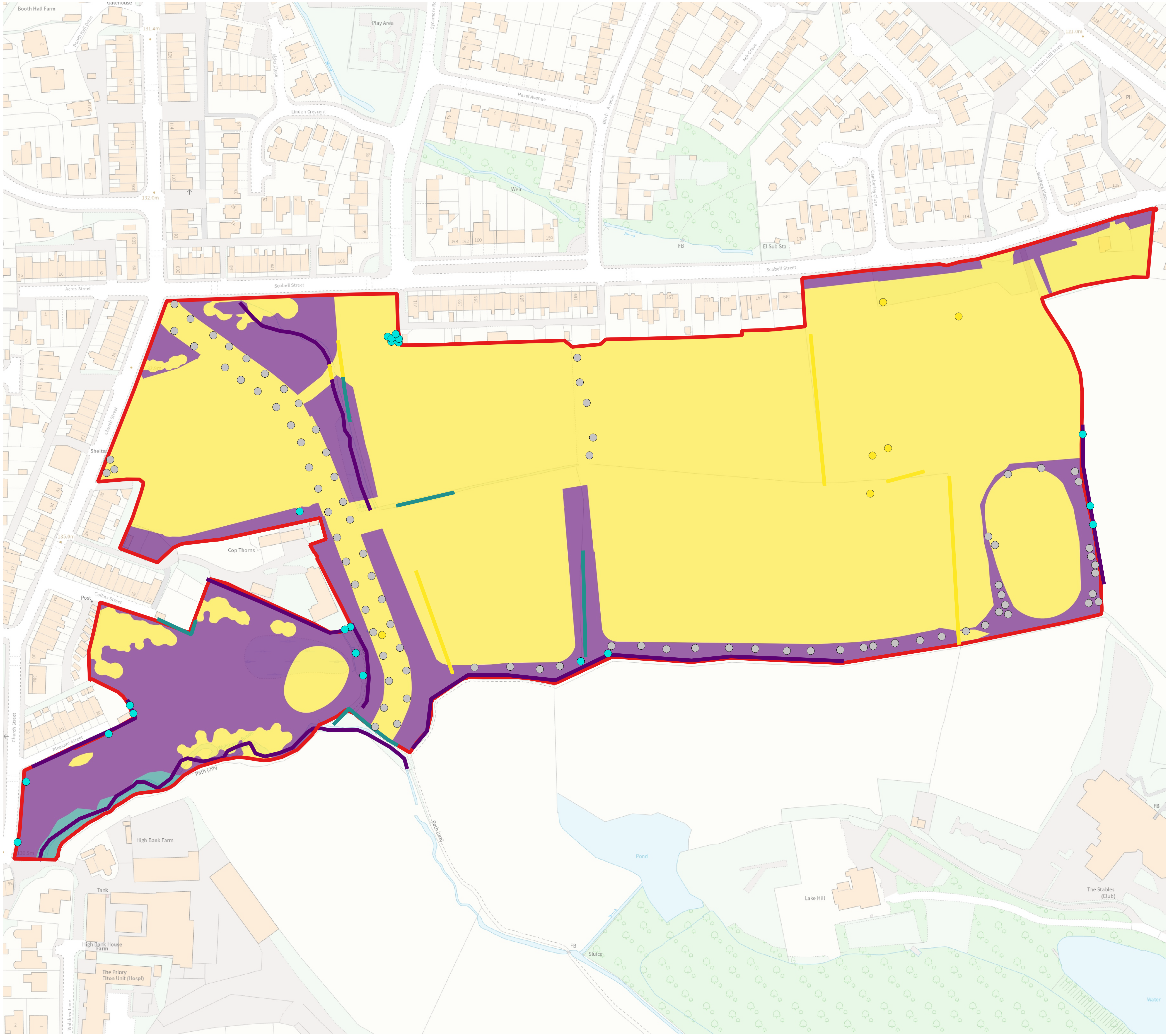
Booth Hall Farm
Play Area
Linden Crescent
Hazel Avenue
Weir
FB
El Sub Sta
Scobell Street
Acres Street
Shelter
Cop Thorns
Post
Path (um)
High Bank Farm
Tank
High Bank House Farm
The Priory Elton Unit (Hospl)
Pond
Sluice
Lake Hill
The Stables (Club)
PH
Water

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N

0 50 100 m

Key:

🟥 Site Boundary

Individual tree Retention
- ● Created
- ● Retained
- ● Proposed Lost

Hedgerow Retention
- ▬ Enhanced
- ▬ Retained
- ▬ Lost

Watercourse Retention
- ▬ Enhanced
- ▬ Lost

Habitat Retention
- 🟪 Enhanced
- 🟩 Retained
- 🟨 Lost

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title	scale
RETENTION PLAN	1:2,100 @ A3

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FIGURE 3	-

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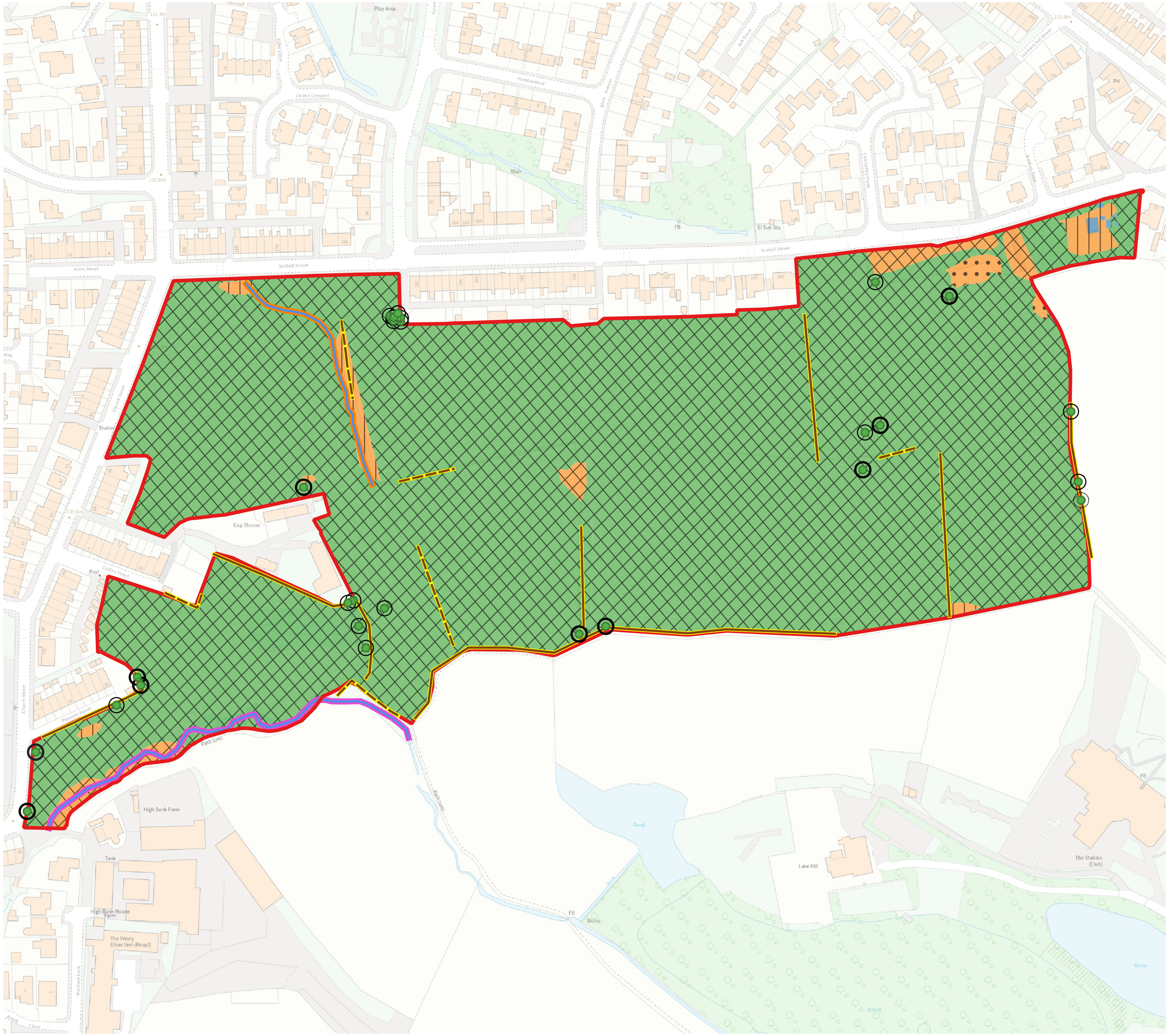
Play Area
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Water
Reeds

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N

0 50 100 m

Key:

INDIVIDUAL TREES

Baseline Individual tree Condition

◌ Poor

○ Moderate

◯ Good

HEDGEROWS

Baseline Hedgerow Condition

— Good

-- Moderate

Baseline Hedgerow Distinctiveness

— Low

Watercourses

Baseline Watercourse Condition

— Poor

Baseline Watercourse Distinctiveness

— High

— Medium

HABITATS

Baseline Habitat Condition

⁘ Moderate

╳ Poor

‖ N/A - Other

Baseline Habiutat Distinctiveness

🟧 Medium

🟩 Low

🟦 V.Low

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Scobell Street
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title
BASELINE HABITAT CONDITION / DISTINCTIVENESS PLAN

scale
1:2,143 @ A3

number
FIGURE 4

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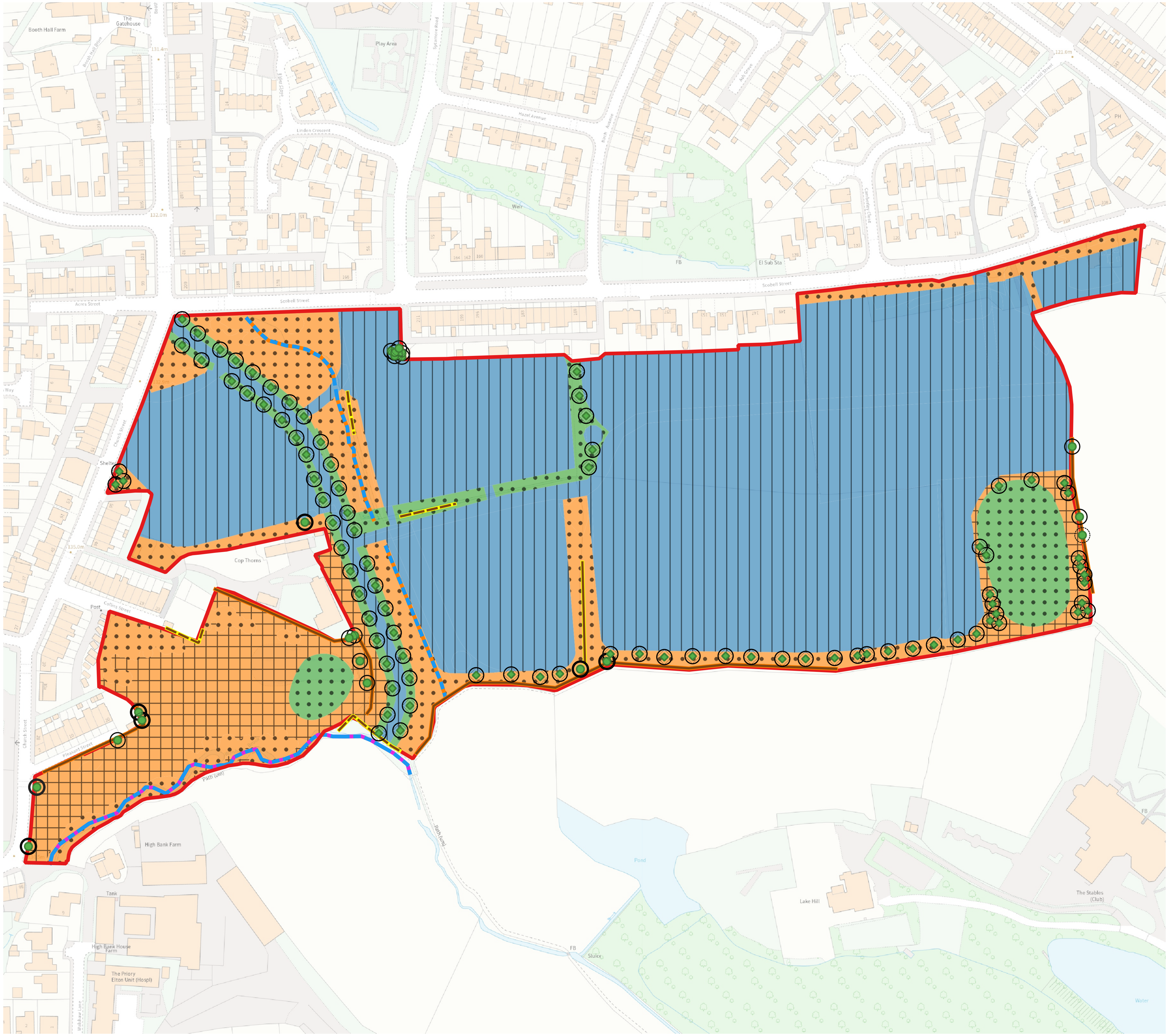
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N

0 50 100 m

Key:

INDIVIDUAL TREES
- ◉ Proposed Large Rural Tree
- ◉ Proposed Medium Rural Tree
- ◈ Proposed Small Urban Tree
- ◉ Proposed Small Rural Tree

Proposed Individual tree Condition
- ◌ Poor
- ○ Moderate
- ○ Good

HEDGEROWS

Proposed Hedgerow Condition
- — Good
- - - Moderate

Proposed Hedgerow Distinctiveness
- — Medium
- — Low

WATERCOURSES

Proposed Watercourse Condition
- — Fairly Poor
- - - Poor

Proposed Watercourse Distinctiveness
- — High
- — Medium

HABITATS

Proposed Habitat Condition
- ╋ Good
- ⁘ Moderate
- ǀ N/A - Other

Proposed Habitat Distinctiveness
- 🟧 Medium
- 🟩 Low
- 🟦 V.Low

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10/12/24	HK / SH

client

Wain Estates

project

Scobell Street
Bury

title	scale
PROPOSED CONDITION / DISTINCTIVENESS PLAN	1:2,143 @ A3

number	rev
FIGURE 5	-

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9 - Transport and Movement

Transport Assessment and Travel Plan Strategy

Land off Church Street / Scobell Street, Walshaw, Bury

Wain Estates (Land) Ltd

Fontwell House,
Trident Business Park,
Birchwood,
Warrington,
WA3 6BX.

Prepared by:

SLR Consulting Limited

5th Floor, 35 Dale Street, Manchester, M1 2HF

SLR Project No.: 410.065892.00001

April 2025

Revision: 01F

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	November 2024	Tom Pritchard	Paul Whitaker	Paul Whitaker
01b	December 2024	Tom Pritchard	Paul Whitaker	Paul Whitaker
01c	December 2024	Tom Pritchard	Paul Whitaker	Paul Whitaker
01d	February 2025	Tom Pritchard	Chris Hargreaves	Paul Whitaker
01e	February 2025	Tom Pritchard	Chris Hargreaves	Paul Whitaker
01F	April 2025	Tom Pritchard	Chris Hargreaves	Paul Whitaker

Basis of Report

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Plans

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Plan 4 Cycling Catchment (West of Site)
Plan 5 Walking Catchment (East of Site)
Plan 6 Cycling Catchment (East of Site)
Plan 7 Bus Route Plan
Plan 8 AM Public Transport Travel Time Survey
Plan 9 PM Public Transport Travel Time Survey

Appendices

Appendix A Indicative Site Layout
Appendix B Survey Analysis
Appendix C General Access & Alignment Plans
Appendix D Traffic Flow Diagrams
Appendix E Junction Modelling Outputs
Appendix F Trip Generation Summary (Sensitivity)
Appendix G Junction Modelling Outputs (Sensitivity)

1.0 Introduction

Overview

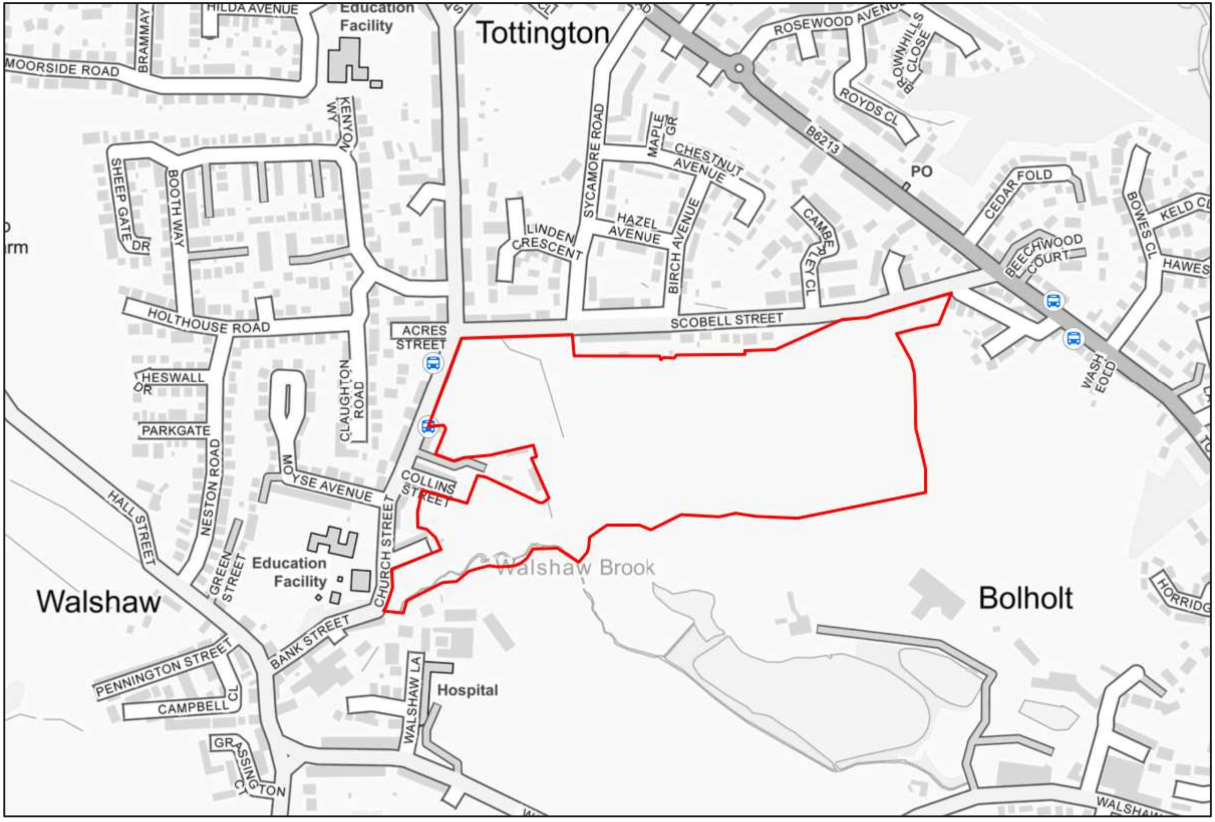
1.1 SLR has been instructed by Wain Estates (Land) Ltd to provide transport and movement advice in relation to a planning application for a residential development at land off Church Street / Scobell Street in Walshaw, Bury.

1.2 This application specifically refers to the northern parcel that makes up part of the wider Walshaw strategic allocation.

1.3 The proposed development site comprises approximately 11.3 ha of land on the eastern edge of Bury. It is currently in use for pastoral farming.

1.4 The location and planning application red line site boundary of the northern parcel that is the subject to this planning application is shown in **Figure 1.1**.

Figure 1.1: Site Location


HILDA AVENUE
Education Facility
Tottington
ROSEWOOD AVENUE
BROWNHILLS CLOSE
MOORSIDE ROAD
BRAMMAY
KENYON WAY
ROYDS CL
B6213
SYCAMORE ROAD
MAPLE GR
CHESTNUT AVENUE
PO
CEDAR FOLD
BOWES CL
KELD CL
SHEEP GATE DR
BOOTH WAY
LINDEN CRESCENT
HAZEL AVENUE
BIRCH AVENUE
CAMBERLEY CL
BEECHWOOD COURT
HAWES
HOLTHOUSE ROAD
ACRES STREET
SCOBELL STREET
HESWALL DR
PARKGATE
CLAUGHTON ROAD
WASH FOLD
MOYSE AVENUE
COLLINS STREET
NESTON ROAD
HALL STREET
Walshaw Brook
Education Facility
CHURCH STREET
GREEN STREET
Walshaw
Bolholt
HORRIDGE
BANK STREET
PENNINGTON STREET
CAMPBELL CL
WALSHAW LA
Hospital
GRASSINGTON CT
WALSHAW

1.5 The fields that make up the site are divided by hedgerows interspersed with trees. The location of the development site is shown in **Plan 1** in a local context, with **Plan 2** presenting the site in wider strategic context.

Wider Walshaw Allocation

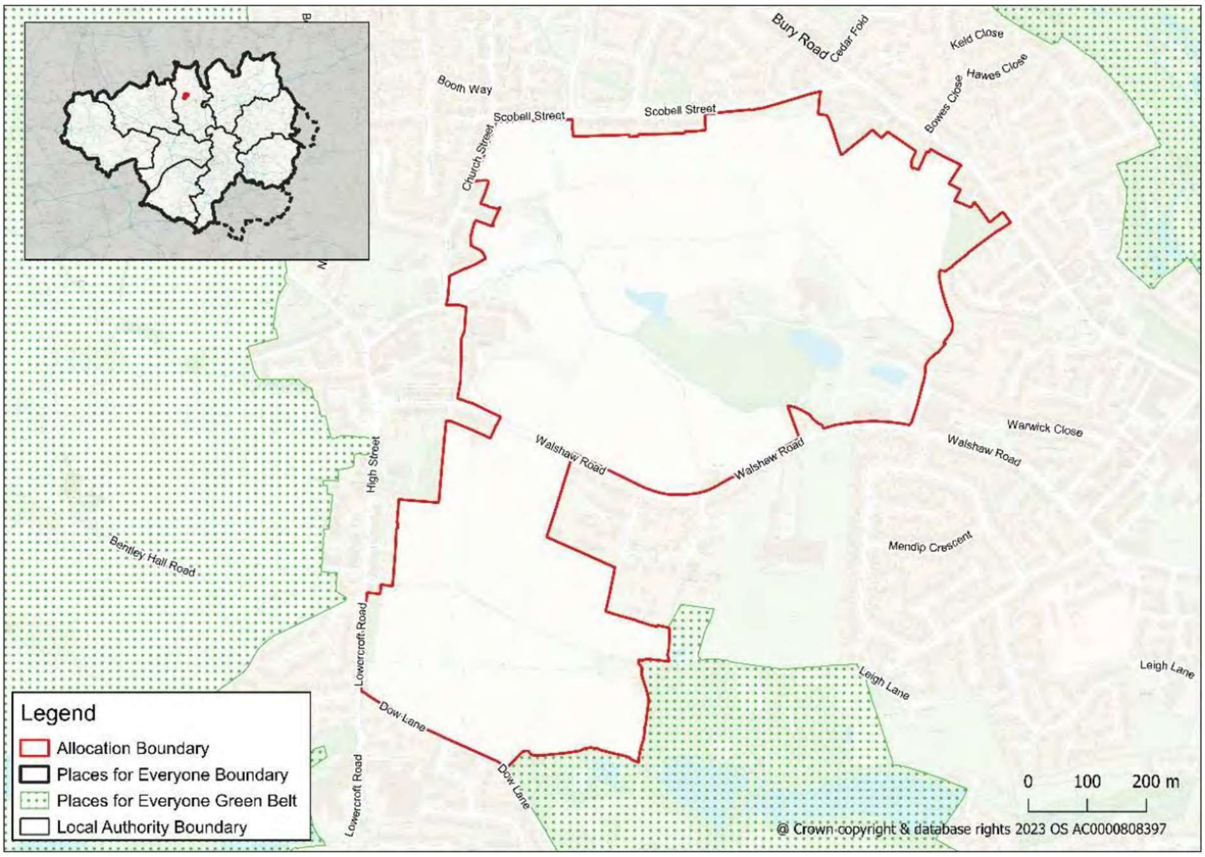
1.6 The site forms parts of a wider allocation for residential development in the Places for Everyone Joint Development Plan Document (hereafter referred to as PfE).

1.7 Policy JP Allocation 9 (Walshaw JPA9) is an allocation for the delivery of around 1,250 dwellings in the Walshaw area of Bury.

1.8 The wider allocation area is enclosed by Scobell Street and residential properties to the north; Tottington Road and residential properties to the north-east; woodland to the east; the Best Western Bury Bolholt Country Park and Stables Country Club to the south-east, Walshaw Brook and agricultural fields to the south-west and Church Street, residential properties, garaging and a cattery to the west.

1.9 An extract of the PfE allocation area is shown in **Figure 1.2**.

Figure 1.2: JP Allocation 9 Walshaw


Bury Road
Cedar Fold
Keld Close
Hawes Close
Bowes Close
Booth Way
Scobell Street
Scobell Street
Church Street
Walshaw Road
Walshaw Road
Warwick Close
Walshaw Road
High Street
Mendip Crescent
Bentley Hall Road
Lowercroft Road
Leigh Lane
Leigh Lane
Dow Lane
Dow Lane
Lowercroft Road
Legend
Allocation Boundary
Places for Everyone Boundary
Places for Everyone Green Belt
Local Authority Boundary
0
100
200 m
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1.10 The allocation has the potential to create a new vision for living, where people want and have the option to live locally, building a close relationship with their community, whilst also remaining connected to key regional centres through attractive and direct active travel and shared travel links.

1.11 In addition to residential development, land for a school and other community facilities has also been allowed for acknowledging the importance of positioning facilities and services within easy walking, cycling and scooting distances from residents in the local community, which the allocation area forms part of.

1.12 The allocation site and associated masterplan has previously been subject to an overarching assessment presented as part of the PfE evidence base, which considered a development scale of up to 1,250 dwellings on the site.

1.13 The PfE document indicated that the development of residential dwellings on the site could be accommodated on the local network with an appropriate mitigation strategy outlined consisting of infrastructure improvements and/or contributions towards wider infrastructure identified by Bury Council (hereafter referred to as BC).

1.14 Since the adoption of the PfE, the wider Walshaw allocation has been undergoing a further comprehensive masterplanning process which has informed the development of the northern parcel. This includes correspondence and liaison with key stakeholders, including BC and TfGM.

1.15 A full assessment of the allocation is accompanying the masterplanning process, building upon the PfE assessment.

1.16 Although the wider Walshaw allocation was informed by a transport assessment as part of the PfE evidence base, and further assessments are progressing as part of the latest masterplan process, it was acknowledged that development of the various phases of development within the site would still be subject to individual applications with appropriate reference made to the original assessment work, supplemented with further details where deemed necessary.

1.17 These latest assessments are aligned and entirely consistent such that judgements can be made about infrastructure needed for the wider allocation, but also specifically how the northern parcel assists with the delivery of this.

Northern Parcel Proposals

1.18 The application is made in outline and is for up to 275 dwellings, with access details to be determined.

1.19 The proposals have specifically been prepared in the context of the health and climate agenda, acknowledging national policy as well as BC's Climate Emergency declaration and commitment to be net carbon neutral by 2038.

1.20 The proposals continue to allow for the promotion of a healthy living agenda built around an understanding of why and how people access facilities, but also considering what this might look like in a post-Covid world.

1.21 A policy driven vision-led (i.e. Vision and Validate) approach to growth and new living has been adopted, enabling, not just encouraging, climate shift and movement towards healthier, happier, sustainable and stable lifestyles.

1.22 The vision is to continue to embrace local living and virtual mobility where that is most appropriate, achieving excellent accessibility by the highest priority forms of mobility and minimising road capacity increases, particularly where these are likely to encourage and generate private vehicular traffic.

1.23 An indicative site layout proposal for the scheme can be found in **Appendix A**.

Council Discussions

1.24 Pre-application discussions have been coordinated with BC regarding the development proposals.

1.25 This has provided the opportunity to discuss the vision of the masterplan for the wider allocation, and specifically how the northern parcel can be delivered as part of an early phase.

1.26 The comments received to date have informed ongoing discussions relating to the design of the site from a transport perspective, with other disciplines also informing the ongoing design following feedback from various consultees.

1.27 A formal planning pre-application response from Transport for Greater Manchester (TfGM) was also received in October 2024, setting out the suggested approach to assessment and scheme requirements from a transport perspective.

1.28 A further transport and movement pre-application meeting with BC and TfGM was coordinated in February 2025.

Report Detail

1.29 This Transport Assessment (TA) for the northern parcel has been prepared following input from BC and TfGM.

1.30 It has also been prepared with reference to guidance provided by the Department for Transport (DfT) on 'Travel Plans, Transport Assessments and Statements' (2014).

1.31 The key objectives of this Transport Assessment are to:

- Identify opportunities for non-car-based travel and socially inclusive transport links in line with current best practice and local and national policy;
- Encourage behavioural choice;
- Establish the quantum of traffic demand, assuming an unfettered network, generated by the proposed development;
- Assess iteratively the forecast demands on the local highway network, and make judgements about residual effect, using a Vision-led approach; and
- Determine suitable accessibility, including transport, measures to maximise the development's accessibility, and connectivity, and to manage the characteristics associated with delivering this site in the context of planning policy.

1.32 The effect of the proposed development on traffic characteristics is a judgement, informed by mathematical forecasts.

1.33 It considers evidence which identifies that in practice traffic demands (including background traffic quantum) are not fixed, and they fluctuate as a function of many factors including heuristics and in particular perception of inconvenience.

1.34 This assessment refers to previous modelling assessments (where appropriate), not as an accurate forecast of future reality, but as a useful tool from which judgements can be made.

1.35 Following this introductory chapter, the remainder of the TA is structured as follows:

- **Section 2: Policy Context** – describes the national and local planning policy pertinent to the proposed development;
- **Section 3: Site Accessibility Review** – describes the accessibility of the site by sustainable modes of travel;
- **Section 4: Emerging Transport Trends –** provides a summary of the trends in travel patterns pre COVID-19 and expected trends following the COVID-19 pandemic, and the effect this will have on travel behaviour;
- **Section 5: Baseline Conditions** – discusses the existing site and local highway network, as well as existing traffic flows / speeds and collision data in the vicinity of the site;
- **Section 6: Proposed Development** – sets out the development proposals including access, parking and servicing;
- **Section 7: Travel Plan Strategy Update –** updated travel plan strategy, building upon principles adopted as part of earlier phases;
- **Section 8: Indicative Trip Generation** – outlines the potential trip generation of the scheme;
- **Section 9 Traffic Impact Assessment** - provides a review of the potential traffic impact of the proposed scheme on the wider highway network;
- **Section 9 Wider Walshaw Allocation** - provides an overview of the proposed development site in the context of the wider Walshaw Masterplan scheme; and
- **Section 10: Summary and Conclusion** – summarises the findings of the TA and provides the report conclusions.

2.0 Planning Policy and Best Practice

National Planning Policy Framework

2.1 The latest National Planning Policy Framework (NPPF) was published in December 2024 by the Ministry of Housing, Communities and Local Government. This replaces the previous version of the NPPF which was published in December 2023.

2.2 The NPPF sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the Framework is a presumption in favour of sustainable development.

2.3 With regards to promoting sustainable transport, Paragraph 109 of the NPPF states that transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach to identify transport solutions that deliver well-designed, sustainable and popular places. This should involve:

a) making transport considerations an important part of early engagement with local communities;

b) ensuring patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places;

c) understanding and addressing the potential impacts of development on transport networks;

d) realising opportunities from existing or proposed transport infrastructure, and changing transport technology and usage – for example in relation to the scale, location or density of development that can be accommodated;

e) identifying and pursuing opportunities to promote walking, cycling and public transport use; and

f) identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.

2.4 When considering development proposals, Paragraph 115 of the revised NPPF states that in assessing applications for development, it should be ensured that:

- sustainable transport modes are prioritised taking account of the vision for the site, the type of development and its location;
- safe and suitable access to the site can be achieved for all users;
- the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code 48;

- any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree through a vision-led approach.

2.5 Paragraph 116 goes on to state that "Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network, following mitigation, would be severe, taking into account all reasonable future scenarios".

2.6 Paragraph 117 states that applications for development should:

- give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
- address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
- allow for the efficient delivery of goods, and access by service and emergency vehicles;
- be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.

2.7 Paragraph 118 states that all developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a vision-led transport statement or transport assessment so that the likely impacts of the proposal can be assessed and monitored.

PPG: Travel Plans, Transport Assessments and Statement in Decision-Taking

2.8 In March 2014, the Ministry of Housing Communities and Local Government in conjunction with the DfT, released advice on when transport assessments and transport statements are required, what they should contain (which is intended to assist stakeholders in determining whether an assessment may be required) and, if so, what the level and scope of that assessment should be.

2.9 The advice reflects current Government policy promoting a shift from the 'predict and provide' approach to transport planning to one more focused on sustainability.

2.10 The document focuses on encouraging environmental sustainability, managing the existing network, and mitigating the residual impacts of traffic from the development proposals.

2.11 The guidance sets out that Travel Plans, Transport Assessments and Statements can positively contribute to:

- Encouraging sustainable travel;
- Lessening traffic generation and its detrimental impacts;
- Reducing carbon emissions and climate impacts;
- Creating accessible, connected, inclusive communities;
- Improving health outcomes and quality of life;
- Improving road safety; and,
- Reducing the need for new development to increase existing road capacity or provide new roads.

2.12 These documents support national planning policy which sets out that planning should actively manage patterns of growth in order to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable.

Places for Everyone Joint Development Plan Document (PfE)

2.13 Policy JP Allocation 9 (Walshaw) (JPA9) of the PfE is a site allocation for the delivery of around 1,250 dwellings in the Walshaw area of Bury.

2.14 The site forms part of a strategic site allocation for development in the PfE Plan, which was adopted on 21 March 2024. The site has consequently been removed from the Green Belt and is identified for housing development.

2.15 Development of this overall site allocation was expected to provide the following:

- Make provision of a new strategic through road to enable an alternative to Church Street, Bank Street and High Street that is designed to be suitable for buses and incorporates active travel and is in line with local design standards;
- Make provision for a network of safe cycling and walking routes through the allocation linking neighbourhoods with key destinations;
- Make provision for other new and improved sustainable transport and highways infrastructure;
- Ensure the design and layout allows for effective integration with surrounding communities, including active travel links and connections to the recreation areas at Dow Lane, Elton Vale, Whitehead Lodges as well as Walshaw Village and Bury Town Centre;
- Make provision for new, high quality, publicly accessible, multifunctional green and blue infrastructure within the allocation including the integration and enhancement of the existing green infrastructure corridors;

2.16 Policy JP-C8: Transport Requirements of New Development requires new development to be located and designed to enable and encourage walking, cycling and public transport use, to reduce the negative effects of car dependency, and help deliver high quality, attractive, liveable and sustainable environments.

2.17 Policy JP-C8 also requires planning applications which are accompanied by a Transport Assessment to consider air impacts on Holcroft Moss within the Manchester Mosses Special Area of Conservation (SAC).

2.18 Should the proposals result in increased traffic flows on the M62 past Holcroft Moss of more than 100 vehicles per day or 20 Heavy Goods Vehicles (HGVs) per day then a scheme-specific range of measures to reduce reliance on cars, reduce trip generation and promote ultra-low emission vehicles may need to be devised and a contribution towards restoration measures may need to be provided in accordance with the Holcroft Moss Habitat Mitigation Plan.

Greater Manchester Transport Strategy 2040

2.19 Transport for Greater Manchester (TfGM) has developed a 2040 Transport Strategy that sets out ambitions for a radical new approach to planning Manchester's transport system in support of long-term needs and aspirations.

2.20 The vision is for Greater Manchester to have:

> *"World class connections that support long-term, sustainable economic growth and access to opportunity for all". The Transport Vision aims are as follows:*
>
> *a) Supporting Sustainable Economic growth;*
>
> *b) Protecting Our Environment;*
>
> *c) Improving Quality of Life for All; and*
>
> *d) Developing an Innovative City Region.*

2.21 The 2040 Vision is supported by policies and proposals for improving the transport network in the medium term up to 2025 structured around spatial themes.

2.22 The development proposals aspire to conform to the vision and goals as set out within the 2040 Vision Document by ensuring that the site is accessible by a variety of sustainable transport modes in order to deliver a quality development that enhances the environment.

3.0 Accessibility by Sustainable Modes

Context

3.1 Contemporary local and national transport policy states that new developments should be focused on locations which are, or can be made, sustainable. Providing travel choice is policy compliant and essential in today's modern and dynamic society.

3.2 This focus maximises social inclusion, minimises the number of single car occupancy private car trips, limits the need to travel, helps reduce congestion and helps to improve air quality and health.

3.3 One of the primary factors when considering the suitability of a new development is its proximity, accessibility, and connectivity in relation to key local facilities by non-car modes.

3.4 Within this context, the development should give priority first to pedestrian and cycle movements both within the scheme and for connections with neighbouring areas. There should also be the consideration of more modern accessibility choices.

3.5 This section of the report examines contemporary travel options and nearby local amenities, as well as evaluates active travel routes and shared transportation links in the vicinity of the site.

Travel Choice and Local Amenities

3.6 Accessibility these days comes in many forms, including 'virtual travel', for instance, use of the internet for interacting with friends, shopping or working; 'active travel', walking or cycling (electric assisted or not); shared travel, including buses, demand responsive services, car-pooling, and car sharing; and single occupancy car travel.

3.7 Society was already moving more towards embracing virtual travel, but these trends have been accelerated as a result of the pandemic. The pandemic has transformed the way we travel to work and for our day-to-day needs.

3.8 Surveys of businesses and employees shows that hybrid working is here to stay with about 83% of organisations now having hybrid working in place.

3.9 The latest release from Office for National Statistics (ONS) on Characteristics of Homeworkers stated that, between September 2022 to January 2023, 44% of workers reported home or hybrid working in the last week, with full time office workers at 56%.

3.10 To examine how this has changed locally, SLR has developed a calculator tool that uses quarterly data from the ONS to understand the percentage of employees that work from home (WFH). This suggests that for the location in the Bury/ Tottingham District the WFH rate was about 13.9% in 2019, but that this is estimated to increase to up to 25.8% in 2024.

3.11 The pandemic also has left its trace on our travel patterns in relation to grocery and retail shopping. Online sales as a percentage of total retail sales over the last 10 years have experienced a significant upturn which accelerated during the pandemic with on-line sales remaining higher than pre-pandemic times.

3.12 In addition to virtual travel, the site includes convenient access to a variety of amenities and infrastructure which serve key day-to-day needs. These include a secondary school, primary school, public houses, community centres, library, park, place of worship, supermarkets, a sports centre, gym and a pharmacy.

3.13 **Table 3.1** provides a sample of local amenities available in the vicinity of the site, with the distances being measured from the centre of the site.

Table 3.1: Nearby Local Amenities

Amenity	Via Scobell Street		Via PRoW	
	Distance	Time	Distance	Time
Convenience Store	850 metres	11 mins	780 metres	9 mins
Supermarket	2.2 kilometres	29 mins	2.1 kilometres	28 mins
Primary School	1.4 kilometres	19 mins	1.5 kilometres	20 mins
Secondary School	1.5 kilometres	20 mins	1.2 kilometres	18 mins
Public House	1 kilometre	12 mins	970 metres	12 mins
Community Hall	1.2 kilometres	18 mins	-	
Place of Worship	1.3 kilometres	18 mins	1 kilometre	12 minutes
Playground	2.3 kilometres	30 mins	1.9 kilometres	23 minutes
Sports Centre	1.3 kilometres	18 mins	600 metres	7 minutes

3.14 For those where walking, cycling, or bus travel may not be realistic for certain journeys, using a private car for some trips to access a wide range of services would be fairly short, helping to minimise the impact of travel by private vehicle.

3.15 This could include ultra-low and zero-emission vehicles, which the NPPF defines as sustainable transport modes along with walking, cycling, and public transport.

Active Travel Links

Walking

3.16 An analysis of the pedestrian routes from the east and west of the site have been completed to identify areas where residents can reach on foot within a 1-kilometre (km) and 2km catchment. These areas are illustrated in **Plans 3** and **5**, while **Figures 3.1** and **3.2** provide extracts from these plans, highlighting the key pedestrian routes.

Figure 3.1: Walking Catchment from the west of the Site

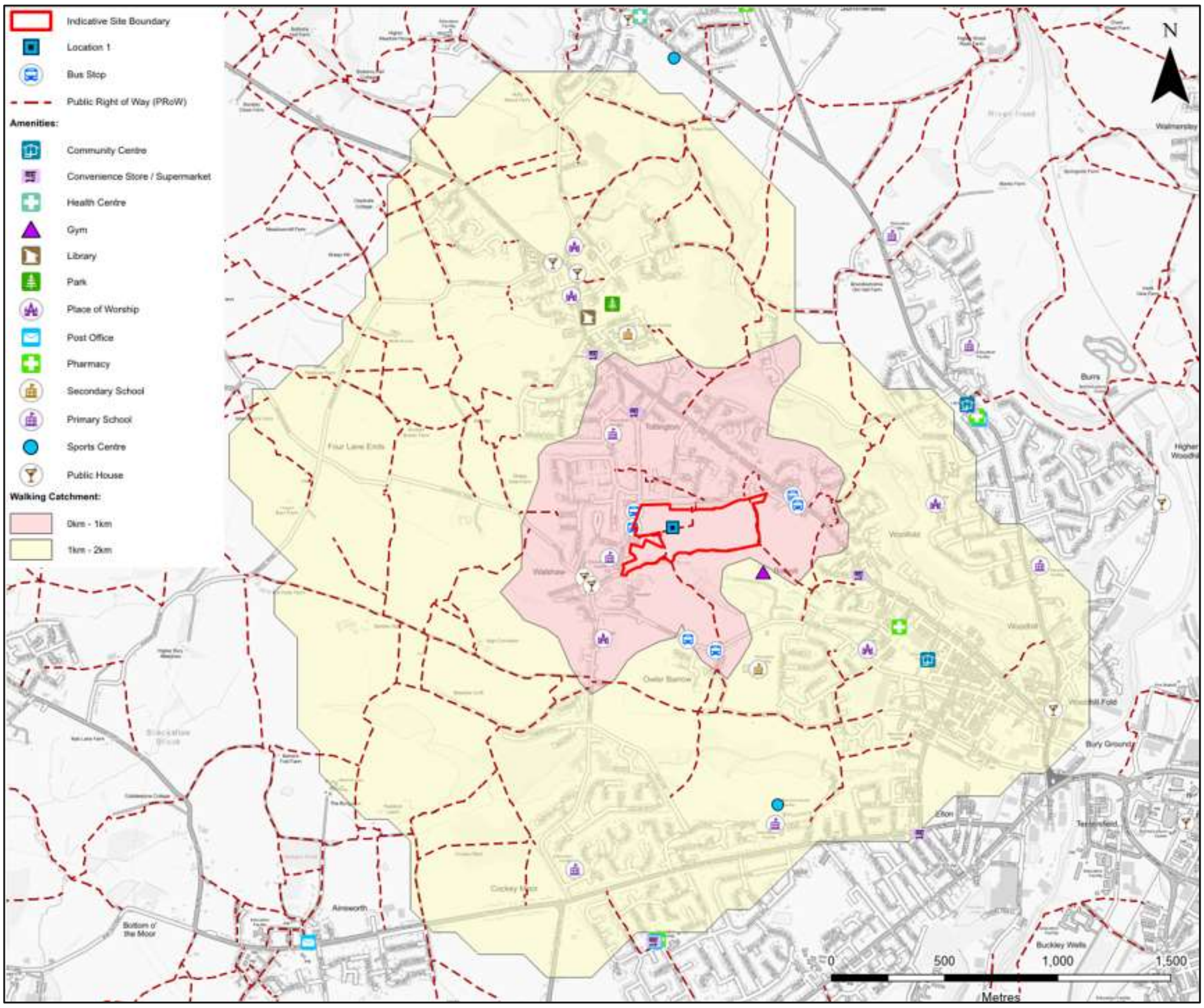
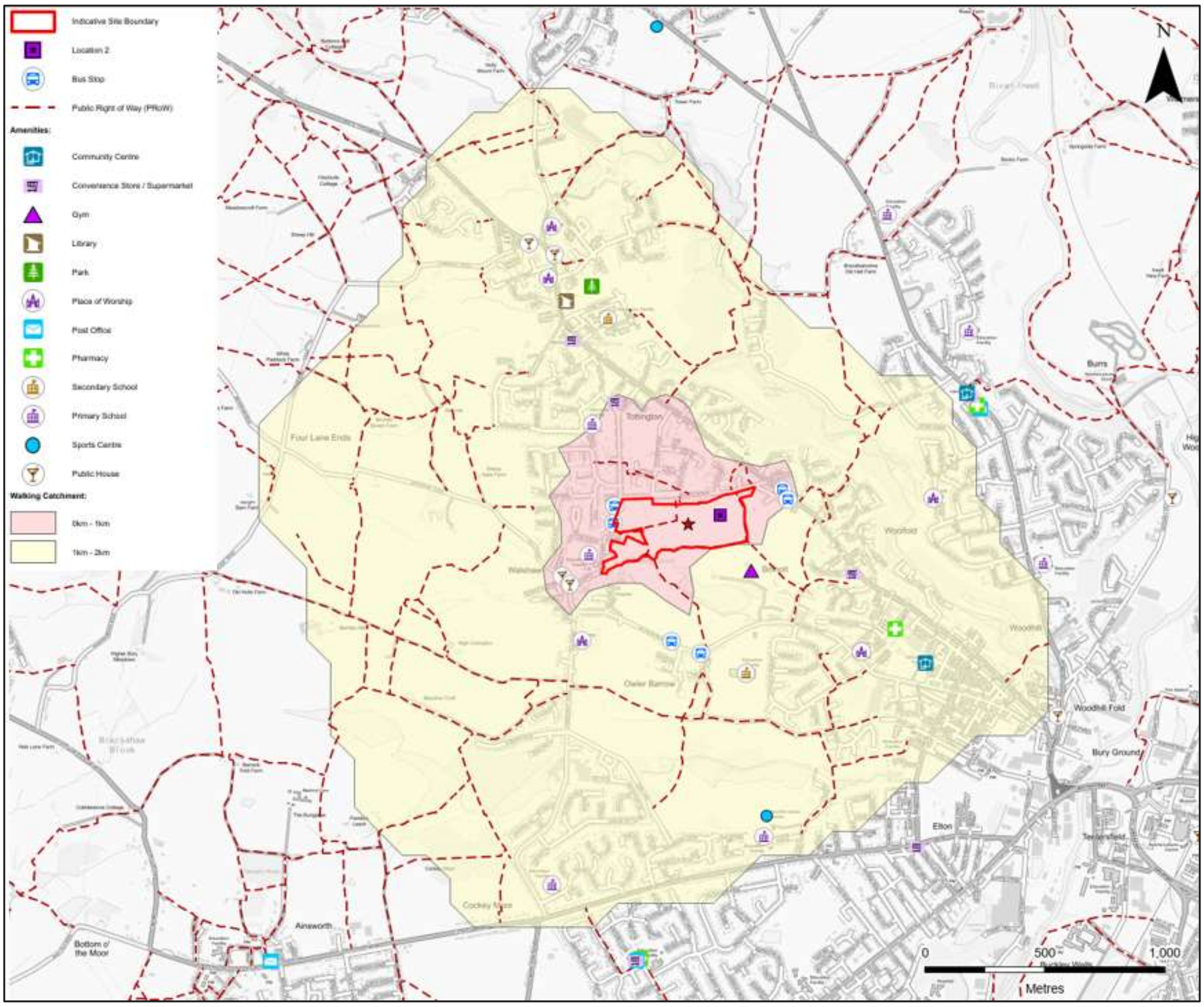

Indicative Site Boundary
Location 1
Bus Stop
Public Right of Way (PRoW)
Amenities:
Community Centre
Convenience Store / Supermarket
Health Centre
Gym
Library
Park
Place of Worship
Post Office
Pharmacy
Secondary School
Primary School
Sports Centre
Public House
Walking Catchment:
0km - 1km
1km - 2km
N
Tottington
Walshaw
Four Lane Ends
Woolfold
Elton
Cockey Moor
Ainsworth
Bottom o' the Moor
Burrs
Bury Ground
Woodhill Fold
Walmersley
0
500
1,000
1,500
Metres

Figure 3.2: Walking Catchment from the east of the Site


Indicative Site Boundary
Location 2
Bus Stop
Public Right of Way (PRoW)
Amenities:
Community Centre
Convenience Store / Supermarket
Gym
Library
Park
Place of Worship
Post Office
Pharmacy
Secondary School
Primary School
Sports Centre
Public House
Walking Catchment:
0km - 1km
1km - 2km
N
Tottington
Four Lane Ends
Walshaw
Woolfold
Woodhill
Woodhill Fold
Bury Ground
Elton
Ainsworth
Cockey Moor
Bottom o' the Moor
0
500
1,000
Metres

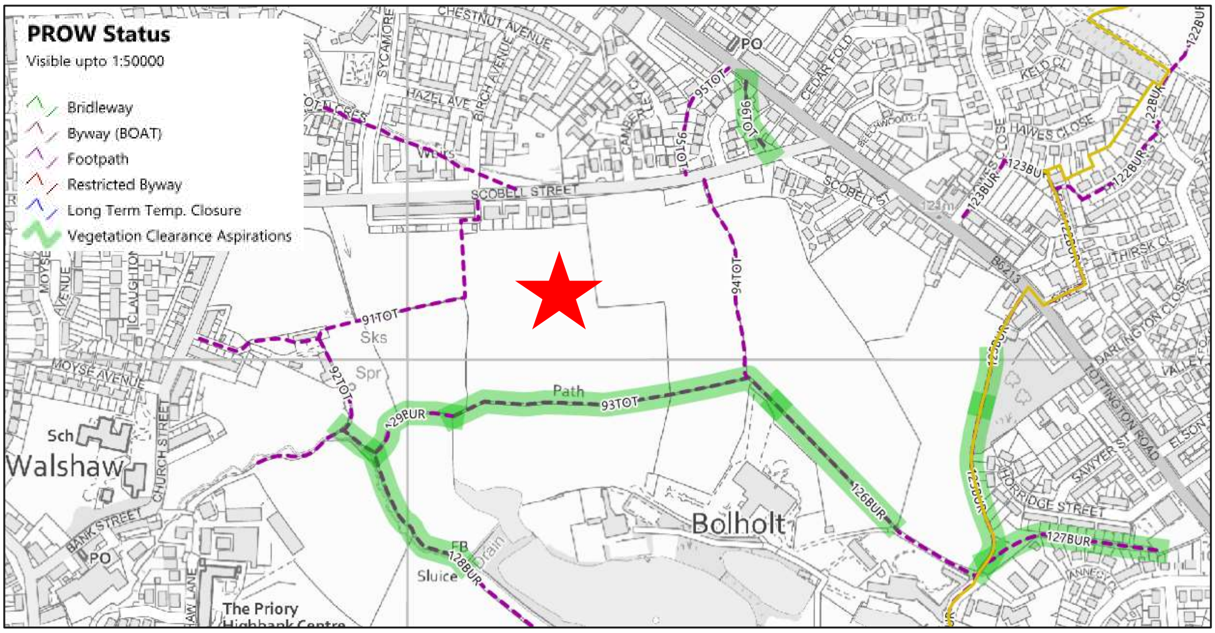
3.17 The 2km catchment represents a journey of approximately 25 minutes. Both of the plans indicate that within a 2km walking catchment the entirety of Tottington, Walshaw, Elton and the northwestern fringe of Bury town centre can be reached.

3.18 The 2km catchment also benefits from a wide range of local facilities being in its vicinity making it a very well-connected development, with good access to employment, retail and leisure opportunities with a real opportunity to promote local living.

3.19 Pedestrian movements around the site are supported by footways with dropped crossings throughout the surrounding residential streets. A more detailed assessment of these routes has been provided in the Active Travel Routing Assessment that can be found later in this chapter.

3.20 Furthermore, it can also be seen that there are a number of public rights of way (PRoW) that run within the development site connecting to the local network. BC have provided a detailed PRoW Map which summarises these routes. An extract of the map in the vicinity of the site is shown in **Figure 3.3.**

Figure 3.3: Bury Council PRoW Definitive Map


PROW Status
Visible upto 1:50000
Bridleway
Byway (BOAT)
Footpath
Restricted Byway
Long Term Temp. Closure
Vegetation Clearance Aspirations
CHESTNUT AVENUE
SYCAMORE
HAZEL AVE
BIRCH AVENUE
PO
95TOT
96TOT
CEDAR FOLD
KELD CL
HAWES CLOSE
122BUR
123BUR
SCOBELL STREET
SCOBELL ST
B6213
94TOT
THIRSK CL
DARLINGTON CLOSE
TOTTINGTON ROAD
MOYSE AVENUE
CLAUGHTON
91TOT
Sks
Spr
92TOT
Path
93TOT
129BUR
Sch
Walshaw
CHURCH STREET
BANK STREET
126BUR
Bolholt
125BUR
SAWYER ST
HORRIDGE STREET
127BUR
FB
128BUR
Sluice
Drain
The Priory
Highbank Centre

Cycling

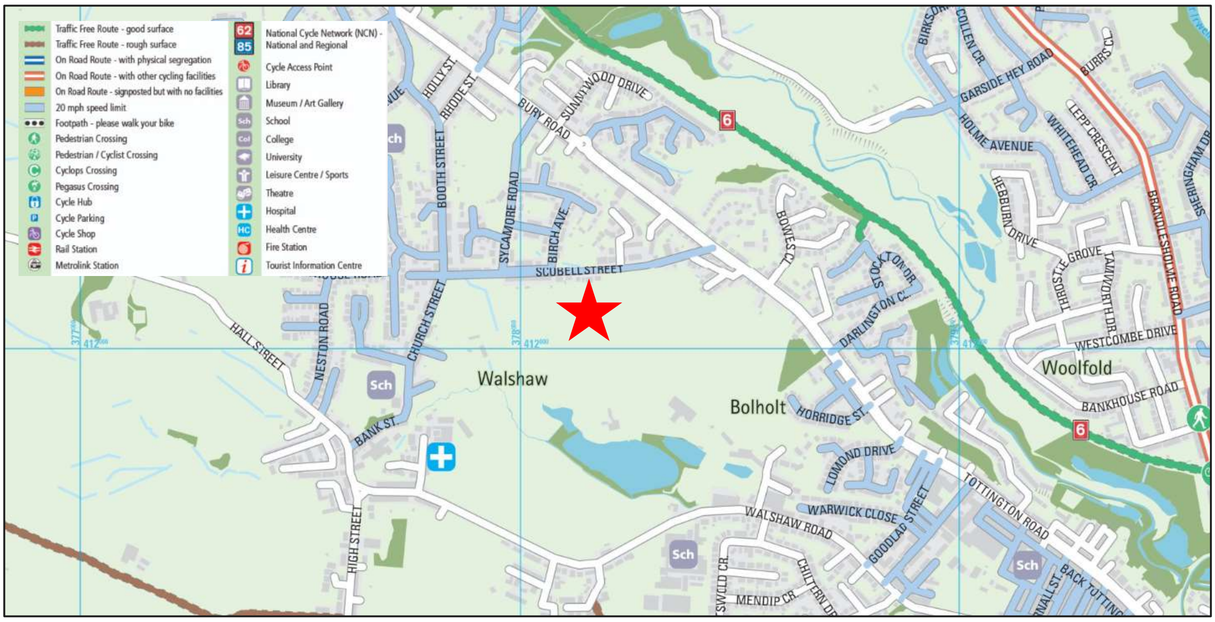
3.21 Cycling is an effective mode for short trips up to 3 to 5 miles (5 to 8km). A catchment of 5km represents a journey time of 20 minutes, based on a leisurely cycle speed of 10mph (16kph).

3.22 **Plan 4** and **Plan 6** show the initial 5km cycle catchments from the west and east of the site. The 5-kilometre cycle catchment on both plans includes the entirety of Tottingham, Walshaw, Bury and other local areas such as Radcliffe, Ramsbottom and suburbs of Bolton.

3.23 Furthermore, it can be seen that the National Cycle Network (NCN) 6 runs in close proximity to the site providing a connection towards Watford, Luton, Milton Keynes, Northampton, Market Harborough, Leicester, Sheffield, Manchester and Lancashire.

3.24 TfGM have provided an online active travel map for the Bury area. An excerpt of this map is shown in **Figure 3.4**, which highlights the cycle infrastructure in the vicinity of the development site, as well as the location of NCN Route 6. The location of the development site has been marked with a red star.

Figure 3.4: Cycle Infrastructure in Vicinity of Site


Traffic Free Route - good surface
Traffic Free Route - rough surface
On Road Route - with physical segregation
On Road Route - with other cycling facilities
On Road Route - signposted but with no facilities
20 mph speed limit
Footpath - please walk your bike
Pedestrian Crossing
Pedestrian / Cyclist Crossing
Cyclops Crossing
Pegasus Crossing
Cycle Hub
Cycle Parking
Cycle Shop
Rail Station
Metrolink Station
62
85
National Cycle Network (NCN) - National and Regional
Cycle Access Point
Library
Museum / Art Gallery
School
College
University
Leisure Centre / Sports
Theatre
Hospital
Health Centre
Fire Station
Tourist Information Centre
Walshaw
Bolholt
Woolfold
Sch
6
HOLLY ST
RHODE ST
BOOTH STREET
SYCAMORE ROAD
BIRCH AVE
BURY ROAD
SUNNYWOOD DRIVE
SCOBELL STREET
CHURCH STREET
NESTON ROAD
HALL STREET
BANK ST
HIGH STREET
BOWES CL
STOCKTON DR
DARLINGTON CL
HORRIDGE ST
LOMOND DRIVE
WARWICK CLOSE
GOODLAD STREET
WALSHAW ROAD
CHILTERN DR
MENDIP CR
TOTTINGTON ROAD
BACK TOTTING
GARSIDE HEY ROAD
HOLME AVENUE
HEBBURN DRIVE
WHITEHEAD CR
LEPP CRESCENT
BURRS CL
COLLEN CR
BRANDLESHOLME ROAD
WESTCOMBE DRIVE
BANKHOUSE ROAD
TAMWORTH DR
GROVE

3.25 **Figure 3.4** indicates that the development site is surrounded by lightly trafficked routes that are subject to 20mph speed limits, that create an environment for cyclists to share the carriageway.

3.26 The local area also includes an on-road route to the east of the site that runs along Brandlesholme Road, that features cycle facilities providing connections to both Bury and Bolton town centre.

Active Travel Routing Assessment

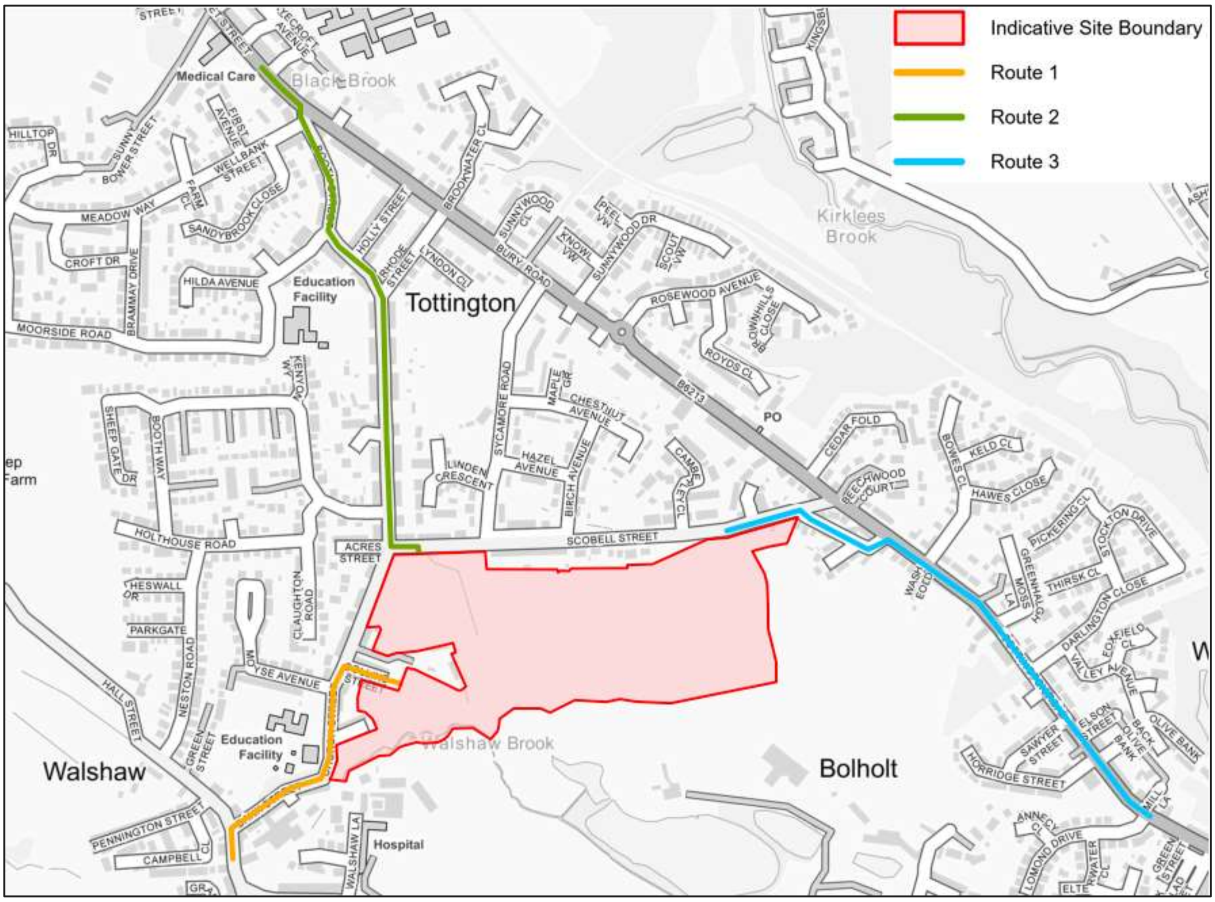
3.27 The key active travel routes that future residents at the site can utilise have been assessed.

3.28 This assessment considers how people of all abilities will make the journeys that are essential to supporting car-free lifestyles, whilst connecting the site to the existing local area.

3.29 The aim of the assessment is to better understand the characteristics of the local area that are required to encourage active travel.

3.30 **Figure 3.5** illustrates what are considered to be the key active travel routes that can be taken from the development site in order to access a variety of key local services and facilities.

Figure 3.5: Key Active Travel Routes


Indicative Site Boundary
Route 1
Route 2
Route 3
Medical Care
Black Brook
Kirklees Brook
Tottington
Education Facility
Education Facility
Walshaw
Walshaw Brook
Bolholt
Hospital
PO
B6213
BURY ROAD
SCOBELL STREET
ACRES STREET
HILLTOP DR
MEADOW WAY
CROFT DR
HILDA AVENUE
MOORSIDE ROAD
BRAMMAY DRIVE
SHEEP GATE DR
BOOTH WAY
HOLTHOUSE ROAD
HESWALL DR
PARKGATE
NESTON ROAD
HALL STREET
GREEN STREET
PENNINGTON STREET
CAMPBELL CL
WALSHAW LA
SYCAMORE ROAD
LINDEN CRESCENT
HAZEL AVENUE
BIRCH AVENUE
CHESTNUT AVENUE
MAPLE GR
ROSEWOOD AVENUE
ROYDS CL
CEDAR FOLD
BEECHWOOD COURT
KELD CL
HAWES CLOSE
PICKERING CL
STOCKTON DRIVE
THIRSK CL
DARLINGTON CLOSE
VALLEY AVENUE
SAWYER STREET
ELSON STREET
HORRIDGE STREET
OLIVE BANK
LOMOND DRIVE
HOLLY STREET
LYNDON CL
SUNNYWOOD DR
SANDYBROOK CLOSE
WELLBANK STREET
FIRST AVENUE
SUNNY BOWER STREET
CLAUGHTON ROAD
KENYON WAY

3.31 The following active travel destinations are important considerations for the future residents and visitors to the development:

- Public transport interchanges: Bury Tram Stop, Bury Interchange and on street bus stops;
- Local amenities: Convenience stores, supermarket, sports centre, country club, takeaways, restaurants, public houses and barbers / hairdressers;
- Green spaces: Whitehead Park and Old Kay's Park;
- Education facilities: Tottington Primary School, Christ Church Primary School, Elton Primary School, Tottington High School Academy; and
- Medical care: Tottington Medical Practice.

3.32 The main walking / cycling routes to what are considered the main destinations for residents of the proposed development have been identified as:

- **Route 1**: Church Street (westbound from the site);
- **Route 2**: Booth Street (northbound from the site);
- **Route 3**: B6213 Bury Road (eastbound from the site).

3.33 Each of the routes identified include / pass multiple key destinations that are within an acceptable active travel distance from the proposed development site.

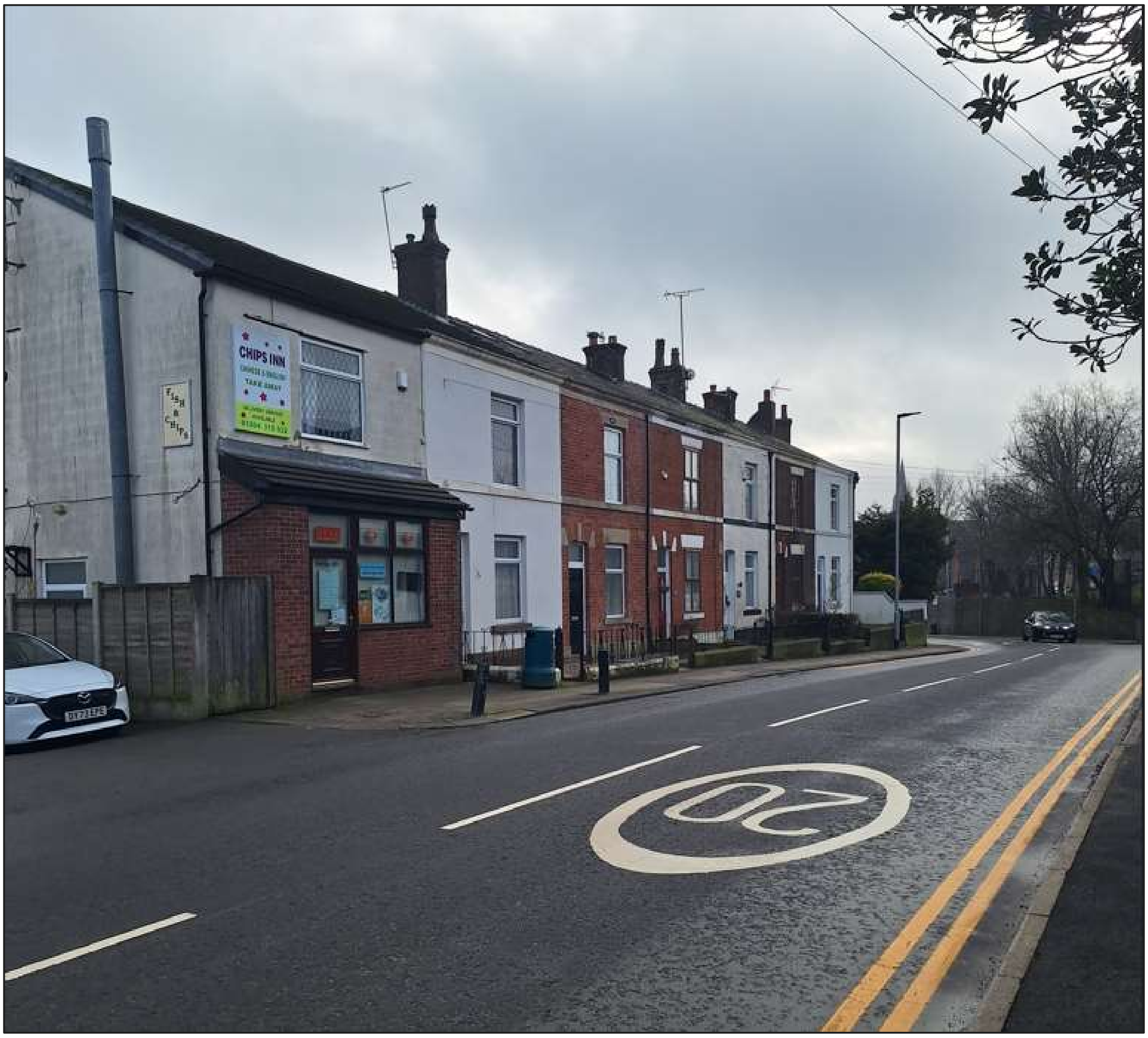
Route 1: Church Street (westbound from the site)

3.34 Route 1 runs to the west of the site from the existing PRoW connection onto Church Street. Church Street runs south in a gradual downhill decline, with street lit footways provided on both sides of the carriageway.

3.35 Church Street is a two-way road with a carriageway width of approximately 7m and has continuous footways with dropped kerbs at a number of junctions along its length, to support pedestrian movements.

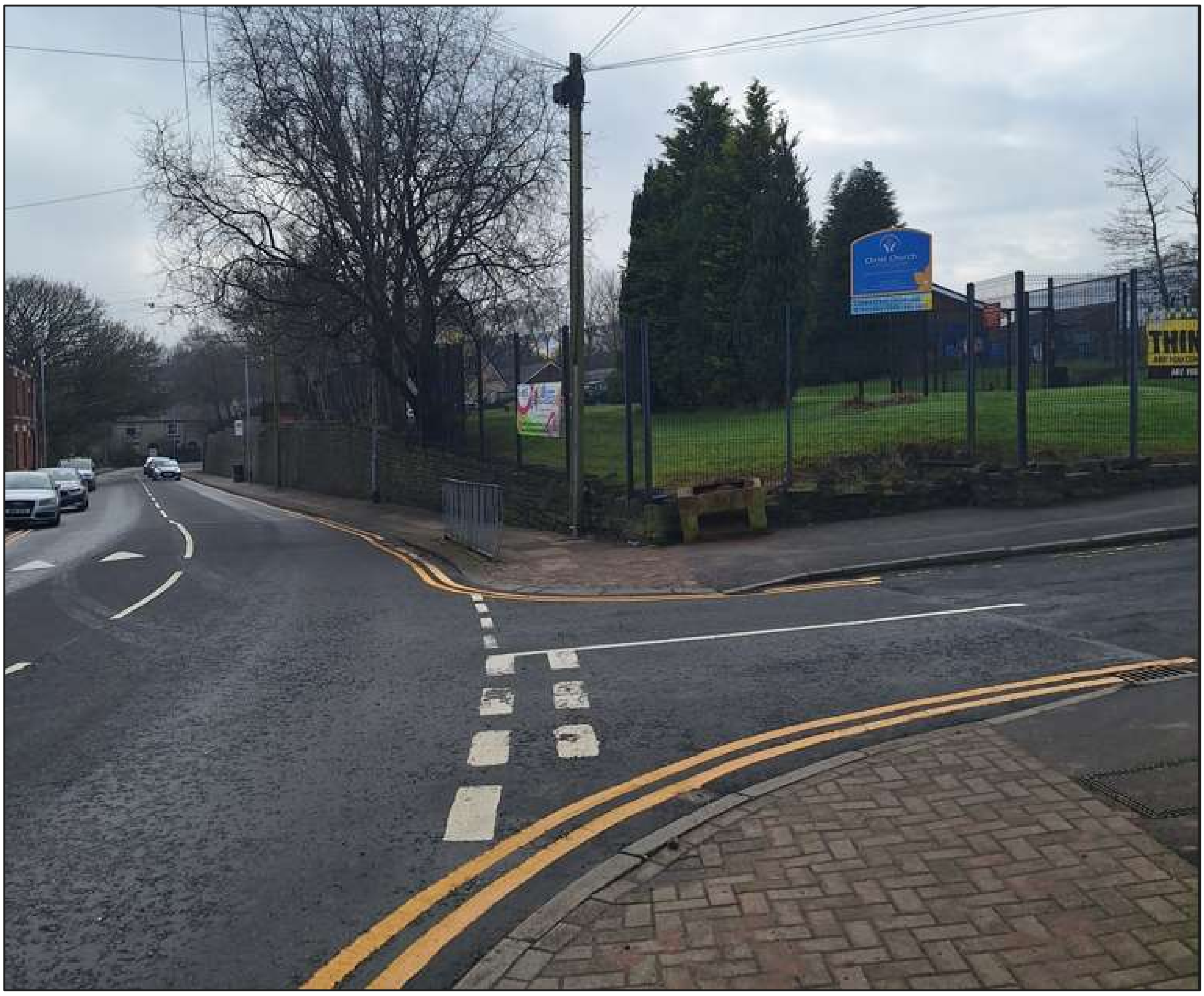
3.36 Travelling south along the route there are pedestrian bollards located alongside a takeaway to prevent vehicles from accessing or parking near the footway, as shown in **Figure 3.6.**

Figure 3.6: Church Street



3.37 Further south along Route 1, Church Street forms a priority junction with Moyse Avenue, where double yellow lines are provided at the junction access to prevent parking close to Christ Church Primary school. This area is shown in **Figure 3.7.**

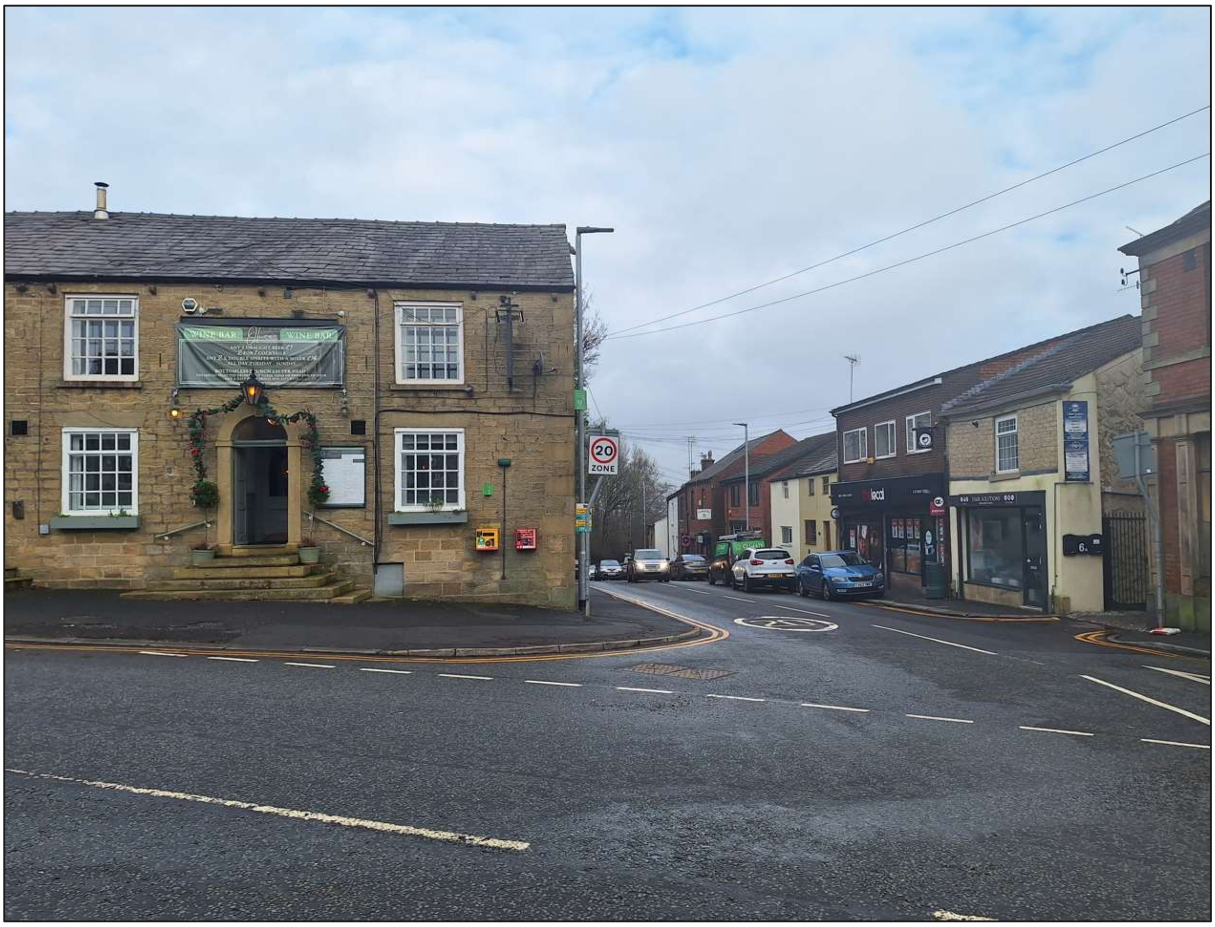
Figure 3.7: Christ Church Primary School



3.38 Travelling southbound along Route 1, Church Street forms Bank Street, where footways are generally in a good well-maintained condition, free of any significant defects and aiding pedestrian safety.

3.39 Future residents are likely to use Route 1 to access amenities in Walshaw village that includes a convenience store, a hairdressers, a sandwich shop and a wine bar, amongst others, as shown in **Figure 3.8**.

Figure 3.8: Walshaw Village Centre



3.40 Route 1 is considered to be a desirable and highly accessible option that supports active travel between the development site and key local destinations, facilitating active travel for future residents.

Route 2: Booth Street (northbound from the site)

3.41 Active Travel Route 2 is taken from the north of the proposed development on Scobell Street and runs northbound along Booth Street.

3.42 Both Scobell Street and Booth Street are primarily residential streets that benefit from low traffic volumes and reduced vehicle speeds (due to the 20mph speed limit), ensuring a comfortable journey for both pedestrians and cyclists. Each of these roads include well-maintained street lit footways on both sides of the road, making it accessible at all times for active travel users.

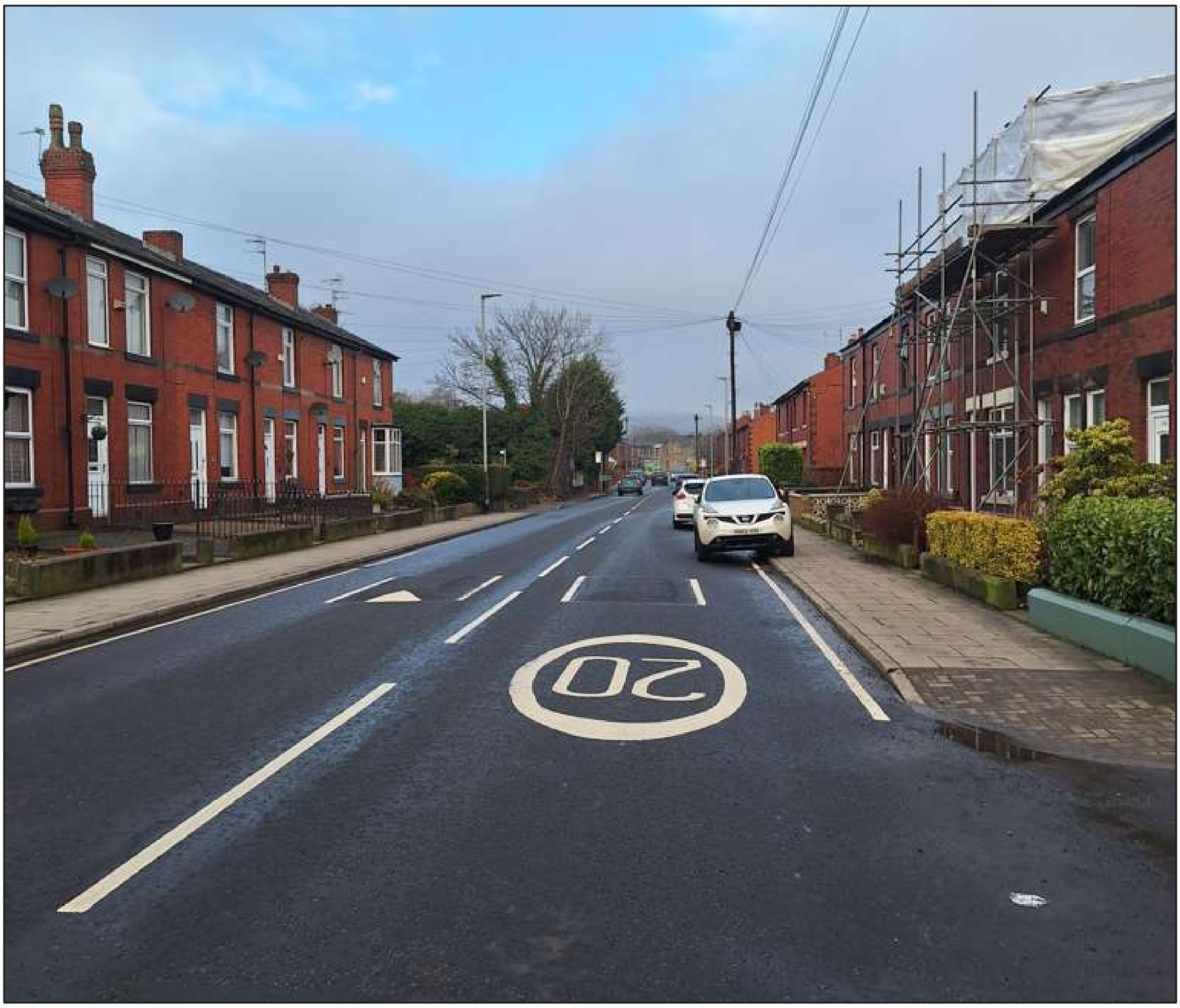
3.43 Dropped kerbs and tactile paving are provided to aid pedestrian movements across Scobell Street and onto Booth Street at the mini roundabout junction to the northwest of the proposed development site.

3.44 Additionally, there is a nearby alley that offers a shorter, traffic-free alternative for those heading northbound directly to Booth Street from Scobell Street. However, the primary route heading towards the mini roundabout to the west of Scobell Street may be the more preferable.

3.45 Heading northbound along Booth Street the road accommodates facilities for active travel movements with street lit footways on both sides of the road and dropped kerbs with tactile paving at each of the key junctions.

3.46 Booth Street is a relatively straight road that runs northbound towards Tottingham, with a very slight gradual incline. An image of Booth Street can be seen below in **Figure 3.9.**

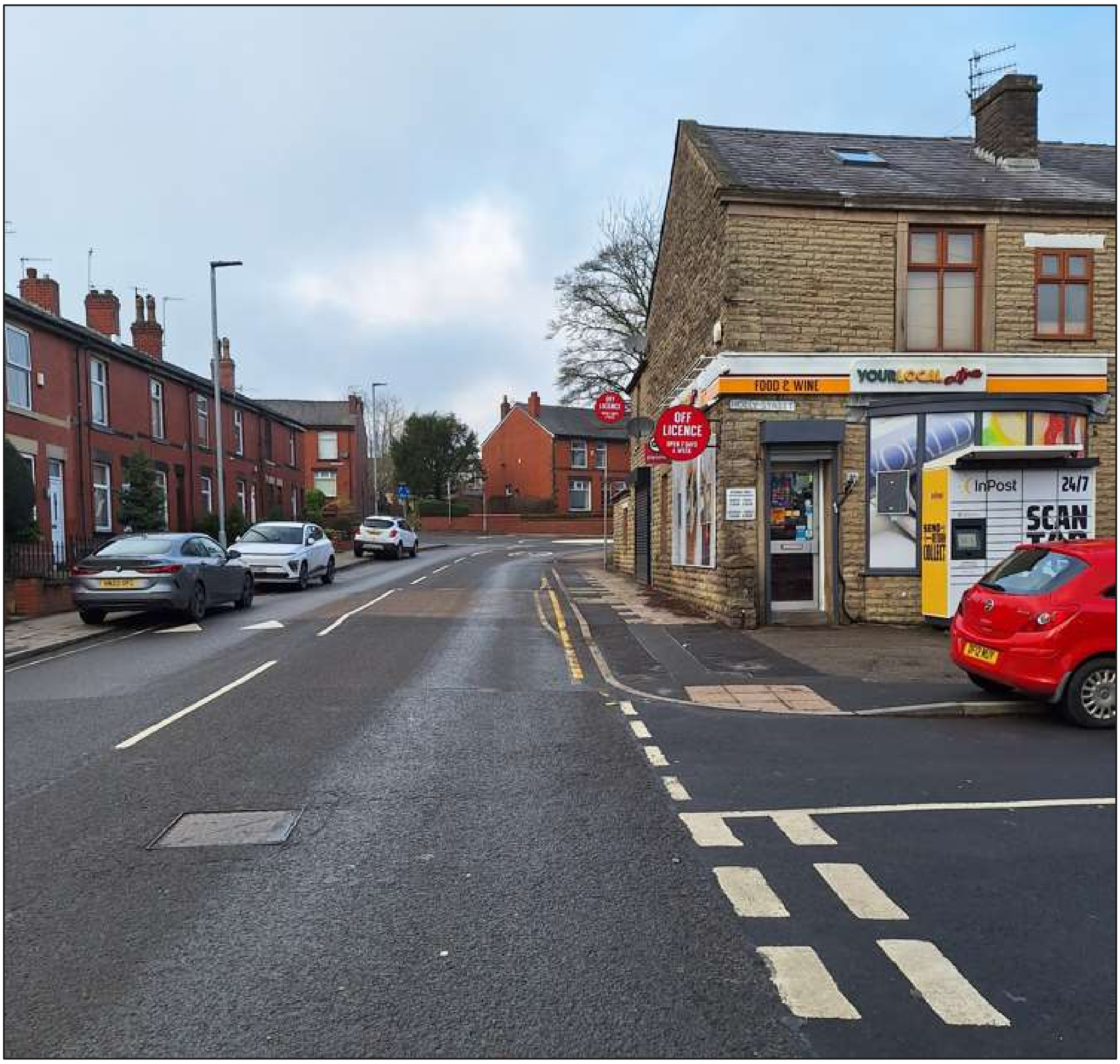
Figure 3.9: Booth Street



3.47 Continuing northbound on Booth Street footways of good condition and assisted crossings provide a desirable route for active travel users.

3.48 Within an approximate 500m distance of the site (6-minute walk time) there is a convenience store located on Booth Street that provides a local shop for future residents of the site, as shown in **Figure 3.10.** Tottington Primary School can also be accessed via route 2 within a 500m walk distance (6 min) of the site.

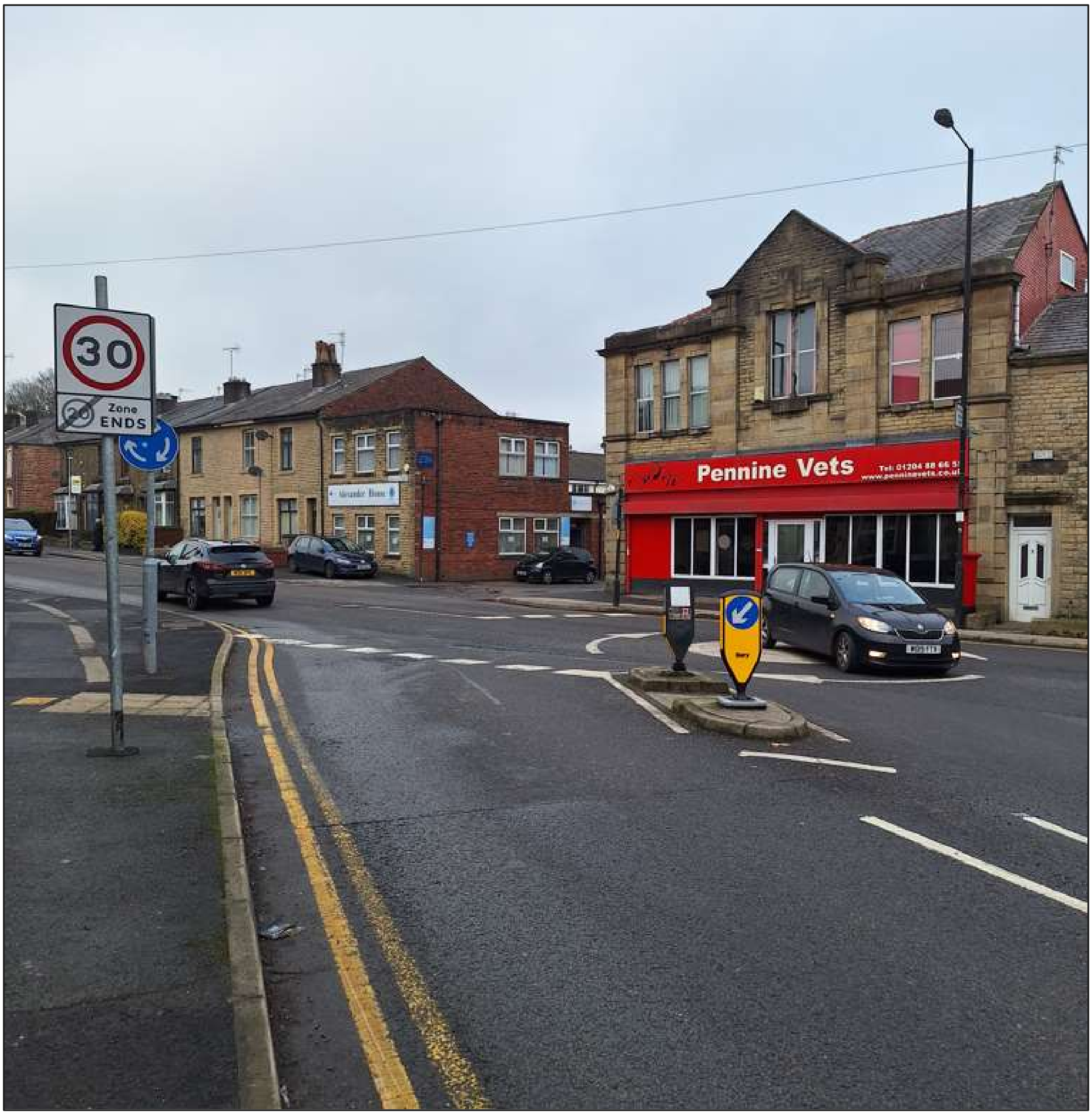
Figure 3.10: Booth Street / Convenience Store



3.49 Continuing northbound from the convenience store shown in **Figure 3.10** there is an area of green space along the eastern side of Booth Street, with a park accessible for children.

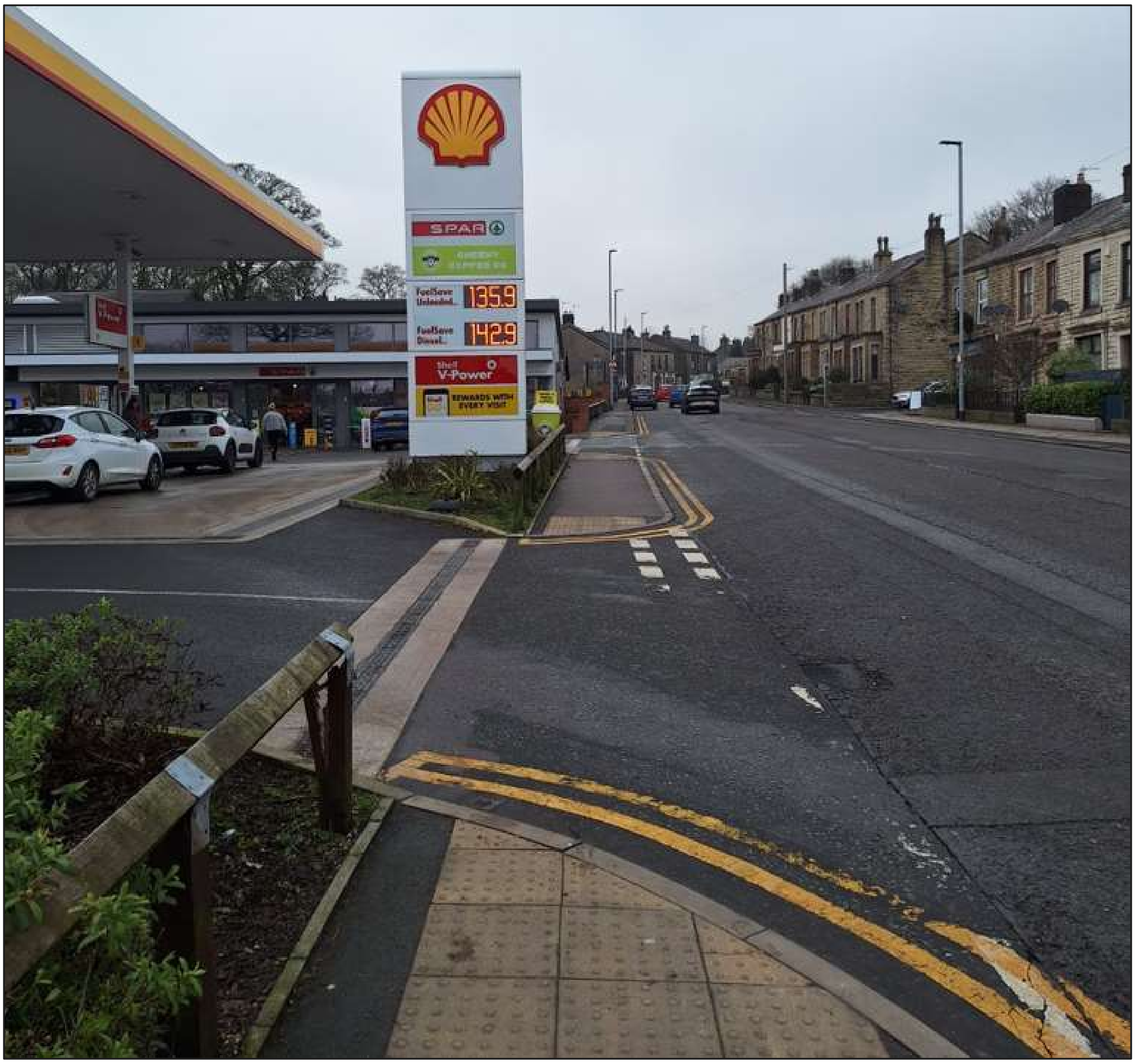
3.50 At the northern end of Booth Street, a mini roundabout junction is formed onto the B6213 Bury Road where a pedestrian refuge island is provided to aid pedestrian crossings over the B6213 Bury Road. The condition and location of this crossing is shown in **Figure 3.11.**

Figure 3.11: Approach towards Market Street and the B6213 Bury Road.


30
20 Zone ENDS
Pennine Vets
Tel: 01204 88 66 5
www.penninevets.co.u
Bury

3.51 The B6213 Market Street is a small high street that provides a variety of amenities along its length. Market Street, as shown in **Figure 3.12** also includes multiple bus stops and is a main route providing frequent bus services that operate within the area

Figure 3.12: Petrol Station & Spar Convenience Store - Market Street



3.52 It is therefore considered that Route 2 is a desirable route that is highly accessible and caters for active travel movements to / from the development site to facilitate future resident active travel movements.

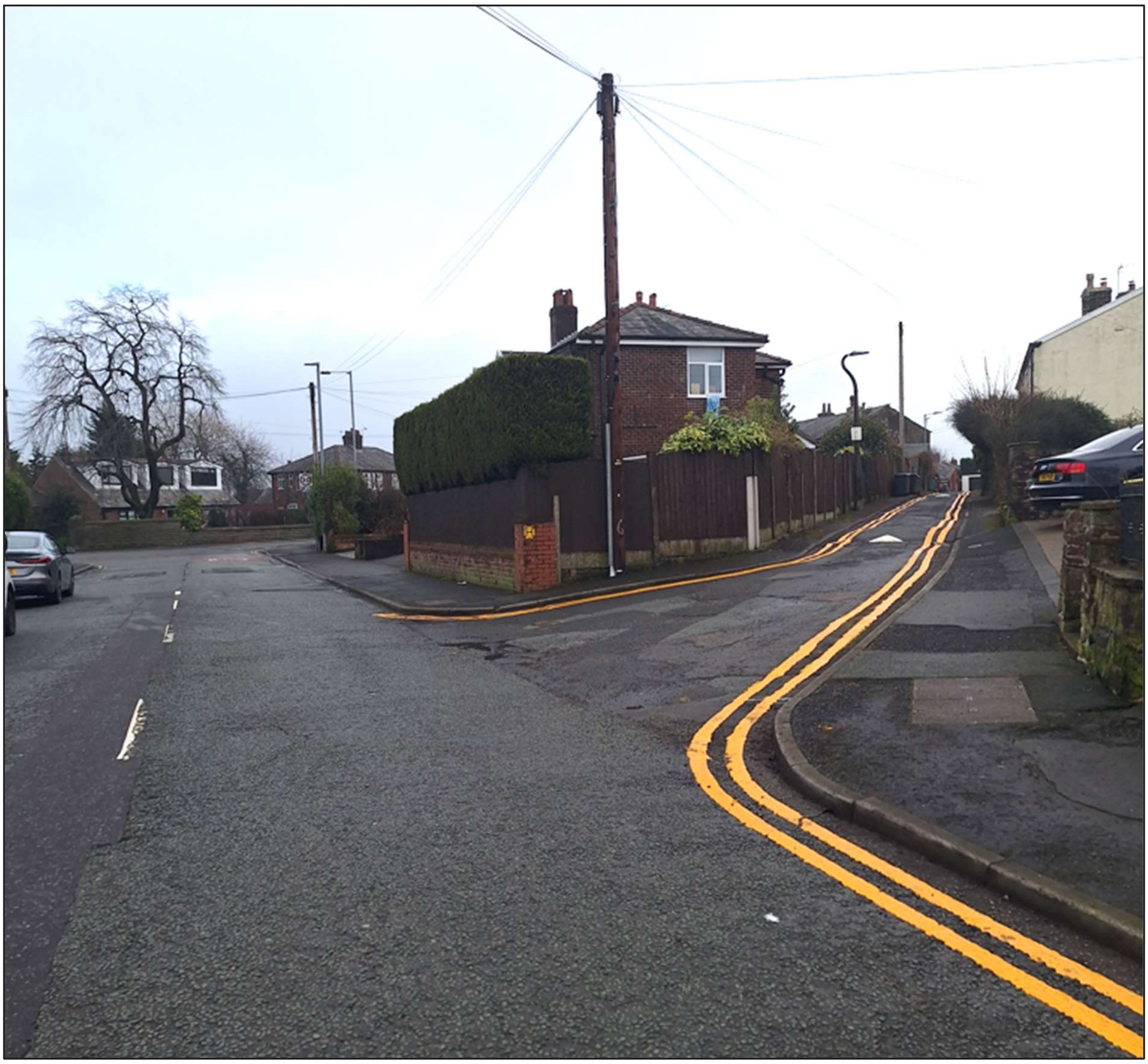
Route 3: B6213 Bury Road (eastbound from the site)

3.53 Active Travel Route 3 is also taken from the north of the proposed development on Scobell Street and runs eastbound from the site. Scobell Street is provided with street lit footways on both sides of the carriageway to the east of the site.

3.54 Route 3 starts as being predominantly residential in nature and is lightly trafficked as it travels towards the B6213 Bury Road / Tottington Road. This route provides an attractive walking route to facilitate future residents of the proposed development site, as having access to the B6213 Bury Road includes the most convenient walking route towards Bury town centre.

3.55 To access the B6213 Bury Road from Scobell Street, pedestrians have the option of continuing along Scobell Street to its junction with Bury New Road or as an alternative use the southeastern road that is also a continuation of Scobell Street. Both routes are lit. This is a sloped inclined route, which is marginally shorter although has narrower footways are more of an incline. The latter route is shown below in **Figure 3.13.**

Figure 3.13: Scobell Street – alternative route to B6213

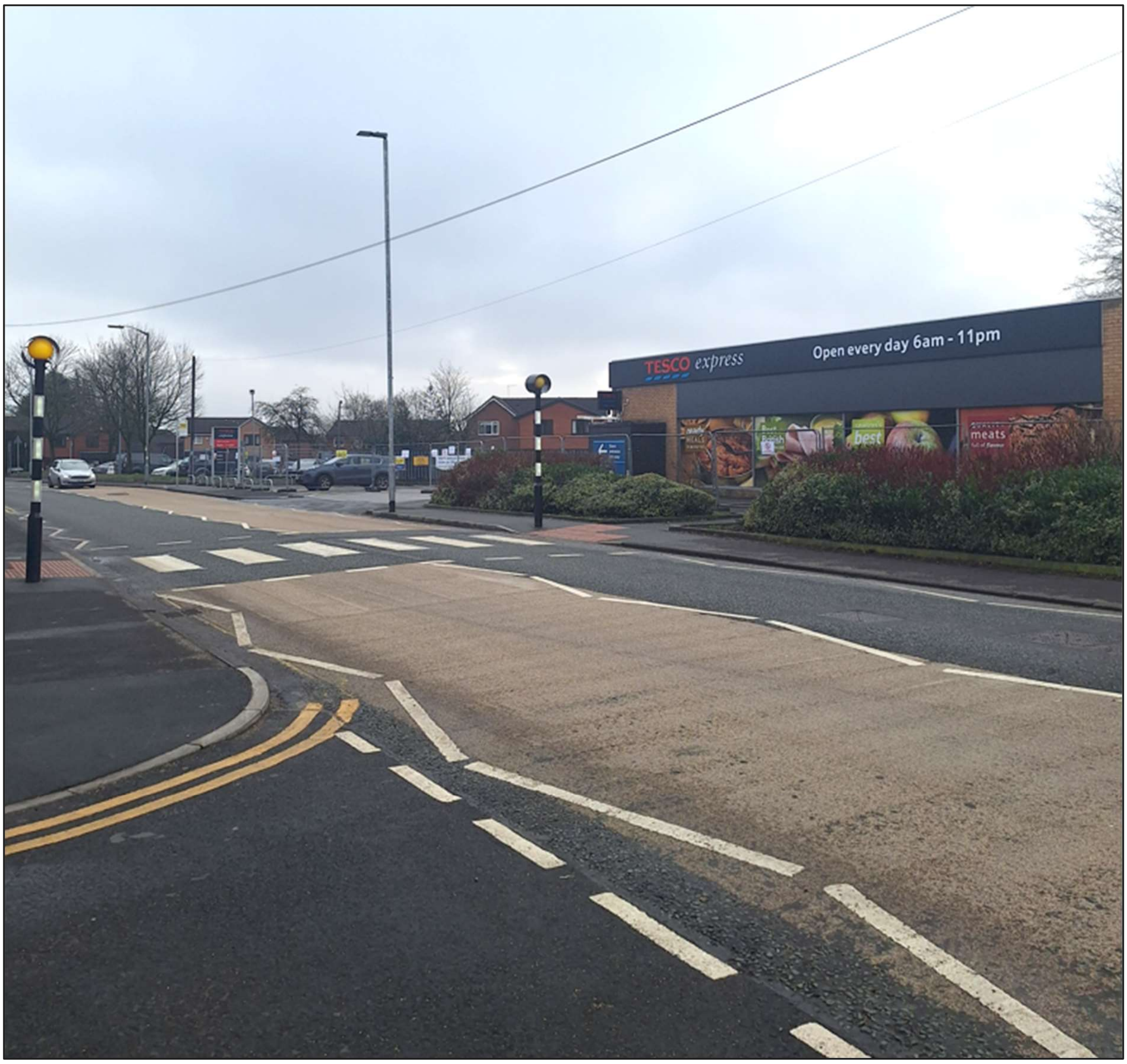


3.56 Double yellow line markings are seen along this section of the road to prevent parking as the road is narrow in width. Continuing eastbound, Scobell Streets reaches the B6213 Bury Road, where footways are provided along both sides of the carriageway, which are well maintained and street lit along its length. Dropped kerbs and tactile paving is provided along the B6213 to aid active travel movements along the road.

3.57 The B6213 Bury Road is generally flat in nature and suitable for pedestrian / cycle use. Travelling southbound on the B6213 a number of amenities can be accessed from the site that include a convenience store, public house and bus stops.

3.58 Further south a zebra crossing can be seen adjacent to the Tesco Express store (650m), as shown in **Figure 3.14.** This crossing is not only useful for reaching the convenience store but also for crossing over the road to reach the residential areas to the east of Tottingham. There is also a hairdresser, public house and Indian takeaway at the other side of the road.

Figure 3.14: B6213 Zebra Crossing



3.59 Route 3 is considered to be a desirable option for active travel users / future residents of the proposed development site, offering a relatively straight alignment and direct path to both nearby residential areas and also to a range of amenities, including the Tesco Convenience Store mentioned earlier, Elton Primary School (1.2km), and further on to the B&M Home Store and Aldi (2km).

3.60 Residents may also choose this route for walking or cycling directly to Bury town centre, with an estimated walk time of approximately 35 minutes and a cycle time of around 8 minutes. Route 3 is therefore considered to be a highly suitable choice for facilitating active travel to and from the development site.

Shared Travel Links

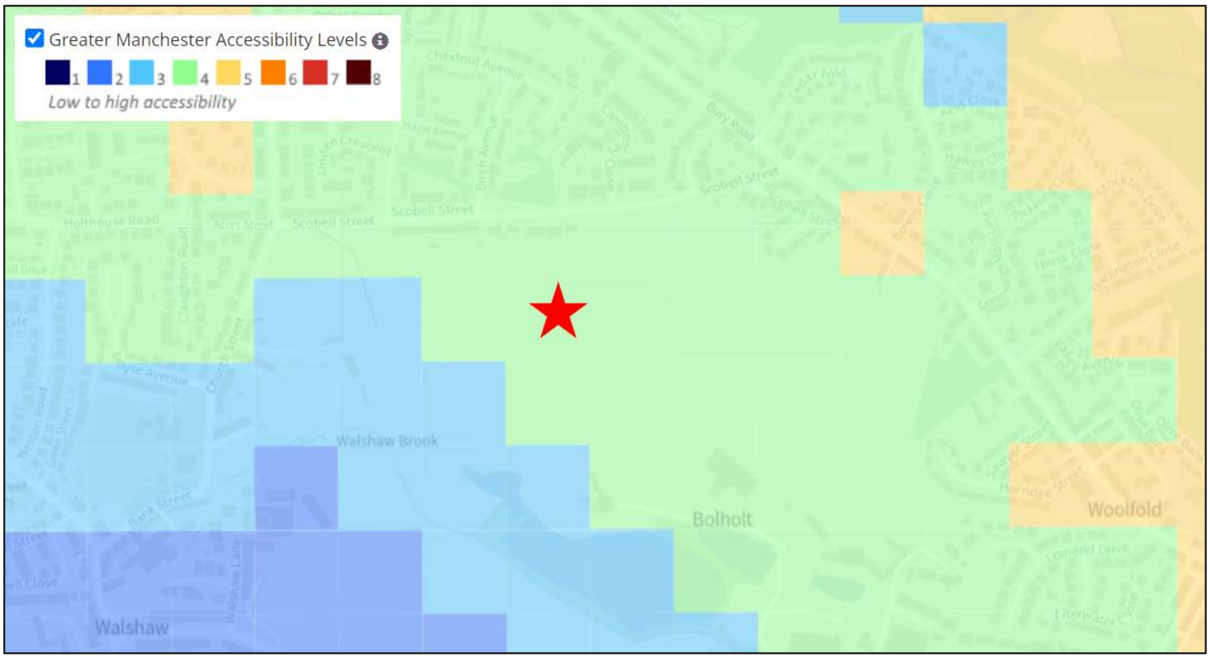
Greater Manchester Accessibility Level (GMAL)

3.61 A Greater Manchester Accessibility Level (GMAL) assessment has been undertaken for the site.

3.62 A GMAL is calculated using the interactive tool managed and maintained by TfGM. This tool measures accessibility by public transport of a point of interest and provides a score between 1 and 8, where 1 is a low level of accessibility and 8 is the highest level of accessibility.

3.63 The GMAL plan in the vicinity of the site is shown in **Figure 3.15.**

Figure 3.15: GMAL level


Greater Manchester Accessibility Levels
1
2
3
4
5
6
7
8
Low to high accessibility
Chestnut Avenue
Cedar Fold
Kew Close
Bury Road
Hazel Avenue
Birch Avenue
Linden Crescent
Hawes Close
Scobell Street
Holthouse Road
Acres Street
Claughton Road
Church Street
Thirsk Close
Darlington Close
Walshaw Brook
Bank Street
Walshaw Lane
Walshaw
Bolholt
Woolfold
Lomond Drive
Ellerwater Close

3.64 **Figure 3.15** demonstrates that the development site is located in an area with accessibility level of 3 to 4. This translates to an area with a good level of public transport accessibility.

3.65 With convenient access to the B6213 Bury Road to the east of the site, this provides the opportunity to reach an accessibility level of 5 with the access to the nearest frequent bus services. Additionally, the area includes well connected footways and a number of existing PRoW routes that can be used to access these bus stops.

Bus

3.66 The nearest bus stops to the site are located on Church Street to the west of the site, an approximate 150m distance from the proposed western site access point. This equates to an approximate 2-minute journey time on foot. Both the northbound and southbound bus stops on Church Street comprise a flag post.

3.67 Bus stops are also provided to the east of the development site along the B6213 Bury Road, an approximate 230m distance from the proposed eastern site access point. This equates to an approximate 3-minute journey on foot. The southbound stop on the B6213 comprises of a flagpole stand, whilst the northbound stop is sheltered and includes timetable information.

3.68 The frequency of services operating from these bus stops are shown below in **Table 3.2.**

Table 3.2: Frequency of bus services in the vicinity of the site

Route	Destination	Frequency per Hour					
		Monday – Friday				Sat	Sun
		AM Peak	Daytime	PM Peak	Evening		
		B6213 Bury Road					
469	Tottington - Bury	4	4	4	2	4	2
		Church Road					
480	Bolton - Bury	1	1	1	-	1	-

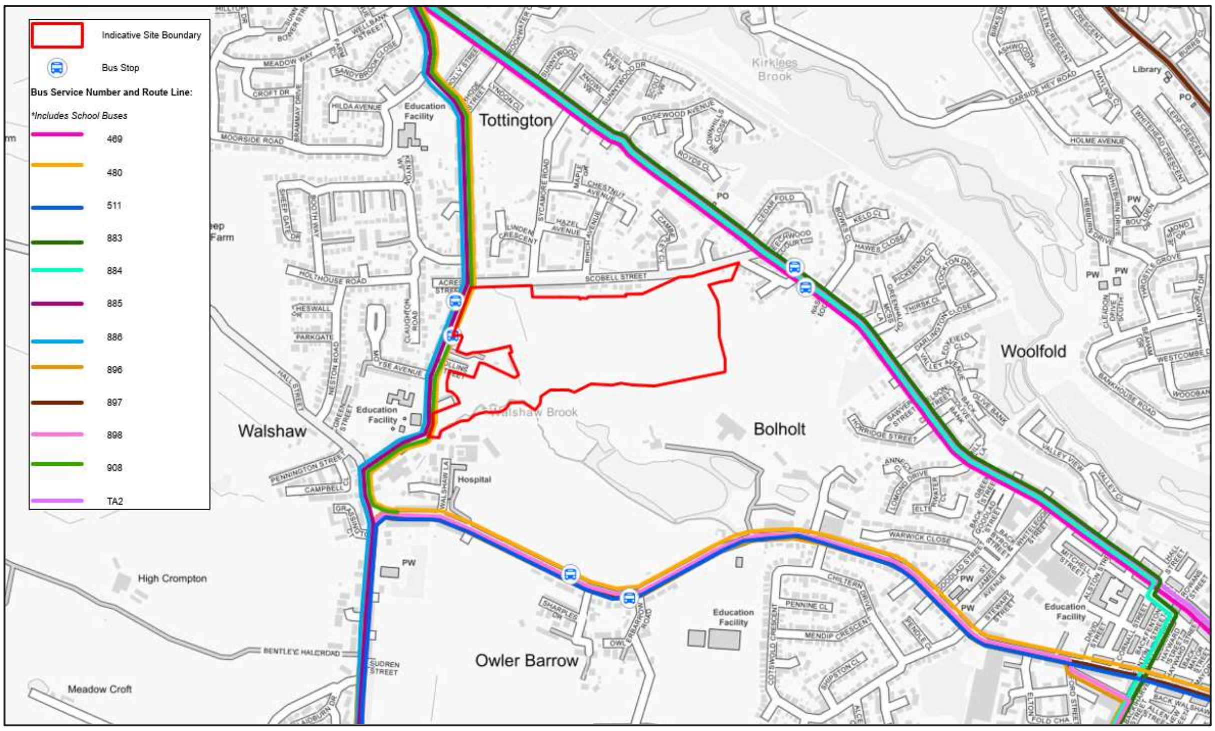
3.69 As shown in **Table 3.2,** the No 469 provides a regular service throughout the day with circa 4 services every hour between Monday to Saturday, with these reducing to 2 per hour on Sundays. The No. 480 is an hourly Monday to Saturday, with a reduced service to every 2 hours on a Sunday between 09:43am to 19:43pm.

3.70 There are also additional services that include a Travel Assist bus, which provides transport for those with mobility impairments. This is known as the No. TA02 which operates twice a day at 10:08 and 12:32.

3.71 In addition, the No. 883/ 884 /885 /886 which are all school buses run one service in the morning and in the afternoon to / from Tottington High School that lies to the north of the development site.

3.72 An illustration of the bus routing plan for each of the services discussed above has been produced as **Plan 7**, with an extract shown below in **Figure 3.16.**

Figure 3.16: Bus Service and Routing Plan


Indicative Site Boundary
Bus Stop
Bus Service Number and Route Line:
*Includes School Buses
469
480
511
883
884
885
886
896
897
898
908
TA2
Tottington
Walshaw
Woolfold
Bolholt
Owler Barrow
High Crompton
Meadow Croft
Walshaw Brook
Kirklees Brook
Hospital
Education Facility

3.73 Based on the above assessment it is considered that the proposed development is well connected and highly accessible via bus for future residents and visitors to the site.

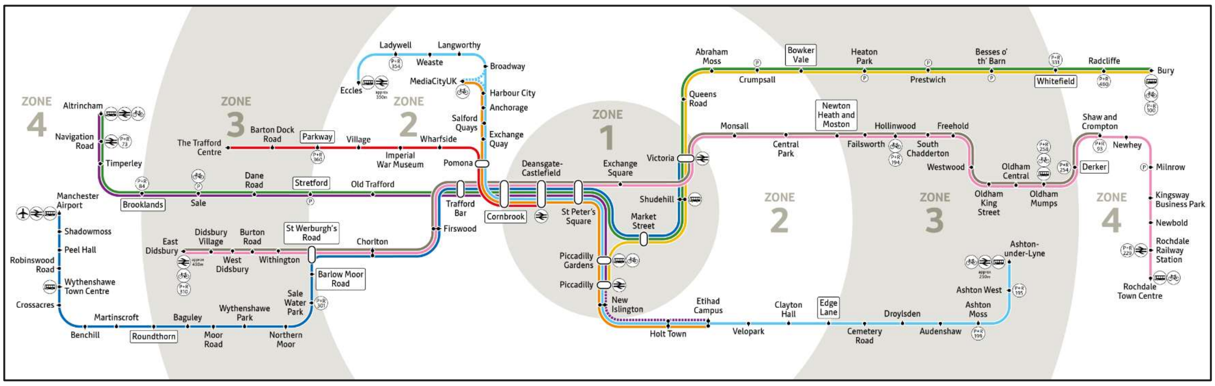
Metrolink Tram

3.74 The nearest tram stops to the proposed development are located within Bury town centre and can be reached by travelling on the No. 469 bus service that stops directly at Bury Interchange.

3.75 Bury Interchange provides access towards other major interchange stations with services operating to a number of key destinations, including Rochdale, Eccles, Ashton-under-Lyne, Altrincham and Manchester Airport.

3.76 Each Metrolink stop provide shelters, seating and real-time journey information and are accessible for disabled access with step-free access, tactile paving and dropped kerbs. The Metrolink Network across the conurbation is provided in **Figure 3.17**.

Figure 3.17: Manchester Metrolink Network


ZONE 4
ZONE 3
ZONE 2
ZONE 1
Altrincham
Navigation Road
Timperley
Manchester Airport
Brooklands
Sale
The Trafford Centre
Barton Dock Road
Parkway
Village
Eccles
Ladywell
Langworthy
Weaste
MediaCityUK
Broadway
Harbour City
Anchorage
Salford Quays
Exchange Quay
Wharfside
Imperial War Museum
Pomona
Dane Road
Stretford
Old Trafford
Trafford Bar
Firswood
Cornbrook
Deansgate-Castlefield
St Peter's Square
Exchange Square
Victoria
Shudehill
Market Street
Piccadilly Gardens
Piccadilly
New Islington
Holt Town
Etihad Campus
Velopark
Clayton Hall
Edge Lane
Cemetery Road
Droylsden
Audenshaw
Ashton Moss
Ashton West
Ashton-under-Lyne
Abraham Moss
Crumpsall
Bowker Vale
Heaton Park
Prestwich
Besses o' th' Barn
Whitefield
Radcliffe
Bury
Queens Road
Monsall
Central Park
Newton Heath and Moston
Failsworth
Hollinwood
South Chadderton
Freehold
Westwood
Oldham Central
Oldham King Street
Oldham Mumps
Derker
Shaw and Crompton
Newhey
Milnrow
Kingsway Business Park
Newbold
Rochdale Railway Station
Rochdale Town Centre
Shadowmoss
Peel Hall
Robinswood Road
Wythenshawe Town Centre
Crossacres
Benchill
Martinscroft
Roundthorn
Baguley
Moor Road
Wythenshawe Park
Northern Moor
Sale Water Park
Barlow Moor Road
St Werburgh's Road
Chorlton
Withington
Burton Road
West Didsbury
Didsbury Village
East Didsbury

3.77 Based on the above assessment it is considered that the proposed development is well connected and highly accessible via tram for future residents and visitors to the site.

60 Minute Travel Time Assessment (TRACC)

3.78 Taking into account the aforementioned bus, rail and tram services, the public transport accessibility of the site has been illustrated on **Plans 8** and **9** for the weekday AM (08:00-09:00) and PM (17:00-18:00) weekday peak periods, respectively.

3.79 These plans have been generated using TRACC software that produces travel times and distances for all public transport modes, cycling, walking and driving using TRACC Travel time analysis software. As shown on the plans it can be seen that the proposed development site has a high level of public transport accessibility within a 1-hour catchment.

3.80 From the centre of the site, residents can easily reach areas such as Manchester city centre, Bolton, and Rochdale amongst others, within 60 minutes.

4.0 Changes in Travel Behaviour and Guidance

Background

4.1 In addition to National and Local Planning Policy, it is also important to consider the emerging transport context and trends in travel behaviour when designing for new or expanded communities. These considerations should include, but are not limited to the following key areas:

- Climate emergency (including Council responses);
- Healthy living;
- Accessibility; and
- Wain Estates vision.

4.2 This section of the report will consider each of these issues in turn with these considerations feeding into the subsequent traffic generation methodology. This section of the report will also outline the importance of moving away from the predict and provide model for transport planning to a vision and validate approach which prioritises more sustainable forms of travel.

Climate

4.3 In 2019, BC declared a climate emergency in response to overwhelming scientific evidence that human activity is changing our planet's climate. These changes are predicted to have extreme impacts on the earth making it a more difficult place for people, animals, and wildlife to thrive.

4.4 In response, BC has produced a Climate Action Strategy and Action Plan, outlining their approach to reaching the goal of carbon neutrality by 2038. The overall aim of the Action Plan and the Climate Action Strategy is to set out how BC will achieve carbon neutrality by 2038.

4.5 This target of carbon neutrality applies to the entire borough, not just the operations of BC, meaning all Bury's buildings, businesses, operations, and services must not produce any more carbon than what is being captured by plants and trees, or is offset. In terms of transport, the Climate Change Strategy outlines that the World Health Organisation has stated that the transport sector is the fastest growing contributor to climate emissions.

4.6 The main drivers of global transport energy growth are land transport, mostly light-duty vehicles, such as cars, as well as freight transport. Transport's contribution to climate change includes long-lived carbon dioxide (CO_2) emissions with transport accounting for roughly 23% of carbon emissions in 2010.

4.7 Within the action plan it states that reducing overall car usage is an important goal. Within the guidance it goes on to state that BC need to make walking, cycling and public transport the best and most efficient method of getting around Bury.

4.8 Within the most recent revision of the action plan it states that there have been positive steps in transport including TfGM taking control of the buses and introducing the Bee Network App11, whilst there are lots of active travel and shared mobility initiatives that when in place will help to give people more options about how they travel around Bury, encouraging them to use low carbon methods.

4.9 Whilst this is the case, the guidance goes on to state that it is important to acknowledge that BC can only do so much by itself and for there to be considerable progress in certain areas, their actions need to be supported by government policy and potentially funding as well. Developments also have a role to play.

Healthy Living

4.10 The NPPF outlines that physical and mental health are a primary social aim of Government. In order to support strong, vibrant, and healthy communities it is imperative that new developments are well-designed and safe with accessible services and open spaces which reflect the current and future needs of communities.

4.11 In providing sustainable access, new developments will assist in meeting the environmental objectives of the NPPF which include mitigating and adapting to climate change, including moving to a low carbon economy.

4.12 The Chartered Institution of Highways and Transport (CIHT) document *Better Planning, Better Transport, Better Places* published in August 2019, in collaboration with the Transport Planning Society (TPS) and the Royal Town Planning Institute (RPTI), focuses on providing guidance to create better places by better integrating planning and transport.

4.13 This guidance has been designed to complement guidance from the Ministry of Housing, Community and Local Government. This guidance also provides practical solutions to tackling the challenge of climate change.

4.14 The Better Planning, Better Places document outlines that our quality of life depends on transport and easy access to jobs, shopping, leisure facilities, and services. An efficient and integrated planning and transport system is needed to not only support a strong and prosperous economy but to reduce carbon emissions.

4.15 Despite both the National Government and Local Councils/Boroughs declaring a climate emergency, the CIHT outline that car parking and traffic still dominate housing developments with sustainable access poor and sustainable approaches to transport relatively non-existent.

4.16 This continues to occur due to the reliance of local Councils and planners on the predict and provide models which focus on providing infrastructure to support access by car.

4.17 In conjunction with this, the Town and Country Planning Association (TCPA) have prepared a document *20-Minute Neighbourhoods: Creating Healthier, Active, Prosperous Community, An Introduction for Council Planners in England* which was published in March 2021. This guidance outlines that neighbourhoods are recognised as crucially important to our physical and mental health.

4.18 This guidance highlights the importance of creating neighbourhoods that make it easier for people to be more physically active by encouraging sustainable development which supports walking and cycling. The TCPA suggest that areas which discourage walking and have poor cycling infrastructure can negatively impact on an individual’s mental and physical health.

4.19 With their most recent guidance on *Decarbonising Transport; A Better Greener Britain* published in July 2021, the DfT also supports the concept of the 20-minute neighbourhood, highlighting that through good design and proper consideration of the needs of our communities, people can be better connected, making communities more accessible, inclusive, safe, and attractive as well as promoting the principles of 20-minute neighbourhoods.

Accessibility

4.20 As outlined previously, contemporary local and national transport policy highlights that new developments should be located in places which are or can be made sustainable and provide access by active travel. Within this context, new developments should prioritise access by walking and cycling both within the site and to external destinations within the local area.

4.21 By focusing on accessibility, it is possible to promote social cohesion, minimise the number and frequency of single car occupancy trips and limit the need to travel.

4.22 In considering accessibility it is important to consider accessibility across the day and not just focus on the typical commuter peak periods, also recognising the changes in travel behaviour which have occurred in response to the COVID-19 pandemic. The most prevalent reason for accessibility is education, followed by leisure and then travel to work.

Predict and Provide or Vision-Led

4.23 Within this context it is important to consider the effectiveness of the predict and provide (P&P) model of transport planning in addressing the aims and objectives of current Government policy and guidance. These policies place a high importance on sustainable development with no expression of policy which prioritises the convenience of car commuters.

4.24 The P&P approach has been abandoned as it does not represent real life and instead of promoting sustainable development, results in bigger roads and junctions which effectively work to increase traffic volumes.

4.25 A general rule of traffic is that in congested networks, increasing road capacity only works to increase car volumes and in turn carbon emissions. Whereas reducing road capacities has the opposite effect and reduces car volumes and emissions as the benefits of driving decrease with more congestion.

4.26 In response to this move away from the P&P approach, the vision-led (i.e. Vision and Validate) approach has been adopted. This approach looks at defining what one wants to see and designing to achieve that. In traffic terms this may mean not providing any more road capacity and using capacity as a tool to limit peak demands.

4.27 The guidance outlines that in order to create better places for people and encourage healthy living it is necessary to fully abandon the predict and provide models of transport planning. Instead, new developments should be assessed against health and wellbeing, lifestyle, and environmental criteria.

4.28 In moving away from the predict and provide model it makes it possible to invest time and resources in active travel instead of providing road-based infrastructure which encourages driving and discourages walking, cycling and other forms of active travel.

4.29 The TCPA's document *Garden City Standards – Guide 13; Sustainable Transport* published in September 2020 outlines that new developments should have a goal of enabling at least 60% of trips to be made by non-car modes of transport. It goes on to highlight that is it necessary to take a 'vision and validate' approach, not predict and provide, which historically has meant building more road for more cars".

4.30 TRICS outlines a similar theme in their '*TRICS Guidance Note: On the Practical Implementation of the Decide and Provide Approach*' published in February 2021.

4.31 This note advises that if we continue to reproduce past transport solutions based on previous travel behaviour, it is inevitable that transport planning will continue to seek to provide infrastructure that meets previously predicted needs, rather than meeting, and indeed shaping, the transport needs of the future.

4.32 As outlined in the CREATE project, the TRICS guidance note goes on to state that by overproviding highway capacity, developments can induce motorised transportation and in turn exacerbate efforts to combat climate change and reduce vehicular traffic.

4.33 This is an oft occurring theme in research and guidance referring to a fundamental law of traffic, which underpins the Vision & Validate approach, which is that in an increasingly busy road network, the volume of traffic is increasingly a function of the availability of road space, so that increasing road space induces traffic, and reducing road space reduces traffic.

Wain Estates

4.34 In alignment with the government's ambitious initiative for new homes to meet Zero Carbon requirements from 2025 Wain Estates have undergone pivotal enhancements to embrace future sustainable living.

4.35 As part of this vision Wain Estates are committed to providing sustainable features as part of their future developments, with features varying according to plot, development and region. Some of these features include air / ground source heat pumps, waste water heat recovery systems, solar panels, decentralised mechanical extract ventilation systems and electric vehicle charging points, amongst others.

4.36 Wain Estates not only embrace modern, eco-conscious living but also position themselves at the forefront of a cleaner, more sustainable future.

Summary

4.37 The way to maximise the opportunities of the changes in travel behaviour and respond to the challenges of climate change is to design with accessibility in mind and seek opportunities to maximise walking, cycling and public transport within the local area.

4.38 It is imperative that new developments are designed with accessibility at the forefront, and where movement occurs to maximise active travel first.

4.39 For this reason, it is important to move away from the predict and provide model of transport planning and move towards a vision-led approach.

4.40 By adopting the policy compliant and strong guidance for a vision-led approach to transport planning, developments are able to focus on providing best designs for climate and health, promoting green infrastructure which supports active travel instead of primarily focusing on providing more road space which does not support the goals of National and Local Planning Policy.

5.0 Baseline Highway Conditions

Local Highway Network

Scobell Street

5.1 Scobell Street runs along the northern boundary of the site and is predominantly residential in nature. Scobell Street is subject to a speed limit of 20mph and is flanked by street lit footways on both sides of the carriageway.

5.2 Parking bays are intermittently marked along Scobell Street, allowing residents and visitors to park their vehicles. There are no formal parking restrictions within these bays, with parking generally unregulated at present except where double yellow lines exist close to the junctions formed with Scobell Street.

Church Street

5.3 Church Street forms the western boundary of the site, running in a north to south direction and serving as the main route through the village centre of Walshaw. Church Street is subject to a 20mph speed limit, reflecting its residential nature and the need for safety in a village / community setting.

5.4 Church Street includes street lit footways on both sides of the road and provides access to both local amenities to the south of the site and other residential areas towards both Bury and Bolton.

B6123 Bury Road

5.5 Scobell Street runs eastbound along the northern site boundary where it forms a priority junction with the B6213 Bury Road.

5.6 The B6213 Bury Road is approximately 6.5m in width and is subject to a speed limit of 30mph. The B6213 Bury Road connects Tottington with Bury through the A58 ring road, an arterial route throughout Bury town centre. The B6213 Bury Road is equipped with street lit footways on both sides of the road and parking restrictions along its length in the form of double yellow lines close to key junctions.

Traffic Survey Data

5.7 In order to inform the Transport Assessment work, classified junction turning count surveys were undertaken on Thursday 27th June 2024 to understand the volume of traffic flows at various junction locations in the vicinity of the proposed development site.

5.8 The results of these counts were then utilised to inform the traffic impact assessment as set out later in this report. The raw turning count traffic survey data can be made available upon request.

5.9 Analysis of the traffic count surveys identified the network peak hour periods were shown to be 07:45 – 08:45 in the morning and 16:30 – 17:30 in the evening, respectively.

5.10 Further to the above and in order to inform the air quality and noise assessments a number of Automatic Traffic Counters (ATCs) were also commissioned at various locations across the highway network in the vicinity of the development site, to record traffic data volumes across a full week.

5.11 The ATC surveys discussed recorded data between Tuesday 25th June to Monday 1st July 2024. The ATC survey data can be made available upon request.

5.12 In undertaking the ATC surveys, an understanding of baseline traffic levels at various locations across the highway network for each day throughout the week, including the weekend, could be assessed.

5.13 Analysis of the ATC survey data showed that the weekday peak hour periods were shown to have higher levels of traffic on the highway network than during a Saturday morning period.

5.14 Based on this analysis, a high-level summary of traffic volumes taken from the combined ATC survey data has been shown below in **Table 5.1**.

Table 5.1: ATC Survey Summary

Date	Total Vehicles (Counted across all ATC locations)				
	AM (8-9)	AM (10-11)	AM (11-12)	PM (4-5)	PM (5-6)
Thursday 27th June 2024 *(date of turning count surveys)*	17,428	13,223	13,851	17,633	17,573
Saturday 29th June 2024	8,635	14,855	15,432	14,257	13,024

5.15 As shown in **Table 5.1**, the weekday AM and PM peak hour ATC values recorded on Thursday 27th June (that also coincide with the turning count survey date) are considerably higher than any of the peak hours traffic totals recorded on Saturday 29th June.

5.16 As part of the traffic data analysis an assessment of the ATC profiles at each count location across the whole day have been produced and can be found in **Appendix B**.

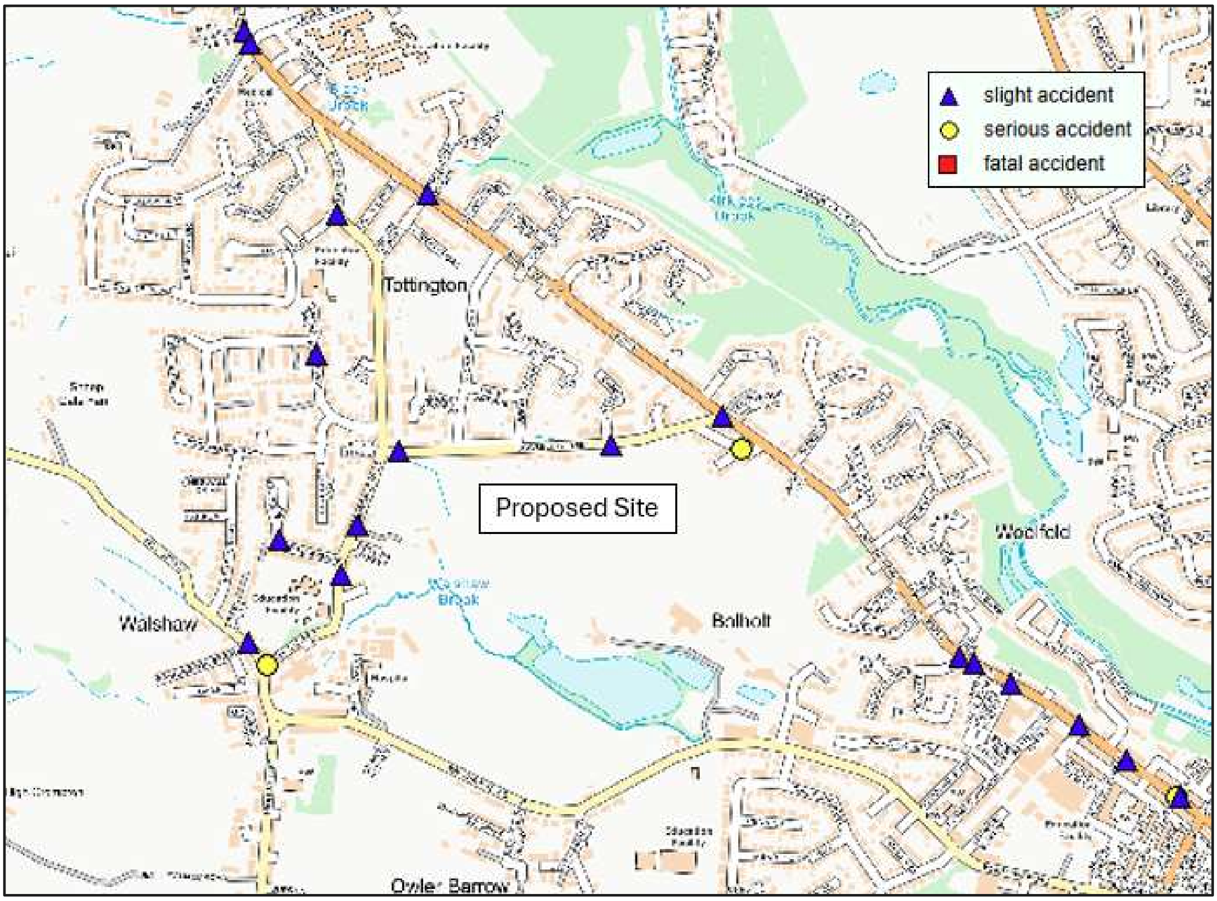
5.17 As demonstrated from each of the graphs produced, outside of the morning and evening peak hours the traffic flows at all other times of the day are lower. Therefore, the analysis presented later in this report only reflects a snapshot of the worst-case junction / link operation across a typical day.

Collision Data

5.18 The TfGM accident database has been used to establish the road collision patterns surrounding the site. The data presents all personal injury accidents occurring for the most recent five-year period available (to the 31st of December 2023).

5.19 The collision data in the vicinity of the site is presented in **Figure 5.1.**

Figure 5.1: Collision Record


▲ slight accident
○ serious accident
■ fatal accident
Proposed Site
Tottington
Walshaw
Woolfold
Bolholt
Owler Barrow
Walshaw Brook

5.20 It can be seen in **Figure 5.1**, that there have been three collisions recorded along Scobell Street during the assessed five-year period, all of which are classed as slight in terms of severity.

5.21 The wider highway network surrounding the site can be seen to feature a number of accidents though there is no clear grouping which might suggest an area of concern on the highway network. Most of the accidents are categorised as slight in severity with only two accidents being categorised as serious.

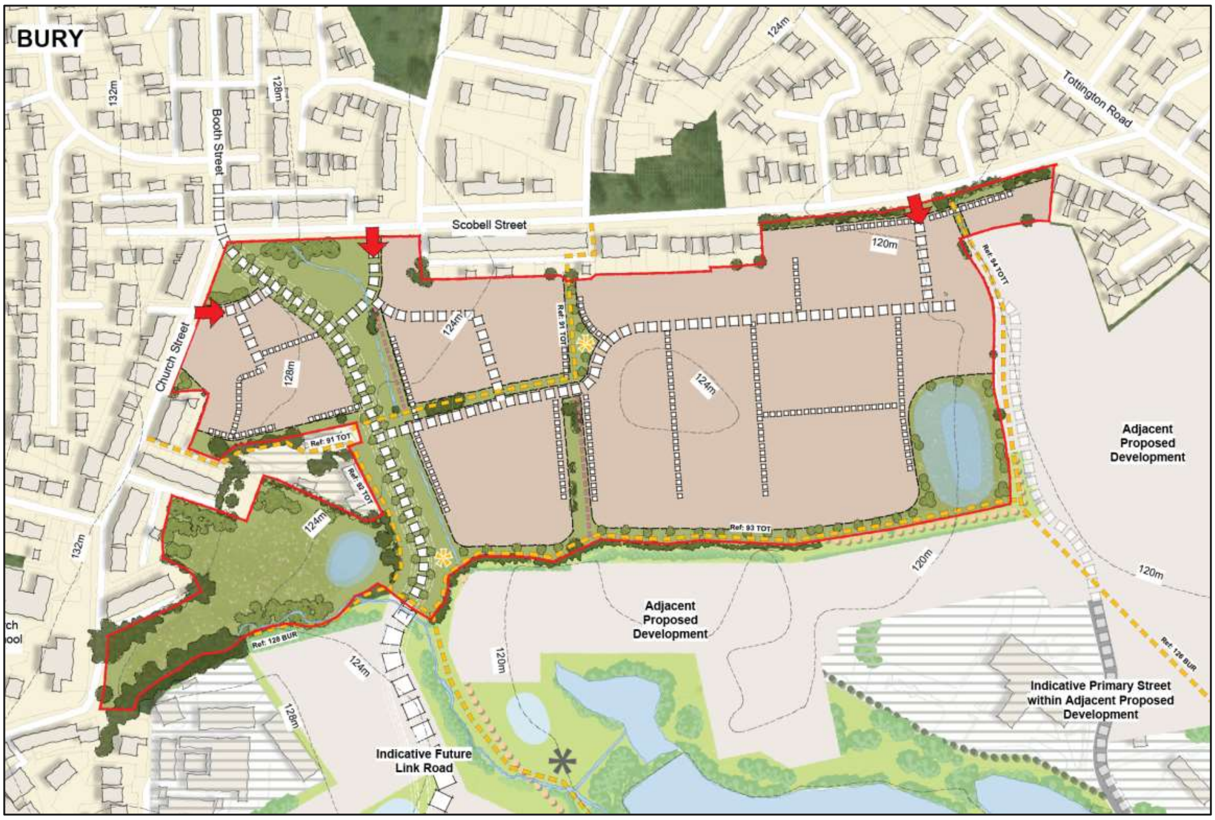
5.22 As such, there are no known inherent highway safety issues on the local highway network that would affect the proposed development coming forward.

6.0 Proposed Development

Development Scale

6.1 As previously detailed, the development proposals seek outline planning permission for a total of 275 dwellings with all matters reserved other than access. An extract of the indicative masterplan for the proposed development (northern parcel) is shown in **Figure 6.1**.

Figure 6.1 – Indicative Masterplan


BURY
Booth Street
132m
128m
124m
Tottington Road
Scobell Street
120m
Church Street
Ref: 94 TOT
Ref: 91 TOT
Ref: 93 TOT
Ref: 128 BUR
Adjacent Proposed Development
Adjacent Proposed Development
Indicative Primary Street within Adjacent Proposed Development
Indicative Future Link Road

6.2 It should be noted that the masterplan shown in **Figure 6.1** is indicative at this stage. The internal road layout, the strategic through road and supplementary non-vehicular access points will be resolved through a future reserved matters application.

The Transport and Mobility Strategy

6.3 The Transport Strategy comprises four key stages intended to create a socially inclusive community which supports national and local planning policy by encouraging non-motorised travel modes and prioritising walking and cycling followed by the use of public transport.

6.4 In order to achieve this, the development proposes a comprehensive package of sustainable transportation measures. The transport and mobility strategy is focused on:

- **Design:** creating communities, where local living, public interaction, outdoor and indoor, is the norm and where it is not an automatic reaction when leaving home to get into a car. The site is well placed to take advantage of the proximity of a range of day-to-day facilities available in neighbouring communities, and then within the wider allocation as it is developed.

- **Choice:** providing the infrastructure and facilities to minimise reliance on any single option of transport. This would assist in widening social inclusion and makes car use more of a choice and less of a necessity. Increased choice provides the opportunity to change behaviour. The proposed package of sustainable transportation measures seeks to encourage behavioural change in travel.

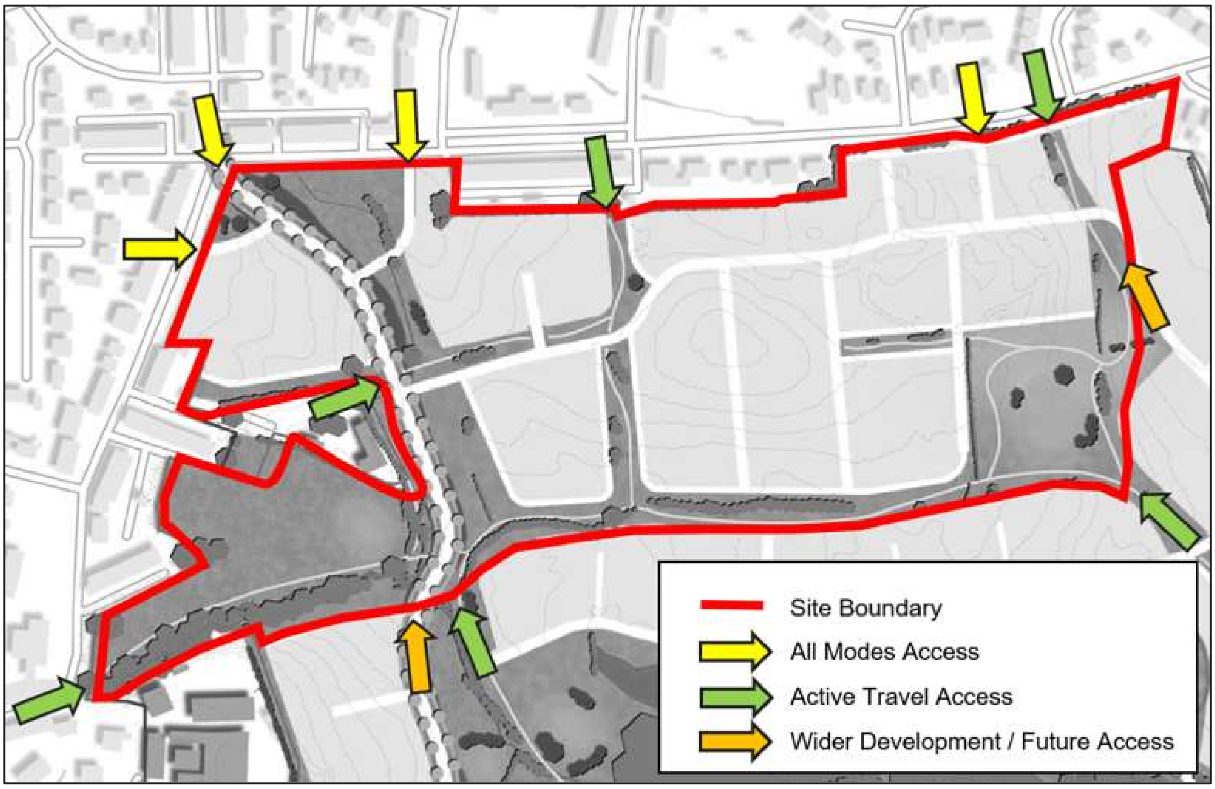
- **Behaviour:** educating people in the options and consequences for mobility. It brings together awareness, health, environment, and personal convenience. Travel Planning and Personalised Travel Planning can be significant factors in encouraging behavioural change, as set out in the Framework Travel Plan Strategy within this report.

- **Network Management:** managing the road network in accordance with national and local policy with walking at the top followed by cycling, public transport and finally car. Car travel is the lowest capacity network in term of space occupied per person and also occupies the lowest priority in the user hierarchy. This means prioritising the reliability and speed of bus and cycle movements over that of cars in the commuter peaks. As such, the objective of the Transport Strategy is not to follow a predict and provide approach to delivering more road capacity to the detriment of investment for other modes of travel choice.

Active Travel Access

6.5 There are multiple access points to the site, both existing and proposed, and the site is proposed to be connected by active travel and ultimately shared travel. A plan showing the indicative location of the active travel links / connections, the proposed all modes access points (including vehicular) and the future access points that will connect to the proposed development once the wider allocation is delivered, are shown in **Figure 6.2** overleaf.

Figure 6.2 – Indicative Access Strategy (Northern Parcel)



6.6 The initial aim of the proposed development is to provide improvements to pedestrian / cycle routes between the site to existing residential areas within Walshaw and beyond. As shown within the indicative masterplan for the northern parcel there are a number of existing PRoW connections from Scobell Street to the north of the site that will be retained and improved in order to promote active travel.

6.7 In addition, an existing PRoW connection to the west of the site with Church Street is proposed to be improved (via contributions if necessary) to deliver enhanced active travel linkages to Walshaw which would link to the wider masterplan to further encourage active travel use.

6.8 Where appropriate, surfacing, lighting and maintenance can and will be carried out to these routes to bring each route to a good quality and consistent standard.

6.9 As detailed within the PfE allocation document, as part of the Walshaw allocation coming forward, contributions towards the enhancement of the Bee Network will be required. The Bee network acts to encourage a mode shift away from single occupancy car travel and assist in limiting traffic growth on the highway network.

6.10 Wain Estates are committed to provide a proportionate contribution to Bee Network improvements in the vicinity as part of delivering the northern parcel that makes up part of the wider Walshaw allocation.

Proposed Vehicular Site Access

6.11 It is proposed to provide vehicular access to the proposed development at two locations from Scobell Street to the north of the site, and a single location on Church Street, each comprising priority junctions. The general arrangement for the proposed access designs in provided in **Appendix C**.

6.12 The eastern vehicular site access junction on Scobell Street will utilise the existing (closed) access point on Scobell Street. The proposed junction has been designed in accordance with standards with a 6.5m carriageway and 6m corner radii on both sides.

6.13 The proposed western access junction on Scobell Street has been designed in accordance with standards with a 6.5m carriageway and 6m corner radii on both sides.

6.14 2m wide footways would be provided as part of each of the priority access junctions on Scobell Street, connecting the internal site layout, including new internal link, with existing off-site infrastructure.

6.15 The proposed access junction on Church Street has been designed in accordance with standards with a 6.5m carriageway and 6m corner radii on both sides. 2m wide footways would be provided as part of each of the access connecting the internal site layout, including new internal link, with existing off-site infrastructure.

6.16 The proposed access points situated on Scobell Street and Church Street have been designed to integrate and connect with the proposed new internal link.

Proposed Internal Link

6.17 As stated in the PfE document, the allocation must make provision for a new internal link, running north to south between Booth Street and Lowercroft Road. The internal link and associated connections will provide an alternative route and facilitate the movement of both development traffic and existing through traffic currently passing through Walshaw village centre.

6.18 The link will incorporate active travel infrastructure, as part of the wider primary movement network, whilst also providing the option to permit buses to pass through the wider Walshaw allocation as each parcel comes forward.

6.19 The alignment of the internal link running through the site has been carefully considered as part of the wider allocation masterplan, including both horizontal and vertical design options.

6.20 Based on the horizontal and vertical alignment, a general route corridor has been identified, within which there is flexibility to provide a link designed in a way such that it does not form a barrier to community movement and ambience.

6.21 It can perform a dual role of both place and movement. The movement element is in respect of designing a road capable of accommodating through movement by cars and cycles, but at a scale so that vehicles do not dominate the environment or intimidate active travel users.

6.22 The place element is the pedestrian scale and ambience necessary for this part of the site to fulfil its community function. This is capable of being provided through further careful masterplanning.

6.23 The detail of the fully completed route will be subject to separate applications associated with the wider allocation masterplan.

6.24 Although the full detail of the route will be subject to further design, given the wider allocation masterplan work that has been completed to date, it has been possible to design a junction at Church Street/Scobell Street, and other associated infrastructure, which will ultimately provide access to the wider allocation.

6.25 Drawing 065605-SLR-HGN-PLN-SK-CH-0008 within **Appendix C** highlights the opportunity that exists to reorganise the priority of the existing network such that vehicular north-south movements are directed to use the new link, with side roads providing access to the wider network.

6.26 Whilst the internal link and new junction at Scobell Street/Church Street is not intended to be used to provide access to specific residential areas within the northern parcel at this stage, the commitment is provided by Wain Estates to contribute to the delivery of infrastructure shown within the northern parcel, including but not limited to the new junction and internal link alignment shown within **Appendix C**.

6.27 There is the opportunity to construct much of this infrastructure within the site offline, thereby minimising disruption, whilst still facilitating delivery of the site and wider allocation. The connection of the link that is built offline with the external network can then be provided at a suitable trigger point.

6.28 The inclusion of the junction at Scobell Street/Church Street, and other associated infrastructure, within the application for the northern parcel, provides the necessary commitment that the delivery of the wider allocation will not be prejudiced and infrastructure has been carefully considered and coordinated so as to avoid piecemeal development.

Internal Site Layout and Car Parking

6.29 As the application is outline, the internal road layout, the strategic through road and non-vehicular access points will be resolved through future reserved matters applications.

6.30 The internal road network will provide a suitable hierarchy acknowledging national design criteria to promote enhanced streets, informal streets and pedestrian-priority streets with appropriate active frontage in parts to reinforce a low-speed residential environment.

6.31 The overarching concept which underpins the access and movement strategy is that planning for people creates places for people, in contrast to planning for cars which has always historically resulted in places dominated by cars.

6.32 Each of the new pedestrian and cycle routes within the site will be lit, surfaced, be generally overlooked and be of high quality to adhere with LTN 1/20 compliance ensuring access on foot and by cycle is maximised.

6.33 There will be opportunities to travel between the proposed development site and the wider Walshaw allocation to the south by active travel modes. There will also be numerous opportunities for the new active travel infrastructure to connect with existing PRoW thereby providing an interconnected network.

6.34 Full parking provision for the proposed development will also be determined at reserved matter stages, however the scheme will be designed based on the requirement for reducing off-site traffic impacts of the development.

6.35 Electric vehicle charging points will also be provided which will encourage the use of more environmentally friendly vehicles.

6.36 The internal road network will allow refuse and delivery vehicles to enter, turn and exit in forward gear.

Shared Travel

6.37 As part of the indicative masterplan for the wider Walshaw allocation, the internal layout will provide suitable carriageway widths along the new internal link to accommodate the movement of buses, with bus stops and other associated infrastructure (i.e. raised kerbs, shelters, seating and timetable information) provided along its length, ensuring that each dwelling is within an acceptable distance of the stops.

6.38 Some high-level considerations to date have sought to explore the options available to provide improved access for the site to public transport services. This has included the potential for improvements to existing services, diversion or extension of existing services and provision of new services.

6.39 In order to deliver the northern parcel (proposed development) and given the new internal link is not proposed to be built out upon completion, at this stage it is not considered that any changes to the current bus routing in the vicinity of the site would be required.

6.40 As part of the delivery of the site there will be a commitment to contribute to the improvement of a number of existing bus stops in the vicinity of the site, to facilitate future residents journeys to / from the site.

6.41 As with the internal link, the commitment is provided by Wain Estates to contribute proportionately to the funding of shared travel provision associated with the wider allocation, to avoid piecemeal development.

Mobility Hubs

6.42 Mobility as a Service (MaaS) is a concept of combining services from public and private transport providers in one place which allows users to create and manage trips.

6.43 There is a commitment to ensure that mobility hub principles are adopted from day one. Temporary mobility hubs will be provided from day one in the vicinity of residential sales centres within the site.

Walshaw Allocation Infrastructure

6.44 In addition to the internal link and active travel access, there is infrastructure that has been identified as part of the wider Walshaw allocation assessment. This includes potential locations where enhancements should be considered to facilitate connectivity and accessibility for the Walshaw Allocation and associated masterplan.

6.45 It has been informed by an existing infrastructure audit and active travel zone assessment along likely key desire lines to identify any gaps in infrastructure.

6.46 The review of infrastructure and desire lines has allowed for a judgement to be made regarding the sensitivity of the infrastructure to changes in demand. This has utilised a spreadsheet trip model considering development trip generation, distribution and assignment for travel across the day and for the key journey purposes (i.e. education, retail/leisure and employment).

6.47 It has been supplemented with traditional standalone junction traffic modelling at certain locations. Where there are gaps in infrastructure, improvements are suggested. Where existing infrastructure is likely to be sensitive to changes in demand, improvements are suggested.

6.48 Infrastructure improvements have been considered in the context of current policy and in the context of health, wellbeing and climate.

6.49 These infrastructure improvements will include a new strategic through road to enable an alternative to Church Street, Bank Street and High Street that will designed to be suitable for buses and incorporates active travel.

6.50 There is a desire to improve Walshaw Rd for active travel users, with improved infrastructure running from the site and connecting to the local area.

6.51 Analysis of the desire lines routing from the site has identified the desire for potential improvements to encourage active travel from the site to the areas of Walshaw, Bury and Tottington.

6.52 The internal link can be utilised to divert a selection of existing bus services to serve the new development, whilst ensuring the existing residential areas in the local area have accessibility to the new bus stops.

6.53 The upgrade of a number of existing Public Rights of Way running through the development will improve connections from the site to the wider communities and infrastructure in the vicinity of the development.

6.54 A Primary Mobility Hub, or Community Hub, will be located in the local centre, and there will be Secondary Mobility Hubs dispersed around the settlement, including within the northern parcel.

6.55 The commitment is provided by Wain Estates to contribute proportionately to the funding of wider Walshaw allocation infrastructure to allow development to come forward expeditiously and avoid piecemeal development.

7.0 Framework Travel Plan Strategy

Framework Travel Plan

7.1 As part of this application there is a commitment to put in place a Framework Travel Plan Strategy, that will be established for the wider allocation, and includes the various land parcels including the northern parcel.

7.2 The strategy sets out a structure along with a number of suggested initiatives and measures to actively promote sustainable travel modes and reduce the reliance on single occupancy car trips.

7.3 In order to promote the northern parcel as part of the wider allocation, and ensure future residents are aware of the sustainable alternatives to car travel, the overarching Travel Plan will promote associated residential travel packs, travel survey incentives, secure cycle storage and general marketing activities. The site will also be included within a monitor and manage programme.

7.4 Travel planning principles will be adopted at the proposed development site (and subsequent plots) from first occupation, and this will include a site-specific long-term management strategy.

Travel Plan Coordinator

7.5 A Travel Plan Coordinator will be put in post upon full occupation of the northern parcel site in order to manage and co-ordinate the Travel Plan process. This section provides an example of the duties that will be undertaken as part of their role.

7.6 The Travel Plan Coordinator will ensure that there is ongoing communication with residents to highlight sustainable living and sustainable travel opportunities and initiatives through the promotion of, but not limited to, these schemes:

- National Walk to Work Day;
- National Cycle to Work Day;
- National Clean Air Day;
- Cycle maintenance workshops.

7.7 The Travel Plan Coordinator should consider liaising with local schools regarding their travel plans and opportunities to promote active travel including walking buses and cycle trains.

7.8 The Travel Plan Coordinator should investigate the potential to assist local schools by offering to administer travel to school initiatives including walking buses, cycle trains and scoot to school initiatives from the community of which the development scheme forms part.

7.9 The Travel Plan Coordinator should liaise with the Active Travel Officers at BC regarding travel initiatives within the wider area and the opportunity for collaboration.

7.10 The Travel Plan Coordinator should also liaise with local businesses and other developments and seek to promote sustainable initiatives.

Residential Travel Information Pack

7.11 A Residential Travel Information Pack will be provided to each new resident within the site.

7.12 The Residential Travel Information Pack will provide the new occupant of each property up to date information including the following:

- A plan showing local facilities and routes available in the vicinity of the site, such as schools, shops, local bike shops, healthcare facilities, places of worship, open space, formal and informal leisure facilities, community facilities and employment sites,
- Identification of walking, cycling and scooting routes,
- Bus timetables for local bus services,
- Details of local taxi operators and 'buying rides' operators,
- Rail timetables from the local railway station,
- Details of local car share clubs, facilitated via a national database (i.e. Liftshare),
- Details of EV charging locations and the nature of the charging facility available,
- Details of local Travel Plans, including but not limited to, the Travel Plans for local schools and local employers,
- Details of any other local living and sustainable movement initiative that comes forward in the local community.

7.13 This information will also made available on the proposed development website.

7.14 As part of the Residential Travel Information Pack, details will be provided as to how each dwelling can apply for a Sustainable Travel Voucher worth up to £150. This would allow for the purchase of a bus or tram pass, car club membership, or even accessories for active travel (i.e. bike lights and locks).

Monitoring

7.15 The Travel Plan will be a 'Living Document' and will continue to be updated.

7.16 As sustainable design and measures are the priority, multiple mobility measures and interventions play a part. The value and effectiveness of these many measures will fluctuate with changing conditions. To make the most of these, there should be a mechanism that monitors this, with the ability to make changes to maximise effectiveness.

7.17 Inherent within the Travel Plan is a monitor and manage approach, that could include a steering group set up by the Travel Plan Coordinator, which can include BC, TfGM, and the wider allocation developers, allowing for the analysis of the results of the monitoring and to make decisions within the framework set out in advance. The aim would be to monitor all aspects of mobility, transport and travel behaviour at specified intervals.

7.18 A flexible transport fund can be explored to allow for investment in those measures performing well, other measures that may as yet not be part of the scheme, or to change the effectiveness of those measures that aren't doing so well and in the view of the steering group will be effective with that investment, noting that the trends may change over time.

Benchmarks

7.19 The Travel Plan will set out targets as part of the ongoing monitoring programme. Benchmarks as opposed to targets (as attitudes are likely to be greatly influenced by life beyond the limits of the development) will be established for key travel purposes (i.e. work, education, retail/leisure, other), against which household interviews and multi-modal survey data will be compared.

7.20 Suitable benchmarks will be determined by the TPC and will be approved by BC. It is understood that these benchmarks may change over time to reflect changing circumstance.

7.21 An initial benchmark framework is:

- **Travel to Work**
  - Within 2 miles
    - Virtual Travel
    - Active Travel
    - Shared Travel (inc. Car Sharing)
    - Single Occupancy Car Travel
  - Over 2 miles
    - Active Travel
    - Shared Travel (inc. Car Sharing)
    - Single Occupancy Car Travel
- **Education**
  - Within 1 mile
    - Active Travel
    - Shared Travel (inc. Car Sharing)
    - Single Occupancy Car Travel
  - Over 1 mile
    - Active Travel
    - Shared Travel (inc. Car Sharing)
    - Single Occupancy Car Travel
- **Retail/Leisure**
  - Within 1 mile
    - Virtual Travel
    - Active Travel
    - Shared Travel (inc. Car Sharing)
    - Single Occupancy Car Travel
  - Over 1 mile
    - Active Travel

- Shared Travel (inc. Car Sharing)
- Single Occupancy Car Travel

7.22 With the benefit of the survey results, and local and national knowledge, the best management direction to take and where to focus resources can be determined.

8.0 Proposed Trip Generation

Overview

8.1 This section of the report considers an initial unfettered trip demand that could be generated by the proposals, focusing on daily flows. This allows for a judgement to be made regarding the impact of the development proposals upon the surrounding highway network.

8.2 The proposed development site is located within an accessible area with access to everyday amenities / facilities within Walshaw and its local catchment. This will maximise the ease of local living for residents at the proposed development, both minimising the need to travel in the first instance and minimising the need for residents to travel by car, given that there are so many alternative modes readily available.

8.3 This is important to note, since a number of trips will be internalised within the local community, which includes the existing communities into which this development sits.

8.4 The NPPF states that the likely impacts of development should be assessed. Therefore, this section of the TA provides a forecast of the initial unfettered more likely trip generation, considering trips by journey purpose (education, employment, leisure) and the potential for internalisation.

8.5 For clarity, this section focuses on the northern parcel and initial development of up to 275 dwellings.

Trip Forecasting

Total Person Trips

8.6 To begin, understanding the potential demand from the proposed development was considered in terms of the number of person trips generated by the site. To achieve this, the TRICS database was interrogated.

8.7 As previously detailed the proposed scheme will provide a total of 275 dwellings. Therefore, as part of the TRICS assessment the privately owned houses use class was utilised. The person trip rates, and associated trips are presented in **Table 8.1**.

Table 8.1: Average Person Trip Rates and Trips

Time	Trip Rate (per dwelling)			Trips (275 dwellings)		
	Arrive	Depart	Two Way	Arrive	Depart	Two Way
07:00 - 08:00	0.124	0.529	0.653	34	145	180
08:00 - 09:00	0.231	0.792	1.023	64	218	281
09:00 - 10:00	0.197	0.319	0.516	54	88	142
10:00 - 11:00	0.167	0.234	0.401	46	64	110
11:00 - 12:00	0.208	0.27	0.478	57	74	131
12:00 - 13:00	0.254	0.239	0.493	70	66	136
13:00 - 14:00	0.26	0.239	0.499	72	66	137
14:00 - 15:00	0.262	0.298	0.56	72	82	154
15:00 - 16:00	0.595	0.314	0.909	164	86	250
16:00 - 17:00	0.594	0.301	0.895	163	83	246
17:00 - 18:00	0.663	0.264	0.927	182	73	255
18:00 - 19:00	0.497	0.289	0.786	137	79	216

8.8 To consider how trips generated by the proposed development might move around the local network, consideration has been given to the journey purpose of trips from residential areas using the National Travel Survey (NTS).

8.9 The NTS consists of face-to-face interviews and a seven day self-completed written travel diary with database number 0502 providing a review of the trip start time by trip purpose for England.

8.10 Initially, the 2015/2019 dataset was used to reflect pre-covid conditions, although it should be noted that these figures are likely to include fewer people working from home (and therefore more commuting trips) than occurs at present. **Table 8.2** provides a summary of the NTS data.

Table 8.2: Trips by Journey Purpose – Commuting, Education, Recreation / Leisure.

Time	Commuting	Education	Recreation/Leisure
07:00 - 08:00	53%	20%	27%
08:00 - 09:00	23%	51%	26%
09:00 - 10:00	16%	10%	74%
10:00 - 11:00	9%	2%	89%
11:00 - 12:00	9%	3%	88%
12:00 - 13:00	11%	4%	85%
13:00 - 14:00	15%	3%	82%
14:00 - 15:00	14%	15%	72%
15:00 - 16:00	9%	47%	44%
16:00 - 17:00	26%	11%	63%
17:00 - 18:00	36%	5%	59%
18:00 - 19:00	24%	2%	74%

8.11 The total number of person trips summarised in **Table 8.1**, broken down by the journey purpose summarised in **Table 8.2**, results in a breakdown of trips by journey purposes as summarised in **Table 8.3**.

Table 8.3: Total Trips by Journey Purpose

Time	Commuting		Education		Recreation/Leisure	
	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	18	78	7	29	9	39
08:00 - 09:00	15	50	33	112	16	56
09:00 - 10:00	9	14	5	9	40	65
10:00 - 11:00	4	6	1	1	41	57
11:00 - 12:00	5	7	2	3	50	65
12:00 - 13:00	8	7	3	3	59	56
13:00 - 14:00	10	10	2	2	59	54
14:00 - 15:00	10	11	11	12	52	59
15:00 - 16:00	15	8	77	41	71	38
16:00 - 17:00	43	22	18	9	103	52
17:00 - 18:00	65	26	9	4	108	43
18:00 - 19:00	32	19	3	2	102	59

8.12 The following paragraphs outline how the person trip rates presented in **Table 8.3** have been assigned a mode split to consider the initial multi modal trip generation of the development proposals.

Commuting Trips

8.13 For commuting trips, the mode split exercise considered how people travelled to work using the 2011 Census database, based on the Bury 006 Middle Super Output Area (MSOA) Journey to Work profile. **Table 8.4** provides a summary of the mode split for commuting trips.

Table 8.4: Commuting Mode Split (Bury 006 - 2011)

Method of Travel to Work	Mode Split
Drive (inc. motorcycle, passenger and taxi)	82.8%
Walking	6.2%
Cycling	1.3%
Public Transport (including train, bus, metro and other)	9.8%

8.14 As indicated within **Table 8.4**, for the purposes of the assessment car passengers have been included within the mode split for driver trips. Whilst excluding car passengers from this figure would equate to less total movements based on the mode split presented, to ensure a robust assessment the driver mode split number has not been changed.

8.15 Given the increased trend for flexible working, including working from home since the Covid pandemic, this needs to be considered as part of the assessment. Therefore, before applying the 2011 modal split to the commuter person trips, an estimate of the increase in propensity to work from home has been calculated and applied.

8.16 As indicated in Section 3, SLR has developed a Working from Home Tool which provides a percentage of working from home pre-Covid (2019) to current (2024), based on ONS data by Local Authority District Area. For Bury, the current estimate for working from home in the location of the proposed development site was shown to be 26.1%, an increase of approximately 11% and for the purposes of this assessment this has been applied to the commuter person trip data.

8.17 Applying the updated mode split to the commuting trips results in a trip demand as summarised in **Table 8.5**.

Table 8.5: Commuting Multi-Modal Trip Demand

Time	Car*		Walk		Cycle		Public Transport	
	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	12	52	1	4	0	1	2	7
08:00 - 09:00	10	33	1	3	0	1	1	4
09:00 - 10:00	6	9	0	1	0	0	1	1
10:00 - 11:00	3	4	0	0	0	0	0	1
11:00 - 12:00	3	4	0	0	0	0	0	1
12:00 - 13:00	5	5	0	0	0	0	1	1
13:00 - 14:00	7	6	1	1	0	0	1	1
14:00 - 15:00	7	7	1	1	0	0	1	1
15:00 - 16:00	10	5	1	0	0	0	1	1
16:00 - 17:00	29	14	2	1	0	0	4	2
17:00 - 18:00	43	17	4	1	1	0	6	2
18:00 - 19:00	22	13	2	1	0	0	3	2

** includes allowance for car occupancy of 1.1 based on NTS0905*

Education Trips

8.18 For education trips, the mode split of trips was considered using the NTS database 0614 which provides an education mode split by journey distance for students aged 5–10 and students aged 11–16. For the purpose of assessment, it has been assumed that there is an equal split between primary (aged 5-10) and secondary (aged 11-16) school education person trips.

8.19 A review of the schools near the site indicated that there are four primary schools and two high schools within 1 mile of the site. Whilst outside 1 mile of the site there are only a handful of primary schools that may reasonably be accessed, with a greater number of high schools. Therefore, this exercise considered the following education profiles:

- Mode split for 5 – 10 year olds within 1 mile (90%);
- Mode split for 5 – 10 year olds outside 1 mile but within 5 miles (10%);
- Mode split for 11 – 16 year olds within 1 mile (40%); and
- Mode split for 11 – 16 year olds outside 1 mile but within 5 miles (60%).

8.20 For clarity, the assessment assumes that all education trips would be off-site, but the option for a school to be provided on the wider masterplan area will further promote local living and reduce the number of off-site trips when delivered.

Table 8.6: Education Mode Split by Distance (NTS 0614)

Method of Travel to Education	5-10 year olds		11-16 year olds	
	Within 1 mile	Outside 1 mile*	Within 1 mile	Outside 1 mile*
Walk	80%	10%	95%	29%
Bicycle	1%	2%	2%	5%
Car / Van	18%	79%	3%	32%
Bus / Other	1%	8%	1%	34%

** average of under 2 miles and under 5 miles*

8.21 Based on the mode split data in **Table 8.6** the resultant trips for education trips are presented in **Table 8.7.**

Table 8.7: Education Multi-Modal Trip Demand

Time	Car		Walk		Cycle		Public Transport	
	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	1	6	2	8	0	0	0	1
08:00 - 09:00	7	23	10	33	0	1	1	2
09:00 - 10:00	1	2	2	3	0	0	0	0
10:00 - 11:00	0	0	0	0	0	0	0	0
11:00 - 12:00	0	1	1	1	0	0	0	0
12:00 - 13:00	1	1	1	1	0	0	0	0
13:00 - 14:00	0	0	1	1	0	0	0	0
14:00 - 15:00	2	3	3	4	0	0	0	0
15:00 - 16:00	16	8	22	12	1	0	1	1
16:00 - 17:00	4	2	5	3	0	0	0	0
17:00 - 18:00	2	1	3	1	0	0	0	0
18:00 - 19:00	1	0	1	0	0	0	0	0

** includes allowance for car occupancy of 1.9 based on NTS0905*

Recreation / Leisure Trips

8.22 The NTS data demonstrates that in the AM peak 26% of journeys are undertaken for the purposes of leisure / recreation (shopping, personal business, visiting friends, holiday, day trips, etc.) this number increases to 85% in the interpeak period and 59% in the PM peak period.

8.23 For the purpose of assessment, a judgement has been made that 30% of leisure/recreation trips are internal trips which remain within the site and 70% are external trips which travel further off site.

8.24 As there is no NTS database which provide mode splits for leisure / recreation trips therefore the same mode split used to distribute commuting trips as summarised in **Table 8.4** has been applied. A breakdown of the external leisure / recreation trips is provided in **Table 8.8**.

Table 8.8: Recreation/Leisure Multi-Modal Trip Demand

Time	Car*		Walk		Cycle		Public Transport	
	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	3	13	0	2	0	0	1	3
08:00 - 09:00	5	18	1	2	0	1	1	4
09:00 - 10:00	13	21	2	3	0	1	3	4
10:00 - 11:00	13	18	2	2	0	1	3	4
11:00 - 12:00	16	21	2	3	0	1	3	4
12:00 - 13:00	19	18	3	2	1	0	4	4
13:00 - 14:00	19	17	3	2	1	0	4	4
14:00 - 15:00	17	19	2	3	0	1	4	4
15:00 - 16:00	23	12	3	2	1	0	5	3
16:00 - 17:00	33	17	4	2	1	0	7	4
17:00 - 18:00	35	14	5	2	1	0	7	3
18:00 - 19:00	33	19	4	3	1	1	7	4

** includes allowance for car occupancy of 1.8 based on NTS0905*

Total Multi-Modal Trips

Based on the trip generation methodology, predicted trips for the proposed 275 dwellings are provided in **Table 8.9** below.

Table 8.9: Total Multi-Modal Trip Demand

Time	Drive		Walk		Cycle		Public Transport	
	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	17	71	3	14	0	1	2	10
08:00 - 09:00	22	75	11	38	1	2	3	10
09:00 - 10:00	20	32	4	6	0	1	4	6
10:00 - 11:00	16	23	2	3	0	1	3	4
11:00 - 12:00	20	26	3	4	1	1	4	5
12:00 - 13:00	25	23	4	4	1	1	5	4
13:00 - 14:00	26	24	4	3	1	1	5	5
14:00 - 15:00	25	29	6	7	1	1	5	5
15:00 - 16:00	49	26	26	14	1	1	8	4
16:00 - 17:00	65	33	12	6	2	1	11	6
17:00 - 18:00	80	32	11	4	2	1	13	5
18:00 - 19:00	55	32	7	4	1	1	10	6

Trip Distribution and Assignment

8.25 As part of the *PfE Locality Assessment Update Note: Elton (JPA7) July 2021*, a distribution pattern to determine the routeing of traffic to / from the proposed Walshaw allocation site was established.

8.26 Therefore, in order to ensure consistency and for the purposes of the commuting and recreation / leisure-based trips generated by the proposed development, the distribution set out in the July 2021 Update Note has been utilised. The traffic distribution routing from the note has been replicated in **Table 8.10**.

Table 8.10: Traffic Distribution Assumptions (Commuting & Recreation / Leisure Trips)

Link	Distribution	
	AM Peak Hour	PM Peak Hour
213 Market Street	14%	14%
Hall Street	19%	15%
B6196 Cockey Moor Road	7%	21%
Starling Road	24%	11%
B6213 Tottington Road	34%	38%
Watling Street	2%	0%

8.27 However, it is considered that the application of the above distribution for the purposes of education-based trips to / from the site has the potential to overestimate impacts at certain locations. Therefore, a site-specific distribution exercise has been undertaken to assign education-based trips to / from the site on the basis of the proximity of local schools in the vicinity of the development site.

8.28 As previously discussed earlier in the report, Policy JP-C8 is a clause in the PfE Plan that covers transport requirements for new developments. The Holcroft Moss Supplementary Planning Document (SPD) provides further guidance on how to implement this policy. The PfE Plan is a long-term plan for jobs, new homes, and sustainable growth for districts.

8.29 The PfE plan provides guidance on mitigation measures to reduce air pollution caused by traffic, ensures that new developments do not harm the protected habitats and species of Holcroft Moss and provides a review of the requirement for developers to contribute to mitigating the impacts on Holcroft Moss.

8.30 Following analysis of the "*WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)*" dataset, all traffic travelling along the M62 in the vicinity of Holcroft Moss (towards Liverpool, Warrington, St Helens, Sefton, Wirral, Halton and Knowsley) weas calculated. As a result of the assessment, it can be seen that less than 2% (1.7%) of daily development traffic from the Walshaw allocation site would be travelling along the M62 and thus result in traffic generation of considerably less than 100 vehicles per day in this location. Therefore, the scheme would not be considered liable to provide a contribution to the Holcroft Moss Habitat Mitigation Plan.

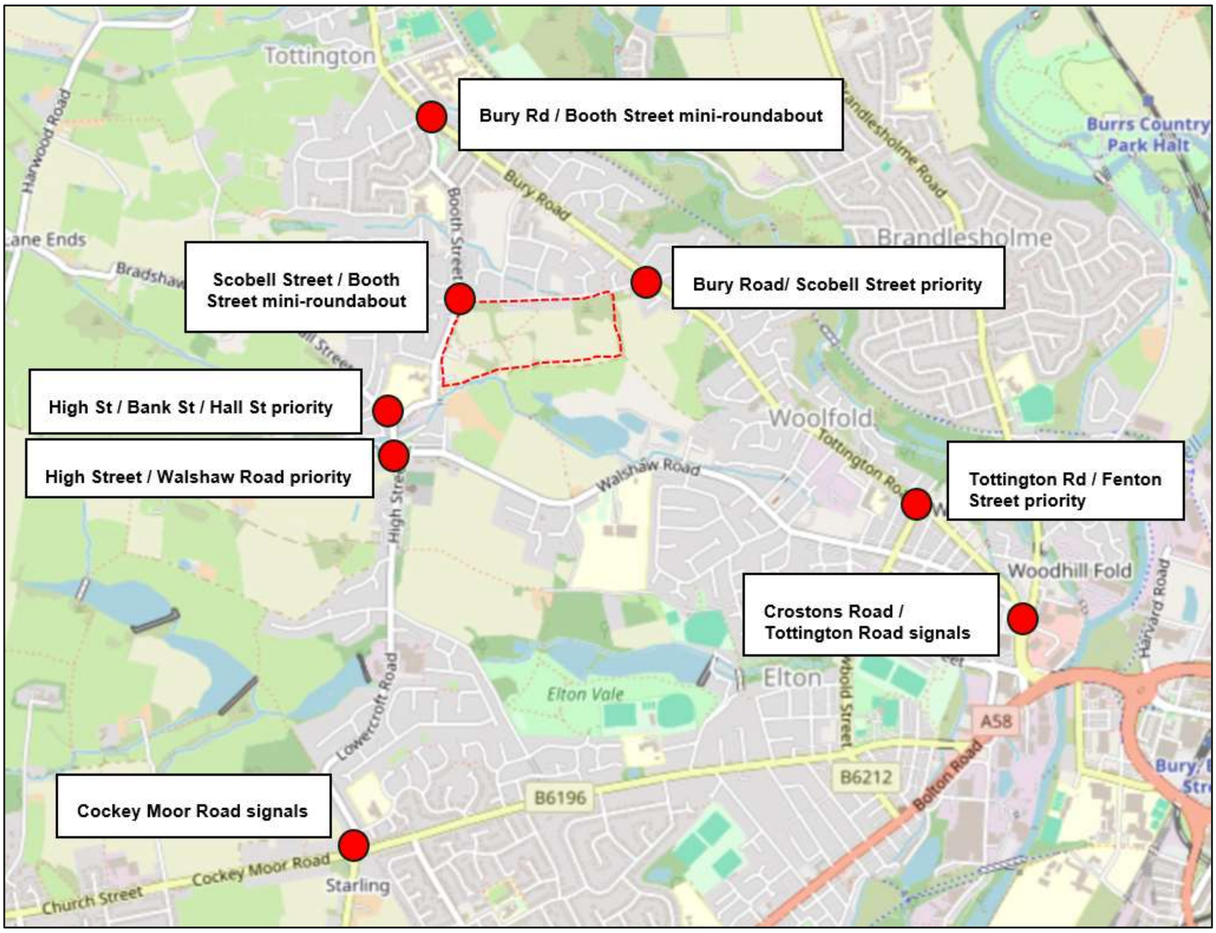
9.0 Traffic Impact Assessment

Study Area

9.1 In order to establish the operation of the highway network in the vicinity of the proposed development site, a number of key junctions that cover those considered and tested in the supporting transport assessment for the PfE adopted plan have been subject to detailed capacity assessments. These junctions were identified based on the traffic routing assumptions of the proposed development site (northern parcel of the Walshaw allocation) as set out in this report.

9.2 A plan of the key junctions that have been included in the scope of assessment are shown in **Figure 9.1** below.

Figure 9.1 – Scope of Junctions


Tottington
Bury Rd / Booth Street mini-roundabout
Harwood Road
Bury Road
Booth Street
Brandlesholme Road
Burrs Country Park Halt
Lane Ends
Bradshaw
Brandlesholme
Scobell Street / Booth Street mini-roundabout
Bury Road/ Scobell Street priority
High St / Bank St / Hall St priority
High Street / Walshaw Road priority
Woolfold
Walshaw Road
Tottington Road
Tottington Rd / Fenton Street priority
Woodhill Fold
Harvard Road
High Street
Crostons Road / Tottington Road signals
Elton
Elton Vale
Lowercroft Road
A58
B6212
Bolton Road
B6196
Cockey Moor Road signals
Cockey Moor Road
Church Street
Starling
Bury

9.3 As illustrated in **Figure 9.1**, the junctions assessed as part of this report are as follows:

- Bury Rd / Booth Street mini-roundabout junction;
- Scobell Street / Booth Street mini-roundabout junction;
- Bury Road/ Scobell Street priority junction;
- Tottington Road / Fenton Street priority junction;

- Crostons Road / Tottington Road signalised junction;
- Cockey Moor Road signalised junction;
- High St / Bank St / Hall St priority junction;
- High Street / Walshaw Road priority junction.

9.4 It should be noted that this assessment does not account for the new internal link being constructed, as it is not envisaged that the new connection will be constructed by the time the proposed development site is occupied.

Committed Development

9.5 It is acknowledged that the wider Walshaw allocation is a committed development that this northern parcel forms part of. Consideration of the wider allocation is considered in the next chapter. In addition to the wider Walshaw allocation, there are three other allocations in the PfE that lie within 5km of the development site. These sites are as follows:

- JPA7 Elton Reservoir (1.5km to the south): The draft allocation is for around 3,500 dwellings.
- JPA8 Seedfield (2km to the east): The draft allocation is for 140 dwellings.
- JPA1.1 Heywood / Pilsworth (Northern Gateway) (5km to the south-east): The draft allocation is for 1,200,000 sqm of industrial and warehousing floorspace and 1,200 dwellings.

9.6 Aside from the schemes listed above, it is considered that there are no other significant developments planned in the surrounding area which would generate any significant cumulative impacts in relation to the proposed development. Based on the geographic location and scale of development, the committed development flows associated with the JPA7 Elton Reservoir allocation are the only flows considered as part of this TA.

9.7 In terms of the amount of development that could be built and occupied on the Elton Reservoir site by the time the northern parcel is occupied, reference has been made to broad build rates presented in the PfE. As set out in the PfE document it is deemed that the Elton Reservoir allocation will deliver a total of 984 units by 2030. Therefore, for the purposes of this assessment 984 units generated by the JPA7 allocation have been considered in the future year scenarios tested.

9.8 As an estimate for the traffic generation of the JPA7 allocation in 2030, trip rates calculated from the PfE document have been utilised to understand the traffic volumes associated with the associated 984 dwellings. In relation to the distribution of traffic to / from the JPA7 allocation the traffic routing assumptions used in the PfE document have also been utilised.

Scenarios

9.9 As detailed, an independent traffic survey was undertaken of the highway network which formed the study area for the proposed development. This provided traffic flows for the 2024 Base scenario. The surveys were undertaken by video which were then counted by the survey provider.

9.10 To understand the impact of the proposed development, and committed development traffic in the vicinity of the site the following proposals have been assessed:

- 2024 baseline;
- 2030 Future Year (without proposed development);
- 2030 Future Year (with proposed development).

9.11 Traffic flow diagrams for the above scenarios can be found within **Appendix D** of this report.

9.12 Full modelling outputs for the assessment of all the junctions tested for the proposed development are included within **Appendix E** of this report, with a summary of the results set out below for each junction.

9.13 The priority junctions have been assessed using the industry standard JUNCTIONS 10 software package. The signalled junctions have been modelled using the 'LinSIG' software which is the industry standard package for assessment of signalled junctions.

9.14 Each of the base models are reflective of observations recorded on site during the time of the surveys. The base models are suitable tools upon which to investigate the effects of the proposed development at these locations.

9.15 It should be noted that the results of the individual junction models are presented to enable a judgement to be made regarding the development effects on the network.

9.16 The caveat with any model, including these, is that in no circumstance can a mathematical traffic model provide an accurate forecast of future reality. This is because the future is subject to multiple variables and uncertainties.

9.17 There is no empirical pass/fail trigger in traffic modelling. They aid in making judgements about characteristics, and cannot be an arbiter in their own right on the planning acceptability of development.

Bury Rd / Booth Street mini-roundabout junction

9.18 The Bury Rd / Booth Street mini-roundabout junction has been assessed using the industry standard JUNCTIONS 10 software package.

Table 9.1: Bury Rd / Booth Street mini-roundabout junction

Scenario	Bury Road		Booth Street		Market St	
	AM	PM	AM	PM	AM	PM
	RFC					
2024 Baseline	0.58	0.64	0.68	0.53	0.75	0.82
2030 Future Year (without proposed development)	0.59	0.65	0.71	0.55	0.76	0.83
2030 Future Year (with proposed development)	0.60	0.66	0.73	0.55	0.76	0.84
	Queue (PCU)					
2024 Baseline	1	2	2	1	3	4
2030 Future Year (without proposed development)	1	2	2	1	3	5
2030 Future Year (with proposed development)	2	2	3	1	3	5

9.19 As shown in **Table 9.1**, the Bury Rd / Booth Street mini-roundabout junction to the north of the proposed development site is shown to have a maximum increase in RFC value from 0.68 to 0.73 during the AM peak hour on Booth Street in a future year scenario, as a result of traffic from the proposed development scheme. These results indicate that the proposed development would have minimal impact upon the operation of the junction.

9.20 In terms of queue lengths, there is anticipated to be a maximum increase of 1 vehicle across all arms of the junction in a future year scenario, as a result of the proposed development scheme.

9.21 It is therefore considered that the characteristics of the Bury Rd / Booth Street mini-roundabout junction would not change as a result of the proposed development.

Scobell Street / Booth Street mini-roundabout junction

9.22 The Scobell Street / Booth Street mini-roundabout junction has been assessed using the industry standard JUNCTIONS 10 software package.

Table 9.2: Scobell Street / Booth Street mini-roundabout junction

Scenario	Scobell St		Church St		Acres St		Booth St	
	AM	PM	AM	PM	AM	PM	AM	PM
	RFC							
2024 Baseline	0.18	0.20	0.26	0.34	0.00	0.01	0.31	0.24
2030 Future Year (without proposed development)	0.23	0.22	0.27	0.38	0.00	0.01	0.31	0.25
2030 Future Year (with proposed development)	0.23	0.22	0.29	0.39	0.00	0.01	0.32	0.27
	Queue (PCU)							
2024 Baseline	0	0	0	1	0	0	0	0
2030 Future Year (without proposed development)	0	0	0	1	0	0	1	0
2030 Future Year (with proposed development)	0	0	0	1	0	0	1	0

9.23 As shown within **Table 9.2**, the Scobell Street / Booth Street mini-roundabout junction to the west of the proposed development site is shown to have a maximum increase in RFC value of 0.05. This occurs during the AM peak hour on Scobell Street and during the PM peak hour on Church Street, respectively, in a future year scenario as a result of traffic from the proposed development scheme.

9.24 In terms of queue lengths, there is anticipated to be a maximum increase of 1 vehicle in both the AM and PM peak hour periods on all arms of the junction in a future year scenario, as a result of the proposed development scheme.

9.25 It is therefore considered that the characteristics of the Scobell Street / Booth Street mini-roundabout junction would not change significantly as a result of the proposed development.

Bury Road / Scobell Street priority junction

9.26 The Bury Road / Scobell Street junction has been assessed using the industry standard JUNCTIONS 10 software package.

Table 9.3: Bury Road / Scobell Street priority junction

Scenario	Scobell St		Bury Rd (North) (RT)	
	AM	PM	AM	PM
	RFC			
2024 Baseline	0.37	0.39	0.04	0.05
2030 Future Year (without proposed development)	0.46	0.45	0.04	0.07
2030 Future Year (with proposed development)	0.46	0.45	0.04	0.07
	Queue (PCU)			
2024 Baseline	1	1	0	0
2030 Future Year (without proposed development)	1	1	0	0
2030 Future Year (with proposed development)	1	1	0	0

9.27 As shown within **Table 9.3**, the Bury Road / Scobell Street junction to the east of the proposed development site is shown to have a maximum increase in RFC value from 0.37 to 0.46 during the AM peak hour on Scobell Street in a future year scenario, as a result of traffic from the proposed development scheme.

9.28 As shown in **Table 9.3** there are not anticipated to be any changes in queue lengths at the junction as a result of the proposed development scheme.

9.29 It is therefore considered that the characteristics of the Bury Road / Scobell Street junction would not significantly change as a result of the proposed development scheme.

Tottington Road / Fenton Street priority junction

9.30 The Tottington Road / Fenton Street priority junction has been assessed using the industry standard JUNCTIONS 10 software package.

Table 9.4: Tottington Road / Fenton Street priority junction

Scenario	Tottington Rd (East)		Fenton St		Tottington Rd (West)		Rowans Street	
	AM	PM	AM	PM	AM	PM	AM	PM
	RFC							
2024 Baseline	0.22	0.44	0.00	0.01	0.02	0.03	0.21	0.19
2030 Future Year (without proposed development)	0.22	0.44	0.00	0.01	0.02	0.03	0.21	0.19
2030 Future Year (with proposed development)	0.22	0.45	0.00	0.01	0.02	0.03	0.22	0.20
	Queue (PCU)							
2024 Baseline	0	1	0	0	0	0	1	1
2030 Future Year (without proposed development)	0	1	0	0	0	0	1	1
2030 Future Year (with proposed development)	0	1	0	0	0	0	1	1

9.31 As shown within **Table 9.4**, the Tottington Road / Fenton Street priority junction to the southeast of the proposed development site is shown to have a maximum increase in RFC value of 0.01 that occurs on a number of arms during the future year scenario assessed, as a result of traffic from the proposed development scheme.

9.32 As shown in **Table 9.4** there is not anticipated to be any change in queue lengths at the junction as a result of the proposed development scheme.

9.33 It is therefore considered that the characteristics of the Tottington Road / Fenton Street priority junction will result in no material impact as a result of the increased traffic generated by the proposed development scheme.

Crostons Road / Tottington Road signalised junction

9.34 The Crostons Road / Tottington Road signalised junction has been assessed using the industry standard LinSig software package.

Table 9.5: Crostons Road / Tottington Road signalised junction

Scenario	Tottington Rd (North)		Crostons Rd (North)		Tottington Rd (South)		Crostons Rd (South)	
	AM	PM	AM	PM	AM	PM	AM	PM
	Degree of Saturation (%)							
2024 Baseline	90.3	74.3	89.7	59.5	12.2	36.1	60.3	75.6
2030 Future Year (without proposed development)	90.3	74.6	91.6	60.5	12.2	36.1	60.8	77.8
2030 Future Year (with proposed development)	90.4	74.6	91.7	60.5	12.2	36.1	60.9	77.8
	Queue							
2024 Baseline	24	12	14	8	1	2	9	14
2030 Future Year (without proposed development)	24	12	15	8	1	2	9	15
2030 Future Year (with proposed development)	24	12	15	8	1	2	9	15

9.35 As shown within **Table 9.5**, the Crostons Road / Tottington Road signalised junction to the south-east of the proposed development site is shown to have minimal impact on its operation as a result of the proposed development. The maximum increase in degree of saturation is shown to be just +2.2 during the PM peak hour on the Crostons Road south arm of the junction in the future year scenario.

9.36 In terms of queue lengths, there is anticipated to be a maximum uplift of 1 vehicle any arm in a future year scenario, as a result of the proposed development scheme.

9.37 Based on these results it can be seen that there would be minimal impact upon the operation of the Crostons Road / Tottington Road junction.

Cockey Moor Road signalised junction

9.38 The Cockey Moor Road signalised junction has been assessed in the industry standard LinSig software package.

Table 9.6: Cockey Moor Road signalised junction

Scenario	Lowercroft Rd		Ainsworth Rd		Starling Rd		Cocky Moor Rd	
	AM	PM	AM	PM	AM	PM	AM	PM
	Degree of Saturation (%)							
2024 Baseline	77.6	75.7	66.7	76.4	79.2	76.3	81.7	73.1
2030 Future Year (without proposed development)	82.0	77.7	67.1	76.4	80.2	77.7	82.2	75.3
2030 Future Year (with proposed development)	82.6	80.0	67.1	76.7	85.7	80.3	82.5	76.2
	Queue							
2024 Baseline	17	14	13	19	11	13	19	15
2030 Future Year (without proposed development)	18	15	13	19	11	14	20	15
2030 Future Year (with proposed development)	19	15	13	19	12	15	20	15

9.39 As shown within **Table 9.6**, the Cockey Moor Road signalised junction to the south-west of the proposed development site is shown to have minimal impact on its operation as a result of the proposed development. The maximum increase in degree of saturation is shown to be just +6.5 during the AM peak hour on the Starling Road arm of the junction in a future year scenario.

9.40 In terms of queue lengths, there is anticipated to be a maximum uplift of 2 vehicles on any arm, as a result of the proposed development scheme.

9.41 Based on these results it can be seen that there would be minimal impact on the operation of the Cockey Moor Road signalised junction as a result of the proposals.

High St / Bank St / Hall St priority junction

9.42 The High St / Bank St / Hall St junction has been assessed using the industry standard JUNCTIONS 10 software package.

Table 9.7: High St / Bank St / Hall St priority junction

Scenario	Bank Street		High Street (RT)	
	AM	PM	AM	PM
	RFC			
2024 Baseline	0.57	0.47	0.47	0.58
2030 Future Year (without proposed development)	0.65	0.50	0.48	0.62
2030 Future Year (with proposed development)	0.65	0.51	0.49	0.63
	Queue (PCU)			
2024 Baseline	1	1	1	2
2030 Future Year (without proposed development)	2	1	1	2
2030 Future Year (with proposed development)	2	1	1	2

9.43 As shown within **Table 9.7**, the High St / Bank St / Hall St priority junction within Walshaw Village centre to the southwest of the proposed development site is shown to have a maximum increase in RFC value from 0.57 to 0.65 during the AM peak hour on Bank Street as a result of traffic from the proposed development scheme.

9.44 In terms of queue lengths, there is anticipated to be a maximum increase of 1 vehicle on any arm in a future year scenario, as a result of the proposed development scheme.

9.45 It is therefore considered that the High St / Bank St / Hall St priority junction would be capable of accommodating the increased traffic resulting from the proposed development scheme.

High Street / Walshaw Road priority junction

9.46 The High Street / Walshaw Road junction has been assessed using the industry standard JUNCTIONS 10 software package.

Table 9.8: High Street / Walshaw Road priority junction

Scenario	Walshaw Rd (LT)		Walshaw Rd (RT)		High Street (RT)	
	AM	PM	AM	PM	AM	PM
	RFC					
2024 Baseline	0.32	0.27	0.43	0.56	0.44	0.46
2030 Future Year (without proposed development)	0.32	0.28	0.44	0.57	0.45	0.46
2030 Future Year (with proposed development)	0.32	0.28	0.44	0.58	0.45	0.47
	Queue (PCU)					
2024 Baseline	1	0	1	1	1	1
2030 Future Year (without proposed development)	1	0	1	1	1	1
2030 Future Year (with proposed development)	1	0	1	1	1	1

9.47 As shown within **Table 9.8**, the High Street / Walshaw Road priority junction within Walshaw Village centre to the southwest of the proposed development site is shown to have a maximum increase in RFC value from 0.56 to 0.58 during the PM peak hour on Walshaw Road as a result of traffic from the proposed development scheme.

9.48 As shown in **Table 9.8** there is not anticipated to be any change in queue lengths at the junction as a result of the proposed development scheme.

9.49 It is therefore considered that the High Street / Walshaw Road priority junction would be capable of accommodating the increased traffic resulting from the proposed development scheme.

10.0 Wider Walshaw Allocation

Overview

10.1 As stated, the planning application development forms part of a wider allocation for residential development in the adopted PfE under Policy JPA9. The JPA9 allocation is for the delivery of around 1,250 dwellings in the Walshaw area of Bury, inclusive of the proposed northern parcel development.

10.2 The PfE evidence base, in the form of a Locality Assessment (2020), has previously indicated that the development of residential dwellings on the allocation could be accommodated on the local network, with an appropriate mitigation strategy that is outlined in the document, consisting of infrastructure improvements and/or contributions included as Appendix D of the adopted PfE Plan.

10.3 **Table 10.1** below sets out the transport mitigation measures / infrastructure included in Appendix D and referred to in TfGM's pre-application letter of October 2024.

Table 10.1: Indicative transport mitigation associated with PfE allocation

Transport Interventions
Internal link providing bus penetration through the allocation between Lowercroft Road & Scobell Steet, via Walshaw Road
Crostons Road / Tottington Road junction
Tottington Road / Walshaw Road priority junction
Cockey Moor Road Junction
A58 Bolton Road / Ainsworth Road
A58 Bolton & Bury Road / Starling Road
Introduction of bus services through the allocation
Active travel improvements

10.4 As set out in the TfGM pre-application letter, the defined transport mitigation measures were based on high level strategic transport modelling enabled the development of high-level indicative transport mitigation for a single strategic "worst-case" scenario being identified in relation to the Plan allocations, recognising the requirement for more detailed transport assessment work. This is considered below, termed Wider Site Allocation Assessment Scenario.

Wider Site Allocation Assessment Scenario

10.5 In order to consider the potential impact of the full Walshaw allocation traffic on the local highway network, an assessment has been undertaken taking into account the potential for delivery of 1,250 dwellings within the wider site.

10.6 The proposed trip generation of the 1,250 dwellings that make up the Walshaw allocation (JPA9) site for the wider site allocation assessment scenario can be found within **Appendix F** of this report.

10.7 The trip generation methodology previously outlined has been utilised, but with an uplift to account for the full residential development, and an allowance for trip internalisation as a result of additional community facilities and a school within the site.

10.8 For the purposes of the assessment, a judgement has also been made that 30% of leisure/recreation trips are internal trips which remain within the wider site and the local community, although this may well be higher based on the mix of land uses proposed. This assessment focuses on the 70% of trips which leave the site to access leisure / recreation opportunities further afield.

10.9 It should be noted that the wider allocation development scenario has also been assessed in line with the implementation of the full proposed internal link in place, running through the allocation between Lowercroft Road and Scobell Steet, via Walshaw Road.

10.10 The assessment has also taken account of the potential additional site access points proposed as part of the wider masterplan from Tottington Road and Walshaw Road.

10.11 The distribution of trips around the local area utilises the same methodology as previously used, but with a reassignment as a result of the proposed delivery of the new internal link.

10.12 This is particularly the case with the junctions serving Walshaw village to the west of the site where the majority of trips have been re-assigned to the new internal link as a result of the proposals.

10.13 The purpose of the sensitivity assessment is to explore how sensitive the network is to changes in flow associated with additional development from the wider site allocation. The wider Walshaw site allocation and associated masterplan is being supported by its own detailed transport assessments which this assessment has been coordinated.

10.14 In addition to the full Walshaw allocation, as part of the wider allocation assessment, the traffic associated with the full build out of 3,500 dwellings at the Elton Reservoir allocation site during the peak hour periods has also been accounted for and distributed in line with the vehicle routing assumptions utilised within the PfE document for this allocation.

10.15 It should be noted that as part of this assessment the information provided with the Locality Assessment regarding trip generation and distribution assumptions for the Elton Reservoir allocation have been utilised. Therefore, no allowance for working from home or trip internalisation have been applied. Therefore, the anticipated traffic levels from the Elton Reservoir site should be considered as a worst-case analysis, over which we have tested the specific impacts of the wider Walshaw allocation.

10.16 The full build out of the Elton Reservoir is planned for 2040, it is therefore considered that this represents a robust assessment.

10.17 For the purposes of this assessment the junctions highlighted for potential mitigation as part of pre-application discussions (listed in **Table 10.1**) have been analysed below. This includes the following:

- Crostons Road / Tottington Road junction;
- Tottington Road / Walshaw Road priority junction;
- Cockey Moor Road Junction;
- A58 Bolton Road / Ainsworth Road.
- A58 Bolton & Bury Road / Starling Road

10.18 Traffic flow diagrams for the sensitivity scenario assessment can also be found within **Appendix D** of this report.

10.19 A summary of the analysis / results set out below for each junction can be found below, with the full modelling outputs for the assessment of the junctions tested as part of the sensitivity scenario included within **Appendix G** of this report.

Crostons Road / Tottington Road signalised junction

10.20 The Crostons Road / Tottington Road signalised junction has been assessed in the industry standard LinSig software package.

Table 10.2: Crostons Road / Tottington Road signalised junction

Scenario	Tottington Rd (North)		Crostons Rd (North)		Tottington Rd (South)		Crostons Rd (South)	
	AM	PM	AM	PM	AM	PM	AM	PM
	Degree of Saturation (%)							
2040 Future Year (without proposed development)	90.5	74.9	90.0	59.7	12.2	36.1	60.9	76.0
2040 Future Year (with proposed development)	96.2	79.1	90.0	59.7	12.2	36.1	60.9	76.0
	Queue							
2040 Future Year (without proposed development)	24	12	14	8	1	2	9	15
2040 Future Year (with full proposed development + full committed dev)	33	15	14	8	1	2	9	15

10.21 As shown within **Table 10.2**, the northern arm / Tottington Road (north) of the Tottington Road / Crostons Road / Tottington Road signalised junction is shown to experience the largest change in DoS and queuing, although impacts are not considered to be severe.

10.22 The Crostons Road (south) arm of this junction is a 'bypass' lane and therefore is not impacted by the change in flows. In addition, the manoeuvre from the Crostons Road (north) arm is not allowed and there is no traffic to/from the retail park opposite anticipated to occur.

10.23 The analysis presented in this Transport Assessment therefore suggests that improvements to the capacity of the junction are not necessary, particularly in the context of a Vision and Validate rather than Predict and Provide approach.

Tottington Road / Walshaw Road priority junction

10.24 The Tottington Road / Walshaw Road junction has been assessed using the industry standard JUNCTIONS 10 software package.

Table 10.3: High Street / Walshaw Road priority junction

Scenario	Walshaw Rd		Tottington Rd (N) (RT)	
	AM	PM	AM	PM
	RFC			
2040 Future Year (without proposed development)	0.65	0.64	0	0
2040 Future Year (with proposed development)	0.86	0.79	0	0
	Queue (PCU)			
2040 Future Year (without proposed development)	2	2	0	0
2040 Future Year (with proposed development)	2	5	2	3

10.25 As shown within **Table 10.3**, the Tottington Road / Walshaw Road priority junction is shown to have a maximum increase in RFC value from 0.65 to 0.86 during the AM peak hour on Walshaw Road as a result of traffic from the full proposed development scheme. The junction is predicted to operate with minimal queueing. The results demonstrate that the proposed wider site allocation would not result in a significant or severe impact, with the conclusion that improvements are not justified from a peak hour capacity perspective.

Cockey Moor Road signalised junction

10.26 The Cockey Moor Road signalised junction has been assessed using the industry standard LinSig software package.

Table 10.4: Cockey Moor Road signalised junction

Scenario	Lowercroft Rd		Ainsworth Rd		Starling Rd		Cocky Moor Rd	
	AM	PM	AM	PM	AM	PM	AM	PM
	Degree of Saturation (%)							
2040 Future Year (without proposed development)	78.7	81.6	83.2	80.8	88.5	83.5	90.4	79.9
2040 Future Year (with proposed development)	92.5	89.7	84.4	80.8	92.6	89.1	91.2	90.4
	Queue							
2040 Future Year (without proposed development)	17	16	13	20	15	16	22	16
2040 Future Year (with proposed development)	25	20	13	20	17	19	23	21

10.27 As shown within **Table 10.4,** there are a number of arms that experience increases in DoS and queueing as a result of the development proposals.

10.28 In terms of queue lengths, there is anticipated to be a maximum uplift of 8 vehicles on the northern arm of the junction during the AM peak hour, as a result of the proposed development scheme.

A58 Bolton Road / Ainsworth Road signalised junction

10.29 Due to the location of the A58 Bolton Road / Ainsworth Road signalised junction there will be no traffic from the development site travelling through the junction and therefore there will be a negligible impact on the operation of the junction as a result of the Walshaw allocation.

10.30 Further to the above, and as highlighted in the results of the PfE document as part of the 'without mitigation' scenarios, it was demonstrated that the development would not create a significant and severe impact at this junction. This Transport Assessment confirms that conclusion.

A58 Bolton & Bury Road / Starling Road Junction

10.31 The A58 Bolton & Bury Road/Starling Road junction is situated approximately 2km to the south of the southernmost proposed vehicular connection to the Walshaw allocation. Given the proximity of the junction in relation to the site and the impact of development traffic from the Walshaw allocation at this location, it is not considered that this junction should be considered in the context of the Walshaw allocation.

10.32 Further to this, given the location of the junction in close proximity of the JPA8 Elton Reservoir Allocation site set out in PfE document, it is considered that analysis / enhancements at this location should be account for as part of the JPA8 allocation.

Potential Allocation Mitigation Strategy

10.33 As noted, the proposed development has been progressed in parallel with a comprehensive masterplan which considers the internal link alignment, masterplan connectivity and wider infrastructure (i.e. local centre, school etc).

10.34 Based on the junction assessments analysed in Chapter 9 for the delivery of the northern parcel (Wain Estates land), it can be seen that the operation of the junctions in the vicinity of the proposed development do not materially change when traffic generated from the northern parcel is considered.

10.35 Following delivery of the northern parcel, it is not considered that any ‘traditional’ peak hour highway capacity mitigation works to any off-site junctions on the local highway network would be required.

10.36 However, in line with the Locality Assessment and TfGM requirements, a collaboration agreement has been progressed with all landowners within the allocation, and there is cohesion with the proposals such that the proposed development of any individual site within the allocation does not in any way prejudice the delivery of the wider masterplan site.

10.37 Based on the above, Wain Estates commit to contributing proportionately to the associated mitigation / contributions required to ensure the comprehensive delivery of the wider allocation masterplan to prioritise active travel and sustainable transport, that is identified by the Council.

11.0 Summary and Conclusion

11.1 SLR has been instructed by Wain Estates (Land) Ltd to provide transport and movement advice in relation to a planning application for a residential development at land off Church Street / Scobell Street in Walshaw, Bury. This application refers to the northern parcel that makes up part of the wider Walshaw allocation site.

11.2 This Transport Assessment (TA) has been prepared with input from BC and Transport for Greater Manchester (TfGM).

11.3 The development proposals seek outline permission for up to 275 residential dwellings on the site, with all matters reserved apart from access.

11.4 The site is considered to be highly accessible by all modes and supports car-free lifestyles, whilst connecting the site to the existing local area.

11.5 It is proposed to provide vehicular access to the proposed development at two locations from Scobell Street to the north of the site.

11.6 The application also includes the access for the northern end of the internal link, with associated modifications to the Church Street/Scobell Street junction. This demonstrates a commitment to delivering infrastructure which then assists with the delivery of the wider allocation.

11.7 As the application is outline, beyond the points of access, the internal road layout, the strategic through road and non-vehicular access points will be resolved through future reserved matters applications.

11.8 A Framework Travel Plan Strategy is contained within this report that sets out a number of suggested initiatives and measures to actively promote sustainable travel modes and reduce the reliance on single occupancy car trips that will align with the vision of the site and wider Walshaw masterplan.

11.9 A comprehensive junction assessment has been undertaken that leads to the judgement that the proposed development proposals would not significantly change the characteristics of the local highway network in the vicinity of the site.

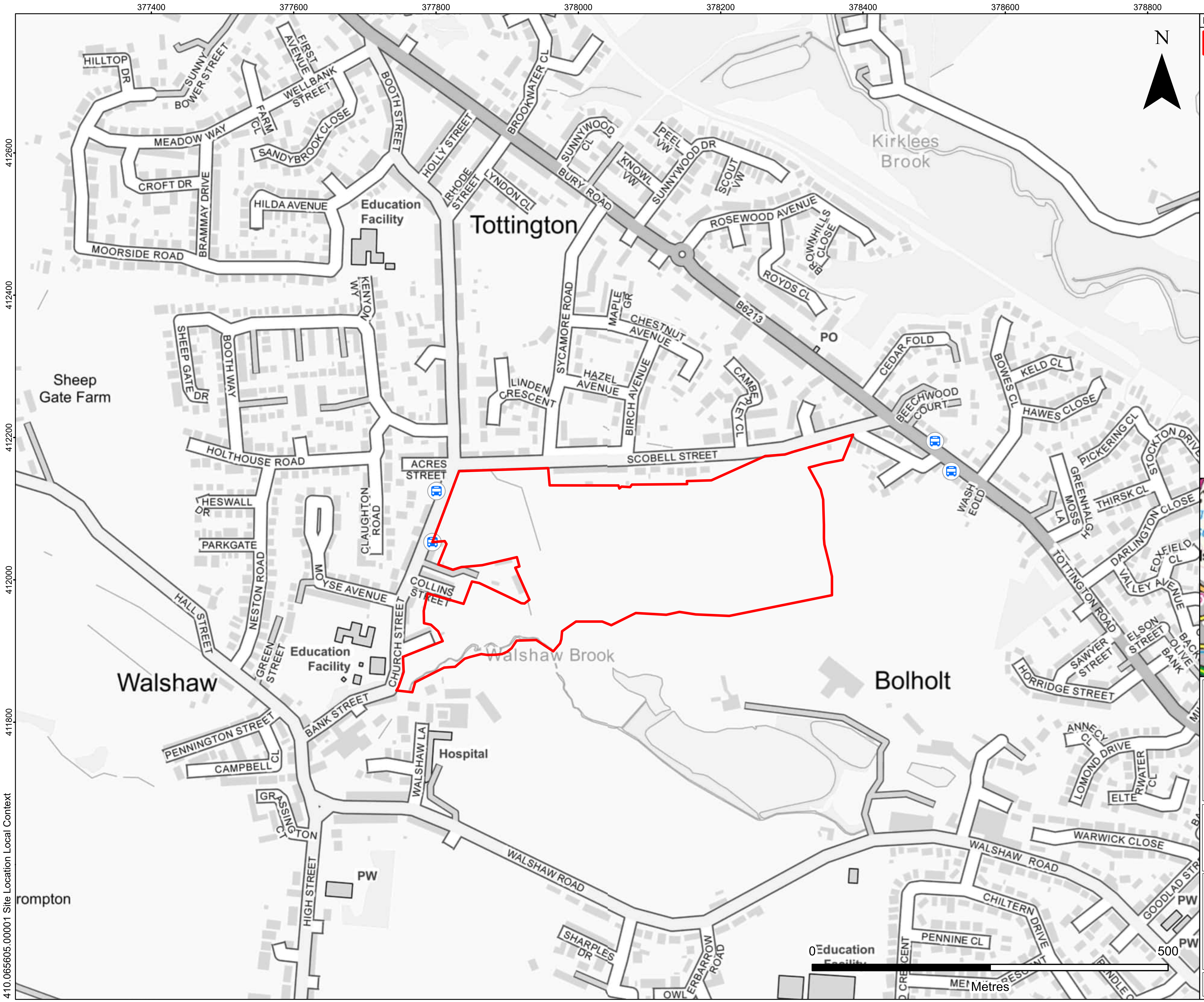
11.10 A sensitivity assessment to understand the impact of the full build out of the Walshaw allocation and associated committed development has been undertaken.

11.11 As part of this assessment, further indicative junction analysis has been tested at a number of locations previously identified in the PfE.

11.12 Wain Estates make the commitment to contribute proportionately to any associated mitigation / contributions required to ensure the comprehensive delivery of the masterplan.

11.13 In conclusion, it is considered that there are no material reasons why the proposed development scheme should not be granted planning consent from a transport and mobility perspective.

Plans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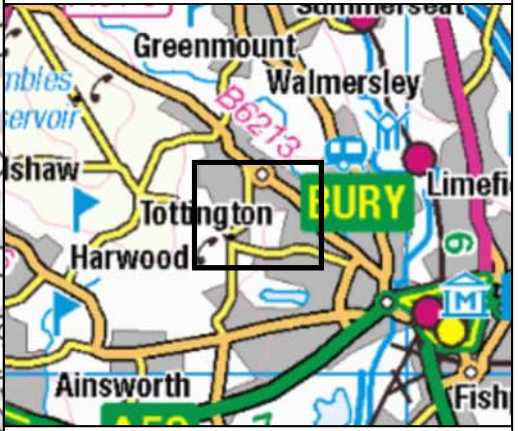
Walshaw
Bolholt
Sheep Gate Farm
Kirklees Brook
Walshaw Brook
Education Facility
Education Facility
Hospital
PO
PW
PW
PW
BURY ROAD
B6213
SCOBELL STREET
ACRES STREET
COLLINS STREET
CHURCH STREET
MOYSE AVENUE
HOLTHOUSE ROAD
WALSHAW ROAD
WALSHAW LA
TOTTINGTON ROAD
SYCAMORE ROAD
BOOTH STREET
MOORSIDE ROAD
MEADOW WAY
ROSEWOOD AVENUE
HIGH STREET
BANK STREET
HALL STREET
NESTON ROAD
HORRIDGE STREET
CHILTERN DRIVE
WARWICK CLOSE
LOMOND DRIVE
HILDA AVENUE
CROFT DR
BRAMMAY DRIVE
HILLTOP DR
WELLBANK STREET
SANDYBROOK CLOSE
HOLLY STREET
RHODE STREET
LYNDON CL
BROOKWATER CL
SUNNYWOOD CL
SUNNYWOOD DR
CHESTNUT AVENUE
HAZEL AVENUE
BIRCH AVENUE
LINDEN CRESCENT
CLAUGHTON ROAD
PARKGATE
HESWALL DR
PENNINGTON STREET
CAMPBELL CL
SHARPLES DR
PENNINE CL
CEDAR FOLD
BEECHWOOD COURT
KELD CL
HAWES CLOSE
BOWES CL
PICKERING CL
STOCKTON DRIVE
THIRSK CL
DARLINGTON CLOSE
FOXFIELD CL
VALLEY AVENUE
ELSON STREET
SAWYER STREET
WASH FOLD
ROYDS CL
SCOUT VW
KNOWL VW
PEEL VW
MAPLE GR
SHEEP GATE DR
BOOTH WAY
KENYON WY
GOODLAD STREET
0
500
Metres


Greenmount
Walmersley
B6213
Tottington
BURY
Harwood
Ainsworth

LEGEND

□ Indicative Site Boundary

🚌 Bus Stop

Wain Estates (Land) Ltd

SLR

431.065605.00001

WALSHAW NORTHERN PARCEL

SITE LOCATION (LOCAL CONTEXT)

Plan 1

Scale	Date
1:5,000 @ A3	APRIL 2025

410.065605.00001 Site Location Local Context

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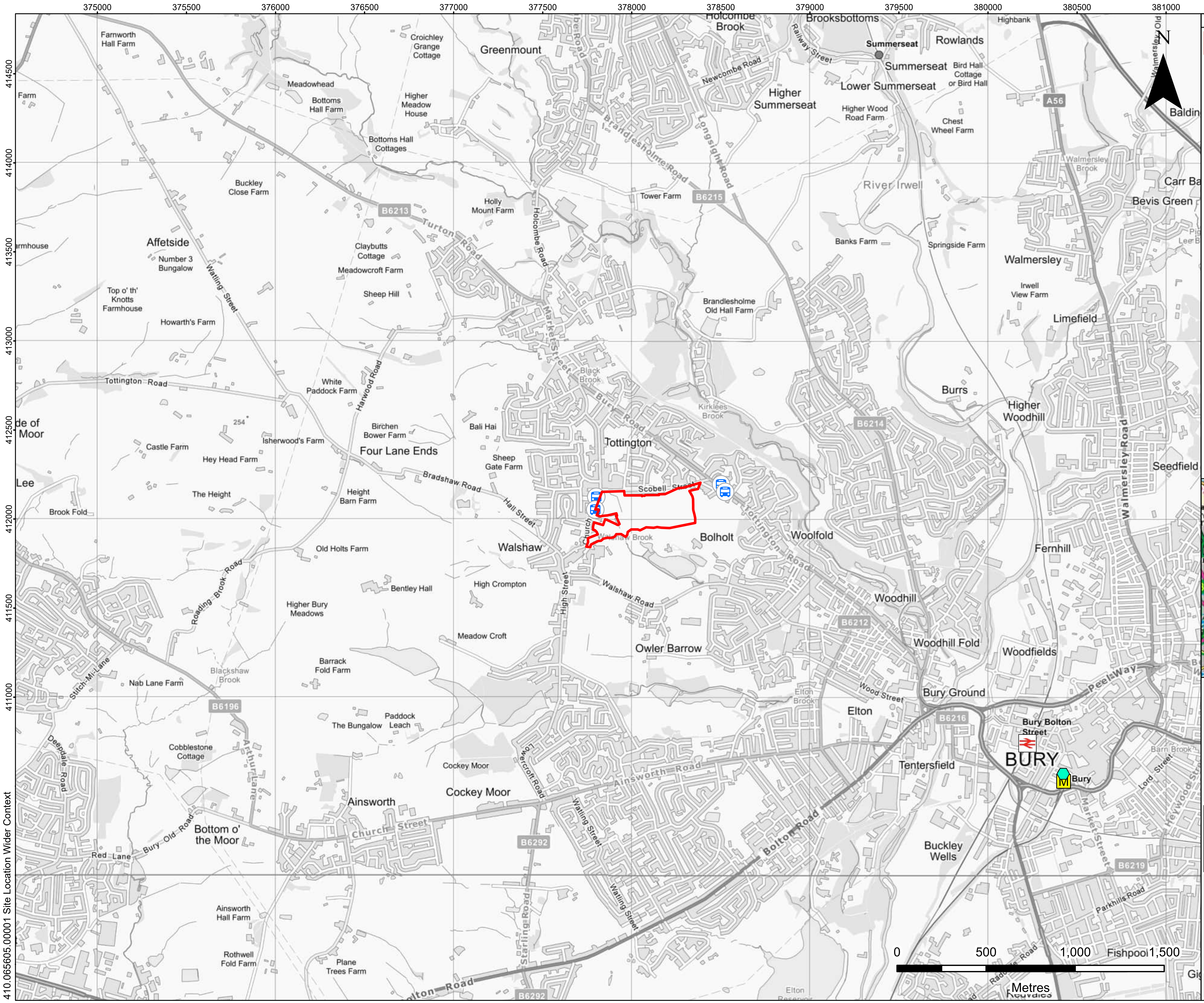
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Farnworth Hall Farm
Croichley Grange Cottage
Greenmount
Holcombe Brook
Brooksbottoms
Highbank
Summerseat
Rowlands
Newcombe Road
Higher Summerseat
Lower Summerseat
Bird Hall Cottage or Bird Hall
A56
Meadowhead
Bottoms Hall Farm
Higher Meadow House
Higher Wood Road Farm
Chest Wheel Farm
Bottoms Hall Cottages
Brandlesholme Road
Longsight Road
Walmersley Brook
Buckley Close Farm
Holly Mount Farm
Tower Farm
B6215
River Irwell
Carr Bank
B6213
Turton Road
Holcombe Road
Bevis Green
Affetside
Claybutts Cottage
Banks Farm
Springside Farm
Number 3 Bungalow
Meadowcroft Farm
Walmersley
Watling Street
Top o' th' Knotts Farmhouse
Sheep Hill
Irwell View Farm
Brandlesholme Old Hall Farm
Howarth's Farm
Limefield
Market Street
Black Brook
Tottington Road
White Paddock Farm
Harwood Road
Burrs
Bury Road
Kirklees Brook
Higher Woodhill
254
Birchen Bower Farm
Bali Hai
B6214
Castle Farm
Isherwood's Farm
Four Lane Ends
Tottington
Hey Head Farm
Sheep Gate Farm
Walmersley Road
Seedfield
Bradshaw Road
Scobell Street
The Height
Height Barn Farm
Hall Street
Brook Fold
Walshaw Brook
Bolholt
Woolfold
Old Holts Farm
Walshaw
Fernhill
Roading Brook Road
Bentley Hall
High Crompton
High Street
Walshaw Road
Woodhill
Higher Bury Meadows
B6212
Meadow Croft
Owler Barrow
Woodhill Fold
Woodfields
Stitch-Mi-Lane
Blackshaw Brook
Peel Way
Nab Lane Farm
Barrack Fold Farm
Wood Street
Bury Ground
B6196
Elton Brook
Elton
Paddock Leach
The Bungalow
B6216
Bury Bolton Street
Deepdale Road
Cobblestone Cottage
Arthur Lane
Barn Brook
Cockey Moor
BURY
Bury
Tentersfield
Lord Street
Lowercroft Road
Ainsworth Road
Ainsworth
Cockey Moor
Bottom o' the Moor
Bury Old Road
Church Street
B6292
Watling Street
Bolton Road
Market Street
Buckley Wells
Red Lane
B6219
Parkhills Road
Ainsworth Hall Farm
Starling Road
Rothwell Fold Farm
Plane Trees Farm
Bolton Road
Elton Reservoir
Fishpool
Radcliffe Road
0
500
1,000
1,500
Metres

LEGEND

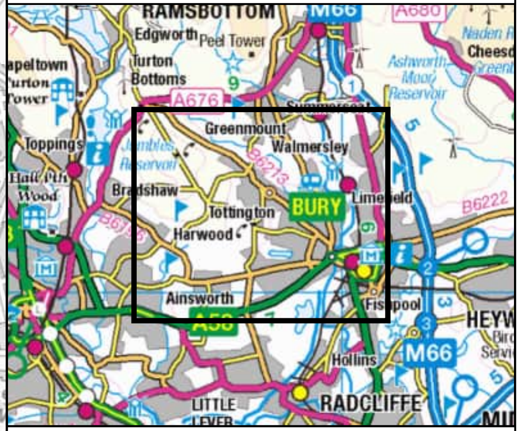
🟥 Indicative Site Boundary

Bus Stop

⬢ Bury Interchange

Railway Station

M Metrolink Tram Stop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M66
Edgworth
Peel Tower
Turton Bottoms
A676
Greenmount
Walmersley
Bradshaw
Tottington
BURY
Harwood
Ainsworth
A58
M66
HEYWOOD
RADCLIFFE
LITTLE LEVER
Hollins
Fishpool

Wain Estates (Land) Ltd

SLR

431.065605.00001

WALSHAW NORTHERN PARCEL

SITE LOCATION (WIDER CONTEXT)

Plan 2

Scale	Date
1:20,000 @ A3	APRIL 2025

410.065605.00001 Site Location Wider Context

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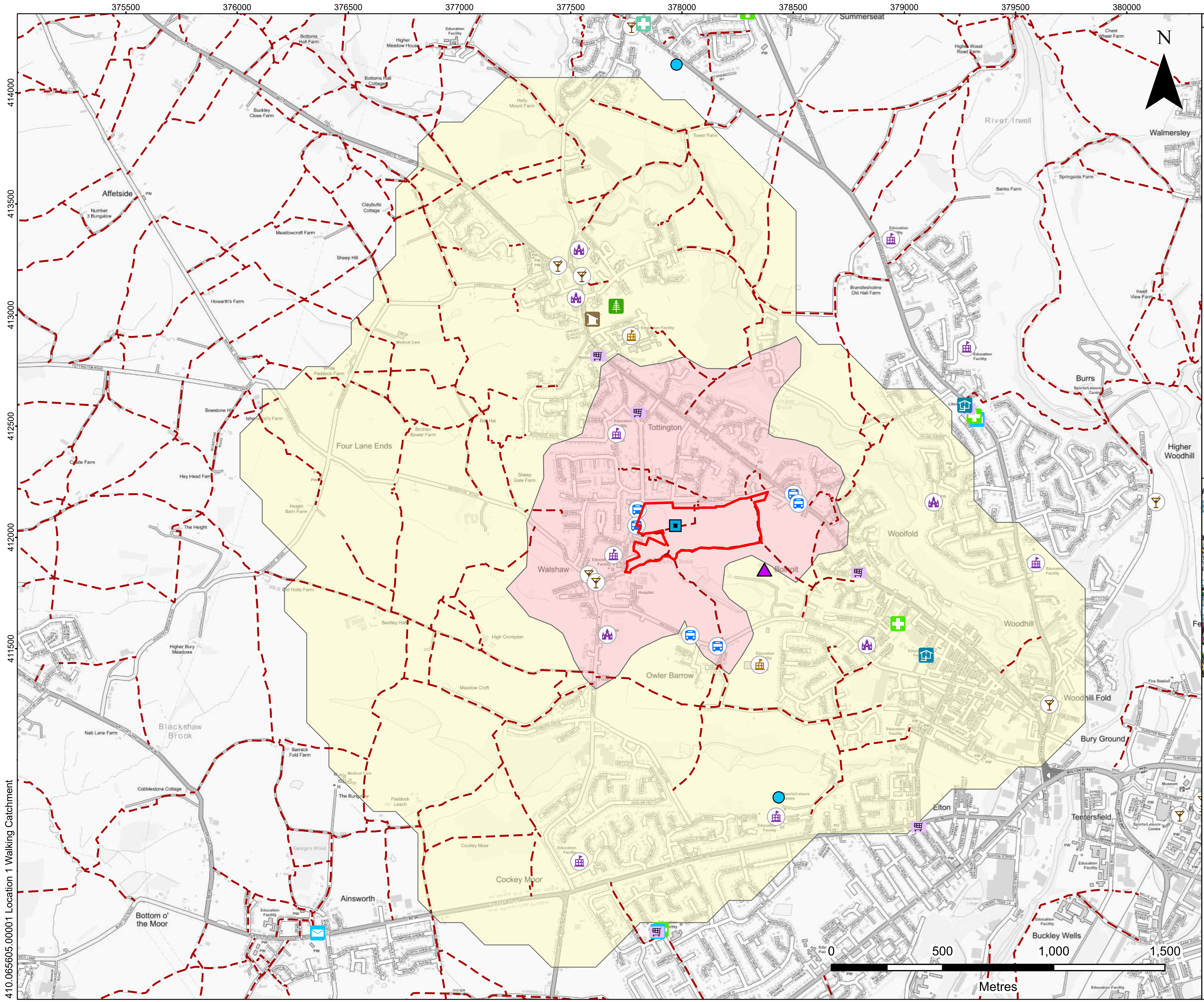
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Summerseat
River Irwell
Walmersley
Affetside
Four Lane Ends
Tottington
Walshaw
Woolfold
Woodhill
Owler Barrow
Burrs
Higher Woodhill
Woodhill Fold
Bury Ground
Blackshaw Brook
Elton
Tentersfield
Cockey Moor
Ainsworth
Bottom o' the Moor
Buckley Wells
0
500
1,000
1,500
Metres

410.065605.00001 Location 1 Walking Catchment

LEGEND

🟥	Indicative Site Boundary
■	Location 1
🚌	Bus Stop
- - -	Public Right of Way (PRoW)

Amenities:

⌂	Community Centre
🛒	Convenience Store / Supermarket
✚	Health Centre
▲	Gym
▨	Library
🌲	Park
⛪	Place of Worship
✉	Post Office
✚	Pharmacy
▨	Secondary School
▨	Primary School
●	Sports Centre
🍸	Public House

Walking Catchment:

🟥	0km - 1km
🟨	1km - 2km

Turton Bottoms
A676
Summerseat
Walmersley
Bradshaw
Tottington
BURY
Harwood
Limefield
Ainsworth
A58
Fishpool
Hollins
M66

Wain Estates (Land) Ltd

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WALSHAW NORTHERN PARCEL

WALKING CATCHMENT (LOCATION 1)

Plan 3

Scale 1:16,000 @ A3

Date APRIL 2025

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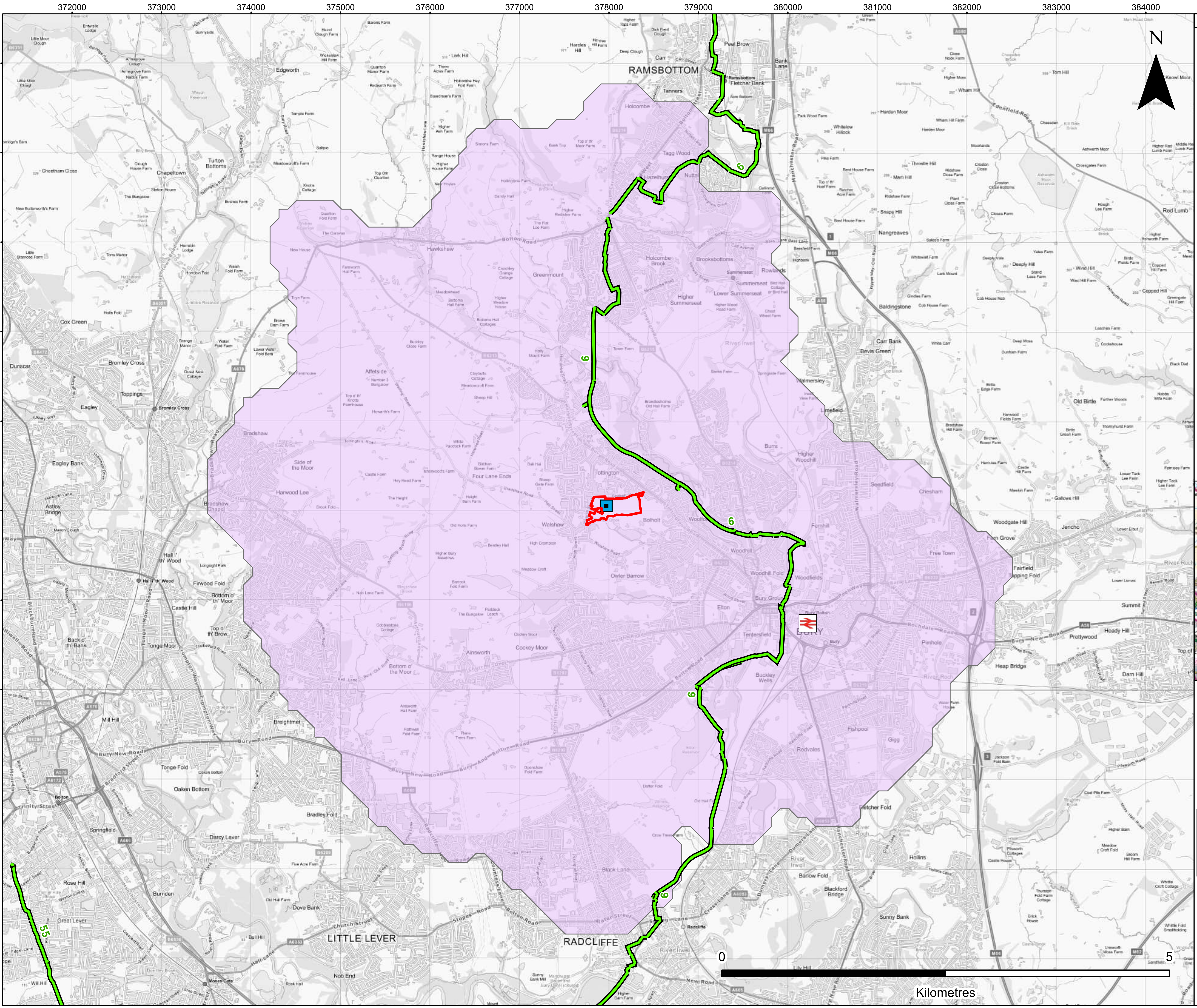
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RADCLIFFE
LITTLE LEVER
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Tottington
Hawkshaw
Greenmount
Holcombe Brook
Summerseat
Elton
Woolfold
Ainsworth
Cockey Moor
Fishpool
Redvales
Walmersley
Bradshaw
Harwood Lee
Breightmet
Edgworth
Turton Bottoms
Chapeltown
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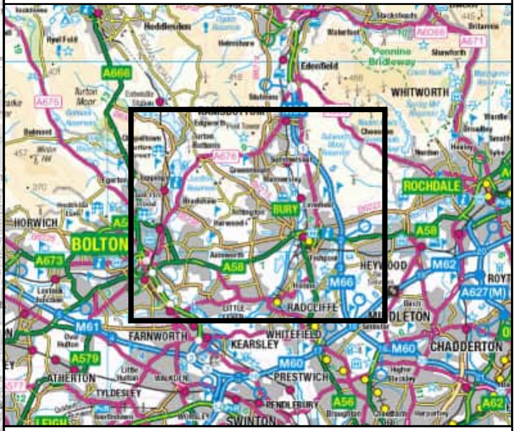
BOLTON
ROCHDALE
HEYWOOD
RADCLIFFE
WHITEFIELD
FARNWORTH
KEARSLEY
PRESTWICH
SWINTON
ATHERTON
TYLDESLEY
CHADDERTON
WHITWORTH

LEGEND

🟥	Indicative Site Boundary
■	Location 1
⇄	Railway Station
🟩	National Cycle Network (NCN) Route

Cycling Catchment:

🟪	0km - 5km

Wain Estates (Land) Ltd

SLR

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WALSHAW NORTHERN PARCEL

CYCLING CATCHMENT (LOCATION 1)

Plan 4

Scale	Date
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410.065605.00001 Location 1 Cycling Catchment

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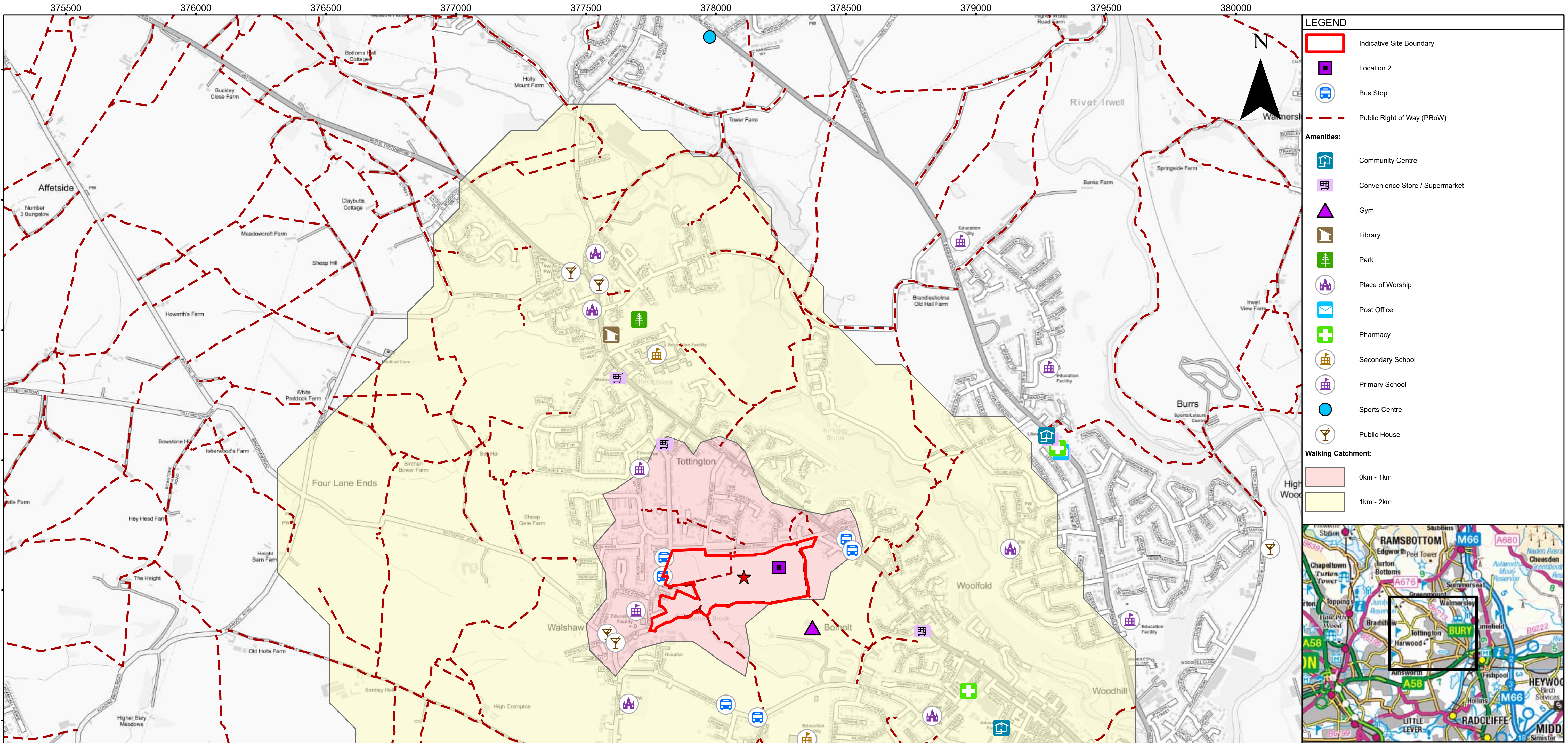
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LEGEND
Indicative Site Boundary
Location 2
Bus Stop
Public Right of Way (PRoW)
Amenities:
Community Centre
Convenience Store / Supermarket
Gym
Library
Park
Place of Worship
Post Office
Pharmacy
Secondary School
Primary School
Sports Centre
Public House
Walking Catchment:
0km - 1km
1km - 2km
Affetside
Four Lane Ends
Tottington
Walshaw
Woolfold
Bonholt
Owler Barrow
Cockey Moor
Ainsworth
Bottom o' the Moor
Elton
Tentersfield
Bury Ground
Woodhill Fold
Woodhill
Burrs
River Irwell
Blackshaw Brook
0
500
1,000
Metres
RAMSBOTTOM
BURY
HEYWOOD
RADCLIFFE

Wain Estates (Land) Ltd

SLR

431.065605.00001

WALSHAW NORTHERN PARCEL

WALKING CATCHMENT (LOCATION 2)

Plan 5

Scale	Date
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410.065605.00001 Location 2 Walking Catchment

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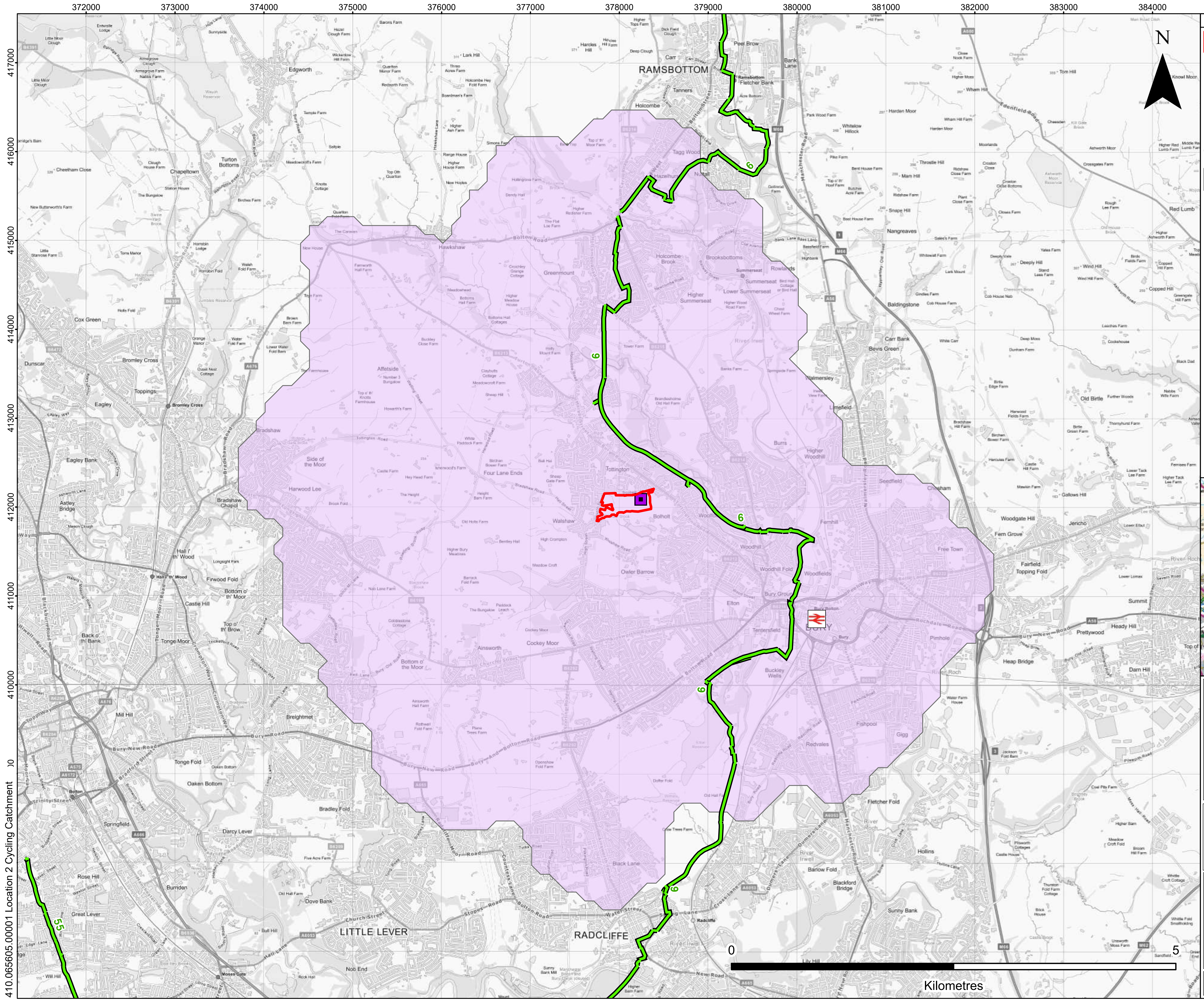
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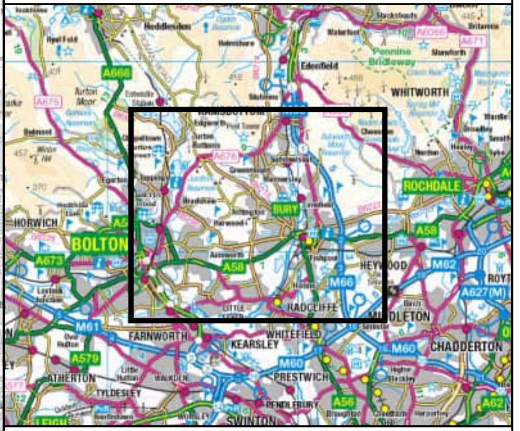
RAMSBOTTOM
Holcombe
Tottington
Walshaw
Bolholt
Woolfold
BURY
Elton
Tentersfield
Buckley Wells
Fishpool
Redvales
Pimhole
Fernhill
Woodhill
Woodfields
Seedfield
Chesham
Burrs
Limefield
Walmersley
Brooksbottoms
Summerseat
Hawkshaw
Greenmount
Affetside
Four Lane Ends
Ainsworth
Cockey Moor
Bottom o' th' Moor
Harwood Lee
Side of the Moor
Bradshaw
Owler Barrow
Black Lane
RADCLIFFE
LITTLE LEVER
Bradley Fold
Breightmet
Tonge Fold
Darcy Lever
Bolton
Edgworth
Turton Bottoms
Chapeltown
Cox Green
Bromley Cross
Eagley
Toppings
Dunscar
Eagley Bank
Astley Bridge
Harwood
Nangreaves
Baldingstone
Bevis Green
Carr Bank
Woodgate Hill
Fern Grove
Jericho
Fairfield
Topping Fold
Heap Bridge
Prettywood
Fletcher Fold
Hollins
Blackford Bridge
Sunny Bank
6
55
0
5
Kilometres

LEGEND

🟥	Indicative Site Boundary
■	Location 2
⇌	Railway Station
🟩	National Cycle Network (NCN) Route

Cycling Catchment:

▨	0km - 5km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ROCHDALE
WHITWORTH
HEYWOOD
RADCLIFFE
FARNWORTH
WHITEFIELD
KEARSLEY
PRESTWICH
CHADDERTON
HORWICH
ATHERTON
TYLDESLEY
SWINTON

Wain Estates (Land) Ltd

SLR

431.065605.00001

WALSHAW NORTHERN PARCEL

CYCLING CATCHMENT (LOCATION 2)

Plan 6

Scale	Date
1:40,000 @ A3	APRIL 2025

410.065605.00001 Location 2 Cycling Catchment

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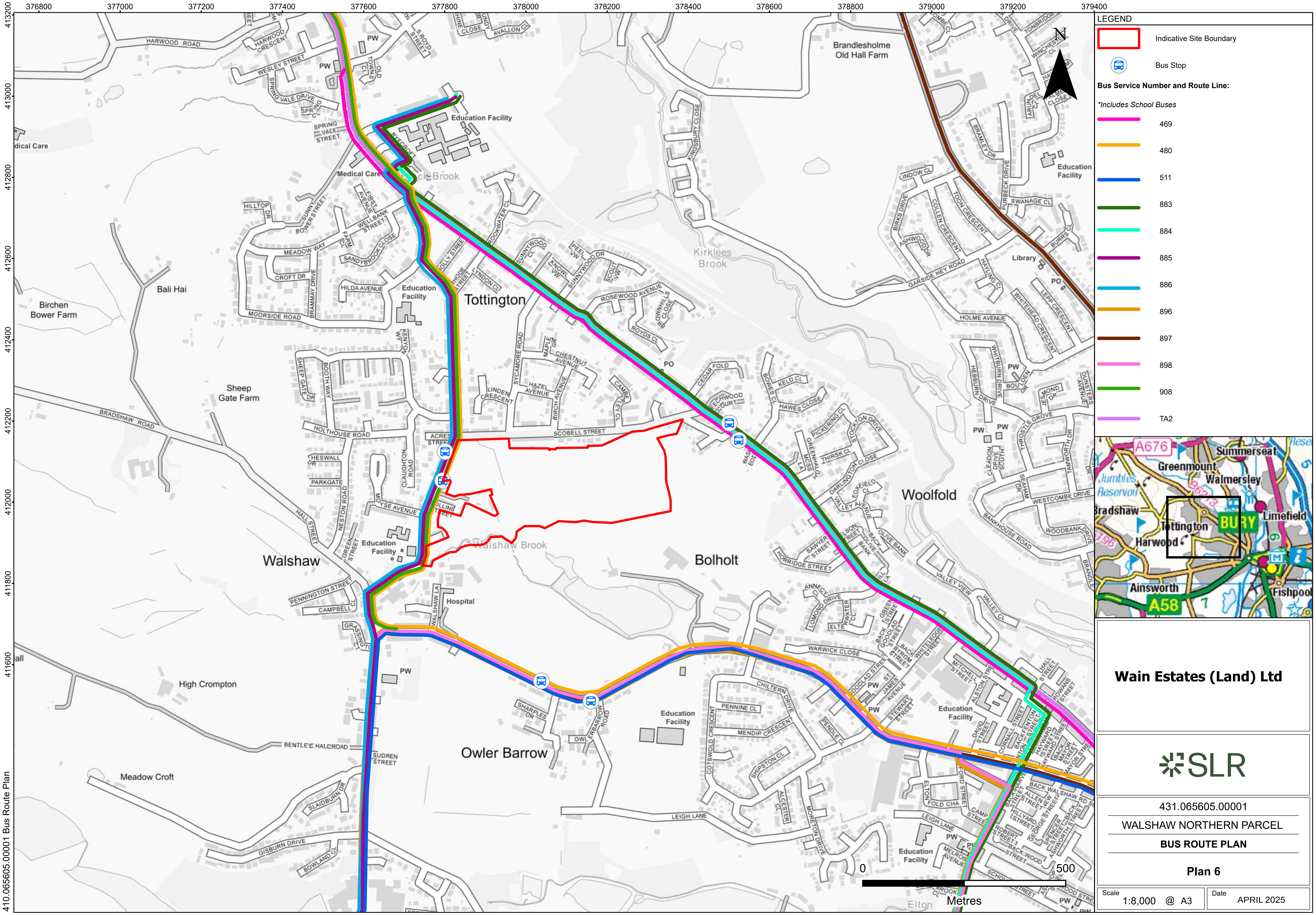
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413200
413000
412800
412600
412400
412200
412000
411800
411600
LEGEND
Indicative Site Boundary
Bus Stop
Bus Service Number and Route Line:
*Includes School Buses
469
480
511
883
884
885
886
896
897
898
908
TA2
N
Tottington
Walshaw
Bolholt
Woolfold
Owler Barrow
Brandlesholme Old Hall Farm
Birchen Bower Farm
Bali Hai
Sheep Gate Farm
High Crompton
Meadow Croft
Kirklees Brook
Walshaw Brook
Education Facility
Medical Care
Hospital
Library
PW
PO
HARWOOD ROAD
SCOBELL STREET
BRADSHAW ROAD
HOLTHOUSE ROAD
BENTLEY HALL ROAD
LEIGH LANE
GARSIDE HEY ROAD
HOLME AVENUE
MOORSIDE ROAD
MEADOW WAY
GISBURN DRIVE
Elton
A676
Summerseat
Greenmount
Walmersley
Jumbles Reservoir
Bradshaw
Tottington
BURY
Limefield
Harwood
Ainsworth
A58
Fishpool
0
500
Metres

Wain Estates (Land) Ltd

431.065605.00001

WALSHAW NORTHERN PARCEL

BUS ROUTE PLAN

Plan 6

Scale 1:8,000 @ A3

Date APRIL 2025

410.065605.00001 Bus Route Plan

4

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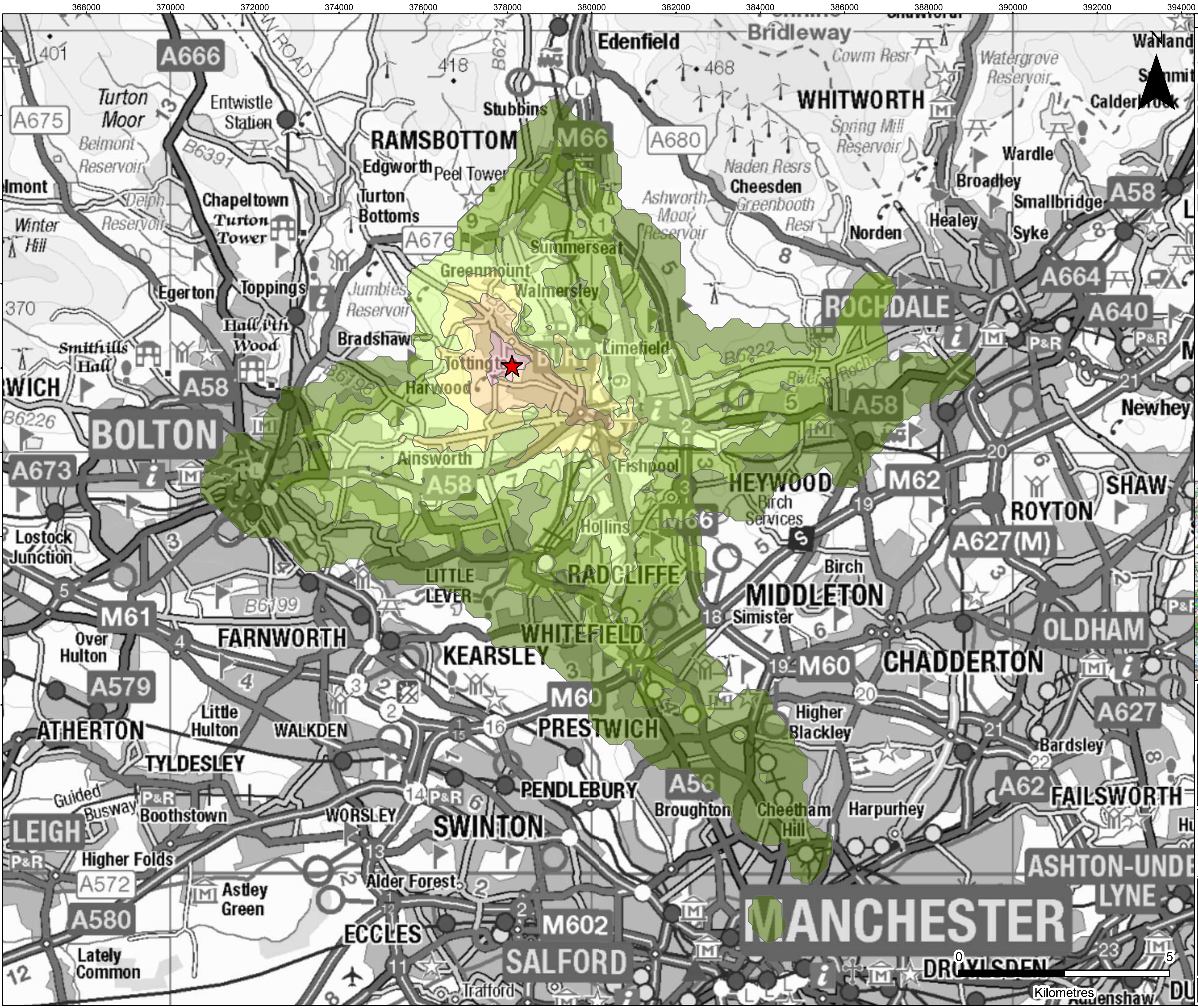
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414000
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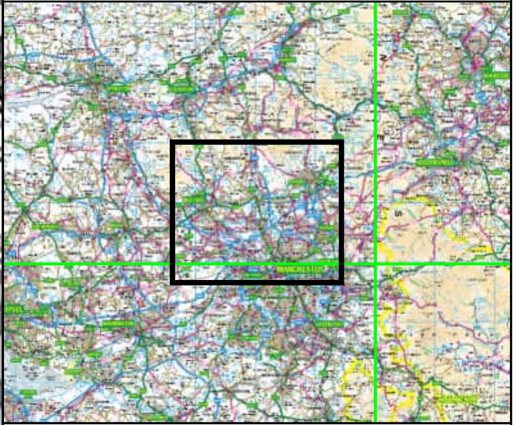
410000
408000
406000
404000
N
Edenfield
RAMSBOTTOM
Stubbins
WHITWORTH
Bridleway
Turton Moor
Entwistle Station
Edgworth
Peel Tower
Chapeltown
Turton Bottoms
Summerseat
Greenmount
Walmersley
Tottington
Harwood
Bradshaw
Egerton
Toppings
Limefield
ROCHDALE
Norden
Heywood
HEYWOOD
Birch Services
Fishpool
Ainsworth
BOLTON
Hollins
RADCLIFFE
LITTLE LEVER
FARNWORTH
KEARSLEY
WHITEFIELD
PRESTWICH
MIDDLETON
Simister
CHADDERTON
OLDHAM
ROYTON
SHAW
Newhey
Wardle
Smallbridge
Healey
Higher Blackley
Cheetham Hill
Harpurhey
Broughton
PENDLEBURY
SWINTON
WALKDEN
Little Hulton
ATHERTON
TYLDESLEY
LEIGH
Boothstown
WORSLEY
ECCLES
SALFORD
MANCHESTER
FAILSWORTH
Lostock Junction
Over Hulton
M66
M62
M60
M61
M602
A58
A56
A666
A676
A680
A627(M)
0
5
Kilometres



LEGEND

★ Site Location

AM PT Combined 60 Minute Travel Time Catchment (Departing from the Site): (08:00am to 09:00am)

🟥 0 - 10 minutes

🟧 10 - 20 minutes

🟨 20 - 30 minutes

🟩 30 - 40 minutes

🟩 40 - 50 minutes

🟩 50 - 60 minutes

Wain Estates (Land) Ltd

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431.065605.00001

WALSHAW NORTHERN PARCEL

AM PT COMBINED TRAVEL TIME SURVEY

Plan 8

Scale	Date
1:85,000 @ A3	APRIL 2025

410.065605.00001 AM Leaving site

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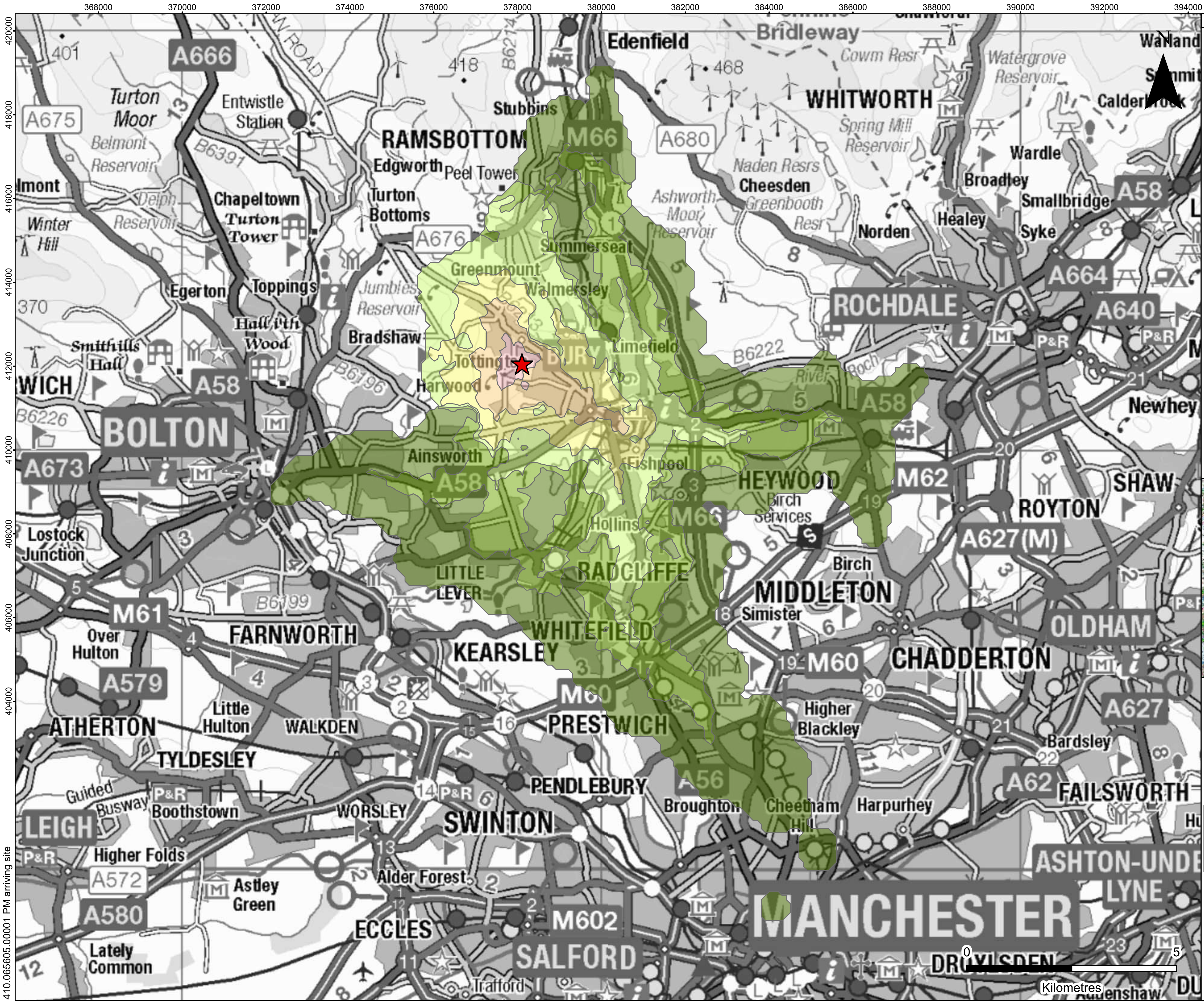
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414000
412000
410000
408000
406000
404000
N
Edenfield
Stubbins
RAMSBOTTOM
WHITWORTH
ROCHDALE
BOLTON
Tottington
Walmersley
Greenmount
Summerseat
Harwood
Ainsworth
HEYWOOD
RADCLIFFE
WHITEFIELD
PRESTWICH
MIDDLETON
KEARSLEY
FARNWORTH
SWINTON
SALFORD
MANCHESTER
OLDHAM
CHADDERTON
0
5
Kilometres

410.065605.00001 PM arriving site

LEGEND

★ Site Location

PM PT Combined 60 Minute Travel Time Catchment (Arriving to the Site):

(17:00pm to 18:00pm)

🟥	0 - 10 minutes
🟧	10 - 20 minutes
🟨	20 - 30 minutes
🟩	30 - 40 minutes
🟩	40 - 50 minutes
🟩	50 - 60 minutes

Wain Estates (Land) Ltd

SLR

431.065605.00001

WALSHAW NORTHERN PARCEL

PM PT COMBINED TRAVEL TIME SURVEY

Plan 9

Scale
1:85,000 @ A3

Date
APRIL 2025

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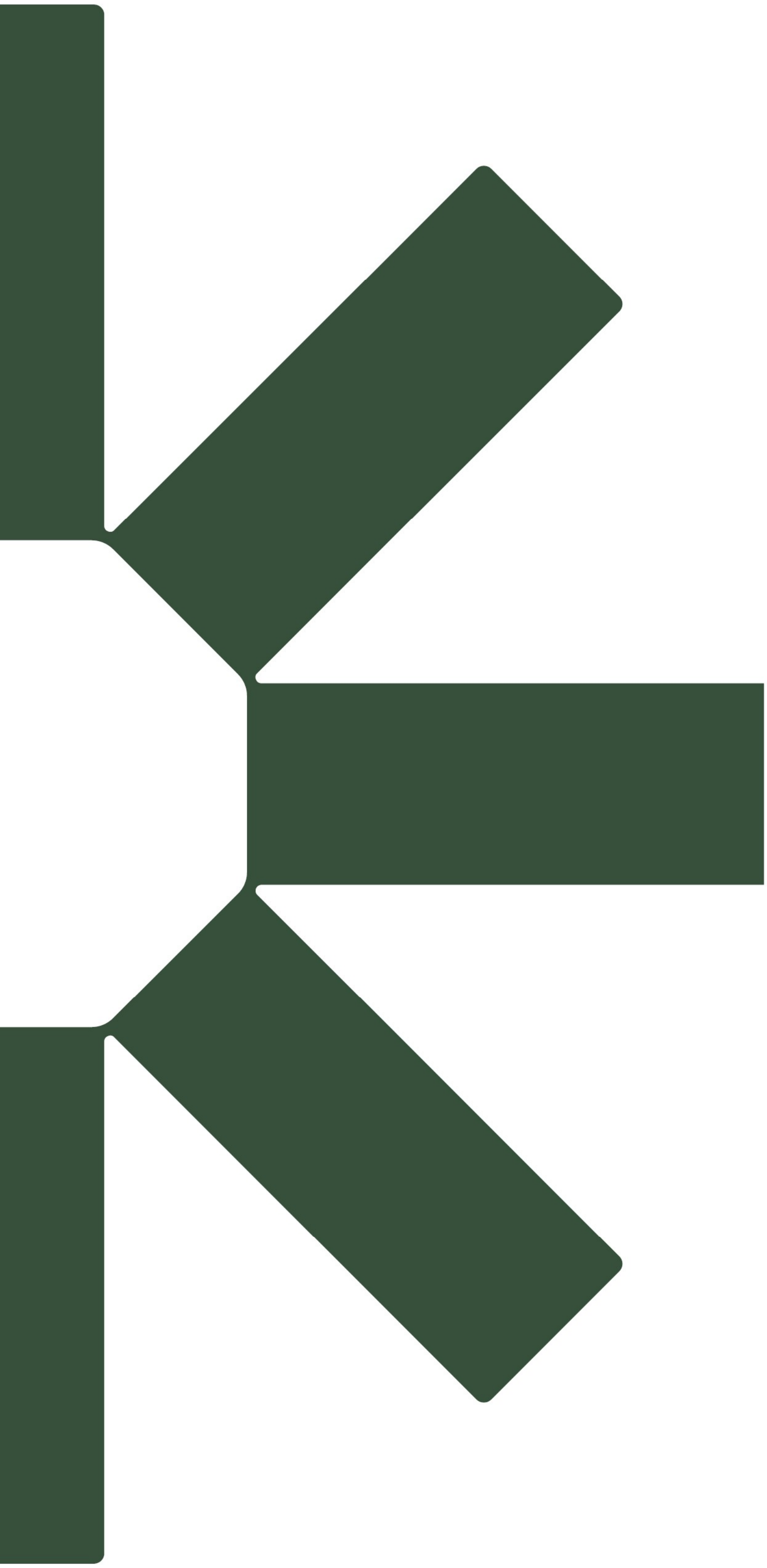


Making Sustainability Happen

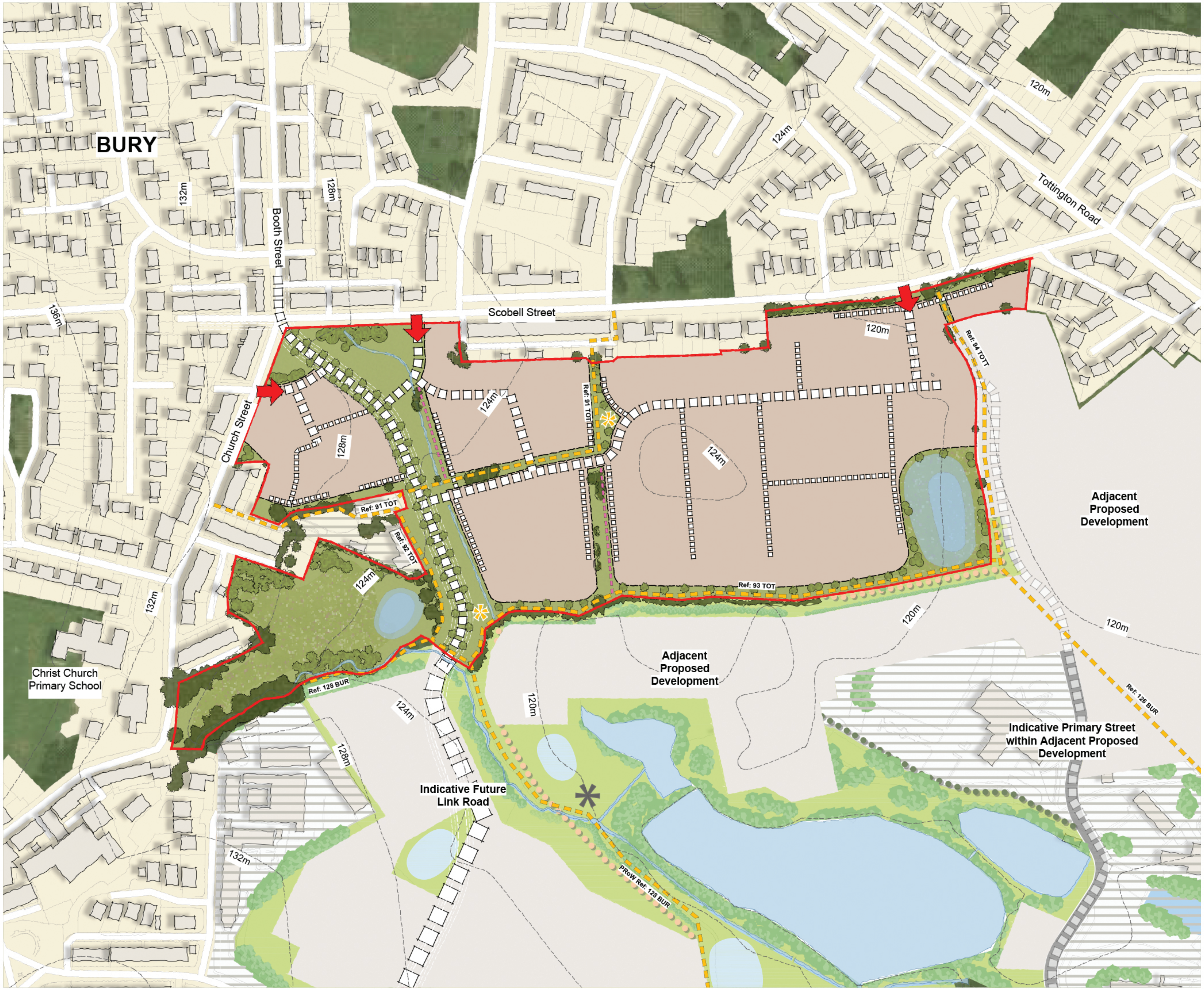
Appendices

Appendix A Indicative Site Layout

Transport Assessment and Travel Plan Strategy

Wain Estates (Land) Ltd

SLR Project No.: 410.065892.00001
April 2025


BURY
Booth Street
Scobell Street
Church Street
Tottington Road
136m
132m
128m
124m
120m
Ref: 91 TOT
Ref: 92 TOT
Ref: 93 TOT
Ref: 94 TOT
Ref: 128 BUR
Ref: 126 BUR
PRoW Ref: 128 BUR
Christ Church
Primary School
Adjacent
Proposed
Development
Adjacent
Proposed
Development
Indicative Future
Link Road
Indicative Primary Street
within Adjacent Proposed
Development

NOTES

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0 25 50 75 100m

N

KEY

Site Boundary [11.3 ha]

Proposed residential development [7.23ha]
Up to 275 dwellings @ 38 dph

Proposed vehicular access

Indicative vehicular routes

Indicative Primary Residential Street

Indicative Secondary Residential Streets

Proposed link road - Overall width 15.5m
(6.5m carriageway with 2m verge and 2.5m footway on both sides)

Existing development

Existing Public Rights of Way (PRoW) with Ref. no

Indicative Proposed Footpaths

Existing trees and vegetation

Existing Watercourses

Contour lines

Indicative proposed attenuation feature

Indicative proposed trees and vegetation

Indicative proposed play area

rev	date	description	drn	chk
P06	20/11/2024	Access via Scobell Street updated.	HJL	KMN
P05	14/10/2024	Alignment of Link Road amended.	HJL	KMN
P04	14/10/2024	Development area amended.	HJL	KMN

masterplanning
environmental assessment
landscape design
urban design
ecology
architecture
arboriculture

FPCR Environment and Design Ltd
Lockington Hall
Lockington
Derby
DE74 2RH

t: 01509 672772
e: mail@fpcr.co.uk
w: www.fpcr.co.uk

client
Wain Estates

project
Land at Scobell Street, Bury

drawing title
DEVELOPMENT FRAMEWORK

scale
1:1250 @ A1

drn chk
HJL KMN

date created
25 March 2024

project number
12221

status
S1

issue
P06

document number
12221-FPCR-XX-XX-DR-A-0001
Project Code - Originator - Zone - Level - Type - Role - Drawing Number

File: \\FPCR-FS-01\Projects2\12200\12221\ARCH\Drawings\12221 Framework Plan P06.vwx

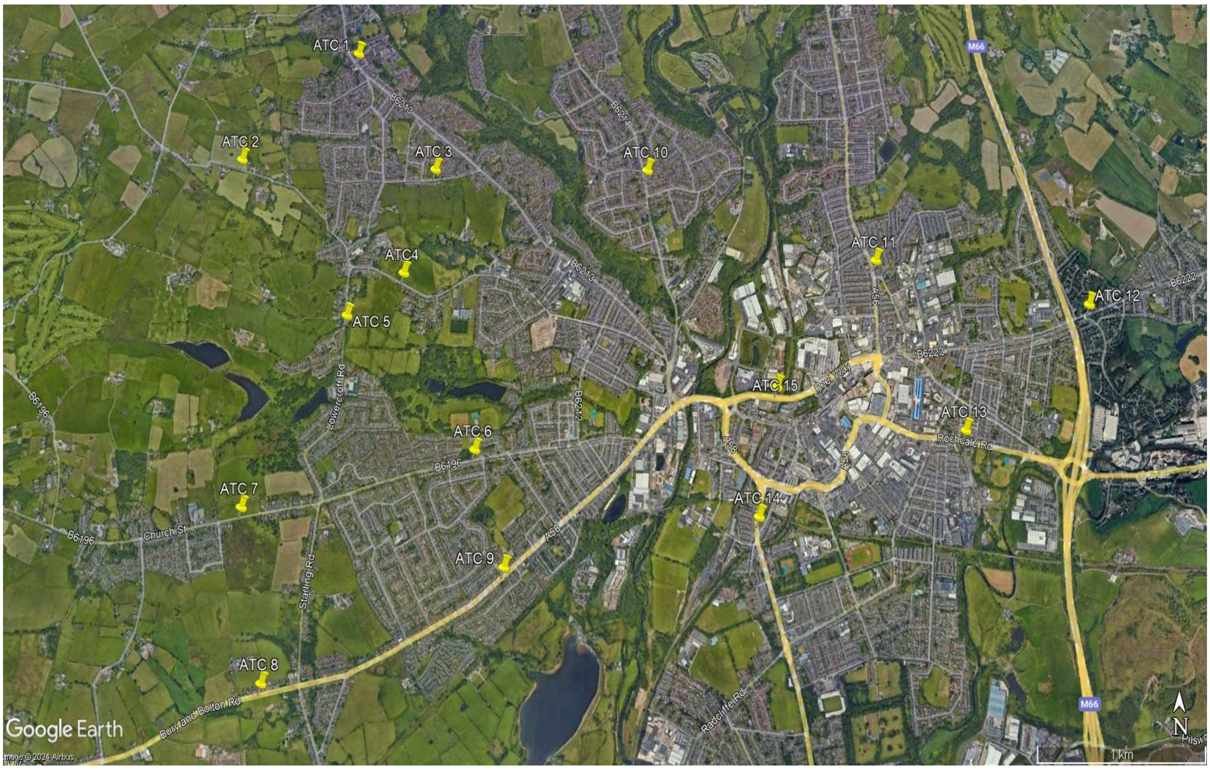
Appendix B Survey Analysis

Transport Assessment and Travel Plan Strategy

Wain Estates (Land) Ltd

SLR Project No.: 410.065892.00001
April 2025

ATC Survey Locations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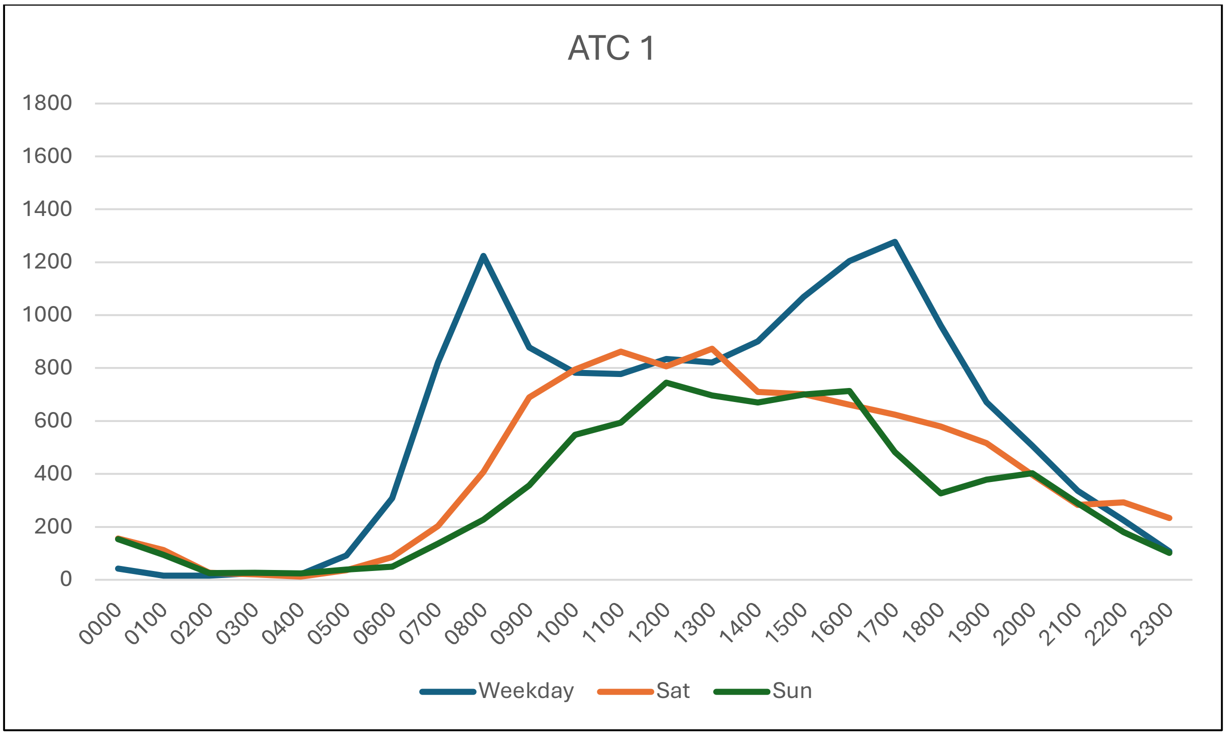
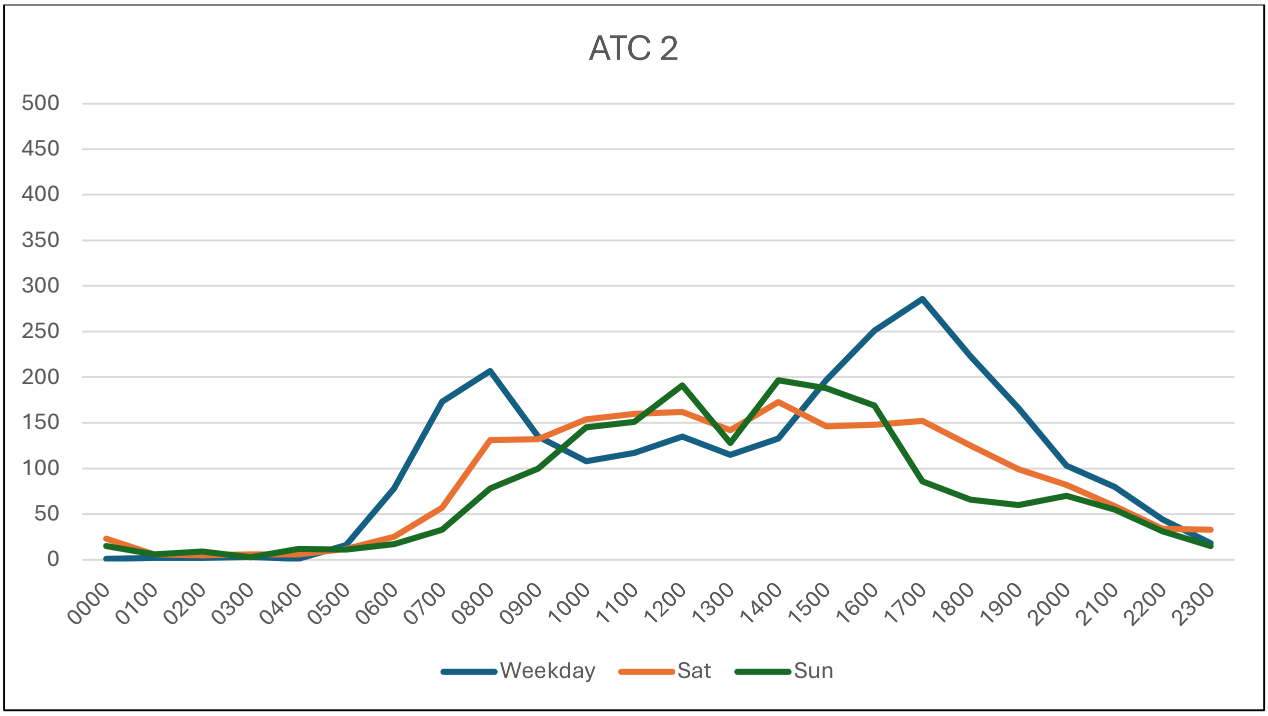
ATC 2
ATC 3
ATC4
ATC 5
ATC 6
ATC 7
ATC 8
ATC 9
ATC 10
ATC 11
ATC 12
ATC 13
ATC 14
ATC 15
M66
B6222
B6196
Church St
Starling Rd
Lowercroft Rd
Bury and Bolton Rd
A58
A56
Rochdale Rd
Radcliffe Rd
N
1 km
Google Earth
Image © 2024 Airbus

ATC Results: Total Two-Way Traffic

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2300
Weekday
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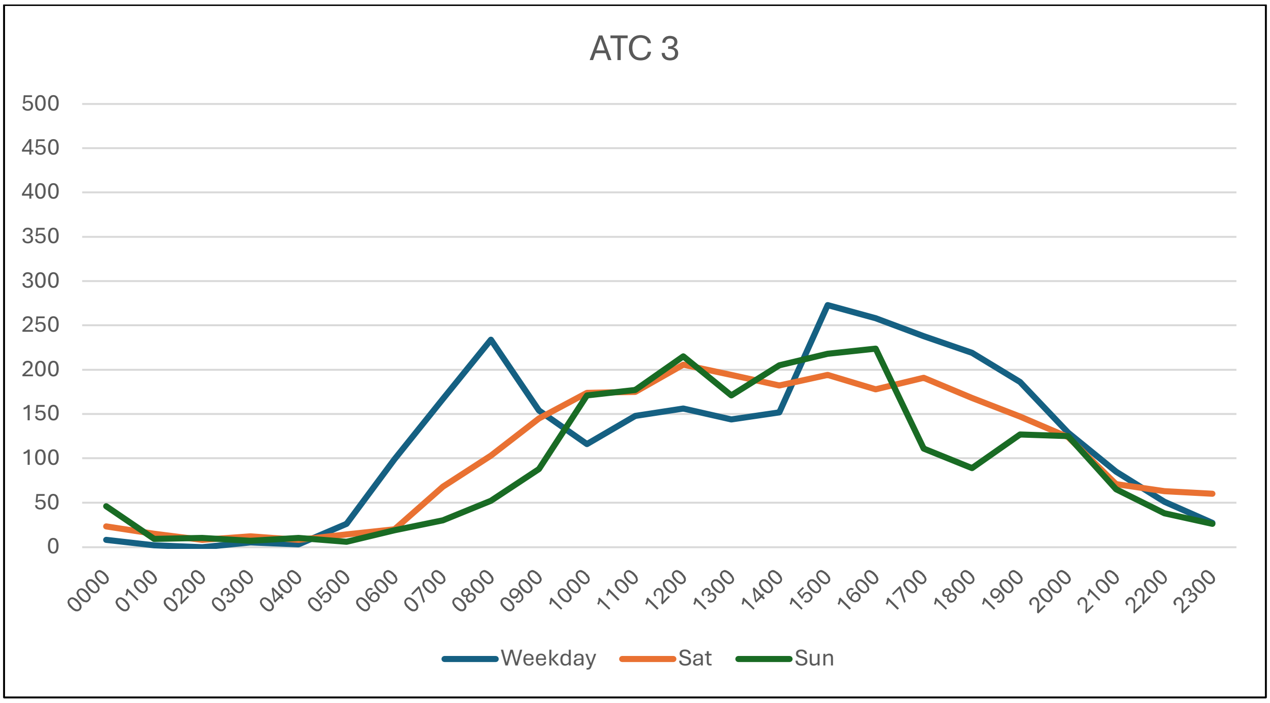
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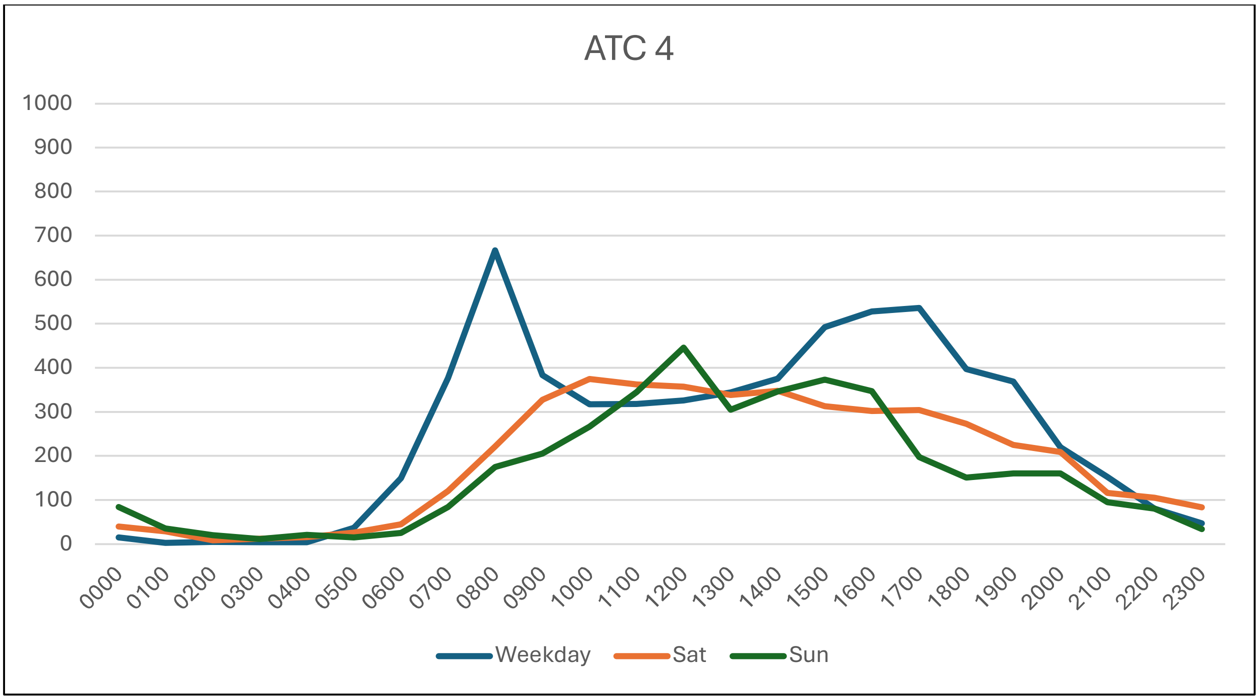
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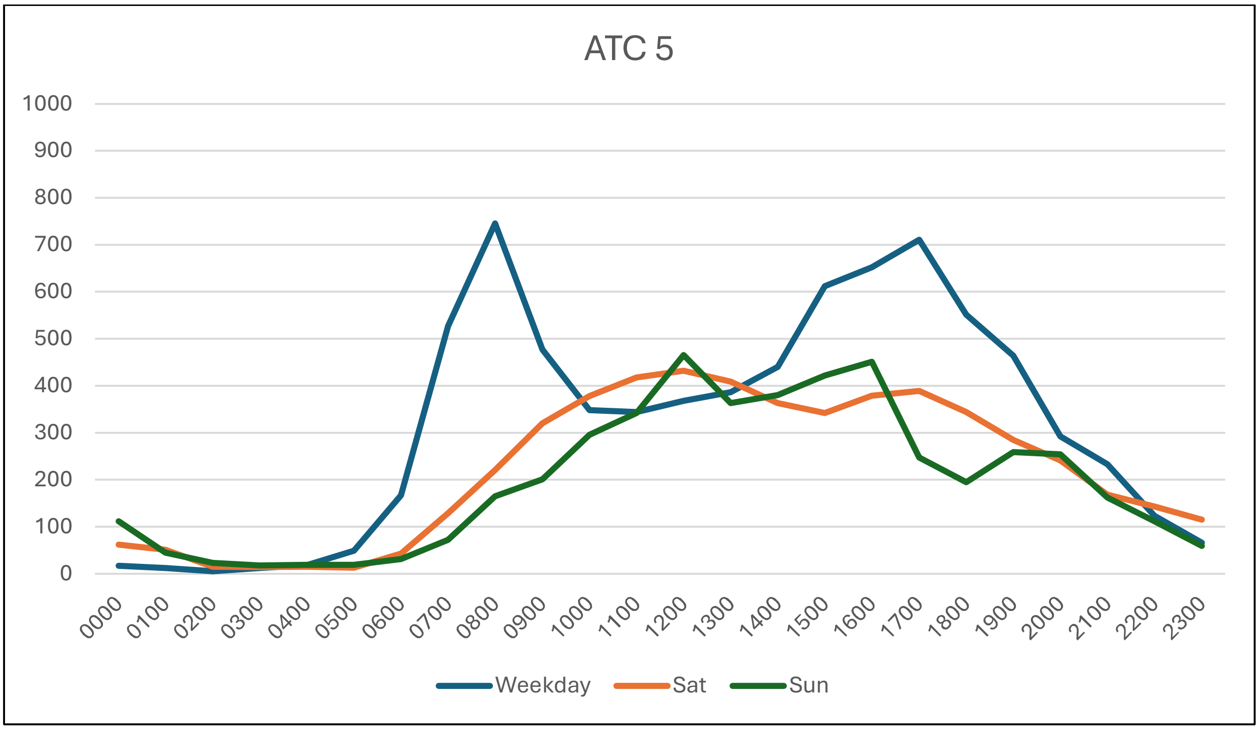
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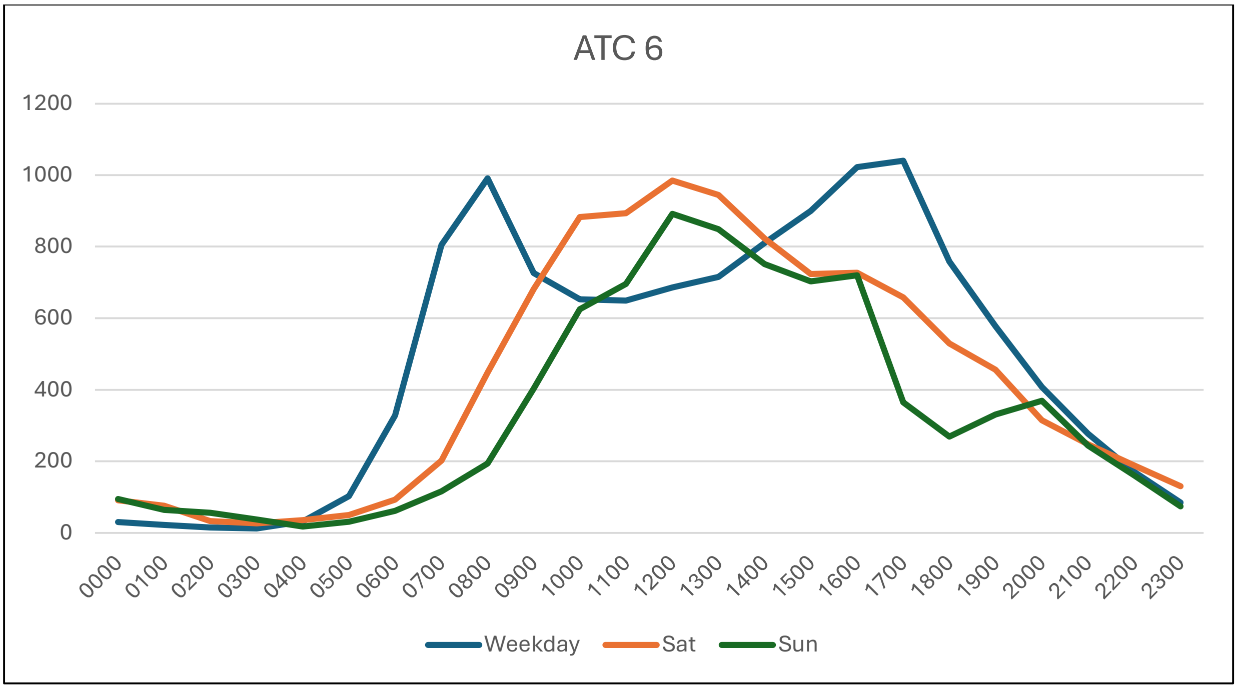
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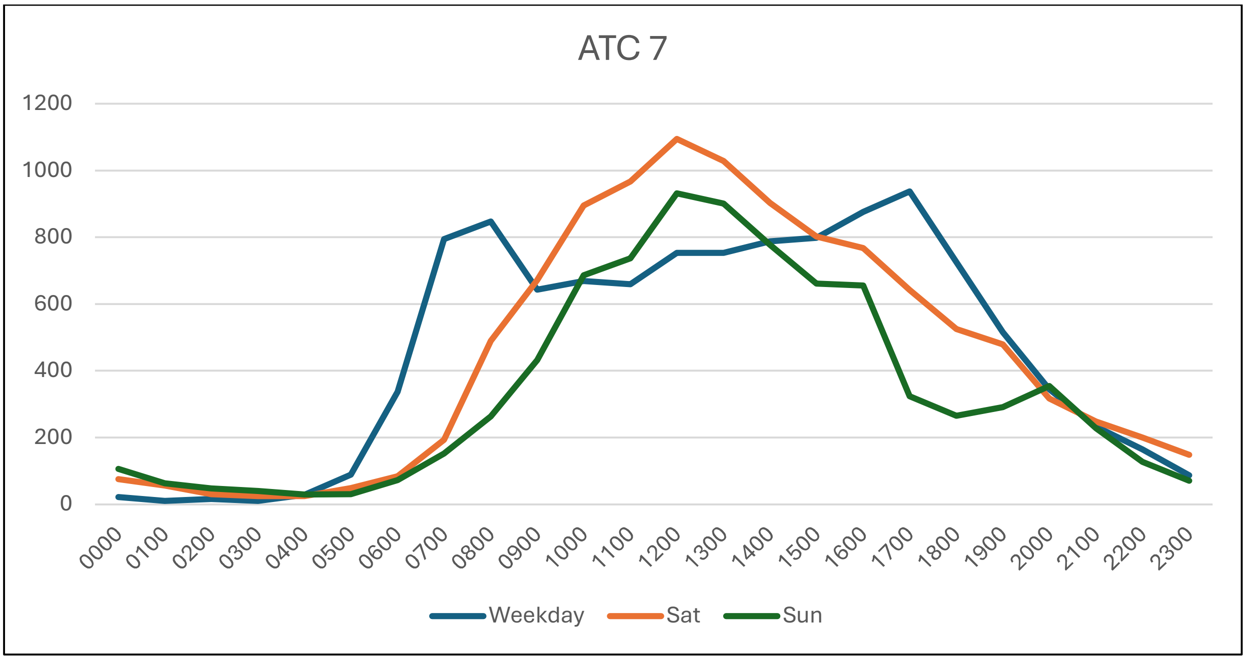
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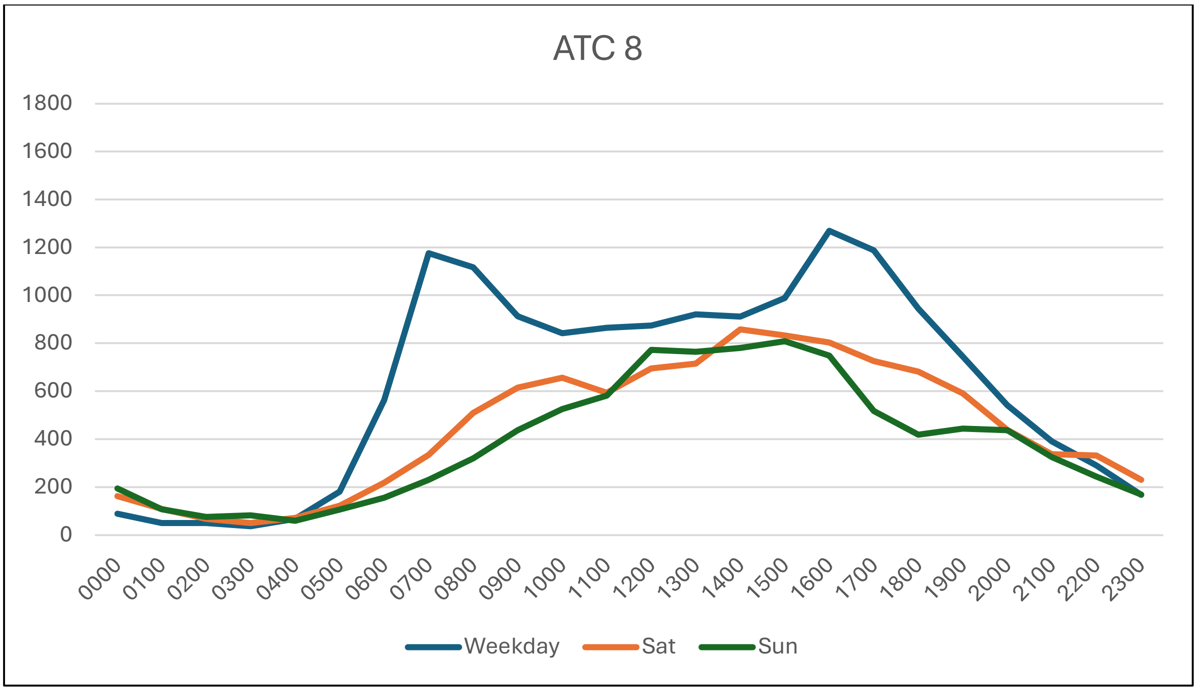
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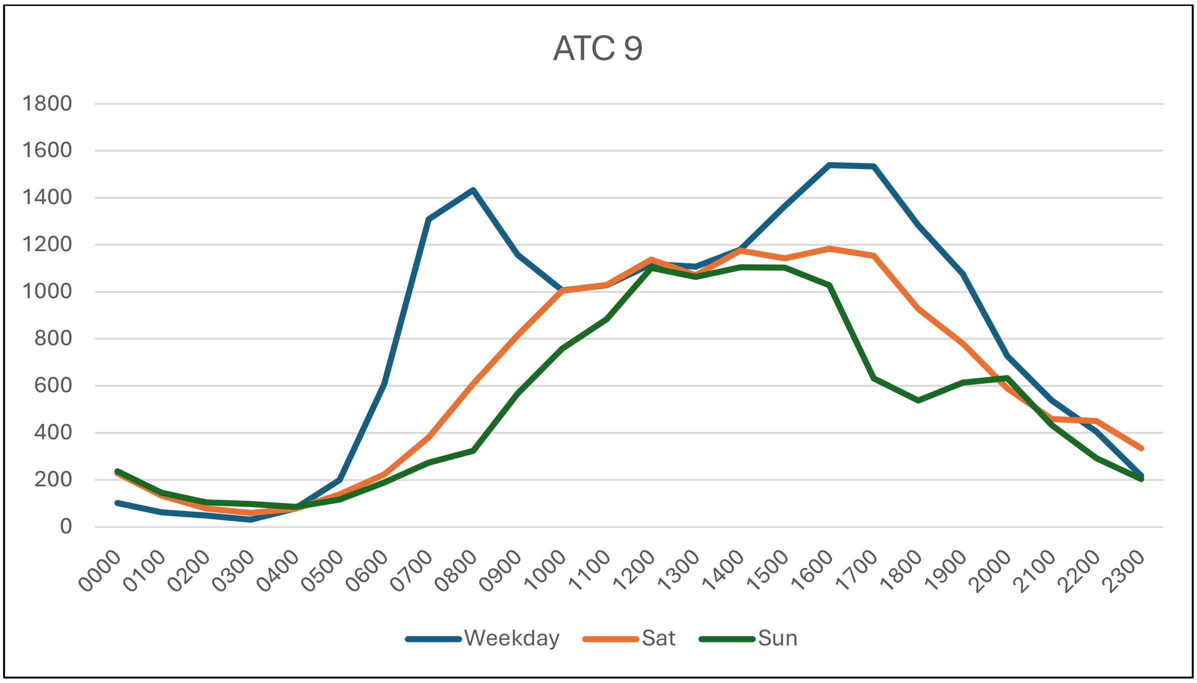
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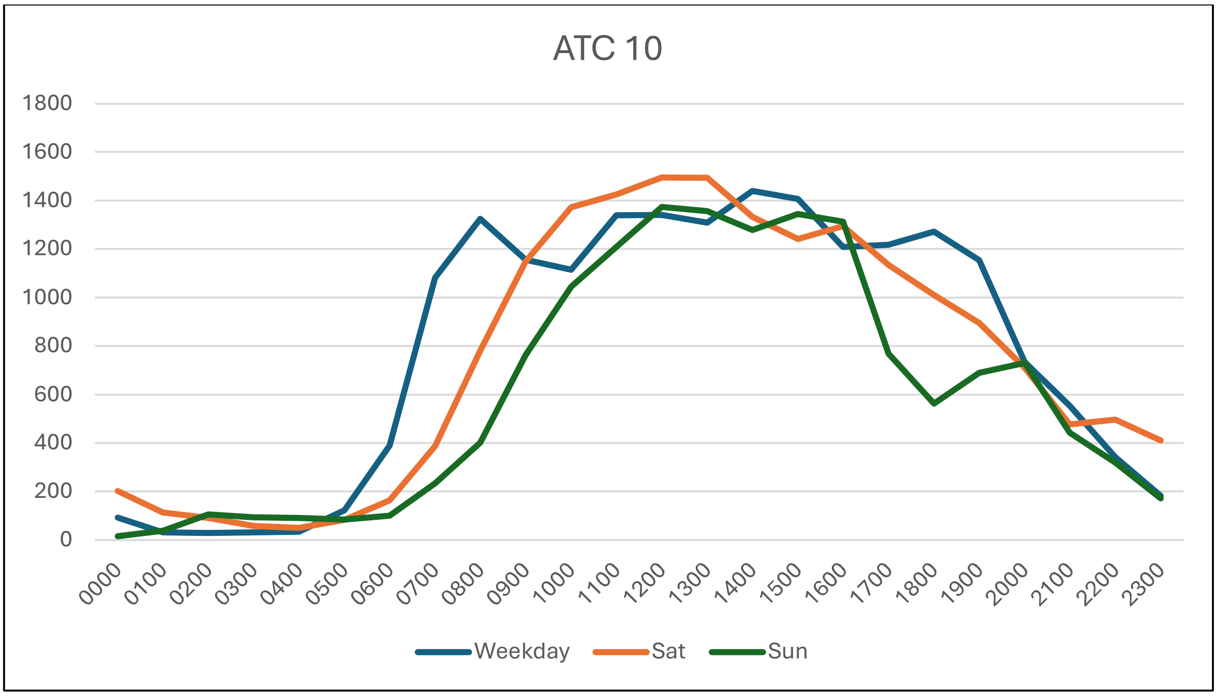
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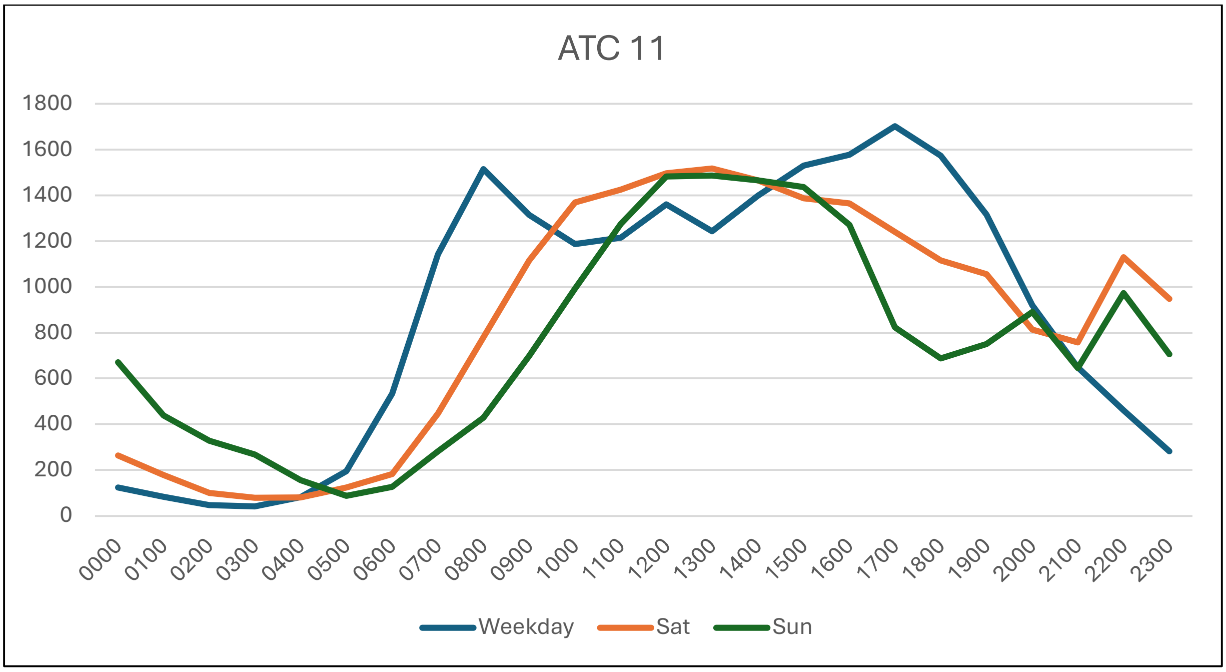
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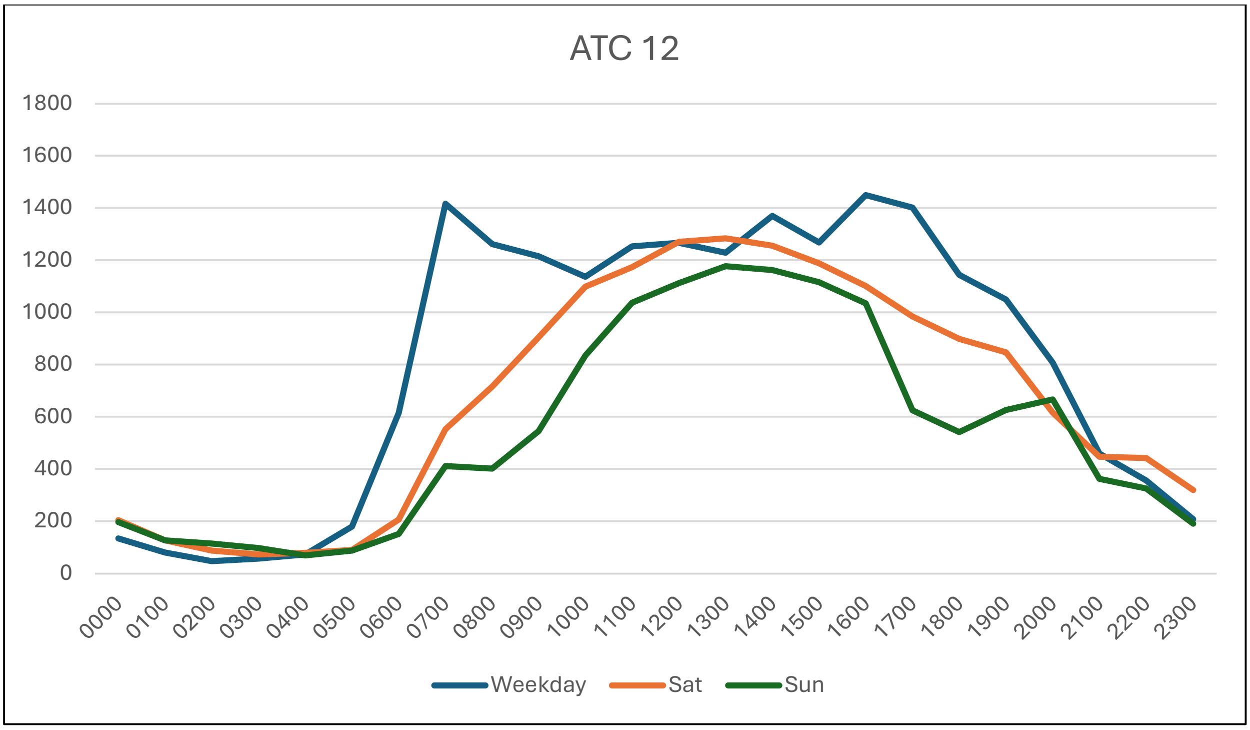
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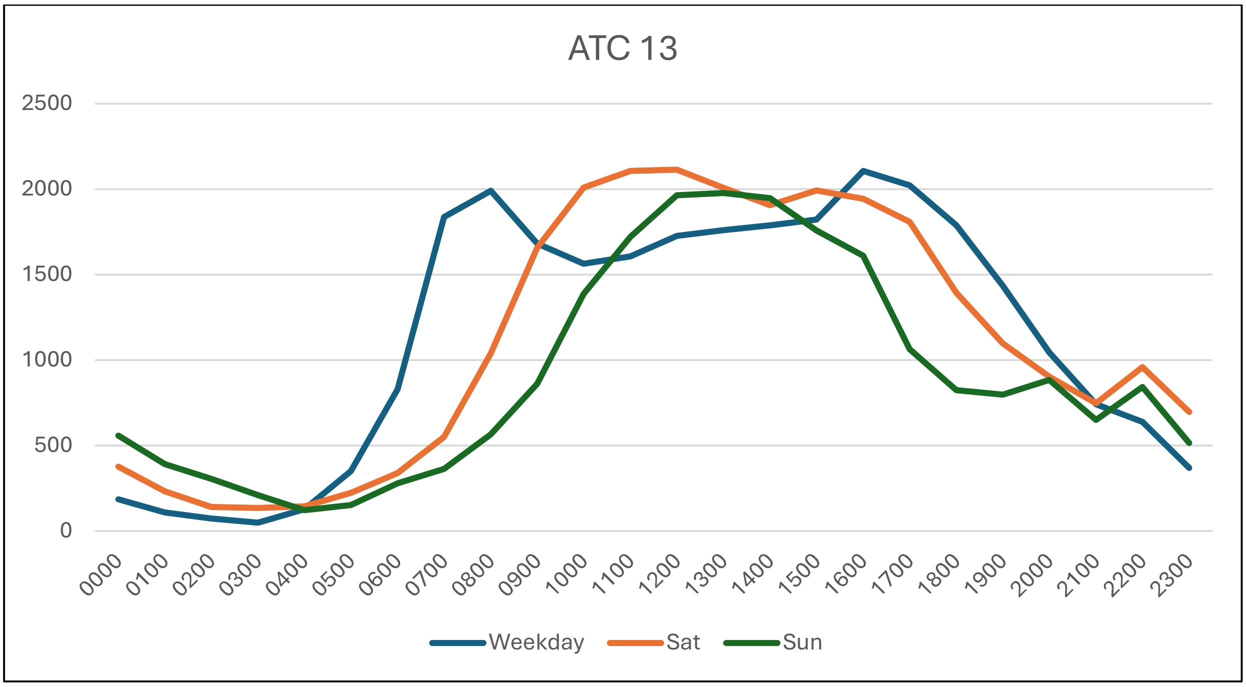
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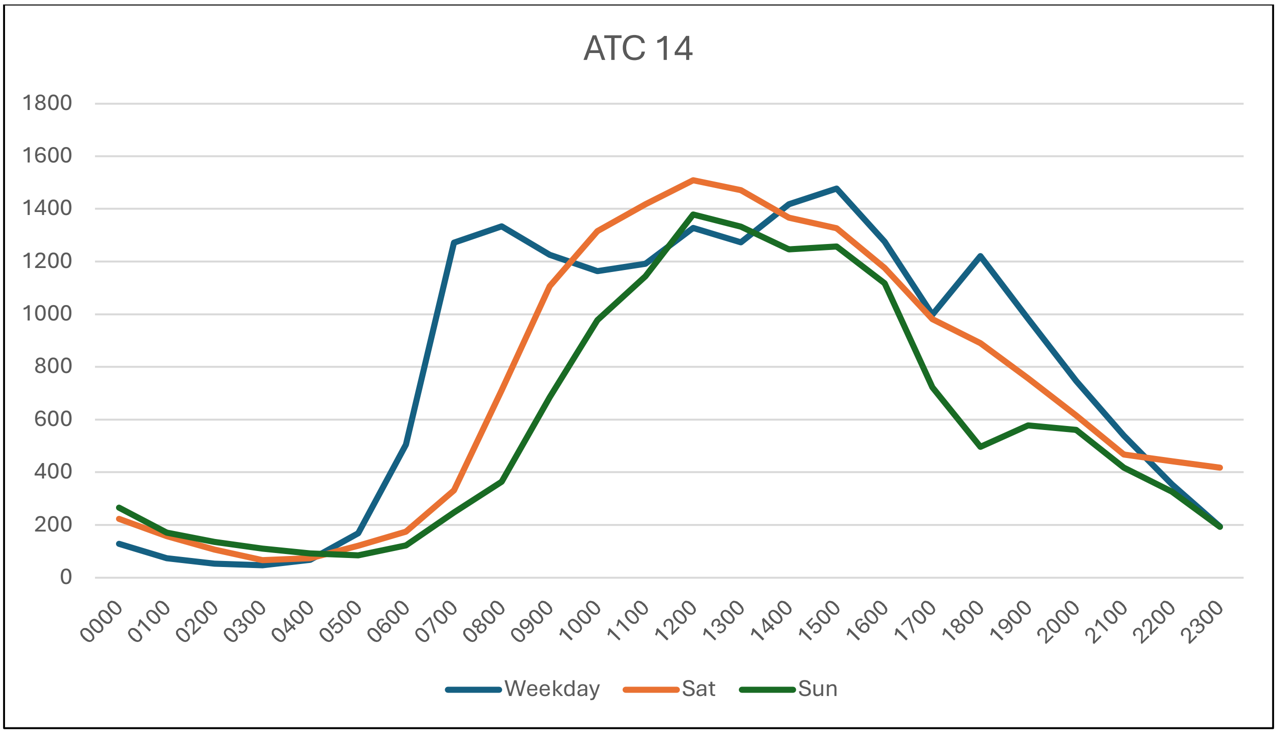
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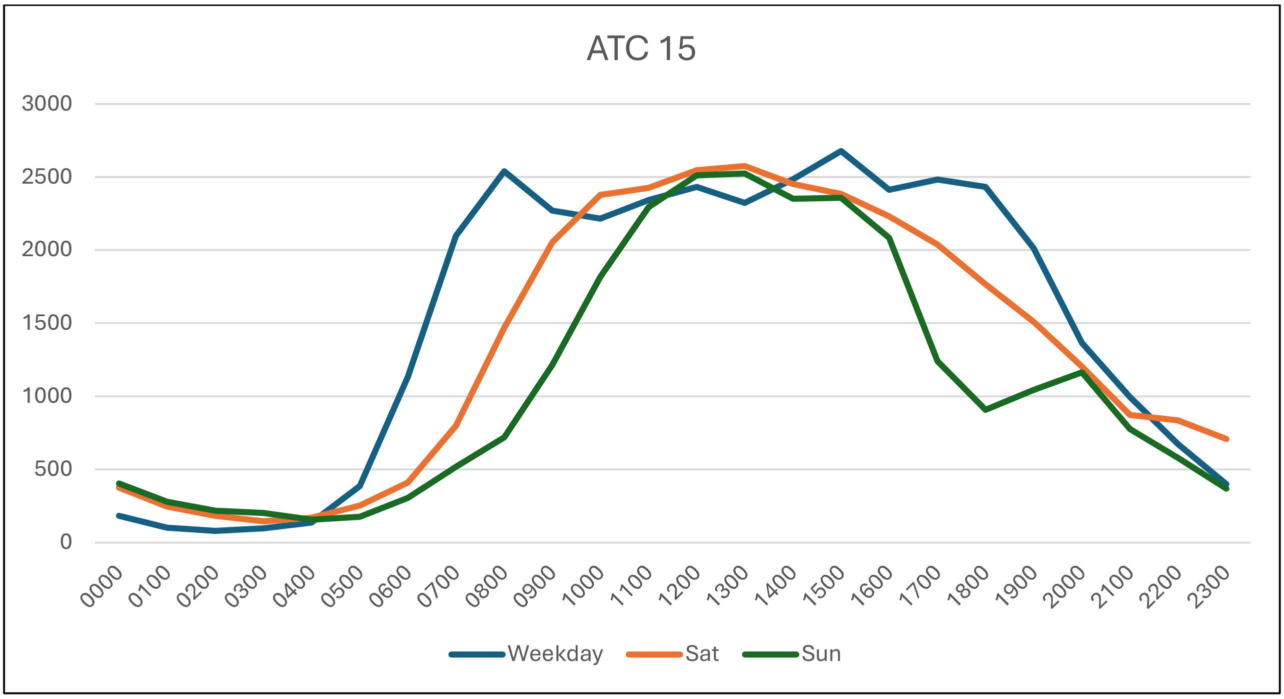
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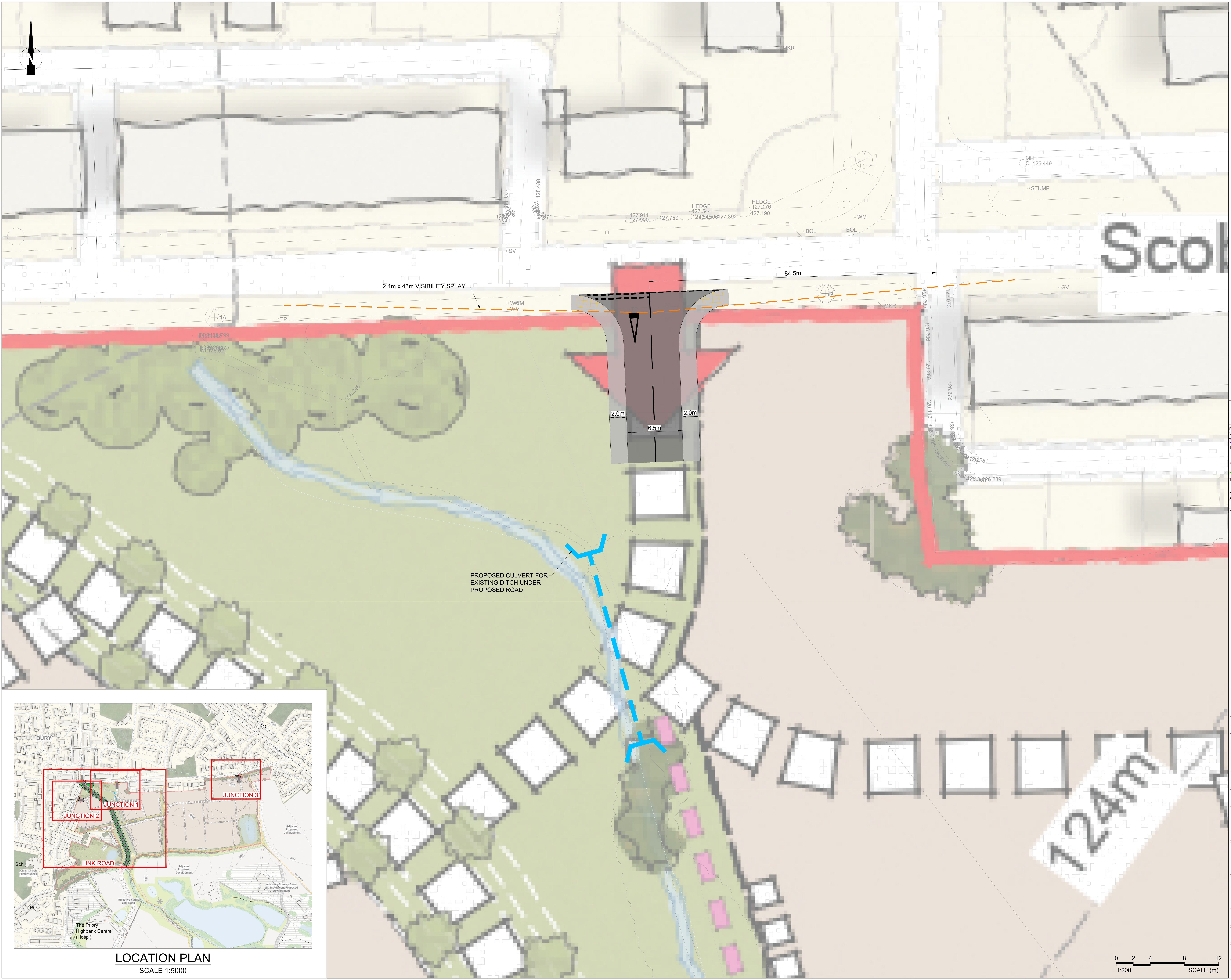
Appendix C General Access & Alignment Plans

Transport Assessment and Travel Plan Strategy

Wain Estates (Land) Ltd

SLR Project No.: 410.065892.00001
April 2025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STUMP
HEDGE
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127.911
127.900
127.760
128.438
WM
BOL
BOL
SV
Scob
84.5m
2.4m x 43m VISIBILITY SPLAY
WM
J1A
TP
MKR
GV
126.205
126.073
126.206
126.289
126.278
126.412
126.251
126.289
2.0m
2.0m
6.5m
PROPOSED CULVERT FOR
EXISTING DITCH UNDER
PROPOSED ROAD
124m
0 2 4 8 12
1:200
SCALE (m)
BURY
PO
JUNCTION 1
JUNCTION 2
JUNCTION 3
LINK ROAD
Sch
Christ Church Primary School
PO
The Priory
Highbank Centre
(Hospl)
Adjacent Proposed Development
Indicative Future Link Road

LOCATION PLAN

SCALE 1:5000

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KEY

🟩	PROPOSED GRASSED VERGE
▨	PROPOSED CYCLEWAY / FOOTWAY
■	PROPOSED CARRIAGEWAY

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2. ATTENTION IS DRAWN TO THE EXISTENCE OF BOTH EXISTING UNDERGROUND AND OVERHEAD UTILITIES.

ENVIRONMENTAL

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Rev	Amendments	Date	By	Chk	Auth
P01	FIRST ISSUE	16.01.25	JDV	SR	SR

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Drawing Status & Suitability Code
FOR INFORMATION S2

Client
WAIN ESTATES

Project
LAND AT SCOBELL STREET, BURY

Drawing Title
GENERAL ACCESS PLAN - JUNCTION 1
SHEET 1 OF 4

Scale
1:200 @ A1

SLR Project No.
410.065605.00001

Designed	Drawn	Checked	Authorised
JDV	JDV	SR	SR
Date 16.01.2025	Date 16.01.2025	Date 16.01.2025	Date 16.01.2025

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065605-SLR-HGN-PLN-SK-CH-0005

Rev.
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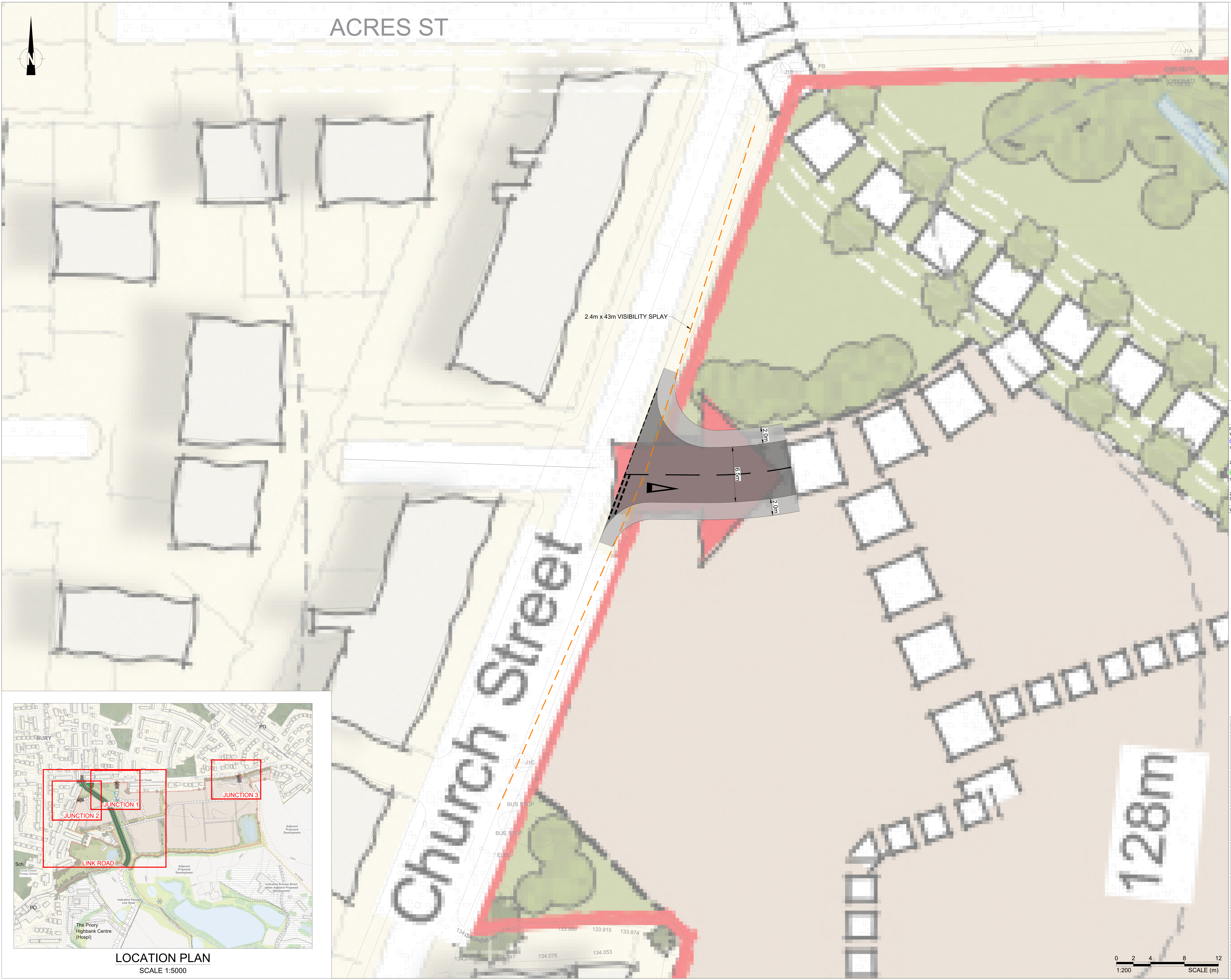
ACRES ST
N
SB
PB
J1B
J1A
2.4m x 43m VISIBILITY SPLAY
2.0m
6.5m
2.0m
Church Street
J1C
BUS STOP
BUS STOP
ELEC
128m
133.986
133.915
133.874
134.147
134.076
134.053
0
2
4
8
12
1:200
SCALE (m)
BURY
PO
JUNCTION 1
JUNCTION 2
JUNCTION 3
LINK ROAD
Sch
PO
The Priory
Highbank Centre
(Hospl)

LOCATION PLAN

SCALE 1:5000

KEY

🟩 PROPOSED GRASSED VERGE

▨ PROPOSED CYCLEWAY / FOOTWAY

▨ PROPOSED CARRIAGEWAY

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Rev	Amendments	Date	By	Chk	Auth
P01	FIRST ISSUE	16.01.25	JDV	SR	SR

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Project
LAND AT SCOBELL STREET, BURY

Drawing Title
GENERAL ACCESS PLAN - JUNCTION 2
SHEET 2 OF 4

Scale		SLR Project No.	
1:200 @ A1		410.065605.00001	
Designed	Drawn	Checked	Authorised
JDV	JDV	SR	SR
Date	Date	Date	Date
16.01.2025	16.01.2025	16.01.2025	16.01.2025

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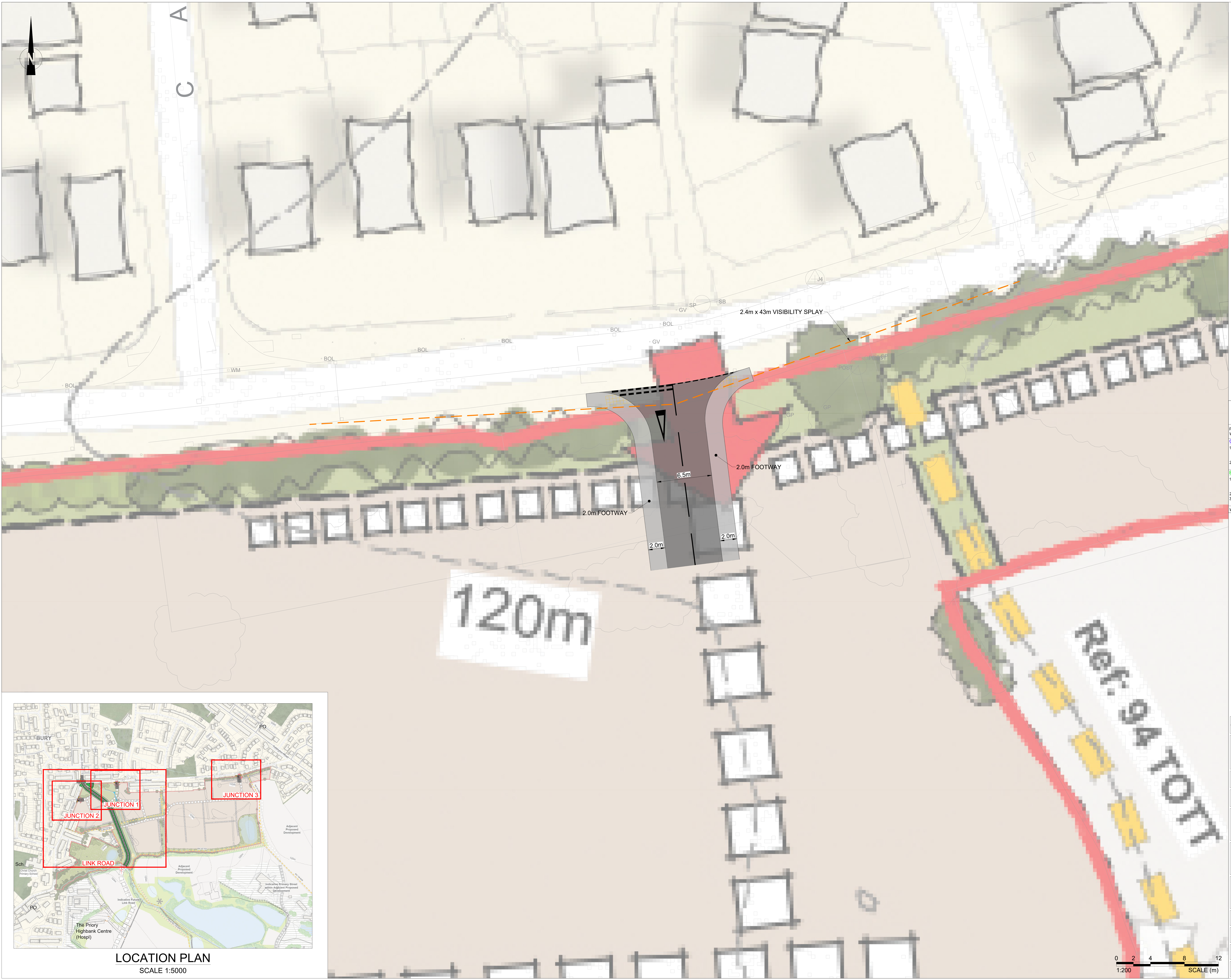

LOCATION PLAN

SCALE 1:5000

KEY

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Project
LAND AT SCOBELL STREET, BURY

Drawing Title
GENERAL ACCESS PLAN - JUNCTION 3
SHEET 3 OF 4

Scale		SLR Project No.	
1:200 @ A1		410.065605.00001	
Designed	Drawn	Checked	Authorised
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Date	Date	Date	Date
16.01.2025	16.01.2025	16.01.2025	16.01.2025

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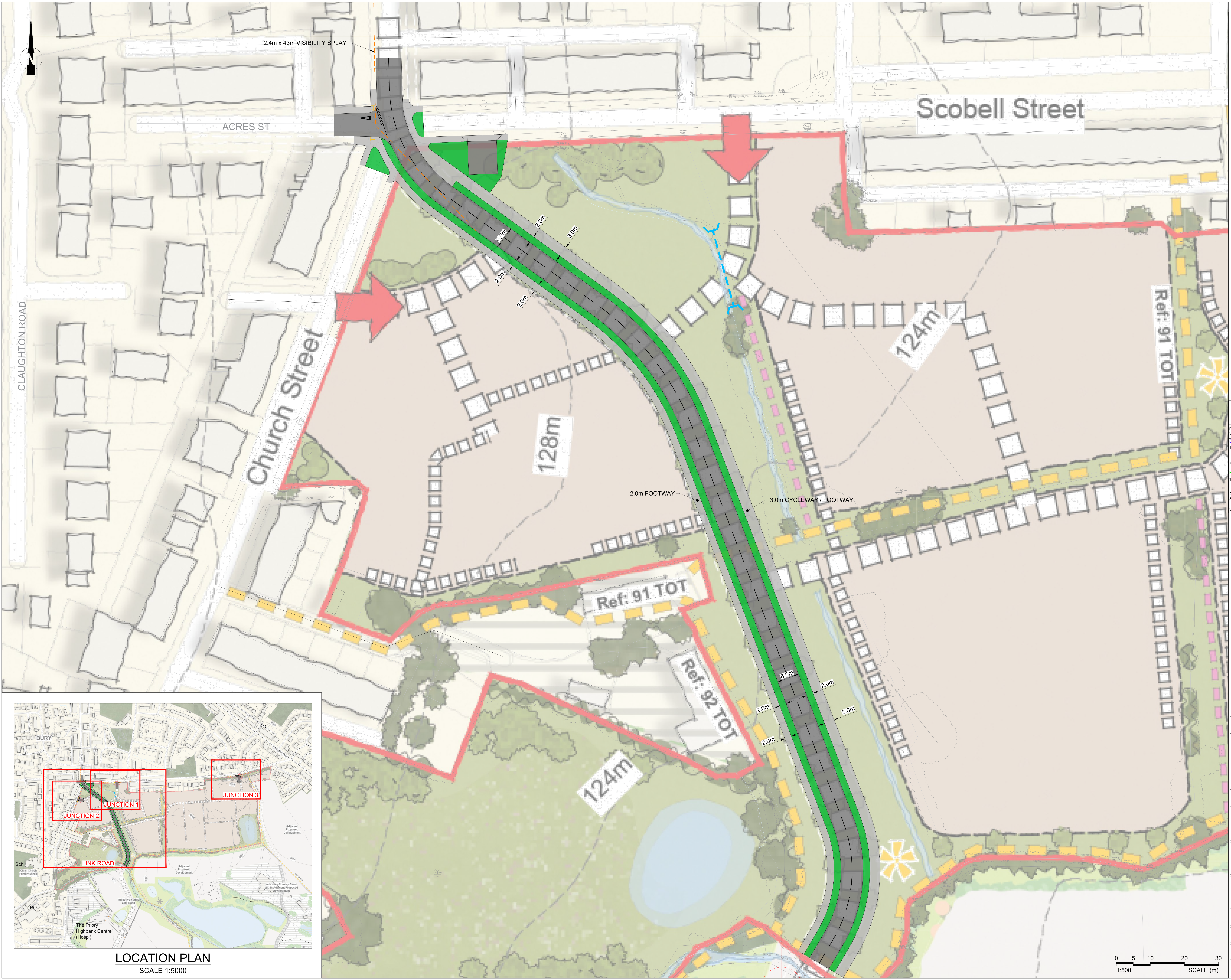
N
2.4m x 43m VISIBILITY SPLAY
ACRES ST
Scobell Street
CLAUGHTON ROAD
Church Street
6.5m
2.0m
3.0m
2.0m
2.0m
128m
124m
Ref: 91 TOT
2.0m FOOTWAY
3.0m CYCLEWAY / FOOTWAY
Ref: 91 TOT
Ref: 92 TOT
124m
6.5m
2.0m
3.0m
2.0m
2.0m
BURY
PO
JUNCTION 1
JUNCTION 2
JUNCTION 3
LINK ROAD
Sch
PO
The Priory Highbank Centre (Hospl)
0
5
10
20
30
1:500
SCALE (m)

LOCATION PLAN

SCALE 1:5000

KEY

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▨ PROPOSED CYCLEWAY / FOOTWAY

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WAIN ESTATES

Project
LAND AT SCOBELL STREET, BURY

Drawing Title
GENERAL ACCESS PLAN - LINK ROAD
SHEET 4 OF 4

Scale 1:500 @ A1		SLR Project No. 410.065605.00001	
Designed JDV	Drawn JDV	Checked SR	Authorised SR
Date 16.01.2025	Date 16.01.2025	Date 16.01.2025	Date 16.01.2025

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Appendix D Traffic Flow Diagrams

Transport Assessment and Travel Plan Strategy

Wain Estates (Land) Ltd

SLR Project No.: 410.065892.00001
April 2025

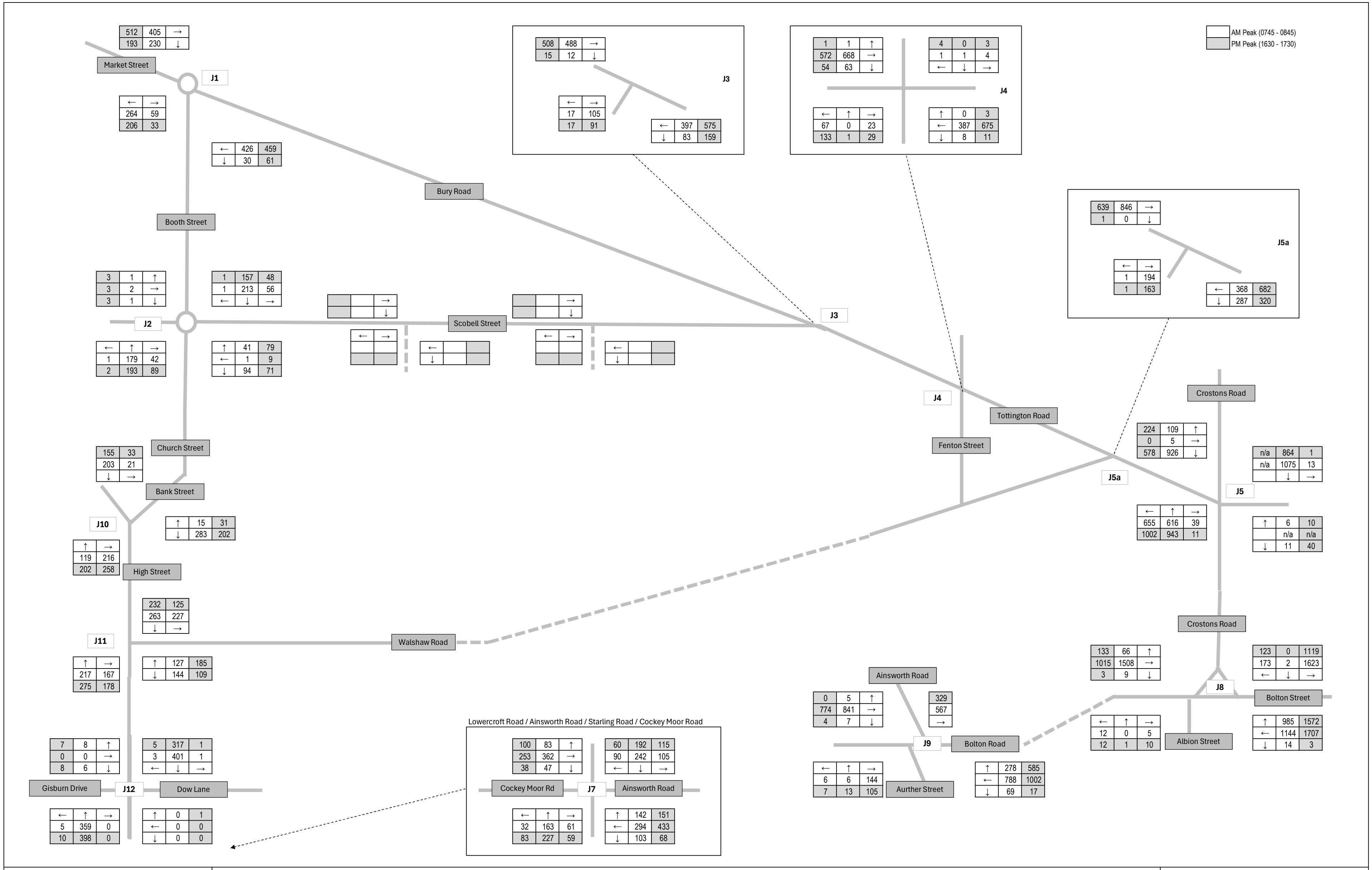

AM Peak (0745 - 0845)
PM Peak (1630 - 1730)
Market Street
J1
512 405 →
193 230 ↓
← →
264 59
206 33
← 426 459
↓ 30 61
Bury Road
Booth Street
3 1 ↑
3 2 →
3 1 ↓
1 157 48
1 213 56
← ↓ →
J2
← ↑ →
1 179 42
2 193 89
↑ 41 79
← 1 9
↓ 94 71
Scobell Street
Church Street
Bank Street
155 33
203 21
↓ →
J10
↑ 15 31
↓ 283 202
↑ →
119 216
202 258
High Street
232 125
263 227
↓ →
J11
Walshaw Road
↑ →
217 167
275 178
↑ 127 185
↓ 144 109
7 8 ↑
0 0 →
8 6 ↓
5 317 1
3 401 1
← ↓ →
Gisburn Drive
J12
Dow Lane
← ↑ →
5 359 0
10 398 0
↑ 0 1
← 0 0
↓ 0 0
J3
508 488 →
15 12 ↓
← →
17 105
17 91
← 397 575
↓ 83 159
J4
1 1 ↑
572 668 →
54 63 ↓
4 0 3
1 1 4
← ↓ →
← ↑ →
67 0 23
133 1 29
↑ 0 3
← 387 675
↓ 8 11
Fenton Street
Tottington Road
J5a
639 846 →
1 0 ↓
← →
1 194
1 163
← 368 682
↓ 287 320
Crostons Road
224 109 ↑
0 5 →
578 926 ↓
n/a 864 1
n/a 1075 13
↓ →
J5
← ↑ →
655 616 39
1002 943 11
↑ 6 10
n/a n/a
↓ 11 40
Crostons Road
133 66 ↑
1015 1508 →
3 9 ↓
123 0 1119
173 2 1623
← ↓ →
J8
Bolton Street
← ↑ →
12 0 5
12 1 10
Albion Street
↑ 985 1572
← 1144 1707
↓ 14 3
Ainsworth Road
0 5 ↑
774 841 →
4 7 ↓
329
567
→
J9
Bolton Road
← ↑ →
6 6 144
7 13 105
Aurther Street
↑ 278 585
← 788 1002
↓ 69 17
Lowercroft Road / Ainsworth Road / Starling Road / Cockey Moor Road
100 83 ↑
253 362 →
38 47 ↓
60 192 115
90 242 105
← ↓ →
Cockey Moor Rd
J7
Ainsworth Road
← ↑ →
32 163 61
83 227 59
↑ 142 151
← 294 433
↓ 103 68

Figure 1

2024 Survey Flows (PCUs)

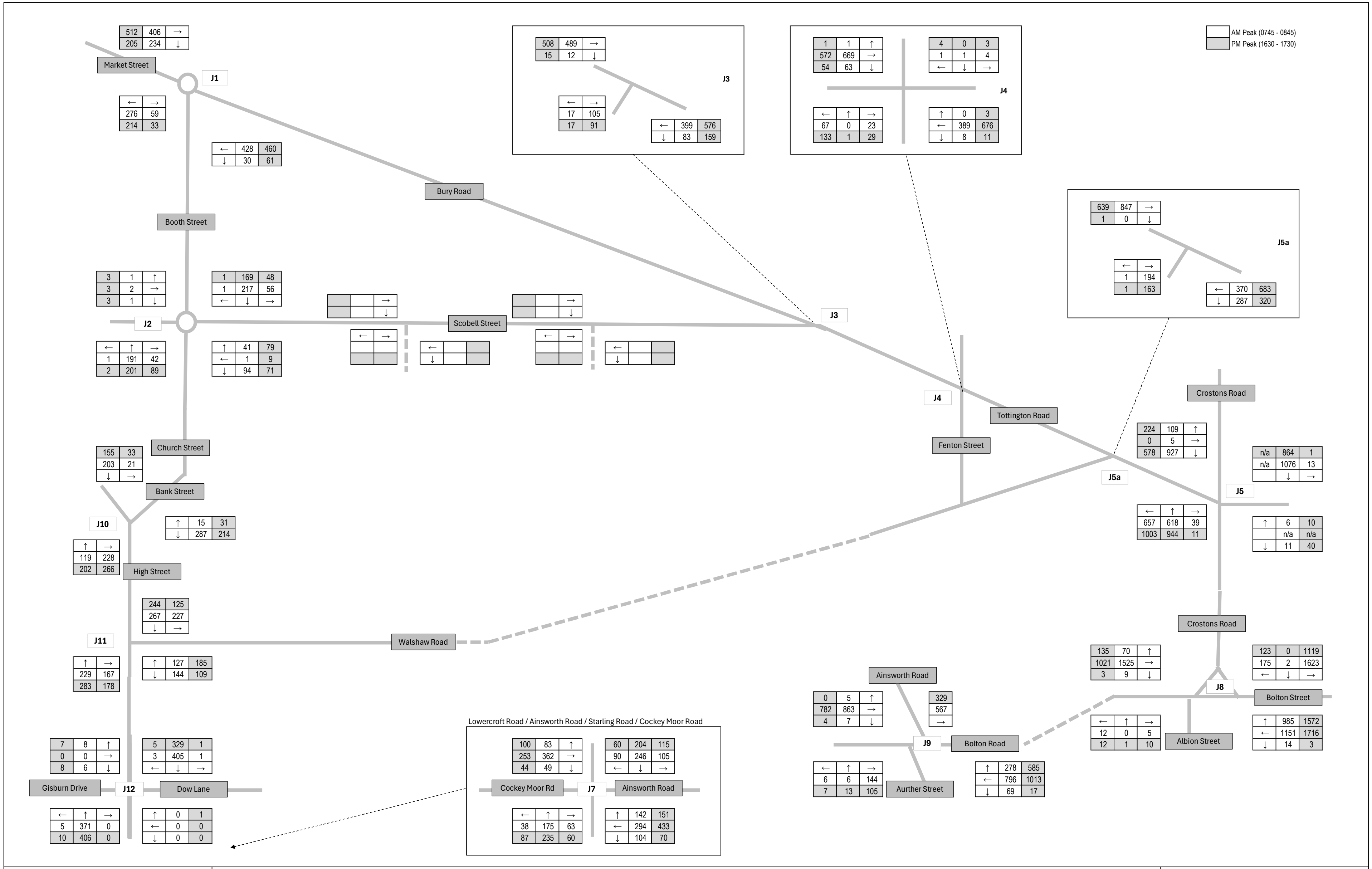

AM Peak (0745 - 0845)
PM Peak (1630 - 1730)
512 406 →
205 234 ↓
Market Street
J1
← →
276 59
214 33
← 428 460
↓ 30 61
Bury Road
Booth Street
3 1 ↑
3 2 →
3 1 ↓
1 169 48
1 217 56
← ↓ →
J2
← ↑ →
1 191 42
2 201 89
↑ 41 79
← 1 9
↓ 94 71
→
↓
← →
← ↓
Scobell Street
→
↓
← →
← ↓
508 489 →
15 12 ↓
J3
← →
17 105
17 91
← 399 576
↓ 83 159
1 1 ↑
572 669 →
54 63 ↓
4 0 3
1 1 4
← ↓ →
J4
← ↑ →
67 0 23
133 1 29
↑ 0 3
← 389 676
↓ 8 11
J3
639 847 →
1 0 ↓
J5a
← →
1 194
1 163
← 370 683
↓ 287 320
J4
Tottington Road
Fenton Street
Crostons Road
224 109 ↑
0 5 →
578 927 ↓
n/a 864 1
n/a 1076 13
↓ →
J5a
J5
← ↑ →
657 618 39
1003 944 11
↑ 6 10
n/a n/a
↓ 11 40
Church Street
155 33
203 21
↓ →
Bank Street
J10
↑ 15 31
↓ 287 214
↑ →
119 228
202 266
High Street
244 125
267 227
↓ →
J11
Walshaw Road
↑ →
229 167
283 178
↑ 127 185
↓ 144 109
Crostons Road
135 70 ↑
1021 1525 →
3 9 ↓
123 0 1119
175 2 1623
← ↓ →
Ainsworth Road
J8
Bolton Street
0 5 ↑
782 863 →
4 7 ↓
329
567
→
J9
Bolton Road
← ↑ →
12 0 5
12 1 10
Albion Street
↑ 985 1572
← 1151 1716
↓ 14 3
← ↑ →
6 6 144
7 13 105
Aurther Street
↑ 278 585
← 796 1013
↓ 69 17
Lowercroft Road / Ainsworth Road / Starling Road / Cockey Moor Road
100 83 ↑
253 362 →
44 49 ↓
60 204 115
90 246 105
← ↓ →
Cockey Moor Rd
J7
Ainsworth Road
← ↑ →
38 175 63
87 235 60
↑ 142 151
← 294 433
↓ 104 70
7 8 ↑
0 0 →
8 6 ↓
5 329 1
3 405 1
← ↓ →
Gisburn Drive
J12
Dow Lane
← ↑ →
5 371 0
10 406 0
↑ 0 1
← 0 0
↓ 0 0

Figure 2

2030 Future Year (inc Committed Dev)(PCUs)

SLR

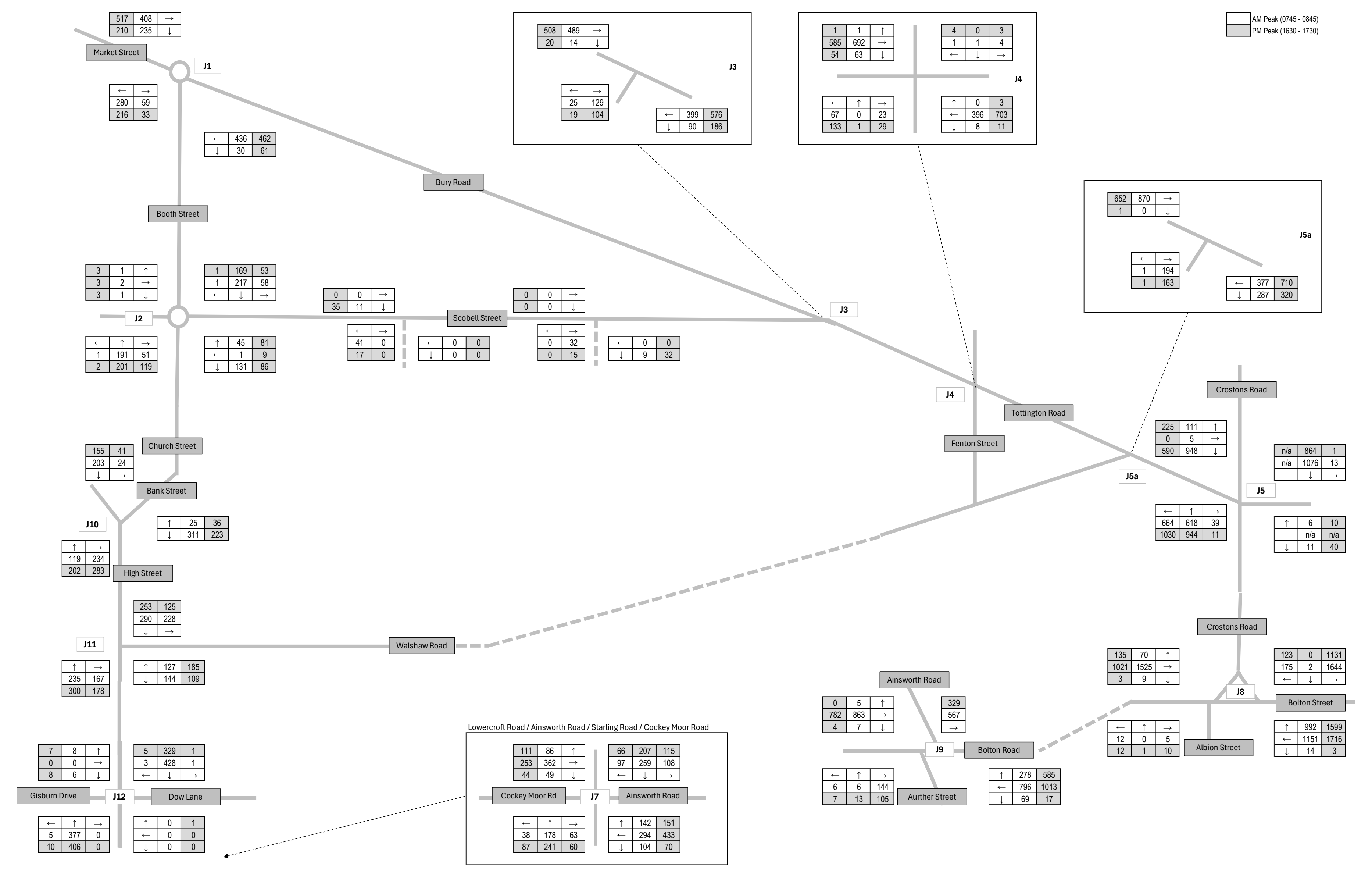
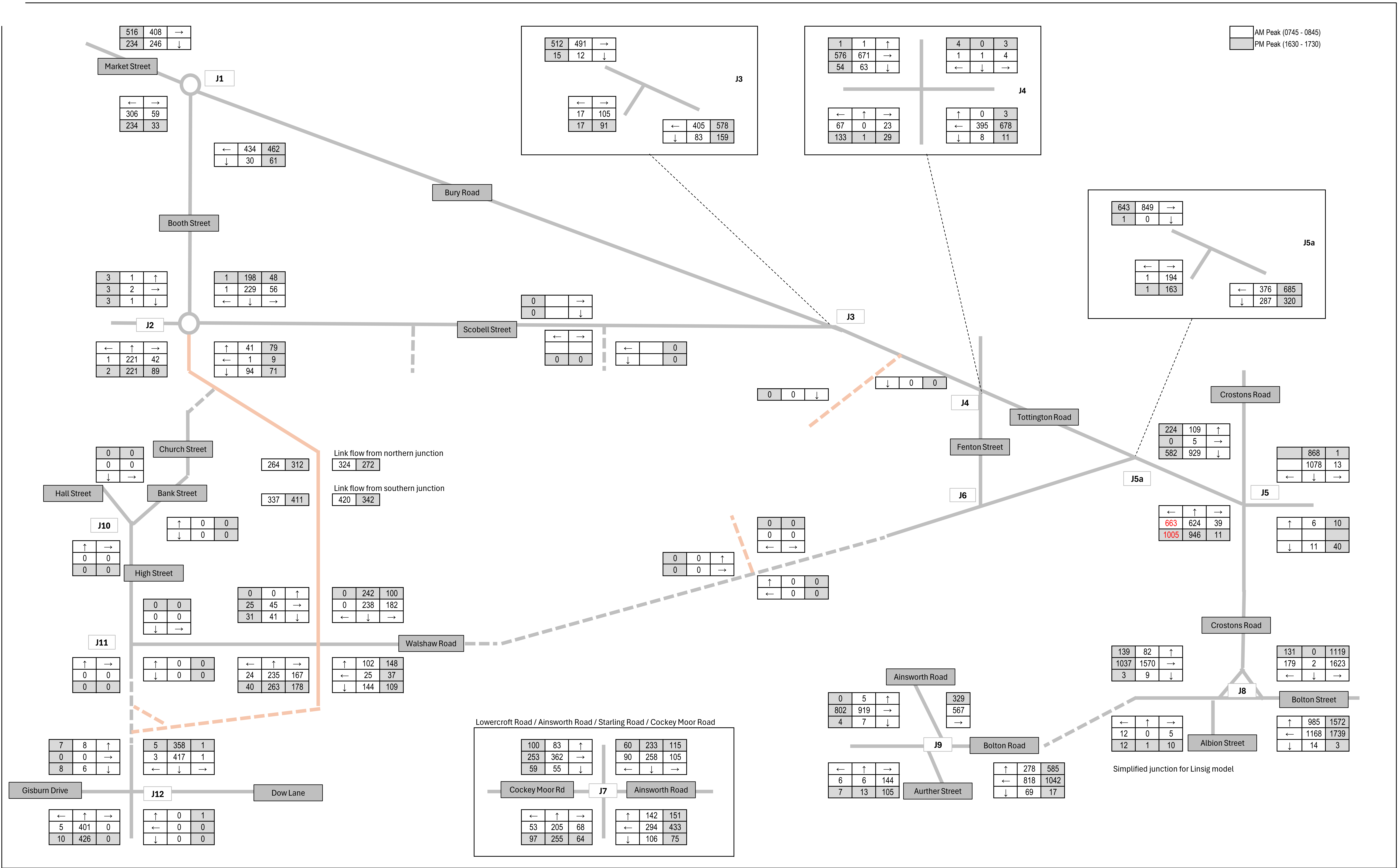

AM Peak (0745 - 0845)
PM Peak (1630 - 1730)
Market Street
J1
517 408 →
210 235 ↓
← →
280 59
216 33
← 436 462
↓ 30 61
Bury Road
Booth Street
J2
3 1 ↑
3 2 →
3 1 ↓
1 169 53
1 217 58
← ↓ →
← ↑ →
1 191 51
2 201 119
↑ 45 81
← 1 9
↓ 131 86
0 0 →
35 11 ↓
← →
41 0
17 0
← 0 0
↓ 0 0
Scobell Street
0 0 →
0 0 ↓
← →
0 32
0 15
← 0 0
↓ 9 32
J3
508 489 →
20 14 ↓
← →
25 129
19 104
← 399 576
↓ 90 186
J4
1 1 ↑
585 692 →
54 63 ↓
4 0 3
1 1 4
← ↓ →
← ↑ →
67 0 23
133 1 29
↑ 0 3
← 396 703
↓ 8 11
J5a
652 870 →
1 0 ↓
← →
1 194
1 163
← 377 710
↓ 287 320
Fenton Street
Tottington Road
Crostons Road
J5
225 111 ↑
0 5 →
590 948 ↓
n/a 864 1
n/a 1076 13
↓ →
← ↑ →
664 618 39
1030 944 11
↑ 6 10
n/a n/a
↓ 11 40
Church Street
Bank Street
J10
155 41
203 24
↓ →
↑ 25 36
↓ 311 223
↑ →
119 234
202 283
High Street
253 125
290 228
↓ →
J11
Walshaw Road
↑ →
235 167
300 178
↑ 127 185
↓ 144 109
Crostons Road
135 70 ↑
1021 1525 →
3 9 ↓
123 0 1131
175 2 1644
← ↓ →
J8
Bolton Street
← ↑ →
12 0 5
12 1 10
Albion Street
↑ 992 1599
← 1151 1716
↓ 14 3
Ainsworth Road
0 5 ↑
782 863 →
4 7 ↓
329
567
→
J9
Bolton Road
← ↑ →
6 6 144
7 13 105
Aurther Street
↑ 278 585
← 796 1013
↓ 69 17
Lowercroft Road / Ainsworth Road / Starling Road / Cockey Moor Road
111 86 ↑
253 362 →
44 49 ↓
66 207 115
97 259 108
← ↓ →
Cockey Moor Rd
J7
Ainsworth Road
← ↑ →
38 178 63
87 241 60
↑ 142 151
← 294 433
↓ 104 70
7 8 ↑
0 0 →
8 6 ↓
5 329 1
3 428 1
← ↓ →
Gisburn Drive
J12
Dow Lane
← ↑ →
5 377 0
10 406 0
↑ 0 1
← 0 0
↓ 0 0

Figure 3

2030 Future Year + Proposed Development (PCUs)



AM Peak (0745 - 0845)
PM Peak (1630 - 1730)
J1
J2
J3
J4
J5
J5a
J6
J7
J8
J9
J10
J11
J12
Market Street
Bury Road
Booth Street
Scobell Street
Church Street
Hall Street
Bank Street
High Street
Walshaw Road
Gisburn Drive
Dow Lane
Tottington Road
Fenton Street
Crostons Road
Bolton Street
Albion Street
Ainsworth Road
Bolton Road
Aurther Street
Cockey Moor Rd
Lowercroft Road / Ainsworth Road / Starling Road / Cockey Moor Road
Link flow from northern junction
Link flow from southern junction
264 312
324 272
337 411
420 342
Simplified junction for Linsig model
516 408 →
234 246 ↓
← →
306 59
234 33
← 434 462
↓ 30 61
3 1 ↑
3 2 →
3 1 ↓
1 198 48
1 229 56
← ↓ →
← ↑ →
1 221 42
2 221 89
↑ 41 79
← 1 9
↓ 94 71
512 491 →
15 12 ↓
← →
17 105
17 91
← 405 578
↓ 83 159
1 1 ↑
576 671 →
54 63 ↓
4 0 3
1 1 4
← ↓ →
← ↑ →
67 0 23
133 1 29
↑ 0 3
← 395 678
↓ 8 11
643 849 →
1 0 ↓
← →
1 194
1 163
← 376 685
↓ 287 320
0 →
0 ↓
← →
0 0
← 0
↓ 0
0 0 ↓
↓ 0 0
224 109 ↑
0 5 →
582 929 ↓
868 1
1078 13
← ↓ →
← ↑ →
663 624 39
1005 946 11
↑ 6 10
↓ 11 40
0 0
0 0
↓ →
↑ 0 0
↓ 0 0
↑ →
0 0
0 0
0 0
0 0
← →
0 0 ↑
0 0 →
↑ 0 0
← 0 0
0 0
0 0
↓ →
0 0 ↑
25 45 →
31 41 ↓
0 242 100
0 238 182
← ↓ →
↑ →
0 0
0 0
↑ 0 0
↓ 0 0
← ↑ →
24 235 167
40 263 178
↑ 102 148
← 25 37
↓ 144 109
7 8 ↑
0 0 →
8 6 ↓
5 358 1
3 417 1
← ↓ →
← ↑ →
5 401 0
10 426 0
↑ 0 1
← 0 0
↓ 0 0
100 83 ↑
253 362 →
59 55 ↓
60 233 115
90 258 105
← ↓ →
← ↑ →
53 205 68
97 255 64
↑ 142 151
← 294 433
↓ 106 75
0 5 ↑
802 919 →
4 7 ↓
329
567
→
← ↑ →
6 6 144
7 13 105
↑ 278 585
← 818 1042
↓ 69 17
139 82 ↑
1037 1570 →
3 9 ↓
131 0 1119
179 2 1623
← ↓ →
← ↑ →
12 0 5
12 1 10
↑ 985 1572
← 1168 1739
↓ 14 3

Figure 4

Base + Committed (Sensitivity)

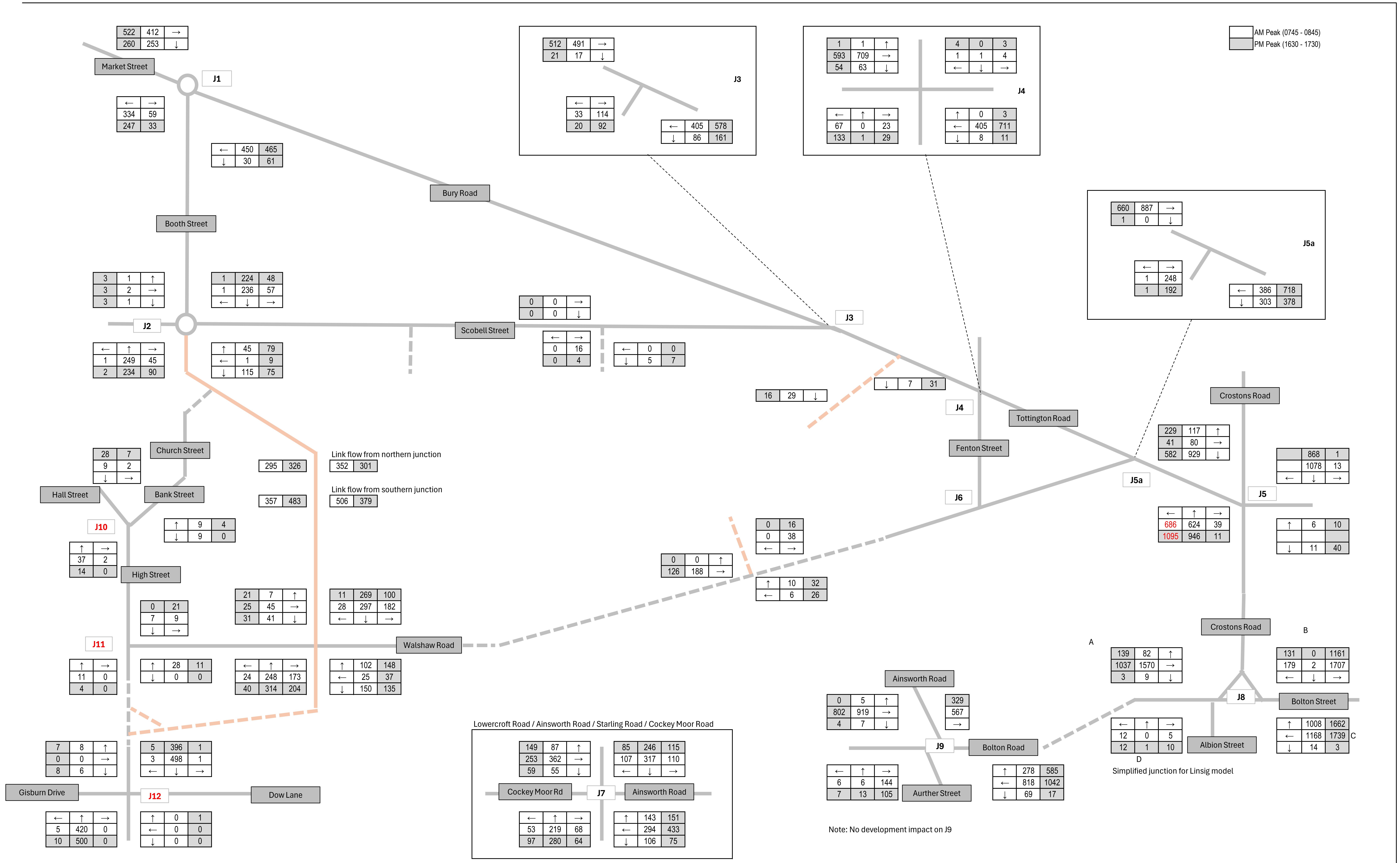

AM Peak (0745 - 0845)
PM Peak (1630 - 1730)
522 412 →
260 253 ↓
Market Street
J1
← →
334 59
247 33
← 450 465
↓ 30 61
Bury Road
Booth Street
3 1 ↑
3 2 →
3 1 ↓
1 224 48
1 236 57
← ↓ →
J2
← ↑ →
1 249 45
2 234 90
↑ 45 79
← 1 9
↓ 115 75
Scobell Street
0 0 →
0 0 ↓
← →
0 16
0 4
← 0 0
↓ 5 7
512 491 →
21 17 ↓
← →
33 114
20 92
← 405 578
↓ 86 161
J3
1 1 ↑
593 709 →
54 63 ↓
4 0 3
1 1 4
← ↓ →
J4
← ↑ →
67 0 23
133 1 29
↑ 0 3
← 405 711
↓ 8 11
660 887 →
1 0 ↓
J5a
← →
1 248
1 192
← 386 718
↓ 303 378
J3
16 29 ↓
↓ 7 31
J4
Tottington Road
Fenton Street
J6
Crostons Road
229 117 ↑
41 80 →
582 929 ↓
868 1
1078 13
← ↓ →
J5a
J5
← ↑ →
686 624 39
1095 946 11
↑ 6 10
↓ 11 40
28 7
9 2
↓ →
Church Street
Hall Street
Bank Street
J10
↑ 9 4
↓ 9 0
↑ →
37 2
14 0
295 326
Link flow from northern junction
352 301
357 483
Link flow from southern junction
506 379
0 16
0 38
← →
0 0 ↑
126 188 →
↑ 10 32
← 6 26
High Street
0 21
7 9
↓ →
21 7 ↑
25 45 →
31 41 ↓
11 269 100
28 297 182
← ↓ →
Walshaw Road
J11
↑ →
11 0
4 0
↑ 28 11
↓ 0 0
← ↑ →
24 248 173
40 314 204
↑ 102 148
← 25 37
↓ 150 135
7 8 ↑
0 0 →
8 6 ↓
5 396 1
3 498 1
← ↓ →
Gisburn Drive
J12
Dow Lane
← ↑ →
5 420 0
10 500 0
↑ 0 1
← 0 0
↓ 0 0
Lowercroft Road / Ainsworth Road / Starling Road / Cockey Moor Road
149 87 ↑
253 362 →
59 55 ↓
85 246 115
107 317 110
← ↓ →
Cockey Moor Rd
J7
Ainsworth Road
← ↑ →
53 219 68
97 280 64
↑ 143 151
← 294 433
↓ 106 75
Ainsworth Road
0 5 ↑
802 919 →
4 7 ↓
329
567
→
J9
Bolton Road
← ↑ →
6 6 144
7 13 105
Auther Street
↑ 278 585
← 818 1042
↓ 69 17
Note: No development impact on J9
A
139 82 ↑
1037 1570 →
3 9 ↓
Crostons Road
B
131 0 1161
179 2 1707
← ↓ →
J8
Bolton Street
← ↑ →
12 0 5
12 1 10
D
Albion Street
↑ 1008 1662
← 1168 1739
↓ 14 3
C
Simplified junction for Linsig model

Figure 5

Base + Committed + Development (Sensitivity)

SLR

Appendix E Junction Capacity Modelling Outputs

Transport Assessment and Travel Plan Strategy

Wain Estates (Land) Ltd

SLR Project No.: 410.065892.00001
April 2025

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.1.1.1905
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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: J1 R7 Bury Rd-Booth St_Existing v2.j10
Path: N:\Vectos Job Data\2024\410.065892.00001 Walshaw Northern Parcel\Arcady
Report generation date: 22/08/2024 15:34:13

- »(Default Analysis Set) - 2024 Survey (Base), AM
- »(Default Analysis Set) - 2024 Survey (Base), PM
- »(Default Analysis Set) - 2024 Base With Dev, AM
- »(Default Analysis Set) - 2024 Base With Dev, PM
- »(Default Analysis Set) - Base + Com Dev, AM
- »(Default Analysis Set) - Base + Com Dev, PM
- »(Default Analysis Set) - Base + CD With Dev, AM
- »(Default Analysis Set) - Base + CD With Dev, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2024 Survey (Base)									
Arm 1	D1	1.4	9.97	0.58	A	D2	1.8	11.40	0.64	B
Arm 2		2.1	21.64	0.68	C		1.1	15.24	0.53	C
Arm 3		2.9	15.37	0.75	C		4.2	20.40	0.82	C
	A1 - 2024 Base With Dev									
Arm 1	D3	1.4	10.24	0.59	B	D4	1.8	11.59	0.65	B
Arm 2		2.2	22.96	0.70	C		1.1	15.47	0.53	C
Arm 3		3.0	15.59	0.75	C		4.5	21.70	0.83	C
	A1 - Base + Com Dev									
Arm 1	D5	1.4	10.11	0.59	B	D6	1.8	11.73	0.65	B
Arm 2		2.3	23.66	0.71	C		1.2	15.87	0.55	C
Arm 3		3.0	15.73	0.76	C		4.6	21.97	0.83	C
	A1 - Base + CD With Dev									
Arm 1	D7	1.5	10.39	0.60	B	D8	1.9	11.95	0.66	B
Arm 2		2.5	25.24	0.73	D		1.2	16.12	0.55	C
Arm 3		3.0	15.96	0.76	C		5.0	23.46	0.84	C

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

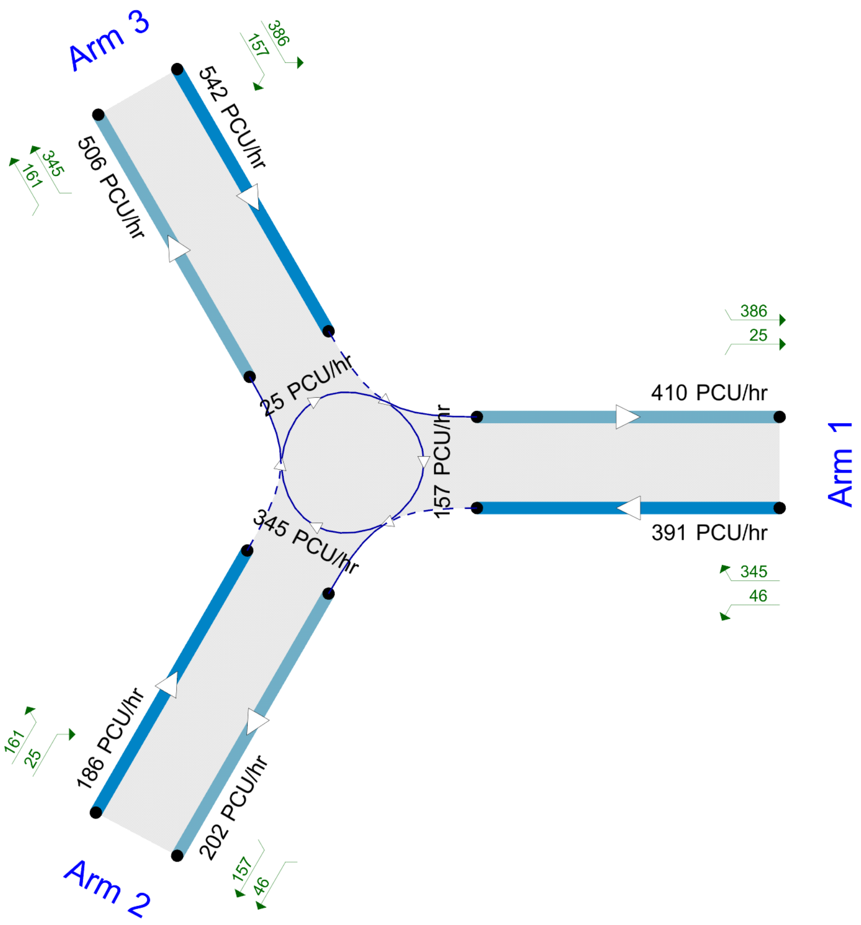
File summary

File Description

Title	(untitled)
Location	
Site number	
Date	19/12/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin


Arm 3
386
157
542 PCU/hr
345
161
506 PCU/hr
25 PCU/hr
386
25
410 PCU/hr
157 PCU/hr
Arm 1
391 PCU/hr
345
46
345 PCU/hr
161
25
186 PCU/hr
202 PCU/hr
157
46
Arm 2

Flows show modelled flow through junction (PCU/hr).

Time Segment: 16:15-16:30

The junction diagram reflects the last run of Junctions.

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
JUNCTIONS 9	5.75						0.85	36.00	20.00		

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Survey (Base)	AM	ONE HOUR	07:30	09:00	15	✓
D2	2024 Survey (Base)	PM	ONE HOUR	16:15	17:45	15	✓
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15	✓
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15	✓
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15	✓
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15	✓
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15	✓
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	(Default Analysis Set)	✓	100.000	100.000

(Default Analysis Set) - 2024 Survey (Base), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3	15.06	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		15.06	C

Arms

Arms

Arm	Name	Description
1	Bury Rd	
2	Booth St	
3	Market St	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.70	3.70	4.20	0.9	9.00	4.00	0.0	
2	3.30	3.30	4.20	0.1	9.00	7.00	0.0	
3	3.40	3.40	3.40	0.0	15.00	14.00	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.624	1021
2	0.603	804
3	0.620	972

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Survey (Base)	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	456	100.000
2		ONE HOUR	✓	323	100.000
3		ONE HOUR	✓	635	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	30	426
	2	59	0	264
	3	405	230	0

Proportions

		To		
		1	2	3
From	1	0.00	0.07	0.93
	2	0.18	0.00	0.82
	3	0.64	0.36	0.00

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Average PCU Per Veh

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:30-07:45	1	343	343
	2	243	243
	3	478	478
07:45-08:00	1	410	410
	2	290	290
	3	571	571
08:00-08:15	1	502	502
	2	356	356
	3	699	699
08:15-08:30	1	502	502
	2	356	356
	3	699	699
08:30-08:45	1	410	410
	2	290	290
	3	571	571
08:45-09:00	1	343	343
	2	243	243
	3	478	478

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.58	9.97	1.4	A	418	628
2	0.68	21.64	2.1	C	296	445
3	0.75	15.37	2.9	C	583	874

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	343	86	172	913	0.376	341	346	0.0	0.6	6.264	A
2	243	61	318	612	0.398	241	194	0.0	0.6	9.637	A
3	478	120	44	945	0.506	474	515	0.0	1.0	7.580	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	410	102	206	892	0.460	409	416	0.6	0.8	7.437	A
2	290	73	382	573	0.506	289	233	0.6	1.0	12.595	B
3	571	143	53	940	0.608	569	618	1.0	1.5	9.655	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	502	126	251	864	0.581	500	507	0.8	1.4	9.839	A
2	356	89	467	522	0.681	352	284	1.0	2.0	20.645	C
3	699	175	64	932	0.750	694	755	1.5	2.8	14.763	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	502	126	253	863	0.582	502	511	1.4	1.4	9.974	A
2	356	89	469	521	0.683	355	286	2.0	2.1	21.640	C
3	699	175	65	932	0.750	699	759	2.8	2.9	15.371	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	410	102	209	890	0.460	412	421	1.4	0.9	7.555	A
2	290	73	385	572	0.508	294	236	2.1	1.1	13.168	B
3	571	143	54	939	0.608	576	625	2.9	1.6	10.059	B

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	343	86	174	912	0.376	344	351	0.9	0.6	6.352	A
2	243	61	322	610	0.399	245	197	1.1	0.7	9.905	A
3	478	120	45	945	0.506	480	522	1.6	1.0	7.790	A

(Default Analysis Set) - 2024 Survey (Base), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 83% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3	16.36	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		16.36	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2024 Survey (Base)	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	520	100.000
2		ONE HOUR	✓	239	100.000
3		ONE HOUR	✓	705	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	61	459
	2	33	0	206
	3	512	193	0

Proportions

		To		
		1	2	3
From	1	0.00	0.12	0.88
	2	0.14	0.00	0.86
	3	0.73	0.27	0.00

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		1	**2**	**3**
From	**1**	0	0	0
	2	0	0	0
	3	0	0	0

Average PCU Per Veh

		To		
		1	**2**	**3**
From	**1**	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:15-16:30	**1**	391	391
	2	180	180
	3	531	531
16:30-16:45	**1**	467	467
	2	215	215
	3	634	634
16:45-17:00	**1**	573	573
	2	263	263
	3	776	776
17:00-17:15	**1**	573	573
	2	263	263
	3	776	776
17:15-17:30	**1**	467	467
	2	215	215
	3	634	634
17:30-17:45	**1**	391	391
	2	180	180
	3	531	531

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.64	11.40	1.8	B	477	716
2	0.53	15.24	1.1	C	219	329
3	0.82	20.40	4.2	C	647	970

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	391	98	144	931	0.421	389	407	0.0	0.7	6.607	A
2	180	45	343	597	0.301	178	190	0.0	0.4	8.566	A
3	531	133	25	957	0.555	526	497	0.0	1.2	8.259	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	467	117	173	913	0.512	466	488	0.7	1.0	8.037	A
2	215	54	412	556	0.387	214	227	0.4	0.6	10.518	B
3	634	158	30	954	0.664	631	596	1.2	1.9	11.048	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	573	143	210	889	0.644	570	594	1.0	1.7	11.160	B
2	263	66	503	500	0.526	261	277	0.6	1.1	14.938	B
3	776	194	36	950	0.817	768	728	1.9	4.0	18.912	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	573	143	212	888	0.645	572	599	1.7	1.8	11.398	B
2	263	66	505	499	0.527	263	279	1.1	1.1	15.241	C
3	776	194	36	950	0.817	775	732	4.0	4.2	20.403	C

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	467	117	176	911	0.513	470	497	1.8	1.1	8.223	A
2	215	54	415	553	0.388	217	231	1.1	0.6	10.748	B
3	634	158	30	954	0.665	642	602	4.2	2.1	11.868	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	391	98	146	929	0.421	393	413	1.1	0.7	6.725	A
2	180	45	347	595	0.303	181	192	0.6	0.4	8.717	A
3	531	133	25	957	0.555	534	503	2.1	1.3	8.572	A

(Default Analysis Set) - 2024 Base With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3	15.54	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		15.54	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	464	100.000
2		ONE HOUR	✓	327	100.000
3		ONE HOUR	✓	638	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	**2**	**3**
From	**1**	0	30	434
	2	59	0	268
	3	407	231	0

Proportions

		To		
		1	**2**	**3**
From	**1**	0.00	0.06	0.94
	2	0.18	0.00	0.82
	3	0.64	0.36	0.00

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		1	**2**	**3**
From	**1**	0	0	0
	2	0	0	0
	3	0	0	0

Average PCU Per Veh

		To		
		1	**2**	**3**
From	**1**	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:30-07:45	1	349	349
	2	246	246
	3	480	480
07:45-08:00	1	417	417
	2	294	294
	3	574	574
08:00-08:15	1	511	511
	2	360	360
	3	702	702
08:15-08:30	1	511	511
	2	360	360
	3	702	702
08:30-08:45	1	417	417
	2	294	294
	3	574	574
08:45-09:00	1	349	349
	2	246	246
	3	480	480

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.59	10.24	1.4	B	426	639
2	0.70	22.96	2.2	C	300	450
3	0.75	15.59	3.0	C	585	878

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	349	87	172	913	0.383	347	348	0.0	0.6	6.333	A
2	246	62	324	608	0.405	244	195	0.0	0.7	9.805	A
3	480	120	44	945	0.508	476	524	0.0	1.0	7.615	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	417	104	207	891	0.468	416	417	0.6	0.9	7.555	A
2	294	73	389	569	0.517	292	234	0.7	1.0	12.947	B
3	574	143	53	940	0.610	572	629	1.0	1.5	9.724	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	511	128	252	863	0.592	509	509	0.9	1.4	10.093	B
2	360	90	476	517	0.697	356	285	1.0	2.1	21.758	C
3	702	176	64	933	0.753	697	767	1.5	2.9	14.948	B

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	511	128	254	862	0.593	511	513	1.4	1.4	10.244	B
2	360	90	478	516	0.698	360	287	2.1	2.2	22.956	C
3	702	176	65	932	0.754	702	773	2.9	3.0	15.587	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	417	104	210	890	0.469	419	423	1.4	0.9	7.687	A
2	294	73	392	567	0.518	298	237	2.2	1.1	13.604	B
3	574	143	54	939	0.611	579	637	3.0	1.6	10.145	B

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	349	87	175	912	0.383	350	353	0.9	0.6	6.429	A
2	246	62	328	606	0.406	248	197	1.1	0.7	10.095	B
3	480	120	45	945	0.509	483	531	1.6	1.1	7.830	A

(Default Analysis Set) - 2024 Base With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 83% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3	17.11	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		17.11	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	522	100.000
2		ONE HOUR	✓	241	100.000
3		ONE HOUR	✓	715	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	**2**	**3**
From	**1**	0	61	461
	2	33	0	208
	3	517	198	0

Proportions

		To		
		1	**2**	**3**
From	**1**	0.00	0.12	0.88
	2	0.14	0.00	0.86
	3	0.72	0.28	0.00

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		1	**2**	**3**
From	**1**	0	0	0
	2	0	0	0
	3	0	0	0

Average PCU Per Veh

		To		
		1	**2**	**3**
From	**1**	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:15-16:30	**1**	393	393
	2	181	181
	3	538	538
16:30-16:45	**1**	469	469
	2	217	217
	3	643	643
16:45-17:00	**1**	575	575
	2	265	265
	3	787	787
17:00-17:15	**1**	575	575
	2	265	265
	3	787	787
17:15-17:30	**1**	469	469
	2	217	217
	3	643	643
17:30-17:45	**1**	393	393
	2	181	181
	3	538	538

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.65	11.59	1.8	B	479	718
2	0.53	15.47	1.1	C	221	332
3	0.83	21.70	4.5	C	656	984

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	393	98	148	928	0.423	390	410	0.0	0.7	6.651	A
2	181	45	345	596	0.304	180	193	0.0	0.4	8.614	A
3	538	135	25	957	0.562	533	500	0.0	1.3	8.399	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	469	117	177	910	0.516	468	492	0.7	1.0	8.119	A
2	217	54	413	554	0.391	216	232	0.4	0.6	10.605	B
3	643	161	30	954	0.674	640	600	1.3	2.0	11.349	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	575	144	215	886	0.649	572	599	1.0	1.8	11.342	B
2	265	66	505	499	0.532	263	282	0.6	1.1	15.149	C
3	787	197	36	950	0.829	778	732	2.0	4.3	19.911	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	575	144	218	885	0.650	575	605	1.8	1.8	11.594	B
2	265	66	507	498	0.533	265	285	1.1	1.1	15.470	C
3	787	197	36	950	0.829	786	736	4.3	4.5	21.696	C

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	469	117	181	908	0.517	472	502	1.8	1.1	8.317	A
2	217	54	417	552	0.392	219	236	1.1	0.7	10.846	B
3	643	161	30	954	0.674	652	606	4.5	2.1	12.299	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	393	98	150	927	0.424	394	417	1.1	0.7	6.778	A
2	181	45	348	594	0.306	182	196	0.7	0.4	8.769	A
3	538	135	25	957	0.563	542	506	2.1	1.3	8.737	A

(Default Analysis Set) - Base + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3	15.79	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		15.79	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	458	100.000
2		ONE HOUR	✓	335	100.000
3		ONE HOUR	✓	640	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	30	428
	2	59	0	276
	3	406	234	0

Proportions

		To		
		1	2	3
From	1	0.00	0.07	0.93
	2	0.18	0.00	0.82
	3	0.63	0.37	0.00

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Average PCU Per Veh

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:30-07:45	1	345	345
	2	252	252
	3	482	482
07:45-08:00	1	412	412
	2	301	301
	3	575	575
08:00-08:15	1	504	504
	2	369	369
	3	705	705
08:15-08:30	1	504	504
	2	369	369
	3	705	705
08:30-08:45	1	412	412
	2	301	301
	3	575	575
08:45-09:00	1	345	345
	2	252	252
	3	482	482

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.59	10.11	1.4	B	420	630
2	0.71	23.66	2.3	C	307	461
3	0.76	15.73	3.0	C	587	881

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	345	86	175	912	0.378	342	347	0.0	0.6	6.298	A
2	252	63	320	611	0.413	249	197	0.0	0.7	9.890	A
3	482	120	44	945	0.510	478	525	0.0	1.0	7.638	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	412	103	210	890	0.463	411	416	0.6	0.8	7.499	A
2	301	75	384	572	0.526	300	237	0.7	1.1	13.125	B
3	575	144	53	940	0.612	573	631	1.0	1.5	9.770	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	504	126	256	861	0.586	502	508	0.8	1.4	9.970	A
2	369	92	469	521	0.708	364	289	1.1	2.2	22.342	C
3	705	176	64	933	0.756	699	769	1.5	2.9	15.074	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	504	126	258	860	0.586	504	512	1.4	1.4	10.113	B
2	369	92	471	520	0.710	368	291	2.2	2.3	23.663	C
3	705	176	65	932	0.756	704	775	2.9	3.0	15.735	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	412	103	212	888	0.464	414	422	1.4	0.9	7.625	A
2	301	75	387	571	0.528	306	239	2.3	1.2	13.835	B
3	575	144	54	939	0.613	581	639	3.0	1.6	10.200	B

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	345	86	177	910	0.379	346	352	0.9	0.6	6.390	A
2	252	63	323	609	0.414	254	200	1.2	0.7	10.192	B
3	482	120	45	945	0.510	484	532	1.6	1.1	7.857	A

(Default Analysis Set) - Base + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 83% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3	17.37	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		17.37	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	521	100.000
2		ONE HOUR	✓	247	100.000
3		ONE HOUR	✓	717	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	61	460
	2	33	0	214
	3	512	205	0

Proportions

		To		
		1	2	3
From	1	0.00	0.12	0.88
	2	0.13	0.00	0.87
	3	0.71	0.29	0.00

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Average PCU Per Veh

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:15-16:30	1	392	392
	2	186	186
	3	540	540
16:30-16:45	1	468	468
	2	222	222
	3	645	645
16:45-17:00	1	574	574
	2	272	272
	3	789	789
17:00-17:15	1	574	574
	2	272	272
	3	789	789
17:15-17:30	1	468	468
	2	222	222
	3	645	645
17:30-17:45	1	392	392
	2	186	186
	3	540	540

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.65	11.73	1.8	B	478	717
2	0.55	15.87	1.2	C	227	340
3	0.83	21.97	4.6	C	658	987

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	392	98	153	925	0.424	389	406	0.0	0.7	6.682	A
2	186	46	344	596	0.312	184	198	0.0	0.4	8.696	A
3	540	135	25	957	0.564	535	503	0.0	1.3	8.428	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	468	117	183	906	0.517	467	488	0.7	1.1	8.175	A
2	222	56	412	555	0.400	221	238	0.4	0.7	10.757	B
3	645	161	30	954	0.676	642	604	1.3	2.0	11.411	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	574	143	223	881	0.651	571	593	1.1	1.8	11.470	B
2	272	68	504	500	0.544	270	290	0.7	1.2	15.521	C
3	789	197	36	950	0.831	780	738	2.0	4.4	20.119	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	574	143	225	880	0.652	573	599	1.8	1.8	11.731	B
2	272	68	506	498	0.546	272	293	1.2	1.2	15.873	C
3	789	197	36	950	0.831	788	742	4.4	4.6	21.974	C

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	468	117	187	904	0.518	471	497	1.8	1.1	8.380	A
2	222	56	416	553	0.402	224	242	1.2	0.7	11.014	B
3	645	161	30	954	0.676	654	610	4.6	2.2	12.390	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	392	98	155	924	0.425	394	413	1.1	0.7	6.811	A
2	186	46	348	594	0.313	187	201	0.7	0.5	8.859	A
3	540	135	25	957	0.564	543	509	2.2	1.3	8.773	A

(Default Analysis Set) - Base + CD With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3	16.34	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		16.34	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	466	100.000
2		ONE HOUR	✓	339	100.000
3		ONE HOUR	✓	643	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	30	436
	2	59	0	280
	3	408	235	0

Proportions

		To		
		1	2	3
From	1	0.00	0.06	0.94
	2	0.17	0.00	0.83
	3	0.63	0.37	0.00

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Average PCU Per Veh

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
07:30-07:45	1	351	351
	2	255	255
	3	484	484
07:45-08:00	1	419	419
	2	305	305
	3	578	578
08:00-08:15	1	513	513
	2	373	373
	3	708	708
08:15-08:30	1	513	513
	2	373	373
	3	708	708
08:30-08:45	1	419	419
	2	305	305
	3	578	578
08:45-09:00	1	351	351
	2	255	255
	3	484	484

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.60	10.39	1.5	B	428	641
2	0.73	25.24	2.5	D	311	467
3	0.76	15.96	3.0	C	590	885

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	351	88	175	911	0.385	348	348	0.0	0.6	6.369	A
2	255	64	326	607	0.420	252	198	0.0	0.7	10.085	B
3	484	121	44	945	0.512	480	534	0.0	1.0	7.674	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	419	105	210	889	0.471	418	418	0.6	0.9	7.620	A
2	305	76	391	568	0.537	303	237	0.7	1.1	13.506	B
3	578	145	53	940	0.615	576	641	1.0	1.6	9.839	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	513	128	257	860	0.596	511	510	0.9	1.4	10.229	B
2	373	93	478	516	0.724	368	290	1.1	2.4	23.631	C
3	708	177	64	933	0.759	702	782	1.6	3.0	15.267	C

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	513	128	259	859	0.597	513	514	1.4	1.5	10.390	B
2	373	93	480	514	0.726	373	292	2.4	2.5	25.235	D
3	708	177	65	932	0.760	708	788	3.0	3.0	15.960	C

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	419	105	213	887	0.472	421	424	1.5	0.9	7.755	A
2	305	76	394	566	0.538	310	240	2.5	1.2	14.330	B
3	578	145	54	939	0.616	584	650	3.0	1.6	10.288	B

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	351	88	178	910	0.386	352	353	0.9	0.6	6.466	A
2	255	64	329	605	0.422	257	200	1.2	0.7	10.397	B
3	484	121	45	945	0.512	486	542	1.6	1.1	7.896	A

(Default Analysis Set) - Base + CD With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 1 and 3 have 83% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3	18.23	C

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		18.23	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	523	100.000
2		ONE HOUR	✓	249	100.000
3		ONE HOUR	✓	727	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	**2**	**3**
From	**1**	0	61	462
	2	33	0	216
	3	517	210	0

Proportions

		To		
		1	**2**	**3**
From	**1**	0.00	0.12	0.88
	2	0.13	0.00	0.87
	3	0.71	0.29	0.00

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		1	2	3
From	1	0	0	0
	2	0	0	0
	3	0	0	0

Average PCU Per Veh

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (PCU/hr)	Demand in PCU (PCU/hr)
16:15-16:30	1	394	394
	2	187	187
	3	547	547
16:30-16:45	1	470	470
	2	224	224
	3	654	654
16:45-17:00	1	576	576
	2	274	274
	3	800	800
17:00-17:15	1	576	576
	2	274	274
	3	800	800
17:15-17:30	1	470	470
	2	224	224
	3	654	654
17:30-17:45	1	394	394
	2	187	187
	3	547	547

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.66	11.95	1.9	B	480	720
2	0.55	16.12	1.2	C	228	343
3	0.84	23.46	5.0	C	667	1001

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	394	98	157	923	0.427	391	410	0.0	0.7	6.731	A
2	187	47	345	596	0.315	186	202	0.0	0.5	8.745	A
3	547	137	25	957	0.572	542	506	0.0	1.3	8.572	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	470	118	188	903	0.520	469	492	0.7	1.1	8.259	A
2	224	56	414	554	0.404	223	243	0.5	0.7	10.848	B
3	654	163	30	954	0.685	650	608	1.3	2.1	11.731	B

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	576	144	228	878	0.656	573	598	1.1	1.8	11.666	B
2	274	69	506	499	0.550	272	295	0.7	1.2	15.749	C
3	800	200	36	950	0.843	790	742	2.1	4.7	21.229	C

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	576	144	231	877	0.657	576	605	1.8	1.9	11.949	B
2	274	69	509	497	0.552	274	298	1.2	1.2	16.122	C
3	800	200	36	950	0.843	799	746	4.7	5.0	23.462	C

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	470	118	192	901	0.522	473	502	1.9	1.1	8.477	A
2	224	56	418	552	0.406	226	247	1.2	0.7	11.120	B
3	654	163	30	954	0.685	664	614	5.0	2.3	12.872	B

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	394	98	159	921	0.427	395	417	1.1	0.8	6.860	A
2	187	47	349	593	0.316	188	205	0.7	0.5	8.911	A
3	547	137	25	957	0.572	551	512	2.3	1.4	8.945	A

Junctions 10

ARCADY 10 - Roundabout Module

Version: 10.1.1.1905

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Filename: J2 R6 Booth St-Scobell St_Existing v2.j10
Path: N:\Vectos Job Data\2024\410.065892.00001 Walshaw Northern Parcel\Arcady
Report generation date: 19/12/2024 16:42:05

»2024 Survey (Base), AM
»2024 Survey (Base), PM
»2024 Base With Dev, AM
»2024 Base With Dev, PM
»Base + Com Dev, AM
»Base + Com Dev, PM
»Base + CD With Dev, AM
»Base + CD With Dev, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2024 Survey (Base)									
Arm 1	D1	0.2	5.22	0.18	A	D2	0.2	5.15	0.20	A
Arm 2		0.4	5.19	0.26	A		0.5	6.05	0.34	A
Arm 3		0.0	0.00	0.00	A		0.0	4.68	0.01	A
Arm 4		0.4	5.37	0.31	A		0.3	5.11	0.24	A
	2024 Base With Dev									
Arm 1	D3	0.3	5.59	0.23	A	D4	0.3	5.29	0.22	A
Arm 2		0.4	5.28	0.27	A		0.6	6.42	0.38	A
Arm 3		0.0	0.00	0.00	A		0.0	4.82	0.01	A
Arm 4		0.5	5.44	0.31	A		0.3	5.30	0.25	A
	Base + Com Dev									
Arm 1	D5	0.2	5.25	0.18	A	D6	0.3	5.21	0.20	A
Arm 2		0.4	5.29	0.27	A		0.5	6.14	0.35	A
Arm 3		0.0	0.00	0.00	A		0.0	4.72	0.01	A
Arm 4		0.5	5.40	0.31	A		0.3	5.20	0.26	A
	Base + CD With Dev									
Arm 1	D7	0.3	5.61	0.23	A	D8	0.3	5.35	0.22	A
Arm 2		0.4	5.39	0.29	A		0.6	6.52	0.39	A
Arm 3		0.0	0.00	0.00	A		0.0	4.86	0.01	A
Arm 4		0.5	5.47	0.32	A		0.4	5.41	0.27	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	03/01/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Mini-roundabout model	Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
JUNCTIONS 9	5.75						0.85	36.00	20.00		

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Survey (Base)	AM	ONE HOUR	07:30	09:00	15	✓
D2	2024 Survey (Base)	PM	ONE HOUR	16:15	17:45	15	✓
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15	✓
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15	✓
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15	✓
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15	✓
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15	✓
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2024 Survey (Base), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 2 and 4 have 77% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3, 4	5.27	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		5.27	A

Arms

Arms

Arm	Name	Description
1	Scobell Street	
2	Church Street	
3	Acres Street	
4	Booth Street	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.40	3.40	3.40	0.0	9.11	2.00	0.0	
2	3.30	3.30	3.60	0.1	7.47	2.00	0.0	
3	3.70	3.70	4.00	2.0	7.76	2.00	0.0	
4	3.80	3.80	3.80	0.0	8.93	2.00	0.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.605	981
2	0.603	967
3	0.624	1026
4	0.620	996

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Survey (Base)	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	136	100.000
2		ONE HOUR	✓	222	100.000
3		ONE HOUR	✓	4	100.000
4		ONE HOUR	✓	270	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	**2**	**3**	**4**
From	**1**	0	94	1	41
	2	42	0	1	179
	3	2	1	0	1
	4	56	213	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1	**2**	**3**	**4**
From	**1**	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.18	5.22	0.2	A	125	187
2	0.26	5.19	0.4	A	204	306
3	0.00	0.00	0.0	A	0	0
4	0.31	5.37	0.4	A	248	372

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	102	26	160	884	0.116	102	73	0.0	0.1	4.598	A
2	167	42	32	948	0.176	166	230	0.0	0.2	4.603	A
3	0	0	196	904	0.000	0	2	0.0	0.0	0.000	A
4	203	51	31	977	0.208	202	165	0.0	0.3	4.641	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	122	31	192	865	0.141	122	88	0.1	0.2	4.846	A
2	200	50	39	944	0.211	199	276	0.2	0.3	4.835	A
3	0	0	235	879	0.000	0	3	0.0	0.0	0.000	A
4	243	61	38	973	0.249	242	198	0.3	0.3	4.927	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	150	37	235	839	0.179	150	108	0.2	0.2	5.221	A
2	244	61	47	938	0.260	244	338	0.3	0.3	5.182	A
3	0	0	288	846	0.000	0	3	0.0	0.0	0.000	A
4	297	74	46	968	0.307	297	242	0.3	0.4	5.362	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	150	37	236	839	0.179	150	108	0.2	0.2	5.225	A
2	244	61	47	938	0.260	244	338	0.3	0.4	5.186	A
3	0	0	288	846	0.000	0	3	0.0	0.0	0.000	A
4	297	74	46	968	0.307	297	242	0.4	0.4	5.368	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	122	31	193	865	0.141	122	88	0.2	0.2	4.853	A
2	200	50	39	944	0.211	200	276	0.4	0.3	4.842	A
3	0	0	236	879	0.000	0	3	0.0	0.0	0.000	A
4	243	61	38	973	0.249	243	198	0.4	0.3	4.935	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	102	26	161	884	0.116	103	74	0.2	0.1	4.609	A
2	167	42	32	947	0.176	167	231	0.3	0.2	4.617	A
3	0	0	198	903	0.000	0	2	0.0	0.0	0.000	A
4	203	51	32	977	0.208	204	166	0.3	0.3	4.658	A

2024 Survey (Base), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 2 and 4 have 74% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3, 4	5.52	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		5.52	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2024 Survey (Base)	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	159	100.000
2		ONE HOUR	✓	284	100.000
3		ONE HOUR	✓	9	100.000
4		ONE HOUR	✓	206	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	71	9	79
	2	89	0	2	193
	3	3	3	0	3
	4	48	157	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1	**2**	**3**	**4**
From	**1**	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.20	5.15	0.2	A	146	219
2	0.34	6.05	0.5	A	261	391
3	0.01	4.68	0.0	A	8	12
4	0.24	5.11	0.3	A	189	284

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	120	30	121	908	0.132	119	105	0.0	0.2	4.559	A
2	214	53	67	927	0.231	213	173	0.0	0.3	5.032	A
3	7	2	270	858	0.008	7	9	0.0	0.0	4.230	A
4	155	39	71	952	0.163	154	206	0.0	0.2	4.508	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	143	36	145	894	0.160	143	126	0.2	0.2	4.792	A
2	255	64	80	919	0.278	255	207	0.3	0.4	5.420	A
3	8	2	324	824	0.010	8	11	0.0	0.0	4.412	A
4	185	46	85	944	0.196	185	247	0.2	0.2	4.744	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	175	44	177	874	0.200	175	154	0.2	0.2	5.147	A
2	313	78	98	908	0.344	312	254	0.4	0.5	6.036	A
3	10	2	397	779	0.013	10	13	0.0	0.0	4.682	A
4	227	57	104	932	0.243	227	302	0.2	0.3	5.102	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	175	44	177	874	0.200	175	154	0.2	0.2	5.150	A
2	313	78	98	908	0.344	313	254	0.5	0.5	6.047	A
3	10	2	397	778	0.013	10	13	0.0	0.0	4.685	A
4	227	57	105	932	0.243	227	303	0.3	0.3	5.107	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	143	36	145	893	0.160	143	126	0.2	0.2	4.798	A
2	255	64	80	919	0.278	256	208	0.5	0.4	5.435	A
3	8	2	325	823	0.010	8	11	0.0	0.0	4.417	A
4	185	46	86	943	0.196	185	248	0.3	0.2	4.753	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	120	30	121	908	0.132	120	106	0.2	0.2	4.571	A
2	214	53	67	927	0.231	214	174	0.4	0.3	5.055	A
3	7	2	272	856	0.008	7	9	0.0	0.0	4.238	A
4	155	39	72	952	0.163	155	207	0.2	0.2	4.519	A

2024 Base With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 2 and 4 have 73% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3, 4	5.42	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		5.42	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	177	100.000
2		ONE HOUR	✓	231	100.000
3		ONE HOUR	✓	4	100.000
4		ONE HOUR	✓	272	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	131	1	45
	2	51	0	1	179
	3	2	1	0	1
	4	58	213	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1	**2**	**3**	**4**
From	**1**	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.23	5.59	0.3	A	162	244
2	0.27	5.28	0.4	A	212	318
3	0.00	0.00	0.0	A	0	0
4	0.31	5.44	0.5	A	250	374

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	133	33	160	884	0.151	133	82	0.0	0.2	4.785	A
2	174	43	35	946	0.184	173	258	0.0	0.2	4.654	A
3	0	0	206	898	0.000	0	2	0.0	0.0	0.000	A
4	205	51	38	973	0.211	204	168	0.0	0.3	4.676	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	159	40	192	865	0.184	159	98	0.2	0.2	5.098	A
2	208	52	42	942	0.221	207	309	0.2	0.3	4.903	A
3	0	0	247	872	0.000	0	3	0.0	0.0	0.000	A
4	245	61	46	968	0.253	244	201	0.3	0.3	4.970	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	195	49	235	839	0.232	195	120	0.2	0.3	5.585	A
2	254	64	52	936	0.272	254	378	0.3	0.4	5.277	A
3	0	0	302	838	0.000	0	3	0.0	0.0	0.000	A
4	299	75	56	962	0.311	299	246	0.3	0.4	5.429	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	195	49	236	839	0.232	195	120	0.3	0.3	5.591	A
2	254	64	52	936	0.272	254	379	0.4	0.4	5.282	A
3	0	0	303	837	0.000	0	3	0.0	0.0	0.000	A
4	299	75	56	962	0.311	299	247	0.4	0.5	5.436	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	159	40	193	865	0.184	159	98	0.3	0.2	5.106	A
2	208	52	42	941	0.221	208	310	0.4	0.3	4.912	A
3	0	0	248	872	0.000	0	3	0.0	0.0	0.000	A
4	245	61	46	968	0.253	245	202	0.5	0.3	4.981	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	133	33	161	884	0.151	133	82	0.2	0.2	4.799	A
2	174	43	35	946	0.184	174	259	0.3	0.2	4.669	A
3	0	0	207	897	0.000	0	2	0.0	0.0	0.000	A
4	205	51	38	973	0.211	205	169	0.3	0.3	4.691	A

2024 Base With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 2 and 4 have 73% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3, 4	5.79	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		5.79	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	176	100.000
2		ONE HOUR	✓	314	100.000
3		ONE HOUR	✓	9	100.000
4		ONE HOUR	✓	211	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	86	9	81
	2	119	0	2	193
	3	3	3	0	3
	4	53	157	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.22	5.29	0.3	A	162	242
2	0.38	6.42	0.6	A	288	432
3	0.01	4.82	0.0	A	8	12
4	0.25	5.30	0.3	A	194	290

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	133	33	121	908	0.146	132	131	0.0	0.2	4.633	A
2	236	59	68	926	0.255	235	184	0.0	0.3	5.203	A
3	7	2	294	843	0.008	7	9	0.0	0.0	4.306	A
4	159	40	94	938	0.169	158	207	0.0	0.2	4.608	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	158	40	145	894	0.177	158	157	0.2	0.2	4.892	A
2	282	71	82	918	0.308	282	221	0.3	0.4	5.657	A
3	8	2	353	806	0.010	8	11	0.0	0.0	4.511	A
4	190	47	112	927	0.205	189	249	0.2	0.3	4.881	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	194	48	177	874	0.222	194	192	0.2	0.3	5.286	A
2	346	86	100	907	0.381	345	270	0.4	0.6	6.401	A
3	10	2	432	757	0.013	10	13	0.0	0.0	4.820	A
4	232	58	137	911	0.255	232	304	0.3	0.3	5.297	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	194	48	177	874	0.222	194	193	0.3	0.3	5.292	A
2	346	86	100	907	0.381	346	271	0.6	0.6	6.417	A
3	10	2	433	756	0.013	10	13	0.0	0.0	4.823	A
4	232	58	138	911	0.255	232	305	0.3	0.3	5.303	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	158	40	145	893	0.177	158	158	0.3	0.2	4.901	A
2	282	71	82	918	0.308	283	222	0.6	0.4	5.677	A
3	8	2	354	805	0.010	8	11	0.0	0.0	4.515	A
4	190	47	113	927	0.205	190	250	0.3	0.3	4.889	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	133	33	121	908	0.146	133	132	0.2	0.2	4.647	A
2	236	59	69	926	0.255	237	185	0.4	0.3	5.228	A
3	7	2	296	841	0.008	7	9	0.0	0.0	4.313	A
4	159	40	94	938	0.169	159	209	0.3	0.2	4.622	A

Base + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 2 and 4 have 78% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3, 4	5.33	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		5.33	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	136	100.000
2		ONE HOUR	✓	234	100.000
3		ONE HOUR	✓	4	100.000
4		ONE HOUR	✓	274	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	94	1	41
	2	42	0	1	191
	3	2	1	0	1
	4	56	217	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.18	5.25	0.2	A	125	187
2	0.27	5.29	0.4	A	215	322
3	0.00	0.00	0.0	A	0	0
4	0.31	5.40	0.5	A	251	377

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	102	26	163	882	0.116	102	73	0.0	0.1	4.609	A
2	176	44	32	948	0.186	175	233	0.0	0.2	4.658	A
3	0	0	205	898	0.000	0	2	0.0	0.0	0.000	A
4	206	52	31	977	0.211	205	174	0.0	0.3	4.658	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	122	31	196	863	0.142	122	88	0.1	0.2	4.861	A
2	210	53	39	944	0.223	210	279	0.2	0.3	4.906	A
3	0	0	246	873	0.000	0	3	0.0	0.0	0.000	A
4	246	62	38	973	0.253	246	208	0.3	0.3	4.948	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	150	37	240	836	0.179	150	108	0.2	0.2	5.241	A
2	258	64	47	938	0.275	257	342	0.3	0.4	5.282	A
3	0	0	301	838	0.000	0	3	0.0	0.0	0.000	A
4	302	75	46	968	0.312	301	255	0.3	0.4	5.397	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	150	37	240	836	0.179	150	108	0.2	0.2	5.245	A
2	258	64	47	938	0.275	258	342	0.4	0.4	5.287	A
3	0	0	302	838	0.000	0	3	0.0	0.0	0.000	A
4	302	75	46	968	0.312	302	255	0.4	0.5	5.404	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	122	31	196	862	0.142	122	88	0.2	0.2	4.866	A
2	210	53	39	944	0.223	211	280	0.4	0.3	4.913	A
3	0	0	247	872	0.000	0	3	0.0	0.0	0.000	A
4	246	62	38	973	0.253	247	209	0.5	0.3	4.959	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	102	26	164	882	0.116	103	74	0.2	0.1	4.622	A
2	176	44	32	947	0.186	176	234	0.3	0.2	4.670	A
3	0	0	207	897	0.000	0	2	0.0	0.0	0.000	A
4	206	52	32	977	0.211	207	175	0.3	0.3	4.677	A

Base + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 2 and 4 have 75% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3, 4	5.60	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		5.60	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	159	100.000
2		ONE HOUR	✓	292	100.000
3		ONE HOUR	✓	9	100.000
4		ONE HOUR	✓	218	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	71	9	79
	2	89	0	2	201
	3	3	3	0	3
	4	48	169	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.20	5.21	0.3	A	146	219
2	0.35	6.14	0.5	A	268	402
3	0.01	4.72	0.0	A	8	12
4	0.26	5.20	0.3	A	200	300

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	120	30	130	903	0.133	119	105	0.0	0.2	4.591	A
2	220	55	67	927	0.237	219	182	0.0	0.3	5.075	A
3	7	2	276	854	0.008	7	9	0.0	0.0	4.249	A
4	164	41	71	952	0.172	163	212	0.0	0.2	4.558	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	143	36	155	887	0.161	143	126	0.2	0.2	4.834	A
2	263	66	80	919	0.286	262	218	0.3	0.4	5.480	A
3	8	2	331	820	0.010	8	11	0.0	0.0	4.436	A
4	196	49	85	944	0.208	196	254	0.2	0.3	4.813	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	175	44	190	866	0.202	175	154	0.2	0.3	5.206	A
2	321	80	98	908	0.354	321	267	0.4	0.5	6.125	A
3	10	2	406	773	0.013	10	13	0.0	0.0	4.716	A
4	240	60	104	932	0.258	240	311	0.3	0.3	5.200	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	175	44	190	866	0.202	175	154	0.3	0.3	5.210	A
2	321	80	98	908	0.354	321	268	0.5	0.5	6.138	A
3	10	2	406	773	0.013	10	13	0.0	0.0	4.719	A
4	240	60	105	932	0.258	240	312	0.3	0.3	5.205	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	143	36	156	887	0.161	143	126	0.3	0.2	4.843	A
2	263	66	80	919	0.286	263	219	0.5	0.4	5.495	A
3	8	2	332	819	0.010	8	11	0.0	0.0	4.442	A
4	196	49	86	943	0.208	196	255	0.3	0.3	4.820	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	120	30	130	902	0.133	120	106	0.2	0.2	4.603	A
2	220	55	67	927	0.237	220	183	0.4	0.3	5.100	A
3	7	2	278	853	0.008	7	9	0.0	0.0	4.255	A
4	164	41	72	952	0.172	164	213	0.3	0.2	4.573	A

Base + CD With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 2 and 4 have 74% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3, 4	5.48	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		5.48	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	177	100.000
2		ONE HOUR	✓	243	100.000
3		ONE HOUR	✓	4	100.000
4		ONE HOUR	✓	276	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	131	1	45
	2	51	0	1	191
	3	2	1	0	1
	4	58	217	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1	2	3	4
From	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.23	5.61	0.3	A	162	244
2	0.29	5.39	0.4	A	223	334
3	0.00	0.00	0.0	A	0	0
4	0.32	5.47	0.5	A	253	380

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	133	33	163	882	0.151	133	82	0.0	0.2	4.797	A
2	183	46	35	946	0.193	182	261	0.0	0.2	4.707	A
3	0	0	215	892	0.000	0	2	0.0	0.0	0.000	A
4	208	52	38	973	0.214	207	177	0.0	0.3	4.692	A

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	159	40	196	863	0.184	159	98	0.2	0.2	5.113	A
2	218	55	42	942	0.232	218	312	0.2	0.3	4.976	A
3	0	0	258	865	0.000	0	3	0.0	0.0	0.000	A
4	248	62	46	968	0.256	248	212	0.3	0.3	4.996	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	195	49	240	836	0.233	195	120	0.2	0.3	5.608	A
2	268	67	52	936	0.286	267	383	0.3	0.4	5.379	A
3	0	0	316	829	0.000	0	3	0.0	0.0	0.000	A
4	304	76	56	962	0.316	303	259	0.3	0.5	5.466	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	195	49	240	836	0.233	195	120	0.3	0.3	5.614	A
2	268	67	52	936	0.286	268	383	0.4	0.4	5.386	A
3	0	0	316	829	0.000	0	3	0.0	0.0	0.000	A
4	304	76	56	962	0.316	304	260	0.5	0.5	5.472	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	159	40	196	862	0.185	159	98	0.3	0.2	5.124	A
2	218	55	42	941	0.232	219	313	0.4	0.3	4.985	A
3	0	0	258	865	0.000	0	3	0.0	0.0	0.000	A
4	248	62	46	968	0.256	249	213	0.5	0.3	5.007	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	133	33	164	882	0.151	133	82	0.2	0.2	4.811	A
2	183	46	35	946	0.193	183	262	0.3	0.2	4.724	A
3	0	0	216	891	0.000	0	2	0.0	0.0	0.000	A
4	208	52	38	973	0.214	208	178	0.3	0.3	4.710	A

Base + CD With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Mini-roundabout		Mini-roundabout appears to have unbalanced flows and may behave like a priority junction; treat results with caution. See User Guide for details.[Arms 2 and 4 have 74% of the total flow for the roundabout for one or more time segments]
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	(untitled)	Mini-roundabout		1, 2, 3, 4	5.88	A

Junction Network

Driving side	Lighting	Road surface	In London	Network delay (s)	Network LOS
Left	Normal/unknown	Normal/unknown		5.88	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1		ONE HOUR	✓	176	100.000
2		ONE HOUR	✓	322	100.000
3		ONE HOUR	✓	9	100.000
4		ONE HOUR	✓	223	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		1	2	3	4
From	1	0	86	9	81
	2	119	0	2	201
	3	3	3	0	3
	4	53	169	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To			
		1	**2**	**3**	**4**
From	**1**	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1	0.22	5.35	0.3	A	162	242
2	0.39	6.52	0.6	A	295	443
3	0.01	4.86	0.0	A	8	12
4	0.27	5.41	0.4	A	205	307

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	133	33	130	903	0.147	132	131	0.0	0.2	4.665	A
2	242	61	68	926	0.262	241	193	0.0	0.4	5.245	A
3	7	2	300	839	0.008	7	9	0.0	0.0	4.325	A
4	168	42	94	938	0.179	167	213	0.0	0.2	4.662	A

16:30 - 16:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	158	40	155	887	0.178	158	157	0.2	0.2	4.935	A
2	289	72	82	918	0.315	289	232	0.4	0.5	5.722	A
3	8	2	360	802	0.010	8	11	0.0	0.0	4.536	A
4	200	50	112	927	0.216	200	256	0.2	0.3	4.953	A

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	194	48	190	866	0.224	193	192	0.2	0.3	5.349	A
2	355	89	100	907	0.391	354	284	0.5	0.6	6.503	A
3	10	2	441	751	0.013	10	13	0.0	0.0	4.855	A
4	246	61	137	911	0.269	245	313	0.3	0.4	5.403	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	194	48	190	866	0.224	194	193	0.3	0.3	5.355	A
2	355	89	100	907	0.391	355	284	0.6	0.6	6.520	A
3	10	2	441	751	0.013	10	13	0.0	0.0	4.859	A
4	246	61	138	911	0.270	246	314	0.4	0.4	5.408	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	158	40	156	887	0.178	158	158	0.3	0.2	4.945	A
2	289	72	82	918	0.315	290	232	0.6	0.5	5.745	A
3	8	2	361	801	0.010	8	11	0.0	0.0	4.543	A
4	200	50	113	927	0.216	201	257	0.4	0.3	4.962	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1	133	33	130	902	0.147	133	132	0.2	0.2	4.680	A
2	242	61	69	926	0.262	243	195	0.5	0.4	5.275	A
3	7	2	302	838	0.008	7	9	0.0	0.0	4.334	A
4	168	42	94	938	0.179	168	215	0.3	0.2	4.677	A

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.1.1.1905
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Filename: J3 R8 Bury Rd- Scobell St_Existing v2.j10
Path: N:\Vectos Job Data\2024\410.065892.00001 Walshaw Northern Parcel\Picady
Report generation date: 19/12/2024 16:35:31

»(Default Analysis Set) - 2024 Survey, AM
»(Default Analysis Set) - 2024 Survey, PM
»(Default Analysis Set) - 2024 With Dev, AM
»(Default Analysis Set) - 2024 With Dev, PM
»(Default Analysis Set) - Base + Com Dev, AM
»(Default Analysis Set) - Base + Com Dev, PM
»(Default Analysis Set) - Base + CD With Dev, AM
»(Default Analysis Set) - Base + CD With Dev, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2024 Survey									
Stream B-AC	D1	0.6	15.54	0.37	C	D2	0.6	19.17	0.39	C
Stream C-AB		0.1	4.56	0.04	A		0.1	4.75	0.05	A
	A1 - 2024 With Dev									
Stream B-AC	D3	0.8	18.12	0.46	C	D4	0.8	21.68	0.45	C
Stream C-AB		0.1	4.58	0.04	A		0.1	4.82	0.07	A
	A1 - Base + Com Dev									
Stream B-AC	D5	0.6	15.59	0.37	C	D6	0.6	19.20	0.39	C
Stream C-AB		0.1	4.56	0.04	A		0.1	4.75	0.05	A
	A1 - Base + CD With Dev									
Stream B-AC	D7	0.8	18.19	0.46	C	D8	0.8	21.72	0.45	C
Stream C-AB		0.1	4.58	0.04	A		0.1	4.82	0.07	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	19/12/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
5.75						0.85	36.00	20.00		

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Survey	AM	ONE HOUR	07:30	09:00	15	✓
D2	2024 Survey	PM	ONE HOUR	16:15	17:45	15	✓
D3	2024 With Dev	AM	ONE HOUR	07:30	09:00	15	✓
D4	2024 With Dev	PM	ONE HOUR	16:15	17:45	15	✓
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15	✓
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15	✓
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15	✓
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	(Default Analysis Set)	✓	100.000	100.000

(Default Analysis Set) - 2024 Survey, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		1.83	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.83	A

Arms

Arms

Arm	Name	Description	Arm type
A	Bury Road (South)		Major
B	Scobell Street		Minor
C	Bury Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.75			110.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.89	19	39

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	548	0.096	0.244	0.153	0.348
B-C	706	0.105	0.265	-	-
C-B	638	0.239	0.239	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Survey	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	480	100.000
B		ONE HOUR	✓	122	100.000
C		ONE HOUR	✓	500	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	83	397
	B	105	0	17
	C	488	12	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.37	15.54	0.6	C	112	168
C-AB	0.04	4.56	0.1	A	24	36
C-A					435	652
A-B					76	114
A-C					364	546

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	23	430	0.214	91	0.0	0.3	10.592	B
C-AB	17	4	806	0.021	16	0.0	0.0	4.559	A
C-A	360	90			360				
A-B	62	16			62				
A-C	299	75			299				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	110	27	403	0.272	109	0.3	0.4	12.241	B
C-AB	23	6	843	0.027	23	0.0	0.0	4.387	A
C-A	427	107			427				
A-B	75	19			75				
A-C	357	89			357				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	134	34	366	0.367	134	0.4	0.6	15.441	C
C-AB	33	8	896	0.037	33	0.0	0.1	4.171	A
C-A	517	129			517				
A-B	91	23			91				
A-C	437	109			437				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	134	34	366	0.367	134	0.6	0.6	15.542	C
C-AB	33	8	896	0.037	33	0.1	0.1	4.173	A
C-A	517	129			517				
A-B	91	23			91				
A-C	437	109			437				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	110	27	403	0.272	110	0.6	0.4	12.342	B
C-AB	23	6	843	0.027	23	0.1	0.0	4.390	A
C-A	427	107			427				
A-B	75	19			75				
A-C	357	89			357				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	23	430	0.214	92	0.4	0.3	10.687	B
C-AB	17	4	806	0.021	17	0.0	0.0	4.559	A
C-A	360	90			360				
A-B	62	16			62				
A-C	299	75			299				

(Default Analysis Set) - 2024 Survey, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		1.64	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.64	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2024 Survey	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	734	100.000
B		ONE HOUR	✓	108	100.000
C		ONE HOUR	✓	523	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	159	575
	B	91	0	17
	C	508	15	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.39	19.17	0.6	C	99	149
C-AB	0.05	4.75	0.1	A	33	50
C-A					447	670
A-B					146	219
A-C					528	791

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	81	20	390	0.208	80	0.0	0.3	11.573	B
C-AB	22	6	781	0.028	22	0.0	0.0	4.745	A
C-A	372	93			372				
A-B	120	30			120				
A-C	433	108			433				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	97	24	355	0.273	97	0.3	0.4	13.892	B
C-AB	31	8	815	0.038	31	0.0	0.1	4.590	A
C-A	439	110			439				
A-B	143	36			143				
A-C	517	129			517				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	119	30	307	0.388	118	0.4	0.6	18.980	C
C-AB	47	12	866	0.054	47	0.1	0.1	4.395	A
C-A	529	132			529				
A-B	175	44			175				
A-C	633	158			633				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	119	30	307	0.388	119	0.6	0.6	19.168	C
C-AB	47	12	866	0.054	47	0.1	0.1	4.398	A
C-A	529	132			529				
A-B	175	44			175				
A-C	633	158			633				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	97	24	355	0.273	98	0.6	0.4	14.046	B
C-AB	31	8	815	0.038	31	0.1	0.1	4.594	A
C-A	439	110			439				
A-B	143	36			143				
A-C	517	129			517				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	81	20	390	0.208	82	0.4	0.3	11.685	B
C-AB	22	6	781	0.028	22	0.1	0.0	4.748	A
C-A	372	93			372				
A-B	120	30			120				
A-C	433	108			433				

(Default Analysis Set) - 2024 With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		2.56	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.56	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2024 With Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	487	100.000
B		ONE HOUR	✓	154	100.000
C		ONE HOUR	✓	502	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	90	397
	B	129	0	25
	C	488	14	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.46	18.12	0.8	C	141	212
C-AB	0.04	4.58	0.1	A	28	42
C-A					432	649
A-B					83	124
A-C					364	546

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	116	29	432	0.268	114	0.0	0.4	11.283	B
C-AB	19	5	805	0.024	19	0.0	0.0	4.581	A
C-A	359	90			359				
A-B	68	17			68				
A-C	299	75			299				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	138	35	405	0.342	138	0.4	0.5	13.427	B
C-AB	26	7	842	0.031	26	0.0	0.0	4.414	A
C-A	425	106			425				
A-B	81	20			81				
A-C	357	89			357				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	170	42	368	0.461	168	0.5	0.8	17.908	C
C-AB	39	10	895	0.043	39	0.0	0.1	4.204	A
C-A	514	129			514				
A-B	99	25			99				
A-C	437	109			437				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	170	42	368	0.461	170	0.8	0.8	18.122	C
C-AB	39	10	895	0.043	39	0.1	0.1	4.207	A
C-A	514	128			514				
A-B	99	25			99				
A-C	437	109			437				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	138	35	405	0.342	140	0.8	0.5	13.614	B
C-AB	26	7	842	0.031	26	0.1	0.0	4.415	A
C-A	425	106			425				
A-B	81	20			81				
A-C	357	89			357				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	116	29	432	0.268	117	0.5	0.4	11.432	B
C-AB	19	5	805	0.024	19	0.0	0.0	4.583	A
C-A	358	90			358				
A-B	68	17			68				
A-C	299	75			299				

(Default Analysis Set) - 2024 With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		2.06	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.06	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2024 With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	761	100.000
B		ONE HOUR	✓	123	100.000
C		ONE HOUR	✓	528	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	186	575
	B	104	0	19
	C	508	20	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.45	21.68	0.8	C	113	169
C-AB	0.07	4.82	0.1	A	45	67
C-A					440	660
A-B					171	256
A-C					528	791

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	93	23	387	0.240	91	0.0	0.3	12.141	B
C-AB	30	7	777	0.038	29	0.0	0.1	4.816	A
C-A	368	92			368				
A-B	140	35			140				
A-C	433	108			433				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	111	28	351	0.315	110	0.3	0.4	14.904	B
C-AB	41	10	811	0.051	41	0.1	0.1	4.679	A
C-A	433	108			433				
A-B	167	42			167				
A-C	517	129			517				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	135	34	301	0.449	134	0.4	0.8	21.356	C
C-AB	63	16	861	0.073	63	0.1	0.1	4.511	A
C-A	518	130			518				
A-B	205	51			205				
A-C	633	158			633				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	135	34	301	0.450	135	0.8	0.8	21.679	C
C-AB	63	16	861	0.073	63	0.1	0.1	4.514	A
C-A	518	130			518				
A-B	205	51			205				
A-C	633	158			633				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	111	28	351	0.315	112	0.8	0.5	15.141	C
C-AB	41	10	811	0.051	42	0.1	0.1	4.684	A
C-A	433	108			433				
A-B	167	42			167				
A-C	517	129			517				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	93	23	387	0.240	93	0.5	0.3	12.296	B
C-AB	30	7	777	0.038	30	0.1	0.1	4.821	A
C-A	368	92			368				
A-B	140	35			140				
A-C	433	108			433				

(Default Analysis Set) - Base + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		1.83	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.83	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	482	100.000
B		ONE HOUR	✓	122	100.000
C		ONE HOUR	✓	501	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	83	399
	B	105	0	17
	C	489	12	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.37	15.59	0.6	C	112	168
C-AB	0.04	4.56	0.1	A	24	36
C-A					436	653
A-B					76	114
A-C					366	549

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	23	429	0.214	91	0.0	0.3	10.608	B
C-AB	17	4	806	0.021	17	0.0	0.0	4.557	A
C-A	361	90			361				
A-B	62	16			62				
A-C	300	75			300				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	110	27	402	0.273	109	0.3	0.4	12.265	B
C-AB	23	6	843	0.027	23	0.0	0.0	4.386	A
C-A	428	107			428				
A-B	75	19			75				
A-C	359	90			359				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	134	34	365	0.368	134	0.4	0.6	15.488	C
C-AB	33	8	896	0.037	33	0.0	0.1	4.169	A
C-A	518	130			518				
A-B	91	23			91				
A-C	439	110			439				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	134	34	365	0.368	134	0.6	0.6	15.591	C
C-AB	33	8	897	0.037	33	0.1	0.1	4.171	A
C-A	518	130			518				
A-B	91	23			91				
A-C	439	110			439				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	110	27	402	0.273	110	0.6	0.4	12.367	B
C-AB	23	6	843	0.027	23	0.1	0.0	4.387	A
C-A	428	107			428				
A-B	75	19			75				
A-C	359	90			359				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	92	23	429	0.214	92	0.4	0.3	10.702	B
C-AB	17	4	806	0.021	17	0.0	0.0	4.558	A
C-A	361	90			361				
A-B	62	16			62				
A-C	300	75			300				

(Default Analysis Set) - Base + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		1.64	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.64	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	735	100.000
B		ONE HOUR	✓	108	100.000
C		ONE HOUR	✓	523	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	159	576
	B	91	0	17
	C	508	15	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.39	19.20	0.6	C	99	149
C-AB	0.05	4.75	0.1	A	33	50
C-A					447	670
A-B					146	219
A-C					529	793

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	81	20	390	0.208	80	0.0	0.3	11.580	B
C-AB	22	6	780	0.028	22	0.0	0.0	4.746	A
C-A	372	93			372				
A-B	120	30			120				
A-C	434	108			434				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	97	24	355	0.273	97	0.3	0.4	13.904	B
C-AB	31	8	815	0.038	31	0.0	0.1	4.591	A
C-A	439	110			439				
A-B	143	36			143				
A-C	518	129			518				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	119	30	306	0.388	118	0.4	0.6	19.008	C
C-AB	47	12	866	0.054	47	0.1	0.1	4.396	A
C-A	529	132			529				
A-B	175	44			175				
A-C	634	159			634				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	119	30	306	0.388	119	0.6	0.6	19.196	C
C-AB	47	12	866	0.054	47	0.1	0.1	4.399	A
C-A	529	132			529				
A-B	175	44			175				
A-C	634	159			634				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	97	24	355	0.273	98	0.6	0.4	14.059	B
C-AB	31	8	815	0.038	31	0.1	0.1	4.595	A
C-A	439	110			439				
A-B	143	36			143				
A-C	518	129			518				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	81	20	390	0.208	82	0.4	0.3	11.693	B
C-AB	22	6	781	0.028	22	0.1	0.0	4.748	A
C-A	372	93			372				
A-B	120	30			120				
A-C	434	108			434				

(Default Analysis Set) - Base + CD With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		2.57	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.57	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	489	100.000
B		ONE HOUR	✓	154	100.000
C		ONE HOUR	✓	503	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	90	399
	B	129	0	25
	C	489	14	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.46	18.19	0.8	C	141	212
C-AB	0.04	4.58	0.1	A	28	42
C-A					433	650
A-B					83	124
A-C					366	549

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	116	29	432	0.269	114	0.0	0.4	11.300	B
C-AB	19	5	805	0.024	19	0.0	0.0	4.579	A
C-A	359	90			359				
A-B	68	17			68				
A-C	300	75			300				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	138	35	405	0.342	138	0.4	0.5	13.456	B
C-AB	26	7	842	0.031	26	0.0	0.0	4.412	A
C-A	426	106			426				
A-B	81	20			81				
A-C	359	90			359				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	170	42	367	0.462	168	0.5	0.8	17.971	C
C-AB	39	10	895	0.043	39	0.0	0.1	4.203	A
C-A	515	129			515				
A-B	99	25			99				
A-C	439	110			439				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	170	42	367	0.462	170	0.8	0.8	18.188	C
C-AB	39	10	895	0.043	39	0.1	0.1	4.205	A
C-A	515	129			515				
A-B	99	25			99				
A-C	439	110			439				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	138	35	405	0.342	140	0.8	0.5	13.645	B
C-AB	26	7	842	0.031	27	0.1	0.0	4.415	A
C-A	426	106			426				
A-B	81	20			81				
A-C	359	90			359				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	116	29	432	0.269	117	0.5	0.4	11.450	B
C-AB	19	5	805	0.024	20	0.0	0.0	4.580	A
C-A	359	90			359				
A-B	68	17			68				
A-C	300	75			300				

(Default Analysis Set) - Base + CD With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		2.06	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.06	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	762	100.000
B		ONE HOUR	✓	123	100.000
C		ONE HOUR	✓	528	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	186	576
	B	104	0	19
	C	508	20	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.45	21.72	0.8	C	113	169
C-AB	0.07	4.82	0.1	A	45	67
C-A					440	660
A-B					171	256
A-C					529	793

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	93	23	386	0.240	91	0.0	0.3	12.148	B
C-AB	30	7	777	0.038	29	0.0	0.1	4.817	A
C-A	368	92			368				
A-B	140	35			140				
A-C	434	108			434				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	111	28	351	0.315	110	0.3	0.5	14.918	B
C-AB	41	10	810	0.051	41	0.1	0.1	4.680	A
C-A	433	108			433				
A-B	167	42			167				
A-C	518	129			518				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	135	34	301	0.450	134	0.5	0.8	21.392	C
C-AB	63	16	861	0.073	63	0.1	0.1	4.513	A
C-A	518	130			518				
A-B	205	51			205				
A-C	634	159			634				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	135	34	301	0.450	135	0.8	0.8	21.716	C
C-AB	63	16	861	0.073	63	0.1	0.1	4.516	A
C-A	518	130			518				
A-B	205	51			205				
A-C	634	159			634				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	111	28	351	0.315	112	0.8	0.5	15.156	C
C-AB	41	10	811	0.051	42	0.1	0.1	4.683	A
C-A	433	108			433				
A-B	167	42			167				
A-C	518	129			518				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	93	23	386	0.240	93	0.5	0.3	12.306	B
C-AB	30	7	777	0.038	30	0.1	0.1	4.820	A
C-A	368	92			368				
A-B	140	35			140				
A-C	434	108			434				

Junctions 10

PICADY 10 - Priority Intersection Module

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Filename: J4 Tottington Rd - Fenton St Existing v2.j10
Path: N:\Vectos Job Data\2024\410.065892.00001 Walshaw Northern Parcel\Picady
Report generation date: 22/08/2024 13:00:13

- »2024 Survey (Base), AM
- »2024 Survey (Base), PM
- »2024 Base With Dev, AM
- »2024 Base With Dev, PM
- »Base + Com Dev, AM
- »Base + Com Dev, PM
- »Base + CD With Dev, AM
- »Base + CD With Dev, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2024 Survey (Base)									
Stream B-ACD	D1	0.3	10.18	0.22	B	D2	0.8	15.76	0.44	C
Stream A-BCD		0.0	0.00	0.00	A		0.0	4.00	0.01	A
Stream D-ABC		0.0	9.33	0.02	A		0.0	12.17	0.03	B
Stream C-ABD		0.6	4.37	0.21	A		0.6	4.76	0.19	A
	2024 Base With Dev									
Stream B-ACD	D3	0.3	10.30	0.22	B	D4	0.8	16.36	0.45	C
Stream A-BCD		0.0	0.00	0.00	A		0.0	3.94	0.01	A
Stream D-ABC		0.0	9.50	0.02	A		0.0	12.50	0.03	B
Stream C-ABD		0.7	4.33	0.22	A		0.6	4.75	0.20	A
	Base + Com Dev									
Stream B-ACD	D5	0.3	10.20	0.22	B	D6	0.8	15.78	0.44	C
Stream A-BCD		0.0	0.00	0.00	A		0.0	3.99	0.01	A
Stream D-ABC		0.0	9.34	0.02	A		0.0	12.18	0.03	B
Stream C-ABD		0.6	4.37	0.21	A		0.6	4.76	0.19	A
	Base + CD With Dev									
Stream B-ACD	D7	0.3	10.32	0.22	B	D8	0.8	16.38	0.45	C
Stream A-BCD		0.0	0.00	0.00	A		0.0	3.94	0.01	A
Stream D-ABC		0.0	9.52	0.02	A		0.0	12.51	0.03	B
Stream C-ABD		0.7	4.33	0.22	A		0.6	4.75	0.20	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	22/08/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	SLR\john.lancaster
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Survey (Base)	AM	ONE HOUR	07:30	09:00	15
D2	2024 Survey (Base)	PM	ONE HOUR	16:15	17:45	15
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 Survey (Base), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Tottington Rd / Fenton St	Crossroads	Two-way	Two-way	Two-way	Two-way		1.41	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.41	A

Arms

Arms

Arm	Name	Description	Arm type
A	Tottington Rd (East)		Major
B	Fenton Street		Minor
C	Totrington Rd (West)		Major
D	Rowans Street		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	8.00			150.0	✓	0.00
C	8.00			150.0	✓	0.00

Major Arm Geometry Notes

Arm	Notes
A	Narrow RT storage but not full lane so excluded from model.
C	Narrow RT storage but not full lane so excluded from model.

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.30	20	18
D	One lane	3.50	28	25

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.234	0.334	0.234	-	-	-
B-A	508	0.084	0.213	0.213	-	-	-	0.134	0.305	-	0.213	0.213	0.107
B-C	654	0.092	0.231	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	508	0.084	0.213	0.213	-	-	-	0.134	0.305	0.134	-	-	-
B-D, offside lane	508	0.084	0.213	0.213	-	-	-	0.134	0.305	0.134	-	-	-
C-B	661	0.234	0.234	0.334	-	-	-	-	-	-	-	-	-
D-A	672	-	-	-	-	-	-	0.238	-	0.094	-	-	-
D-B, nearside lane	524	0.139	0.139	0.315	-	-	-	0.220	0.220	0.087	-	-	-
D-B, offside lane	524	0.139	0.139	0.315	-	-	-	0.220	0.220	0.087	-	-	-
D-C	524	-	0.139	0.315	0.110	0.220	0.220	0.220	0.220	0.087	-	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Survey (Base)	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	395	100.000
B		✓	90	100.000
C		✓	732	100.000
D		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	8	387	0
	B	23	0	67	0
	C	668	63	0	1
	D	4	1	1	0

Vehicle Mix

Heavy Vehicle %

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.22	10.18	0.3	B
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.02	9.33	0.0	A
C-ABD	0.21	4.37	0.6	A
C-D				
C-A				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	68	506	0.134	67	0.2	8.185	A
A-BCD	0	527	0.000	0	0.0	0.000	A
A-B	6			6			
A-C	291			291			
D-ABC	5	466	0.010	4	0.0	7.799	A
C-ABD	104	930	0.111	103	0.2	4.352	A
C-D	0.67			0.67			
C-A	447			447			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	81	484	0.167	81	0.2	8.915	A
A-BCD	0	501	0.000	0	0.0	0.000	A
A-B	7			7			
A-C	348			348			
D-ABC	5	436	0.012	5	0.0	8.365	A
C-ABD	146	987	0.148	145	0.4	4.285	A
C-D	0.77			0.77			
C-A	511			511			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	99	453	0.219	99	0.3	10.163	B
A-BCD	0	465	0.000	0	0.0	0.000	A
A-B	9			9			
A-C	426			426			
D-ABC	7	393	0.017	7	0.0	9.325	A
C-ABD	225	1068	0.211	225	0.6	4.280	A
C-D	0.87			0.87			
C-A	580			580			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	99	453	0.219	99	0.3	10.183	B
A-BCD	0	465	0.000	0	0.0	0.000	A
A-B	9			9			
A-C	426			426			
D-ABC	7	392	0.017	7	0.0	9.331	A
C-ABD	226	1068	0.212	226	0.6	4.288	A
C-D	0.87			0.87			
C-A	579			579			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	81	484	0.167	81	0.2	8.939	A
A-BCD	0	501	0.000	0	0.0	0.000	A
A-B	7			7			
A-C	348			348			
D-ABC	5	435	0.012	5	0.0	8.373	A
C-ABD	146	987	0.148	147	0.4	4.300	A
C-D	0.76			0.76			
C-A	511			511			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	68	506	0.134	68	0.2	8.219	A
A-BCD	0	527	0.000	0	0.0	0.000	A
A-B	6			6			
A-C	291			291			
D-ABC	5	466	0.010	5	0.0	7.807	A
C-ABD	104	930	0.112	105	0.3	4.371	A
C-D	0.67			0.67			
C-A	446			446			

2024 Survey (Base), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Tottington Rd / Fenton St	Crossroads	Two-way	Two-way	Two-way	Two-way		2.25	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.25	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2024 Survey (Base)	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	689	100.000
B		✓	163	100.000
C		✓	627	100.000
D		✓	7	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	**B**	**C**	**D**
From	**A**	0	11	675	3
	B	29	0	133	1
	C	572	54	0	1
	D	3	0	4	0

Vehicle Mix

Heavy Vehicle %

		To			
		A	**B**	**C**	**D**
From	**A**	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.44	15.76	0.8	C
A-BCD	0.01	4.00	0.0	A
A-B				
A-C				
D-ABC	0.03	12.17	0.0	B
C-ABD	0.19	4.76	0.6	A
C-D				
C-A				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	123	480	0.256	121	0.3	10.010	B
A-BCD	5	906	0.006	5	0.0	3.995	A
A-B	8			8			
A-C	505			505			
D-ABC	5	398	0.013	5	0.0	9.171	A
C-ABD	83	841	0.099	83	0.2	4.744	A
C-D	0.68			0.68			
C-A	388			388			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	147	450	0.325	146	0.5	11.812	B
A-BCD	8	961	0.008	8	0.0	3.774	A
A-B	10			10			
A-C	602			602			
D-ABC	6	359	0.018	6	0.0	10.201	B
C-ABD	117	884	0.132	117	0.3	4.700	A
C-D	0.78			0.78			
C-A	446			446			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	179	408	0.440	178	0.8	15.604	C
A-BCD	12	1042	0.012	12	0.0	3.496	A
A-B	12			12			
A-C	735			735			
D-ABC	8	304	0.025	8	0.0	12.153	B
C-ABD	180	945	0.191	179	0.6	4.709	A
C-D	0.89			0.89			
C-A	509			509			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	179	408	0.440	179	0.8	15.760	C
A-BCD	12	1041	0.012	12	0.0	3.496	A
A-B	12			12			
A-C	735			735			
D-ABC	8	303	0.025	8	0.0	12.174	B
C-ABD	181	946	0.191	181	0.6	4.721	A
C-D	0.89			0.89			
C-A	509			509			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	147	450	0.326	148	0.5	11.949	B
A-BCD	8	961	0.008	8	0.0	3.775	A
A-B	10			10			
A-C	602			602			
D-ABC	6	359	0.018	6	0.0	10.223	B
C-ABD	118	884	0.133	118	0.3	4.714	A
C-D	0.78			0.78			
C-A	445			445			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	123	479	0.256	123	0.3	10.124	B
A-BCD	5	906	0.006	5	0.0	3.997	A
A-B	8			8			
A-C	505			505			
D-ABC	5	397	0.013	5	0.0	9.191	A
C-ABD	84	842	0.100	85	0.2	4.762	A
C-D	0.68			0.68			
C-A	387			387			

2024 Base With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Tottington Rd / Fenton St	Crossroads	Two-way	Two-way	Two-way	Two-way		1.40	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.40	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	402	100.000
B		✓	90	100.000
C		✓	755	100.000
D		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	8	394	0
	B	23	0	67	0
	C	691	63	0	1
	D	4	1	1	0

Vehicle Mix

Heavy Vehicle %

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.22	10.30	0.3	B
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.02	9.50	0.0	A
C-ABD	0.22	4.33	0.7	A
C-D				
C-A				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	68	504	0.134	67	0.2	8.231	A
A-BCD	0	523	0.000	0	0.0	0.000	A
A-B	6			6			
A-C	297			297			
D-ABC	5	461	0.010	4	0.0	7.877	A
C-ABD	106	940	0.113	105	0.3	4.311	A
C-D	0.67			0.67			
C-A	461			461			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	81	481	0.168	81	0.2	8.982	A
A-BCD	0	496	0.000	0	0.0	0.000	A
A-B	7			7			
A-C	354			354			
D-ABC	5	430	0.013	5	0.0	8.475	A
C-ABD	151	1000	0.151	150	0.4	4.243	A
C-D	0.76			0.76			
C-A	527			527			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	99	449	0.221	99	0.3	10.278	B
A-BCD	0	459	0.000	0	0.0	0.000	A
A-B	9			9			
A-C	434			434			
D-ABC	7	386	0.017	7	0.0	9.497	A
C-ABD	235	1084	0.217	234	0.6	4.247	A
C-D	0.86			0.86			
C-A	595			595			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	99	449	0.221	99	0.3	10.299	B
A-BCD	0	459	0.000	0	0.0	0.000	A
A-B	9			9			
A-C	434			434			
D-ABC	7	385	0.017	7	0.0	9.504	A
C-ABD	236	1085	0.217	236	0.7	4.257	A
C-D	0.86			0.86			
C-A	595			595			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	81	481	0.168	81	0.2	9.006	A
A-BCD	0	496	0.000	0	0.0	0.000	A
A-B	7			7			
A-C	354			354			
D-ABC	5	430	0.013	5	0.0	8.483	A
C-ABD	151	1001	0.151	152	0.4	4.260	A
C-D	0.76			0.76			
C-A	526			526			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	68	504	0.135	68	0.2	8.264	A
A-BCD	0	523	0.000	0	0.0	0.000	A
A-B	6			6			
A-C	297			297			
D-ABC	5	461	0.010	5	0.0	7.884	A
C-ABD	107	941	0.114	108	0.3	4.328	A
C-D	0.67			0.67			
C-A	461			461			

2024 Base With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Tottington Rd / Fenton St	Crossroads	Two-way	Two-way	Two-way	Two-way		2.27	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.27	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	716	100.000
B		✓	163	100.000
C		✓	640	100.000
D		✓	7	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	11	702	3
	B	29	0	133	1
	C	585	54	0	1
	D	3	0	4	0

Vehicle Mix

Heavy Vehicle %

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.45	16.36	0.8	C
A-BCD	0.01	3.94	0.0	A
A-B				
A-C				
D-ABC	0.03	12.50	0.0	B
C-ABD	0.20	4.75	0.6	A
C-D				
C-A				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	123	474	0.259	121	0.3	10.161	B
A-BCD	5	919	0.006	5	0.0	3.941	A
A-B	8			8			
A-C	525			525			
D-ABC	5	393	0.013	5	0.0	9.284	A
C-ABD	85	845	0.101	84	0.2	4.734	A
C-D	0.68			0.68			
C-A	396			396			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	147	444	0.330	146	0.5	12.068	B
A-BCD	8	977	0.008	8	0.0	3.715	A
A-B	10			10			
A-C	626			626			
D-ABC	6	353	0.018	6	0.0	10.375	B
C-ABD	120	888	0.135	120	0.3	4.692	A
C-D	0.78			0.78			
C-A	455			455			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	179	399	0.449	178	0.8	16.180	C
A-BCD	13	1061	0.012	13	0.0	3.432	A
A-B	12			12			
A-C	764			764			
D-ABC	8	296	0.026	8	0.0	12.478	B
C-ABD	186	951	0.196	185	0.6	4.709	A
C-D	0.88			0.88			
C-A	518			518			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	179	399	0.449	179	0.8	16.357	C
A-BCD	13	1061	0.012	13	0.0	3.435	A
A-B	12			12			
A-C	764			764			
D-ABC	8	296	0.026	8	0.0	12.502	B
C-ABD	187	952	0.196	187	0.6	4.721	A
C-D	0.88			0.88			
C-A	517			517			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	147	444	0.330	148	0.5	12.216	B
A-BCD	8	976	0.008	8	0.0	3.716	A
A-B	10			10			
A-C	626			626			
D-ABC	6	353	0.018	6	0.0	10.397	B
C-ABD	121	889	0.136	122	0.4	4.707	A
C-D	0.78			0.78			
C-A	454			454			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	123	474	0.259	123	0.4	10.277	B
A-BCD	5	918	0.006	5	0.0	3.944	A
A-B	8			8			
A-C	525			525			
D-ABC	5	392	0.013	5	0.0	9.303	A
C-ABD	86	845	0.101	86	0.2	4.752	A
C-D	0.68			0.68			
C-A	395			395			

Base + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Tottington Rd / Fenton St	Crossroads	Two-way	Two-way	Two-way	Two-way		1.41	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.41	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	397	100.000
B		✓	90	100.000
C		✓	733	100.000
D		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	8	389	0
	B	23	0	67	0
	C	669	63	0	1
	D	4	1	1	0

Vehicle Mix

Heavy Vehicle %

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.22	10.20	0.3	B
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.02	9.34	0.0	A
C-ABD	0.21	4.37	0.6	A
C-D				
C-A				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	68	506	0.134	67	0.2	8.194	A
A-BCD	0	527	0.000	0	0.0	0.000	A
A-B	6			6			
A-C	293			293			
D-ABC	5	466	0.010	4	0.0	7.804	A
C-ABD	104	930	0.112	103	0.2	4.352	A
C-D	0.67			0.67			
C-A	447			447			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	81	484	0.167	81	0.2	8.926	A
A-BCD	0	501	0.000	0	0.0	0.000	A
A-B	7			7			
A-C	350			350			
D-ABC	5	435	0.012	5	0.0	8.373	A
C-ABD	146	987	0.148	146	0.4	4.286	A
C-D	0.77			0.77			
C-A	512			512			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	99	452	0.219	99	0.3	10.181	B
A-BCD	0	465	0.000	0	0.0	0.000	A
A-B	9			9			
A-C	428			428			
D-ABC	7	392	0.017	7	0.0	9.336	A
C-ABD	226	1068	0.212	225	0.6	4.281	A
C-D	0.87			0.87			
C-A	580			580			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	99	452	0.219	99	0.3	10.201	B
A-BCD	0	465	0.000	0	0.0	0.000	A
A-B	9			9			
A-C	428			428			
D-ABC	7	392	0.017	7	0.0	9.342	A
C-ABD	227	1069	0.212	226	0.6	4.290	A
C-D	0.87			0.87			
C-A	580			580			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	81	484	0.167	81	0.2	8.952	A
A-BCD	0	500	0.000	0	0.0	0.000	A
A-B	7			7			
A-C	350			350			
D-ABC	5	435	0.012	5	0.0	8.380	A
C-ABD	147	988	0.149	148	0.4	4.300	A
C-D	0.76			0.76			
C-A	511			511			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	68	506	0.134	68	0.2	8.226	A
A-BCD	0	527	0.000	0	0.0	0.000	A
A-B	6			6			
A-C	293			293			
D-ABC	5	465	0.010	5	0.0	7.812	A
C-ABD	104	930	0.112	105	0.3	4.369	A
C-D	0.67			0.67			
C-A	447			447			

Base + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Tottington Rd / Fenton St	Crossroads	Two-way	Two-way	Two-way	Two-way		2.25	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.25	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	690	100.000
B		✓	163	100.000
C		✓	627	100.000
D		✓	7	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	11	676	3
	B	29	0	133	1
	C	572	54	0	1
	D	3	0	4	0

Vehicle Mix

Heavy Vehicle %

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.44	15.78	0.8	C
A-BCD	0.01	3.99	0.0	A
A-B				
A-C				
D-ABC	0.03	12.18	0.0	B
C-ABD	0.19	4.76	0.6	A
C-D				
C-A				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	123	479	0.256	121	0.3	10.015	B
A-BCD	5	907	0.006	5	0.0	3.993	A
A-B	8			8			
A-C	506			506			
D-ABC	5	398	0.013	5	0.0	9.174	A
C-ABD	83	841	0.099	83	0.2	4.745	A
C-D	0.68			0.68			
C-A	388			388			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	147	450	0.326	146	0.5	11.820	B
A-BCD	8	962	0.008	8	0.0	3.771	A
A-B	10			10			
A-C	603			603			
D-ABC	6	359	0.018	6	0.0	10.204	B
C-ABD	117	883	0.133	117	0.3	4.699	A
C-D	0.78			0.78			
C-A	446			446			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	179	408	0.440	178	0.8	15.623	C
A-BCD	12	1042	0.012	12	0.0	3.493	A
A-B	12			12			
A-C	736			736			
D-ABC	8	304	0.025	8	0.0	12.159	B
C-ABD	180	945	0.191	179	0.6	4.712	A
C-D	0.89			0.89			
C-A	509			509			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	179	407	0.440	179	0.8	15.778	C
A-BCD	12	1042	0.012	12	0.0	3.493	A
A-B	12			12			
A-C	736			736			
D-ABC	8	303	0.025	8	0.0	12.180	B
C-ABD	181	946	0.191	181	0.6	4.723	A
C-D	0.89			0.89			
C-A	509			509			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	147	450	0.326	148	0.5	11.957	B
A-BCD	8	962	0.008	8	0.0	3.772	A
A-B	10			10			
A-C	603			603			
D-ABC	6	358	0.018	6	0.0	10.227	B
C-ABD	118	884	0.133	118	0.3	4.717	A
C-D	0.78			0.78			
C-A	445			445			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	123	479	0.256	123	0.3	10.127	B
A-BCD	5	906	0.006	5	0.0	3.994	A
A-B	8			8			
A-C	506			506			
D-ABC	5	397	0.013	5	0.0	9.191	A
C-ABD	84	842	0.100	85	0.2	4.761	A
C-D	0.68			0.68			
C-A	387			387			

Base + CD With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Tottington Rd / Fenton St	Crossroads	Two-way	Two-way	Two-way	Two-way		1.40	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.40	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	404	100.000
B		✓	90	100.000
C		✓	756	100.000
D		✓	6	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	8	396	0
	B	23	0	67	0
	C	692	63	0	1
	D	4	1	1	0

Vehicle Mix

Heavy Vehicle %

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.22	10.32	0.3	B
A-BCD	0.00	0.00	0.0	A
A-B				
A-C				
D-ABC	0.02	9.52	0.0	A
C-ABD	0.22	4.33	0.7	A
C-D				
C-A				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	68	503	0.135	67	0.2	8.239	A
A-BCD	0	523	0.000	0	0.0	0.000	A
A-B	6			6			
A-C	298			298			
D-ABC	5	461	0.010	4	0.0	7.882	A
C-ABD	107	941	0.113	106	0.3	4.311	A
C-D	0.67			0.67			
C-A	462			462			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	81	481	0.168	81	0.2	8.993	A
A-BCD	0	496	0.000	0	0.0	0.000	A
A-B	7			7			
A-C	356			356			
D-ABC	5	430	0.013	5	0.0	8.482	A
C-ABD	151	1000	0.151	151	0.4	4.243	A
C-D	0.76			0.76			
C-A	528			528			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	99	448	0.221	99	0.3	10.296	B
A-BCD	0	459	0.000	0	0.0	0.000	A
A-B	9			9			
A-C	436			436			
D-ABC	7	385	0.017	7	0.0	9.509	A
C-ABD	236	1084	0.218	235	0.6	4.248	A
C-D	0.86			0.86			
C-A	596			596			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	99	448	0.221	99	0.3	10.317	B
A-BCD	0	459	0.000	0	0.0	0.000	A
A-B	9			9			
A-C	436			436			
D-ABC	7	385	0.017	7	0.0	9.516	A
C-ABD	236	1085	0.218	236	0.7	4.258	A
C-D	0.86			0.86			
C-A	595			595			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	81	481	0.168	81	0.2	9.018	A
A-BCD	0	496	0.000	0	0.0	0.000	A
A-B	7			7			
A-C	356			356			
D-ABC	5	429	0.013	5	0.0	8.491	A
C-ABD	152	1001	0.152	153	0.4	4.258	A
C-D	0.76			0.76			
C-A	527			527			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	68	503	0.135	68	0.2	8.274	A
A-BCD	0	523	0.000	0	0.0	0.000	A
A-B	6			6			
A-C	298			298			
D-ABC	5	461	0.010	5	0.0	7.891	A
C-ABD	107	941	0.114	108	0.3	4.329	A
C-D	0.67			0.67			
C-A	461			461			

Base + CD With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Tottington Rd / Fenton St	Crossroads	Two-way	Two-way	Two-way	Two-way		2.27	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	2.27	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	717	100.000
B		✓	163	100.000
C		✓	640	100.000
D		✓	7	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	**B**	**C**	**D**
From	**A**	0	11	703	3
	B	29	0	133	1
	C	585	54	0	1
	D	3	0	4	0

Vehicle Mix

Heavy Vehicle %

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.45	16.38	0.8	C
A-BCD	0.01	3.94	0.0	A
A-B				
A-C				
D-ABC	0.03	12.51	0.0	B
C-ABD	0.20	4.75	0.6	A
C-D				
C-A				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	123	474	0.259	121	0.3	10.166	B
A-BCD	5	919	0.006	5	0.0	3.939	A
A-B	8			8			
A-C	526			526			
D-ABC	5	393	0.013	5	0.0	9.286	A
C-ABD	85	845	0.101	84	0.2	4.735	A
C-D	0.68			0.68			
C-A	396			396			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	147	443	0.330	146	0.5	12.077	B
A-BCD	8	977	0.008	8	0.0	3.712	A
A-B	10			10			
A-C	627			627			
D-ABC	6	353	0.018	6	0.0	10.378	B
C-ABD	120	888	0.135	120	0.3	4.693	A
C-D	0.78			0.78			
C-A	455			455			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	179	399	0.450	178	0.8	16.199	C
A-BCD	13	1062	0.012	13	0.0	3.430	A
A-B	12			12			
A-C	765			765			
D-ABC	8	296	0.026	8	0.0	12.485	B
C-ABD	186	951	0.196	185	0.6	4.711	A
C-D	0.88			0.88			
C-A	517			517			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	179	399	0.450	179	0.8	16.377	C
A-BCD	13	1062	0.012	13	0.0	3.430	A
A-B	12			12			
A-C	765			765			
D-ABC	8	295	0.026	8	0.0	12.508	B
C-ABD	187	952	0.196	187	0.6	4.724	A
C-D	0.88			0.88			
C-A	517			517			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	147	443	0.331	148	0.5	12.225	B
A-BCD	8	977	0.008	8	0.0	3.716	A
A-B	10			10			
A-C	627			627			
D-ABC	6	352	0.018	6	0.0	10.403	B
C-ABD	121	889	0.136	122	0.4	4.710	A
C-D	0.78			0.78			
C-A	454			454			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	123	474	0.259	123	0.4	10.284	B
A-BCD	5	919	0.006	5	0.0	3.942	A
A-B	8			8			
A-C	526			526			
D-ABC	5	392	0.013	5	0.0	9.307	A
C-ABD	86	845	0.101	86	0.2	4.751	A
C-D	0.68			0.68			
C-A	395			395			

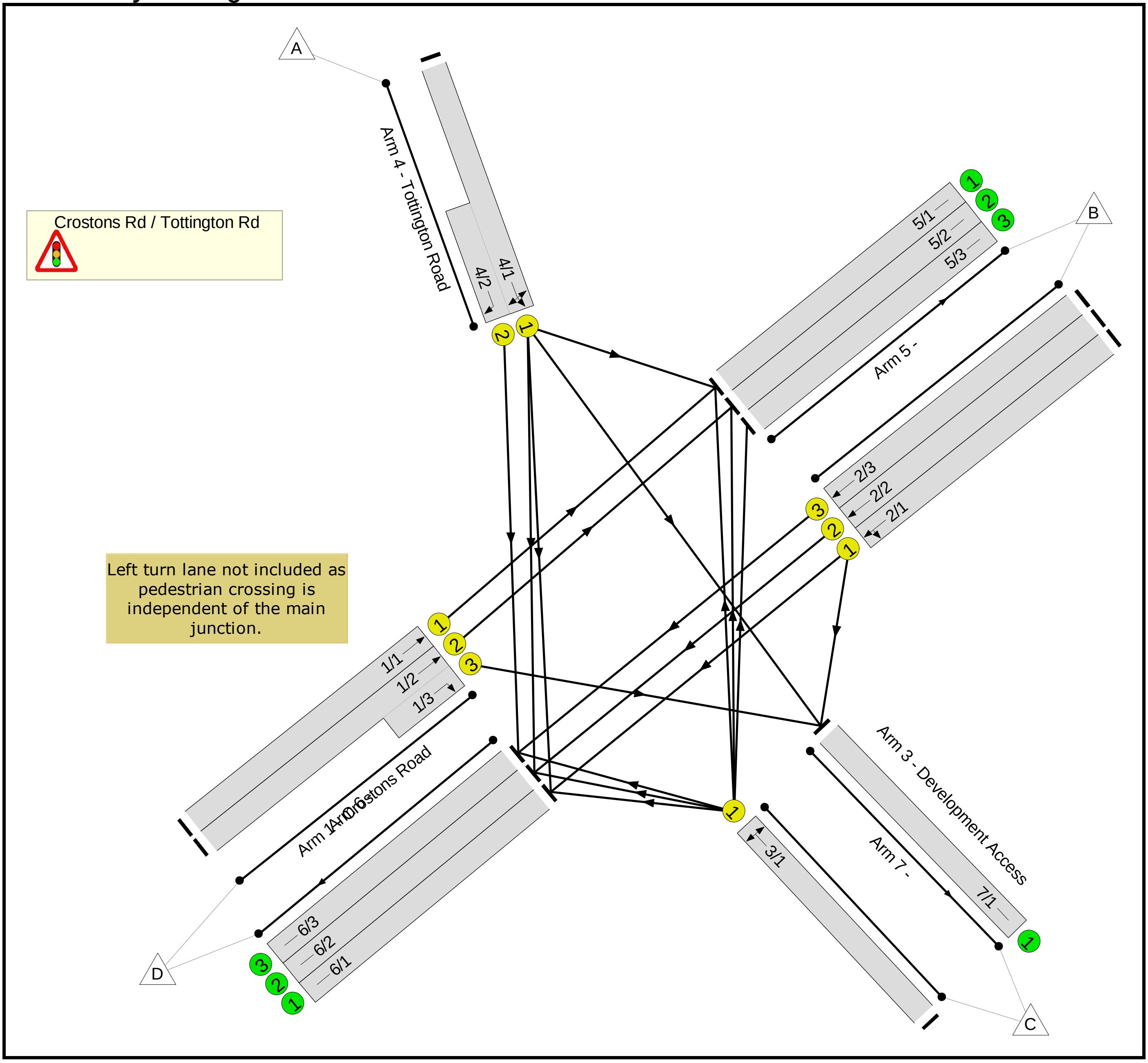
Full Input Data And Results

User and Project Details

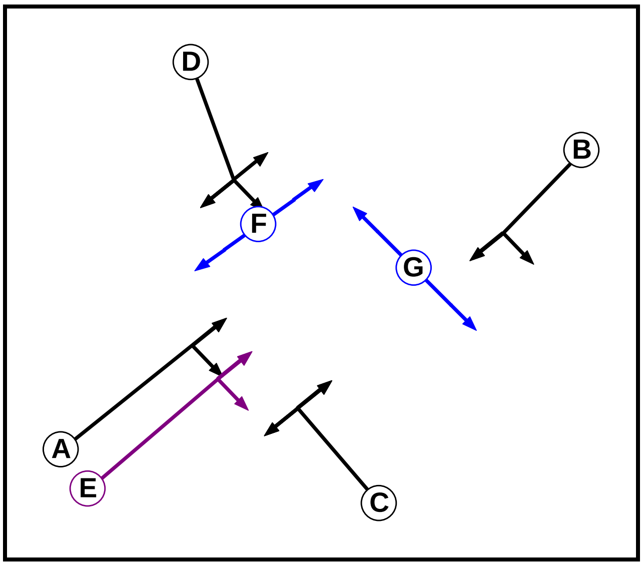
Project:	
Title:	
Location:	
Additional detail:	
File name:	J5 Crostons Rd-Tottington Rd Existing v2.lsg3x
Author:	GH
Company:	
Address:	

Full Input Data And Results

Network Layout Diagram


A
B
C
D
Crostons Rd / Tottington Rd
Arm 4 - Tottington Road
4/1
4/2
5/1
5/2
5/3
Arm 5 -
2/3
2/2
2/1
Left turn lane not included as pedestrian crossing is independent of the main junction.
1/1
1/2
1/3
Arm 1 - Crostons Road
Arm 6 -
6/3
6/2
6/1
3/1
Arm 3 - Development Access
Arm 7 -
7/1
1
2
3

Phase Diagram



Full Input Data And Results

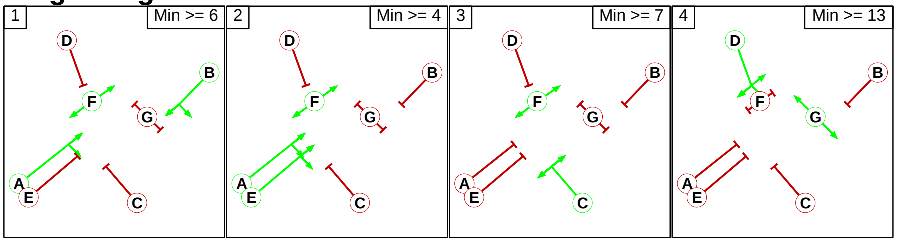
Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		-9999	7
B	Traffic		-9999	7
C	Traffic		-9999	7
D	Traffic		-9999	7
E	Ind. Arrow	A	-9999	4
F	Pedestrian		-9999	6
G	Pedestrian		-9999	13

Phase Intergreens Matrix

	Starting Phase							
	■	A	B	C	D	E	F	G
Terminating Phase	A	■	-	5	8	-	-	9
	B	-	■	6	5	4	-	5
	C	6	5	■	9	6	-	9
	D	6	6	7	■	6	5	-
	E	-	6	5	8	■	-	9
	F	-	-	-	8	-	■	-
	G	9	9	9	-	9	-	■

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
1	3	A	Losing	1	1
1	4	B	Losing	3	3
3	4	F	Losing	1	1
4	1	D	Losing	4	4
4	2	D	Losing	3	3
4	3	D	Losing	2	2

Give-Way Lane Input Data

Junction: Crostons Rd / Tottington Rd
There are no Opposed Lanes in this Junction

Lane Input Data

Junction: Crostons Rd / Tottington Rd

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Crostons Road)	U	A E	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 5 Ahead	Inf
1/2 (Crostons Road)	U	A E	2	3	60.0	Geom	-	3.65	0.00	N	Arm 5 Ahead	Inf
1/3 (Crostons Road)	U	A E	2	3	5.0	Geom	-	3.65	0.00	Y	Arm 7 Right	15.00
2/1 (Crostons Road)	U	B	2	3	60.0	Geom	-	3.65	0.00	N	Arm 6 Ahead Arm 7 Left	Inf 12.00
2/2 (Crostons Road)	U	B	2	3	60.0	Geom	-	3.26	0.00	N	Arm 6 Ahead	Inf
2/3 (Crostons Road)	U	B	2	3	60.0	Geom	-	3.65	0.00	N	Arm 6 Ahead	Inf
3/1 (Development Access)	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Right Arm 6 Left	30.00 15.00
4/1 (Tottington Road)	U	D	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 5 Left Arm 6 Right Arm 7 Ahead	12.00 30.00 Inf
4/2 (Tottington Road)	U	D	2	3	7.0	Geom	-	3.65	0.00	Y	Arm 6 Right	50.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
5/3	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
6/3	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2024 Survey AM'	07:45	08:45	01:00	
2: '2024 Survey PM'	16:30	17:30	01:00	
3: '2024 Base With Dev AM'	07:45	08:45	01:00	
4: '2024 Base With Dev PM'	16:30	17:30	01:00	
5: 'Base + Com Dev AM'	07:45	08:45	01:00	
6: 'Base + Com Dev PM'	16:30	17:30	01:00	
7: 'Base + CD With Dev AM'	07:45	08:45	01:00	
8: 'Base + CD With Dev PM'	16:30	17:30	01:00	

Scenario 1: '2024 Survey AM' (FG1: '2024 Survey AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	109	5	926	1040
	B	0	0	13	1075	1088
	C	0	6	0	11	17
	D	0	616	39	0	655
	Tot.	0	731	57	2012	2800

Traffic Lane Flows

Lane	Scenario 1: 2024 Survey AM
Junction: Crostons Rd / Tottington Rd	
1/1	297
1/2 (with short)	358(In) 319(Out)
1/3 (short)	39
2/1	364
2/2	358
2/3	366
3/1	17
4/1 (with short)	1040(In) 494(Out)
4/2 (short)	546
5/1	408
5/2	321
5/3	2
6/1	544
6/2	552
6/3	916
7/1	57

Scenario 2: '2024 Survey PM' (FG2: '2024 Survey PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
Origin		A	B	C	D	Tot.
	A	0	224	0	578	802
	B	0	0	1	864	865
	C	0	10	0	40	50
	D	0	943	11	0	954
	Tot.	0	1177	12	1482	2671

Traffic Lane Flows

Lane	Scenario 2: 2024 Survey PM
Junction: Crostons Rd / Tottington Rd	
1/1	452
1/2 (with short)	502(In) 491(Out)
1/3 (short)	11
2/1	291
2/2	284
2/3	290
3/1	50
4/1 (with short)	802(In) 388(Out)
4/2 (short)	414
5/1	679
5/2	494
5/3	4
6/1	386
6/2	379
6/3	717
7/1	12

Scenario 3: '2024 Base With Dev AM' (FG3: '2024 Base With Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	109	5	926	1040
	B	0	0	13	1098	1111
	C	0	6	0	11	17
	D	0	623	39	0	662
	Tot.	0	738	57	2035	2830

Traffic Lane Flows

Lane	Scenario 3: 2024 Base With Dev AM
Junction: Crostons Rd / Tottington Rd	
1/1	301
1/2 (with short)	361(In) 322(Out)
1/3 (short)	39
2/1	372
2/2	366
2/3	373
3/1	17
4/1 (with short)	1040(In) 494(Out)
4/2 (short)	546
5/1	412
5/2	324
5/3	2
6/1	552
6/2	560
6/3	923
7/1	57

Scenario 4: '2024 Base With Dev PM' (FG4: '2024 Base With Dev PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	224	0	578	802
	B	0	0	1	877	878
	C	0	10	0	40	50
	D	0	970	11	0	981
	Tot.	0	1204	12	1495	2711

Traffic Lane Flows

Lane	Scenario 4: 2024 Base With Dev PM
Junction: Crostons Rd / Tottington Rd	
1/1	464
1/2 (with short)	517(In) 506(Out)
1/3 (short)	11
2/1	295
2/2	287
2/3	296
3/1	50
4/1 (with short)	802(In) 384(Out)
4/2 (short)	418
5/1	691
5/2	509
5/3	4
6/1	388
6/2	380
6/3	727
7/1	12

Scenario 5: 'Base + Com Dev AM' (FG5: 'Base + Com Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	109	5	927	1041
	B	0	0	13	1076	1089
	C	0	6	0	11	17
	D	0	618	39	0	657
	Tot.	0	733	57	2014	2804

Traffic Lane Flows

Lane	Scenario 5: Base + Com Dev AM
Junction: Crostons Rd / Tottington Rd	
1/1	298
1/2 (with short)	359(In) 320(Out)
1/3 (short)	39
2/1	364
2/2	359
2/3	366
3/1	17
4/1 (with short)	1041(In) 494(Out)
4/2 (short)	547
5/1	409
5/2	322
5/3	2
6/1	544
6/2	553
6/3	917
7/1	57

Scenario 6: 'Base + Com Dev PM' (FG6: 'Base + Com Dev PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	224	0	578	802
	B	0	0	1	864	865
	C	0	10	0	40	50
	D	0	944	11	0	955
	Tot.	0	1178	12	1482	2672

Traffic Lane Flows

Lane	Scenario 6: Base + Com Dev PM
Junction: Crostons Rd / Tottington Rd	
1/1	451
1/2 (with short)	504(In) 493(Out)
1/3 (short)	11
2/1	291
2/2	283
2/3	291
3/1	50
4/1 (with short)	802(In) 384(Out)
4/2 (short)	418
5/1	678
5/2	496
5/3	4
6/1	384
6/2	376
6/3	722
7/1	12

Scenario 7: 'Base + CD With Dev AM' (FG7: 'Base + CD With Dev AM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	109	5	927	1041
	B	0	0	13	1099	1112
	C	0	6	0	11	17
	D	0	625	39	0	664
	Tot.	0	740	57	2037	2834

Traffic Lane Flows

Lane	Scenario 7: Base + CD With Dev AM
Junction: Crostons Rd / Tottington Rd	
1/1	302
1/2 (with short)	362(In) 323(Out)
1/3 (short)	39
2/1	372
2/2	366
2/3	374
3/1	17
4/1 (with short)	1041(In) 494(Out)
4/2 (short)	547
5/1	413
5/2	325
5/3	2
6/1	552
6/2	560
6/3	925
7/1	57

Scenario 8: 'Base + CD With Dev PM' (FG8: 'Base + CD With Dev PM', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

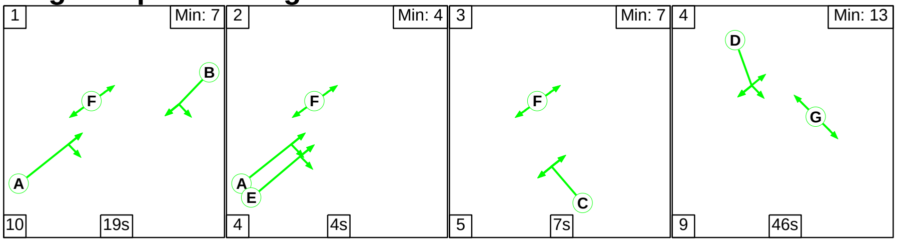
	Destination					
Origin		A	B	C	D	Tot.
	A	0	224	0	578	802
	B	0	0	1	877	878
	C	0	10	0	40	50
	D	0	971	11	0	982
	Tot.	0	1205	12	1495	2712

Traffic Lane Flows

Lane	Scenario 8: Base + CD With Dev PM
Junction: Crostons Rd / Tottington Rd	
1/1	465
1/2 (with short)	517(In) 506(Out)
1/3 (short)	11
2/1	295
2/2	287
2/3	296
3/1	50
4/1 (with short)	802(In) 384(Out)
4/2 (short)	418
5/1	692
5/2	509
5/3	4
6/1	388
6/2	380
6/3	727
7/1	12

Scenario 1: '2024 Survey AM' (FG1: '2024 Survey AM', Plan 1: 'Network Control Plan 1')

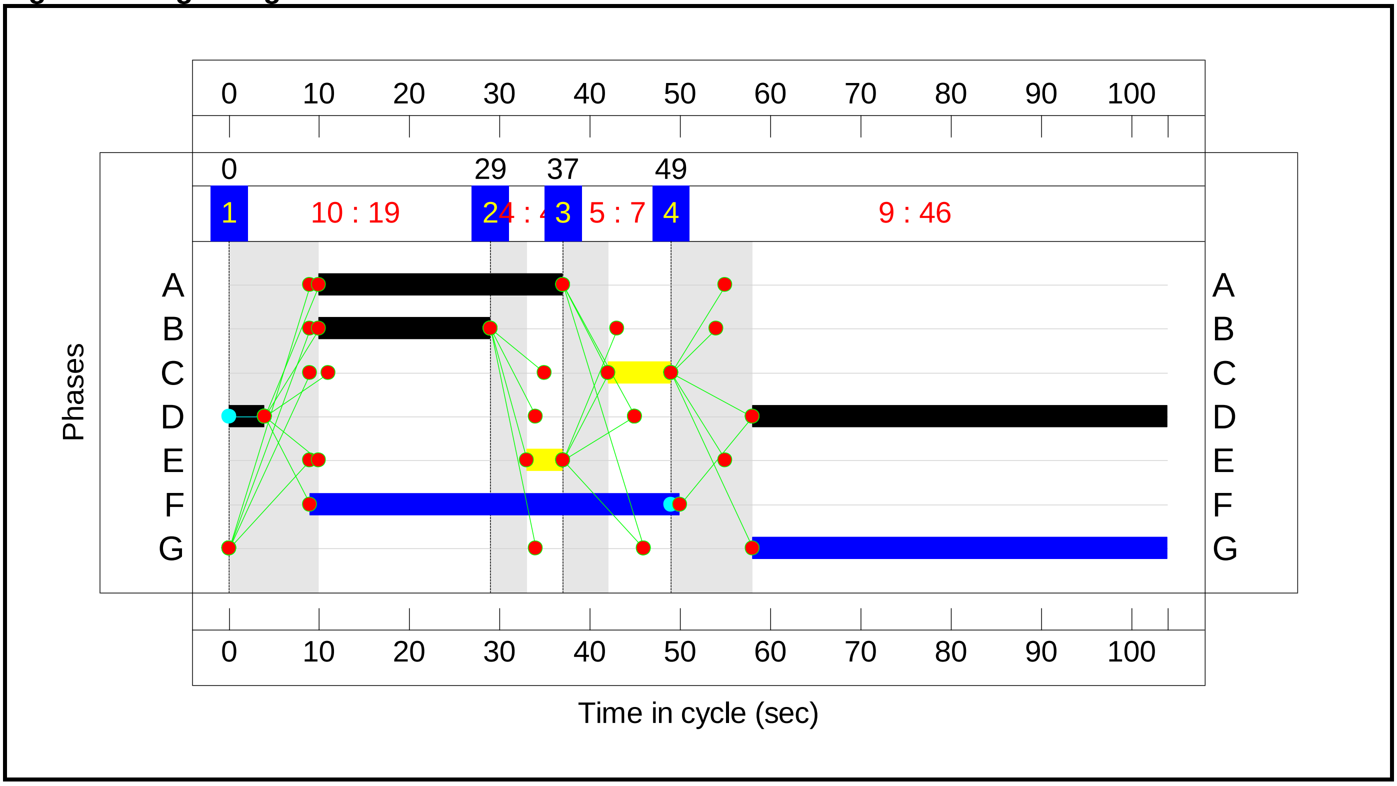
Stage Sequence Diagram


1
Min: 7
B
F
A
10
19s
2
Min: 4
F
A
E
4
4s
3
Min: 7
F
C
5
7s
4
Min: 13
D
G
9
46s

Stage Timings

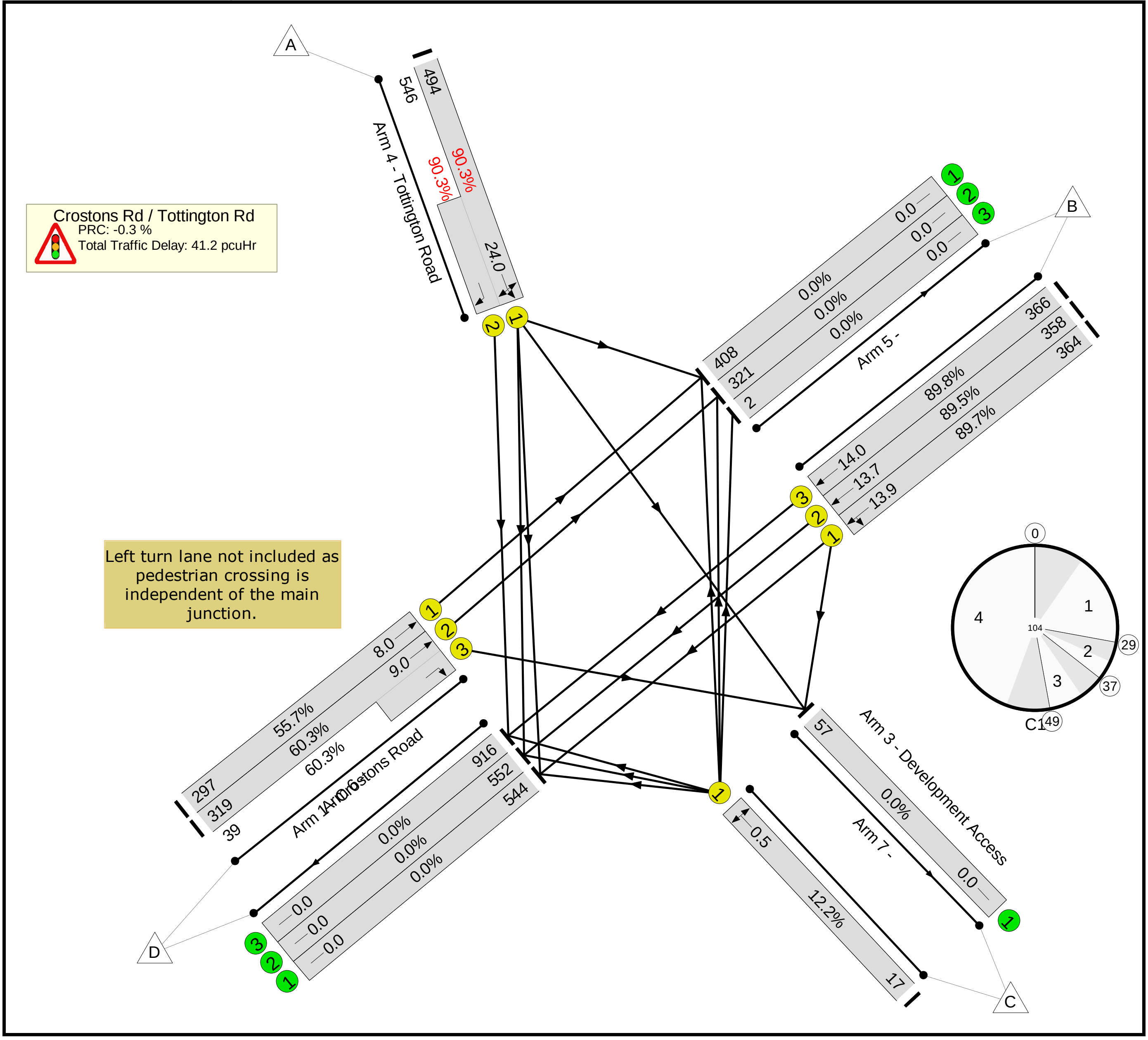
Stage	1	2	3	4
Duration	19	4	7	46
Change Point	0	29	37	49

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: -0.3 %
Total Traffic Delay: 41.2 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
A
B
C
D
Arm 4 - Tottington Road
494
546
90.3%
90.3%
24.0
Arm 5 -
408
321
2
0.0%
0.0%
0.0%
0.0
0.0
0.0
366
358
364
89.8%
89.5%
89.7%
14.0
13.7
13.9
Arm 1 - Crostons Road
Arm 6 -
297
319
39
55.7%
60.3%
60.3%
8.0
9.0
916
552
544
0.0%
0.0%
0.0%
0.0
0.0
0.0
Arm 3 - Development Access
Arm 7 -
57
0.0%
0.0
0.5
12.2%
17
0
1
2
3
4
104
29
37
49
C1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.3%**
Crostons Rd / Tottington Rd	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.3%**
1/1	Crostons Road Ahead	U	N/A	N/A	A	E	1	27	4	297	1980	533	55.7%
1/2+1/3	Crostons Road Ahead Right	U	N/A	N/A	A	E	1	27	4:4	358	2120:1800	529+65	60.3 : 60.3%
2/1	Crostons Road Ahead Left	U	N/A	N/A	B		1	19	-	364	2111	406	89.7%
2/2	Crostons Road Ahead	U	N/A	N/A	B		1	19	-	358	2081	400	89.5%
2/3	Crostons Road Ahead	U	N/A	N/A	B		1	19	-	366	2120	408	89.8%
3/1	Development Access Right Left	U	N/A	N/A	C		1	7	-	17	1815	140	12.2%
4/1+4/2	Tottington Road Left Right Ahead	U	N/A	N/A	D		1	50	-	1040	1857:1922	547+605	90.3 : 90.3%
5/1		U	N/A	N/A	-		-	-	-	408	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	544	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	552	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	916	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	57	Inf	Inf	0.0%

Full Input Data And Results

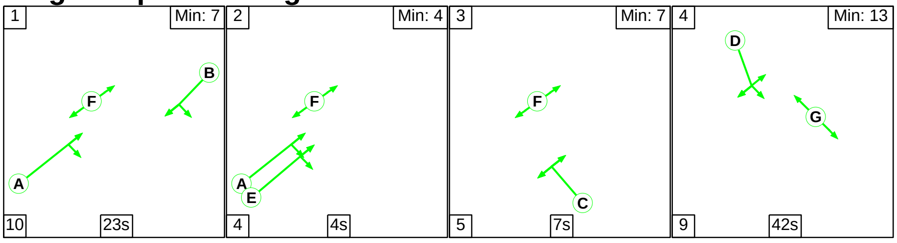
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**24.4**	**16.8**	**0.0**	**41.2**	**-**	**-**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**0**	**0**	**0**	**24.4**	**16.8**	**0.0**	**41.2**	**-**	**-**	**-**	**-**
1/1	297	297	-	-	-	2.7	0.6	-	3.3	40.3	7.3	0.6	8.0
1/2+1/3	358	358	-	-	-	3.2	0.8	-	4.0	40.1	8.2	0.8	9.0
2/1	364	364	-	-	-	4.1	3.7	-	7.8	77.5	10.2	3.7	13.9
2/2	358	358	-	-	-	4.1	3.6	-	7.7	77.4	10.0	3.6	13.7
2/3	366	366	-	-	-	4.2	3.7	-	7.9	77.6	10.3	3.7	14.0
3/1	17	17	-	-	-	0.2	0.1	-	0.3	59.4	0.5	0.1	0.5
4/1+4/2	1040	1040	-	-	-	5.9	4.3	-	10.2	35.3	19.7	4.3	24.0
5/1	408	408	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	321	321	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	544	544	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	552	552	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	916	916	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	57	57	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -0.3 Total Delay for Signalled Lanes (pcuHr): 41.21 Cycle Time (s): 104
PRC Over All Lanes (%): -0.3 Total Delay Over All Lanes(pcuHr): 41.21

Full Input Data And Results

Scenario 2: '2024 Survey PM' (FG2: '2024 Survey PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

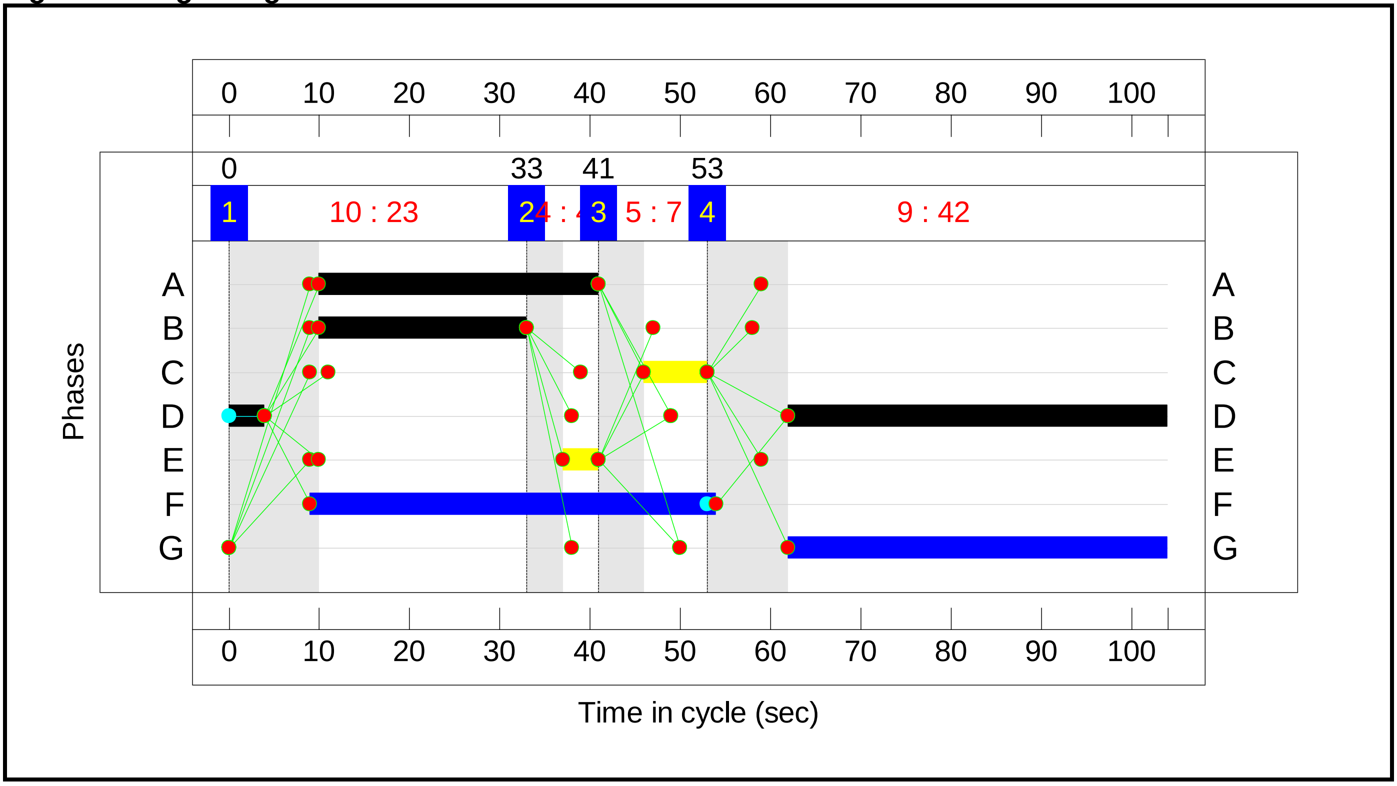


1
Min: 7
F
B
A
10
23s
2
Min: 4
F
A
E
4
4s
3
Min: 7
F
C
5
7s
4
Min: 13
D
G
9
42s

Stage Timings

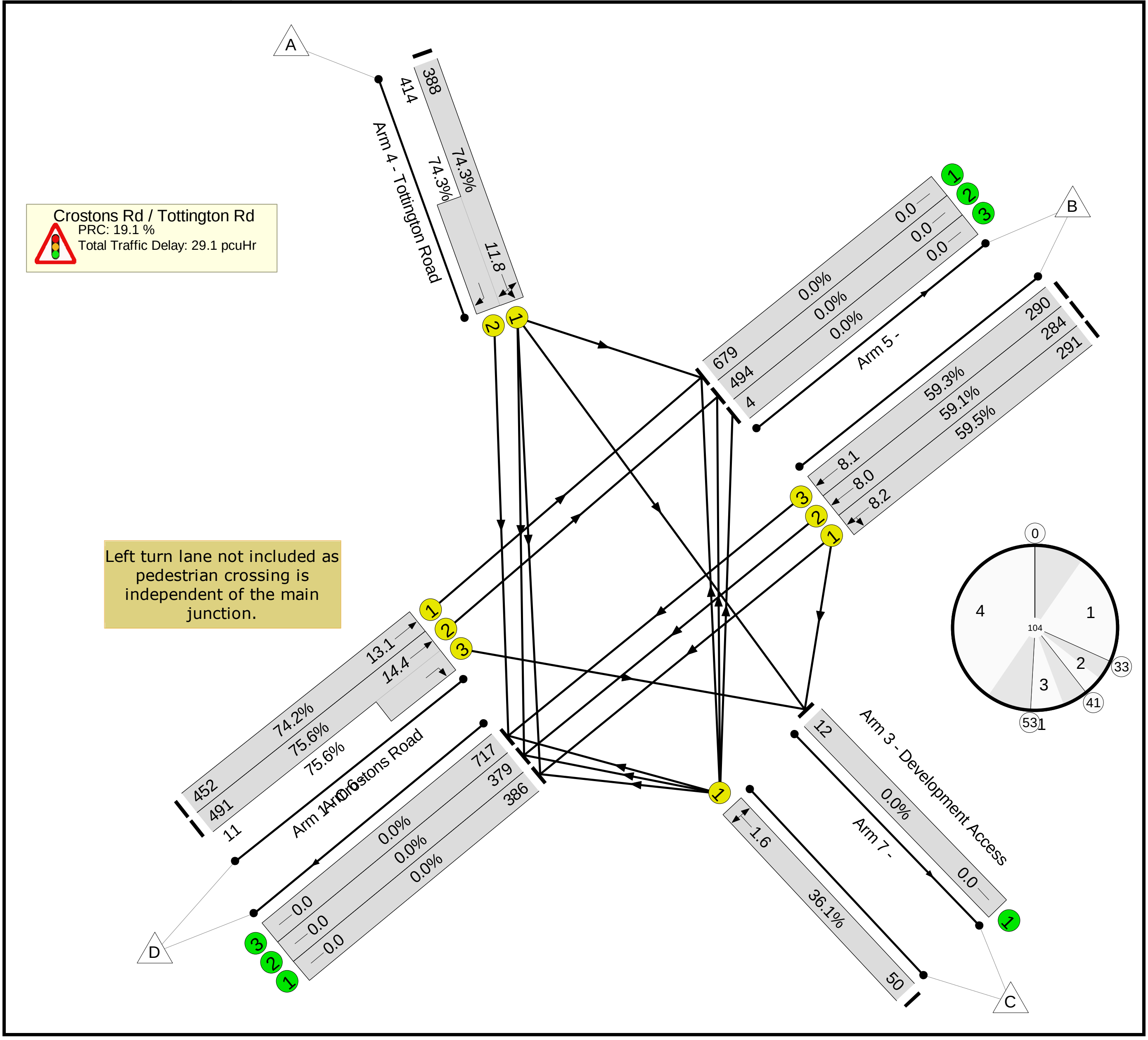
Stage	**1**	**2**	**3**	**4**
Duration	23	4	7	42
Change Point	0	33	41	53

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



A
B
C
D
Crostons Rd / Tottington Rd
PRC: 19.1 %
Total Traffic Delay: 29.1 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
Arm 4 - Tottington Road
388
414
74.3%
74.3%
11.8
Arm 5 -
679
494
4
0.0%
0.0%
0.0%
0.0
0.0
0.0
290
284
291
59.3%
59.1%
59.5%
8.1
8.0
8.2
Arm 3 - Development Access
12
0.0%
0.0
Arm 7 -
1.6
36.1%
50
Arm 1 - Crostons Road
Arm 6 -
452
491
11
74.2%
75.6%
75.6%
13.1
14.4
717
379
386
0.0%
0.0%
0.0%
0.0
0.0
0.0
0
1
2
3
4
104
33
41
53
1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.6%**
Crostons Rd / Tottington Rd	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.6%**
1/1	Crostons Road Ahead	U	N/A	N/A	A	E	1	31	4	452	1980	609	74.2%
1/2+1/3	Crostons Road Ahead Right	U	N/A	N/A	A	E	1	31	4:4	502	2120:1800	650+15	75.6 : 75.6%
2/1	Crostons Road Ahead Left	U	N/A	N/A	B		1	23	-	291	2119	489	59.5%
2/2	Crostons Road Ahead	U	N/A	N/A	B		1	23	-	284	2081	480	59.1%
2/3	Crostons Road Ahead	U	N/A	N/A	B		1	23	-	290	2120	489	59.3%
3/1	Development Access Right Left	U	N/A	N/A	C		1	7	-	50	1803	139	36.1%
4/1+4/2	Tottington Road Left Right Ahead	U	N/A	N/A	D		1	46	-	802	1811:1922	522+557	74.3 : 74.3%
5/1		U	N/A	N/A	-		-	-	-	679	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	494	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	4	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	386	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	379	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	717	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	12	Inf	Inf	0.0%

Full Input Data And Results

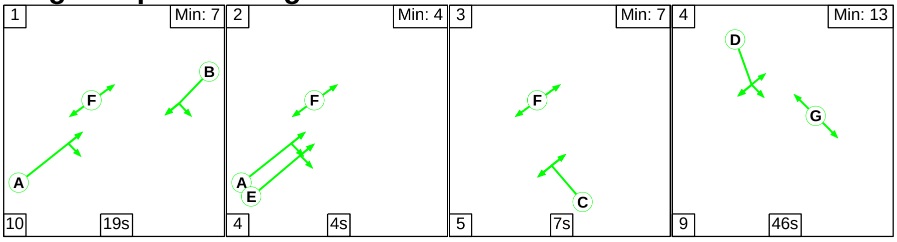
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.3**	**6.8**	**0.0**	**29.1**	**-**	**-**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**0**	**0**	**0**	**22.3**	**6.8**	**0.0**	**29.1**	**-**	**-**	**-**	**-**
1/1	452	452	-	-	-	4.1	1.4	-	5.5	43.5	11.7	1.4	13.1
1/2+1/3	502	502	-	-	-	4.5	1.5	-	6.0	43.3	12.9	1.5	14.4
2/1	291	291	-	-	-	2.9	0.7	-	3.6	44.7	7.4	0.7	8.2
2/2	284	284	-	-	-	2.8	0.7	-	3.5	44.7	7.3	0.7	8.0
2/3	290	290	-	-	-	2.9	0.7	-	3.6	44.6	7.4	0.7	8.1
3/1	50	50	-	-	-	0.6	0.3	-	0.9	65.8	1.4	0.3	1.6
4/1+4/2	802	802	-	-	-	4.5	1.4	-	5.9	26.5	10.4	1.4	11.8
5/1	679	679	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	494	494	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	4	4	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	386	386	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	379	379	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	12	12	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 19.1 Total Delay for Signalled Lanes (pcuHr): 29.07 Cycle Time (s): 104
PRC Over All Lanes (%): 19.1 Total Delay Over All Lanes(pcuHr): 29.07

Full Input Data And Results

Scenario 3: '2024 Base With Dev AM' (FG3: '2024 Base With Dev AM', Plan 1: 'Network Control Plan 1')

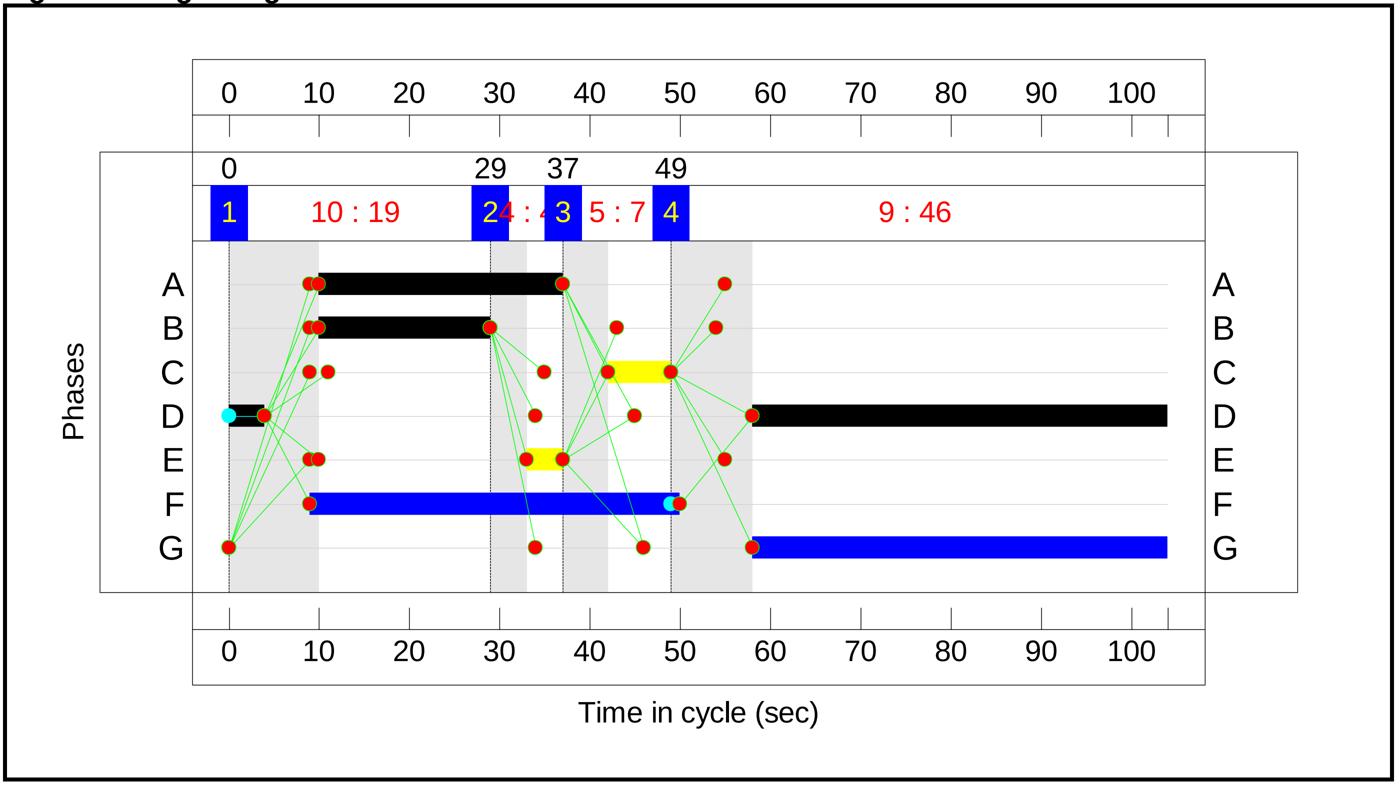
Stage Sequence Diagram


1
Min: 7
F
B
A
10
19s
2
Min: 4
F
A
E
4
4s
3
Min: 7
F
C
5
7s
4
Min: 13
D
G
9
46s

Stage Timings

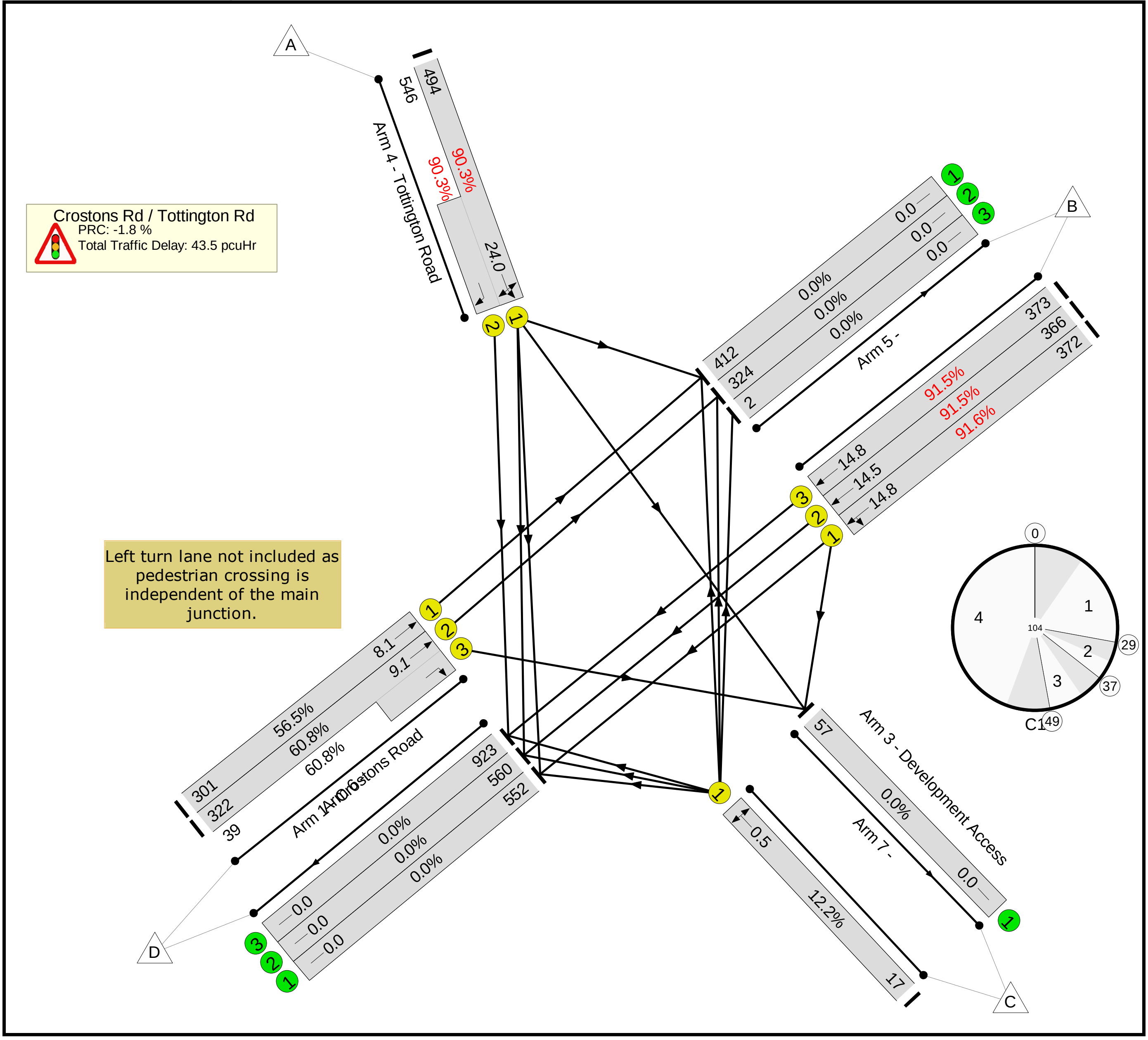
Stage	1	2	3	4
Duration	19	4	7	46
Change Point	0	29	37	49

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: -1.8 %
Total Traffic Delay: 43.5 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
A
B
C
D
Arm 4 - Tottington Road
494
546
90.3%
90.3%
24.0
Arm 5 -
412
324
2
0.0%
0.0%
0.0%
0.0
0.0
0.0
373
366
372
91.5%
91.5%
91.6%
14.8
14.5
14.8
Arm 1 - Crostons Road
Arm 6 -
301
322
39
56.5%
60.8%
60.8%
8.1
9.1
923
560
552
0.0%
0.0%
0.0%
0.0
0.0
0.0
Arm 3 - Development Access
Arm 7 -
57
0.0%
0.0
0.5
12.2%
17
1
2
3
4
0
104
29
37
C1
49

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.6%**
Crostons Rd / Tottington Rd	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.6%**
1/1	Crostons Road Ahead	U	N/A	N/A	A	E	1	27	4	301	1980	533	56.5%
1/2+1/3	Crostons Road Ahead Right	U	N/A	N/A	A	E	1	27	4:4	361	2120:1800	530+64	60.8 : 60.8%
2/1	Crostons Road Ahead Left	U	N/A	N/A	B		1	19	-	372	2111	406	91.6%
2/2	Crostons Road Ahead	U	N/A	N/A	B		1	19	-	366	2081	400	91.5%
2/3	Crostons Road Ahead	U	N/A	N/A	B		1	19	-	373	2120	408	91.5%
3/1	Development Access Right Left	U	N/A	N/A	C		1	7	-	17	1815	140	12.2%
4/1+4/2	Tottington Road Left Right Ahead	U	N/A	N/A	D		1	50	-	1040	1857:1922	547+605	90.3 : 90.3%
5/1		U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	324	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	552	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	560	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	923	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	57	Inf	Inf	0.0%

Full Input Data And Results

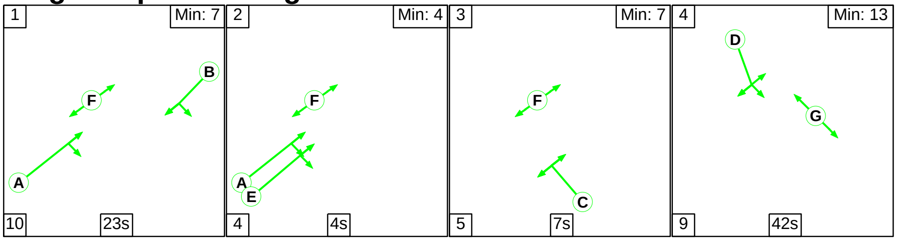
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**24.8**	**18.7**	**0.0**	**43.5**	**-**	**-**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**0**	**0**	**0**	**24.8**	**18.7**	**0.0**	**43.5**	**-**	**-**	**-**	**-**
1/1	301	301	-	-	-	2.7	0.6	-	3.4	40.5	7.4	0.6	8.1
1/2+1/3	361	361	-	-	-	3.3	0.8	-	4.0	40.3	8.3	0.8	9.1
2/1	372	372	-	-	-	4.3	4.4	-	8.6	83.4	10.4	4.4	14.8
2/2	366	366	-	-	-	4.2	4.3	-	8.5	83.3	10.3	4.3	14.5
2/3	373	373	-	-	-	4.3	4.3	-	8.6	82.7	10.5	4.3	14.8
3/1	17	17	-	-	-	0.2	0.1	-	0.3	59.4	0.5	0.1	0.5
4/1+4/2	1040	1040	-	-	-	5.9	4.3	-	10.2	35.3	19.7	4.3	24.0
5/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	324	324	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	552	552	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	560	560	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	923	923	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	57	57	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1
PRC for Signalled Lanes (%): -1.8
PRC Over All Lanes (%): -1.8
Total Delay for Signalled Lanes (pcuHr): 43.55
Total Delay Over All Lanes(pcuHr): 43.55
Cycle Time (s): 104

Full Input Data And Results

Scenario 4: '2024 Base With Dev PM' (FG4: '2024 Base With Dev PM', Plan 1: 'Network Control Plan 1')

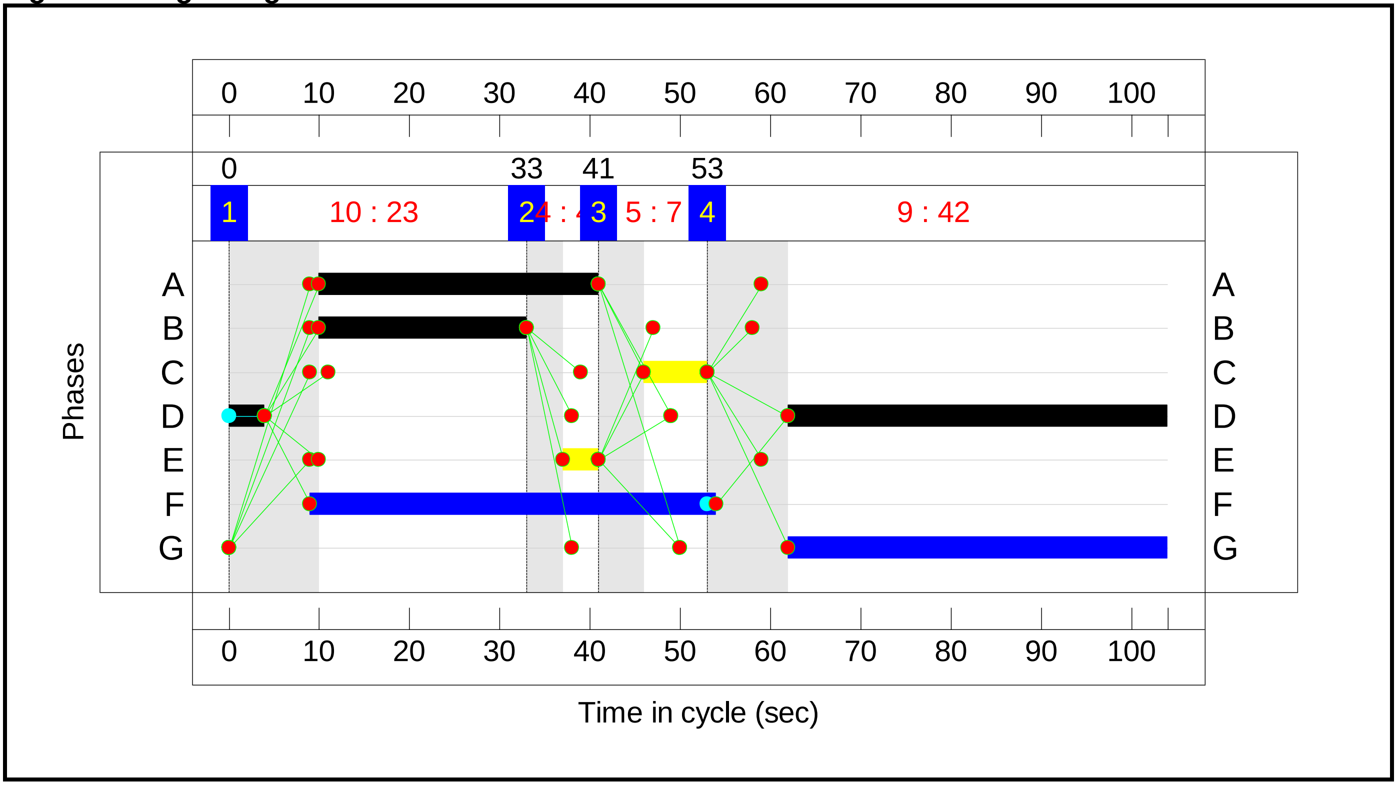
Stage Sequence Diagram


1
Min: 7
B
F
A
10
23s
2
Min: 4
F
A
E
4
4s
3
Min: 7
F
C
5
7s
4
Min: 13
D
G
9
42s

Stage Timings

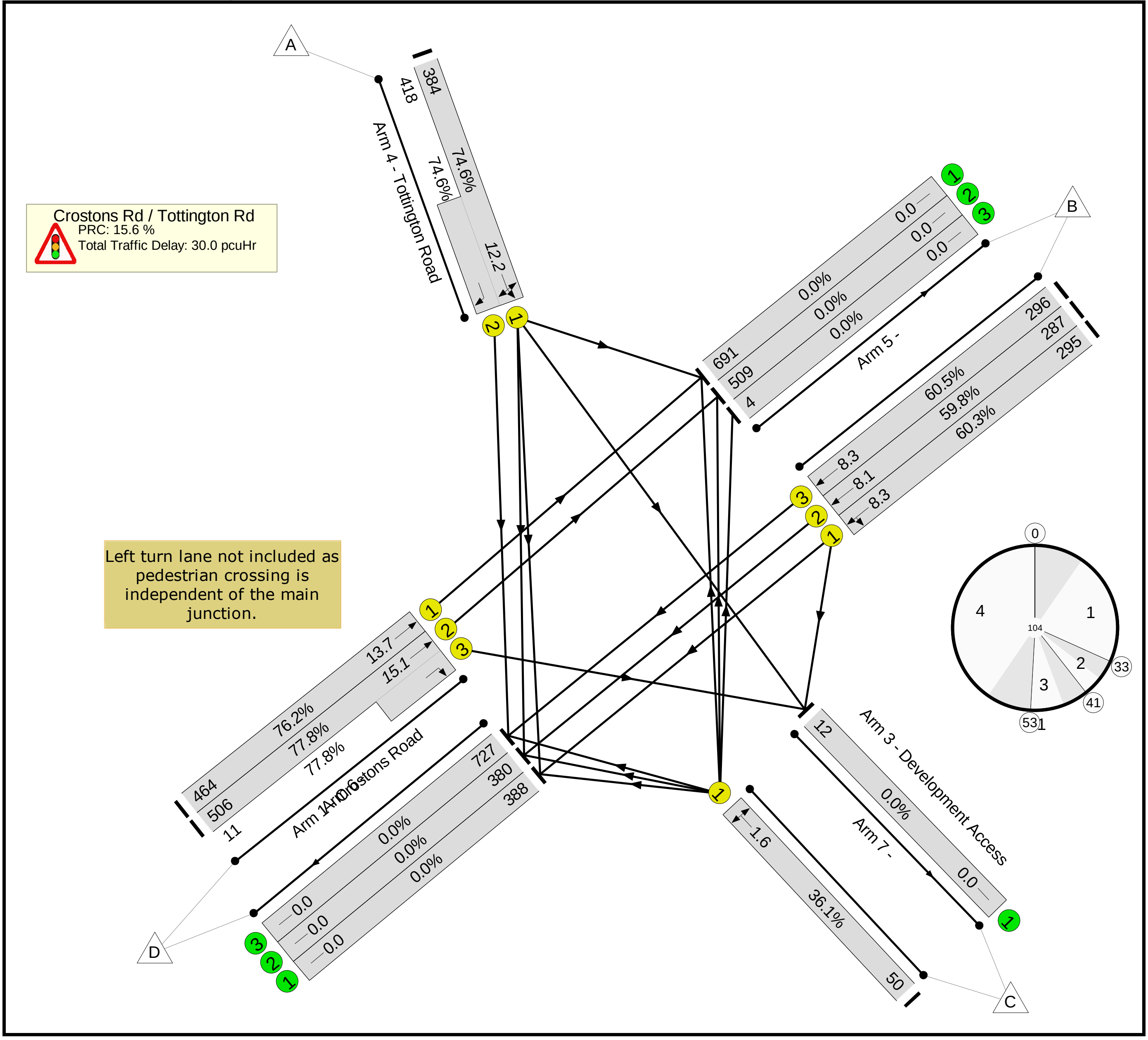
Stage	1	2	3	4
Duration	23	4	7	42
Change Point	0	33	41	53

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A
B
C
D
Crostons Rd / Tottington Rd
PRC: 15.6 %
Total Traffic Delay: 30.0 pcuHr
Arm 4 - Tottington Road
384
418
74.6%
74.6%
12.2
1
2
3
0.0
0.0
0.0
0.0%
0.0%
0.0%
691
509
4
Arm 5 -
296
287
295
60.5%
59.8%
60.3%
8.3
8.1
8.3
Left turn lane not included as pedestrian crossing is independent of the main junction.
464
506
11
76.2%
77.8%
77.8%
13.7
15.1
Arm 1 - Crostons Road
Arm 6 -
727
380
388
0.0%
0.0%
0.0%
0.0
0.0
0.0
Arm 3 - Development Access
12
0.0%
0.0
Arm 7 -
1.6
36.1%
50
0
104
1
2
3
4
33
41
53
1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.8%**
Crostons Rd / Tottington Rd	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.8%**
1/1	Crostons Road Ahead	U	N/A	N/A	A	E	1	31	4	464	1980	609	76.2%
1/2+1/3	Crostons Road Ahead Right	U	N/A	N/A	A	E	1	31	4:4	517	2120:1800	650+14	77.8 : 77.8%
2/1	Crostons Road Ahead Left	U	N/A	N/A	B		1	23	-	295	2119	489	60.3%
2/2	Crostons Road Ahead	U	N/A	N/A	B		1	23	-	287	2081	480	59.8%
2/3	Crostons Road Ahead	U	N/A	N/A	B		1	23	-	296	2120	489	60.5%
3/1	Development Access Right Left	U	N/A	N/A	C		1	7	-	50	1803	139	36.1%
4/1+4/2	Tottington Road Left Right Ahead	U	N/A	N/A	D		1	46	-	802	1810:1922	515+560	74.6 : 74.6%
5/1		U	N/A	N/A	-		-	-	-	691	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	509	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	4	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	727	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	12	Inf	Inf	0.0%

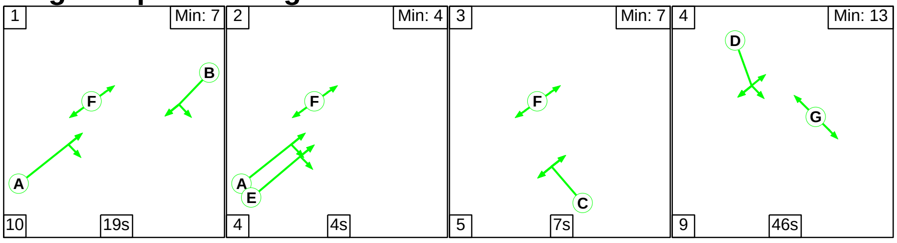
Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.7**	**7.3**	**0.0**	**30.0**	**-**	**-**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**0**	**0**	**0**	**22.7**	**7.3**	**0.0**	**30.0**	**-**	**-**	**-**	**-**
1/1	464	464	-	-	-	4.2	1.6	-	5.8	44.7	12.1	1.6	13.7
1/2+1/3	517	517	-	-	-	4.7	1.7	-	6.4	44.7	13.4	1.7	15.1
2/1	295	295	-	-	-	2.9	0.8	-	3.7	45.0	7.5	0.8	8.3
2/2	287	287	-	-	-	2.8	0.7	-	3.6	44.9	7.3	0.7	8.1
2/3	296	296	-	-	-	2.9	0.8	-	3.7	45.0	7.6	0.8	8.3
3/1	50	50	-	-	-	0.6	0.3	-	0.9	65.8	1.4	0.3	1.6
4/1+4/2	802	802	-	-	-	4.5	1.5	-	5.9	26.7	10.7	1.5	12.2
5/1	691	691	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	509	509	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	4	4	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	380	380	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	727	727	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	12	12	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 15.6 Total Delay for Signalled Lanes (pcuHr): 30.00 Cycle Time (s): 104
PRC Over All Lanes (%): 15.6 Total Delay Over All Lanes(pcuHr): 30.00

Scenario 5: 'Base + Com Dev AM' (FG5: 'Base + Com Dev AM', Plan 1: 'Network Control Plan 1')

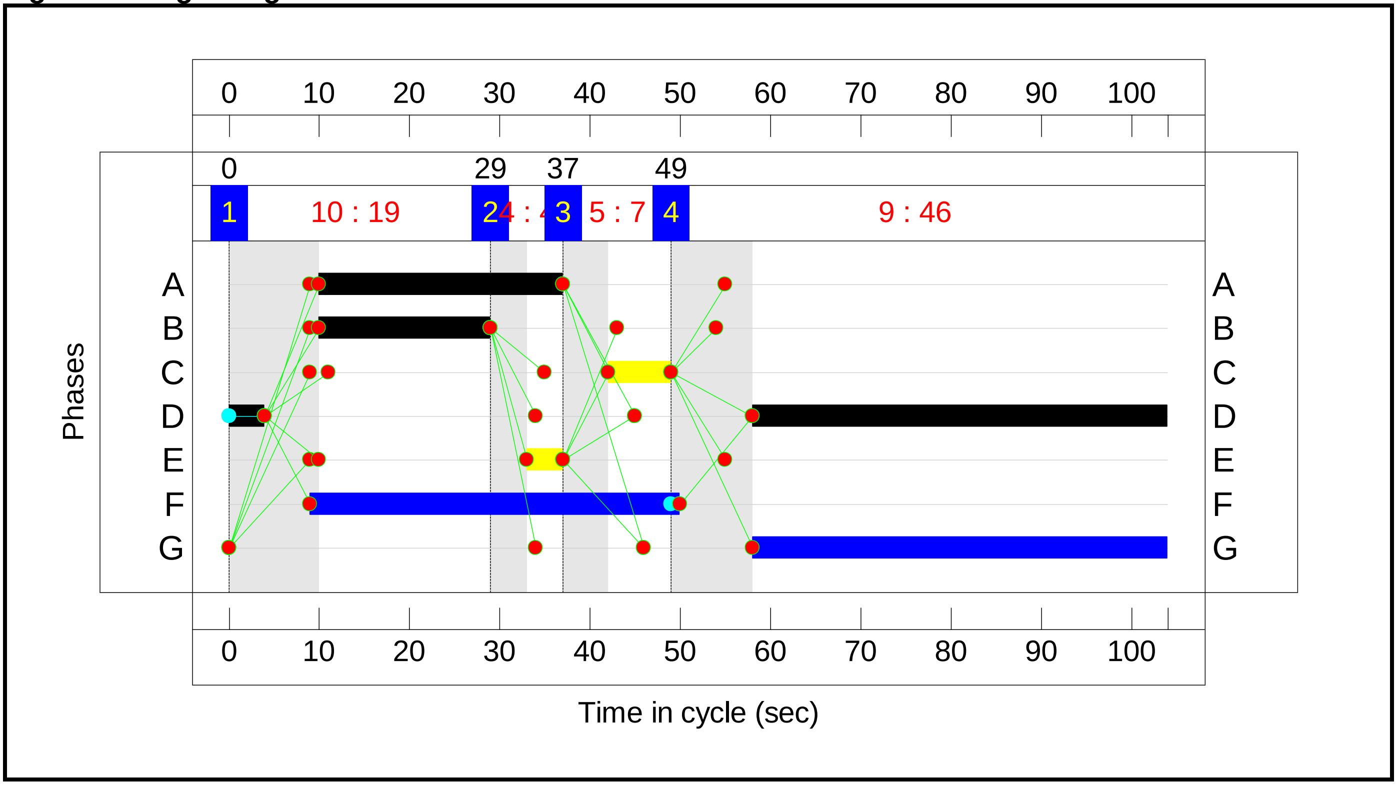
Stage Sequence Diagram


1
Min: 7
B
F
A
10
19s
2
Min: 4
F
A
E
4
4s
3
Min: 7
F
C
5
7s
4
Min: 13
D
G
9
46s

Stage Timings

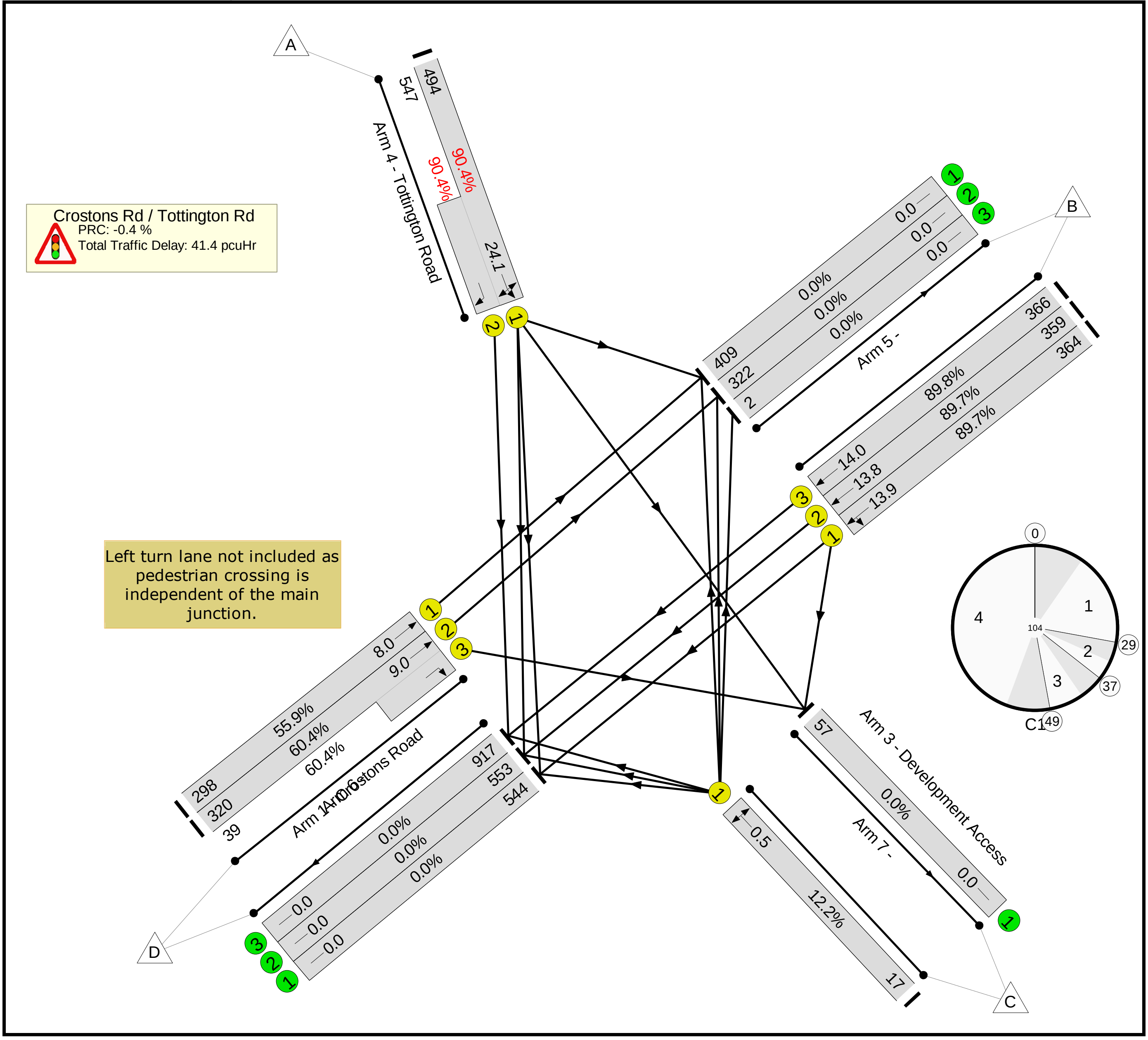
Stage	1	2	3	4
Duration	19	4	7	46
Change Point	0	29	37	49

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


A
B
C
D
Crostons Rd / Tottington Rd
PRC: -0.4 %
Total Traffic Delay: 41.4 pcuHr
Arm 4 - Tottington Road
494
547
90.4%
90.4%
24.1
Arm 5 -
409
322
2
0.0%
0.0%
0.0%
0.0
0.0
0.0
366
359
364
89.8%
89.7%
89.7%
14.0
13.8
13.9
Left turn lane not included as pedestrian crossing is independent of the main junction.
Arm 1 - Crostons Road
Arm 6 -
298
320
39
55.9%
60.4%
60.4%
8.0
9.0
917
553
544
0.0%
0.0%
0.0%
0.0
0.0
0.0
Arm 3 - Development Access
57
0.0%
0.0
Arm 7 -
0.5
12.2%
17
0
1
2
3
4
104
29
37
49
C1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.4%**
Crostons Rd / Tottington Rd	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.4%**
1/1	Crostons Road Ahead	U	N/A	N/A	A	E	1	27	4	298	1980	533	55.9%
1/2+1/3	Crostons Road Ahead Right	U	N/A	N/A	A	E	1	27	4:4	359	2120:1800	530+65	60.4 : 60.4%
2/1	Crostons Road Ahead Left	U	N/A	N/A	B		1	19	-	364	2111	406	89.7%
2/2	Crostons Road Ahead	U	N/A	N/A	B		1	19	-	359	2081	400	89.7%
2/3	Crostons Road Ahead	U	N/A	N/A	B		1	19	-	366	2120	408	89.8%
3/1	Development Access Right Left	U	N/A	N/A	C		1	7	-	17	1815	140	12.2%
4/1+4/2	Tottington Road Left Right Ahead	U	N/A	N/A	D		1	50	-	1041	1857:1922	547+605	90.4 : 90.4%
5/1		U	N/A	N/A	-		-	-	-	409	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	322	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	544	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	553	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	917	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	57	Inf	Inf	0.0%

Full Input Data And Results

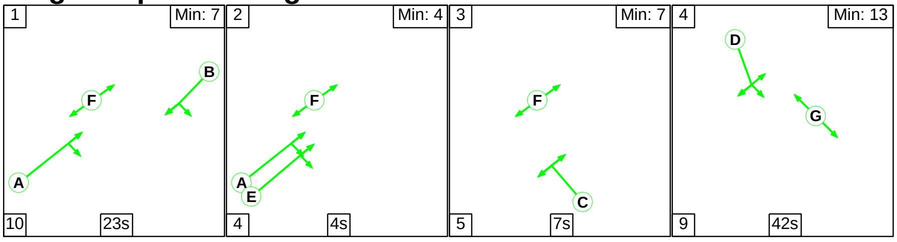
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**24.5**	**16.9**	**0.0**	**41.4**	**-**	**-**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**0**	**0**	**0**	**24.5**	**16.9**	**0.0**	**41.4**	**-**	**-**	**-**	**-**
1/1	298	298	-	-	-	2.7	0.6	-	3.3	40.3	7.4	0.6	8.0
1/2+1/3	359	359	-	-	-	3.2	0.8	-	4.0	40.2	8.3	0.8	9.0
2/1	364	364	-	-	-	4.1	3.7	-	7.8	77.5	10.2	3.7	13.9
2/2	359	359	-	-	-	4.1	3.7	-	7.8	78.1	10.1	3.7	13.8
2/3	366	366	-	-	-	4.2	3.7	-	7.9	77.6	10.3	3.7	14.0
3/1	17	17	-	-	-	0.2	0.1	-	0.3	59.4	0.5	0.1	0.5
4/1+4/2	1041	1041	-	-	-	5.9	4.4	-	10.3	35.5	19.7	4.4	24.1
5/1	409	409	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	322	322	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	544	544	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	553	553	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	917	917	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	57	57	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -0.4 Total Delay for Signalled Lanes (pcuHr): 41.39 Cycle Time (s): 104
PRC Over All Lanes (%): -0.4 Total Delay Over All Lanes(pcuHr): 41.39

Full Input Data And Results

Scenario 6: 'Base + Com Dev PM' (FG6: 'Base + Com Dev PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

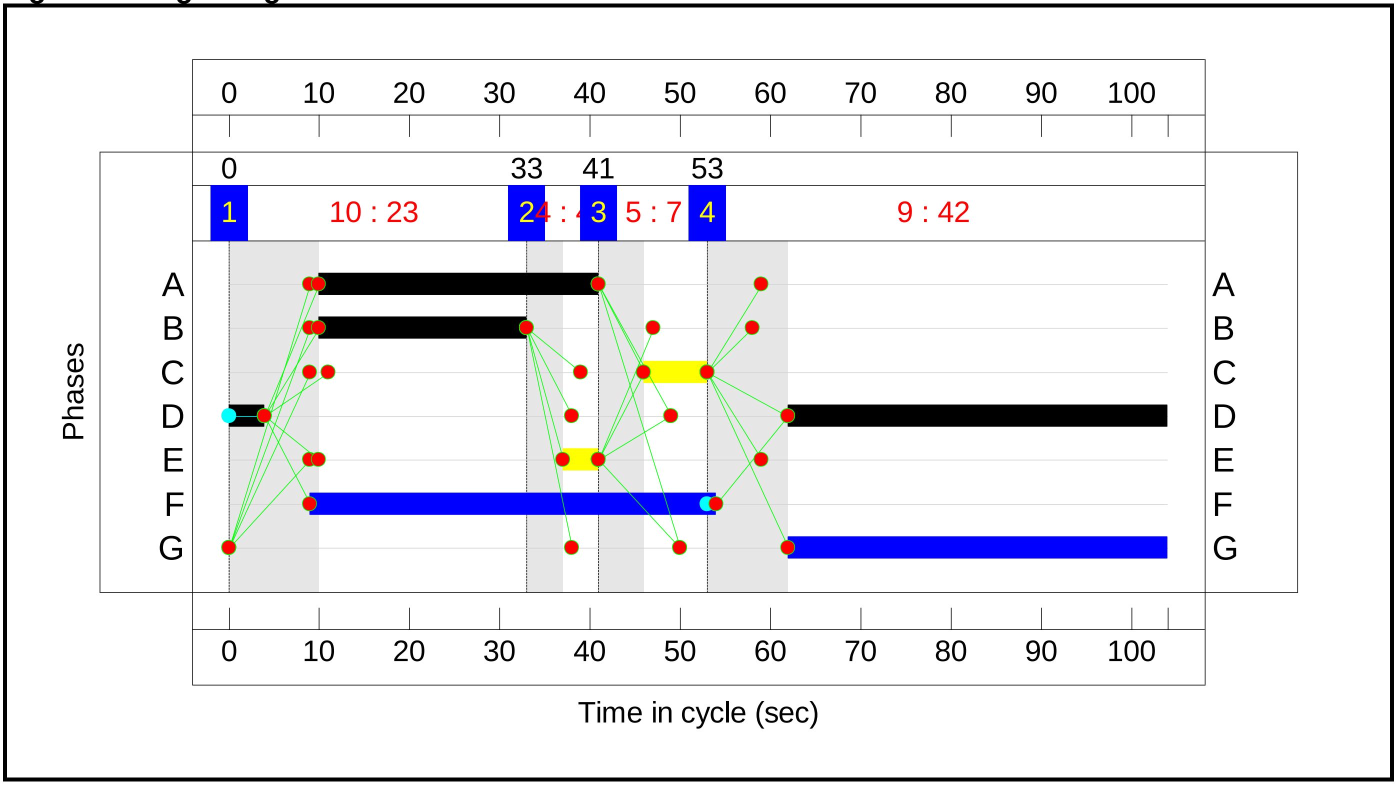


1
Min: 7
F
B
A
10
23s
2
Min: 4
F
A
E
4
4s
3
Min: 7
F
C
5
7s
4
Min: 13
D
G
9
42s

Stage Timings

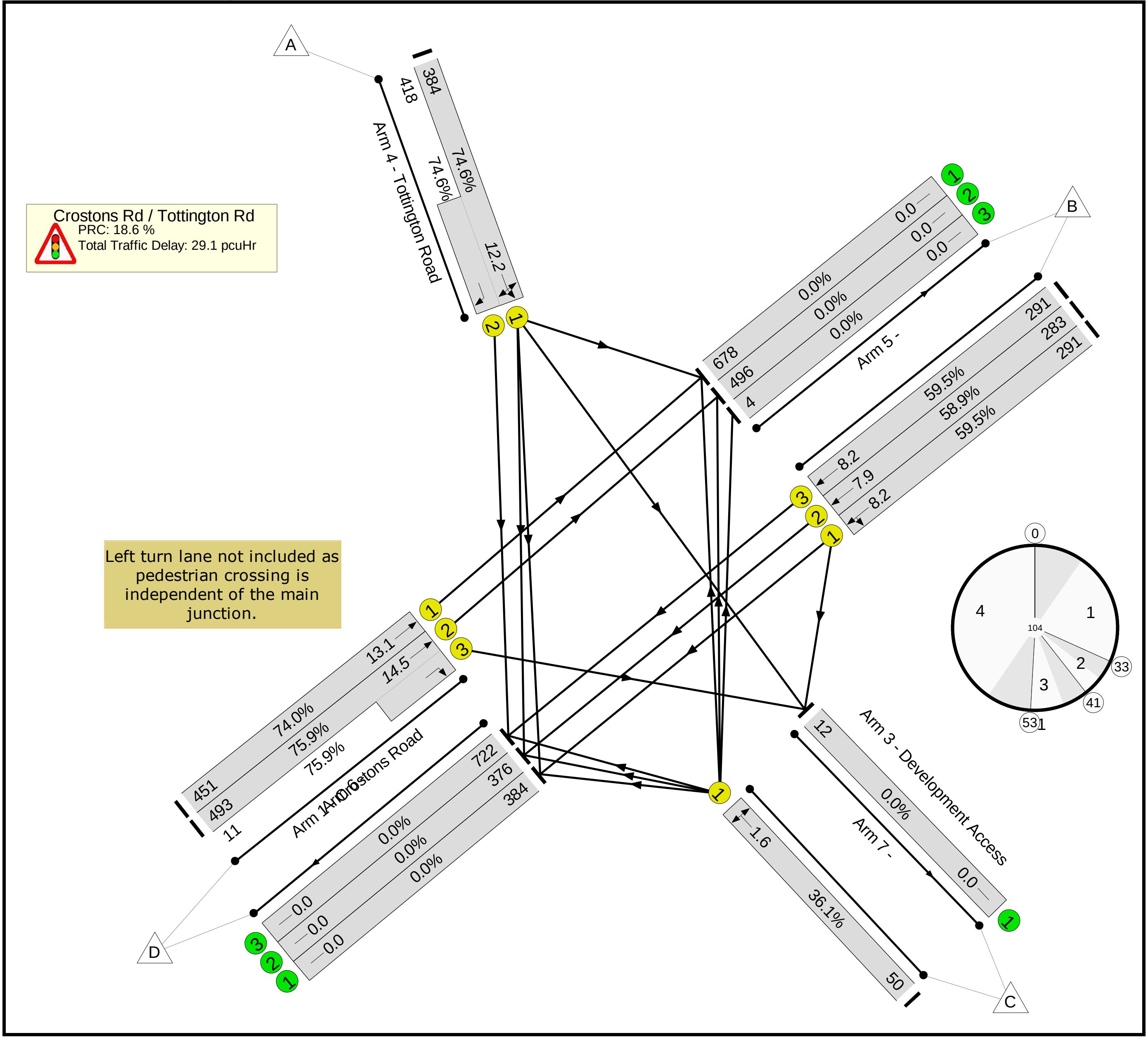
Stage	1	2	3	4
Duration	23	4	7	42
Change Point	0	33	41	53

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: 18.6 %
Total Traffic Delay: 29.1 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
A
B
C
D
Arm 4 - Tottington Road
384
418
74.6%
74.6%
12.2
Arm 5 -
678
496
4
0.0%
0.0%
0.0%
0.0
0.0
0.0
291
283
291
59.5%
58.9%
59.5%
8.2
7.9
8.2
Arm 3 - Development Access
12
0.0%
0.0
Arm 7 -
1.6
36.1%
50
Arm 1 - Crostons Road
Arm 6 -
451
493
11
74.0%
75.9%
75.9%
13.1
14.5
722
376
384
0.0%
0.0%
0.0%
0.0
0.0
0.0
0
104
1
2
3
4
33
41
53
1

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.9%**
Crostons Rd / Tottington Rd	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.9%**
1/1	Crostons Road Ahead	U	N/A	N/A	A	E	1	31	4	451	1980	609	74.0%
1/2+1/3	Crostons Road Ahead Right	U	N/A	N/A	A	E	1	31	4:4	504	2120:1800	650+14	75.9 : 75.9%
2/1	Crostons Road Ahead Left	U	N/A	N/A	B		1	23	-	291	2119	489	59.5%
2/2	Crostons Road Ahead	U	N/A	N/A	B		1	23	-	283	2081	480	58.9%
2/3	Crostons Road Ahead	U	N/A	N/A	B		1	23	-	291	2120	489	59.5%
3/1	Development Access Right Left	U	N/A	N/A	C		1	7	-	50	1803	139	36.1%
4/1+4/2	Tottington Road Left Right Ahead	U	N/A	N/A	D		1	46	-	802	1810:1922	515+560	74.6 : 74.6%
5/1		U	N/A	N/A	-		-	-	-	678	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	496	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	4	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	384	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	376	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	722	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	12	Inf	Inf	0.0%

Full Input Data And Results

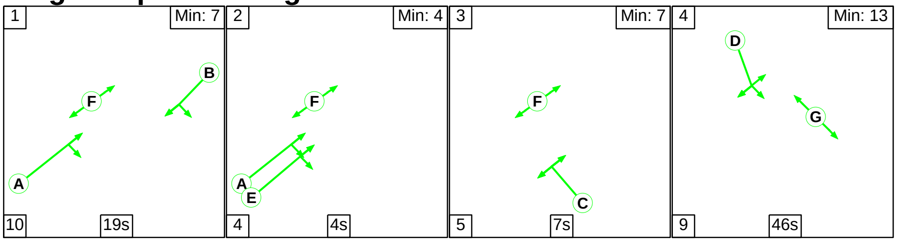
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.3**	**6.8**	**0.0**	**29.1**	**-**	**-**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**0**	**0**	**0**	**22.3**	**6.8**	**0.0**	**29.1**	**-**	**-**	**-**	**-**
1/1	451	451	-	-	-	4.0	1.4	-	5.4	43.5	11.7	1.4	13.1
1/2+1/3	504	504	-	-	-	4.5	1.5	-	6.1	43.5	12.9	1.5	14.5
2/1	291	291	-	-	-	2.9	0.7	-	3.6	44.7	7.4	0.7	8.2
2/2	283	283	-	-	-	2.8	0.7	-	3.5	44.7	7.2	0.7	7.9
2/3	291	291	-	-	-	2.9	0.7	-	3.6	44.7	7.4	0.7	8.2
3/1	50	50	-	-	-	0.6	0.3	-	0.9	65.8	1.4	0.3	1.6
4/1+4/2	802	802	-	-	-	4.5	1.5	-	5.9	26.7	10.7	1.5	12.2
5/1	678	678	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	496	496	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	4	4	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	384	384	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	376	376	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	722	722	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	12	12	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 18.6 Total Delay for Signalled Lanes (pcuHr): 29.13 Cycle Time (s): 104
PRC Over All Lanes (%): 18.6 Total Delay Over All Lanes(pcuHr): 29.13

Full Input Data And Results

Scenario 7: 'Base + CD With Dev AM' (FG7: 'Base + CD With Dev AM', Plan 1: 'Network Control Plan 1')

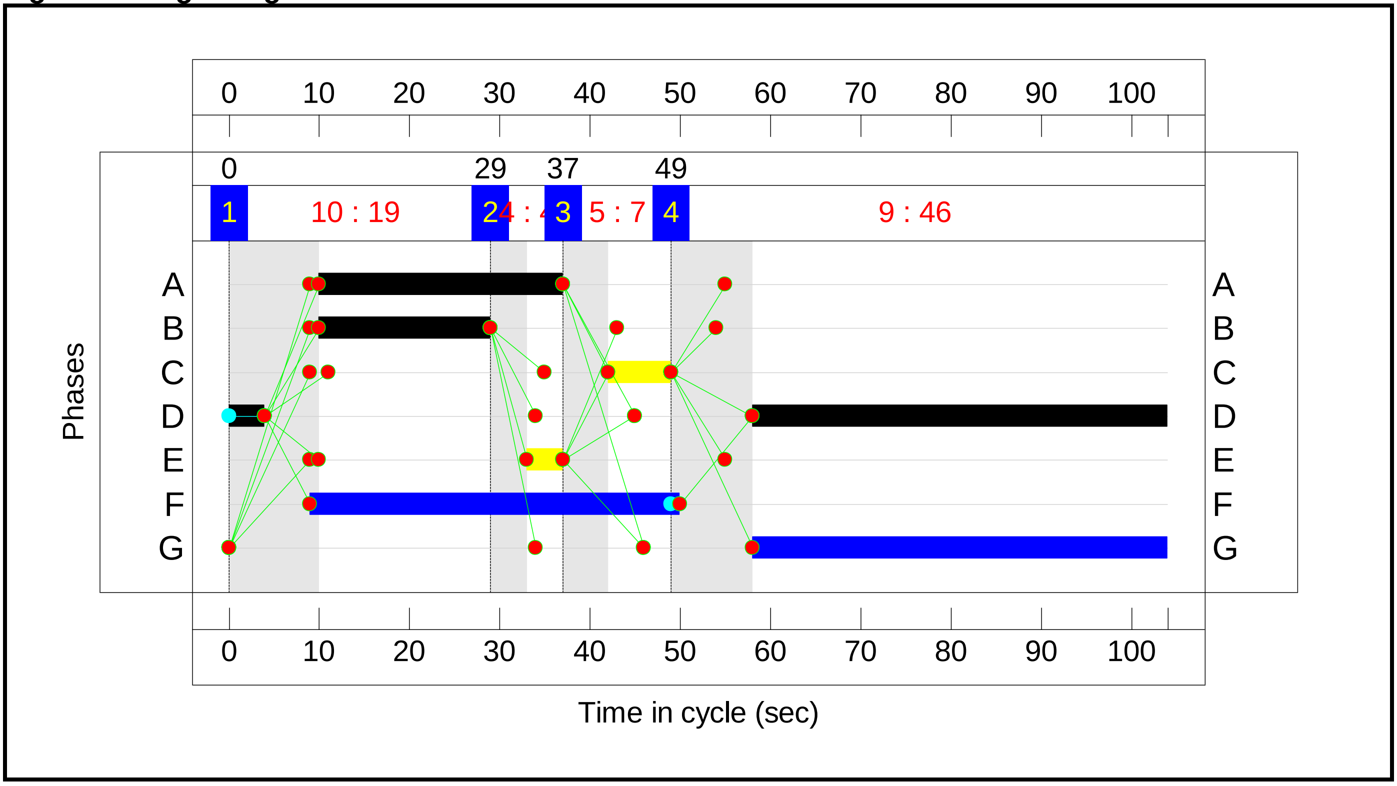
Stage Sequence Diagram


1
Min: 7
B
F
A
10
19s
2
Min: 4
F
A
E
4
4s
3
Min: 7
F
C
5
7s
4
Min: 13
D
G
9
46s

Stage Timings

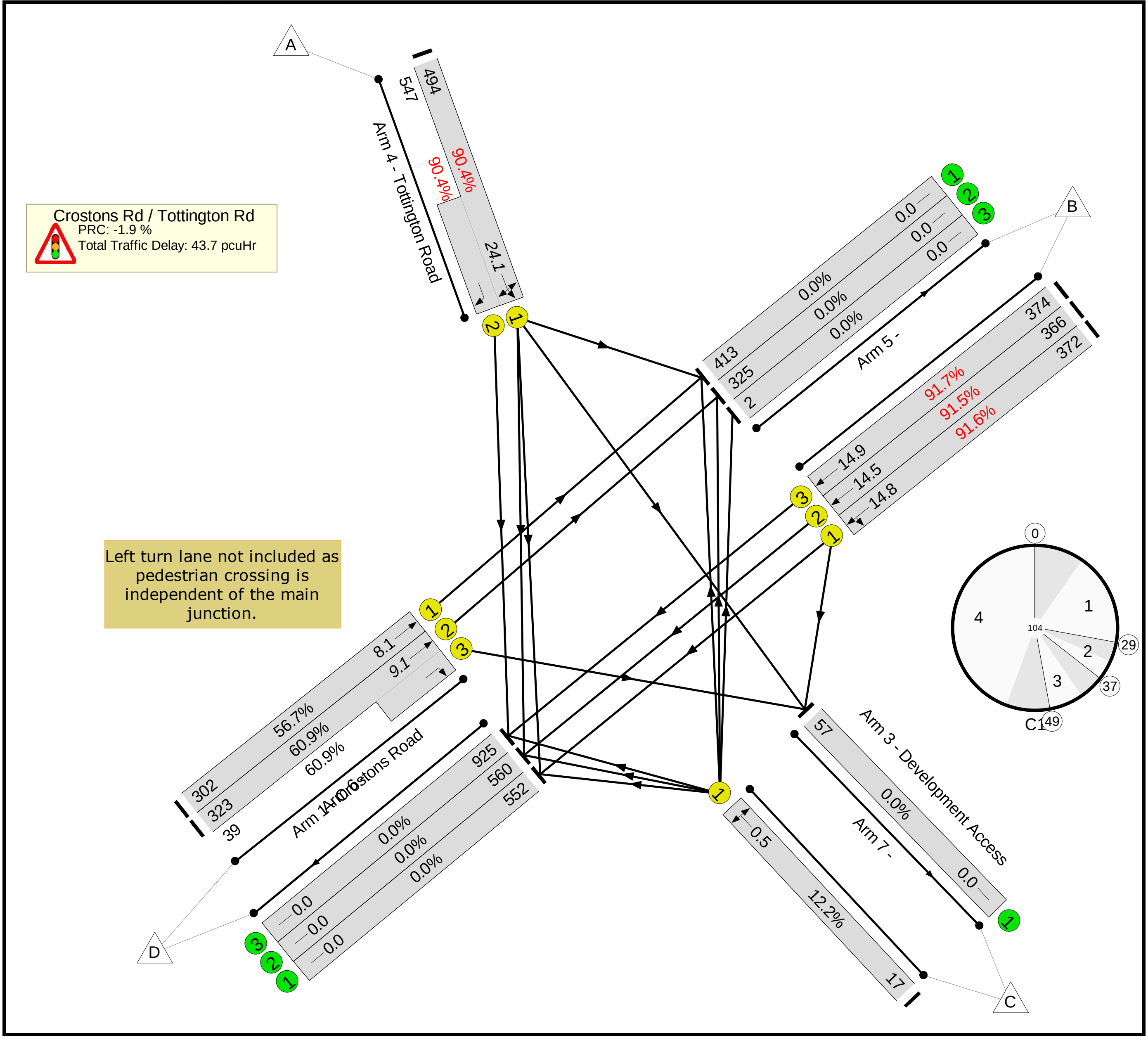
Stage	1	2	3	4
Duration	19	4	7	46
Change Point	0	29	37	49

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: -1.9 %
Total Traffic Delay: 43.7 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
A
B
C
D
Arm 4 - Tottington Road
494
547
90.4%
90.4%
24.1
Arm 5 -
413
325
2
0.0%
0.0%
0.0%
0.0
0.0
0.0
374
366
372
91.7%
91.5%
91.6%
14.9
14.5
14.8
Arm 1 - Crostons Road
Arm 6 -
302
323
39
56.7%
60.9%
60.9%
8.1
9.1
925
560
552
0.0%
0.0%
0.0%
0.0
0.0
0.0
Arm 3 - Development Access
57
0.0%
0.0
Arm 7 -
0.5
12.2%
17
0
104
1
2
3
4
29
37
49
C1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.7%**
Crostons Rd / Tottington Rd	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.7%**
1/1	Crostons Road Ahead	U	N/A	N/A	A	E	1	27	4	302	1980	533	56.7%
1/2+1/3	Crostons Road Ahead Right	U	N/A	N/A	A	E	1	27	4:4	362	2120:1800	530+64	60.9 : 60.9%
2/1	Crostons Road Ahead Left	U	N/A	N/A	B		1	19	-	372	2111	406	91.6%
2/2	Crostons Road Ahead	U	N/A	N/A	B		1	19	-	366	2081	400	91.5%
2/3	Crostons Road Ahead	U	N/A	N/A	B		1	19	-	374	2120	408	91.7%
3/1	Development Access Right Left	U	N/A	N/A	C		1	7	-	17	1815	140	12.2%
4/1+4/2	Tottington Road Left Right Ahead	U	N/A	N/A	D		1	50	-	1041	1857:1922	547+605	90.4 : 90.4%
5/1		U	N/A	N/A	-		-	-	-	413	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	325	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	2	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	552	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	560	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	925	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	57	Inf	Inf	0.0%

Full Input Data And Results

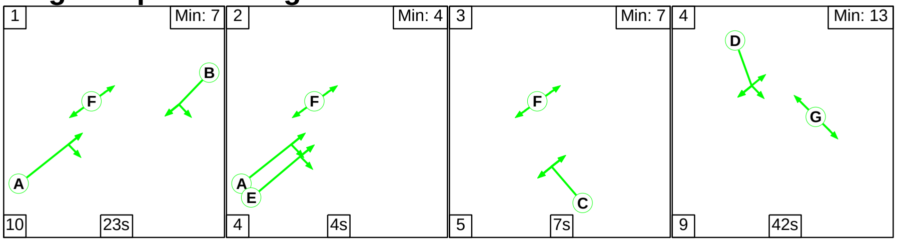
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**24.9**	**18.9**	**0.0**	**43.7**	**-**	**-**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**0**	**0**	**0**	**24.9**	**18.9**	**0.0**	**43.7**	**-**	**-**	**-**	**-**
1/1	302	302	-	-	-	2.7	0.6	-	3.4	40.5	7.5	0.6	8.1
1/2+1/3	362	362	-	-	-	3.3	0.8	-	4.1	40.3	8.3	0.8	9.1
2/1	372	372	-	-	-	4.3	4.4	-	8.6	83.4	10.4	4.4	14.8
2/2	366	366	-	-	-	4.2	4.3	-	8.5	83.3	10.3	4.3	14.5
2/3	374	374	-	-	-	4.3	4.4	-	8.7	83.5	10.5	4.4	14.9
3/1	17	17	-	-	-	0.2	0.1	-	0.3	59.4	0.5	0.1	0.5
4/1+4/2	1041	1041	-	-	-	5.9	4.4	-	10.3	35.5	19.7	4.4	24.1
5/1	413	413	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	325	325	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	2	2	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	552	552	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	560	560	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	925	925	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	57	57	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): -1.9 Total Delay for Signalled Lanes (pcuHr): 43.75 Cycle Time (s): 104
PRC Over All Lanes (%): -1.9 Total Delay Over All Lanes(pcuHr): 43.75

Full Input Data And Results

Scenario 8: 'Base + CD With Dev PM' (FG8: 'Base + CD With Dev PM', Plan 1: 'Network Control Plan 1')

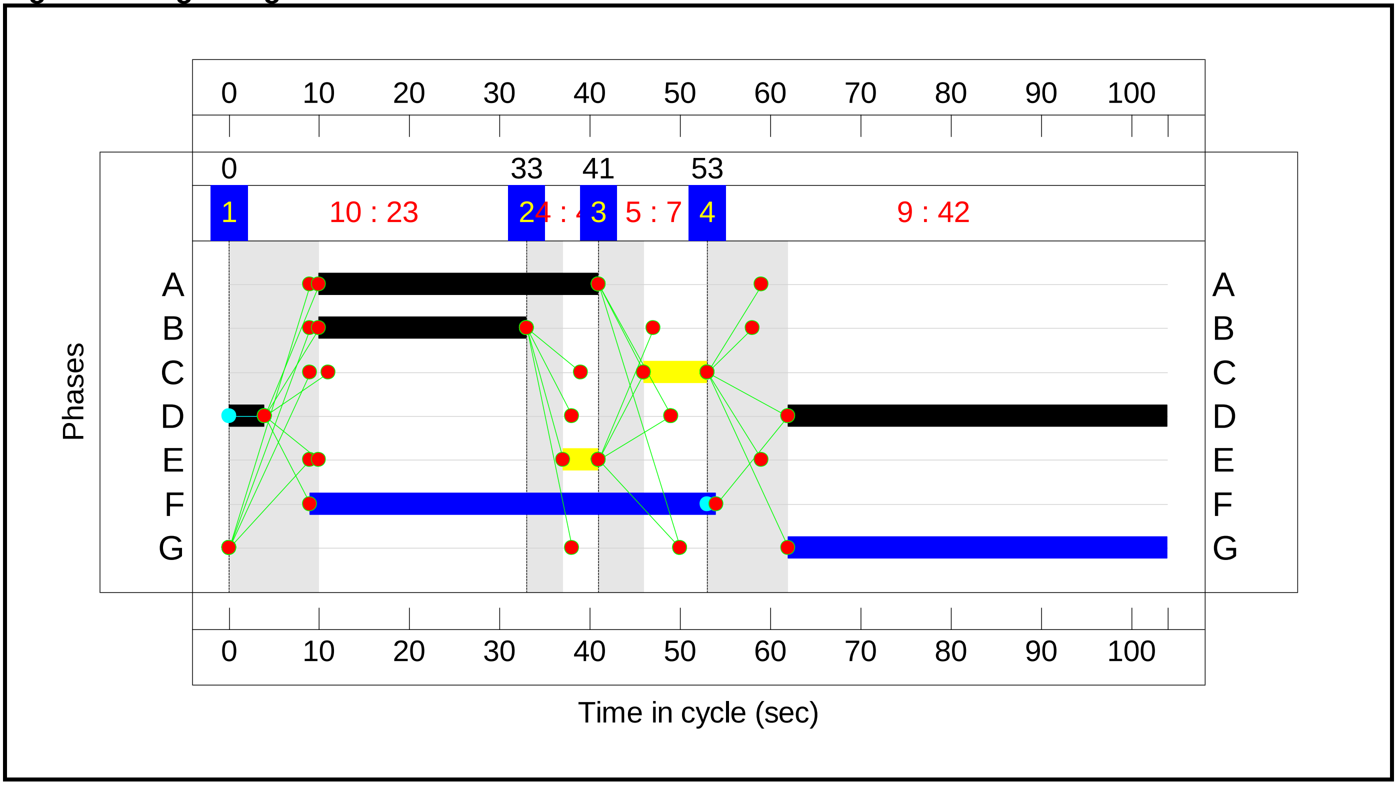
Stage Sequence Diagram


1
Min: 7
B
F
A
10
23s
2
Min: 4
F
A
E
4
4s
3
Min: 7
F
C
5
7s
4
Min: 13
D
G
9
42s

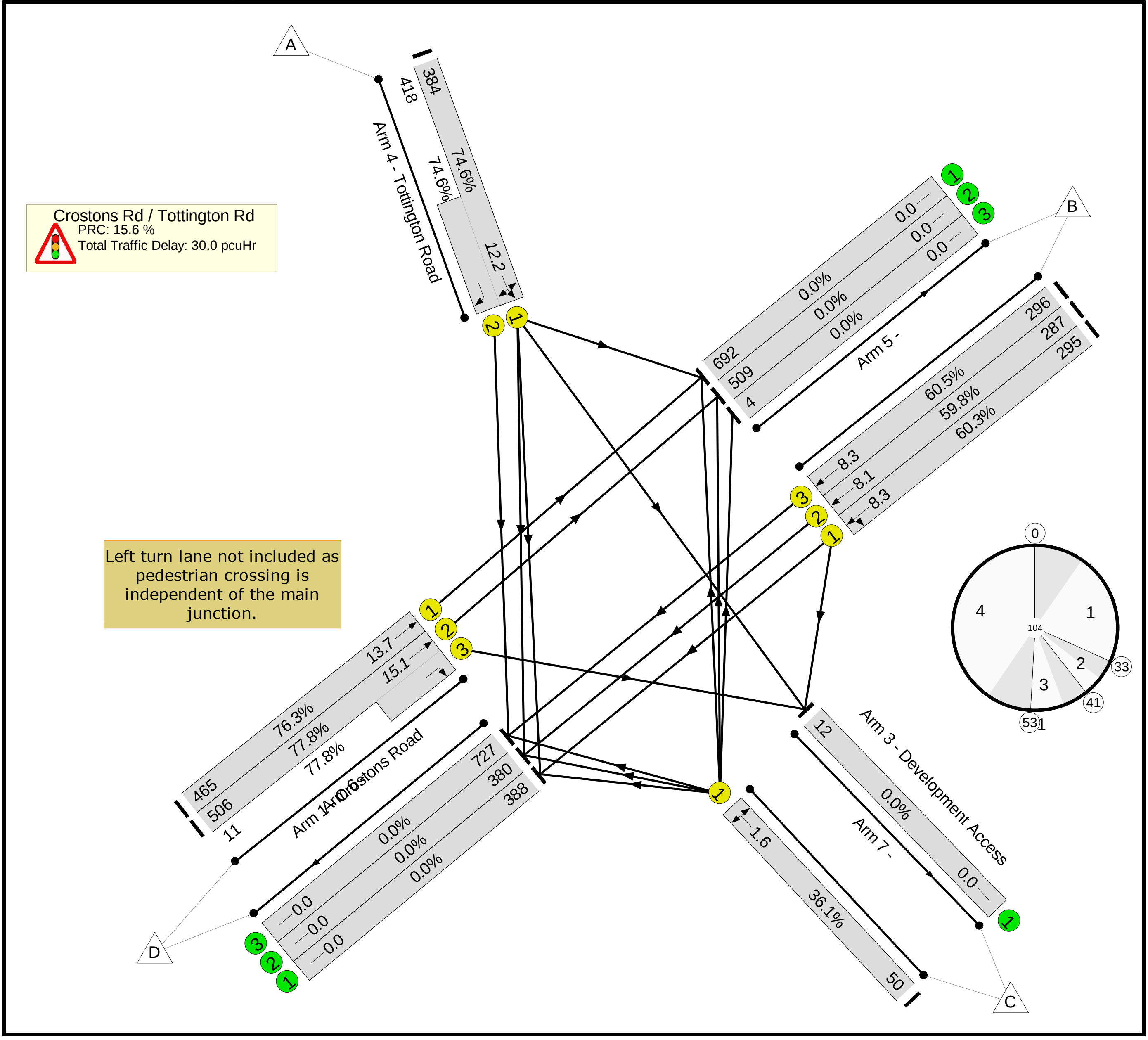
Stage Timings

Stage	1	2	3	4
Duration	23	4	7	42
Change Point	0	33	41	53

Signal Timings Diagram



Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: 15.6 %
Total Traffic Delay: 30.0 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
A
B
C
D
Arm 4 - Tottington Road
384
418
74.6%
74.6%
12.2
Arm 5 -
692
509
4
0.0%
0.0%
0.0%
0.0
0.0
0.0
296
287
295
60.5%
59.8%
60.3%
8.3
8.1
8.3
Arm 3 - Development Access
12
0.0%
0.0
Arm 7 -
1.6
36.1%
50
Arm 1 - Crostons Road
Arm 6 -
465
506
11
76.3%
77.8%
77.8%
13.7
15.1
727
380
388
0.0%
0.0%
0.0%
0.0
0.0
0.0
0
1
2
3
4
104
33
41
53
1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.8%**
Crostons Rd / Tottington Rd	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.8%**
1/1	Crostons Road Ahead	U	N/A	N/A	A	E	1	31	4	465	1980	609	76.3%
1/2+1/3	Crostons Road Ahead Right	U	N/A	N/A	A	E	1	31	4:4	517	2120:1800	650+14	77.8 : 77.8%
2/1	Crostons Road Ahead Left	U	N/A	N/A	B		1	23	-	295	2119	489	60.3%
2/2	Crostons Road Ahead	U	N/A	N/A	B		1	23	-	287	2081	480	59.8%
2/3	Crostons Road Ahead	U	N/A	N/A	B		1	23	-	296	2120	489	60.5%
3/1	Development Access Right Left	U	N/A	N/A	C		1	7	-	50	1803	139	36.1%
4/1+4/2	Tottington Road Left Right Ahead	U	N/A	N/A	D		1	46	-	802	1810:1922	515+560	74.6 : 74.6%
5/1		U	N/A	N/A	-		-	-	-	692	Inf	Inf	0.0%
5/2		U	N/A	N/A	-		-	-	-	509	Inf	Inf	0.0%
5/3		U	N/A	N/A	-		-	-	-	4	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
6/2		U	N/A	N/A	-		-	-	-	380	Inf	Inf	0.0%
6/3		U	N/A	N/A	-		-	-	-	727	Inf	Inf	0.0%
7/1		U	N/A	N/A	-		-	-	-	12	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**22.7**	**7.3**	**0.0**	**30.0**	**-**	**-**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**0**	**0**	**0**	**22.7**	**7.3**	**0.0**	**30.0**	**-**	**-**	**-**	**-**
1/1	465	465	-	-	-	4.2	1.6	-	5.8	44.8	12.1	1.6	13.7
1/2+1/3	517	517	-	-	-	4.7	1.7	-	6.4	44.7	13.4	1.7	15.1
2/1	295	295	-	-	-	2.9	0.8	-	3.7	45.0	7.5	0.8	8.3
2/2	287	287	-	-	-	2.8	0.7	-	3.6	44.9	7.3	0.7	8.1
2/3	296	296	-	-	-	2.9	0.8	-	3.7	45.0	7.6	0.8	8.3
3/1	50	50	-	-	-	0.6	0.3	-	0.9	65.8	1.4	0.3	1.6
4/1+4/2	802	802	-	-	-	4.5	1.5	-	5.9	26.7	10.7	1.5	12.2
5/1	692	692	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/2	509	509	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/3	4	4	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2	380	380	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/3	727	727	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	12	12	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1
PRC for Signalled Lanes (%): 15.6
PRC Over All Lanes (%): 15.6
Total Delay for Signalled Lanes (pcuHr): 30.03
Total Delay Over All Lanes(pcuHr): 30.03
Cycle Time (s): 104

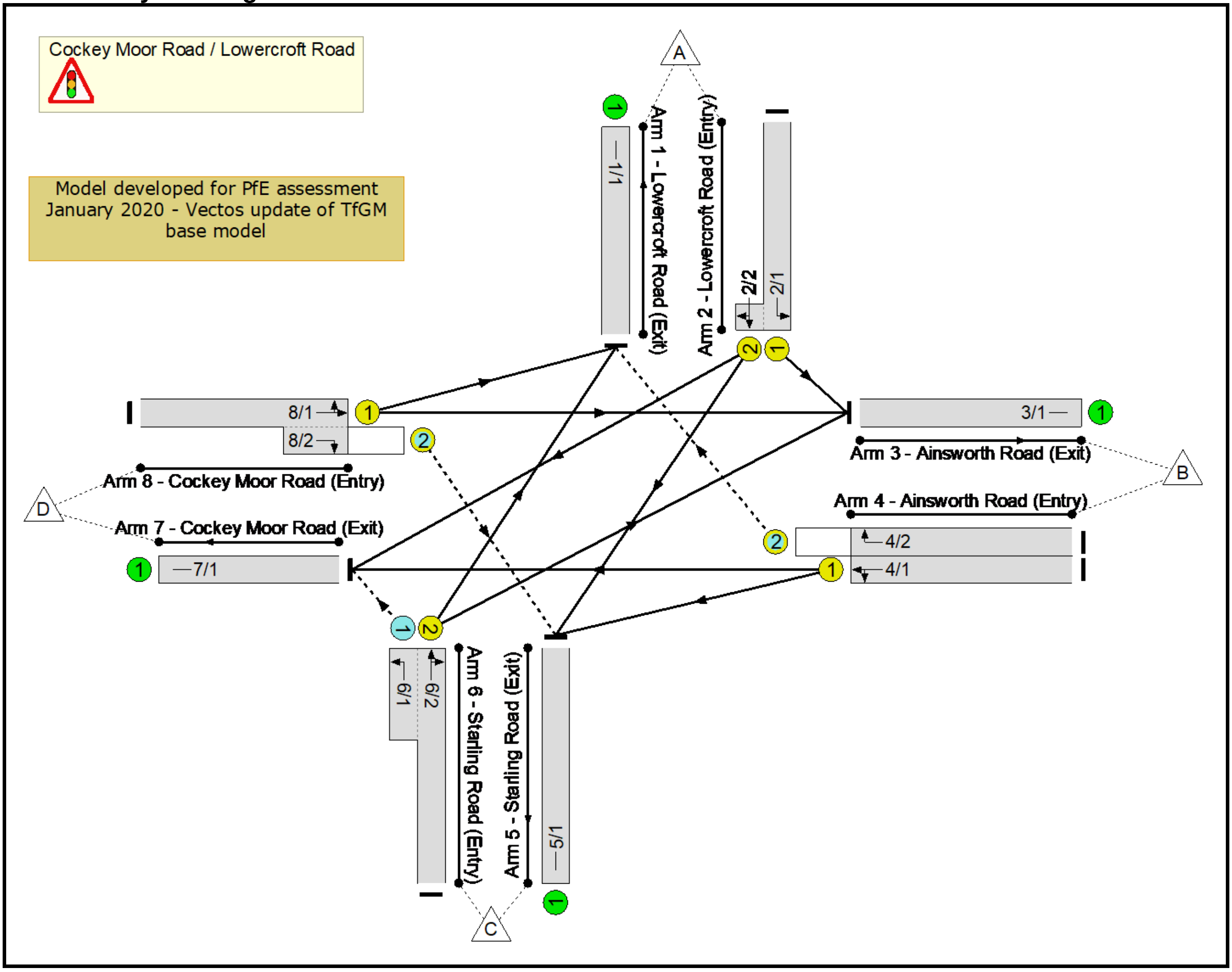
Full Input Data And Results

User and Project Details

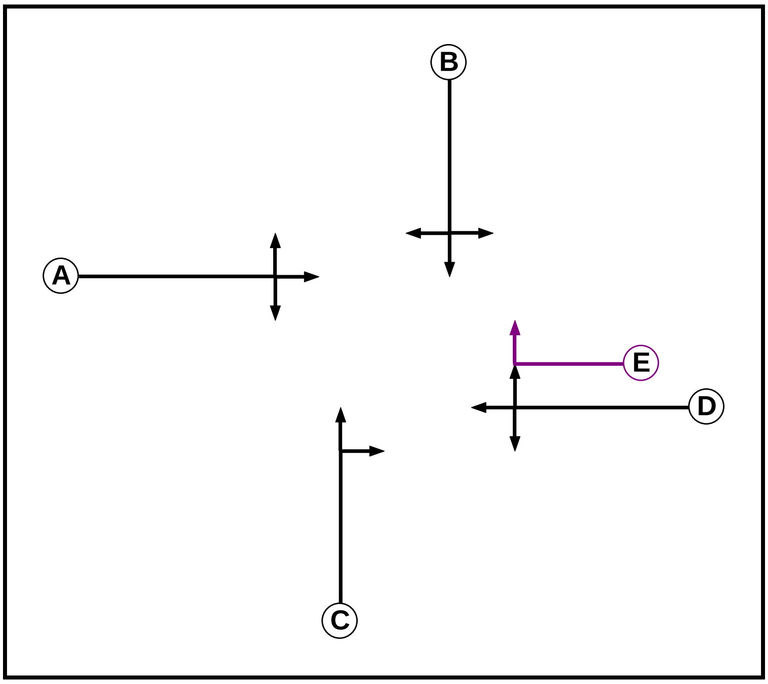
Project:	**Ainsworth Road / Cockey Moor Road Junction Upgrade**
Title:	**Ainsworth Road / Cockey Moor Road Junction Upgrade**
Location:	Bury
Design Layout Ref:	Existing
Date Completed:	August 2024
Model Purpose:	For development impact assessment.
Flow Details:	Cycle time of 140 seconds taken from MOVA Logs (2-034 MOVA Log (05-10-17 to 16-10-17)). Updated traffic count undertaken Junce 2024.
Safety Considerations:	N/a
Additional detail:	
File name:	J7 Cockey Moor Rd Existing v2.lsg3x
Author:	JL
Company:	SLR
Address:	Dale Street, Manchester, M1 2HF

Full Input Data And Results

Network Layout Diagram


Cockey Moor Road / Lowercroft Road
Model developed for PfE assessment
January 2020 - Vectos update of TfGM
base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
1/1
2/1
2/2
3/1
4/1
4/2
5/1
6/1
6/2
7/1
8/1
8/2
1
2

Phase Diagram



Full Input Data And Results

Phase Input Data

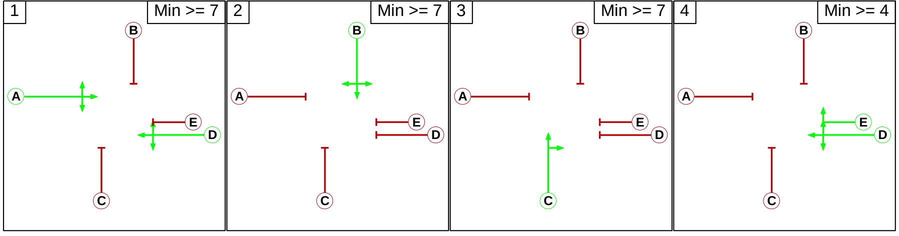
Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		-9999	7
B	Traffic	1		-9999	7
C	Traffic	1		-9999	7
D	Traffic	1		-9999	7
E	Ind. Arrow	1	D	-9999	4

Phase Intergreens Matrix

		Starting Phase				
Terminating Phase		A	B	C	D	E
	A		8	8	-	7
	B	6		8	6	6
	C	6	8		6	6
	D	-	8	8		-
	E	5	8	8	-	

Stage Diagram

Stage Stream: 1


1
Min >= 7
A
B
C
D
E
2
Min >= 7
A
B
C
D
E
3
Min >= 7
A
B
C
D
E
4
Min >= 4
A
B
C
D
E

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Give-Way Lane Input Data

Junction: Cockey Moor Road / Lowercroft Road											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
4/2 (Ainsworth Road (Entry))	1/1 (Right)	1439	0	8/1	1.09	To 3/1 (Ahead)	3.00	-	0.50	3	2.00
6/1 (Starling Road (Entry))	7/1 (Left)	715	0	2/2	0.22	All	-	-	-	-	-
				4/1	0.22	To 7/1 (Ahead)					
8/2 (Cockey Moor Road (Entry))	5/1 (Right)	1439	0	4/1	1.09	All	3.00	-	0.50	3	2.00

Lane Input Data

Junction: Cockey Moor Road / Lowercroft Road

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Lowercroft Road (Exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
2/1 (Lowercroft Road (Entry))	U	B	2	3	60.0	Geom	-	2.60	0.00	Y	Arm 3 Left	8.20
2/2 (Lowercroft Road (Entry))	U	B	2	3	1.4	Geom	-	2.60	0.00	N	Arm 5 Ahead	Inf
											Arm 7 Right	6.75
3/1 (Ainsworth Road (Exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1 (Ainsworth Road (Entry))	U	D	2	3	60.0	Geom	-	2.50	0.00	Y	Arm 5 Left	13.00
											Arm 7 Ahead	Inf
4/2 (Ainsworth Road (Entry))	O	D E	2	3	60.0	Geom	-	2.50	0.00	N	Arm 1 Right	3.40
5/1 (Starling Road (Exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Starling Road (Entry))	O		2	3	5.0	Geom	-	4.60	0.00	Y	Arm 7 Left	20.00
6/2 (Starling Road (Entry))	U	C	2	3	60.0	Geom	-	3.10	0.00	Y	Arm 1 Ahead	13.50
											Arm 3 Right	17.50
7/1 (Cockey Moor Road (Exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Cockey Moor Road (Entry))	U	A	2	3	60.0	Geom	-	2.00	0.00	Y	Arm 1 Left	13.30
											Arm 3 Ahead	Inf
8/2 (Cockey Moor Road (Entry))	O	A	2	3	3.5	Geom	-	2.00	0.00	Y	Arm 5 Right	Inf

Full Input Data And Results

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2024 Survey AM'	07:45	08:45	01:00	
2: '2024 Survey PM'	16:30	17:30	01:00	
3: '2024 Base With Dev AM'	07:45	08:45	01:00	
4: '2024 Base With Dev PM'	16:30	17:30	01:00	
5: 'Base + Com Dev AM'	07:45	08:45	01:00	
6: 'Base + Com Dev PM'	16:30	17:30	01:00	
7: 'Base + CD With Dev AM'	07:45	08:45	01:00	
8: 'Base + CD With Dev PM'	16:30	17:30	01:00	

Traffic Flows, Desired

Scenario 1: '2024 Servey AM' (FG1: '2024 Survey AM', Plan 1: 'Network Control Plan 1')
Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	105	242	90	437
	B	142	0	103	294	539
	C	163	61	0	32	256
	D	83	362	47	0	492
	Tot.	388	528	392	416	1724

Scenario 2: '2024 Survey PM' (FG2: '2024 Survey PM', Plan 1: 'Network Control Plan 1')
Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	115	192	60	367
	B	151	0	68	433	652
	C	227	59	0	83	369
	D	100	253	38	0	391
	Tot.	478	427	298	576	1779

Scenario 3: '20240 Base With Dev AM' (FG3: '2024 Base With Dev AM', Plan 1: 'Network Control Plan 1')
Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	108	255	97	460
	B	142	0	103	294	539
	C	166	61	0	32	259
	D	86	362	47	0	495
	Tot.	394	531	405	423	1753

Scenario 4: '2024 Basw With Dev PM' (FG4: '2024 Base With Dev PM', Plan 1: 'Network Control Plan 1')
Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	115	195	66	376
	B	151	0	68	433	652
	C	233	59	0	83	375
	D	111	253	38	0	402
	Tot.	495	427	301	582	1805

Scenario 5: 'Base + Com Dev AM' (FG5: 'Base + Com Dev AM', Plan 1: 'Network Control Plan 1')
Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	105	246	90	441
	B	142	0	104	294	540
	C	175	63	0	38	276
	D	83	362	49	0	494
	Tot.	400	530	399	422	1751

Scenario 6: 'Base + Com Dev PM' (FG6: 'Base + Com Dev PM', Plan 1: 'Network Control Plan 1')
Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	115	204	60	379
	B	151	0	70	433	654
	C	235	60	0	87	382
	D	100	253	44	0	397
	Tot.	486	428	318	580	1812

Full Input Data And Results

Scenario 7: 'Base + CD With Dev AM' (FG7: 'Base + CD With Dev AM', Plan 1: 'Network Control Plan 1')
Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	108	259	97	464
	B	142	0	104	294	540
	C	178	63	0	38	279
	D	86	362	49	0	497
	Tot.	406	533	412	429	1780

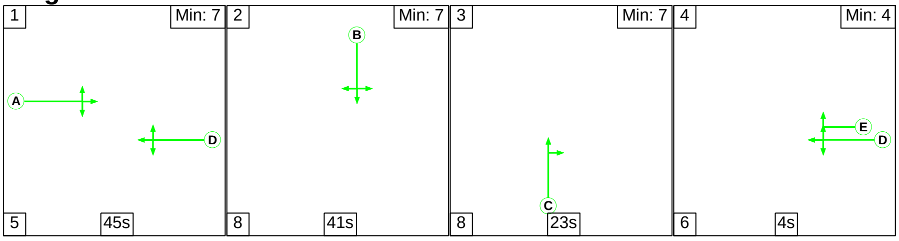
Scenario 8: 'Base + CD With Dev PM' (FG8: 'Base + CD With Dev PM', Plan 1: 'Network Control Plan 1')
Desired Flow :

	Destination					
		A	B	C	D	Tot.
Origin	A	0	115	207	66	388
	B	151	0	70	433	654
	C	241	60	0	87	388
	D	111	253	44	0	408
	Tot.	503	428	321	586	1838

Scenario 1: '2024 Servey AM' (FG1: '2024 Survey AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

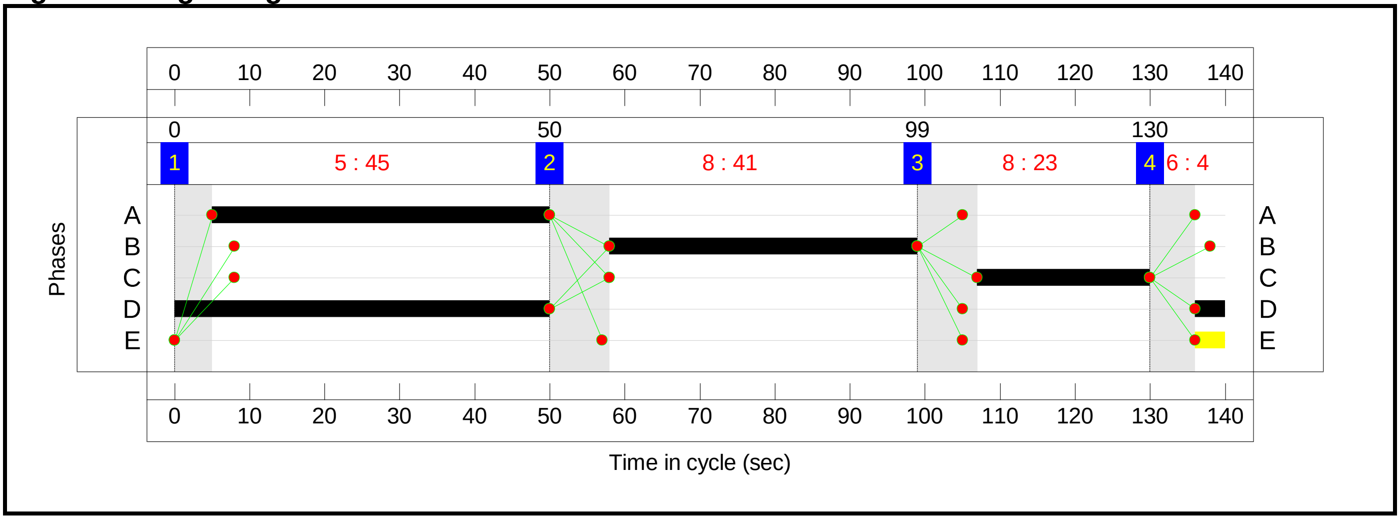


Stage Timings

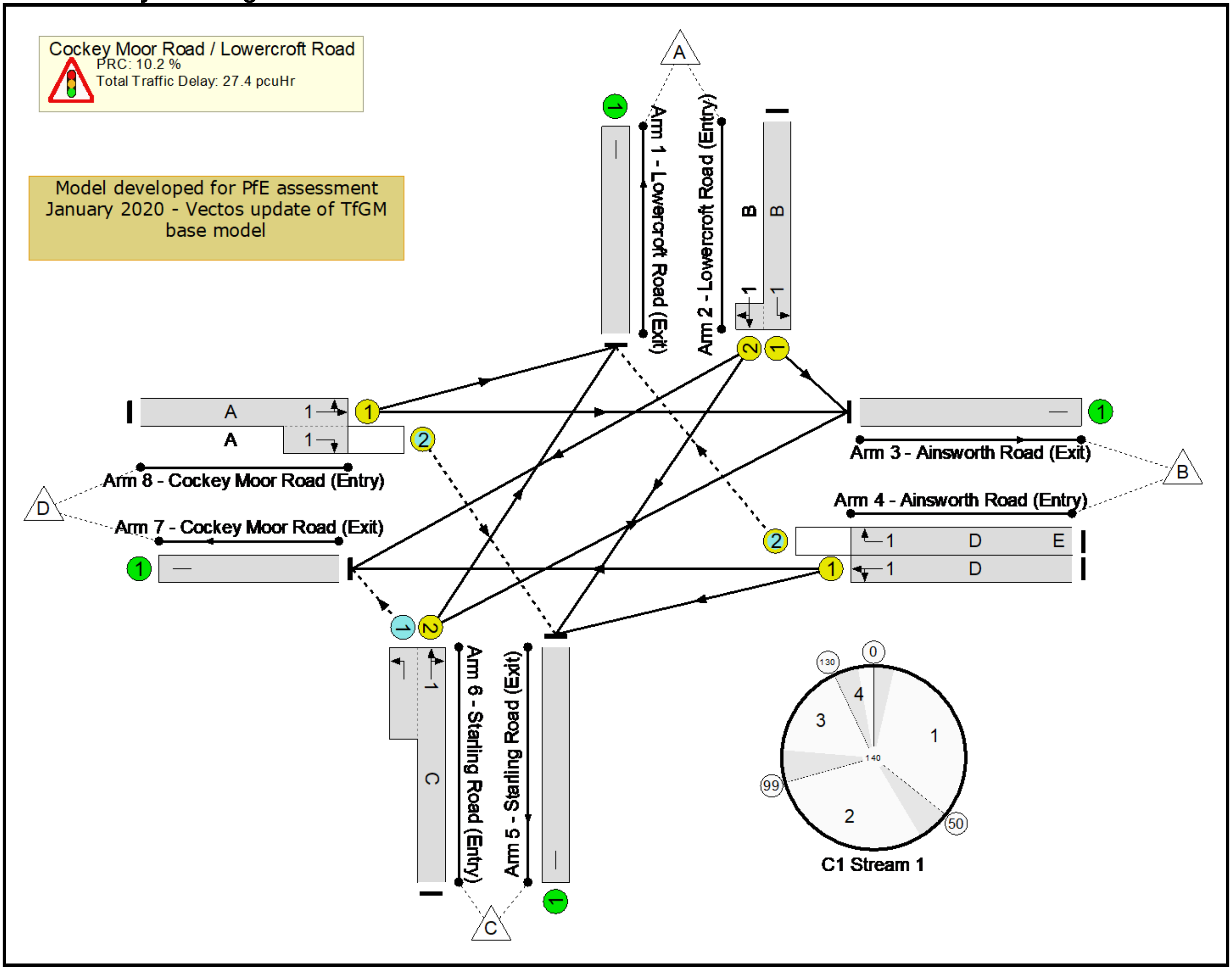
Stage Stream: 1

Stage	**1**	**2**	**3**	**4**
Duration	45	41	23	4
Change Point	0	50	99	130

Signal Timings Diagram



Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 10.2 %
Total Traffic Delay: 27.4 pcuHr
Model developed for PfE assessment January 2020 - Vectos update of TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
0
130
99
50
140
1
2
3
4
C1 Stream 1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.7%**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.7%**
1/1	Lowercroft Road (Exit)	U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	1	N/A	B		1	41	-	437	1585:1901	135+427	77.8 : 77.8%
3/1	Ainsworth Road (Exit)	U	N/A	N/A	-		-	-	-	528	Inf	Inf	0.0%
4/1	Ainsworth Road (Entry) Left Ahead	U	1	N/A	D		1	54	-	397	1811	711	55.8%
4/2	Ainsworth Road (Entry) Right	O	1	N/A	D	E	1	54	4	142	1391	213	66.7%
5/1	Starling Road (Exit)	U	N/A	N/A	-		-	-	-	392	Inf	Inf	0.0%
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	1	N/A	C -		1	23	-	256	1743:1930	283+40	79.2 : 79.2%
7/1	Cockey Moor Road (Exit)	U	N/A	N/A	-		-	-	-	416	Inf	Inf	0.0%
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	1	N/A	A		1	45	-	492	1778:1815	545+58	81.7 : 81.7%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**143**	**76**	**1**	**19.5**	**7.3**	**0.6**	**27.4**	**-**	**-**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**143**	**76**	**1**	**19.5**	**7.3**	**0.6**	**27.4**	**-**	**-**	**-**	**-**
1/1	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1+2/2	437	437	-	-	-	5.3	1.7	-	7.1	58.1	15.0	1.7	16.7
3/1	528	528	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	397	397	-	-	-	3.6	0.6	-	4.3	38.8	11.9	0.6	12.5
4/2	142	142	81	60	1	1.1	1.0	0.6	2.7	68.4	3.7	1.0	4.7
5/1	392	392	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	256	256	15	17	0	3.5	1.8	-	5.3	74.8	8.8	1.8	10.6
7/1	416	416	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	492	492	47	0	0	5.8	2.1	0.1	8.0	58.6	17.1	2.1	19.3

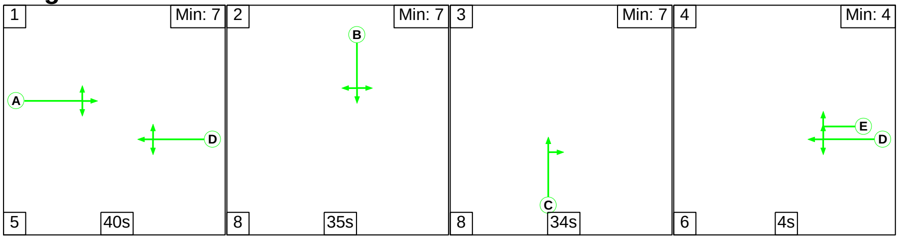
C1 Stream: 1 PRC for Signalled Lanes (%): 10.2 Total Delay for Signalled Lanes (pcuHr): 27.35 Cycle Time (s): 140
PRC Over All Lanes (%): 10.2 Total Delay Over All Lanes(pcuHr): 27.35

Full Input Data And Results

Scenario 2: '2024 Survey PM' (FG2: '2024 Survey PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

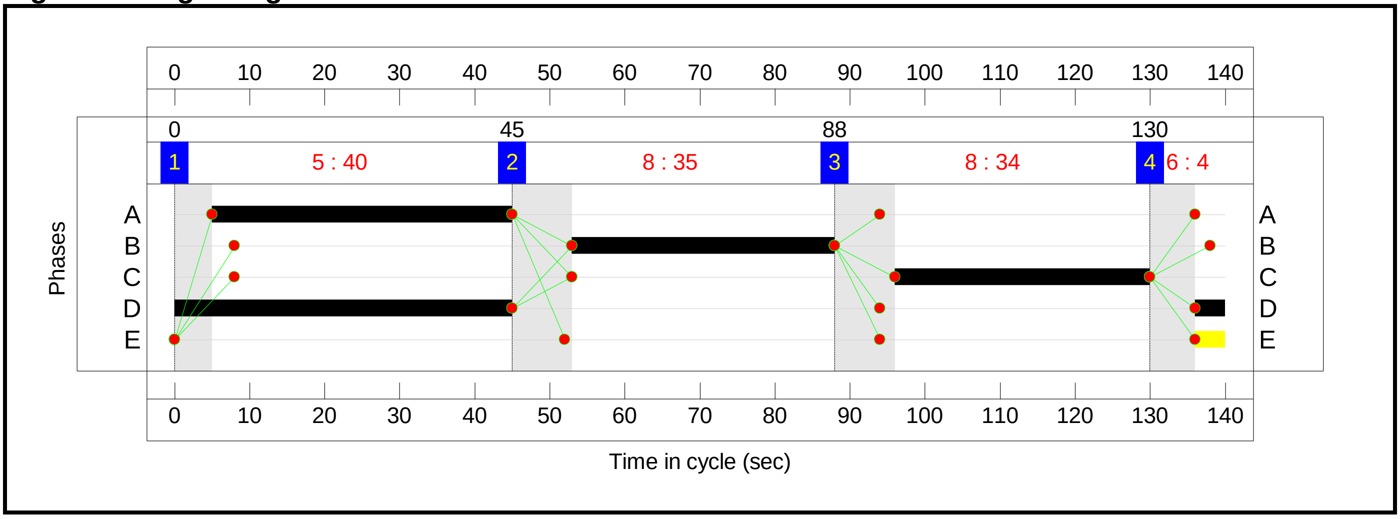

1
Min: 7
A
D
5
40s
2
Min: 7
B
8
35s
3
Min: 7
C
8
34s
4
Min: 4
E
D
6
4s

Stage Timings

Stage Stream: 1

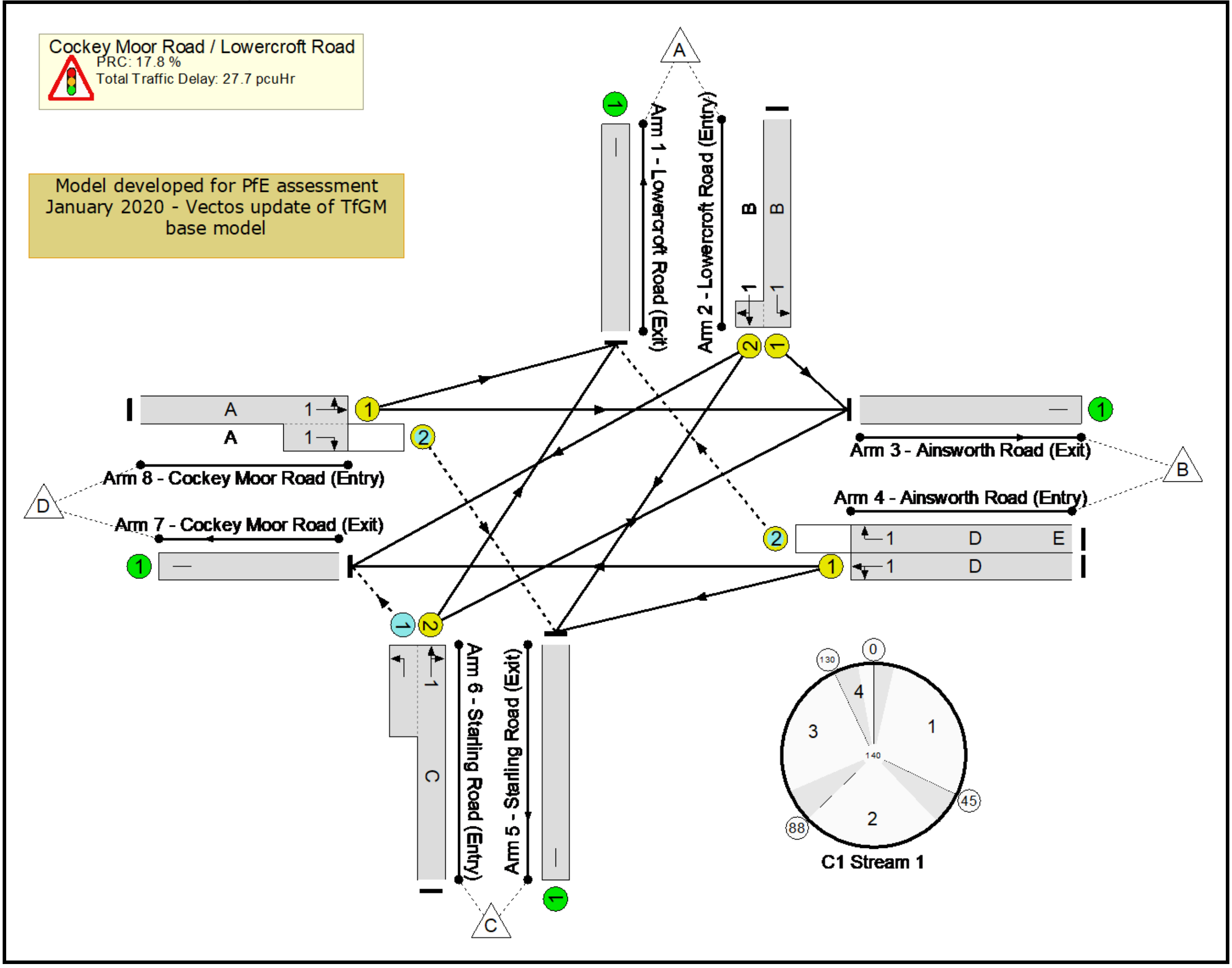
Stage	1	2	3	4
Duration	40	35	34	4
Change Point	0	45	88	130

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 17.8 %
Total Traffic Delay: 27.7 pcuHr
Model developed for PfE assessment January 2020 - Vectos update of TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
E
0
130
140
45
88
1
2
3
4
C1 Stream 1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.4%**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.4%**
1/1	Lowercroft Road (Exit)	U	N/A	N/A	-		-	-	-	478	Inf	Inf	0.0%
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	1	N/A	B		1	35	-	367	1585:1914	152+333	75.7 : 75.7%
3/1	Ainsworth Road (Exit)	U	N/A	N/A	-		-	-	-	427	Inf	Inf	0.0%
4/1	Ainsworth Road (Entry) Left Ahead	U	1	N/A	D		1	49	-	501	1836	656	76.4%
4/2	Ainsworth Road (Entry) Right	O	1	N/A	D	E	1	49	4	151	1391	266	56.8%
5/1	Starling Road (Exit)	U	N/A	N/A	-		-	-	-	298	Inf	Inf	0.0%
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	1	N/A	C -		1	34	-	369	1741:1930	375+109	76.3 : 76.3%
7/1	Cockey Moor Road (Exit)	U	N/A	N/A	-		-	-	-	576	Inf	Inf	0.0%
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	1	N/A	A		1	40	-	391	1759:1815	483+52	73.1 : 73.1%

Full Input Data And Results

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**158**	**113**	**1**	**20.5**	**6.7**	**0.6**	**27.7**	**-**	**-**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**158**	**113**	**1**	**20.5**	**6.7**	**0.6**	**27.7**	**-**	**-**	**-**	**-**
1/1	478	478	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1+2/2	367	367	-	-	-	4.8	1.5	-	6.3	61.9	12.4	1.5	13.9
3/1	427	427	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	501	501	-	-	-	5.5	1.6	-	7.1	51.2	17.1	1.6	18.7
4/2	151	151	90	60	1	1.4	0.7	0.4	2.4	58.0	4.2	0.7	4.8
5/1	298	298	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	369	369	30	53	0	4.1	1.6	-	5.6	54.9	11.8	1.6	13.3
7/1	576	576	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	391	391	38	0	0	4.8	1.3	0.1	6.2	57.5	13.2	1.3	14.5

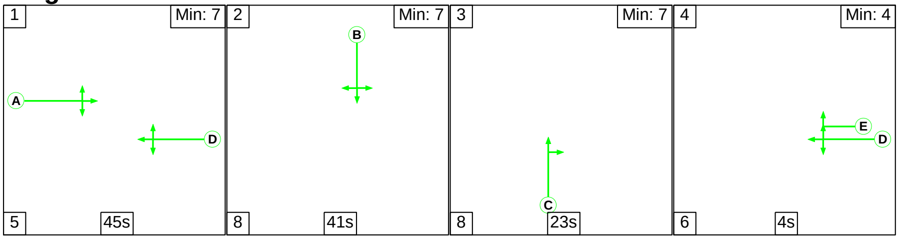
C1 Stream: 1 PRC for Signalled Lanes (%): 17.8 Total Delay for Signalled Lanes (pcuHr): 27.74 Cycle Time (s): 140
PRC Over All Lanes (%): 17.8 Total Delay Over All Lanes(pcuHr): 27.74

Full Input Data And Results

Scenario 3: '20240 Base With Dev AM' (FG3: '2024 Base With Dev AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



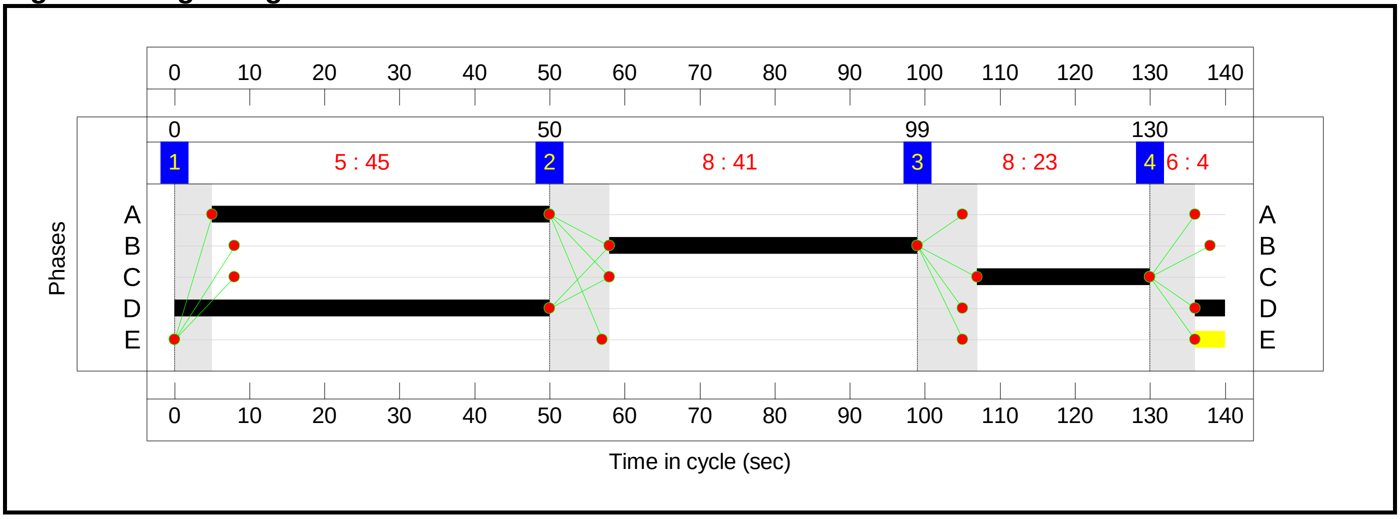
1
Min: 7
A
D
5
45s
2
Min: 7
B
8
41s
3
Min: 7
C
8
23s
4
Min: 4
E
D
6
4s

Stage Timings

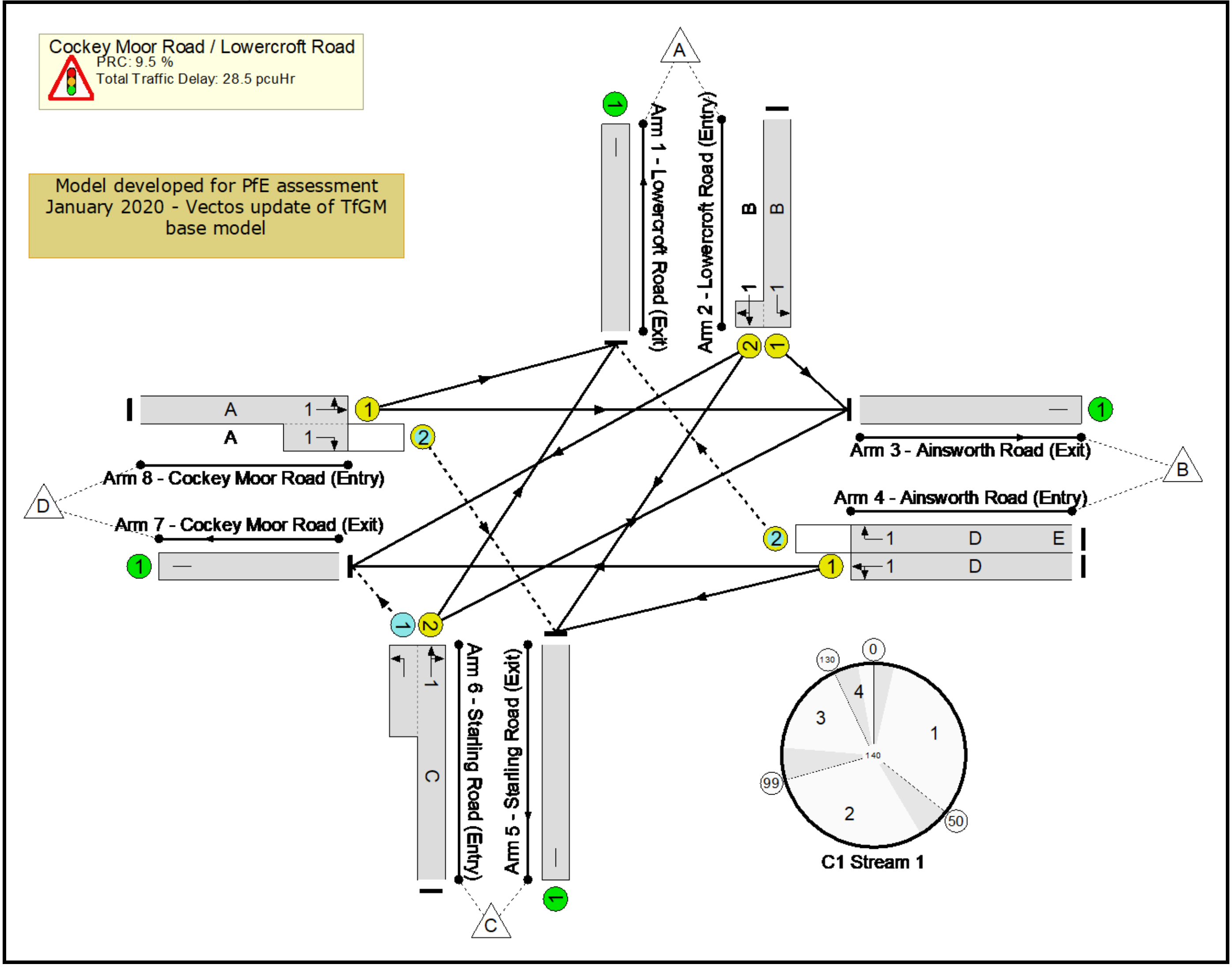
Stage Stream: 1

Stage	1	2	3	4
Duration	45	41	23	4
Change Point	0	50	99	130

Signal Timings Diagram



Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 9.5 %
Total Traffic Delay: 28.5 pcuHr
Model developed for PfE assessment January 2020 - Vectos update of TfGM base model
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
A
B
C
D
E
1
2
0
130
140
99
50
3
4
C1 Stream 1

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.2%**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.2%**
1/1	Lowercroft Road (Exit)	U	N/A	N/A	-		-	-	-	394	Inf	Inf	0.0%
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	1	N/A	B		1	41	-	460	1585:1899	132+429	82.0 : 82.0%
3/1	Ainsworth Road (Exit)	U	N/A	N/A	-		-	-	-	531	Inf	Inf	0.0%
4/1	Ainsworth Road (Entry) Left Ahead	U	1	N/A	D		1	54	-	397	1811	711	55.8%
4/2	Ainsworth Road (Entry) Right	O	1	N/A	D	E	1	54	4	142	1391	212	67.1%
5/1	Starling Road (Exit)	U	N/A	N/A	-		-	-	-	405	Inf	Inf	0.0%
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	1	N/A	C -		1	23	-	259	1743:1930	283+40	80.2 : 80.2%
7/1	Cockey Moor Road (Exit)	U	N/A	N/A	-		-	-	-	423	Inf	Inf	0.0%
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	1	N/A	A		1	45	-	495	1777:1815	545+57	82.2 : 82.2%

Full Input Data And Results

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**143**	**77**	**1**	**19.9**	**7.9**	**0.6**	**28.5**	**-**	**-**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**143**	**77**	**1**	**19.9**	**7.9**	**0.6**	**28.5**	**-**	**-**	**-**	**-**
1/1	394	394	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1+2/2	460	460	-	-	-	5.7	2.2	-	7.9	61.8	16.1	2.2	18.2
3/1	531	531	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	397	397	-	-	-	3.6	0.6	-	4.3	38.8	11.9	0.6	12.5
4/2	142	142	81	60	1	1.1	1.0	0.6	2.7	68.7	3.7	1.0	4.7
5/1	405	405	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	259	259	15	17	0	3.6	1.9	-	5.5	76.1	9.0	1.9	10.9
7/1	423	423	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	495	495	47	0	0	5.9	2.2	0.1	8.1	59.2	17.2	2.2	19.5

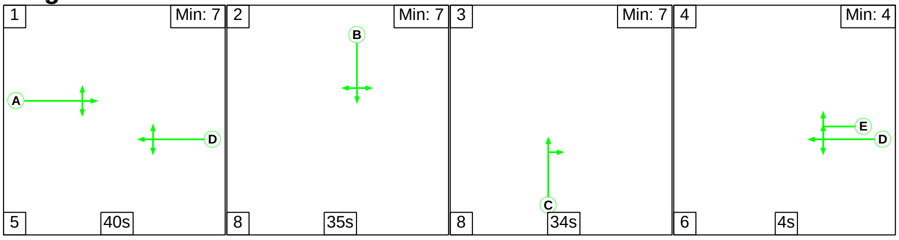
C1 Stream: 1 PRC for Signalled Lanes (%): 9.5 Total Delay for Signalled Lanes (pcuHr): 28.50 Cycle Time (s): 140
PRC Over All Lanes (%): 9.5 Total Delay Over All Lanes(pcuHr): 28.50

Full Input Data And Results

Scenario 4: '2024 Basw With Dev PM' (FG4: '2024 Base With Dev PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

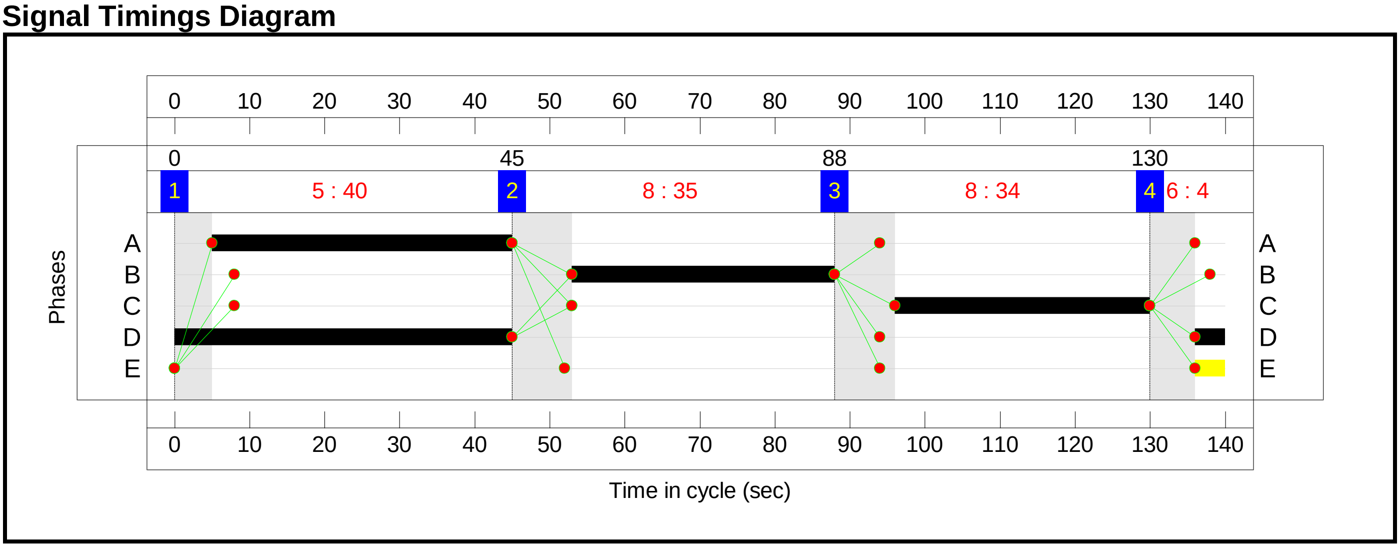

1
Min: 7
A
D
5
40s
2
Min: 7
B
8
35s
3
Min: 7
C
8
34s
4
Min: 4
E
D
6
4s

Stage Timings

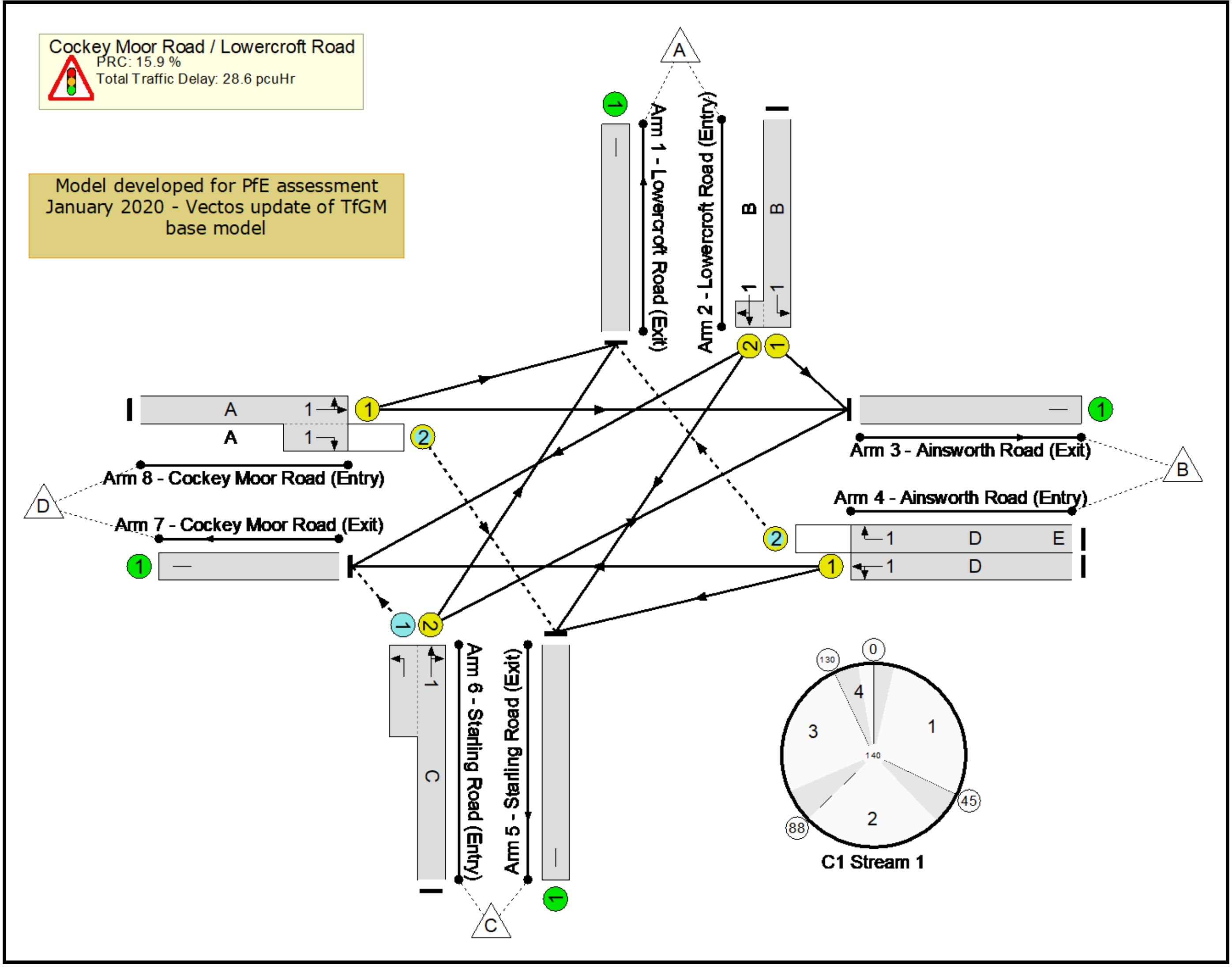
Stage Stream: 1

Stage	1	2	3	4
Duration	40	35	34	4
Change Point	0	45	88	130

Signal Timings Diagram



Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 15.9 %
Total Traffic Delay: 28.6 pcuHr
Model developed for PfE assessment January 2020 - Vectos update of TfGM base model
A
B
C
D
E
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
1
2
0
130
140
45
88
3
4
C1 Stream 1

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.7%**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.7%**
1/1	Lowercroft Road (Exit)	U	N/A	N/A	-		-	-	-	495	Inf	Inf	0.0%
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	1	N/A	B		1	35	-	376	1585:1908	148+336	77.7 : 77.7%
3/1	Ainsworth Road (Exit)	U	N/A	N/A	-		-	-	-	427	Inf	Inf	0.0%
4/1	Ainsworth Road (Entry) Left Ahead	U	1	N/A	D		1	49	-	501	1836	656	76.4%
4/2	Ainsworth Road (Entry) Right	O	1	N/A	D	E	1	49	4	151	1391	266	56.8%
5/1	Starling Road (Exit)	U	N/A	N/A	-		-	-	-	301	Inf	Inf	0.0%
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	1	N/A	C -		1	34	-	375	1741:1930	376+107	77.7 : 77.7%
7/1	Cockey Moor Road (Exit)	U	N/A	N/A	-		-	-	-	582	Inf	Inf	0.0%
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	1	N/A	A		1	40	-	402	1755:1815	483+50	75.3 : 75.3%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**158**	**113**	**1**	**21.0**	**7.1**	**0.5**	**28.6**	**-**	**-**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**158**	**113**	**1**	**21.0**	**7.1**	**0.5**	**28.6**	**-**	**-**	**-**	**-**
1/1	495	495	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1+2/2	376	376	-	-	-	4.9	1.7	-	6.6	63.5	12.9	1.7	14.5
3/1	427	427	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	501	501	-	-	-	5.5	1.6	-	7.1	51.2	17.1	1.6	18.7
4/2	151	151	90	60	1	1.4	0.7	0.4	2.4	57.3	4.2	0.7	4.8
5/1	301	301	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	375	375	30	53	0	4.2	1.7	-	5.9	56.3	12.1	1.7	13.8
7/1	582	582	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	402	402	38	0	0	5.0	1.5	0.1	6.6	58.9	13.7	1.5	15.2

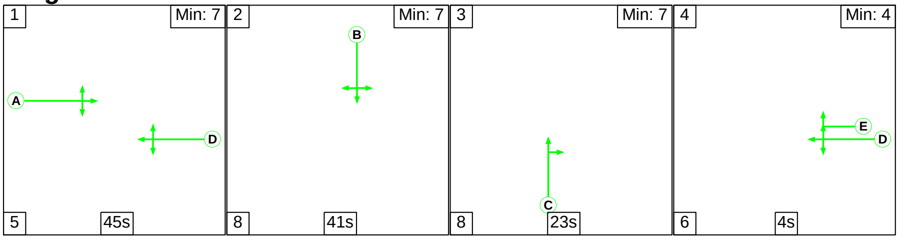
C1 Stream: 1 PRC for Signalled Lanes (%): 15.9 Total Delay for Signalled Lanes (pcuHr): 28.60 Cycle Time (s): 140
PRC Over All Lanes (%): 15.9 Total Delay Over All Lanes(pcuHr): 28.60

Full Input Data And Results

Scenario 5: 'Base + Com Dev AM' (FG5: 'Base + Com Dev AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

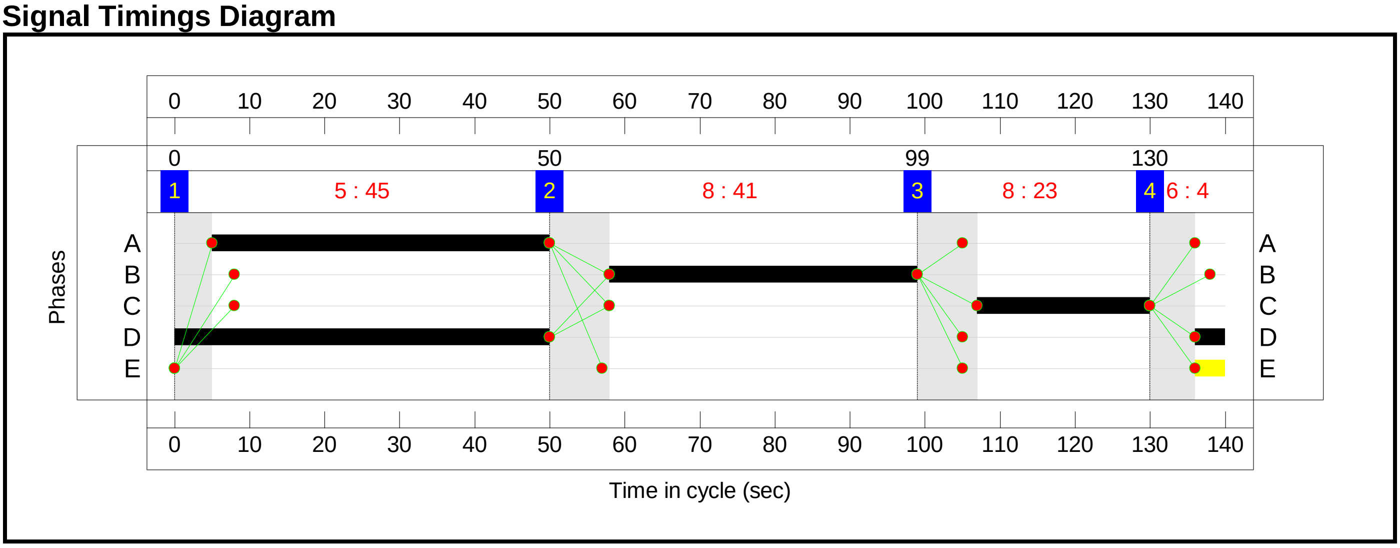

1
Min: 7
A
D
5
45s
2
Min: 7
B
8
41s
3
Min: 7
C
8
23s
4
Min: 4
E
D
6
4s

Stage Timings

Stage Stream: 1

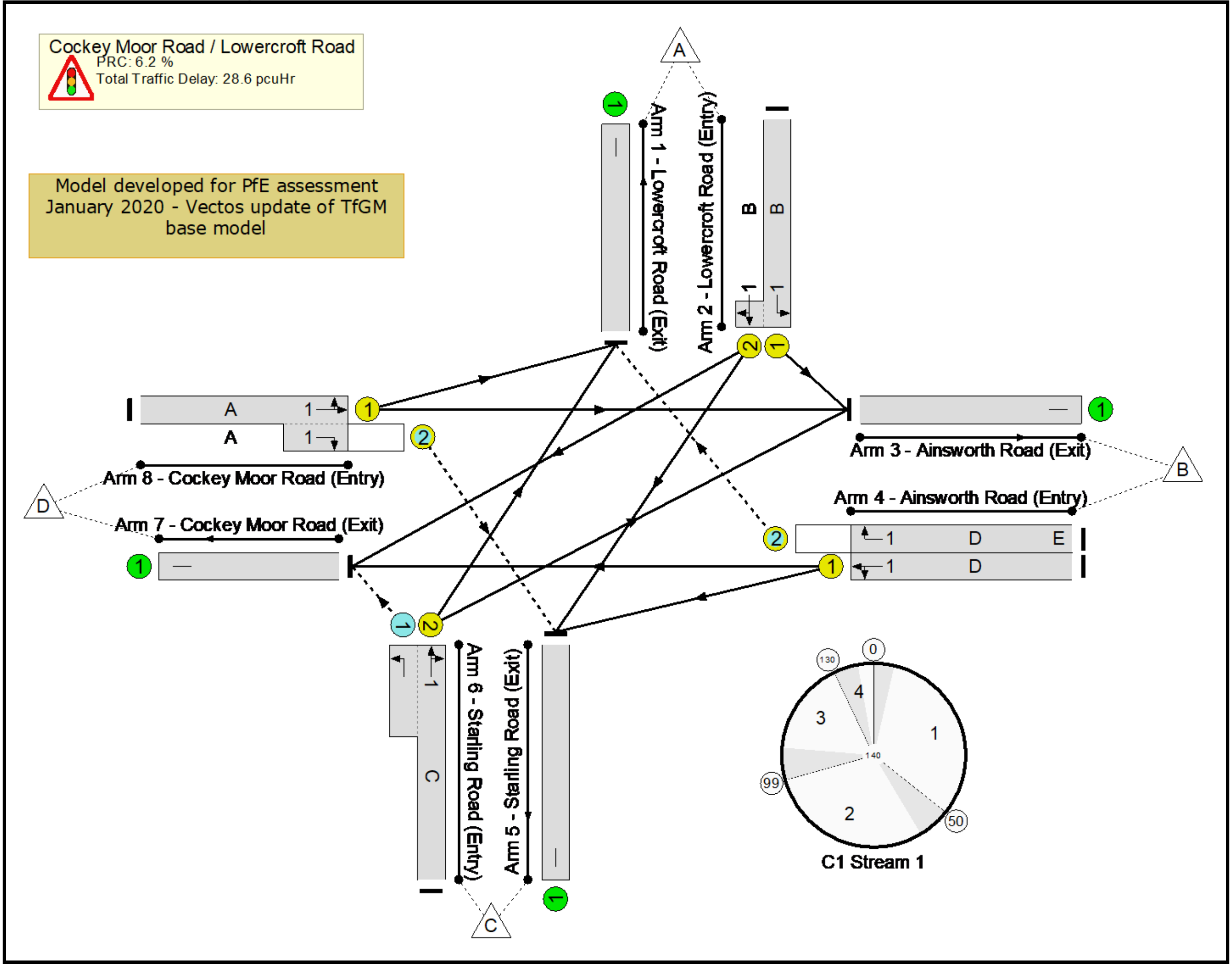
Stage	**1**	**2**	**3**	**4**
Duration	45	41	23	4
Change Point	0	50	99	130

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 6.2 %
Total Traffic Delay: 28.6 pcuHr
Model developed for PfE assessment January 2020 - Vectos update of TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
E
0
130
99
50
140
1
2
3
4
C1 Stream 1

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.7%**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.7%**
1/1	Lowercroft Road (Exit)	U	N/A	N/A	-		-	-	-	400	Inf	Inf	0.0%
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	1	N/A	B		1	41	-	441	1585:1902	134+428	78.5 : 78.5%
3/1	Ainsworth Road (Exit)	U	N/A	N/A	-		-	-	-	530	Inf	Inf	0.0%
4/1	Ainsworth Road (Entry) Left Ahead	U	1	N/A	D		1	54	-	398	1810	711	56.0%
4/2	Ainsworth Road (Entry) Right	O	1	N/A	D	E	1	54	4	142	1391	213	66.8%
5/1	Starling Road (Exit)	U	N/A	N/A	-		-	-	-	399	Inf	Inf	0.0%
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	1	N/A	C -		1	23	-	276	1743:1930	281+45	84.7 : 84.7%
7/1	Cockey Moor Road (Exit)	U	N/A	N/A	-		-	-	-	422	Inf	Inf	0.0%
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	1	N/A	A		1	45	-	494	1778:1815	543+60	81.9 : 81.9%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**147**	**81**	**1**	**19.8**	**8.1**	**0.6**	**28.6**	**-**	**-**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**147**	**81**	**1**	**19.8**	**8.1**	**0.6**	**28.6**	**-**	**-**	**-**	**-**
1/1	400	400	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1+2/2	441	441	-	-	-	5.4	1.8	-	7.2	58.7	15.1	1.8	16.9
3/1	530	530	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	398	398	-	-	-	3.7	0.6	-	4.3	38.8	11.9	0.6	12.6
4/2	142	142	81	60	1	1.1	1.0	0.6	2.7	68.4	3.7	1.0	4.7
5/1	399	399	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	276	276	17	21	0	3.8	2.5	-	6.3	82.4	9.6	2.5	12.1
7/1	422	422	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	494	494	49	0	0	5.8	2.2	0.1	8.1	58.9	17.2	2.2	19.4

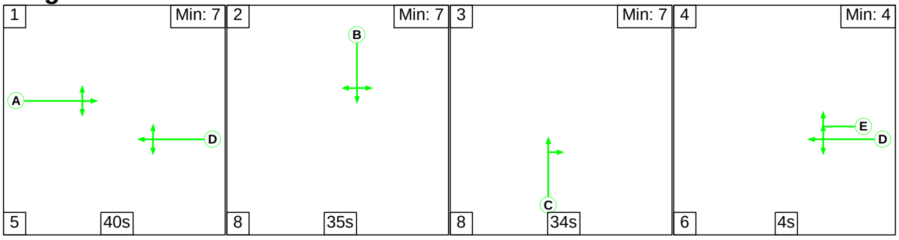
C1 Stream: 1 PRC for Signalled Lanes (%): 6.2 Total Delay for Signalled Lanes (pcuHr): 28.57 Cycle Time (s): 140
PRC Over All Lanes (%): 6.2 Total Delay Over All Lanes(pcuHr): 28.57

Full Input Data And Results

Scenario 6: 'Base + Com Dev PM' (FG6: 'Base + Com Dev PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

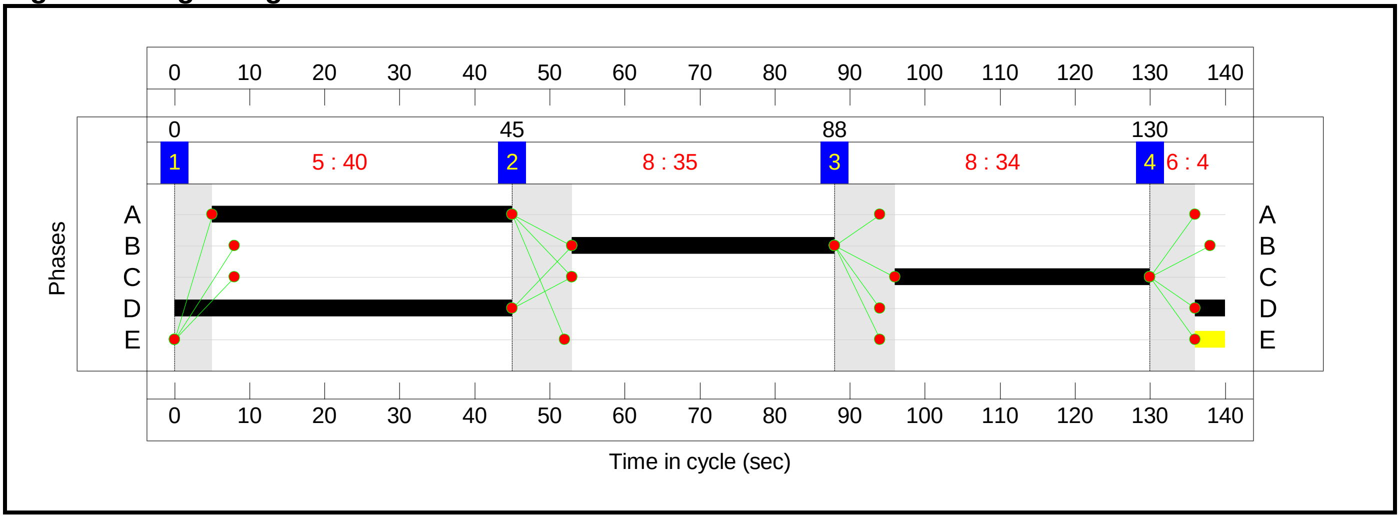

1
Min: 7
A
D
5
40s
2
Min: 7
B
8
35s
3
Min: 7
C
8
34s
4
Min: 4
E
D
6
4s

Stage Timings

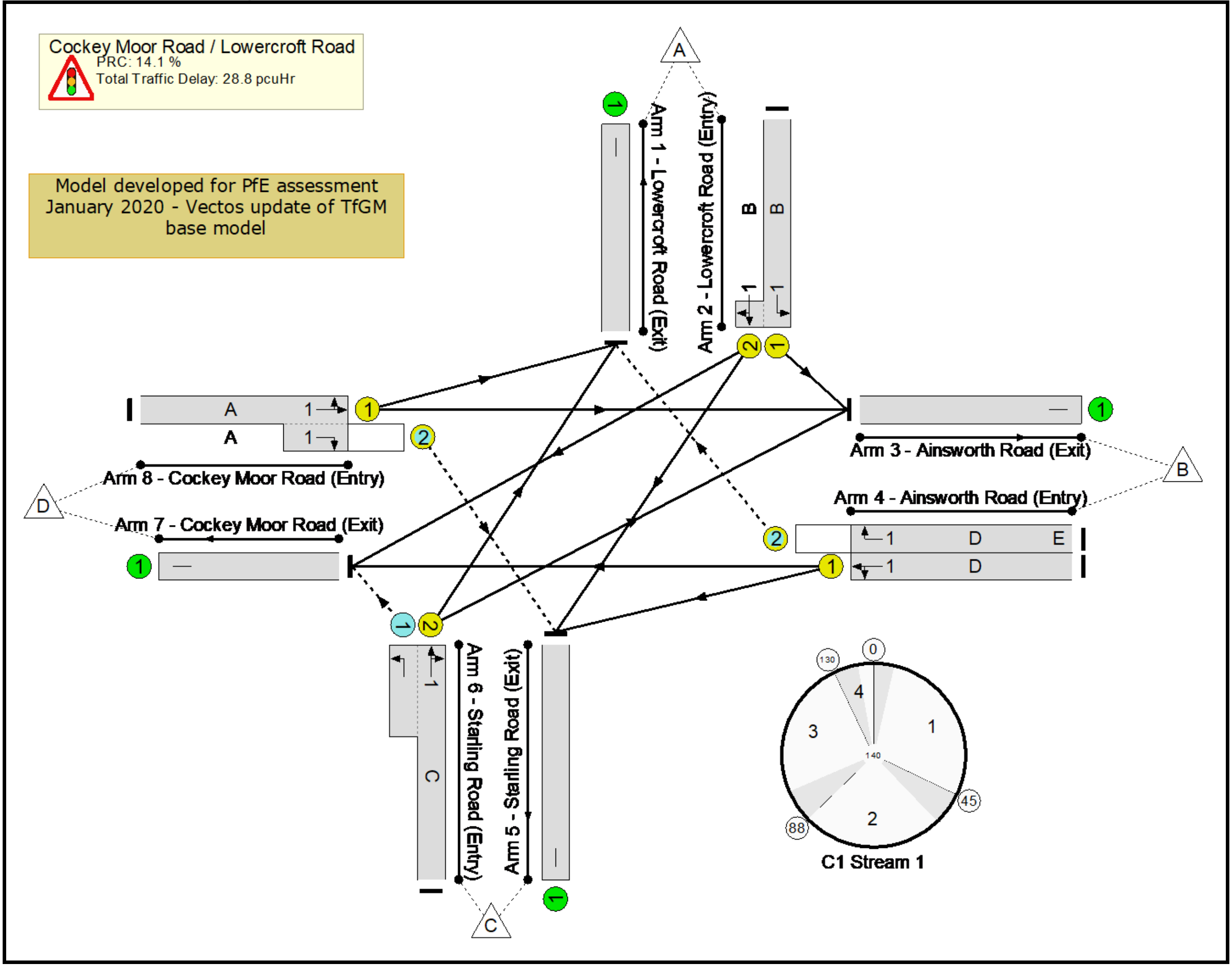
Stage Stream: 1

Stage	**1**	**2**	**3**	**4**
Duration	40	35	34	4
Change Point	0	45	88	130

Signal Timings Diagram



Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 14.1 %
Total Traffic Delay: 28.8 pcuHr
Model developed for PfE assessment January 2020 - Vectos update of TfGM base model
A
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
B
1
Arm 3 - Ainsworth Road (Exit)
B
Arm 4 - Ainsworth Road (Entry)
D
E
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
C
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
A
D
2
0
130
4
3
1
140
45
88
2
C1 Stream 1

Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.8%**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.8%**
1/1	Lowercroft Road (Exit)	U	N/A	N/A	-		-	-	-	486	Inf	Inf	0.0%
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	1	N/A	B		1	35	-	379	1585:1918	147+338	78.0 : 78.0%
3/1	Ainsworth Road (Exit)	U	N/A	N/A	-		-	-	-	428	Inf	Inf	0.0%
4/1	Ainsworth Road (Entry) Left Ahead	U	1	N/A	D		1	49	-	503	1836	656	76.7%
4/2	Ainsworth Road (Entry) Right	O	1	N/A	D	E	1	49	4	151	1391	266	56.8%
5/1	Starling Road (Exit)	U	N/A	N/A	-		-	-	-	318	Inf	Inf	0.0%
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	1	N/A	C -		1	34	-	382	1741:1930	374+110	78.8 : 78.8%
7/1	Cockey Moor Road (Exit)	U	N/A	N/A	-		-	-	-	580	Inf	Inf	0.0%
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	1	N/A	A		1	40	-	397	1759:1815	477+59	74.0 : 74.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**165**	**116**	**1**	**21.0**	**7.2**	**0.6**	**28.8**	**-**	**-**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**165**	**116**	**1**	**21.0**	**7.2**	**0.6**	**28.8**	**-**	**-**	**-**	**-**
1/1	486	486	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1+2/2	379	379	-	-	-	5.0	1.7	-	6.7	63.8	13.0	1.7	14.7
3/1	428	428	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	503	503	-	-	-	5.6	1.6	-	7.2	51.4	17.2	1.6	18.8
4/2	151	151	90	60	1	1.4	0.7	0.4	2.4	57.8	4.2	0.7	4.8
5/1	318	318	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	382	382	31	56	0	4.3	1.8	-	6.1	57.0	12.3	1.8	14.1
7/1	580	580	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	397	397	44	0	0	4.9	1.4	0.2	6.4	58.2	13.3	1.4	14.7

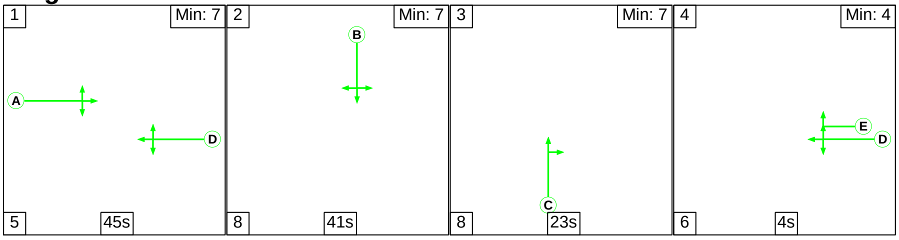
C1 Stream: 1 PRC for Signalled Lanes (%): 14.1 Total Delay for Signalled Lanes (pcuHr): 28.79 Cycle Time (s): 140
PRC Over All Lanes (%): 14.1 Total Delay Over All Lanes(pcuHr): 28.79

Full Input Data And Results

Scenario 7: 'Base + CD With Dev AM' (FG7: 'Base + CD With Dev AM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1

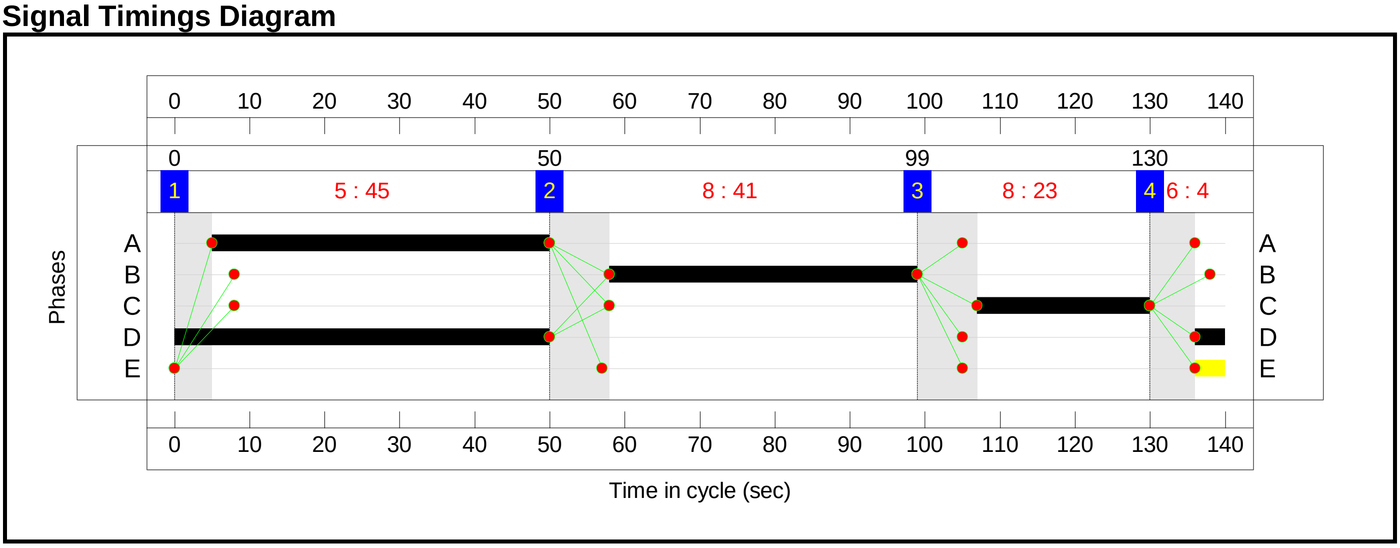

1
Min: 7
A
D
5
45s
2
Min: 7
B
8
41s
3
Min: 7
C
8
23s
4
Min: 4
E
D
6
4s

Stage Timings

Stage Stream: 1

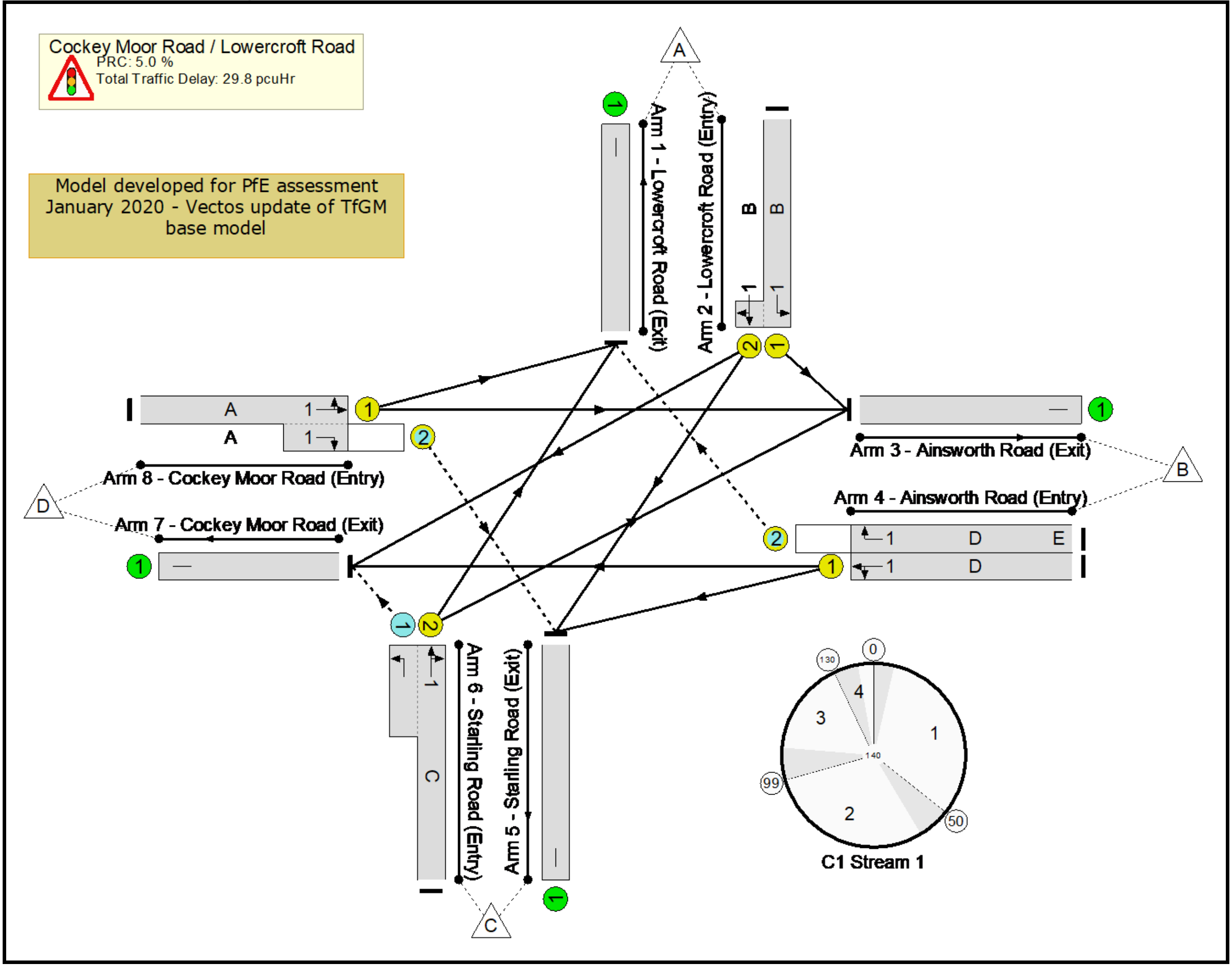
Stage	1	2	3	4
Duration	45	41	23	4
Change Point	0	50	99	130

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 5.0 %
Total Traffic Delay: 29.8 pcuHr
Model developed for PfE assessment January 2020 - Vectos update of TfGM base model
A
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
B
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
C
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
D
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
E
0
130
99
50
140
1
2
3
4
C1 Stream 1

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.7%**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.7%**
1/1	Lowercroft Road (Exit)	U	N/A	N/A	-		-	-	-	406	Inf	Inf	0.0%
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	1	N/A	B		1	41	-	464	1585:1900	131+431	82.6 : 82.6%
3/1	Ainsworth Road (Exit)	U	N/A	N/A	-		-	-	-	533	Inf	Inf	0.0%
4/1	Ainsworth Road (Entry) Left Ahead	U	1	N/A	D		1	54	-	398	1810	711	56.0%
4/2	Ainsworth Road (Entry) Right	O	1	N/A	D	E	1	54	4	142	1391	212	67.1%
5/1	Starling Road (Exit)	U	N/A	N/A	-		-	-	-	412	Inf	Inf	0.0%
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	1	N/A	C -		1	23	-	279	1743:1930	281+44	85.7 : 85.7%
7/1	Cockey Moor Road (Exit)	U	N/A	N/A	-		-	-	-	429	Inf	Inf	0.0%
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	1	N/A	A		1	45	-	497	1777:1815	543+59	82.5 : 82.5%

Full Input Data And Results

Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**146**	**81**	**1**	**20.3**	**8.8**	**0.6**	**29.8**	**-**	**-**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**146**	**81**	**1**	**20.3**	**8.8**	**0.6**	**29.8**	**-**	**-**	**-**	**-**
1/1	406	406	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1+2/2	464	464	-	-	-	5.8	2.3	-	8.1	62.6	16.2	2.3	18.5
3/1	533	533	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	398	398	-	-	-	3.7	0.6	-	4.3	38.8	11.9	0.6	12.6
4/2	142	142	81	60	1	1.1	1.0	0.6	2.7	68.7	3.7	1.0	4.7
5/1	412	412	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	279	279	16	22	0	3.9	2.7	-	6.6	84.5	9.7	2.7	12.4
7/1	429	429	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	497	497	49	0	0	5.9	2.3	0.1	8.2	59.4	17.3	2.3	19.5

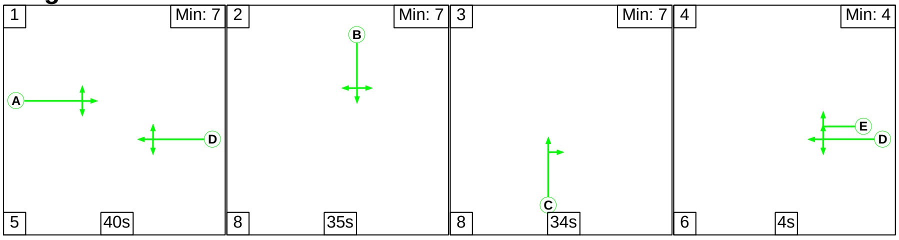
C1 Stream: 1 PRC for Signalled Lanes (%): 5.0 Total Delay for Signalled Lanes (pcuHr): 29.82 Cycle Time (s): 140
PRC Over All Lanes (%): 5.0 Total Delay Over All Lanes(pcuHr): 29.82

Full Input Data And Results

Scenario 8: 'Base + CD With Dev PM' (FG8: 'Base + CD With Dev PM', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

Stage Stream: 1



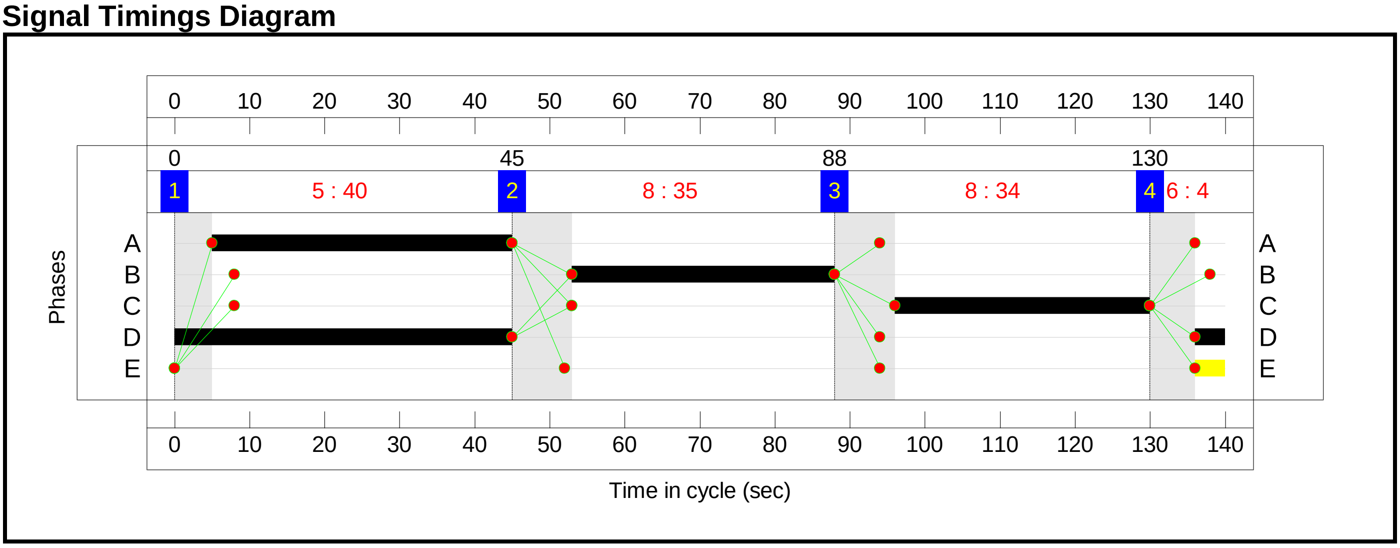
1
Min: 7
A
D
5
40s
2
Min: 7
B
8
35s
3
Min: 7
C
8
34s
4
Min: 4
E
D
6
4s

Stage Timings

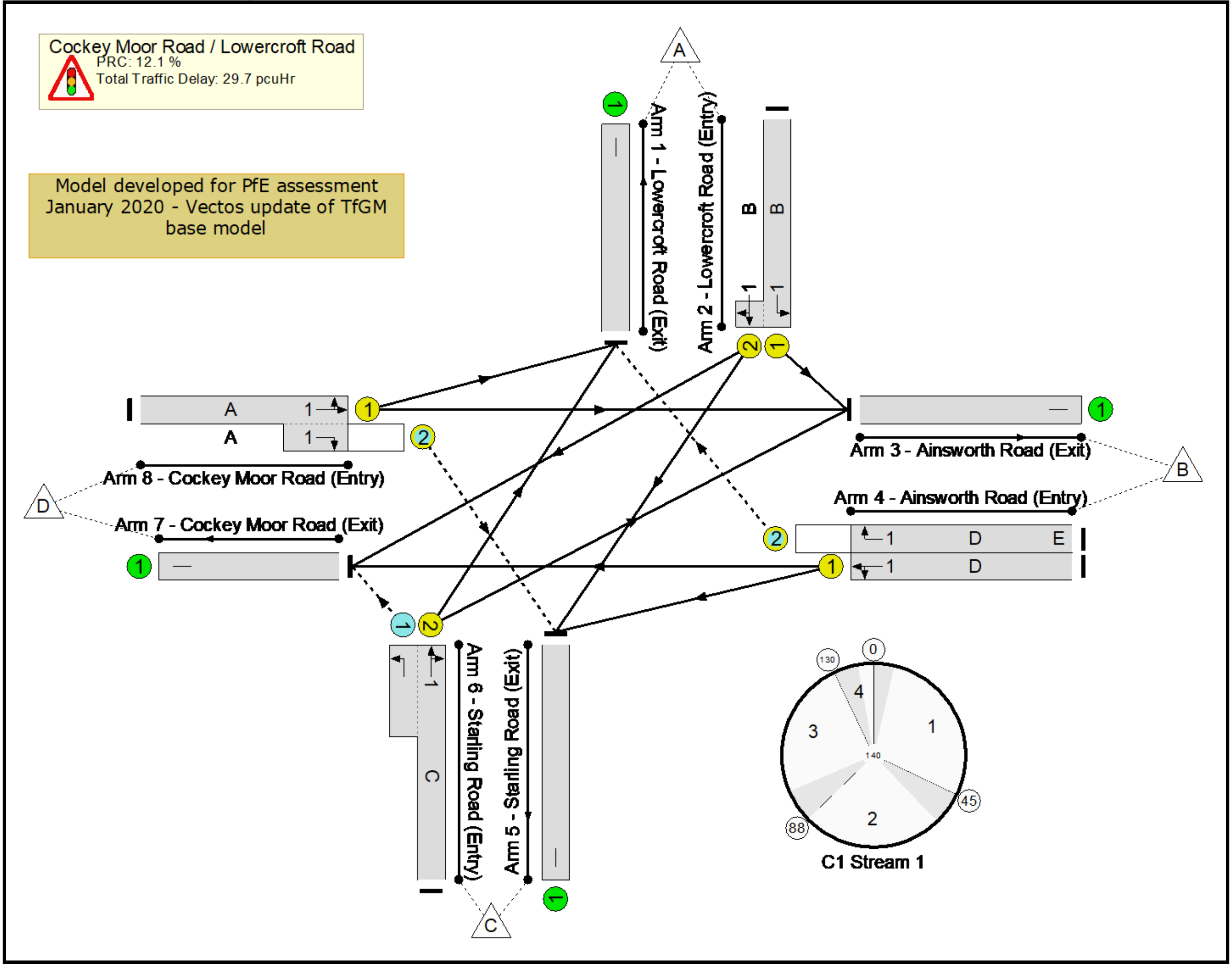
Stage Stream: 1

Stage	**1**	**2**	**3**	**4**
Duration	40	35	34	4
Change Point	0	45	88	130

Signal Timings Diagram



Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 12.1 %
Total Traffic Delay: 29.7 pcuHr
Model developed for PfE assessment January 2020 - Vectos update of TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
A
A
B
B
C
D
D
E
1
2
0
130
45
88
140
4
3
1
2
C1 Stream 1

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.3%**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.3%**
1/1	Lowercroft Road (Exit)	U	N/A	N/A	-		-	-	-	503	Inf	Inf	0.0%
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	1	N/A	B		1	35	-	388	1585:1912	144+341	80.0 : 80.0%
3/1	Ainsworth Road (Exit)	U	N/A	N/A	-		-	-	-	428	Inf	Inf	0.0%
4/1	Ainsworth Road (Entry) Left Ahead	U	1	N/A	D		1	49	-	503	1836	656	76.7%
4/2	Ainsworth Road (Entry) Right	O	1	N/A	D	E	1	49	4	151	1391	266	56.8%
5/1	Starling Road (Exit)	U	N/A	N/A	-		-	-	-	321	Inf	Inf	0.0%
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	1	N/A	C -		1	34	-	388	1740:1930	375+108	80.3 : 80.3%
7/1	Cockey Moor Road (Exit)	U	N/A	N/A	-		-	-	-	586	Inf	Inf	0.0%
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	1	N/A	A		1	40	-	408	1755:1815	478+58	76.2 : 76.2%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**165**	**116**	**1**	**21.5**	**7.7**	**0.5**	**29.7**	**-**	**-**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**165**	**116**	**1**	**21.5**	**7.7**	**0.5**	**29.7**	**-**	**-**	**-**	**-**
1/1	503	503	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
2/1+2/2	388	388	-	-	-	5.1	1.9	-	7.1	65.7	13.4	1.9	15.3
3/1	428	428	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	503	503	-	-	-	5.6	1.6	-	7.2	51.4	17.2	1.6	18.8
4/2	151	151	90	60	1	1.4	0.7	0.4	2.4	57.1	4.2	0.7	4.8
5/1	321	321	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/2+6/1	388	388	31	56	0	4.4	2.0	-	6.3	58.6	12.7	2.0	14.6
7/1	586	586	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
8/1+8/2	408	408	44	0	0	5.0	1.6	0.2	6.8	59.6	13.9	1.6	15.4

C1 Stream: 1 PRC for Signalled Lanes (%): 12.1 Total Delay for Signalled Lanes (pcuHr): 29.73 Cycle Time (s): 140
PRC Over All Lanes (%): 12.1 Total Delay Over All Lanes(pcuHr): 29.73

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.1.1.1905
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Filename: J10 R5 High St - Bank St Existing v2.j10
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Report generation date: 19/08/2024 12:16:15

»2024 Survey, AM
»2024 Survey, PM
»2024 Base With Dev, AM
»2024 Base With Dev, PM
»Base + Com Dev, AM
»Base + Com Dev, PM
»Base + CD With Dev, AM
»Base + CD With Dev, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2024 Survey									
Stream B-AC	D1	1.3	14.48	0.57	B	D2	0.9	12.30	0.47	B
Stream C-AB		1.0	10.54	0.47	B		1.7	12.10	0.58	B
	2024 Base With Dev									
Stream B-AC	D3	1.8	17.87	0.65	C	D4	1.0	13.39	0.50	B
Stream C-AB		1.1	10.83	0.48	B		2.0	13.45	0.62	B
	Base + Com Dev									
Stream B-AC	D5	1.3	14.55	0.57	B	D6	0.9	12.47	0.47	B
Stream C-AB		1.0	10.50	0.47	B		1.8	12.25	0.59	B
	Base + CD With Dev									
Stream B-AC	D7	1.8	18.01	0.65	C	D8	1.0	13.60	0.51	B
Stream C-AB		1.1	10.80	0.49	B		2.1	13.65	0.63	B

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	26/07/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	SLR\john.lancaster
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Survey	AM	ONE HOUR	07:30	09:00	15
D2	2024 Survey	PM	ONE HOUR	16:15	17:45	15
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 Survey, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Bank Street	T-Junction	Two-way	Two-way	Two-way		8.27	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.27	A

Arms

Arms

Arm	Name	Description	Arm type
A	Hall Street		Major
B	Bank Street		Minor
C	High Street		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00			60.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.00	20	50

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	509	0.093	0.234	0.147	0.334
B-C	655	0.100	0.254	-	-
C-B	609	0.236	0.236	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Survey	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	224	100.000
B		✓	298	100.000
C		✓	335	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	21	203
	B	15	0	283
	C	119	216	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.57	14.48	1.3	B
C-AB	0.47	10.54	1.0	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	224	599	0.374	222	0.6	9.486	A
C-AB	190	630	0.301	188	0.5	8.108	A
C-A	63			63			
A-B	16			16			
A-C	153			153			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	268	590	0.454	267	0.8	11.120	B
C-AB	234	635	0.368	233	0.7	8.956	A
C-A	67			67			
A-B	19			19			
A-C	182			182			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	328	577	0.569	326	1.3	14.275	B
C-AB	299	642	0.467	298	1.0	10.463	B
C-A	69			69			
A-B	23			23			
A-C	224			224			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	328	576	0.569	328	1.3	14.476	B
C-AB	300	642	0.467	300	1.0	10.541	B
C-A	69			69			
A-B	23			23			
A-C	224			224			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	268	590	0.454	270	0.9	11.311	B
C-AB	234	635	0.369	235	0.7	9.046	A
C-A	67			67			
A-B	19			19			
A-C	182			182			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	224	599	0.374	225	0.6	9.657	A
C-AB	190	631	0.301	191	0.5	8.206	A
C-A	62			62			
A-B	16			16			
A-C	153			153			

2024 Survey, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Bank Street	T-Junction	Two-way	Two-way	Two-way		8.15	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.15	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2024 Survey	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	188	100.000
B		✓	233	100.000
C		✓	460	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	33	155
	B	31	0	202
	C	202	258	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.47	12.30	0.9	B
C-AB	0.58	12.10	1.7	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	175	578	0.304	174	0.4	8.872	A
C-AB	250	679	0.369	248	0.7	8.314	A
C-A	96			96			
A-B	25			25			
A-C	117			117			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	209	566	0.370	209	0.6	10.060	B
C-AB	315	693	0.454	314	1.0	9.485	A
C-A	98			98			
A-B	30			30			
A-C	139			139			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	257	549	0.467	255	0.9	12.201	B
C-AB	414	714	0.580	412	1.7	11.897	B
C-A	92			92			
A-B	36			36			
A-C	171			171			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	257	549	0.467	256	0.9	12.301	B
C-AB	415	715	0.581	415	1.7	12.104	B
C-A	91			91			
A-B	36			36			
A-C	171			171			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	209	566	0.370	211	0.6	10.164	B
C-AB	316	695	0.455	319	1.0	9.680	A
C-A	97			97			
A-B	30			30			
A-C	139			139			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	175	577	0.304	176	0.4	8.983	A
C-AB	251	680	0.370	253	0.7	8.474	A
C-A	95			95			
A-B	25			25			
A-C	117			117			

2024 Base With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Bank Street	T-Junction	Two-way	Two-way	Two-way		9.84	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.84	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	227	100.000
B		✓	332	100.000
C		✓	341	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	24	203
	B	25	0	307
	C	119	222	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.65	17.87	1.8	C
C-AB	0.48	10.83	1.1	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	250	591	0.423	247	0.7	10.377	B
C-AB	195	630	0.309	193	0.5	8.213	A
C-A	62			62			
A-B	18			18			
A-C	153			153			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	298	581	0.514	297	1.0	12.628	B
C-AB	240	634	0.379	240	0.7	9.116	A
C-A	66			66			
A-B	22			22			
A-C	182			182			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	366	566	0.645	363	1.7	17.427	C
C-AB	308	641	0.480	306	1.0	10.743	B
C-A	68			68			
A-B	26			26			
A-C	224			224			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	366	566	0.645	365	1.8	17.871	C
C-AB	308	641	0.480	308	1.1	10.831	B
C-A	67			67			
A-B	26			26			
A-C	224			224			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	298	581	0.514	301	1.1	12.998	B
C-AB	241	635	0.379	242	0.7	9.216	A
C-A	66			66			
A-B	22			22			
A-C	182			182			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	250	591	0.423	251	0.7	10.639	B
C-AB	195	630	0.310	196	0.5	8.319	A
C-A	61			61			
A-B	18			18			
A-C	153			153			

2024 Base With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Bank Street	T-Junction	Two-way	Two-way	Two-way		9.16	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.16	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	196	100.000
B		✓	247	100.000
C		✓	477	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	41	155
	B	36	0	211
	C	202	275	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.50	13.39	1.0	B
C-AB	0.62	13.45	2.0	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	186	572	0.325	184	0.5	9.239	A
C-AB	267	677	0.394	264	0.8	8.662	A
C-A	92			92			
A-B	31			31			
A-C	117			117			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	222	559	0.397	221	0.6	10.634	B
C-AB	336	692	0.486	335	1.1	10.076	B
C-A	93			93			
A-B	37			37			
A-C	139			139			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	272	541	0.503	271	1.0	13.253	B
C-AB	442	712	0.621	439	1.9	13.145	B
C-A	83			83			
A-B	45			45			
A-C	171			171			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	272	541	0.503	272	1.0	13.393	B
C-AB	443	713	0.622	443	2.0	13.450	B
C-A	82			82			
A-B	45			45			
A-C	171			171			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	222	559	0.397	223	0.7	10.776	B
C-AB	337	693	0.487	341	1.2	10.347	B
C-A	91			91			
A-B	37			37			
A-C	139			139			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	186	571	0.325	187	0.5	9.375	A
C-AB	268	678	0.395	270	0.8	8.862	A
C-A	91			91			
A-B	31			31			
A-C	117			117			

Base + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Bank Street	T-Junction	Two-way	Two-way	Two-way		8.19	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.19	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	228	100.000
B		✓	298	100.000
C		✓	347	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	21	207
	B	15	0	283
	C	131	216	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.57	14.55	1.3	B
C-AB	0.47	10.50	1.0	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	224	598	0.375	222	0.6	9.509	A
C-AB	192	636	0.303	191	0.5	8.061	A
C-A	69			69			
A-B	16			16			
A-C	156			156			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	268	589	0.455	267	0.8	11.158	B
C-AB	238	642	0.371	237	0.7	8.905	A
C-A	74			74			
A-B	19			19			
A-C	186			186			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	328	575	0.570	326	1.3	14.352	B
C-AB	306	650	0.471	305	1.0	10.421	B
C-A	76			76			
A-B	23			23			
A-C	228			228			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	328	575	0.571	328	1.3	14.555	B
C-AB	307	650	0.471	307	1.0	10.503	B
C-A	75			75			
A-B	23			23			
A-C	228			228			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	268	589	0.455	270	0.9	11.354	B
C-AB	239	642	0.372	240	0.7	8.999	A
C-A	73			73			
A-B	19			19			
A-C	186			186			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	224	598	0.375	225	0.6	9.681	A
C-AB	193	636	0.303	194	0.5	8.161	A
C-A	68			68			
A-B	16			16			
A-C	156			156			

Base + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Bank Street	T-Junction	Two-way	Two-way	Two-way		8.13	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.13	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	200	100.000
B		✓	233	100.000
C		✓	468	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	33	167
	B	31	0	202
	C	210	258	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.47	12.47	0.9	B
C-AB	0.59	12.25	1.8	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	175	575	0.305	174	0.4	8.928	A
C-AB	253	681	0.371	250	0.7	8.322	A
C-A	99			99			
A-B	25			25			
A-C	126			126			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	209	563	0.372	209	0.6	10.149	B
C-AB	319	696	0.458	318	1.0	9.520	A
C-A	102			102			
A-B	30			30			
A-C	150			150			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	257	545	0.470	255	0.9	12.365	B
C-AB	421	717	0.587	418	1.7	12.024	B
C-A	94			94			
A-B	36			36			
A-C	184			184			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	257	545	0.471	256	0.9	12.467	B
C-AB	422	718	0.587	422	1.8	12.246	B
C-A	93			93			
A-B	36			36			
A-C	184			184			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	209	563	0.372	211	0.6	10.257	B
C-AB	320	697	0.459	323	1.1	9.728	A
C-A	101			101			
A-B	30			30			
A-C	150			150			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	175	575	0.305	176	0.4	9.040	A
C-AB	254	682	0.372	255	0.7	8.489	A
C-A	98			98			
A-B	25			25			
A-C	126			126			

Base + CD With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Bank Street	T-Junction	Two-way	Two-way	Two-way		9.77	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.77	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	231	100.000
B		✓	332	100.000
C		✓	353	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	24	207
	B	25	0	307
	C	131	222	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.65	18.01	1.8	C
C-AB	0.49	10.80	1.1	B
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	250	590	0.423	247	0.7	10.407	B
C-AB	198	635	0.311	196	0.5	8.166	A
C-A	68			68			
A-B	18			18			
A-C	156			156			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	298	580	0.515	297	1.0	12.684	B
C-AB	245	641	0.382	244	0.7	9.066	A
C-A	72			72			
A-B	22			22			
A-C	186			186			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	366	565	0.647	363	1.7	17.578	C
C-AB	315	649	0.485	313	1.1	10.705	B
C-A	74			74			
A-B	26			26			
A-C	228			228			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	366	565	0.647	365	1.8	18.006	C
C-AB	315	650	0.485	315	1.1	10.799	B
C-A	73			73			
A-B	26			26			
A-C	228			228			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	298	580	0.515	301	1.1	13.060	B
C-AB	245	642	0.382	247	0.7	9.170	A
C-A	72			72			
A-B	22			22			
A-C	186			186			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	250	590	0.424	251	0.7	10.670	B
C-AB	198	636	0.312	199	0.5	8.272	A
C-A	67			67			
A-B	18			18			
A-C	156			156			

Base + CD With Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Bank Street	T-Junction	Two-way	Two-way	Two-way		9.17	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.17	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	208	100.000
B		✓	247	100.000
C		✓	485	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
From		A	B	C
	A	0	41	167
	B	36	0	211
	C	210	275	0

Vehicle Mix

Heavy Vehicle %

		To		
From		A	B	C
	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-AC	0.51	13.60	1.0	B
C-AB	0.63	13.65	2.1	B
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	186	569	0.327	184	0.5	9.302	A
C-AB	270	680	0.397	267	0.8	8.676	A
C-A	95			95			
A-B	31			31			
A-C	126			126			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	222	556	0.399	221	0.7	10.737	B
C-AB	340	695	0.490	339	1.1	10.124	B
C-A	96			96			
A-B	37			37			
A-C	150			150			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	272	537	0.507	271	1.0	13.450	B
C-AB	449	716	0.628	446	2.0	13.320	B
C-A	85			85			
A-B	45			45			
A-C	184			184			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	272	536	0.507	272	1.0	13.597	B
C-AB	450	716	0.629	450	2.1	13.654	B
C-A	84			84			
A-B	45			45			
A-C	184			184			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	222	555	0.400	223	0.7	10.882	B
C-AB	342	696	0.491	345	1.2	10.409	B
C-A	94			94			
A-B	37			37			
A-C	150			150			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	186	569	0.327	187	0.5	9.441	A
C-AB	271	681	0.398	273	0.8	8.879	A
C-A	94			94			
A-B	31			31			
A-C	126			126			

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.1.1.1905
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Filename: J11 R4 High St - Walshaw Rd Existing v2.j10
Path: N:\Vectos Job Data\2024\410.065892.00001 Walshaw Northern Parcel\Picady
Report generation date: 19/08/2024 12:30:57

»2024 Survey, AM
»2024 Survey, PM
»2024 Base With Dev, AM
»2024 Base With Dev, PM
»Base + Com Dev, AM
»Base + Com Dev, PM
»Base + CD With Dev, AM
»Base + CD With Dev, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2024 Survey									
Stream B-C	D1	0.5	10.45	0.32	B	D2	0.4	11.25	0.27	B
Stream B-A		0.7	19.07	0.43	C		1.3	22.82	0.56	C
Stream C-AB		1.0	9.80	0.44	A		1.2	9.67	0.46	A
	2024 Base With Dev									
Stream B-C	D3	0.5	10.69	0.32	B	D4	0.4	11.43	0.28	B
Stream B-A		0.8	19.84	0.44	C		1.3	23.67	0.57	C
Stream C-AB		1.1	9.94	0.45	A		1.3	9.65	0.46	A
	Base + Com Dev									
Stream B-C	D5	0.5	10.50	0.32	B	D6	0.4	11.43	0.28	B
Stream B-A		0.7	19.39	0.43	C		1.3	23.55	0.57	C
Stream C-AB		1.1	9.75	0.44	A		1.3	9.72	0.46	A
	Base + CD With Dev									
Stream B-C	D7	0.5	10.75	0.32	B	D8	0.4	11.62	0.28	B
Stream B-A		0.8	20.18	0.44	C		1.3	24.47	0.58	C
Stream C-AB		1.1	9.90	0.45	A		1.4	9.70	0.47	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	26/07/2024
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	SLR\john.lancaster
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Survey	AM	ONE HOUR	07:30	09:00	15
D2	2024 Survey	PM	ONE HOUR	16:15	17:45	15
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 Survey, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Walshaw Road	T-Junction	Two-way	Two-way	Two-way		5.53	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.53	A

Arms

Arms

Arm	Name	Description	Arm type
A	High Street (North)		Major
B	Walshaw Road		Minor
C	High Street (South)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00			65.0	✓	0.00

Major Arm Geometry Notes

Arm	Notes
C	High Street is wide at the junction but narrows to north and south.

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	6.00	6.00	6.00	6.00	3.00		3.00	80	59

Minor Arm Geometry Notes

Arm	Notes
B	Lane width is wider but constrained by parked cars. Separate left and right turn lanes - modelled as flare of 3 PCUs. Cannot model the secondary stopline for RT traffic from the south.

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	523	0.095	0.241	0.151	0.344
B-C	671	0.103	0.260	-	-
C-B	612	0.237	0.237	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Survey	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	490	100.000
B		✓	271	100.000
C		✓	384	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	227	263
	B	127	0	144
	C	217	167	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.32	10.45	0.5	B
B-A	0.43	19.07	0.7	C
C-AB	0.44	9.80	1.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	565	0.192	107	0.2	7.860	A
B-A	96	391	0.245	94	0.3	12.093	B
C-AB	169	640	0.264	167	0.4	7.594	A
C-A	120			120			
A-B	171			171			
A-C	198			198			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	541	0.239	129	0.3	8.744	A
B-A	114	365	0.313	114	0.4	14.308	B
C-AB	215	648	0.333	215	0.6	8.323	A
C-A	130			130			
A-B	204			204			
A-C	236			236			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	504	0.315	158	0.5	10.387	B
B-A	140	329	0.426	139	0.7	18.854	C
C-AB	290	659	0.439	288	1.0	9.716	A
C-A	133			133			
A-B	250			250			
A-C	290			290			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	503	0.315	159	0.5	10.447	B
B-A	140	328	0.426	140	0.7	19.075	C
C-AB	290	660	0.440	290	1.0	9.797	A
C-A	133			133			
A-B	250			250			
A-C	290			290			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	539	0.240	130	0.3	8.808	A
B-A	114	364	0.313	115	0.5	14.501	B
C-AB	216	648	0.333	218	0.7	8.409	A
C-A	129			129			
A-B	204			204			
A-C	236			236			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	563	0.192	109	0.2	7.924	A
B-A	96	390	0.245	96	0.3	12.254	B
C-AB	169	641	0.265	170	0.5	7.680	A
C-A	120			120			
A-B	171			171			
A-C	198			198			

2024 Survey, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Walshaw Road	T-Junction	Two-way	Two-way	Two-way		7.40	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.40	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2024 Survey	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	357	100.000
B		✓	294	100.000
C		✓	453	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	125	232
	B	185	0	109
	C	275	178	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	12	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.27	11.25	0.4	B
B-A	0.56	22.82	1.3	C
C-AB	0.46	9.67	1.2	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	82	513	0.160	81	0.2	8.332	A
B-A	139	427	0.326	137	0.5	12.361	B
C-AB	191	692	0.276	189	0.5	7.724	A
C-A	150			150			
A-B	94			94			
A-C	175			175			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	488	0.201	98	0.2	9.230	A
B-A	166	399	0.417	165	0.7	15.340	C
C-AB	246	710	0.347	246	0.8	8.381	A
C-A	161			161			
A-B	112			112			
A-C	209			209			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	120	442	0.271	120	0.4	11.144	B
B-A	204	361	0.564	202	1.2	22.245	C
C-AB	335	735	0.456	333	1.2	9.638	A
C-A	164			164			
A-B	138			138			
A-C	255			255			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	120	440	0.273	120	0.4	11.253	B
B-A	204	361	0.564	204	1.3	22.821	C
C-AB	336	735	0.457	336	1.2	9.673	A
C-A	163			163			
A-B	138			138			
A-C	255			255			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	485	0.202	98	0.3	9.319	A
B-A	166	399	0.417	168	0.7	15.758	C
C-AB	247	711	0.348	249	0.8	8.392	A
C-A	160			160			
A-B	112			112			
A-C	209			209			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	82	511	0.161	82	0.2	8.407	A
B-A	139	426	0.327	140	0.5	12.629	B
C-AB	192	693	0.277	193	0.6	7.783	A
C-A	149			149			
A-B	94			94			
A-C	175			175			

2024 Base With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Walshaw Road	T-Junction	Two-way	Two-way	Two-way		5.56	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.56	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2024 Base With Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	514	100.000
B		✓	271	100.000
C		✓	390	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	228	286
	B	127	0	144
	C	223	167	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.32	10.69	0.5	B
B-A	0.44	19.84	0.8	C
C-AB	0.45	9.94	1.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	560	0.194	107	0.2	7.941	A
B-A	96	386	0.248	94	0.3	12.296	B
C-AB	171	639	0.267	169	0.5	7.633	A
C-A	123			123			
A-B	172			172			
A-C	215			215			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	535	0.242	129	0.3	8.863	A
B-A	114	359	0.318	114	0.5	14.650	B
C-AB	218	647	0.337	217	0.7	8.388	A
C-A	132			132			
A-B	205			205			
A-C	257			257			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	496	0.320	158	0.5	10.626	B
B-A	140	321	0.435	139	0.7	19.585	C
C-AB	294	658	0.447	293	1.1	9.858	A
C-A	135			135			
A-B	251			251			
A-C	315			315			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	495	0.320	159	0.5	10.690	B
B-A	140	321	0.435	140	0.8	19.838	C
C-AB	295	659	0.448	295	1.1	9.944	A
C-A	134			134			
A-B	251			251			
A-C	315			315			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	533	0.243	130	0.3	8.939	A
B-A	114	359	0.318	115	0.5	14.865	B
C-AB	219	648	0.338	221	0.7	8.482	A
C-A	132			132			
A-B	205			205			
A-C	257			257			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	559	0.194	109	0.2	8.011	A
B-A	96	386	0.248	96	0.3	12.465	B
C-AB	171	640	0.268	172	0.5	7.722	A
C-A	122			122			
A-B	172			172			
A-C	215			215			

2024 Base With Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Walshaw Road	T-Junction	Two-way	Two-way	Two-way		7.45	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.45	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2024 Base With Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	366	100.000
B		✓	294	100.000
C		✓	470	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
From		**A**	**B**	**C**
	A	0	125	241
	B	185	0	109
	C	292	178	0

Vehicle Mix

Heavy Vehicle %

	To			
From		**A**	**B**	**C**
	A	0	0	0
	B	0	0	0
	C	0	12	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.28	11.43	0.4	B
B-A	0.57	23.67	1.3	C
C-AB	0.46	9.65	1.3	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	82	511	0.161	81	0.2	8.370	A
B-A	139	423	0.329	137	0.5	12.524	B
C-AB	195	699	0.279	193	0.6	7.659	A
C-A	158			158			
A-B	94			94			
A-C	181			181			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	485	0.202	98	0.3	9.293	A
B-A	166	395	0.422	165	0.7	15.643	C
C-AB	253	719	0.352	252	0.8	8.320	A
C-A	169			169			
A-B	112			112			
A-C	217			217			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	120	437	0.274	120	0.4	11.306	B
B-A	204	356	0.573	201	1.3	23.012	C
C-AB	346	746	0.464	344	1.3	9.613	A
C-A	171			171			
A-B	138			138			
A-C	265			265			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	120	435	0.276	120	0.4	11.425	B
B-A	204	355	0.573	204	1.3	23.671	C
C-AB	347	747	0.465	347	1.3	9.652	A
C-A	170			170			
A-B	138			138			
A-C	265			265			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	482	0.203	98	0.3	9.388	A
B-A	166	394	0.422	169	0.8	16.101	C
C-AB	254	720	0.353	256	0.8	8.334	A
C-A	169			169			
A-B	112			112			
A-C	217			217			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	82	509	0.161	82	0.2	8.445	A
B-A	139	422	0.330	140	0.5	12.806	B
C-AB	196	700	0.281	197	0.6	7.720	A
C-A	157			157			
A-B	94			94			
A-C	181			181			

Base + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Walshaw Road	T-Junction	Two-way	Two-way	Two-way		5.53	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.53	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	494	100.000
B		✓	271	100.000
C		✓	396	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	227	267
	B	127	0	144
	C	229	167	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.32	10.50	0.5	B
B-A	0.43	19.39	0.7	C
C-AB	0.44	9.75	1.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	564	0.192	107	0.2	7.876	A
B-A	96	389	0.246	94	0.3	12.180	B
C-AB	172	646	0.266	170	0.5	7.545	A
C-A	127			127			
A-B	171			171			
A-C	201			201			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	539	0.240	129	0.3	8.770	A
B-A	114	362	0.315	114	0.5	14.454	B
C-AB	220	655	0.336	219	0.7	8.269	A
C-A	136			136			
A-B	204			204			
A-C	240			240			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	502	0.316	158	0.5	10.439	B
B-A	140	326	0.430	139	0.7	19.156	C
C-AB	297	668	0.444	295	1.1	9.670	A
C-A	139			139			
A-B	250			250			
A-C	294			294			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	501	0.316	159	0.5	10.502	B
B-A	140	325	0.430	140	0.7	19.392	C
C-AB	297	668	0.445	297	1.1	9.755	A
C-A	139			139			
A-B	250			250			
A-C	294			294			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	538	0.241	130	0.3	8.833	A
B-A	114	362	0.315	115	0.5	14.655	B
C-AB	220	656	0.336	222	0.7	8.360	A
C-A	136			136			
A-B	204			204			
A-C	240			240			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	562	0.193	109	0.2	7.941	A
B-A	96	388	0.246	96	0.3	12.343	B
C-AB	172	646	0.266	173	0.5	7.634	A
C-A	126			126			
A-B	171			171			
A-C	201			201			

Base + Com Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Walshaw Road	T-Junction	Two-way	Two-way	Two-way		7.45	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.45	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	369	100.000
B		✓	294	100.000
C		✓	461	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	125	244
	B	185	0	109
	C	283	178	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	12	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.28	11.43	0.4	B
B-A	0.57	23.55	1.3	C
C-AB	0.46	9.72	1.3	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	82	510	0.161	81	0.2	8.378	A
B-A	139	423	0.329	137	0.5	12.504	B
C-AB	193	694	0.279	191	0.5	7.713	A
C-A	154			154			
A-B	94			94			
A-C	184			184			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	484	0.202	98	0.3	9.303	A
B-A	166	395	0.421	165	0.7	15.602	C
C-AB	250	713	0.351	249	0.8	8.382	A
C-A	165			165			
A-B	112			112			
A-C	219			219			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	120	437	0.275	120	0.4	11.315	B
B-A	204	356	0.572	201	1.3	22.914	C
C-AB	341	739	0.462	339	1.3	9.677	A
C-A	167			167			
A-B	138			138			
A-C	269			269			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	120	435	0.276	120	0.4	11.433	B
B-A	204	356	0.572	204	1.3	23.550	C
C-AB	342	739	0.462	342	1.3	9.716	A
C-A	166			166			
A-B	138			138			
A-C	269			269			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	482	0.203	98	0.3	9.397	A
B-A	166	395	0.421	169	0.7	16.053	C
C-AB	251	714	0.351	253	0.8	8.395	A
C-A	164			164			
A-B	112			112			
A-C	219			219			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	82	508	0.161	82	0.2	8.453	A
B-A	139	423	0.329	140	0.5	12.782	B
C-AB	194	695	0.280	195	0.6	7.775	A
C-A	153			153			
A-B	94			94			
A-C	184			184			

Base + CD With Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Walshaw Road	T-Junction	Two-way	Two-way	Two-way		5.56	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.56	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	Base + CD With Dev	AM	ONE HOUR	07:30	09:00	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	518	100.000
B		✓	271	100.000
C		✓	402	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	228	290
	B	127	0	144
	C	235	167	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.32	10.75	0.5	B
B-A	0.44	20.18	0.8	C
C-AB	0.45	9.90	1.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	559	0.194	107	0.2	7.958	A
B-A	96	384	0.249	94	0.3	12.383	B
C-AB	173	645	0.269	171	0.5	7.583	A
C-A	129			129			
A-B	172			172			
A-C	218			218			

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	533	0.243	129	0.3	8.896	A
B-A	114	356	0.320	114	0.5	14.799	B
C-AB	222	654	0.340	222	0.7	8.334	A
C-A	139			139			
A-B	205			205			
A-C	261			261			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	494	0.321	158	0.5	10.681	B
B-A	140	318	0.439	139	0.8	19.910	C
C-AB	302	667	0.452	300	1.1	9.814	A
C-A	141			141			
A-B	251			251			
A-C	319			319			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	159	493	0.321	159	0.5	10.750	B
B-A	140	318	0.440	140	0.8	20.180	C
C-AB	302	668	0.453	302	1.1	9.904	A
C-A	140			140			
A-B	251			251			
A-C	319			319			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	129	532	0.243	130	0.3	8.967	A
B-A	114	356	0.321	115	0.5	15.021	C
C-AB	223	655	0.341	225	0.7	8.430	A
C-A	138			138			
A-B	205			205			
A-C	261			261			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	108	558	0.194	109	0.2	8.026	A
B-A	96	383	0.249	96	0.3	12.558	B
C-AB	174	646	0.269	175	0.5	7.672	A
C-A	129			129			
A-B	172			172			
A-C	218			218			

Base + CD With Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	High Street / Walshaw Road	T-Junction	Two-way	Two-way	Two-way		7.51	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.51	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	Base + CD With Dev	PM	ONE HOUR	16:15	17:45	15

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	378	100.000
B		✓	294	100.000
C		✓	478	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	**B**	**C**
From	**A**	0	125	253
	B	185	0	109
	C	300	178	0

Vehicle Mix

Heavy Vehicle %

		To		
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	12	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-C	0.28	11.62	0.4	B
B-A	0.58	24.47	1.3	C
C-AB	0.47	9.70	1.4	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	82	508	0.161	81	0.2	8.414	A
B-A	139	420	0.332	137	0.5	12.671	B
C-AB	198	702	0.282	195	0.6	7.650	A
C-A	162			162			
A-B	94			94			
A-C	190			190			

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	482	0.203	98	0.3	9.367	A
B-A	166	391	0.426	165	0.7	15.916	C
C-AB	257	722	0.355	256	0.8	8.323	A
C-A	173			173			
A-B	112			112			
A-C	227			227			

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	120	432	0.278	120	0.4	11.485	B
B-A	204	351	0.581	201	1.3	23.736	C
C-AB	352	750	0.470	350	1.3	9.656	A
C-A	174			174			
A-B	138			138			
A-C	279			279			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	120	430	0.279	120	0.4	11.617	B
B-A	204	350	0.581	204	1.3	24.465	C
C-AB	353	751	0.470	353	1.4	9.698	A
C-A	173			173			
A-B	138			138			
A-C	279			279			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	98	479	0.205	98	0.3	9.468	A
B-A	166	390	0.426	169	0.8	16.410	C
C-AB	258	723	0.356	260	0.8	8.339	A
C-A	172			172			
A-B	112			112			
A-C	227			227			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-C	82	506	0.162	82	0.2	8.494	A
B-A	139	419	0.332	140	0.5	12.966	B
C-AB	199	703	0.283	200	0.6	7.712	A
C-A	161			161			
A-B	94			94			
A-C	190			190			

Appendix F Trip Generation Summary (Sensitivity)

Transport Assessment and Travel Plan Strategy

Wain Estates (Land) Ltd

SLR Project No.: 410.065892.00001
April 2025

Proposed Trip Forecasting (1,250 Dwellings) – Sensitivity Assessment

Average Person Trip Rates and Trips

Time	Trip Rate (per dwelling)			Trips (1,250 dwellings)		
	Arrive	Depart	Two Way	Arrive	Depart	Two Way
07:00 - 08:00	0.076	0.495	0.571	95	619	714
08:00 - 09:00	0.223	0.802	1.025	279	1003	1281
09:00 - 10:00	0.241	0.304	0.545	301	380	681
10:00 - 11:00	0.236	0.294	0.53	295	368	663
11:00 - 12:00	0.26	0.259	0.519	325	324	649
12:00 - 13:00	0.267	0.283	0.55	334	354	688
13:00 - 14:00	0.298	0.243	0.541	373	304	676
14:00 - 15:00	0.316	0.365	0.681	395	456	851
15:00 - 16:00	0.587	0.281	0.868	734	351	1085
16:00 - 17:00	0.493	0.215	0.708	616	269	885
17:00 - 18:00	0.431	0.253	0.684	539	316	855
18:00 - 19:00	0.449	0.242	0.691	561	303	864

Total Trips by Journey Purpose

Time	Commuting		Education		Recreation/Leisure	
	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	51	330	19	123	26	166
08:00 - 09:00	64	229	143	515	72	258
09:00 - 10:00	48	60	30	38	224	282
10:00 - 11:00	27	34	6	8	262	326
11:00 - 12:00	29	29	11	11	285	284
12:00 - 13:00	37	39	14	15	283	300
13:00 - 14:00	55	44	12	10	306	249
14:00 - 15:00	54	62	59	68	283	327
15:00 - 16:00	69	33	345	165	320	153
16:00 - 17:00	161	70	69	30	387	169
17:00 - 18:00	191	112	28	16	319	188
18:00 - 19:00	133	72	11	6	417	225

Commuting Trips

Time	Car*		Walk		Cycle		Public Transport	
	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	34	221	3	18	1	4	4	29
08:00 - 09:00	43	154	4	13	1	3	6	20
09:00 - 10:00	32	40	3	3	1	1	4	5
10:00 - 11:00	18	23	1	2	0	0	2	3
11:00 - 12:00	20	20	2	2	0	0	3	3
12:00 - 13:00	25	26	2	2	0	0	3	3
13:00 - 14:00	37	30	3	2	1	1	5	4
14:00 - 15:00	36	41	3	3	1	1	5	5
15:00 - 16:00	47	22	4	2	1	0	6	3
16:00 - 17:00	108	47	9	4	2	1	14	6
17:00 - 18:00	128	75	11	6	2	1	17	10
18:00 - 19:00	89	48	7	4	2	1	12	6

** includes allowance for car occupancy of 1.1 based on NTS0905*

Education Trips

Time	Car		Walk		Cycle		Public Transport	
	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	7	49	10	68	0	2	1	4
08:00 - 09:00	57	205	80	286	2	7	5	18
09:00 - 10:00	12	15	17	21	0	1	1	1
10:00 - 11:00	2	3	3	4	0	0	0	0
11:00 - 12:00	4	4	6	6	0	0	0	0
12:00 - 13:00	6	6	8	8	0	0	0	1
13:00 - 14:00	5	4	7	6	0	0	0	0
14:00 - 15:00	23	27	33	38	1	1	2	2
15:00 - 16:00	137	65	191	92	5	2	12	6
16:00 - 17:00	27	12	38	17	1	0	2	1
17:00 - 18:00	11	6	15	9	0	0	1	1
18:00 - 19:00	4	2	6	3	0	0	0	0

** includes allowance for car occupancy of 1.9 based on NTS0905*

Recreation / Leisure Trips

Time	Car*		Walk		Cycle		Public Transport	
	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	8	54	1	7	0	1	2	11
08:00 - 09:00	23	83	3	11	1	2	5	18
09:00 - 10:00	72	91	10	12	2	3	15	19
10:00 - 11:00	84	105	11	14	2	3	18	22
11:00 - 12:00	92	91	12	12	3	3	19	19
12:00 - 13:00	91	96	12	13	3	3	19	20
13:00 - 14:00	98	80	13	11	3	2	21	17
14:00 - 15:00	91	105	12	14	3	3	19	22
15:00 - 16:00	103	49	14	7	3	1	22	10
16:00 - 17:00	125	54	17	7	3	2	26	12
17:00 - 18:00	103	60	14	8	3	2	22	13
18:00 - 19:00	134	72	18	10	4	2	28	15

** includes allowance for car occupancy of 1.8 based on NTS0905*

Total Multi-Modal Trips

Time	Drive		Walk		Cycle		Public Transport	
	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
07:00 - 08:00	50	323	14	93	1	7	7	44
08:00 - 09:00	123	441	86	310	3	12	15	55
09:00 - 10:00	116	146	29	36	3	4	20	26
10:00 - 11:00	105	131	16	20	3	3	20	25
11:00 - 12:00	116	115	20	20	3	3	22	22
12:00 - 13:00	121	129	22	23	3	3	23	24
13:00 - 14:00	140	114	23	19	4	3	26	21
14:00 - 15:00	150	174	48	55	4	5	26	30
15:00 - 16:00	286	137	209	100	8	4	40	19
16:00 - 17:00	259	113	64	28	6	3	43	19
17:00 - 18:00	242	142	40	23	5	3	39	23
18:00 - 19:00	228	123	31	17	5	3	40	22

Appendix G Junction Capacity Modelling Outputs (Sensitivity)

Transport Assessment and Travel Plan Strategy

Wain Estates (Land) Ltd

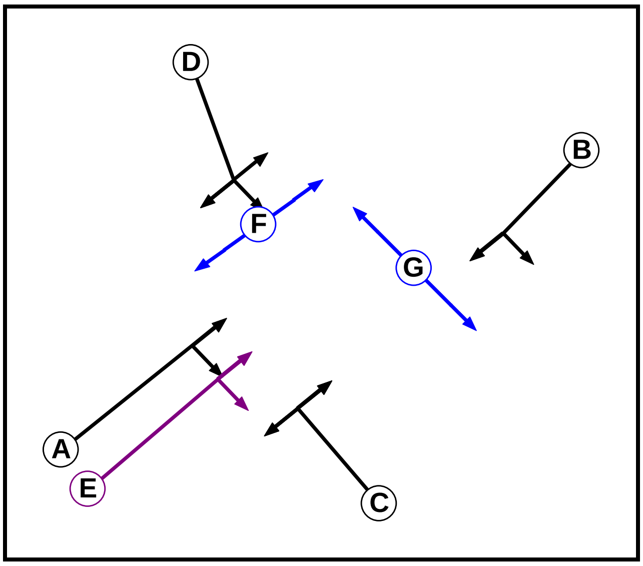
SLR Project No.: 410.065892.00001
April 2025

Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	J5 Crostons Rd-Tottington Rd Existing v2b MP.lsg3x
Author:	GH
Company:	
Address:	

Phase Diagram

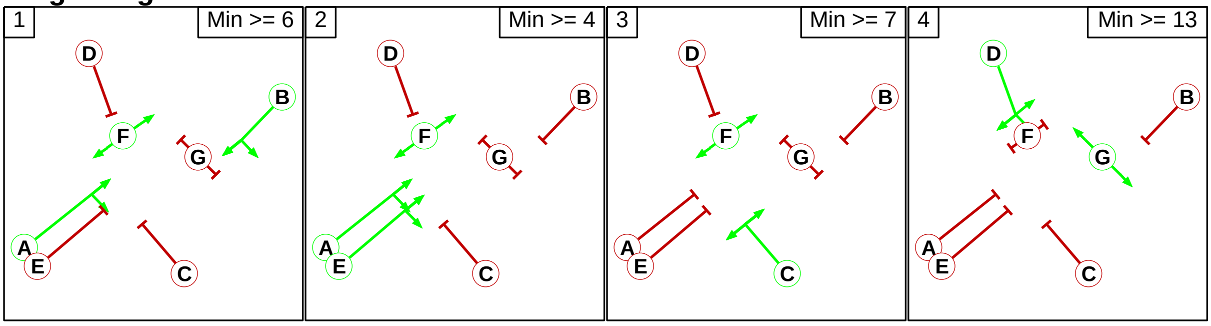


Basic Results Summary

Phase Intergreens Matrix

		Starting Phase						
		A	B	C	D	E	F	G
Terminating Phase	A		-	5	8	-	-	9
	B	-		6	5	4	-	5
	C	6	5		9	6	-	9
	D	6	6	7		6	5	-
	E	-	6	5	8		-	9
	F	-	-	-	8	-		-
	G	9	9	9	-	9	-	

Stage Diagram


1
Min >= 6
D
B
F
G
A
E
C
2
Min >= 4
D
B
F
G
A
E
C
3
Min >= 7
D
B
F
G
A
E
C
4
Min >= 13
D
B
F
G
A
E
C

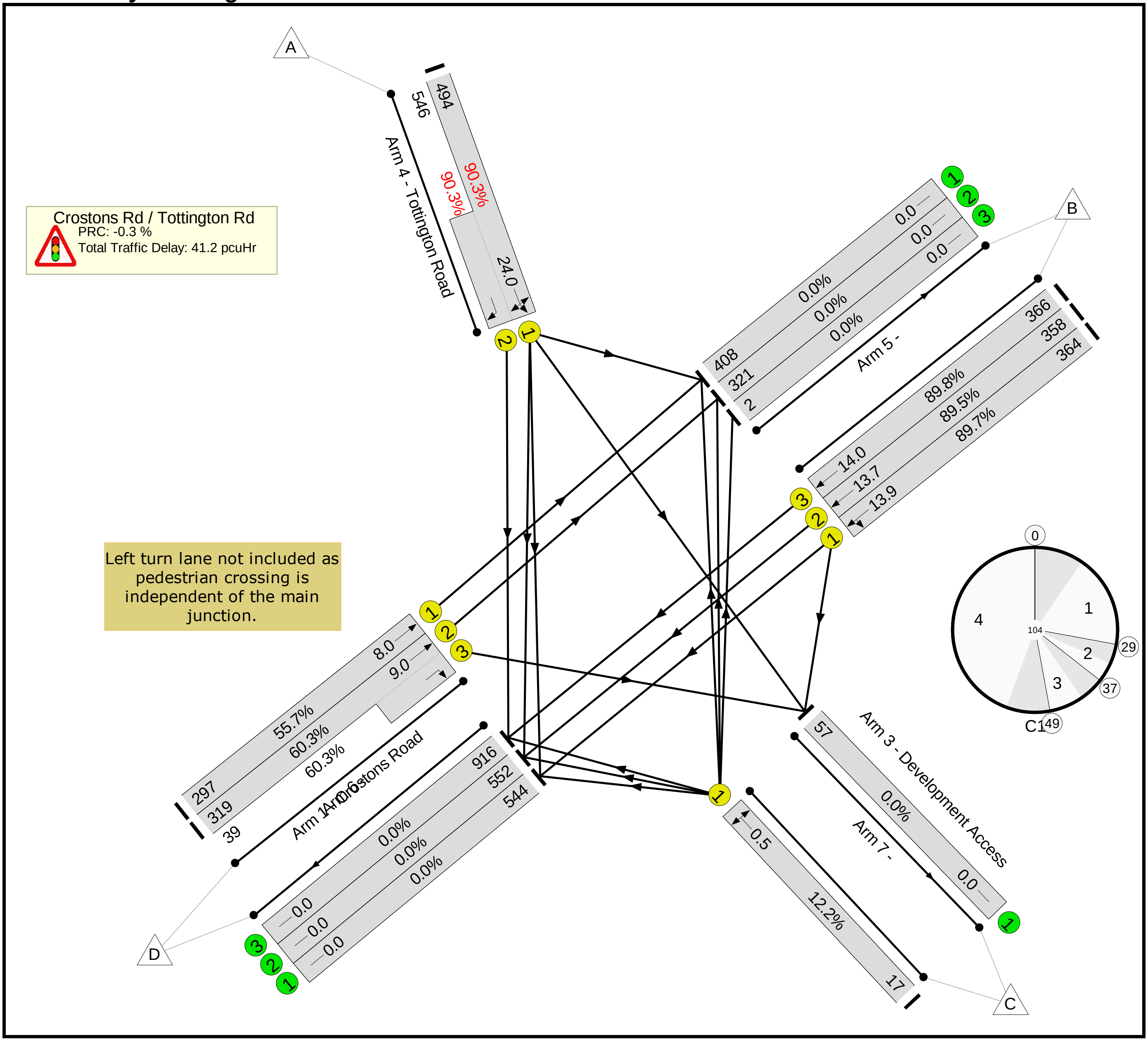
Lane Input Data

Junction: Crostons Rd / Tottington Rd												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Crostons Road)	U	A E	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 5 Ahead	Inf
1/2 (Crostons Road)	U	A E	2	3	60.0	Geom	-	3.65	0.00	N	Arm 5 Ahead	Inf
1/3 (Crostons Road)	U	A E	2	3	5.0	Geom	-	3.65	0.00	Y	Arm 7 Right	15.00
2/1 (Crostons Road)	U	B	2	3	60.0	Geom	-	3.65	0.00	N	Arm 6 Ahead	Inf
											Arm 7 Left	12.00
2/2 (Crostons Road)	U	B	2	3	60.0	Geom	-	3.26	0.00	N	Arm 6 Ahead	Inf
2/3 (Crostons Road)	U	B	2	3	60.0	Geom	-	3.65	0.00	N	Arm 6 Ahead	Inf
3/1 (Development Access)	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Right	30.00
											Arm 6 Left	15.00
4/1 (Tottington Road)	U	D	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 5 Left	12.00
											Arm 6 Right	30.00
											Arm 7 Ahead	Inf
4/2 (Tottington Road)	U	D	2	3	7.0	Geom	-	3.65	0.00	Y	Arm 6 Right	50.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/2	U		2	3	60.0	Inf	-	-	-	-	-	-
5/3	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
6/3	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Basic Results Summary

Scenario 1: '2024 Survey AM' (FG1: '2024 Survey AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: -0.3 %
Total Traffic Delay: 41.2 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
A
B
C
D
Arm 4 - Tottington Road
494
546
90.3%
90.3%
24.0
1
2
Arm 5 -
408
321
2
0.0%
0.0%
0.0%
0.0
0.0
0.0
1
2
3
366
358
364
89.8%
89.5%
89.7%
14.0
13.7
13.9
3
2
1
297
319
39
55.7%
60.3%
60.3%
8.0
9.0
1
2
3
Arm 1 - Crostons Road
Arm 6 -
916
552
544
0.0%
0.0%
0.0%
0.0
0.0
0.0
3
2
1
1
Arm 3 - Development Access
57
0.0%
0.0
1
Arm 7 -
0.5
12.2%
17
0
1
2
3
4
104
29
37
49
C1

Basic Results Summary

Network Results

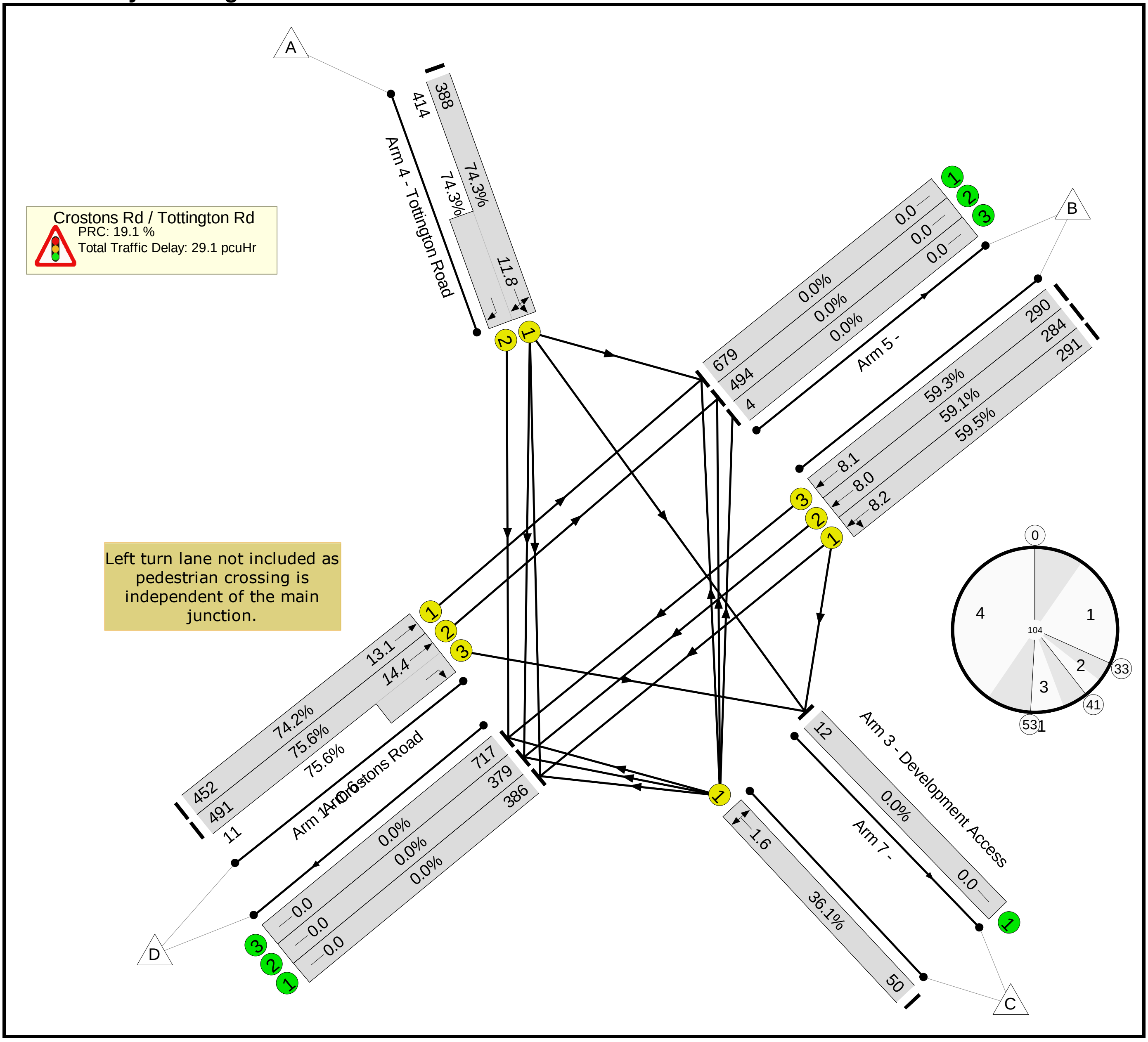
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.3%**	**0**	**0**	**0**	**41.2**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.3%**	**0**	**0**	**0**	**41.2**	**-**	**-**
1/1	Crostons Road Ahead	U	A	E	1	27	4	297	1980	533	55.7%	-	-	-	3.3	40.3	8.0
1/2+1/3	Crostons Road Ahead Right	U	A	E	1	27	4:4	358	2120:1800	529+65	60.3 : 60.3%	-	-	-	4.0	40.1	9.0
2/1	Crostons Road Ahead Left	U	B		1	19	-	364	2111	406	89.7%	-	-	-	7.8	77.5	13.9
2/2	Crostons Road Ahead	U	B		1	19	-	358	2081	400	89.5%	-	-	-	7.7	77.4	13.7
2/3	Crostons Road Ahead	U	B		1	19	-	366	2120	408	89.8%	-	-	-	7.9	77.6	14.0
3/1	Development Access Right Left	U	C		1	7	-	17	1815	140	12.2%	-	-	-	0.3	59.4	0.5
4/1+4/2	Tottington Road Left Right Ahead	U	D		1	50	-	1040	1857:1922	547+605	90.3 : 90.3%	-	-	-	10.2	35.3	24.0

C1 PRC for Signalled Lanes (%): -0.3 Total Delay for Signalled Lanes (pcuHr): 41.21 Cycle Time (s): 104
PRC Over All Lanes (%): -0.3 Total Delay Over All Lanes(pcuHr): 41.21

Basic Results Summary

Scenario 2: '2024 Survey PM' (FG2: '2024 Survey PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Crostons Rd / Tottington Rd
PRC: 19.1 %
Total Traffic Delay: 29.1 pcuHr

Left turn lane not included as pedestrian crossing is independent of the main junction.

A
B
C
D
Arm 4 - Tottington Road
388
414
74.3%
74.3%
11.8
1
2
Arm 5 -
679
494
4
0.0%
0.0%
0.0%
0.0
0.0
0.0
1
2
3
290
284
291
59.3%
59.1%
59.5%
8.1
8.0
8.2
3
2
1
Arm 1 - Crostons Road
Arm 6 -
452
491
11
74.2%
75.6%
75.6%
13.1
14.4
1
2
3
717
379
386
0.0%
0.0%
0.0%
0.0
0.0
0.0
3
2
1
Arm 3 - Development Access
12
0.0%
0.0
1
Arm 7 -
1.6
36.1%
50
1
0
104
1
2
3
4
33
41
53
1

Basic Results Summary

Network Results

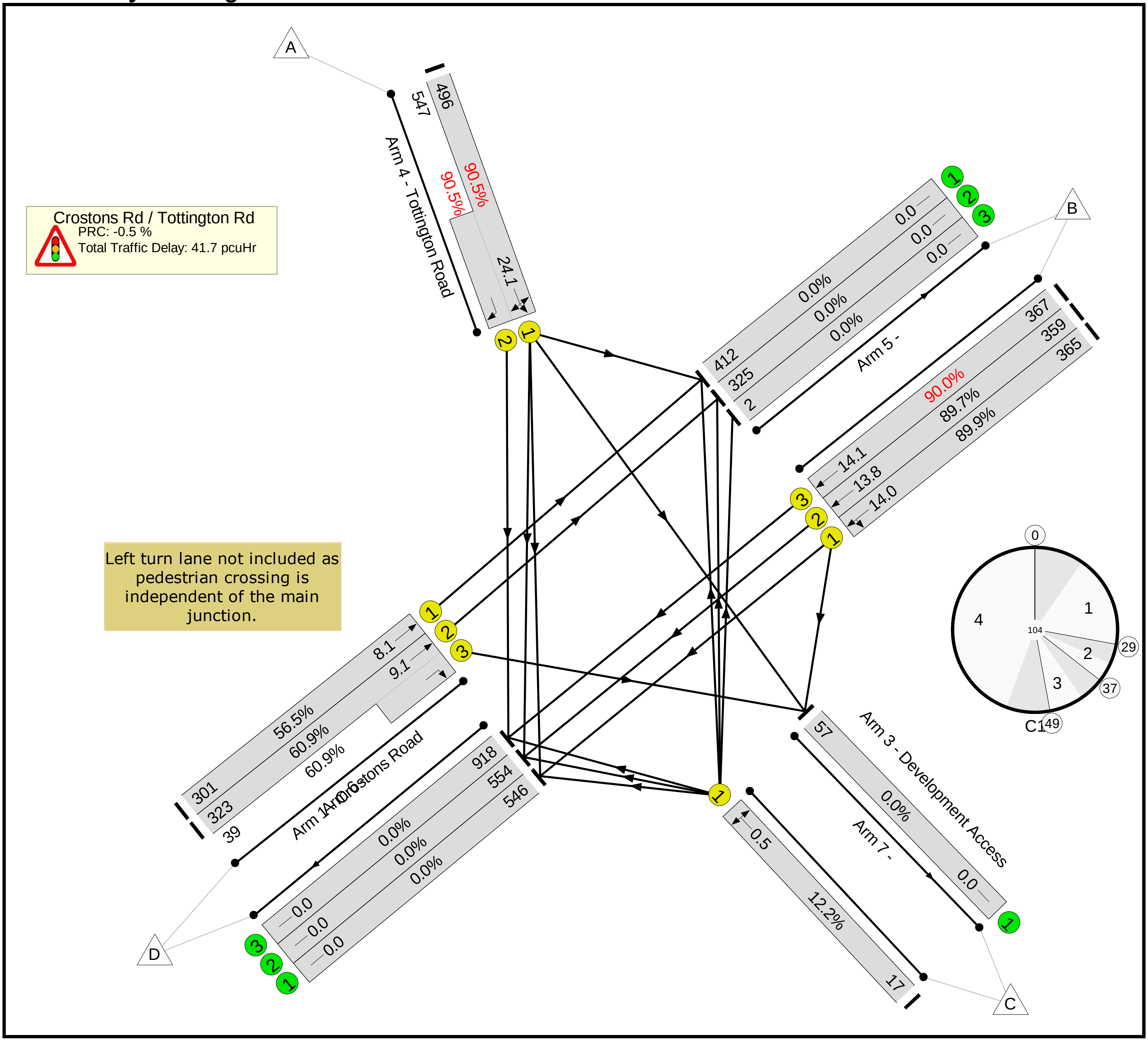
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.6%**	**0**	**0**	**0**	**29.1**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.6%**	**0**	**0**	**0**	**29.1**	**-**	**-**
1/1	Crostons Road Ahead	U	A	E	1	31	4	452	1980	609	74.2%	-	-	-	5.5	43.5	13.1
1/2+1/3	Crostons Road Ahead Right	U	A	E	1	31	4:4	502	2120:1800	650+15	75.6 : 75.6%	-	-	-	6.0	43.3	14.4
2/1	Crostons Road Ahead Left	U	B		1	23	-	291	2119	489	59.5%	-	-	-	3.6	44.7	8.2
2/2	Crostons Road Ahead	U	B		1	23	-	284	2081	480	59.1%	-	-	-	3.5	44.7	8.0
2/3	Crostons Road Ahead	U	B		1	23	-	290	2120	489	59.3%	-	-	-	3.6	44.6	8.1
3/1	Development Access Right Left	U	C		1	7	-	50	1803	139	36.1%	-	-	-	0.9	65.8	1.6
4/1+4/2	Tottington Road Left Right Ahead	U	D		1	46	-	802	1811:1922	522+557	74.3 : 74.3%	-	-	-	5.9	26.5	11.8

C1 PRC for Signalled Lanes (%): 19.1 Total Delay for Signalled Lanes (pcuHr): 29.07 Cycle Time (s): 104
PRC Over All Lanes (%): 19.1 Total Delay Over All Lanes(pcuHr): 29.07

Basic Results Summary

Scenario 3: 'Base + Com Dev AM' (FG3: 'Base + Com Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: -0.5 %
Total Traffic Delay: 41.7 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
A
B
C
D
Arm 4 - Tottington Road
496
547
90.5%
90.5%
24.1
Arm 5 -
412
325
2
0.0%
0.0%
0.0%
0.0
0.0
0.0
367
359
365
90.0%
89.7%
89.9%
14.1
13.8
14.0
Arm 3 - Development Access
57
0.0%
0.0
Arm 7 -
0.5
12.2%
17
Arm 1 - Crostons Road
Arm 6 -
301
323
39
56.5%
60.9%
60.9%
8.1
9.1
918
554
546
0.0%
0.0%
0.0%
0.0
0.0
0.0
0
1
2
3
4
104
29
37
C1
49

Basic Results Summary

Network Results

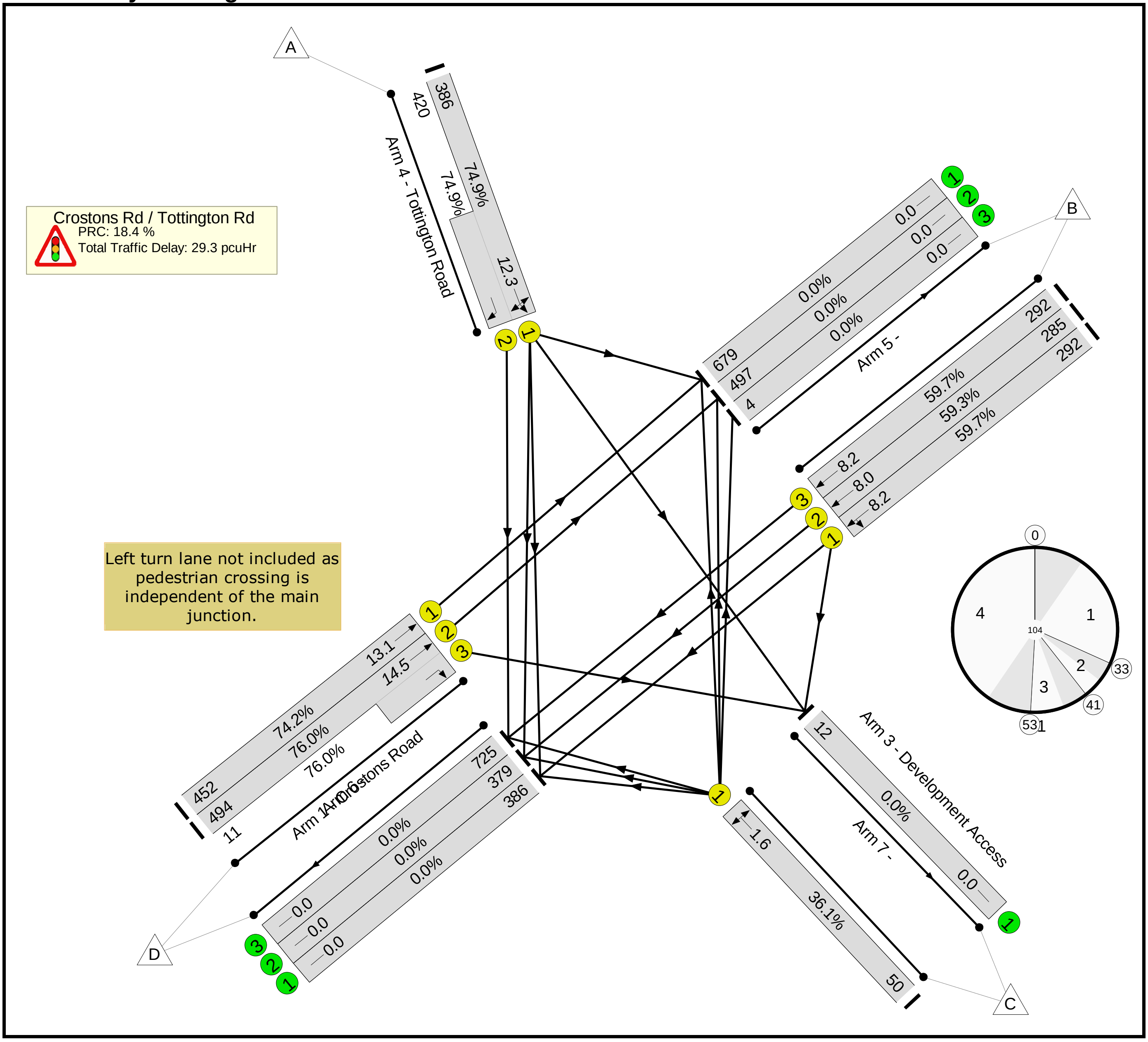
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.5%**	**0**	**0**	**0**	**41.7**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.5%**	**0**	**0**	**0**	**41.7**	**-**	**-**
1/1	Crostons Road Ahead	U	A	E	1	27	4	301	1980	533	56.5%	-	-	-	3.4	40.5	8.1
1/2+1/3	Crostons Road Ahead Right	U	A	E	1	27	4:4	362	2120:1800	530+64	60.9 : 60.9%	-	-	-	4.1	40.3	9.1
2/1	Crostons Road Ahead Left	U	B		1	19	-	365	2111	406	89.9%	-	-	-	7.9	78.1	14.0
2/2	Crostons Road Ahead	U	B		1	19	-	359	2081	400	89.7%	-	-	-	7.8	78.1	13.8
2/3	Crostons Road Ahead	U	B		1	19	-	367	2120	408	90.0%	-	-	-	8.0	78.3	14.1
3/1	Development Access Right Left	U	C		1	7	-	17	1815	140	12.2%	-	-	-	0.3	59.4	0.5
4/1+4/2	Tottington Road Left Right Ahead	U	D		1	50	-	1043	1857:1922	548+605	90.5 : 90.5%	-	-	-	10.3	35.6	24.1

C1 PRC for Signalled Lanes (%): -0.5 Total Delay for Signalled Lanes (pcuHr): 41.73 Cycle Time (s): 104
PRC Over All Lanes (%): -0.5 Total Delay Over All Lanes(pcuHr): 41.73

Basic Results Summary

Scenario 4: 'Base + Com Dev PM' (FG4: 'Base + Com Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: 18.4 %
Total Traffic Delay: 29.3 pcuHr

Left turn lane not included as pedestrian crossing is independent of the main junction.

A
B
C
D
Arm 4 - Tottington Road
386
420
74.9%
74.9%
12.3
Arm 5 -
679
497
4
0.0%
0.0%
0.0%
0.0
0.0
0.0
292
285
292
59.7%
59.3%
59.7%
8.2
8.0
8.2
Arm 3 - Development Access
12
0.0%
0.0
Arm 7 -
1.6
36.1%
50
Arm 1 - Crostons Road
Arm 6 -
452
494
11
74.2%
76.0%
76.0%
13.1
14.5
725
379
386
0.0%
0.0%
0.0%
0.0
0.0
0.0
0
1
2
3
4
104
33
41
53
1

Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.0%**	**0**	**0**	**0**	**29.3**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.0%**	**0**	**0**	**0**	**29.3**	**-**	**-**
1/1	Crostons Road Ahead	U	A	E	1	31	4	452	1980	609	74.2%	-	-	-	5.5	43.5	13.1
1/2+1/3	Crostons Road Ahead Right	U	A	E	1	31	4:4	505	2120:1800	650+14	76.0 : 76.0%	-	-	-	6.1	43.6	14.5
2/1	Crostons Road Ahead Left	U	B		1	23	-	292	2119	489	59.7%	-	-	-	3.6	44.8	8.2
2/2	Crostons Road Ahead	U	B		1	23	-	285	2081	480	59.3%	-	-	-	3.5	44.8	8.0
2/3	Crostons Road Ahead	U	B		1	23	-	292	2120	489	59.7%	-	-	-	3.6	44.7	8.2
3/1	Development Access Right Left	U	C		1	7	-	50	1803	139	36.1%	-	-	-	0.9	65.8	1.6
4/1+4/2	Tottington Road Left Right Ahead	U	D		1	46	-	806	1811:1922	515+560	74.9 : 74.9%	-	-	-	6.0	26.8	12.3

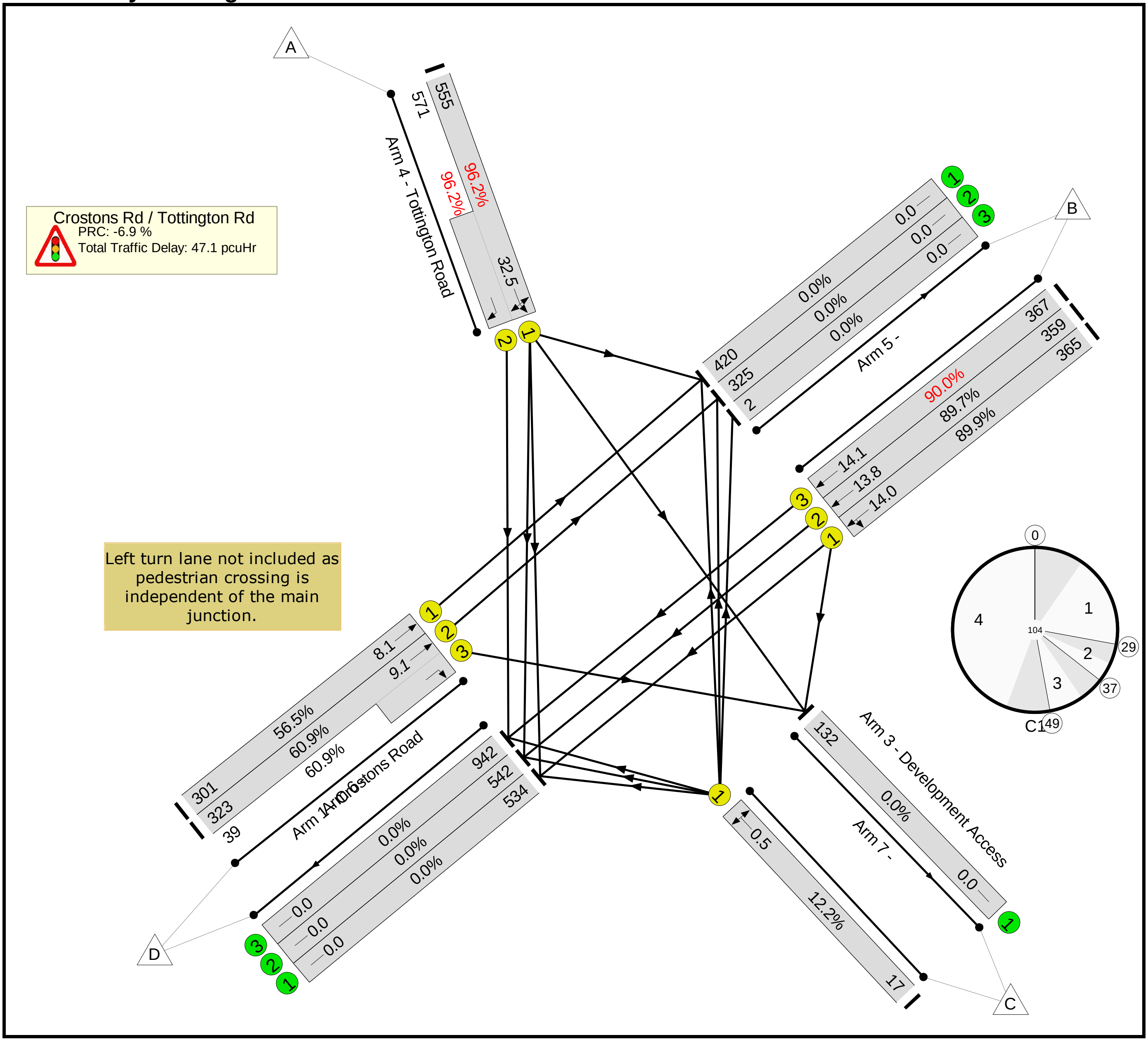
C1 PRC for Signalled Lanes (%): 18.4 Total Delay for Signalled Lanes (pcuHr): 29.30 Cycle Time (s): 104

PRC Over All Lanes (%): 18.4 Total Delay Over All Lanes(pcuHr): 29.30

Basic Results Summary

Scenario 5: 'Base + CD With Dev AM' (FG5: 'Base + CD With Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


Crostons Rd / Tottington Rd
PRC: -6.9 %
Total Traffic Delay: 47.1 pcuHr
Left turn lane not included as pedestrian crossing is independent of the main junction.
A
B
C
D
Arm 4 - Tottington Road
555
571
96.2%
96.2%
32.5
Arm 5 -
420
325
2
0.0%
0.0%
0.0%
0.0
0.0
0.0
367
359
365
90.0%
89.7%
89.9%
14.1
13.8
14.0
Arm 1 - Crostons Road
Arm 6 -
301
323
39
56.5%
60.9%
60.9%
8.1
9.1
942
542
534
0.0%
0.0%
0.0%
0.0
0.0
0.0
Arm 3 - Development Access
132
0.0%
0.0
Arm 7 -
0.5
12.2%
17
1
2
3
4
0
104
29
37
C1
49

Basic Results Summary

Network Results

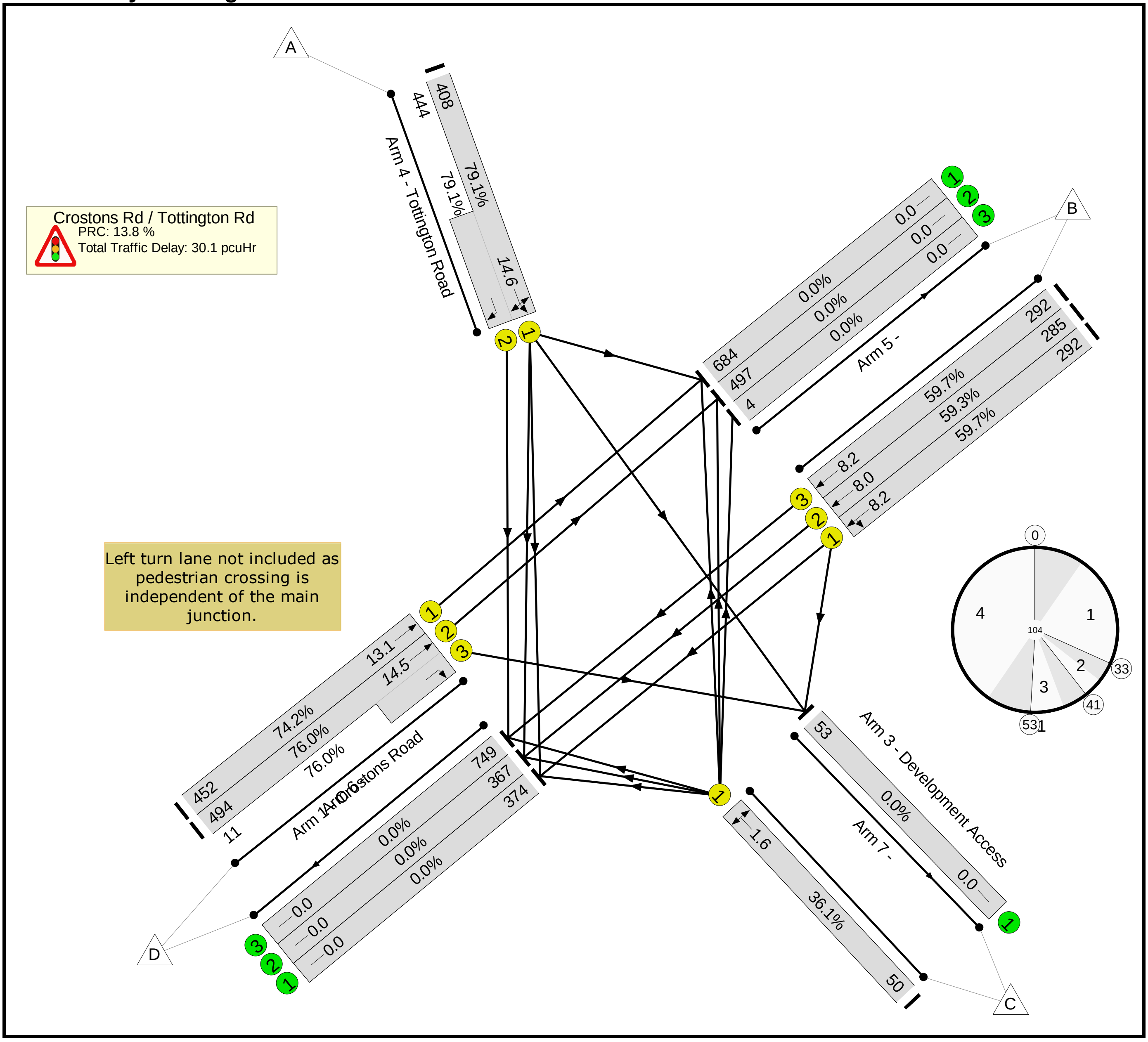
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.2%**	**0**	**0**	**0**	**47.1**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**96.2%**	**0**	**0**	**0**	**47.1**	**-**	**-**
1/1	Crostons Road Ahead	U	A	E	1	27	4	301	1980	533	56.5%	-	-	-	3.4	40.5	8.1
1/2+1/3	Crostons Road Ahead Right	U	A	E	1	27	4:4	362	2120:1800	530+64	60.9 : 60.9%	-	-	-	4.1	40.3	9.1
2/1	Crostons Road Ahead Left	U	B		1	19	-	365	2111	406	89.9%	-	-	-	7.9	78.1	14.0
2/2	Crostons Road Ahead	U	B		1	19	-	359	2081	400	89.7%	-	-	-	7.8	78.1	13.8
2/3	Crostons Road Ahead	U	B		1	19	-	367	2120	408	90.0%	-	-	-	8.0	78.3	14.1
3/1	Development Access Right Left	U	C		1	7	-	17	1815	140	12.2%	-	-	-	0.3	59.4	0.5
4/1+4/2	Tottington Road Left Right Ahead	U	D		1	50	-	1126	1870:1922	577+594	96.2 : 96.2%	-	-	-	15.7	50.3	32.5

C1 PRC for Signalled Lanes (%): -6.9 Total Delay for Signalled Lanes (pcuHr): 47.15 Cycle Time (s): 104

PRC Over All Lanes (%): -6.9 Total Delay Over All Lanes(pcuHr): 47.15

Scenario 6: 'Base + CD With Dev PM' (FG6: 'Base + CD With Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


A
B
C
D
Crostons Rd / Tottington Rd
PRC: 13.8 %
Total Traffic Delay: 30.1 pcuHr
Arm 4 - Tottington Road
408
444
79.1%
79.1%
14.6
Arm 5 -
684
497
4
0.0%
0.0%
0.0%
0.0
0.0
0.0
292
285
292
59.7%
59.3%
59.7%
8.2
8.0
8.2
Left turn lane not included as pedestrian crossing is independent of the main junction.
452
494
11
74.2%
76.0%
76.0%
13.1
14.5
Arm 1 - Crostons Road
Arm 6 -
749
367
374
0.0%
0.0%
0.0%
0.0
0.0
0.0
Arm 3 - Development Access
53
0.0%
0.0
Arm 7 -
1.6
36.1%
50
0
104
1
2
3
4
33
41
53
1

Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.1%**	**0**	**0**	**0**	**30.1**	**-**	**-**
Crostons Rd / Tottington Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**79.1%**	**0**	**0**	**0**	**30.1**	**-**	**-**
1/1	Crostons Road Ahead	U	A	E	1	31	4	452	1980	609	74.2%	-	-	-	5.5	43.5	13.1
1/2+1/3	Crostons Road Ahead Right	U	A	E	1	31	4:4	505	2120:1800	650+14	76.0 : 76.0%	-	-	-	6.1	43.6	14.5
2/1	Crostons Road Ahead Left	U	B		1	23	-	292	2119	489	59.7%	-	-	-	3.6	44.8	8.2
2/2	Crostons Road Ahead	U	B		1	23	-	285	2081	480	59.3%	-	-	-	3.5	44.8	8.0
2/3	Crostons Road Ahead	U	B		1	23	-	292	2120	489	59.7%	-	-	-	3.6	44.7	8.2
3/1	Development Access Right Left	U	C		1	7	-	50	1803	139	36.1%	-	-	-	0.9	65.8	1.6
4/1+4/2	Tottington Road Left Right Ahead	U	D		1	46	-	852	1821:1922	516+561	79.1 : 79.1%	-	-	-	6.8	28.6	14.6

C1 PRC for Signalled Lanes (%): 13.8 Total Delay for Signalled Lanes (pcuHr): 30.07 Cycle Time (s): 104
PRC Over All Lanes (%): 13.8 Total Delay Over All Lanes(pcuHr): 30.07

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.1.1.1905
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Filename: J5a R9 Tottington Rd-Walshaw Rd_Existing v2b MP.j10
Path: N:\Vectos Job Data\2024\410.065892.00001 Walshaw Northern Parcel\Picady\v2b MP
Report generation date: 05/11/2024 11:51:56

»(Default Analysis Set) - 2024 Survey, AM
»(Default Analysis Set) - 2024 Survey, PM
»(Default Analysis Set) - Base + Com Dev, AM
»(Default Analysis Set) - Base + Com Dev, PM
»(Default Analysis Set) - Base + CD + Dev, AM
»(Default Analysis Set) - Base + CD + Dev, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	A1 - 2024 Survey									
Stream B-AC	D1	1.8	30.48	0.65	D	D2	1.6	34.02	0.63	D
Stream C-B		0.0	0.00	0.00	A		0.0	9.18	0.00	A
	A1 - Base + Com Dev									
Stream B-AC	D3	1.8	31.08	0.65	D	D4	1.7	34.43	0.64	D
Stream C-B		0.0	0.00	0.00	A		0.0	9.19	0.00	A
	A1 - Base + CD + Dev									
Stream B-AC	D5	4.8	68.31	0.86	F	D6	3.3	60.20	0.79	F
Stream C-B		0.0	0.00	0.00	A		0.0	9.66	0.00	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	19/12/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	Office
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts
5.75						0.85	36.00	20.00		

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Survey	AM	ONE HOUR	07:30	09:00	15	✓
D2	2024 Survey	PM	ONE HOUR	16:15	17:45	15	✓
D3	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15	✓
D4	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15	✓
D5	Base + CD + Dev	AM	ONE HOUR	07:30	09:00	15	✓
D6	Base + CD + Dev	PM	ONE HOUR	16:15	17:45	15	✓

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	(Default Analysis Set)	✓	100.000	100.000

(Default Analysis Set) - 2024 Survey, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		3.50	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.50	A

Arms

Arms

Arm	Name	Description	Arm type
A	Tottington Road (South)		Major
B	Walshaw Road		Minor
C	Tottington Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	10.30			50.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	4.25	25	40

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	569	0.084	0.213	0.134	0.304
B-C	730	0.091	0.230	-	-
C-B	603	0.190	0.190	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 Survey	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	655	100.000
B		ONE HOUR	✓	195	100.000
C		ONE HOUR	✓	846	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	287	368
	B	194	0	1
	C	846	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.65	30.48	1.8	D	179	268
C-A					776	1164
C-B	0.00	0.00	0.0	A	0	0
A-B					263	395
A-C					338	507

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	147	37	407	0.361	145	0.0	0.6	13.613	B
C-A	637	159			637				
C-B	0	0	509	0.000	0	0.0	0.0	0.000	A
A-B	216	54			216				
A-C	277	69			277				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	175	44	375	0.467	174	0.6	0.8	17.773	C
C-A	761	190			761				
C-B	0	0	491	0.000	0	0.0	0.0	0.000	A
A-B	258	65			258				
A-C	331	83			331				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	215	54	332	0.647	211	0.8	1.7	29.077	D
C-A	931	233			931				
C-B	0	0	466	0.000	0	0.0	0.0	0.000	A
A-B	316	79			316				
A-C	405	101			405				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	215	54	332	0.647	214	1.7	1.8	30.477	D
C-A	931	233			931				
C-B	0	0	466	0.000	0	0.0	0.0	0.000	A
A-B	316	79			316				
A-C	405	101			405				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	175	44	375	0.467	179	1.8	0.9	18.594	C
C-A	761	190			761				
C-B	0	0	491	0.000	0	0.0	0.0	0.000	A
A-B	258	65			258				
A-C	331	83			331				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	147	37	407	0.361	148	0.9	0.6	13.978	B
C-A	637	159			637				
C-B	0	0	509	0.000	0	0.0	0.0	0.000	A
A-B	216	54			216				
A-C	277	69			277				

(Default Analysis Set) - 2024 Survey, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		3.09	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.09	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2024 Survey	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1002	100.000
B		ONE HOUR	✓	164	100.000
C		ONE HOUR	✓	640	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	320	682
	B	163	0	1
	C	639	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.63	34.02	1.6	D	150	226
C-A					586	880
C-B	0.00	9.18	0.0	A	0.92	1
A-B					294	440
A-C					626	939

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	123	31	375	0.329	122	0.0	0.5	14.087	B
C-A	481	120			481				
C-B	0.75	0.19	460	0.002	0.75	0.0	0.0	7.844	A
A-B	241	60			241				
A-C	513	128			513				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	147	37	338	0.437	146	0.5	0.7	18.719	C
C-A	574	144			574				
C-B	0.90	0.22	432	0.002	0.90	0.0	0.0	8.353	A
A-B	288	72			288				
A-C	613	153			613				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	181	45	285	0.633	177	0.7	1.6	32.329	D
C-A	704	176			704				
C-B	1	0.28	393	0.003	1	0.0	0.0	9.175	A
A-B	352	88			352				
A-C	751	188			751				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	181	45	285	0.633	180	1.6	1.6	34.020	D
C-A	704	176			704				
C-B	1	0.28	393	0.003	1	0.0	0.0	9.175	A
A-B	352	88			352				
A-C	751	188			751				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	147	37	338	0.437	151	1.6	0.8	19.600	C
C-A	574	144			574				
C-B	0.90	0.22	432	0.002	0.90	0.0	0.0	8.353	A
A-B	288	72			288				
A-C	613	153			613				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	123	31	375	0.329	125	0.8	0.5	14.437	B
C-A	481	120			481				
C-B	0.75	0.19	460	0.002	0.75	0.0	0.0	7.845	A
A-B	241	60			241				
A-C	513	128			513				

(Default Analysis Set) - Base + Com Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		3.55	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.55	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	Base + Com Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	663	100.000
B		ONE HOUR	✓	195	100.000
C		ONE HOUR	✓	849	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	287	376
	B	194	0	1
	C	849	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.65	31.08	1.8	D	179	268
C-A					779	1169
C-B	0.00	0.00	0.0	A	0	0
A-B					263	395
A-C					345	518

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	147	37	405	0.362	145	0.0	0.6	13.694	B
C-A	639	160			639				
C-B	0	0	508	0.000	0	0.0	0.0	0.000	A
A-B	216	54			216				
A-C	283	71			283				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	175	44	374	0.469	174	0.6	0.9	17.938	C
C-A	763	191			763				
C-B	0	0	490	0.000	0	0.0	0.0	0.000	A
A-B	258	65			258				
A-C	338	85			338				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	215	54	330	0.652	211	0.9	1.7	29.592	D
C-A	935	234			935				
C-B	0	0	464	0.000	0	0.0	0.0	0.000	A
A-B	316	79			316				
A-C	414	103			414				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	215	54	330	0.652	214	1.7	1.8	31.075	D
C-A	935	234			935				
C-B	0	0	464	0.000	0	0.0	0.0	0.000	A
A-B	316	79			316				
A-C	414	103			414				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	175	44	374	0.469	179	1.8	0.9	18.793	C
C-A	763	191			763				
C-B	0	0	490	0.000	0	0.0	0.0	0.000	A
A-B	258	65			258				
A-C	338	85			338				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	147	37	405	0.362	148	0.9	0.6	14.067	B
C-A	639	160			639				
C-B	0	0	508	0.000	0	0.0	0.0	0.000	A
A-B	216	54			216				
A-C	283	71			283				

(Default Analysis Set) - Base + Com Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		3.12	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	3.12	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	Base + Com Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1005	100.000
B		ONE HOUR	✓	164	100.000
C		ONE HOUR	✓	644	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	320	685
	B	163	0	1
	C	643	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.64	34.43	1.7	D	150	226
C-A					590	885
C-B	0.00	9.19	0.0	A	0.92	1
A-B					294	440
A-C					629	943

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	123	31	374	0.330	122	0.0	0.5	14.137	B
C-A	484	121			484				
C-B	0.75	0.19	459	0.002	0.75	0.0	0.0	7.851	A
A-B	241	60			241				
A-C	516	129			516				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	147	37	336	0.438	146	0.5	0.8	18.819	C
C-A	578	145			578				
C-B	0.90	0.22	431	0.002	0.90	0.0	0.0	8.363	A
A-B	288	72			288				
A-C	616	154			616				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	181	45	284	0.636	177	0.8	1.6	32.680	D
C-A	708	177			708				
C-B	1	0.28	393	0.003	1	0.0	0.0	9.190	A
A-B	352	88			352				
A-C	754	189			754				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	181	45	284	0.636	180	1.6	1.7	34.432	D
C-A	708	177			708				
C-B	1	0.28	393	0.003	1	0.0	0.0	9.190	A
A-B	352	88			352				
A-C	754	189			754				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	147	37	336	0.438	151	1.7	0.8	19.725	C
C-A	578	145			578				
C-B	0.90	0.22	431	0.002	0.90	0.0	0.0	8.364	A
A-B	288	72			288				
A-C	616	154			616				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	123	31	374	0.330	125	0.8	0.5	14.487	B
C-A	484	121			484				
C-B	0.75	0.19	459	0.002	0.75	0.0	0.0	7.853	A
A-B	241	60			241				
A-C	516	129			516				

(Default Analysis Set) - Base + CD + Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		9.32	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.32	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	Base + CD + Dev	AM	ONE HOUR	07:30	09:00	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	689	100.000
B		ONE HOUR	✓	249	100.000
C		ONE HOUR	✓	887	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	303	386
	B	248	0	1
	C	887	0	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

		To		
		A	B	C
From	A	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.86	68.31	4.8	F	228	343
C-A					814	1221
C-B	0.00	0.00	0.0	A	0	0
A-B					278	417
A-C					354	531

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	187	47	399	0.470	184	0.0	0.9	16.526	C
C-A	668	167			668				
C-B	0	0	504	0.000	0	0.0	0.0	0.000	A
A-B	228	57			228				
A-C	291	73			291				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	224	56	366	0.612	221	0.9	1.5	24.510	C
C-A	797	199			797				
C-B	0	0	485	0.000	0	0.0	0.0	0.000	A
A-B	272	68			272				
A-C	347	87			347				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	274	69	320	0.857	263	1.5	4.2	55.227	F
C-A	977	244			977				
C-B	0	0	459	0.000	0	0.0	0.0	0.000	A
A-B	334	83			334				
A-C	425	106			425				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	274	69	320	0.857	272	4.2	4.8	68.314	F
C-A	977	244			977				
C-B	0	0	459	0.000	0	0.0	0.0	0.000	A
A-B	334	83			334				
A-C	425	106			425				

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	224	56	366	0.612	236	4.8	1.7	30.057	D
C-A	797	199			797				
C-B	0	0	485	0.000	0	0.0	0.0	0.000	A
A-B	272	68			272				
A-C	347	87			347				

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	187	47	399	0.470	191	1.7	0.9	17.535	C
C-A	668	167			668				
C-B	0	0	504	0.000	0	0.0	0.0	0.000	A
A-B	228	57			228				
A-C	291	73			291				

(Default Analysis Set) - Base + CD + Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	(untitled)	T-Junction	Two-way	Two-way	Two-way		5.96	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	5.96	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Base + CD + Dev	PM	ONE HOUR	16:15	17:45	15	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		ONE HOUR	✓	1096	100.000
B		ONE HOUR	✓	193	100.000
C		ONE HOUR	✓	661	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
		A	**B**	**C**
From	**A**	0	378	718
	B	192	0	1
	C	660	1	0

Vehicle Mix

HV data entry mode	PCU Factor for a HV (PCU)
HV Percentages	2.00

Heavy Vehicle %

	To			
		A	**B**	**C**
From	**A**	0	0	0
	B	0	0	0
	C	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-AC	0.79	60.20	3.3	F	177	266
C-A					606	908
C-B	0.00	9.66	0.0	A	0.92	1
A-B					347	520
A-C					659	988

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	145	36	364	0.400	143	0.0	0.6	16.123	C
C-A	497	124			497				
C-B	0.75	0.19	446	0.002	0.75	0.0	0.0	8.081	A
A-B	285	71			285				
A-C	541	135			541				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	174	43	324	0.536	172	0.6	1.1	23.410	C
C-A	593	148			593				
C-B	0.90	0.22	416	0.002	0.90	0.0	0.0	8.676	A
A-B	340	85			340				
A-C	645	161			645				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	212	53	268	0.792	205	1.1	3.0	51.550	F
C-A	727	182			727				
C-B	1	0.28	374	0.003	1	0.0	0.0	9.659	A
A-B	416	104			416				
A-C	791	198			791				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	212	53	268	0.792	211	3.0	3.3	60.195	F
C-A	727	182			727				
C-B	1	0.28	374	0.003	1	0.0	0.0	9.659	A
A-B	416	104			416				
A-C	791	198			791				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	174	43	324	0.536	182	3.3	1.2	26.697	D
C-A	593	148			593				
C-B	0.90	0.22	416	0.002	0.90	0.0	0.0	8.676	A
A-B	340	85			340				
A-C	645	161			645				

17:30 - 17:45

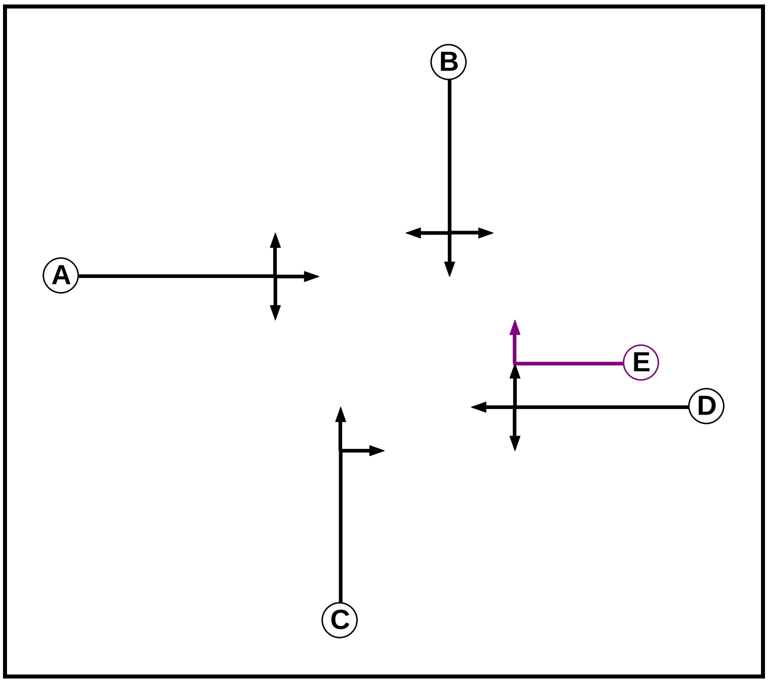
Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	145	36	364	0.400	147	1.2	0.7	16.816	C
C-A	497	124			497				
C-B	0.75	0.19	446	0.002	0.75	0.0	0.0	8.082	A
A-B	285	71			285				
A-C	541	135			541				

Basic Results Summary

User and Project Details

Project:	**Ainsworth Road / Cockey Moor Road Junction Upgrade**
Title:	**Ainsworth Road / Cockey Moor Road Junction Upgrade**
Location:	Bury
Design Layout Ref:	Existing
Date Completed:	August 2024
Model Purpose:	For development impact assessment.
Flow Details:	Cycle time of 140 seconds taken from MOVA Logs (2-034 MOVA Log (05-10-17 to 16-10-17)). Updated traffic count undertaken Junce 2024.
Safety Considerations:	N/a
Additional detail:	
File name:	J7 Cockey Moor Rd Existing v2b MP.lsg3x
Author:	JL
Company:	SLR
Address:	Dale Street, Manchester, M1 2HF

Phase Diagram

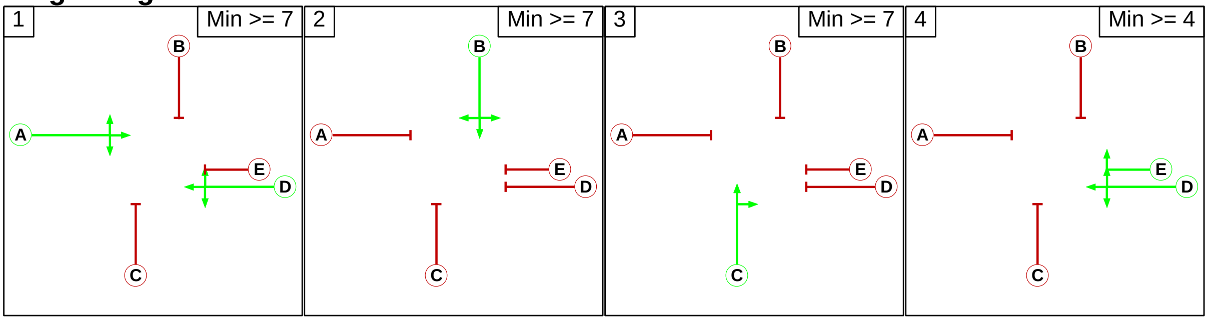


Basic Results Summary

Phase Intergreens Matrix

		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		8	8	-	7
	B	6		8	6	6
	C	6	8		6	6
	D	-	8	8		-
	E	5	8	8	-	

Stage Diagram



1
Min >= 7
A
B
C
D
E
2
Min >= 7
A
B
C
D
E
3
Min >= 7
A
B
C
D
E
4
Min >= 4
A
B
C
D
E

Lane Input Data

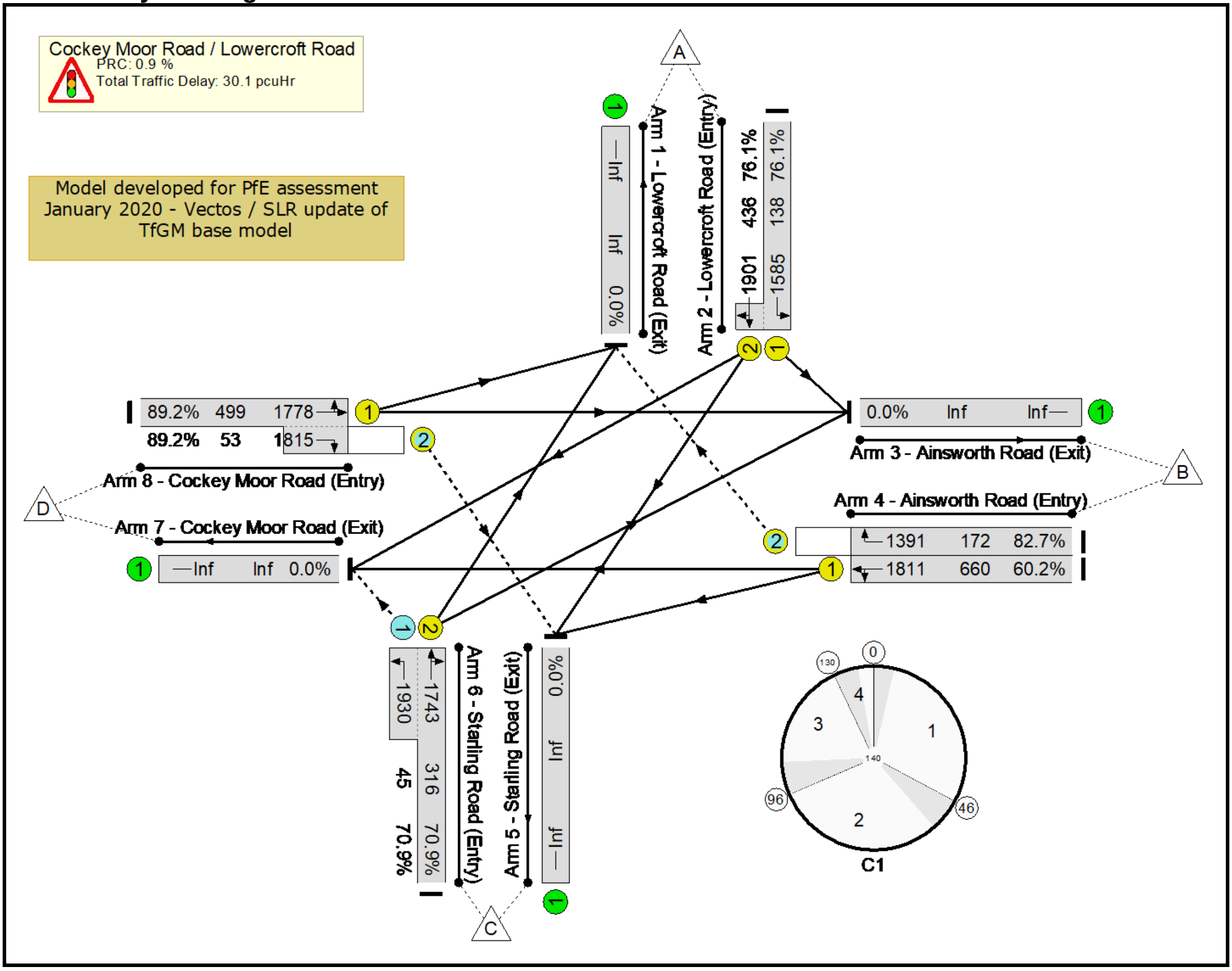
Junction: Cockey Moor Road / Lowercroft Road

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Lowercroft Road (Exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
2/1 (Lowercroft Road (Entry))	U	B	2	3	60.0	Geom	-	2.60	0.00	Y	Arm 3 Left	8.20
2/2 (Lowercroft Road (Entry))	U	B	2	3	1.4	Geom	-	2.60	0.00	N	Arm 5 Ahead	Inf
											Arm 7 Right	6.75
3/1 (Ainsworth Road (Exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1 (Ainsworth Road (Entry))	U	D	2	3	60.0	Geom	-	2.50	0.00	Y	Arm 5 Left	13.00
											Arm 7 Ahead	Inf
4/2 (Ainsworth Road (Entry))	O	D E	2	3	60.0	Geom	-	2.50	0.00	N	Arm 1 Right	3.40
5/1 (Starling Road (Exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Starling Road (Entry))	O		2	3	5.0	Geom	-	4.60	0.00	Y	Arm 7 Left	20.00
6/2 (Starling Road (Entry))	U	C	2	3	60.0	Geom	-	3.10	0.00	Y	Arm 1 Ahead	13.50
											Arm 3 Right	17.50
7/1 (Cockey Moor Road (Exit))	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1 (Cockey Moor Road (Entry))	U	A	2	3	60.0	Geom	-	2.00	0.00	Y	Arm 1 Left	13.30
											Arm 3 Ahead	Inf
8/2 (Cockey Moor Road (Entry))	O	A	2	3	3.5	Geom	-	2.00	0.00	Y	Arm 5 Right	Inf

Basic Results Summary

Scenario 1: '2024 Servey AM' (FG1: '2024 Survey AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Cockey Moor Road / Lowercroft Road
PRC: 0.9 %
Total Traffic Delay: 30.1 pcuHr
Model developed for PfE assessment
January 2020 - Vectos / SLR update of
TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
Inf Inf 0.0%
1901 436 76.1%
1585 138 76.1%
89.2% 499 1778
89.2% 53 1815
0.0% Inf Inf
1391 172 82.7%
1811 660 60.2%
Inf Inf 0.0%
1930 45 70.9%
1743 316 70.9%
0.0% Inf Inf
1
2
C1
0
130
140
96
46
1
2
3
4

Basic Results Summary

Network Results

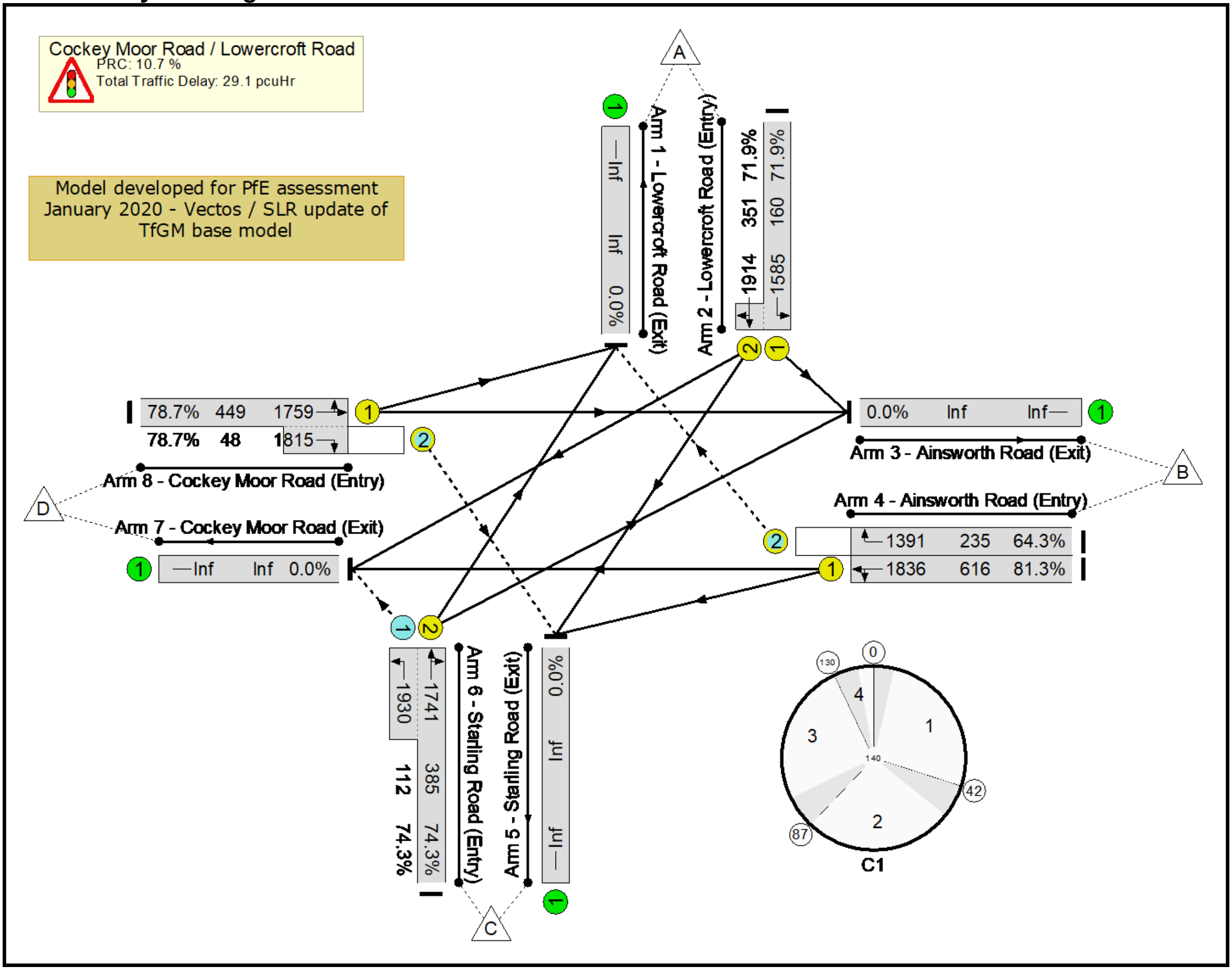
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.2%**	**112**	**76**	**33**	**30.1**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.2%**	**112**	**76**	**33**	**30.1**	**-**	**-**
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	B		1	42	-	437	1585:1901	138+436	76.1 : 76.1%	-	-	-	6.8	55.9	16.4
4/1	Ainsworth Road (Entry) Left Ahead	U	D		1	50	-	397	1811	660	60.2%	-	-	-	4.7	43.0	13.2
4/2	Ainsworth Road (Entry) Right	O	D	E	1	50	4	142	1391	172	82.7%	50	60	33	4.0	101.4	6.0
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	C -		1	26	-	256	1743:1930	316+45	70.9 : 70.9%	15	17	0	4.5	63.5	9.7
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	A		1	41	-	492	1778:1815	499+53	89.2 : 89.2%	47	0	0	10.1	73.6	21.5

C1 PRC for Signalled Lanes (%): 0.9 Total Delay for Signalled Lanes (pcuHr): 30.12 Cycle Time (s): 140
PRC Over All Lanes (%): 0.9 Total Delay Over All Lanes(pcuHr): 30.12

Basic Results Summary

Scenario 2: '2024 Survey PM' (FG2: '2024 Survey PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: 10.7 %
Total Traffic Delay: 29.1 pcuHr
Model developed for PfE assessment January 2020 - Vectos / SLR update of TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
Inf Inf 0.0%
1914 351 71.9%
1585 160 71.9%
78.7% 449 1759
78.7% 48 1815
0.0% Inf Inf
1391 235 64.3%
1836 616 81.3%
Inf Inf 0.0%
1741 385 74.3%
1930 112 74.3%
0.0% Inf Inf
1
2
4
3
1
2
130
0
140
42
87
C1

Basic Results Summary

Network Results

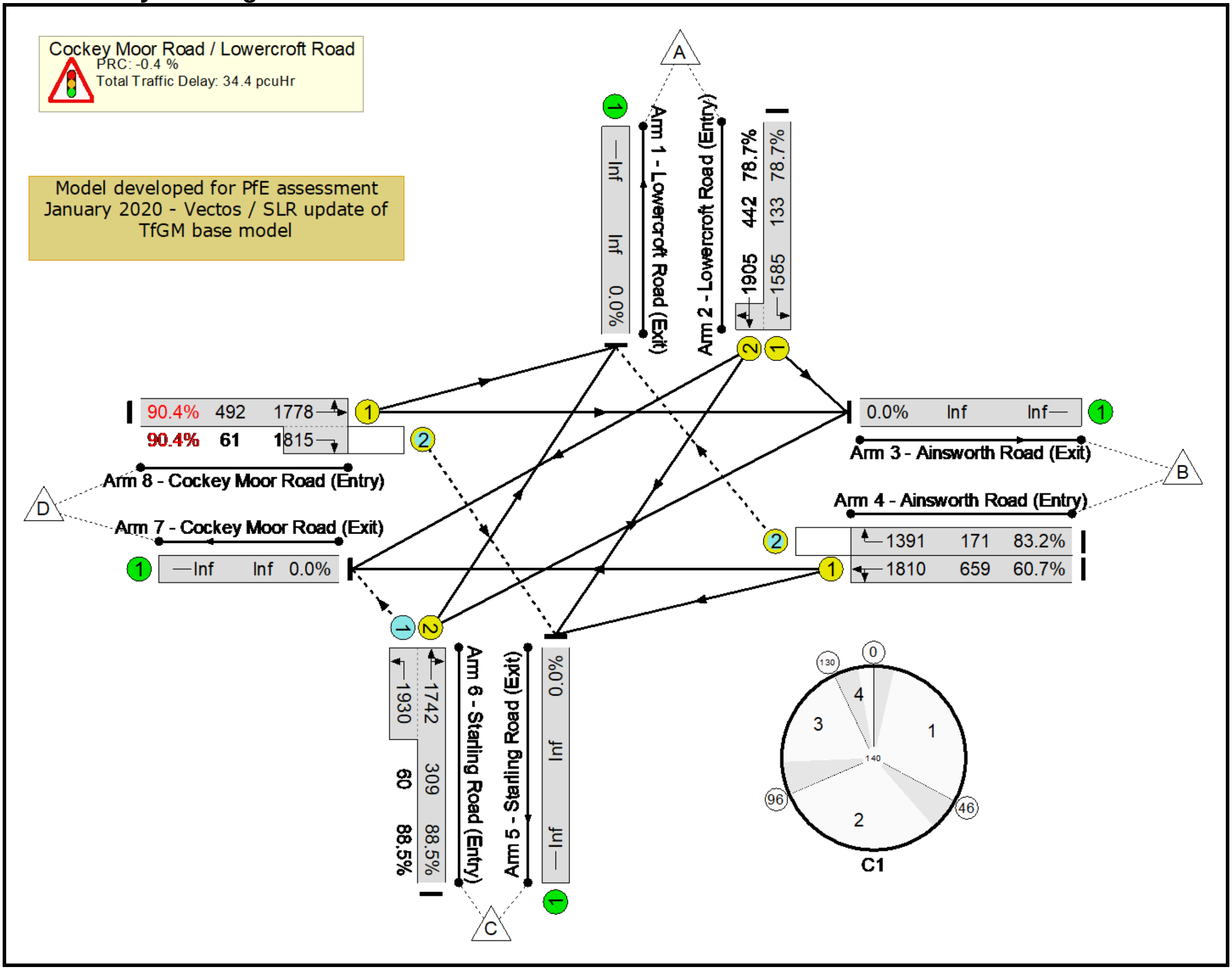
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.3%**	**157**	**114**	**1**	**29.1**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.3%**	**157**	**114**	**1**	**29.1**	**-**	**-**
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	B		1	37	-	367	1585:1914	160+351	71.9 : 71.9%	-	-	-	5.9	57.5	13.4
4/1	Ainsworth Road (Entry) Left Ahead	U	D		1	46	-	501	1836	616	81.3%	-	-	-	8.0	57.5	19.8
4/2	Ainsworth Road (Entry) Right	O	D	E	1	46	4	151	1391	235	64.3%	90	60	1	2.8	66.6	5.2
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	C -		1	35	-	369	1741:1930	385+112	74.3 : 74.3%	29	54	0	5.4	52.6	13.1
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	A		1	37	-	391	1759:1815	449+48	78.7 : 78.7%	38	0	0	7.0	64.5	15.4

C1 PRC for Signalled Lanes (%): 10.7 Total Delay for Signalled Lanes (pcuHr): 29.07 Cycle Time (s): 140
PRC Over All Lanes (%): 10.7 Total Delay Over All Lanes(pcuHr): 29.07

Basic Results Summary

Scenario 3: 'Base + Com Dev AM' (FG3: 'Base + Com Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Cockey Moor Road / Lowercroft Road
PRC: -0.4 %
Total Traffic Delay: 34.4 pcuHr
Model developed for PfE assessment January 2020 - Vectos / SLR update of TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Arm 2 - Lowercroft Road (Entry)
Arm 3 - Ainsworth Road (Exit)
Arm 4 - Ainsworth Road (Entry)
Arm 5 - Starling Road (Exit)
Arm 6 - Starling Road (Entry)
Arm 7 - Cockey Moor Road (Exit)
Arm 8 - Cockey Moor Road (Entry)
Inf Inf 0.0%
1905 442 78.7%
1585 133 78.7%
0.0% Inf Inf
90.4% 492 1778
90.4% 61 1815
Inf Inf 0.0%
1391 171 83.2%
1810 659 60.7%
1930 60 88.5%
1742 309 88.5%
0.0% Inf Inf
1
2
0
130
4
3
1
140
96
2
46
C1

Basic Results Summary

Network Results

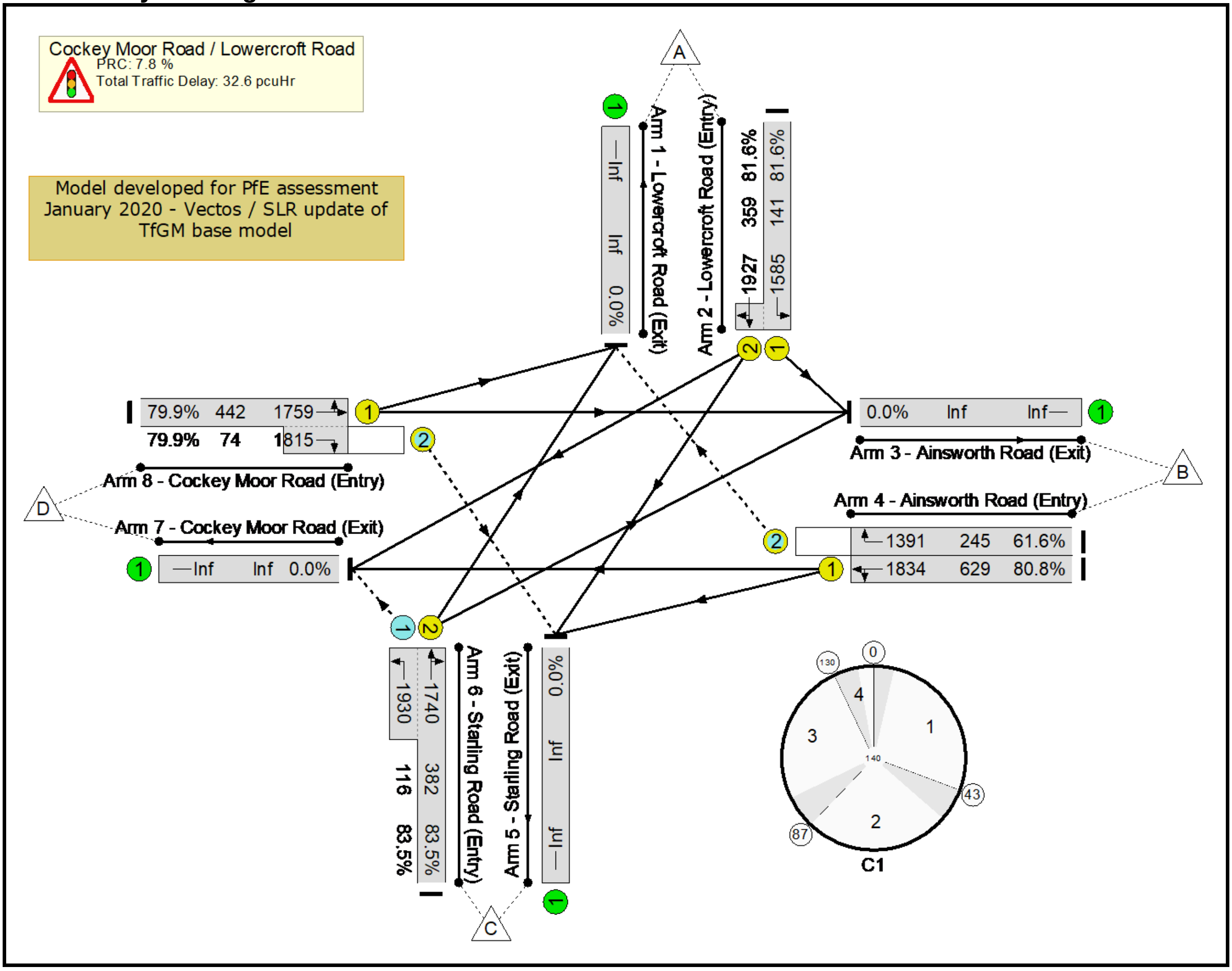
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.4%**	**123**	**93**	**34**	**34.4**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.4%**	**123**	**93**	**34**	**34.4**	**-**	**-**
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	B		1	42	-	453	1585:1905	133+442	78.7 : 78.7%	-	-	-	7.3	57.9	17.4
4/1	Ainsworth Road (Entry) Left Ahead	U	D		1	50	-	400	1810	659	60.7%	-	-	-	4.8	43.2	13.4
4/2	Ainsworth Road (Entry) Right	O	D	E	1	50	4	142	1391	171	83.2%	49	60	33	4.0	102.6	6.1
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	C -		1	26	-	326	1742:1930	309+60	88.5 : 88.5%	20	33	0	7.7	84.5	14.7
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	A		1	41	-	500	1778:1815	492+61	90.4 : 90.4%	55	0	0	10.6	76.3	22.2

C1 PRC for Signalled Lanes (%): -0.4 Total Delay for Signalled Lanes (pcuHr): 34.38 Cycle Time (s): 140
PRC Over All Lanes (%): -0.4 Total Delay Over All Lanes(pcuHr): 34.38

Basic Results Summary

Scenario 4: 'Base + Com Dev PM' (FG4: 'Base + Com Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Cockey Moor Road / Lowercroft Road
PRC: 7.8 %
Total Traffic Delay: 32.6 pcuHr
Model developed for PfE assessment
January 2020 - Vectos / SLR update of
TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Inf Inf 0.0%
Arm 2 - Lowercroft Road (Entry)
1927 359 81.6%
1585 141 81.6%
Arm 3 - Ainsworth Road (Exit)
0.0% Inf Inf
Arm 4 - Ainsworth Road (Entry)
1391 245 61.6%
1834 629 80.8%
Arm 5 - Starling Road (Exit)
0.0% Inf Inf
Arm 6 - Starling Road (Entry)
1930 116 83.5%
1740 382 83.5%
Arm 7 - Cockey Moor Road (Exit)
Inf Inf 0.0%
Arm 8 - Cockey Moor Road (Entry)
79.9% 442 1759
79.9% 74 1815
1
2
C1
0
130
43
87
140
1
2
3
4

Basic Results Summary

Network Results

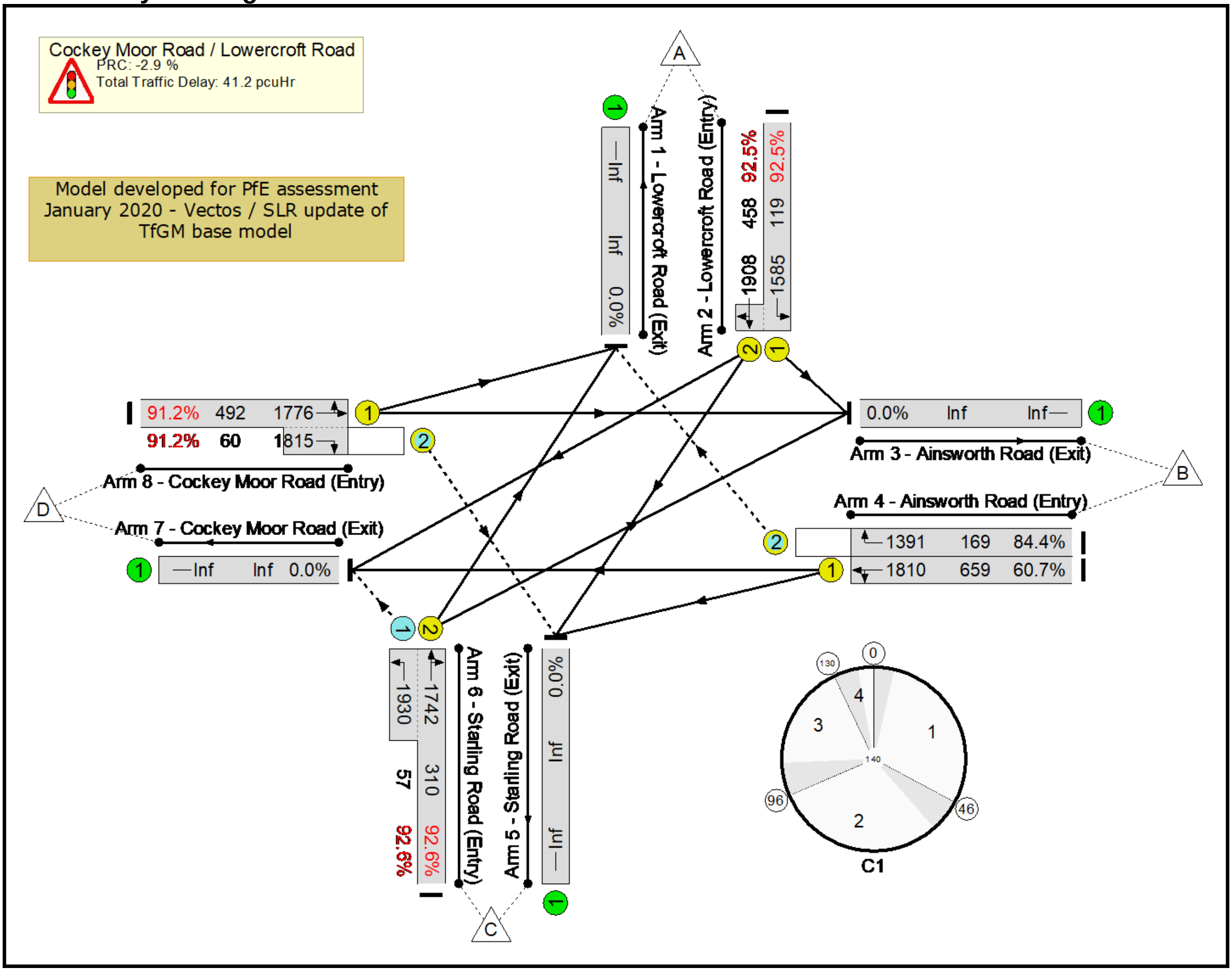
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.5%**	**182**	**123**	**1**	**32.6**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**83.5%**	**182**	**123**	**1**	**32.6**	**-**	**-**
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	B		1	36	-	408	1585:1927	141+359	81.6 : 81.6%	-	-	-	7.5	66.2	16.3
4/1	Ainsworth Road (Entry) Left Ahead	U	D		1	47	-	508	1834	629	80.8%	-	-	-	7.9	56.2	20.0
4/2	Ainsworth Road (Entry) Right	O	D	E	1	47	4	151	1391	245	61.6%	90	60	1	2.6	62.8	5.1
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	C -		1	35	-	416	1740:1930	382+116	83.5 : 83.5%	33	64	0	7.1	61.1	16.1
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	A		1	38	-	412	1759:1815	442+74	79.9 : 79.9%	59	0	0	7.4	65.0	16.1

C1
PRC for Signalled Lanes (%): 7.8
PRC Over All Lanes (%): 7.8
Total Delay for Signalled Lanes (pcuHr): 32.57
Total Delay Over All Lanes(pcuHr): 32.57
Cycle Time (s): 140

Basic Results Summary

Scenario 5: 'Base + CD With Dev AM' (FG5: 'Base + CD + Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: -2.9 %
Total Traffic Delay: 41.2 pcuHr
Model developed for PfE assessment
January 2020 - Vectos / SLR update of
TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Inf
Inf
0.0%
Arm 2 - Lowercroft Road (Entry)
1908
458
92.5%
1585
119
92.5%
Arm 3 - Ainsworth Road (Exit)
0.0%
Inf
Inf
Arm 4 - Ainsworth Road (Entry)
1391
169
84.4%
1810
659
60.7%
Arm 5 - Starling Road (Exit)
0.0%
Inf
Inf
Arm 6 - Starling Road (Entry)
1930
57
92.6%
1742
310
92.6%
Arm 7 - Cockey Moor Road (Exit)
Inf
Inf
0.0%
Arm 8 - Cockey Moor Road (Entry)
91.2%
492
1776
91.2%
60
1815
1
2
0
130
4
3
1
140
96
2
46
C1

Basic Results Summary

Network Results

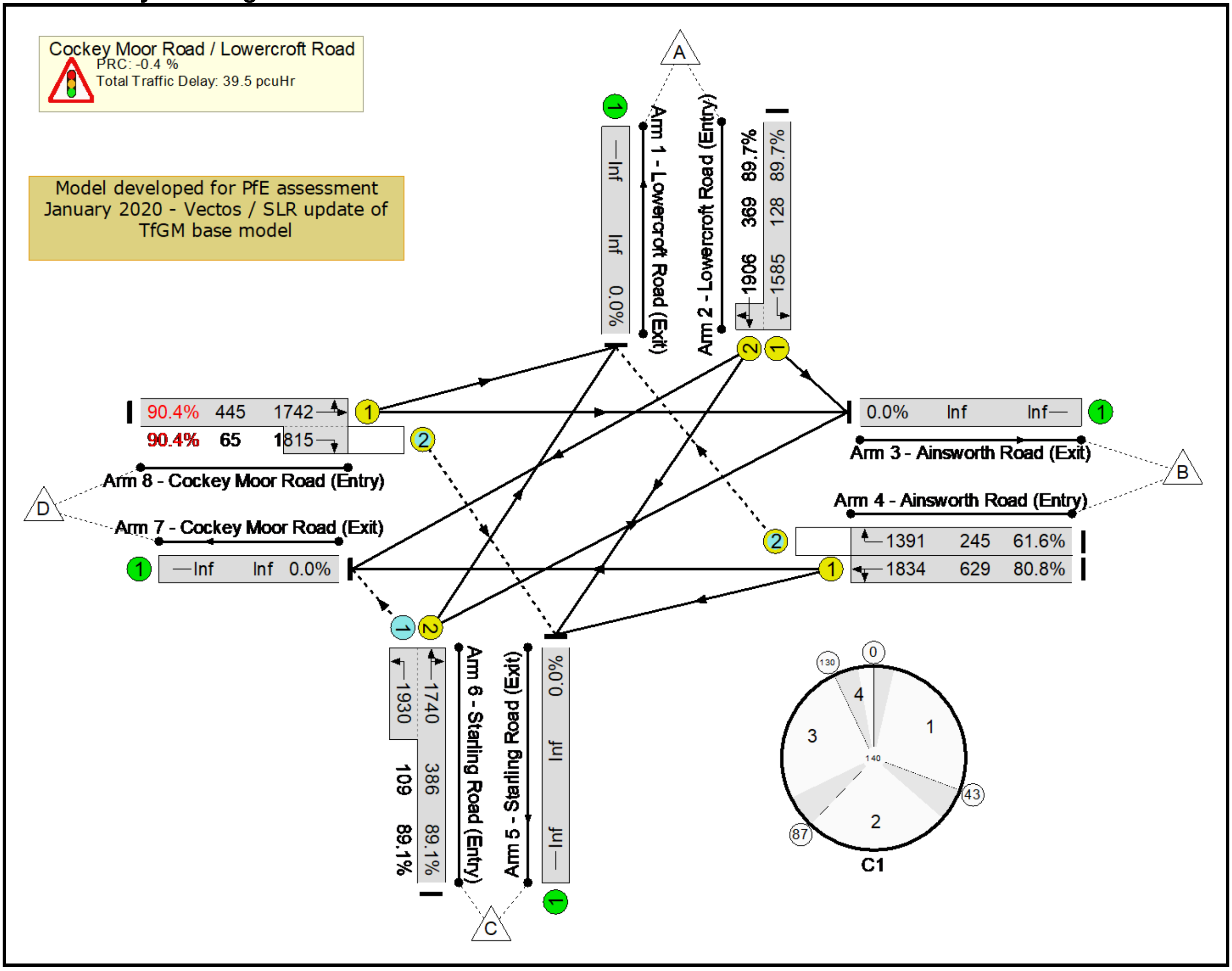
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.6%**	**121**	**93**	**36**	**41.2**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.6%**	**121**	**93**	**36**	**41.2**	**-**	**-**
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	B		1	42	-	534	1585:1908	119+458	92.5 : 92.5%	-	-	-	11.9	80.2	24.7
4/1	Ainsworth Road (Entry) Left Ahead	U	D		1	50	-	400	1810	659	60.7%	-	-	-	4.8	43.2	13.4
4/2	Ainsworth Road (Entry) Right	O	D	E	1	50	4	143	1391	169	84.4%	48	60	36	4.2	106.2	6.2
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	C -		1	26	-	340	1742:1930	310+57	92.6 : 92.6%	19	34	0	9.3	98.3	16.7
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	A		1	41	-	504	1776:1815	492+60	91.2 : 91.2%	55	0	0	11.0	78.4	22.7

C1 PRC for Signalled Lanes (%): -2.9 Total Delay for Signalled Lanes (pcuHr): 41.18 Cycle Time (s): 140
PRC Over All Lanes (%): -2.9 Total Delay Over All Lanes(pcuHr): 41.18

Basic Results Summary

Scenario 6: 'Base + CD With Dev PM' (FG6: 'Base + CD + Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


Cockey Moor Road / Lowercroft Road
PRC: -0.4 %
Total Traffic Delay: 39.5 pcuHr
Model developed for PfE assessment January 2020 - Vectos / SLR update of TfGM base model
A
B
C
D
Arm 1 - Lowercroft Road (Exit)
Inf Inf 0.0%
Arm 2 - Lowercroft Road (Entry)
1906 369 89.7%
1585 128 89.7%
Arm 3 - Ainsworth Road (Exit)
0.0% Inf Inf
Arm 4 - Ainsworth Road (Entry)
1391 245 61.6%
1834 629 80.8%
Arm 5 - Starling Road (Exit)
0.0% Inf Inf
Arm 6 - Starling Road (Entry)
1930 109 89.1%
1740 386 89.1%
Arm 7 - Cockey Moor Road (Exit)
Inf Inf 0.0%
Arm 8 - Cockey Moor Road (Entry)
90.4% 445 1742
90.4% 65 1815
1
2
C1
0
130
4
3
1
140
43
87
2

Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Ainsworth Road / Cockey Moor Road Junction Upgrade	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.4%**	**180**	**125**	**1**	**39.5**	**-**	**-**
Cockey Moor Road / Lowercroft Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.4%**	**180**	**125**	**1**	**39.5**	**-**	**-**
2/1+2/2	Lowercroft Road (Entry) Left Ahead Right	U	B		1	36	-	446	1585:1906	128+369	89.7 : 89.7%	-	-	-	9.9	79.6	19.9
4/1	Ainsworth Road (Entry) Left Ahead	U	D		1	47	-	508	1834	629	80.8%	-	-	-	7.9	56.2	20.0
4/2	Ainsworth Road (Entry) Right	O	D	E	1	47	4	151	1391	245	61.6%	90	60	1	2.5	59.3	5.1
6/2+6/1	Starling Road (Entry) Ahead Right Left	U+O	C -		1	35	-	441	1740:1930	386+109	89.1 : 89.1%	31	66	0	8.8	71.6	18.6
8/1+8/2	Cockey Moor Road (Entry) Left Ahead Right	U+O	A		1	38	-	461	1742:1815	445+65	90.4 : 90.4%	59	0	0	10.4	81.2	20.7

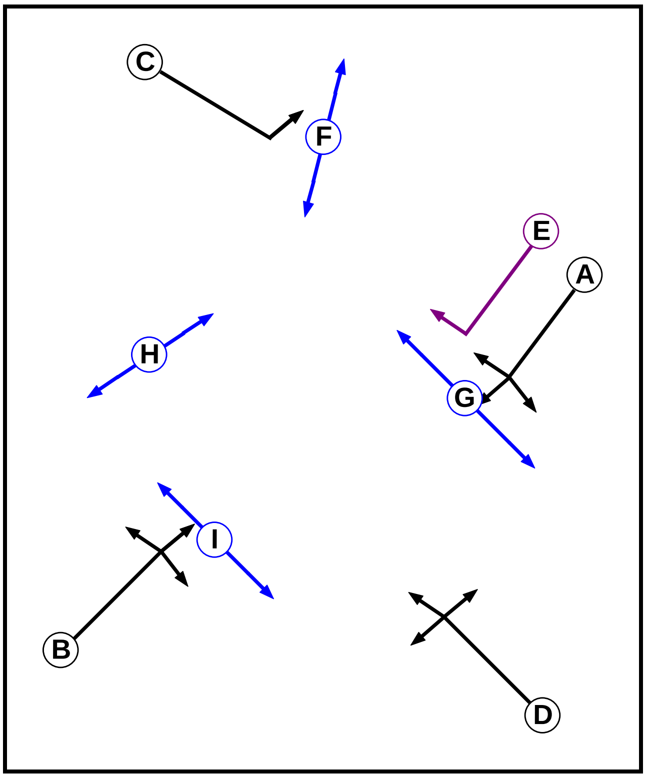
C1 PRC for Signalled Lanes (%): -0.4 Total Delay for Signalled Lanes (pcuHr): 39.45 Cycle Time (s): 140
PRC Over All Lanes (%): -0.4 Total Delay Over All Lanes(pcuHr): 39.45

Basic Results Summary

User and Project Details

Project:	**VN70764**
Title:	**A58 Bolton Rd/ Ainsworth Rd Existing**
Location:	
Additional detail:	
File name:	J9 Bolton Rd-Ainsworth Rd_Existing v2b MP.lsg3x
Author:	
Company:	
Address:	

Phase Diagram

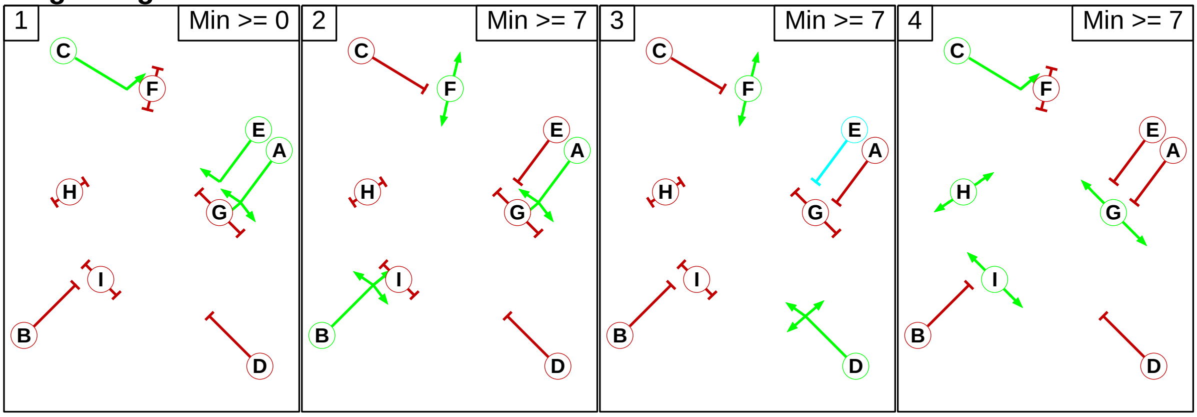


Basic Results Summary

Phase Intergreens Matrix

		Starting Phase								
		A	B	C	D	E	F	G	H	I
Terminating Phase	A		-	-	7	-	-	5	8	10
	B	-		10	6	5	-	10	8	5
	C	-	5		5	-	5	-	-	-
	D	5	5	10		-	-	10	7	7
	E	-	5	-	-		-	5	8	10
	F	-	-	9	-	-		-	-	-
	G	12	12	-	12	12	-		-	-
	H	10	10	-	10	10	-	-		-
	I	12	12	-	12	12	-	-	-	

Stage Diagram


1
Min >= 0
2
Min >= 7
3
Min >= 7
4
Min >= 7
C
F
E
A
H
G
I
B
D

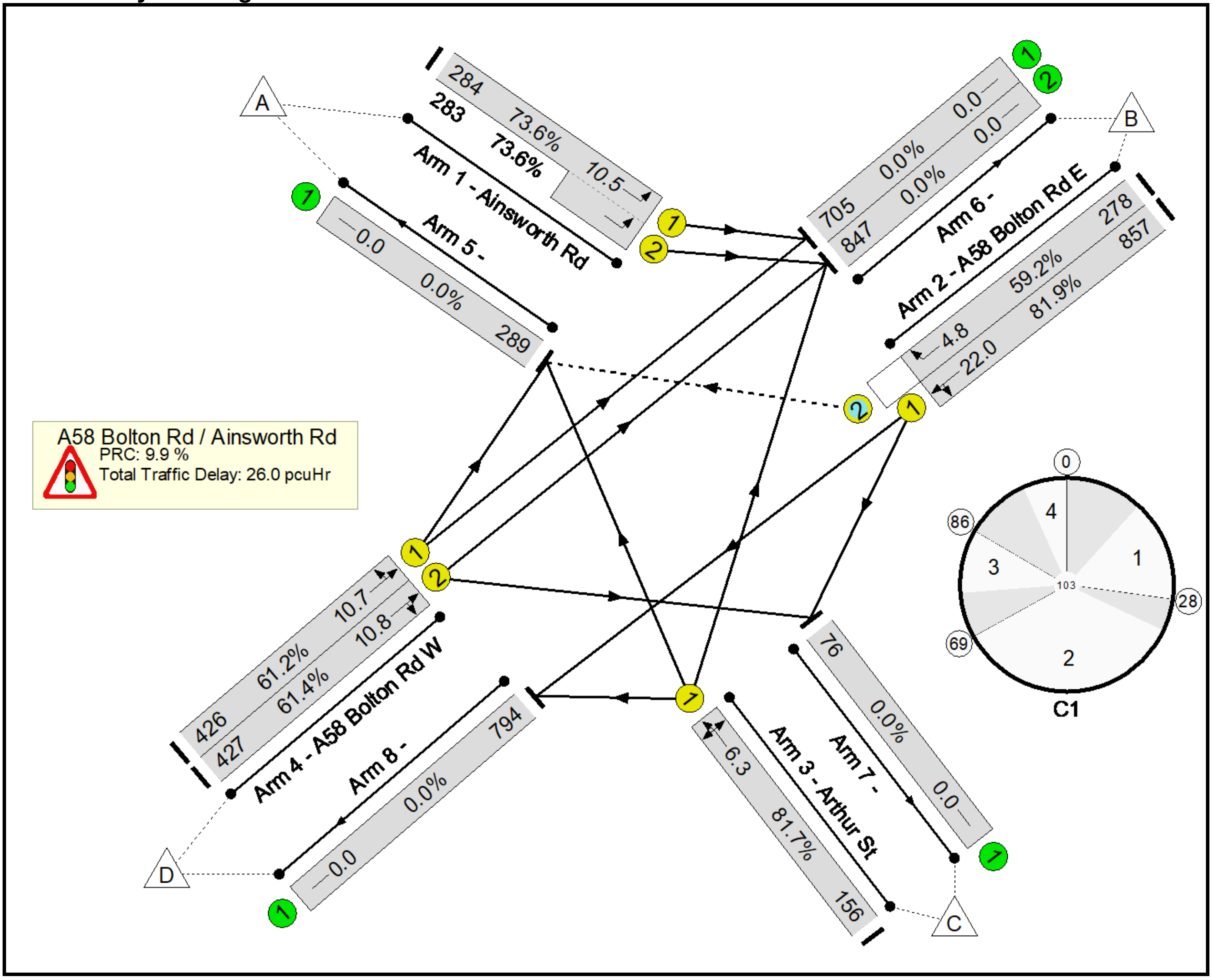
Lane Input Data

Junction: A58 Bolton Rd / Ainsworth Rd												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Ainsworth Rd)	U	C	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 6 Left	12.00
1/2 (Ainsworth Rd)	U	C	2	3	4.3	Geom	-	3.50	0.00	Y	Arm 6 Left	12.00
2/1 (A58 Bolton Rd E)	U	A	2	3	60.0	Geom	-	2.75	0.00	Y	Arm 7 Left	7.00
											Arm 8 Ahead	Inf
2/2 (A58 Bolton Rd E)	O	A E	2	3	60.0	Geom	-	2.75	0.00	Y	Arm 5 Right	17.00
3/1 (Arthur St)	U	D	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	15.50
											Arm 8 Left	6.00
4/1 (A58 Bolton Rd W)	U	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 5 Left	12.00
											Arm 6 Ahead	Inf
4/2 (A58 Bolton Rd W)	U	B	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 6 Ahead	Inf
											Arm 7 Right	18.00
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/2	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1	U		2	3	60.0	Inf	-	-	-	-	-	-
8/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Basic Results Summary

Scenario 1: '2024 Survey AM' (FG1: '2024 Survey AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


A
B
C
D
284
73.6%
10.5
283
73.6%
Arm 1 - Ainsworth Rd
Arm 5 -
0.0
0.0%
289
705
0.0%
0.0
847
0.0%
0.0
Arm 6 -
Arm 2 - A58 Bolton Rd E
278
59.2%
4.8
857
81.9%
22.0
A58 Bolton Rd / Ainsworth Rd
PRC: 9.9 %
Total Traffic Delay: 26.0 pcuHr
426
61.2%
10.7
427
61.4%
10.8
Arm 4 - A58 Bolton Rd W
Arm 8 -
794
0.0%
0.0
6.3
81.7%
156
Arm 3 - Arthur St
Arm 7 -
76
0.0%
0.0
0
4
86
1
3
103
28
69
2
C1

Basic Results Summary

Network Results

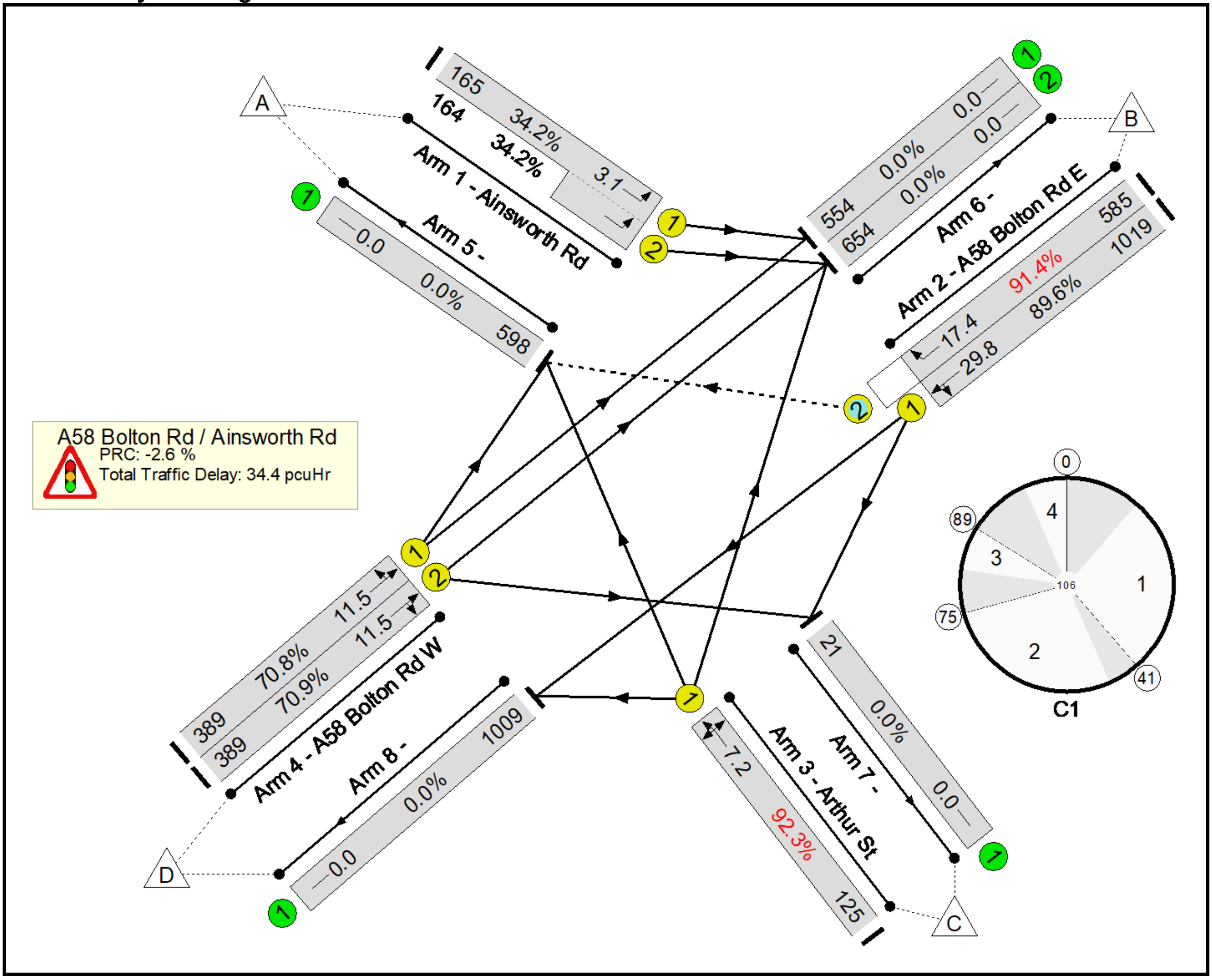
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A58 Bolton Rd/ Ainsworth Rd Existing	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.9%**	**89**	**173**	**16**	**26.0**	**-**	**-**
A58 Bolton Rd / Ainsworth Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**81.9%**	**89**	**173**	**16**	**26.0**	**-**	**-**
1/1+1/2	Ainsworth Rd Left	U	C		1	35	-	567	1747:1747	386+384	73.6 : 73.6%	-	-	-	5.5	35.2	10.5
2/1	A58 Bolton Rd E Left Ahead	U	A		1	57	-	857	1858	1046	81.9%	-	-	-	6.6	27.5	22.0
2/2	A58 Bolton Rd E Right	O	A	E	1	57	16	278	1737	469	59.2%	89	173	16	2.0	25.6	4.8
3/1	Arthur St Ahead Right Left	U	D		1	10	-	156	1788	191	81.7%	-	-	-	4.0	91.2	6.3
4/1	A58 Bolton Rd W Left Ahead	U	B		1	36	-	426	1937	696	61.2%	-	-	-	4.0	33.7	10.7
4/2	A58 Bolton Rd W Ahead Right	U	B		1	36	-	427	1937	696	61.4%	-	-	-	4.0	33.8	10.8

C1 PRC for Signalled Lanes (%): 9.9 Total Delay for Signalled Lanes (pcuHr): 26.03 Cycle Time (s): 103
PRC Over All Lanes (%): 9.9 Total Delay Over All Lanes(pcuHr): 26.03

Basic Results Summary

Scenario 2: '2024 Survey PM' (FG2: '2024 Survey PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


A58 Bolton Rd / Ainsworth Rd
PRC: -2.6 %
Total Traffic Delay: 34.4 pcuHr
A
B
C
D
Arm 1 - Ainsworth Rd
165
34.2%
3.1
164
34.2%
Arm 5 -
0.0
0.0%
598
Arm 6 -
0.0
0.0%
554
0.0
0.0%
654
Arm 2 - A58 Bolton Rd E
585
91.4%
17.4
1019
89.6%
29.8
Arm 4 - A58 Bolton Rd W
389
70.8%
11.5
389
70.9%
11.5
Arm 8 -
1009
0.0%
0.0
Arm 3 - Arthur St
7.2
92.3%
125
Arm 7 -
21
0.0%
0.0
1
2
0
89
75
41
106
4
3
1
2
C1

Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A58 Bolton Rd/ Ainsworth Rd Existing	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.3%**	**59**	**469**	**57**	**34.4**	**-**	**-**
A58 Bolton Rd / Ainsworth Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**92.3%**	**59**	**469**	**57**	**34.4**	**-**	**-**
1/1+1/2	Ainsworth Rd Left	U	C		1	48	-	329	1747:1747	483+480	34.2 : 34.2%	-	-	-	1.8	19.8	3.1
2/1	A58 Bolton Rd E Left Ahead	U	A		1	63	-	1019	1883	1137	89.6%	-	-	-	9.2	32.4	29.8
2/2	A58 Bolton Rd E Right	O	A	E	1	63	29	585	1737	640	91.4%	59	469	57	8.4	51.9	17.4
3/1	Arthur St Ahead Right Left	U	D		1	7	-	125	1794	135	92.3%	-	-	-	5.3	151.4	7.2
4/1	A58 Bolton Rd W Left Ahead	U	B		1	29	-	389	1940	549	70.8%	-	-	-	4.9	45.2	11.5
4/2	A58 Bolton Rd W Ahead Right	U	B		1	29	-	389	1938	548	70.9%	-	-	-	4.9	45.2	11.5

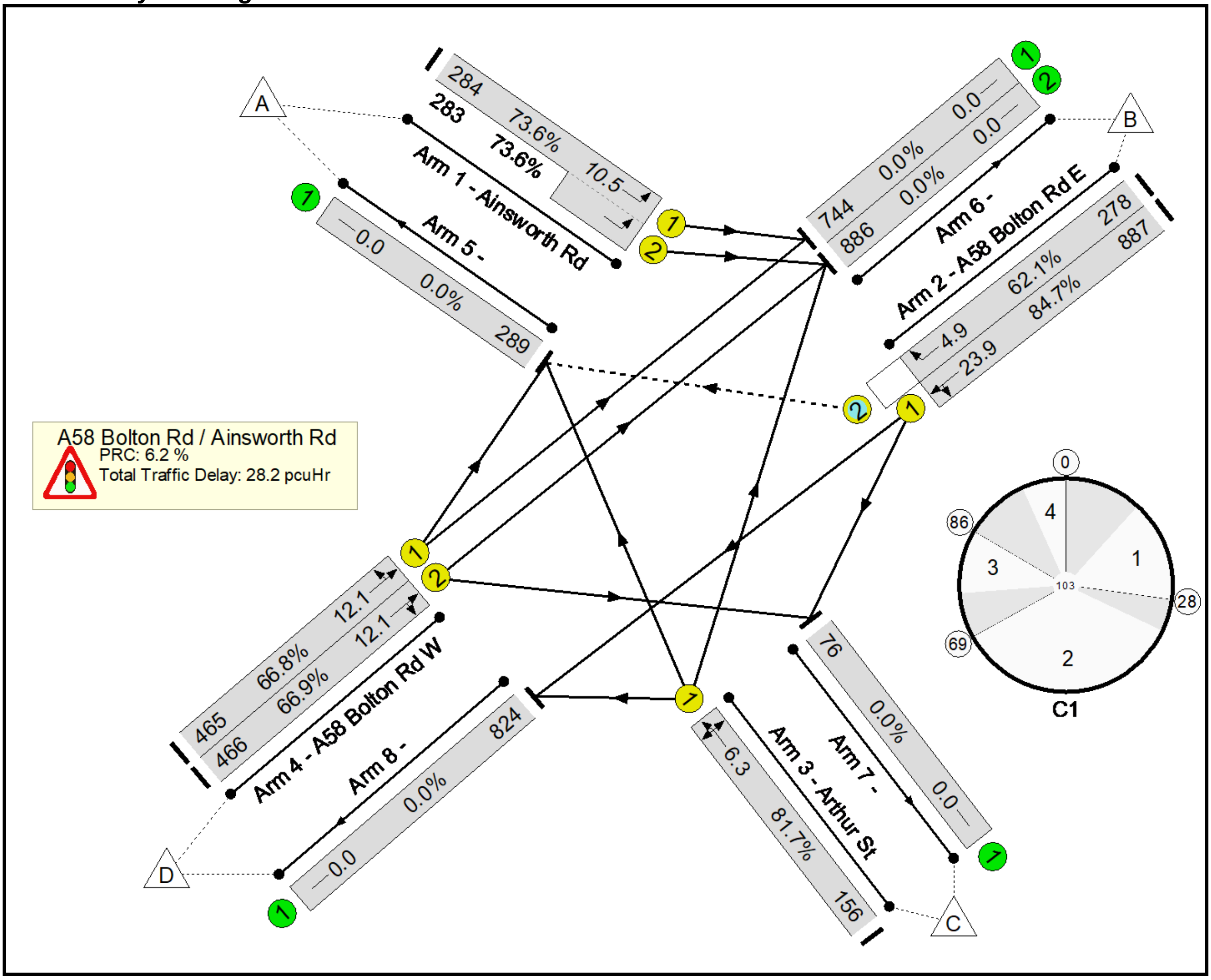
C1 PRC for Signalled Lanes (%): -2.6 Total Delay for Signalled Lanes (pcuHr): 34.44 Cycle Time (s): 106

PRC Over All Lanes (%): -2.6 Total Delay Over All Lanes(pcuHr): 34.44

Basic Results Summary

Scenario 3: 'Base + Com Dev AM' (FG3: 'Base + Com Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


A58 Bolton Rd / Ainsworth Rd
PRC: 6.2 %
Total Traffic Delay: 28.2 pcuHr
A
B
C
D
Arm 1 - Ainsworth Rd
284 73.6% 10.5
283 73.6%
Arm 5 -
0.0 0.0% 289
Arm 6 -
744 0.0% 0.0
886 0.0% 0.0
Arm 2 - A58 Bolton Rd E
278 62.1% 4.9
887 84.7% 23.9
Arm 4 - A58 Bolton Rd W
465 66.8% 12.1
466 66.9% 12.1
Arm 8 -
824 0.0% 0.0
Arm 3 - Arthur St
6.3 81.7% 156
Arm 7 -
76 0.0% 0.0
0
4
1
86
3
103
28
69
2
C1

Basic Results Summary

Network Results

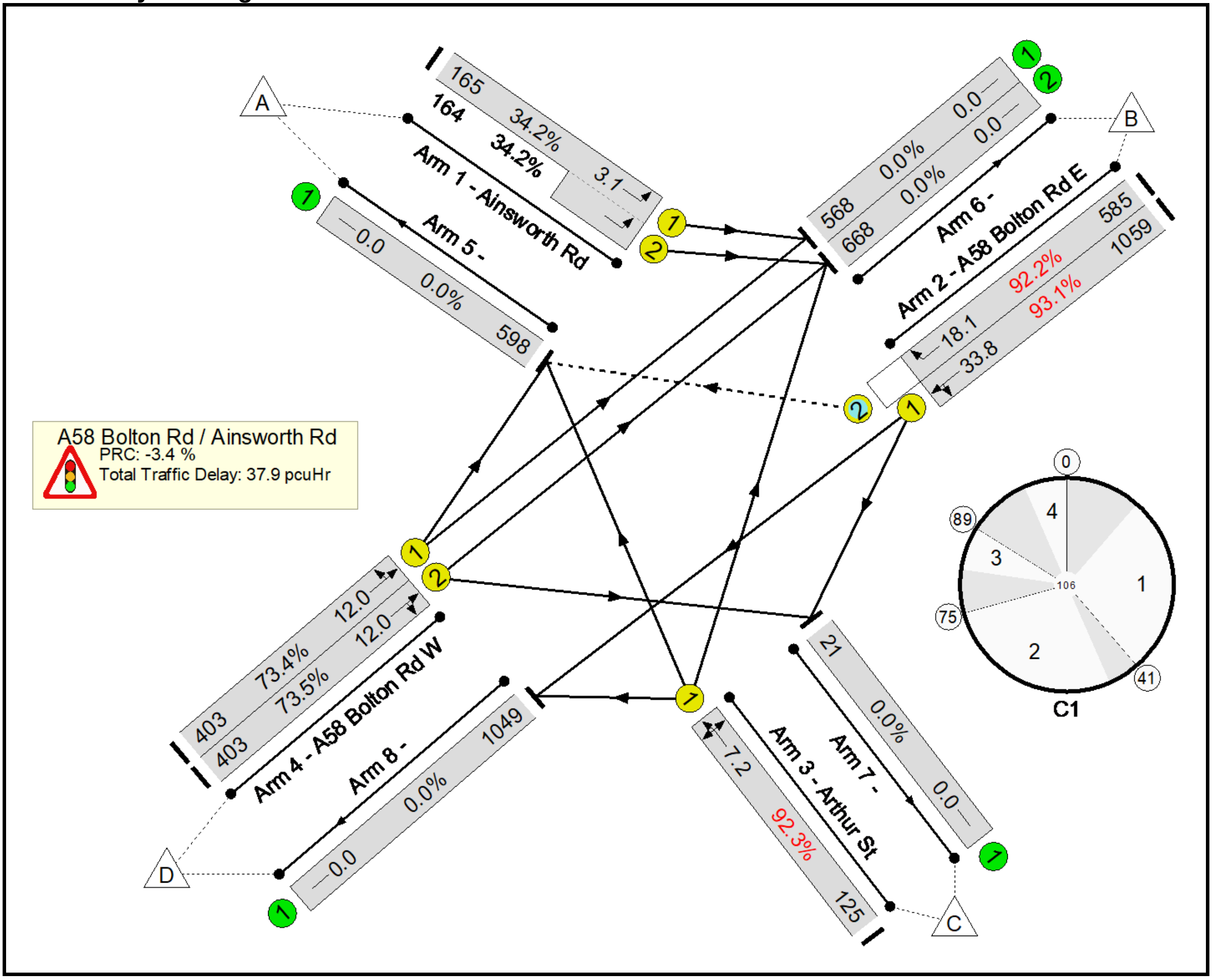
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A58 Bolton Rd/ Ainsworth Rd Existing	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.7%**	**66**	**173**	**39**	**28.2**	**-**	**-**
A58 Bolton Rd / Ainsworth Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.7%**	**66**	**173**	**39**	**28.2**	**-**	**-**
1/1+1/2	Ainsworth Rd Left	U	C		1	35	-	567	1747:1747	386+384	73.6 : 73.6%	-	-	-	5.5	35.2	10.5
2/1	A58 Bolton Rd E Left Ahead	U	A		1	57	-	887	1859	1047	84.7%	-	-	-	7.3	29.7	23.9
2/2	A58 Bolton Rd E Right	O	A	E	1	57	16	278	1737	448	62.1%	66	173	39	2.2	27.9	4.9
3/1	Arthur St Ahead Right Left	U	D		1	10	-	156	1788	191	81.7%	-	-	-	4.0	91.2	6.3
4/1	A58 Bolton Rd W Left Ahead	U	B		1	36	-	465	1937	696	66.8%	-	-	-	4.6	35.6	12.1
4/2	A58 Bolton Rd W Ahead Right	U	B		1	36	-	466	1938	696	66.9%	-	-	-	4.6	35.6	12.1

C1 PRC for Signalled Lanes (%): 6.2 Total Delay for Signalled Lanes (pcuHr): 28.17 Cycle Time (s): 103
PRC Over All Lanes (%): 6.2 Total Delay Over All Lanes(pcuHr): 28.17

Basic Results Summary

Scenario 4: 'Base + Com Dev PM' (FG4: 'Base + Com Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


A58 Bolton Rd / Ainsworth Rd
PRC: -3.4 %
Total Traffic Delay: 37.9 pcuHr
A
B
C
D
Arm 1 - Ainsworth Rd
165
34.2%
164
34.2%
3.1
Arm 5 -
0.0
0.0%
598
Arm 6 -
568
0.0%
0.0
668
0.0%
0.0
Arm 2 - A58 Bolton Rd E
585
92.2%
18.1
1059
93.1%
33.8
Arm 4 - A58 Bolton Rd W
403
73.4%
12.0
403
73.5%
12.0
Arm 8 -
1049
0.0%
0.0
Arm 3 - Arthur St
7.2
92.3%
125
Arm 7 -
21
0.0%
0.0
1
2
0
89
75
41
106
4
3
1
2
C1

Basic Results Summary

Network Results

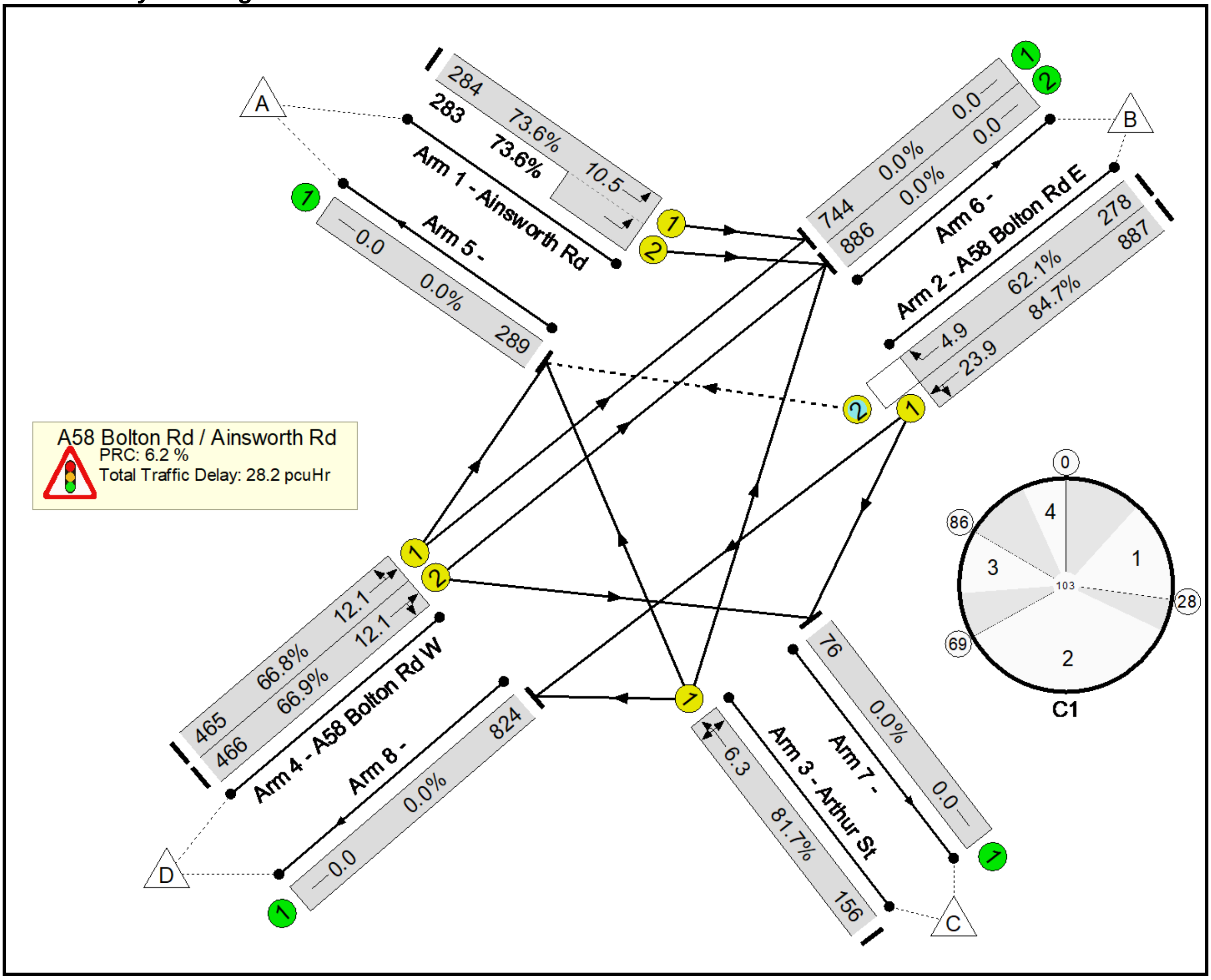
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A58 Bolton Rd/ Ainsworth Rd Existing	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.1%**	**53**	**475**	**57**	**37.9**	**-**	**-**
A58 Bolton Rd / Ainsworth Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.1%**	**53**	**475**	**57**	**37.9**	**-**	**-**
1/1+1/2	Ainsworth Rd Left	U	C		1	48	-	329	1747:1747	483+480	34.2 : 34.2%	-	-	-	1.8	19.8	3.1
2/1	A58 Bolton Rd E Left Ahead	U	A		1	63	-	1059	1884	1138	93.1%	-	-	-	11.5	38.9	33.8
2/2	A58 Bolton Rd E Right	O	A	E	1	63	29	585	1737	635	92.2%	53	475	57	8.9	54.9	18.1
3/1	Arthur St Ahead Right Left	U	D		1	7	-	125	1794	135	92.3%	-	-	-	5.3	151.4	7.2
4/1	A58 Bolton Rd W Left Ahead	U	B		1	29	-	403	1940	549	73.4%	-	-	-	5.2	46.5	12.0
4/2	A58 Bolton Rd W Ahead Right	U	B		1	29	-	403	1938	548	73.5%	-	-	-	5.2	46.5	12.0

C1 PRC for Signalled Lanes (%): -3.4 Total Delay for Signalled Lanes (pcuHr): 37.86 Cycle Time (s): 106
PRC Over All Lanes (%): -3.4 Total Delay Over All Lanes(pcuHr): 37.86

Basic Results Summary

Scenario 5: 'Base + CD + Dev AM' (FG5: 'Base + CD + Dev AM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram


A
B
C
D
284
283
73.6%
73.6%
10.5
Arm 1 - Ainsworth Rd
Arm 5 -
0.0
0.0%
289
744
886
0.0%
0.0%
0.0
0.0
Arm 6 -
Arm 2 - A58 Bolton Rd E
278
887
62.1%
84.7%
4.9
23.9
A58 Bolton Rd / Ainsworth Rd
PRC: 6.2 %
Total Traffic Delay: 28.2 pcuHr
465
466
66.8%
66.9%
12.1
12.1
Arm 4 - A58 Bolton Rd W
Arm 8 -
824
0.0%
0.0
6.3
81.7%
156
Arm 3 - Arthur St
Arm 7 -
76
0.0%
0.0
0
86
28
69
103
4
1
3
2
C1

Basic Results Summary

Network Results

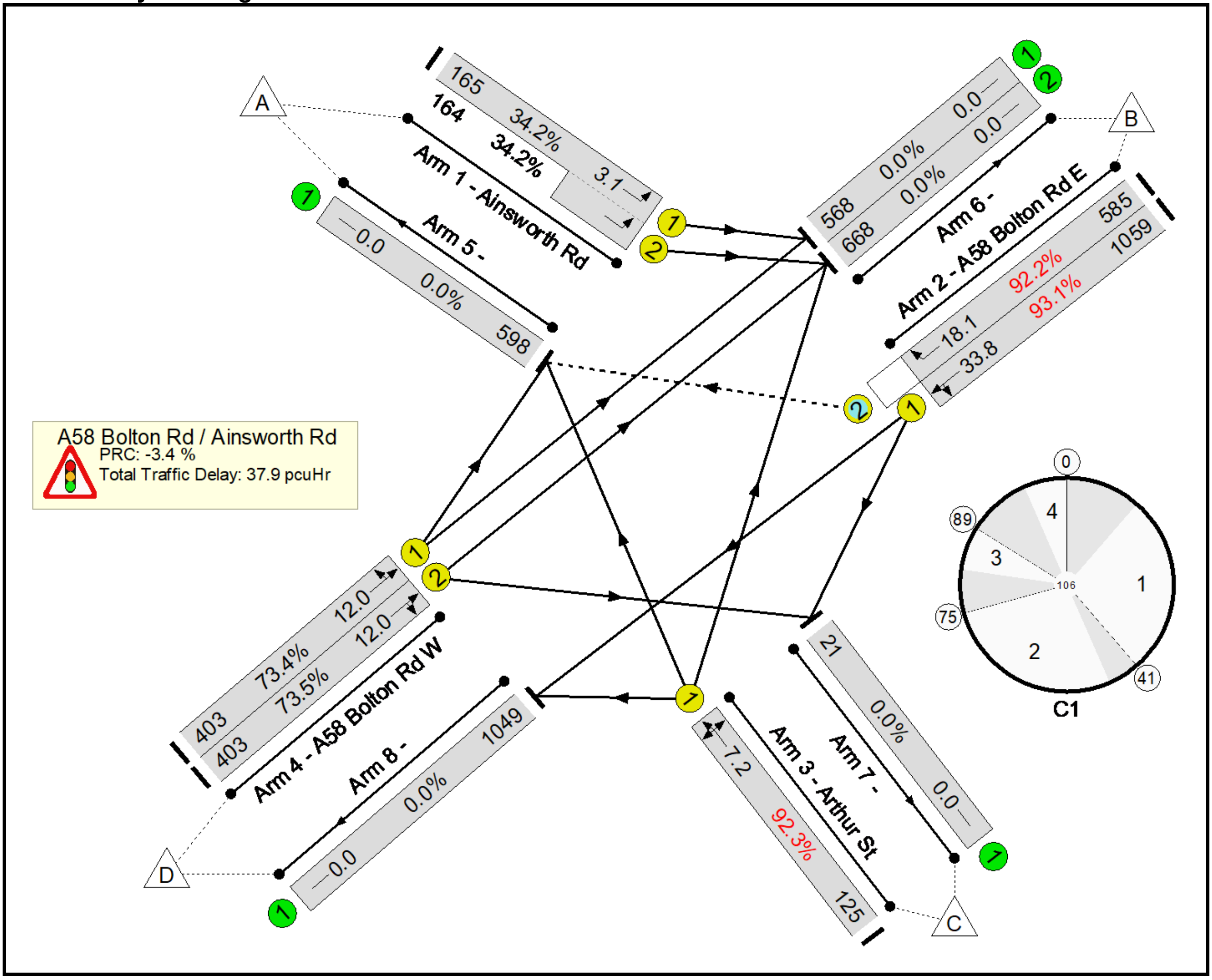
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A58 Bolton Rd/ Ainsworth Rd Existing	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.7%**	**66**	**173**	**39**	**28.2**	**-**	**-**
A58 Bolton Rd / Ainsworth Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**84.7%**	**66**	**173**	**39**	**28.2**	**-**	**-**
1/1+1/2	Ainsworth Rd Left	U	C		1	35	-	567	1747:1747	386+384	73.6 : 73.6%	-	-	-	5.5	35.2	10.5
2/1	A58 Bolton Rd E Left Ahead	U	A		1	57	-	887	1859	1047	84.7%	-	-	-	7.3	29.7	23.9
2/2	A58 Bolton Rd E Right	O	A	E	1	57	16	278	1737	448	62.1%	66	173	39	2.2	27.9	4.9
3/1	Arthur St Ahead Right Left	U	D		1	10	-	156	1788	191	81.7%	-	-	-	4.0	91.2	6.3
4/1	A58 Bolton Rd W Left Ahead	U	B		1	36	-	465	1937	696	66.8%	-	-	-	4.6	35.6	12.1
4/2	A58 Bolton Rd W Ahead Right	U	B		1	36	-	466	1938	696	66.9%	-	-	-	4.6	35.6	12.1

C1 PRC for Signalled Lanes (%): 6.2 Total Delay for Signalled Lanes (pcuHr): 28.17 Cycle Time (s): 103
PRC Over All Lanes (%): 6.2 Total Delay Over All Lanes(pcuHr): 28.17

Basic Results Summary

Scenario 6: 'Base + CD + Dev PM' (FG6: 'Base + CD + Dev PM', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



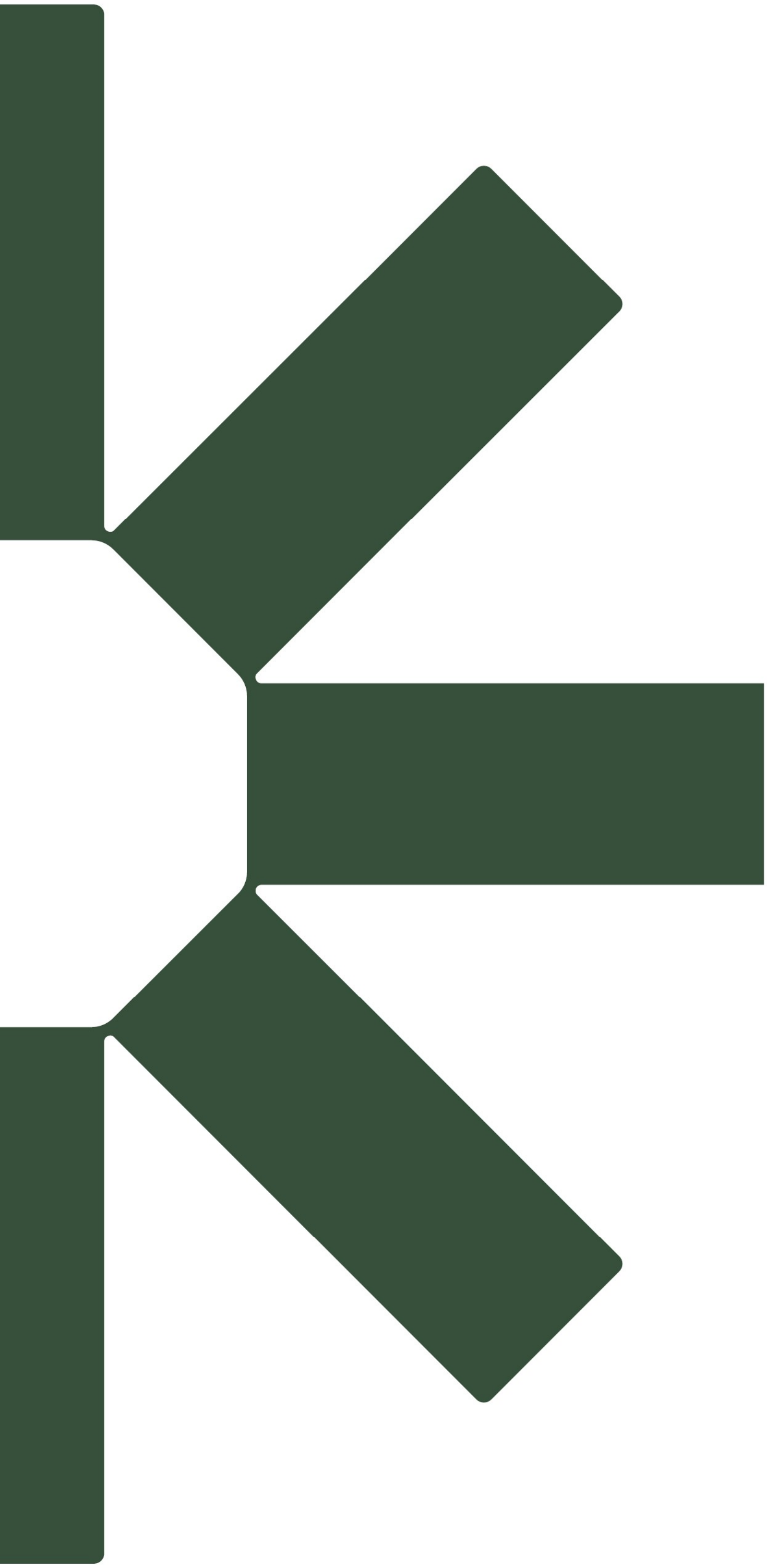
A58 Bolton Rd / Ainsworth Rd
PRC: -3.4 %
Total Traffic Delay: 37.9 pcuHr
A
B
C
D
Arm 1 - Ainsworth Rd
165
34.2%
3.1
164
34.2%
Arm 5 -
0.0
0.0%
598
Arm 6 -
568
0.0%
0.0
668
0.0%
0.0
Arm 2 - A58 Bolton Rd E
585
92.2%
18.1
1059
93.1%
33.8
Arm 4 - A58 Bolton Rd W
403
73.4%
12.0
403
73.5%
12.0
Arm 8 -
1049
0.0%
0.0
Arm 3 - Arthur St
7.2
92.3%
125
Arm 7 -
21
0.0%
0.0
1
2
C1
0
4
89
3
106
1
75
2
41

Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: A58 Bolton Rd/ Ainsworth Rd Existing	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.1%**	**53**	**475**	**57**	**37.9**	**-**	**-**
A58 Bolton Rd / Ainsworth Rd	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.1%**	**53**	**475**	**57**	**37.9**	**-**	**-**
1/1+1/2	Ainsworth Rd Left	U	C		1	48	-	329	1747:1747	483+480	34.2 : 34.2%	-	-	-	1.8	19.8	3.1
2/1	A58 Bolton Rd E Left Ahead	U	A		1	63	-	1059	1884	1138	93.1%	-	-	-	11.5	38.9	33.8
2/2	A58 Bolton Rd E Right	O	A	E	1	63	29	585	1737	635	92.2%	53	475	57	8.9	54.9	18.1
3/1	Arthur St Ahead Right Left	U	D		1	7	-	125	1794	135	92.3%	-	-	-	5.3	151.4	7.2
4/1	A58 Bolton Rd W Left Ahead	U	B		1	29	-	403	1940	549	73.4%	-	-	-	5.2	46.5	12.0
4/2	A58 Bolton Rd W Ahead Right	U	B		1	29	-	403	1938	548	73.5%	-	-	-	5.2	46.5	12.0

C1 PRC for Signalled Lanes (%): -3.4 Total Delay for Signalled Lanes (pcuHr): 37.86 Cycle Time (s): 106
PRC Over All Lanes (%): -3.4 Total Delay Over All Lanes(pcuHr): 37.86



Making Sustainability Happen

10 - Water Resources and Flood Risk

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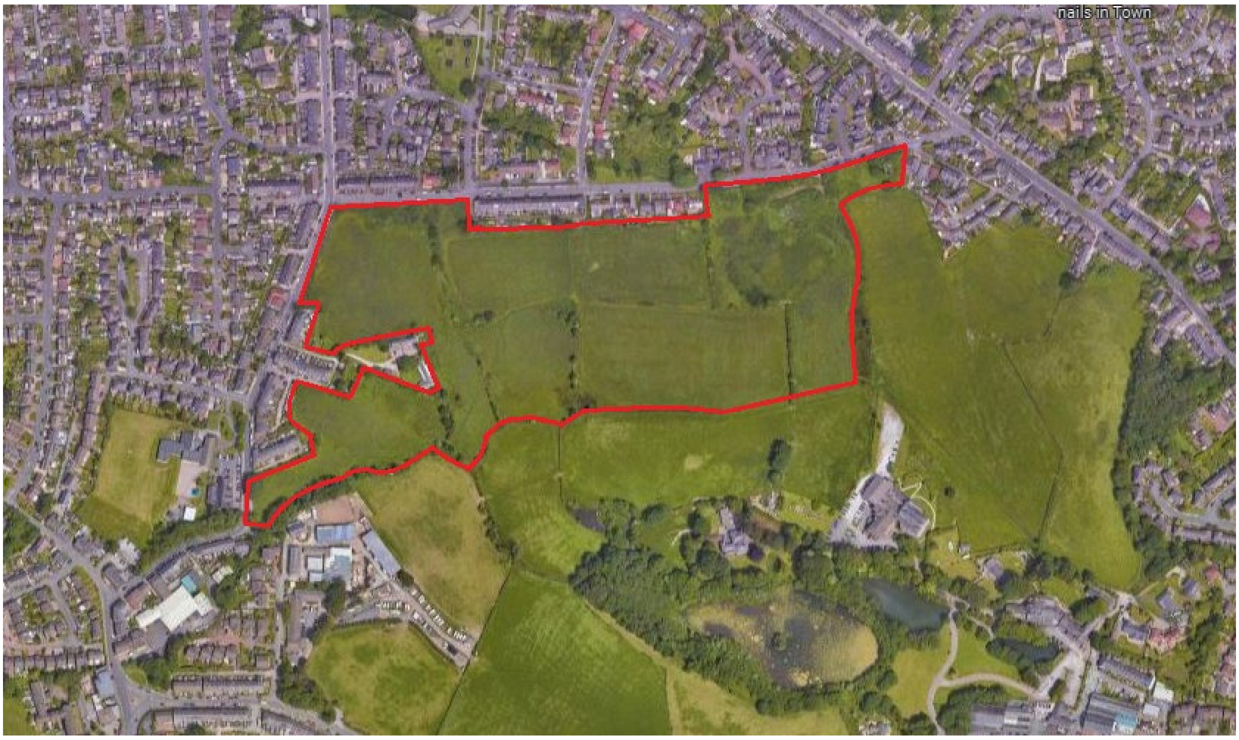
Ref: 6718/R1

Church Street/Scobell Street
Bury

Flood Risk Assessment with Outline Drainage Strategy

January 2025



Wain ESTATES

Clients: Wain Estates, Fontwell House, Trident Business Park, Birchwood, Warrington. WA3 6BX

REPORT DETAILS

Site Name: Church Street/Scobell Street, Bury

Report Title: Flood Risk Assessment with Outline Drainage Strategy

Report Number: 6718/R1

Revision	Date	Status
-	January 2025	For Planning Submission

Client: Wain Estates

Client Contact: John Turton

CBennett

Prepared by: ____
Chris Bennett B.Eng. (Hons) Civil Engineering

JElees

Approved By: _______________________________
John E Lees B.Sc., C.Eng., M.I.C.E., M.C.I.W.E.M.

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Appendix	5	OUTLINE DRAINAGE STRATEGY
	5A	Preliminary Surface Water Attenuation Calculations
	5B	Outline Drainage Strategy
		Drg. No.6718/01-01A

1.0 INTRODUCTION

1.1 Lees Roxburgh have been instructed by Wain Estates to carry out a Flood Risk Assessment (FRA) with Outline Drainage Strategy for a development of an area of land off Scobell Street, Bury.

1.2 This report has been prepared to accompany an outline planning application by Wain Estates for a development of up to 275 No. dwellings.

1.3 The site lies within an area designated on EA Flood mapping as Flood Risk Zone 1 and therefore comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (< 0.1%).

1.4 *The National Planning Policy Framework (NPPF)* and the accompanying *National Planning Policy Guidance* set out the requirements for addressing flood risk with respect to potential development sites.

In accordance with the NPPF an FRA is required to support the planning submission.

1.5 The purpose of an FRA is to address the following;

- The potential for the proposed development to be affected by flooding either from the development proposal or external sources.
- The potential for the proposed development to increase the flood risk elsewhere.
- That mitigation measures introduced to deal with any risks identified can be successfully managed.
- That the site can be developed and occupied safely.

The NPPF indicates that an assessment of flood risk should be proportionate to the risk and appropriate to the scale, nature and location of the development. This report reflects the requirements of the NPPF in this regard.

1.6 This report has been prepared specifically for Wain Estates for the sole purposes of the planning application and any reliance on its contents must be read in conjunction with the requirements of any subsequent planning conditions.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Location

2.1.1 The site is centred on National Grid references 378086, 412039 and is 11.3 ha in area **(Appendix 1).**

2.1.2 The site lies on the southern outskirts of Tottington, some 2km to the north west of Bury town centre.

2.2 Access and Surrounding Land Use

2.2.1 The site is currently accessible via a farm gate off Scobell Street at the northern boundary of the site, Scobell Street forms the northern boundary except for a number of houses centrally located on the boundary.

2.2.2 The eastern boundary to the north borders an existing housing estate, with open fields to the south proposed for a housing development.

2.2.3 The southern boundary is bordered by fields, which are proposed for development, with Walshaw Brook and an existing industrial area to the south west boundary.

2.2.4 Church Street forms the north western boundary, which continues to the south and south west around existing housing and Copthorne Cattery.

2.2.5 The site is bordered to the north and west by existing housing beyond Scobell Street and Church Street respectively.

2.2.6 To the immediate south is the Stables Country Club and The Old Walmsley.

2.3 Site Description

2.3.1 The site is irregular in shape and as noted is contained by Scobell Street to the north, Church Street to the west and fields proposed for development to the south and east.

2.3.2 The site currently comprises open fields with intermittent hedgerows.

There is a watercourse which runs from the north west corner of the site to the south.

It is understood a water main runs north to south entering the site mid-way along the north west boundary with Scobell Street.

2.3.3 External and internal field boundaries substantially comprise bushes and hedges with occasional trees, reinforced in places by post and wire fencing.

The post and wire fencing along the northern boundary is overgrown with hedge and brambles.

There are intermittent hedge lines delineating the southern boundary.

2.4 Topography

2.4.1 The site falls generally from the centre of the site out towards the boundaries, but with significant undulations producing localised falls in all directions, including towards the watercourse that crosses the site. Falls vary but are typically between 1:11 and 1:15, with pockets of approximately 1:40.

2.4.2 Reference should be made to the topographical survey **(Appendix 2)** but boundary levels can be summarised as follows;

North West Corner…	132.5m AOD
North East Corner…	121.74m AOD
South East Corner…	117.7m AOD
South West Corner…	131.0m AOD

2.5 Existing Drainage

2.5.1 Watercourse systems in the area are identified in **Appendix 1B.**

2.5.2 Walshaw Brook, a non-main river, forms the south west boundary of the site and continues south easterly to the south of the large lake within the Country Club grounds before disappearing into culvert in the area of Walshaw Road some 300m to the south of the site.

About 1km to the south is Elton Brook which again flows easterly.

Both systems lie within the catchment of the River Irwell.

2.5.3 A heavily overgrown watercourse, dry at the time of the site inspection, enters the site at the north west corner before turning and heading south towards Walshaw Brook. Its route upstream of the site is not known but it is conjectured may over time have been incorporated into the sewer network. Its connectivity to the brook has yet to be determined.

Where the watercourse passes adjacent to Copthorne Cattery, the above ground route ends were noted as *Sinks* on OS mapping.

2.5.4 There is also a second overgrown drainage ditch system in the south west of the site to the south of Copthorne Cattery, again dry at the time of site inspection, with no obvious outfall. This ditch heads south towards Walshaw Brook with any connectivity to the brook to be investigated further.

2.5.5 Outfalls from both systems within the site are to be investigated further.

3.0 FLOOD RISK

3.1 Flood Mapping

3.1.1 Gov. UK Flood Map for Planning

3.1.1.1 Reference to the Flood Map for Planning **(Figure.1)** identifies that the site is situated within a Flood Zone 1 Area of flood risk. This is defined within the NPPF as land assessed as having a less than 1 in 1000 annual probability of flooding (<0.1% in any year). All uses of land are appropriate in this zone.

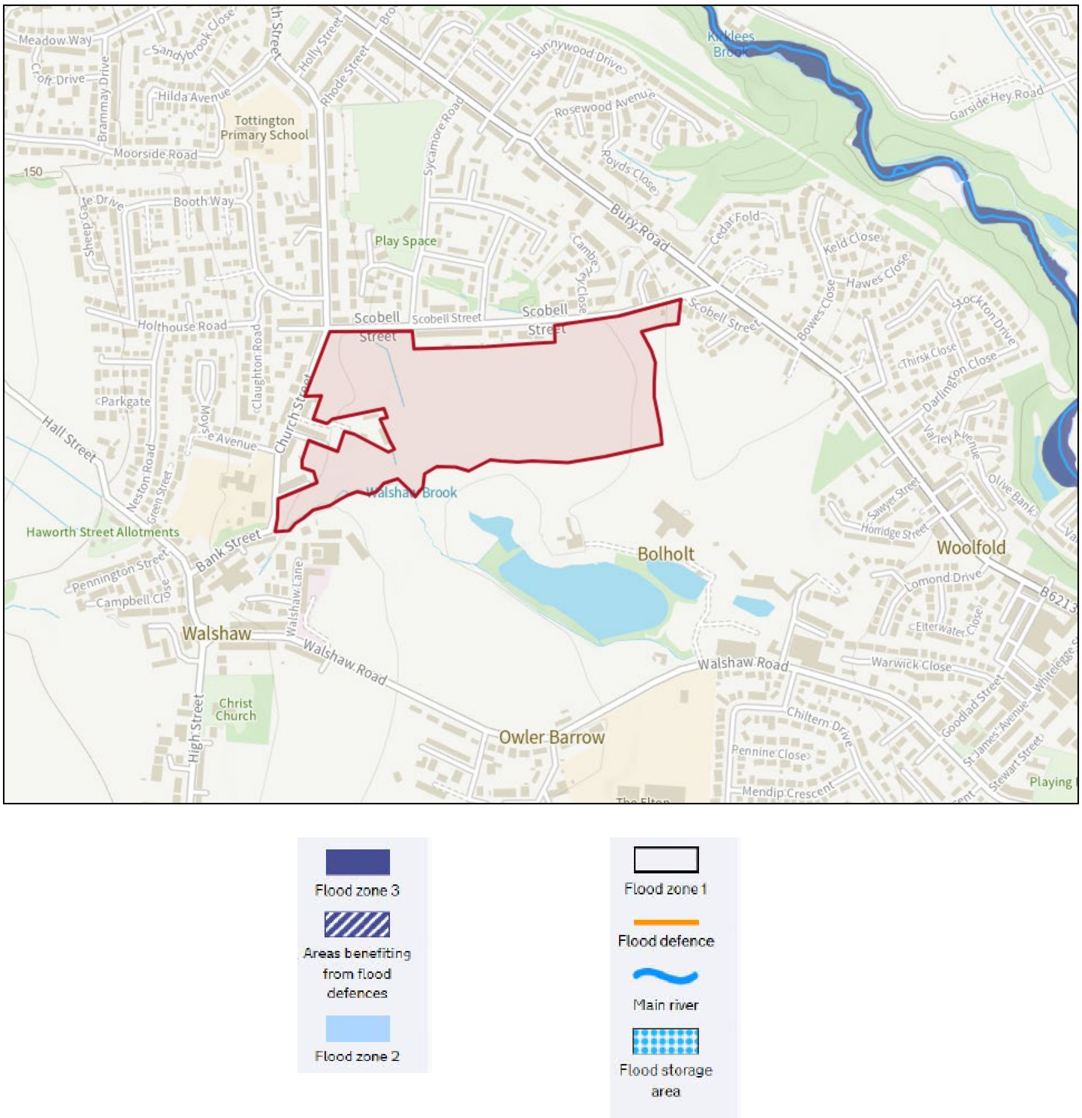

Meadow Way
Sandybrook Close
Hilda Avenue
Tottington Primary School
Moorside Road
Brammay Drive
Booth Way
Holthouse Road
Parkgate
Hall Street
Claughton Road
Church Street
Scobell Street
Play Space
Sycamore Road
Holly Street
Rhode Street
Sunnywood Drive
Rosewood Avenue
Royds Close
Bury Road
Cedar Fold
Keld Close
Hawes Close
Kirklees Brook
Garside Hey Road
Stockton Drive
Thirsk Close
Bowes Close
Walshaw Brook
Haworth Street Allotments
Bank Street
Pennington Street
Campbell Close
Walshaw
Walshaw Lane
Walshaw Road
Christ Church
High Street
Bolholt
Owler Barrow
Woolfold
Lomond Drive
Elterwater Close
Warwick Close
Chiltern Drive
Pennine Close
Mendip Crescent
B6213
Flood zone 3
Areas benefiting from flood defences
Flood zone 2
Flood zone 1
Flood defence
Main river
Flood storage area

Figure 1: Gov. UK Flood Map for Planning

3.1.2 Gov. UK Surface Water Flood Risk

3.1.2.1 Reference to the Gov. UK Surface Water Flood Risk Map **(Figure 2)** identifies areas of risk associated with the various watercourse systems and sporadically in the general area.

The site is shown as being impacted by an area of low to medium risk flooding within the lower areas of the site merging into an area of high risk to the south beyond the site which extends south easterly into the adjacent lakes.

There is also a ribbon of risk which correlates with the line of the tributary within the valley in the site and some small, isolated areas within the main area of the site which correlate with low features in the topography.

A ribbon of risk also runs along the east boundary of the site again continuing south and merging with areas of higher risk beyond the site boundary.

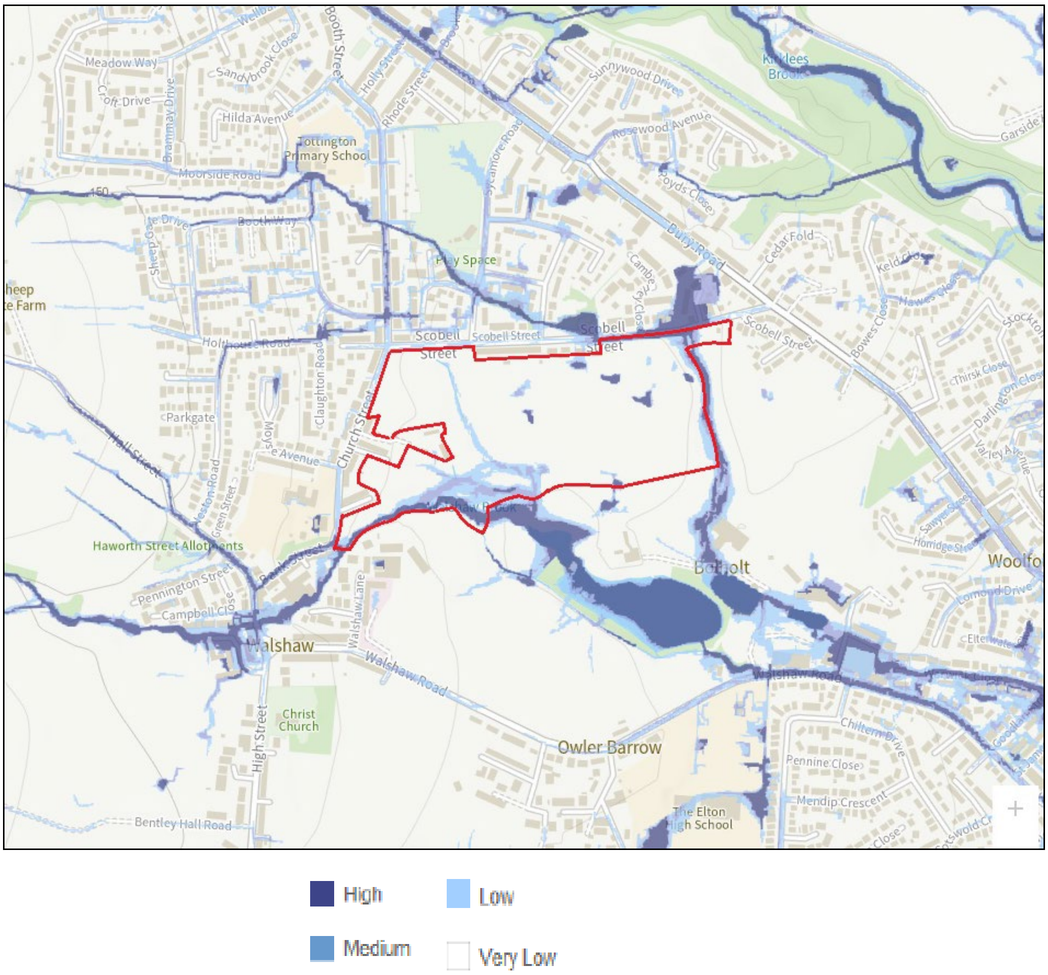

Meadow Way
Croft Drive
Sandybrook Close
Booth Street
Holly Street
Rhode Street
Hilda Avenue
Tottington Primary School
Moorside Road
Booth Way
Sycamore Road
Sunnywood Drive
Rosewood Avenue
Floyds Close
Bury Road
Kirklees Brook
Garside
Play Space
Scobell Street
Holthouse Road
Claughton Road
Parkgate
Church Street
Cedar Fold
Keld Close
Bowes Close
Thirsk Close
Haworth Street Allotments
Pennington Street
Campbell Close
Walshaw
Walshaw Lane
Walshaw Road
Bolholt
Woolfold
Christ Church
High Street
Owler Barrow
Chiltern Drive
Pennine Close
Mendip Crescent
The Elton High School
Bentley Hall Road
High
Low
Medium
Very Low

Figure 2: Gov. UK Flood Risk from Surface Water

3.1.3 Groundwater Flood Risk

3.1.3.1 Reference to the Geosmart GWS Map **(Figure 3)** identifies the site as negligible risk.

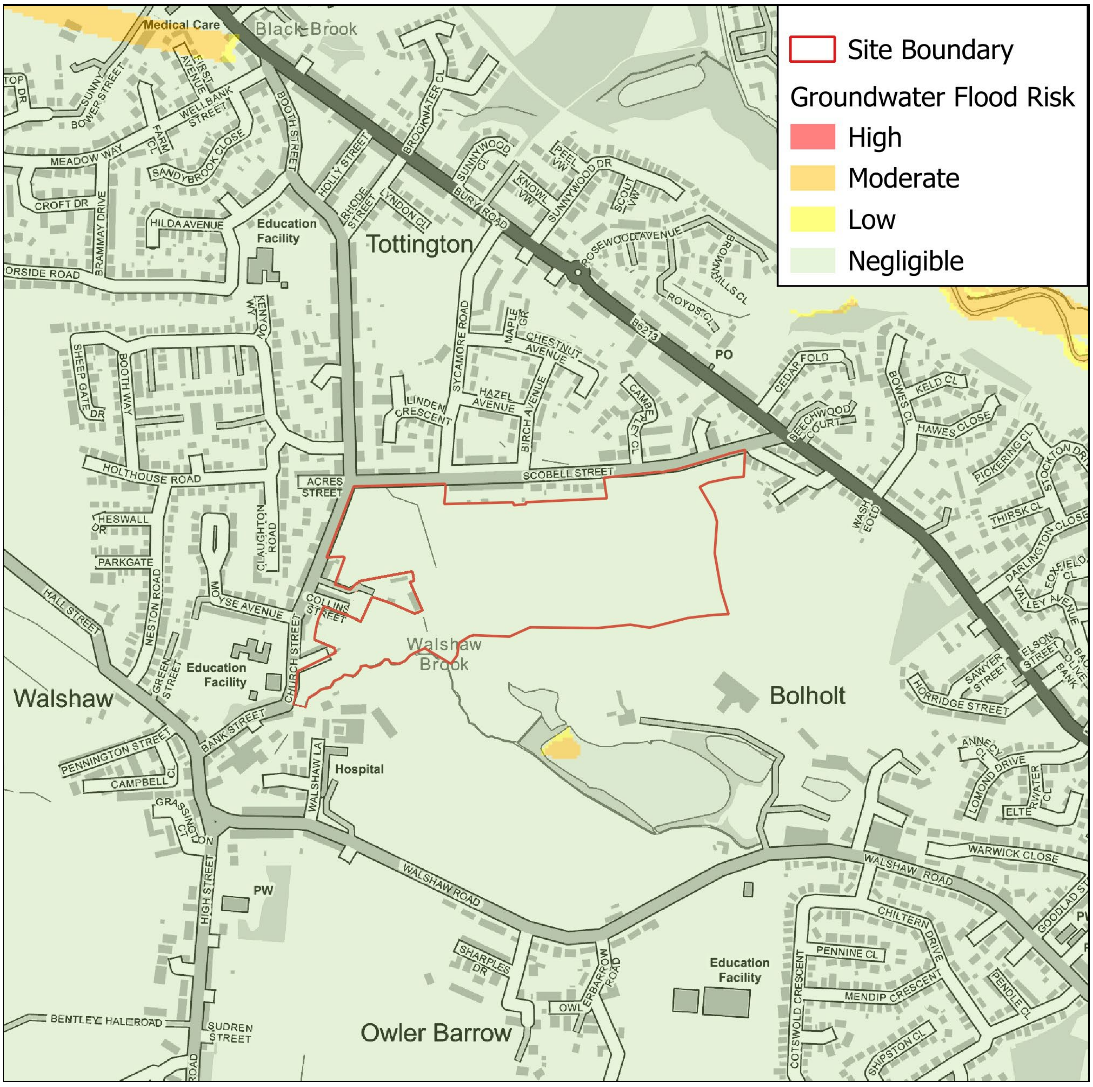

Site Boundary
Groundwater Flood Risk
High
Moderate
Low
Negligible
Medical Care
Black Brook
Tottington
Education Facility
PO
B6213
Scobell Street
Acres Street
Church Street
Collins Street
Moyse Avenue
Walshaw Brook
Walshaw
Bolholt
Hospital
Walshaw Road
Walshaw La
High Street
Hall Street
PW
Education Facility
Owler Barrow
Sharples Dr
Warwick Close
Chiltern Drive
Pennine Cl
Mendip Crescent
Cotswold Crescent
Bentley Hall Road
Sudren Street
Bury Road
Sycamore Road
Birch Avenue
Hazel Avenue
Linden Crescent
Holthouse Road
Parkgate
Heswall Dr
Neston Road
Claughton Road
Booth Street
Holly Street
Hilda Avenue
Meadow Way
Croft Dr

Figure 3: GeoSmart GW5 Map (GeoSmart 2024)

3.1.4 Gov. UK Extent of Flooding from Reservoirs

3.1.4.1 Reference to the Gov. UK Extent of Flooding from Reservoirs Map **(Figure 4)** identifies that the site is not at risk of flooding from reservoirs.

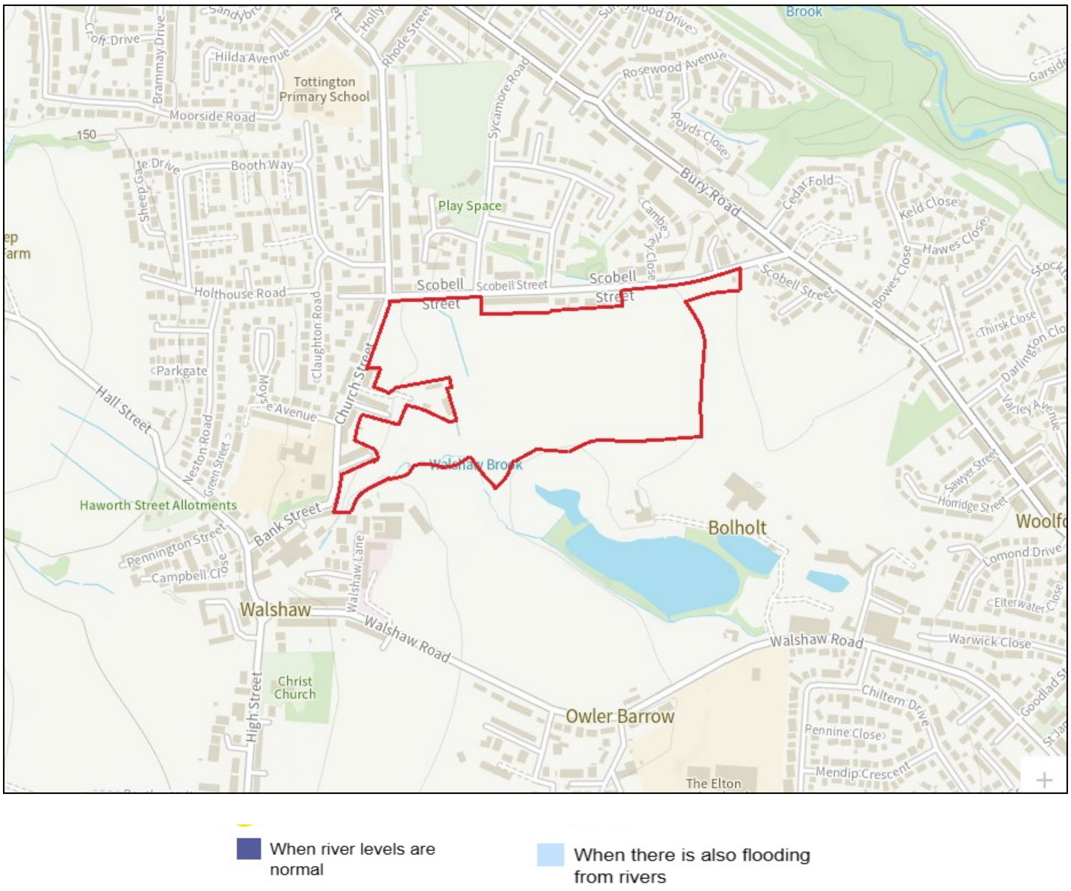

Tottington Primary School
Moorside Road
Hilda Avenue
Booth Way
Play Space
Rosewood Avenue
Bury Road
Scobell Street
Holthouse Road
Parkgate
Claughton Road
Church Street
Hall Street
Walshaw Brook
Haworth Street Allotments
Bank Street
Pennington Street
Campbell Close
Walshaw
Walshaw Lane
Walshaw Road
Bolholt
Christ Church
High Street
Owler Barrow
The Elton
Woolfold
Chiltern Drive
Pennine Close
Mendip Crescent
Warwick Close
Lomond Drive
150
When river levels are normal
When there is also flooding from rivers

Figure 4: Gov. UK Extent of Flooding from Reservoirs

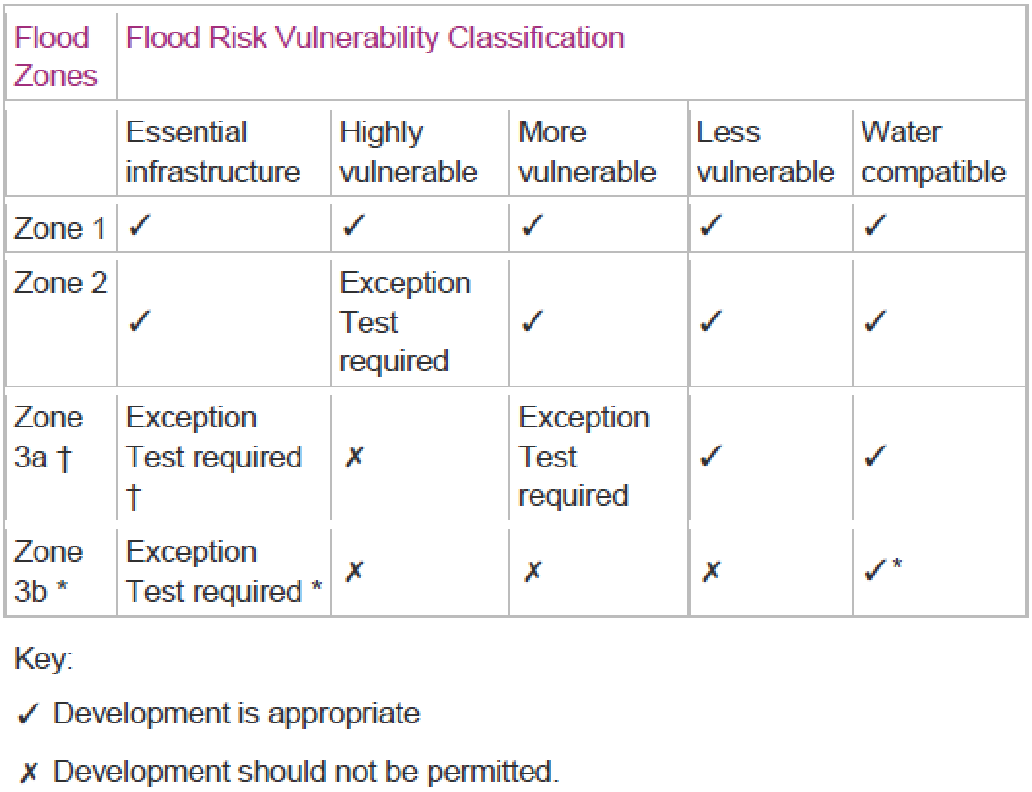
3.2 Land Use Vulnerability Classification and Sequential and Exception Tests

3.2.1 As set out in the NPPF, the sequential test is a risk based approach which should be applied at all stages of the planning process in order to steer new development to areas at risk from the lowest probability of flooding, in the first instance from areas mapped as Flood Zones 2 and 3 to Flood Zone 1.

The sequential test should also be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site specific Flood Risk Assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).

3.2.2 The NPPF Planning Practice Guidance incorporates a list of appropriate land uses in each flood zone dependent on the vulnerability of the proposed development to flooding. Table 2 of the guidance classifies the proposed development as ‘More Vulnerable’.

Reference is made to the table below, reproduced from Table 3 of the guidance, which sets out the Flood Risk Vulnerability Classification.



Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓ *

Key:

✓ Development is appropriate

✗ Development should not be permitted.

3.2.3 The proposed development is classified in the NPPF as ‘More Vulnerable’ and is located within a Zone 1 area of flood risk.

This FRA will conclude built development within the site boundary can be delivered so as not to be at risk of flooding from any source having regard to reasonably foreseeable potential changes in flood risk. On this basis the sequential and exception tests will not apply.

3.3 Sources of Flood Risk

3.3.1 Water Bodies, Watercourse Network, Surface Water Flooding and Groundwater

3.3.1.1 There are no water bodies in the area which present a source of risk to the development with the adjacent lakes sitting at a lower level than the site.

3.3.1.2 Walshaw Brook forms the south west boundary and is fed by a tributary within the site, both of which need to be considered.

3.3.1.3 Mapping identifies the site as being at low to medium risk of surface water flooding and which needs to be considered.

3.3.1.4 The risk from groundwater is negligible and can be discounted.

3.3.1.5 In summary it is concluded that the risk of flooding from water bodies and groundwater can be discounted but that from the watercourse network and surface water flooding should be considered.

3.3.2 Existing Sewers and Drainage

3.3.2.1 Copies of United Utilities public sewer records have been obtained and identify the presence of adopted drainage infrastructure in the area of the site. These records have been incorporated in **Appendix 3A.**

3.3.2.2 Reference to these records indicates the following;

- Combined sewer network within Scobell Street to the north which continues east to west.
- Combined sewer network within Church Street which continues south to north, before joining the network within Scobell Street.
- 300mm surface water system enters the site in the north west, before opening into the ditch and heading south. It is conjectured that the sewer has over time replaced the historic watercourse.

3.3.2.3 United Utilities have advised of recorded flooding issues on the combined sewer system in Scobell Street at manhole references 2106 and 2101 **(Appendix 3C)**. These have been highlighted on an enlarged extract from the plan they have provided and also included in **Appendix 3C**.

Levels rise from Scobell Street into the site and it is therefore anticipated that proposed development levels will be of the order of 1m above the levels within Scobell Street. On this basis it is considered that the recorded flooding will not present a risk to the development.

It is however noted that an access to the development is proposed from Scobell Street in this area. In the event of any flooding compromising access to the development should the combined sewer system overflow then access can readily be achieved from the main access to the development to the north west.

3.3.3 Land Drainage and Groundwater

3.3.3.1 Given the topography and with the presence of the watercourse network within the site no land drainage or groundwater issues are anticipated which cannot readily be dealt with during the design and construction process.

3.3.4 Comment

3.3.4.1 On the basis of the assessment of the potential sources of flood risk described above, it is concluded that the risks associated with the following need to be addressed by this FRA;

- Walshaw Brook and tributary
- Surface water flooding
- Development drainage proposals

4.0 SURFACE WATER RUNOFF

4.1 Requirements for Surface Water Drainage of the Site

4.1.1 The NPPF recommends that surface water generated by the development site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development.

4.1.2 Proposals should ensure that peak flow rates of surface water leaving the developed site are no greater than those prior to development, reducing surface water run off where possible.

4.2 Site Area

4.2.1 The site occupies an area of 11.3 ha of which 7.23ha is proposed for development (A_{dev}).

4.2.2 For drainage purposes this area is split by the topography into the following parcels;

Catchment 1	A_{dev}	0.77 ha
Catchment 2	A_{dev}	6.46 ha

The area occupied by the spine road is additional to the above and lies within Catchment 1.

4.3 Existing Site Run Off

4.3.1 The existing site is greenfield.

4.3.2 Existing greenfield run off rates have been calculated using the FEH Method **on a per hectare basis** (**Appendix 4)** and these are as follows;

Q_{bar}…	13.55 litres/sec
Q_1…	11.78 litres/sec
Q_{30}…	23.03 litres/sec
Q_{100}…	28.18 litres/sec

At detailed design stage these rates will be assigned based on a detailed take off of the contributing developable areas.

4.4 Surface Water Run Off from the Developed Site

4.4.1 The development plan is incorporated in **Appendix 5B.**

4.4.2 Uncontrolled flows from the development will exceed existing run off rates. Development run off rates limited to the existing Qbar rate identified in 4.3 would normally be appropriate.

5.0 DRAINAGE HIERARCHY

5.1 National Planning Practice Guidance

5.1.1 National Planning Practice Guidance states the aim that surface water run off should be discharged as high up the drainage hierarchy as reasonably practicable;

- Into the ground (infiltration)
- To a surface water body or watercourse
- To a surface water sewer, highway drain or other drainage system
- To a combined sewer

The following measures have therefore been considered and identified.

5.2 Potential for Ground Infiltration Based Drainage

5.2.1 A Phase 1 Geoenvironmental Assessment has been undertaken by Clancy Consulting (Ref. 10/2399/001) and has identified that the site as being underlain by both Glaciofluvial Deposits and Devensian Till, with underlying solid strata indicated to be a mix of sandstone, siltstone, mudstone and coal of the Pennine Lower Coal Measures, Canal Rock and Old Lawrence Rock.

5.2.2 It is considered therefore that ground conditions will not be suitable for a sitewide infiltration based solution.

For the purposes of the application, a positive surface water outfall approach from the development is therefore proposed.

5.3 Surface Water Outfalls

5.3.1 On this basis and due to the topography split, two surface water outfalls are anticipated, both to Walshaw Brook to the south west of the site.

6.0 MITIGATION MEASURES

6.1 Walshaw Brook and Tributary

6.1.1 Walshaw Brook forms the south west boundary of the site with a tributary appearing to emanate in the north west corner and fed by a surface water sewer before turning and heading south towards Walshaw Brook.

There is a break in the watercourse noted as ‘sinks’ from where it is assumed the system continues south.

6.1.2 There is also a short section of ditch to the west of this tributary close to Walshaw Brook which is associated with a spring identified on historical mapping.

This ditch has no obvious inlet or outlet, and needs to be investigated further but is considered of minor significance.

6.1.3 Flows in these systems will be assessed at a later detailed stage and the proposed road culverts sized and adjacent development levels set accordingly. Some diversion of the tributary is anticipated.

However, it is noted that these systems are well contained by the surrounding ground levels which will in turn set development levels thus inherently mitigating risk to the development proposals.

6.2 Surface Water Flooding

6.2.1 The mapped risk extending into the site from Scobell Street follows the route of the tributary and as above will be mitigated by the setting of levels supplemented as necessary by the introduction of land drainage to create a flow route through the development.

6.2.2 Similarly the area of flood risk to the south west in the area of the brook will be mitigated by appropriate setting of development levels as will the more concentrated area of risk to the east.

6.2.3 The localised areas of risk within the site will effectively be removed by introduction of the development.

6.2.4 It is noted that development drainage proposals will inherently reduce uncontrolled surface water runoff from within the site and will reduce the extent of the mapped surface water flood risk.

6.3 Development Surface Water Drainage

6.3.1 Drainage Strategy

6.3.1.1 The allowable run off in any event will be restricted to the per hectare Qbar rate of 13.55 litres/sec established in 4.3.2.

6.3.1.2 The topography of the site splits the development area into two separate catchments.

- Catchment 1 To west of tributary including spine road

- Catchment 2 To east of tributary

Catchments 1 and 2 will each be drained separately with attenuation to be provided within the piped network and online basins.

Catchment 1 will drain by gravity with an outfall to Walshaw Brook

Due to the topography, Catchment 2 will need to be pumped, also to outfall at Walshaw Brook. This is because a gravity solution would be in excess of 8m deep and need to cross under Walshaw Brook, before tracking the brook through third party land until levels allow a connection to the brook towards the south east of The Old Walmsley.

Discharge rates will be finalised at a more detailed stage based on the per hectare Qbar rate and the developable areas at that time.

6.3.1.3 Highways, houses and associated hard surfaces will be served by a piped surface water system designed to adoptable standards to ensure, at minimum, no flooding up to the 1 in 30 year event.

Overall flows up to the 1 in 100 year event plus allowance for 45% climate change will be contained on site within the basins and pipe systems.

The basins have been sized accordingly, on a preliminary basis, all remaining subject to detailed design **(Appendix 5A)**. Meanwhile the impermeable areas reflected in the calculations for each area are based on 50% impermeability plus 10% allowance for urban creep i.e., 55%.

6.3.1.4 The existing United Utilities surface water outfall in the north west area will be maintained and accommodated within the layout at detailed stage. The existing ditch will be accommodated within the layout and culverted under proposed road crossings and subject to land drainage consents.

6.3.2 Future Maintenance

6.3.2.1 It is proposed that the main piped systems, basins, pumping stations and outfalls will be adopted under a S104 agreement by United Utilities.

6.3.2.2 Provision will be made for maintenance access to either side of the tributary within the site and to Walshaw Brook with the management company appointed for the development to take on the riparian responsibility for future maintenance.

6.3.3 Water Quality

6.3.3.1 Whilst ground conditions may not prove to be suitable for the incorporation of infiltration based drainage techniques, the risk to water quality from housing developments is categorised as low to very low.

6.3.3.2 The incorporation of trapped gullies to roads and the provision of the basins will nonetheless provide two levels of treatment.

Residential development is categorised as presenting a low to very low risk to water quality.

Notwithstanding, the provision of trapped gullies to adoptable roads and the attenuation basin will provide two levels of treatment to address any perceived risk to water quality.

At detailed design stage a surface water quality treatment assessment will be undertaken on the overall drainage proposals in accordance with the simple index approach set out in the Ciria SUDS Manual and which will include the identification of any enhancement measures required to the basin, all in consultation with the relevant parties.

6.3.4 Drainage Strategy

6.3.4.1 The drainage strategy for the development has been prepared accordingly and is incorporated in **Appendix 5B**.

6.4 Exceedance Flows

6.4.1 More generally, floor levels will be set a minimum of 0.15m above external ground level and will encourage any flows generated by an exceedance event (i.e. greater than the 1 in 100 year plus climate change design event) to pass safely through the development.

6.4.2 Flow routes will of course follow the topography and have been indicated in **Appendix 5B.**

6.5 Land Drainage Consents

6.5.1 Formal land drainage consents will be required for tributary diversion and culverting works and the development surface water outfalls.

7.0 FOUL DRAINAGE

7.1 There is an existing combined sewer network within Church Street to the west turning down Scobell Street to the north of the site. Connection of foul flows to this network has been agreed with United Utilities **(Appendix 3B)**.

Due to the topography and point of connection at this stage it is anticipated 2 No. pumping stations will be required.

7.2 The foul system will be designed to adoptable standards and submitted for adoption by United Utilities in conjunction with the surface water scheme.

7.3 The outline foul drainage strategy for the development has been prepared accordingly and is incorporated in **Appendix 5B.**

8.0 CONCLUSIONS

8.1 The proposed residential development is classified in the NPPF as 'More Vulnerable' and is located within a Zone 1 area of flood risk.

Potential sources of flooding from water bodies and groundwater have been considered, found to be negligible and can be discounted.

Risks associated with the watercourse network and surface water flooding will be addressed within the development layout and by appropriate setting of levels with the introduction of the development drainage system providing additional mitigation.

United Utilities have advised of recorded flooding issues on the combined sewer system in Scobell Street to the north east. Levels rise from Scobell Street into the site and it is therefore anticipated that proposed development levels will be above the levels within Scobell Street and on this basis this flooding will not present a risk to the development.

This FRA has therefore concluded that built development within the site boundary can be delivered so as not to be at risk of flooding from any source having regard to reasonably foreseeable potential changes in flood risk. On this basis the sequential and exception tests will not apply.

8.2 The tributary crossing the site will be accommodated within the layout with some diversion works anticipated. Flows in this system and Walshaw Brook will be assessed and the proposed road culverts sized and adjacent development levels set accordingly to mitigate any associated risk.

Maintenance provision for the network will be incorporated into the layout.

8.3 Geoenvironmental Assessment work has identified the site as being underlain by both Glaciofluvial Deposits and Devensian Till, so it is considered that infiltration based drainage is unlikely to be feasible for a sitewide drainage solution but will be investigated at a more detailed stage. Meanwhile, for the purposes of the outline application, a positive surface water outfall approach from the development is therefore proposed.

8.4 The maximum allowable run off in any event should be restricted to Qbar rates.

The topography of the site splits the development area into two catchments. Catchment 1 will drain by gravity with an outfall to Walshaw Brook. Catchment 2 will be pumped also to an outfall at Walshaw Brook.

Highways, houses and associated hard surfaces will be served by a piped surface water system designed to adoptable standards with overall flows up to the 1 in 100 year event plus allowance for 45% climate change and urban creep contained on site within the basins and pipe systems.

8.5 It is proposed that the main piped systems, basins, pumping stations and outfalls will be adopted by United Utilities.

Provision will be made for maintenance access to either side of the tributary within the site and to Walshaw Brook with the management company appointed for the development to take on the riparian responsibility for future maintenance.

8.6 Although the risk to water quality from housing developments is categorised as low to very low, the incorporation of trapped gullies to roads and the basins will nonetheless provide two levels of treatment to the substantial part of the site.

At detailed design stage a surface water quality treatment assessment will be undertaken on the overall drainage proposals in accordance with the simple index approach set out in the Ciria SUDS Manual and which will include the identification of any enhancement measures required to the basin, all in consultation with the relevant parties.

8.7 Floor levels will be set to encourage any flows generated by an exceedance event to pass safely through the development.

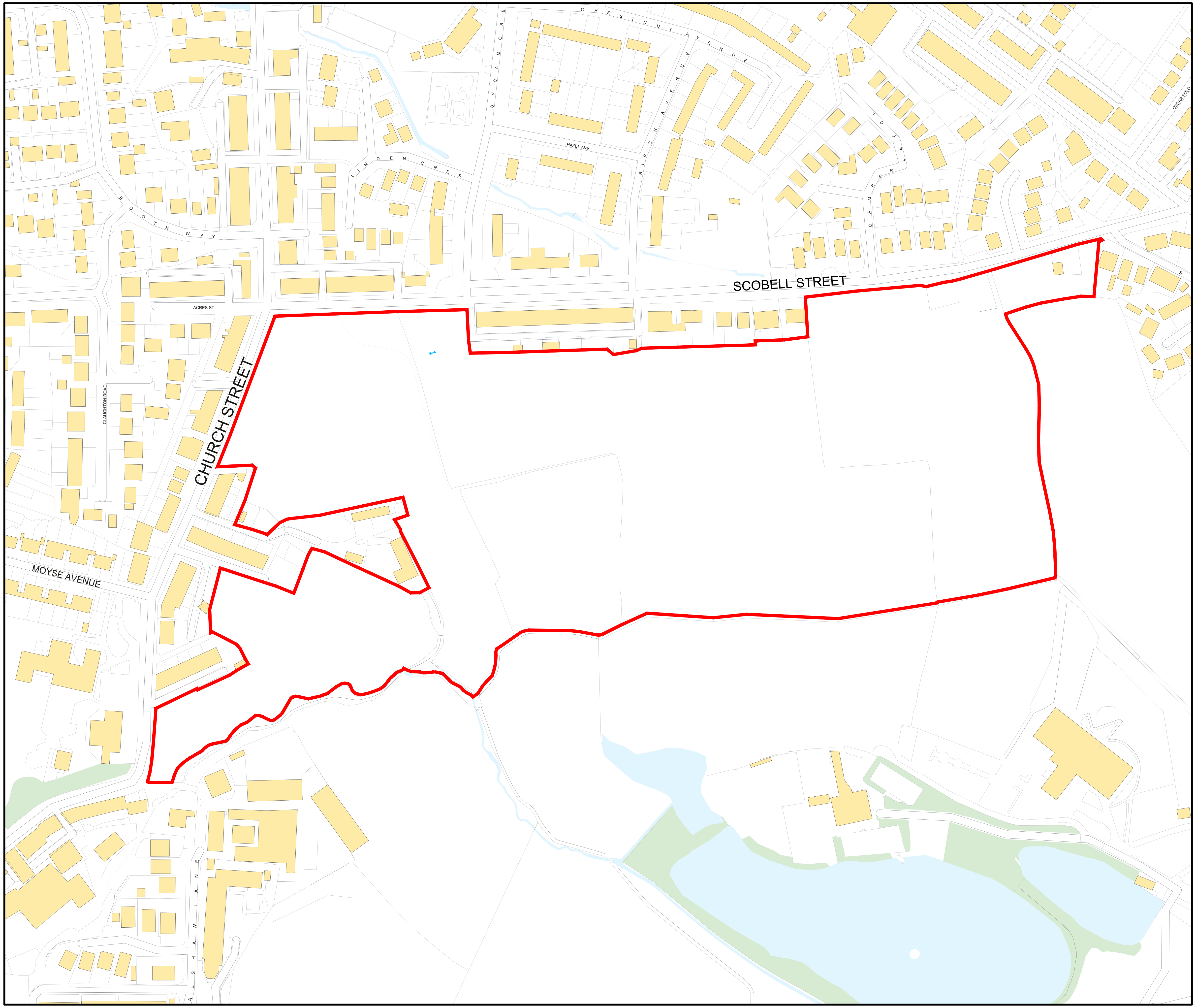
8.8 Formal land drainage consents will be required for tributary diversion and culverting works and the development surface water outfalls.

8.9 A foul drainage connection to the combined sewer network within Church Street to the west has been agreed with United Utilities and will need to be pumped with the foul system to be adopted by United Utilities in conjunction with the surface water system.

8.10 It is therefore concluded that that the development can be delivered in accordance with the NPPF so as not to be at risk of flooding from external sources or from within the development, and so as not to increase flood risk to the surrounding area and is therefore appropriate.

Appendix 1: Site Details

Appendix 1A: Location Plan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CAMBERLEY CL
CEDAR FOLD
BOOTH WAY
ACRES ST
CLAUGHTON ROAD
CHURCH STREET
SCOBELL STREET
MOYSE AVENUE
WALSHAW LANE

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\\Xdman1-ntap02_cifs\shared_projects\333100672\A4 - Drawings & Registers\Masterplanning\CAD\333100672-EH-M-04-Wain Estates Site Boundary.dwg - A3

The scaling of this drawing cannot be assured

Revision	Date	Drn	Ckd
-	-	-	-

▭ Site Boundary (c.11.3ha)

Figure 1

Project
Walshaw

Drawing Title
Site Boundary (Wain Estates)

Date	Scale	Drawn by	Check by
22.02.24	1:2500	AT	-

Project No	Drawing No	Revision
333100672	DWG01	-

Stantec

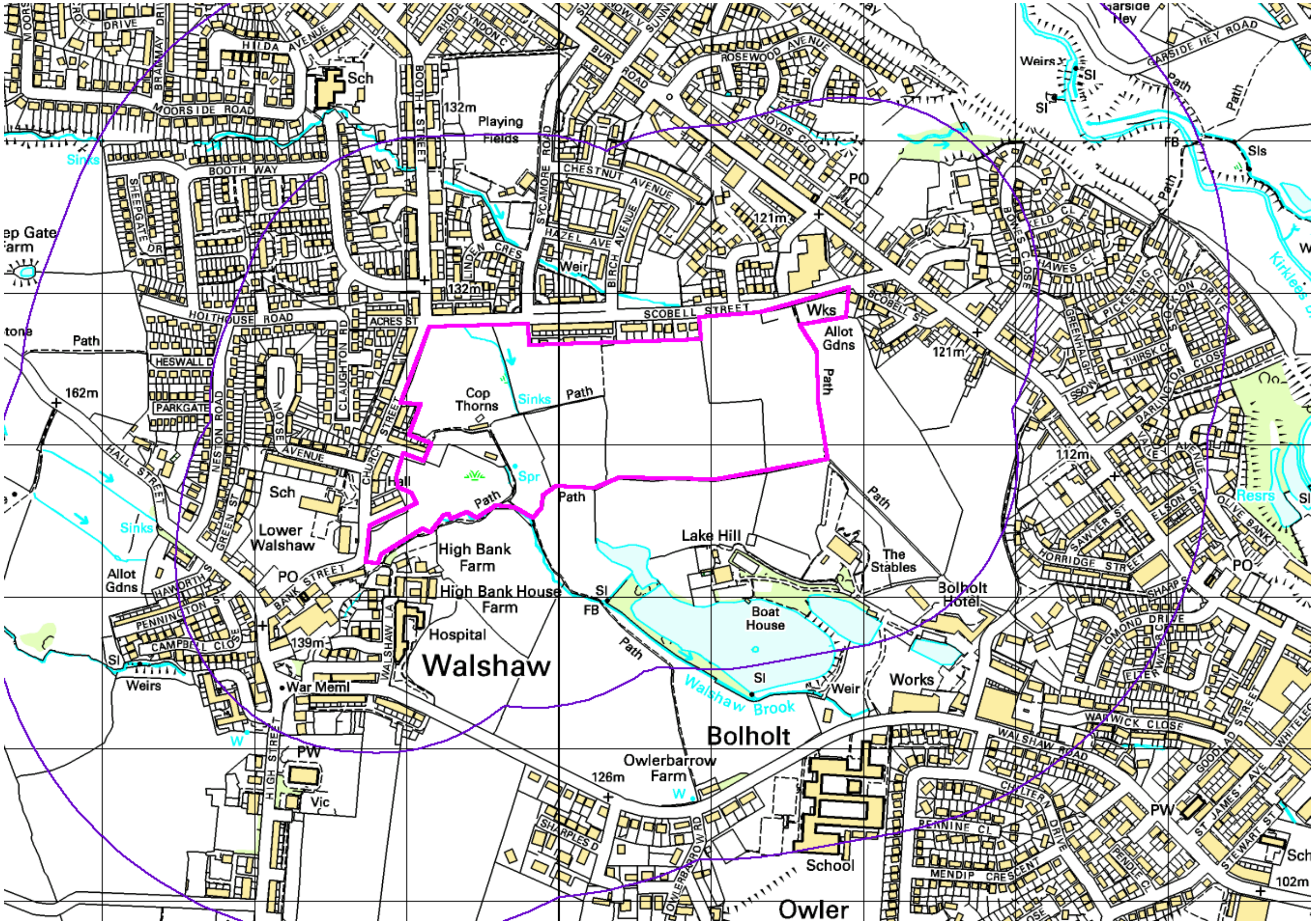
DRAFT

Stantec UK Limited
10th Floor
Bank House
8 Cherry Street
Birmingham
B2 5AL
T: 0121 633 2900

bsi. ISO 9001 Quality Management

stantec.com\uk

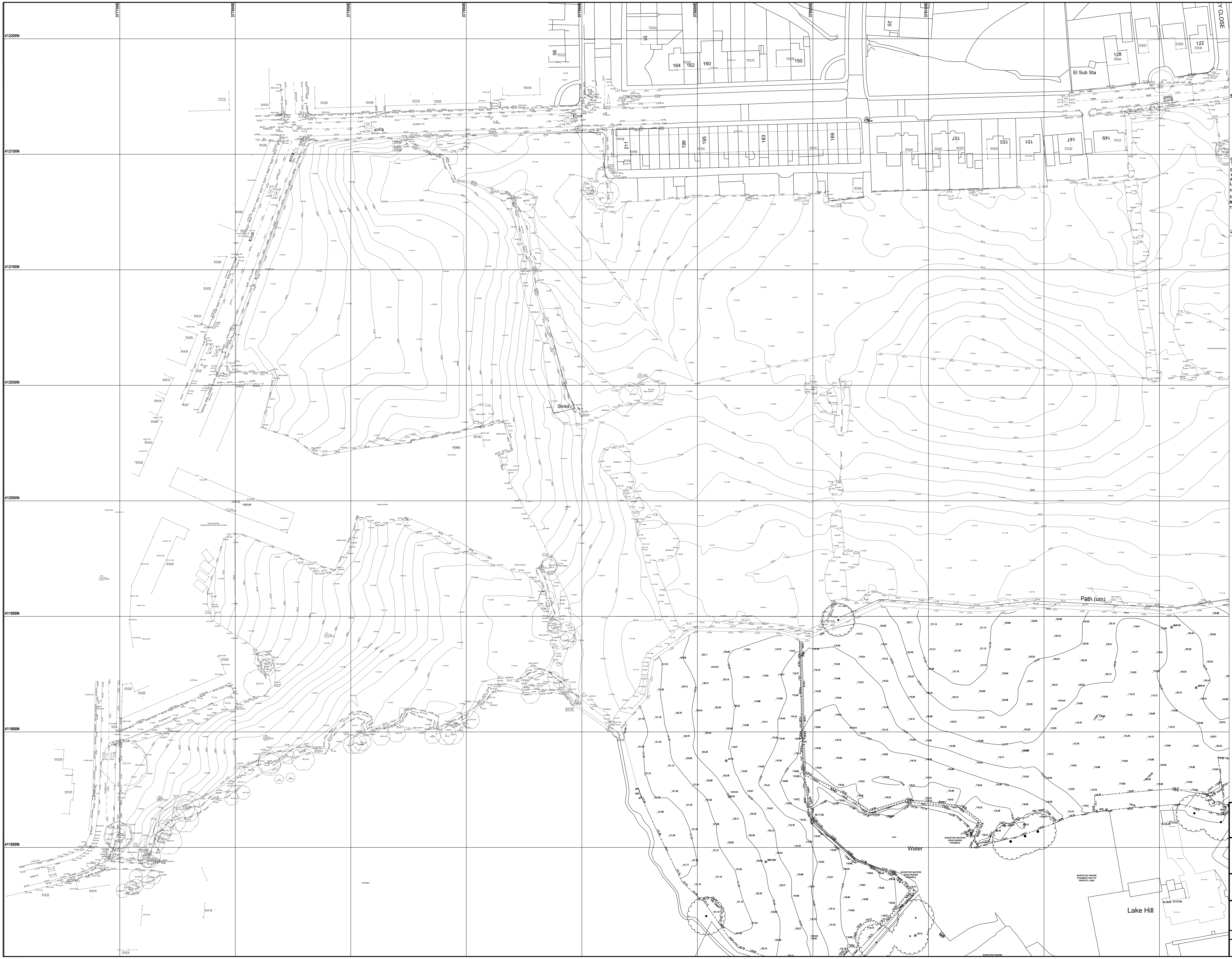
Appendix 1B: Watercourse Systems


N
Walshaw
Bolholt
Owler
Lower Walshaw
Cop Thorns
Sinks
Spr
Path
Scobell Street
Church Street
Wks
Allot Gdns
Lake Hill
The Stables
Bolholt Hotel
Boat House
Walshaw Brook
Weir
Works
High Bank Farm
High Bank House Farm
Hospital
War Meml
Owlerbarrow Farm
School
Playing Fields
132m
121m
112m
126m
139m
162m
102m
Holthouse Road
Walshaw Road
Booth Street
Sycamore Road
Chestnut Avenue
Hazel Ave
Birch Avenue
Bury Road
Moorside Road
Booth Way
Hall Street
Bank Street
Kirklees
Resrs
Weirs
Sch
PO
PW
Vic
FB
Sl

CHURCH STREET/SCOBELL STREET, BURY
WATERCOURSE SYSTEMS

Appendix 2: Topographical Survey

JLP Surveying Ref. S19-1210-1 & 2



SURVEY ORIENTATED TO REAL TIME GPS

0m 10m 20m 30m 40m

SCALE BAR 1:500

NOTES AND AMENDMENTS

ONLY MANHOLES AND SERVICES VISIBLE AT TIME OF SURVEY SHOWN

DRAINAGE INFORMATION MUST BE CHECKED AND VERIFIED WITH LOCAL AUTHORITY RECORDS PRIOR TO WORK COMMENCING

Levels defining edge of carriageway are observed at channel (bottom of kerb). Unless otherwise stated.

TREE SPREADS ARE SYMBOLIC ONLY AND ARE REPRESENTATIVE OF THE THE AVERAGE SPREAD.
THE DRIP LINE LAYER DENOTES THE TREES EXTREMITY

REVISIONS

REV.	DESCRIPTION	DRAWN	CHKD.	DATE

Topographical Survey Legend

Bin	Litter bin	TL	Tie line
BH	Bore Hole	TP	Telegraph pole
Bol	Bollard	TPS	Tactile paving slabs
BS	Bus stop	TS	Traffic signal light
BT	British telecom ic	TV	Television cover
CPS	Concrete paving slabs	VP	Vent pipe
DR	Drain	WM	Water meter
Elec	Electrical ic	WO	Wash Out
EP	Elec. pole	UTL	Unable to lift
ER	Earth rod	Fence annotation	
FH	Fire Hydrant	B/W	Barbed wire
FP	Flagpole	C/B	Closed boarded
FT	Floodlight	C/I	Corrugated iron
G	Gully	C/L	Chain link
GP	Gate post	C/P	Concrete panel
GV	Gas valve	H/R	Hand rail
IC	Inspection cover	I/R	Iron railings
JB	Junction box	O/B	Open boarded
KO	Kerb outlet	P/C	Post & chain
LB	Letter box	P/R	Post & rail
LP	Lamp post	P/W	Post & wire
Mkr	Utility marker	W/M	Wire mesh
MP	Mile post	Level prefix descriptions	
MW	Monitoring Well	AL	Arch level
NP	Name plate	BL	Bed level
P	Post	CL	Cover level
PM	Parking meter	EH	Eaves level
RE	Rodding eye	FL	Floor level
RS	Road sign	IL	Invert level
rwp	Rain water pipe	PL	Parapet level
SP	Sign post	RH	Roof/ridge level
ST	Stop tap	SL	Soffit level
SB	Service Box	Spr	Arch springing level
SV	Stop valve	Top	Top of pipe/culvert
TCB	Telephone call box	WH	Wall height
TH	Trial Hole	WL	Water level

BENCH MARK INFORMATION

All levels relate to OSBM Newyln

Datum Generated by VRS GPS

SURVEY STATIONS			
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J1A	377876.459	412158.288	130.149
J1B	377829.559	412155.790	132.459
J1C	377799.100	412074.597	134.004
J1D	377742.183	411966.554	134.664
J1E	377748.771	411894.864	131.768
J1F	377745.100	411846.091	130.661
J2	378073.328	412165.020	122.431
J3	378205.599	412171.466	119.876
J4	378301.830	412193.428	118.816
J5	378377.715	412215.720	120.893
SE13	378705.709	411984.362	112.959
JLP1	378421.576	411630.574	113.185

JLP Surveying

JLP Surveying Consultants Ltd,
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WN1 1BT
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Fax - 01942 492230
Mobile - 07710 428498
EMAIL:- peterhouston@jlpsurveys.com

PROJECT
Scobell Street
Bury

DRAWING TITLE
Topographical Land Survey

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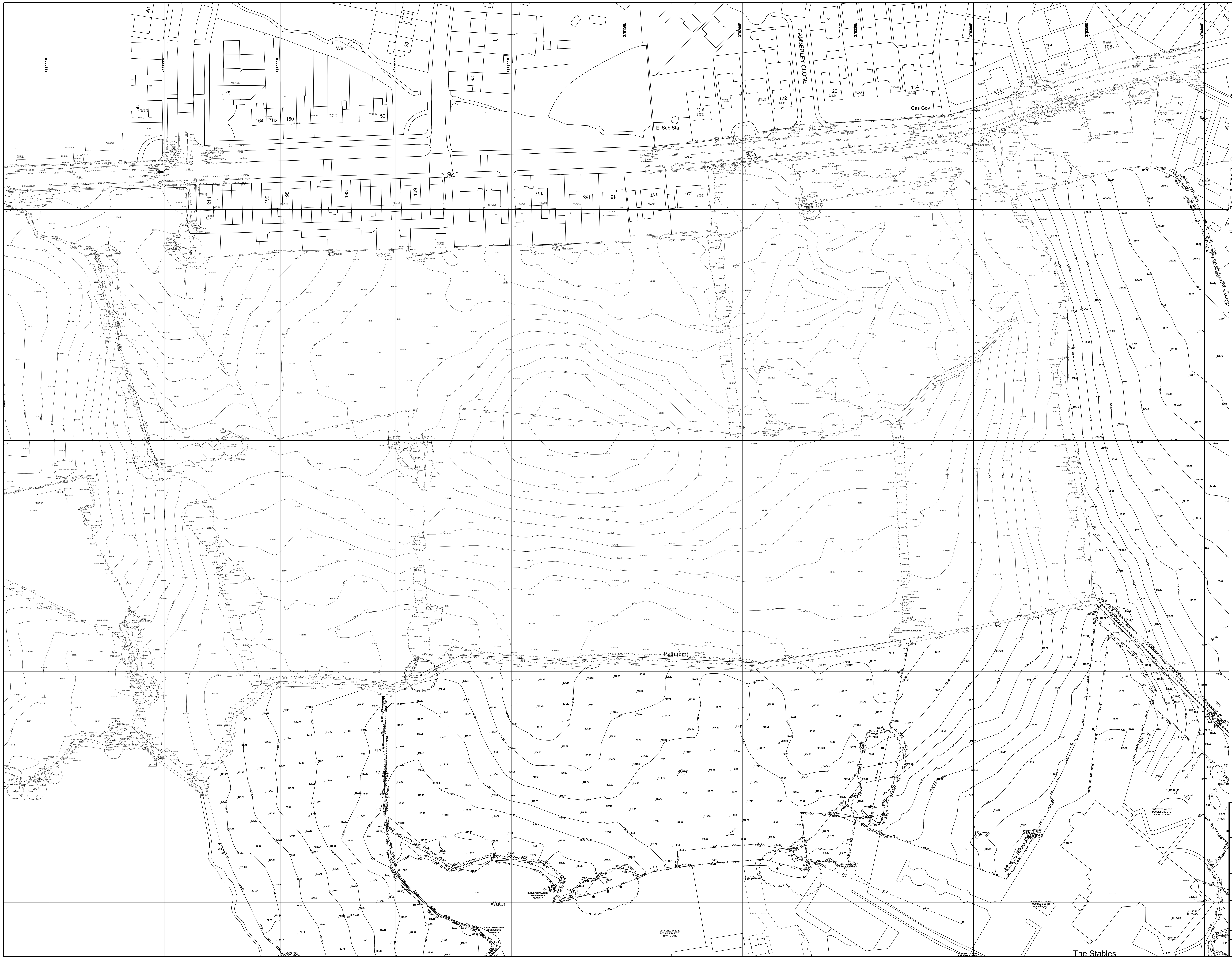
DRAWING NUMBER
S19-1210-1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378050E
378100E
378150E
378200E
378250E
378300E
378350E
378400E
Weir
El Sub Sta
CAMBERLEY CLOSE
Gas Gov
Sinks
Path (um)
Water
FB
BT
The Stables
GRASS
POND
SURVEYED WATERS EDGE WHERE POSSIBLE
SURVEYED WHERE POSSIBLE DUE TO PRIVATE LAND
46
56
51
164
162
160
150
20
25
2
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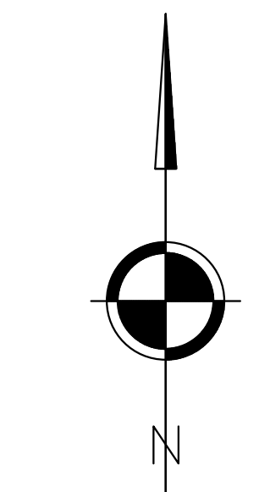

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LP	Lamp post	P/W	Post & wire
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PM	Parking meter	EH	Eaves level
RE	Rodding eye	FL	Floor level
RS	Road sign	IL	Invert level
rwp	Rain water pipe	PL	Parapet level
SP	Sign post	RH	Roof/ridge level
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TH	Trial Hole	WL	Water level

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J1C	377799.100	412074.597	134.004
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J1E	377748.771	411894.864	131.768
J1F	377745.100	411846.091	130.661
J2	378073.328	412165.020	122.431
J3	378205.599	412171.466	119.876
J4	378301.830	412193.428	118.816
J5	378377.715	412215.720	120.893
SE13	378705.709	411984.362	112.959
JLP1	378421.576	411630.574	113.185

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DRAWING TITLE
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SCALE	SHEET SIZE	No. of SHEETS	DATE	REVISION
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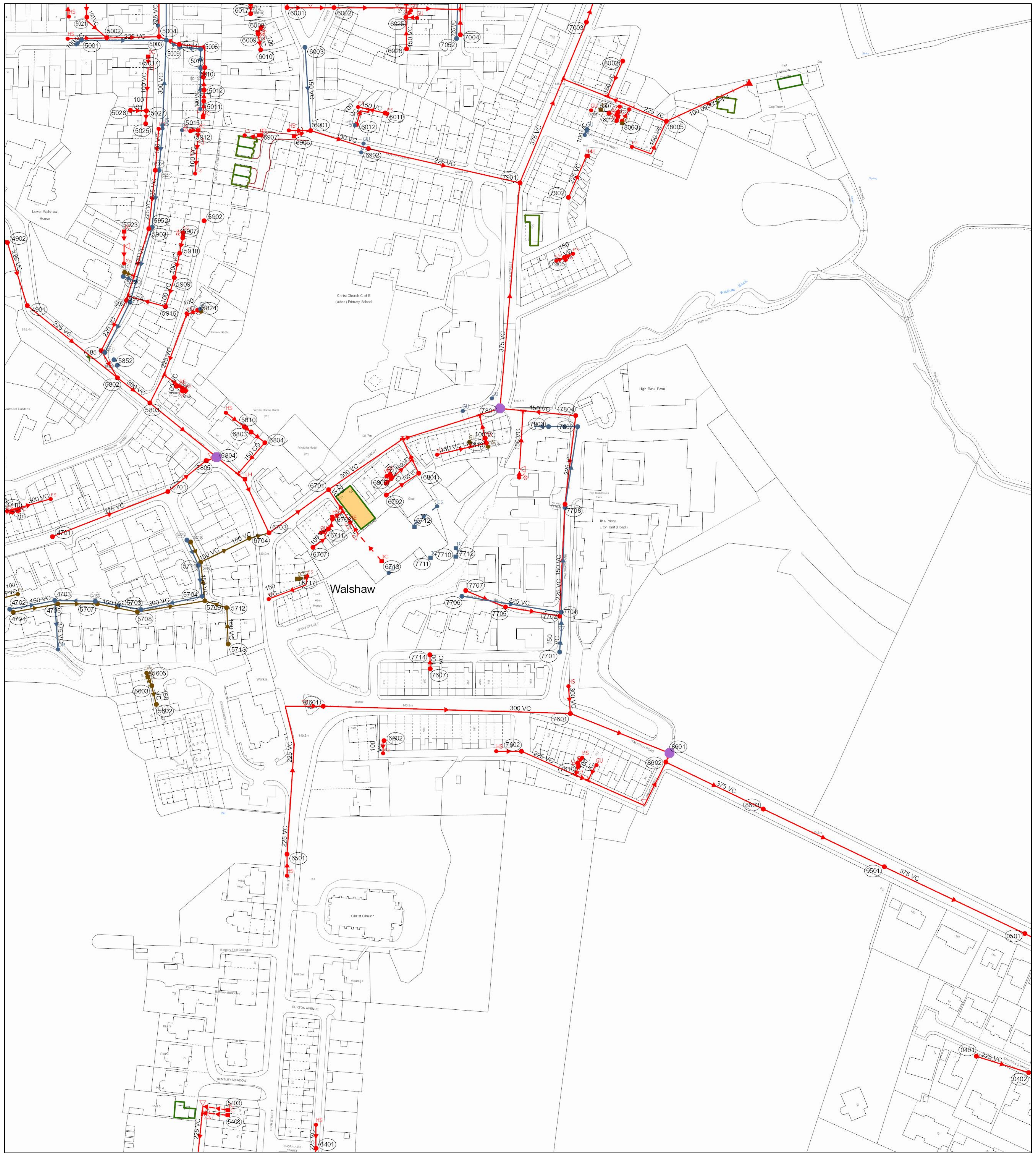
DRAWING NUMBER
S19-1210-2

Appendix 3: United Utilities

Appendix 3A: Public Sewer Records



The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5701	144.21	CO	141.87	225			VC	27.01851	1 in 17
6101	142.77	CO	141.77	150			VC	41.04875	1 in 61
6601	139.94	CO	134.38	300			VC	137.0584	1 in 70
7052	138.69	SW	137.67	225			VC	41.01219	1 in 73
7052	138.69	SW	137.67	225			VC	41.01219	1 in 73
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
4902	152.71	CO	151.25	225			VC	36.68787	1 in 10
4902	152.71	CO	151.25	225			VC	36.68787	1 in 10
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5704		SW	0	300			VC	34.63587	
7703	135.97	SW	133.36	225			VC	45.54119	
5953	147.29	SW	145.78	300			VC	31.30495	1 in 98
5712		FO		100			VC	12.55988	
5710		FO	0	150			VC	12.46	
7702	137.58	SW	135.57	225			VC	58.03447	1 in 28
5001	150.47	SW	148.6	225			VC	47	1 in 12
5001	150.47	SW	148.6	225			VC	47	1 in 12
6805		CO		100			VC	15.67945	
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
5703		SW	0	300			VC	25.82755	
7705	138.77	CO	137.14	150			VC	30.41381	1 in 25
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5920		SW		100			VC	7.661172	
5907		CO		100			VC	8.634017	
5907		CO		100			VC	8.634017	
6501	144.32	CO	143.68	225			VC	93.71804	
6708		CO		100			VC	7.307223	
6026		CO		150			VC	17.4993	
6026		CO		150			VC	17.4993	
5012		CO		100			VC	7.33593	
5012		CO		100			VC	7.33593	
5901	147.9	CO	146.28	225			VC	32.6757	1 in 149
5901	147.9	CO	146.28	225			VC	32.6757	1 in 149
5952	147.64	SW	146.02	300			VC	43.22209	1 in 180
5952	147.64	SW	146.02	300			VC	43.22209	1 in 180
7701	138.05	SW	136.18	150			VC	11.04536	1 in 38
7707	138.94	CO	137.4	150			VC	23.76973	1 in 99
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9501	129.11	CO	125.75	375			VC	86.33076	1 in 81
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6011		CO		150			VC	15.45388	
5706		SW	0	150			VC	17.34454	
4702		SW	0	150			VC	25.4234	
5010		SW		100			VC	10.36825	
5010		SW		100			VC	10.36825	
7708	135.98	CO	133.39	150			VC	49.36598	
4901	149.28	CO	147.64	225			VC	64.03124	1 in 16
8603	131.9	CO	128	375			VC	74.24958	1 in 62
6707		CO		100			VC	14.35133	
6001	143.15	CO	141.1	150			VC	13	1 in 16
6001	143.15	CO	141.1	150			VC	13	1 in 16
5808		CO		100			VC	12.75175	
5810		CO	0	150			CO	4.742204	
5708		FO	0	150			VC	37.98947	
6701	137.34	CO	133.09	300			VC	106.2615	1 in 27
7706	139.04	SW	137.07	225			VC	55.7315	1 in 38
4703		SW	0	375			VC	27.01545	
5916		CO		100			VC	21.76227	
6901	142.65	CO	140.62	150			VC	33.52611	
6901	142.65	CO	140.62	150			VC	33.52611	
5903	147.64	CO	146.06	225			VC	41.41968	1 in 153
5903	147.64	CO	146.06	225			VC	41.41968	1 in 153
6003	142.71	SW	141.81	150			VC	46.09772	1 in 39
6003	142.71	SW	141.81	150			VC	46.09772	1 in 39
7004	138.69	CO	137.67	225			VC	14	
7004	138.69	CO	137.67	225			VC	14	
5709		FO	0	150			VC	21.61366	
5801	146.79	CO	145.29	300			VC	17.49286	1 in 15
6804		CO	0	150			CO	23.01263	
5805	142.31	CO	140.27	225			VC	3.162278	1 in 4
5705		SW	0	150			VC	15.37948	
5009		SW		100			VC	8.425817	
5009		SW		100			VC	8.425817	
8003		CO		100			VC	7.522595	
8003		CO		100			VC	7.522595	
7003	134.31	CO	127.82	375			VC	12.64911	
7003	134.31	CO	127.82	375			VC	12.64911	
6602		CO		100			VC	7.140544	
8602	134.49	CO	130.59	375			VC	59.9333	1 in 71
7902	134.56	CO	132.2	225			VC	25.07987	
7902	134.56	CO	132.2	225			VC	25.07987	
5951	147.89	SW	146.31	225			VC	31.75702	1 in 110
5951	147.89	SW	146.31	225			VC	31.75702	1 in 110
5702		SW	0	300			VC	22.34151	
6012		CO		100			VC	14.06792	
6012		CO		100			VC	14.06792	
5802	145.85	CO	142.66	300			VC	22.80351	1 in 18
5713		FO		100			VC	20.2518	
7804		CO	0	150			VC	42.19004	
5011		CO		100			VC	6.109969	
5011		CO		100			VC	6.109969	
6401	146.42	CO	143.53	225			VC	56.22277	
5707		FO	0	150			VC	22.70248	
7704	137.53	CO	135.86	150			VC	62.07254	1 in 26
6002	142.03	CO	139.61	225			VC	35	
6002	142.03	CO	139.61	225			VC	35	
5824		CO		100			VC	6.678972	
5804	142.28	CO	138.81	300			VC	52.31526	1 in 14
7905		CO		150			VC	5.015236	
6801	134.01	CO	131.98	100			VC	21.0238	
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
6703	138.89	CO	135.13	300			VC	40.80441	1 in 38
6025		CO		150			VC	15.68411	
6025		CO		150			VC	15.68411	
6902	140.45	CO	0	225			VC	86.12201	
6902	140.45	CO	0	225			VC	86.12201	
7802		SW	0	225			VC	16	
7813		CO		150			VC	13.28922	
5027		CO		100			VC	7.239471	
5027		CO		100			VC	7.239471	
5013		CO		100			VC	5.333201	
5013		CO		100			VC	5.333201	
5028		CO		100			VC	8.797112	
5028		CO		100			VC	8.797112	
7607		CO		100			VC	7.744483	
5014		CO		100			VC	25.38035	
5014		CO		100			VC	25.38035	
8005		CO		225			VC	61.89595	
8005		CO		225			VC	61.89595	
7901	134.66	CO	128.28	375			VC	96.38464	1 in 219
7901	134.66	CO	128.28	375			VC	96.38464	1 in 219
5003	146.12	SW	144.63	300			VC	61	1 in 3050
5003	146.12	SW	144.63	300			VC	61	1 in 3050
7602	139.29	CO	137.36	225			VC	74.32362	
5002	149.63	CO	147.6	225			VC	28.95601	1 in 20
5002	149.63	CO	147.6	225			VC	28.95601	1 in 20
8002		CO		150			VC	21.59494	
8002		CO		150			VC	21.59494	
5815		CO		100			VC	1.249111	
7812		CO		150			VC	2.864055	
5024		CO		100			VC	12.15971	
5024		CO		100			VC	12.15971	
5004	147.65	CO	146.18	225			VC	61	1 in 39
5004	147.65	CO	146.18	225			VC	61	1 in 39
7803		SW	0	225			VC	8	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

	Abandoned	Foul	Surface Water	Combined
Public Sewer	─►─	─►─	─►─	─►─
Private Sewer		- -►- -	- -►- -	- -►- -
Section 104		–·►·–	–·►·–	–·►·–
Rising Main	┼┼►┼┼	┼┼►┼┼	┼┼►┼┼	┼┼►┼┼
Sludge Main	─►─	─►─		
Overflow	─►─	─►─		
Water Course	- -►- -	- -►- -		
Highway Drain	- -►- -	- -►- -		

All point assets follow the standard colour convention:
red - combined   blue - surface water
brown - foul   purple - overflow

● Manhole	Side Entry Manhole
● Head of System	Outfall
● Extent of Survey	Screen Chamber
● Rodding Eye	Inspection Chamber
● Inlet	Bifurcation Chamber
● Discharge Point	Lamp Hole
● Vortex	T Junction / Saddle
● Penstock	Catchpit
● Washout Chamber	Valve Chamber
● Valve	Vent Column
● Air Valve	Vortex Chamber
● Non Return Valve	Penstock Chamber
● Soakaway	Network Storage Tank
● Gully	Sewer Overflow
● Cascade	Ww Treatment Works
● Flow Meter	▲ Ww Pumping Station
● Hatch Box	Septic Tank
● Oil Interceptor	Control Kiosk
● Summit	● DNM Network Monitoring Point
● Drop Shaft	▽ Change of Characteristic
● Orifice Plate	

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

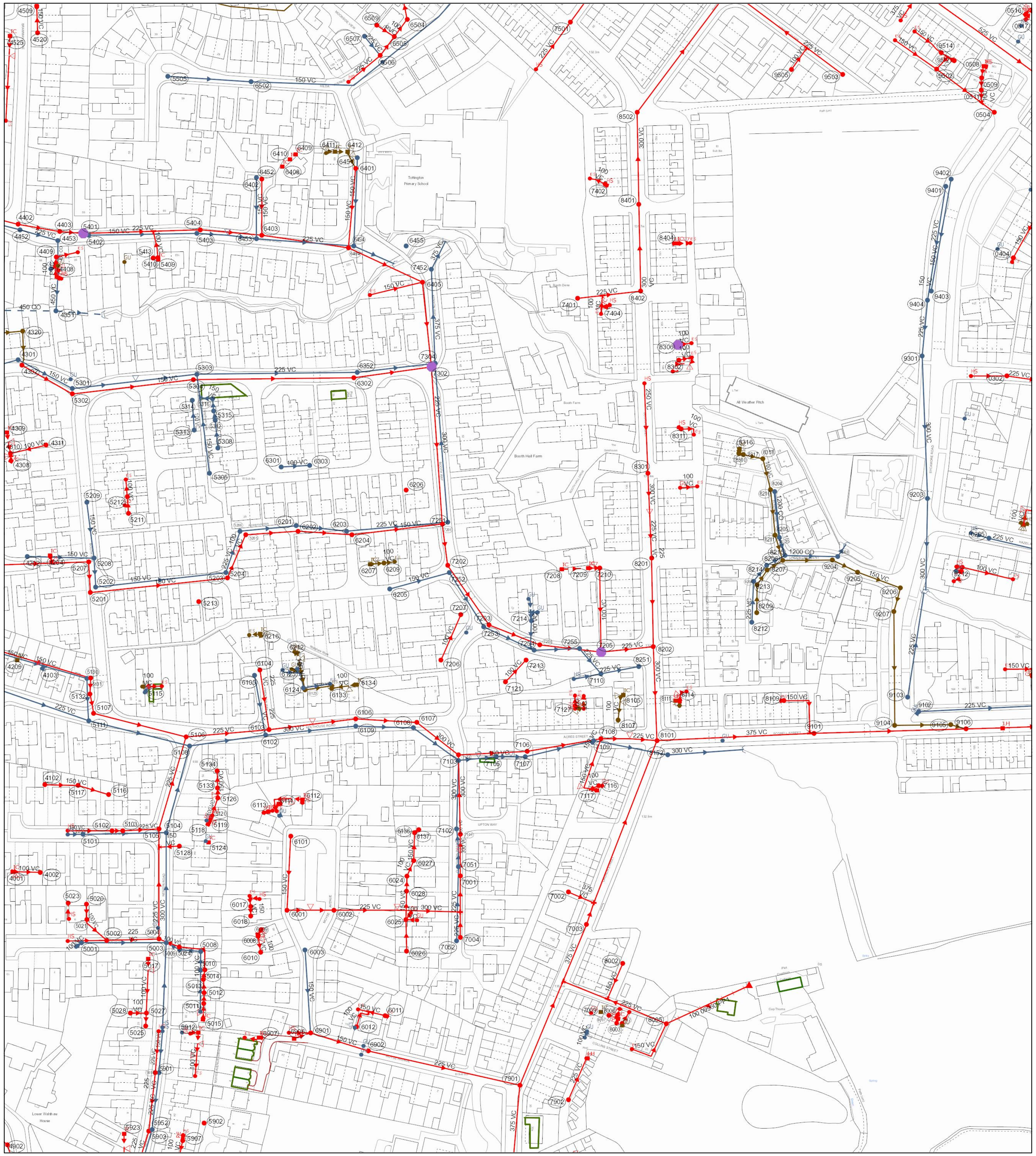
Scobell Street Bury,

OS sheet Number: SD7711NE
Scale: 1:1250
Date: 12/07/2024
Nodes: 161
Sheet: 1 of 4

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West



The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7201	137.35	CO	133.48	225			VC	23.19483	1 in 331
7121		CO		100			VC	16.69775	
0509		CO		100			VC	6.789247	
0509		CO		100			VC	6.789247	
5132		CO		150			VC	10.75532	
6502	142.08	SW	140.29	150			VC	156.4238	1 in 26
7107	135.01	SW	133.35	300			VC	39.05125	1 in 24
0511		CO		100			VC	6.949281	
0511		CO		100			VC	6.949281	
4902	152.71	CO	151.25	225			VC	36.68787	1 in 10
4902	152.71	CO	151.25	225			VC	36.68787	1 in 10
9205		FO	0	150			VC	25.32687	
9206		FO	0	150			VC	13.61131	
6504		CO	0	225			VC	13.6805	
5105	146.8	CO	144.58	225			VC	53.16014	1 in 55
5207	147.54	CO	145.55	150			VC	17.02939	1 in 61
9207		FO	0	150			VC	62.99191	
8204		FO	0	150			VC	25.3705	
4452	151.2	SW	148.15	225			VC	21.84033	1 in 29
6125		SW		100			VC	8.720252	
5111	148.78	SW	146.92	225			VC	57.72348	1 in 21
5203	143.6	CO	141.62	150			VC	13	1 in 108
9212		CO		100			VC	28.92301	
9212		CO		100			VC	28.92301	
5404	142.59	CO	140.73	225			VC	34.1321	1 in 14
8213		SW	0	225			VC	11.40112	
0205	124.92	SW	123.43	225			VC	61.61169	1 in 36
0205	124.92	SW	123.43	225			VC	61.61169	1 in 36
5952	147.64	SW	146.02	300			VC	43.22209	1 in 180
5952	147.64	SW	146.02	300			VC	43.22209	1 in 180
9512		CO		150			VC	4.193076	
9512		CO		150			VC	4.193076	
5403	142.69	SW	140.83	150			VC	17.02939	1 in 14
5008		SW		100			VC	11.68991	
5008		SW		100			VC	11.68991	
6106	140.02	CO	137.5	300			VC	34.05877	1 in 26
5130		SW		150			VC	23.42216	
6453	140.56	SW	138.31	225			VC	54.14795	1 in 27
6452	140.83	SW	139.1	150			VC	34	1 in 56
5107	148.72	CO	146.87	225			VC	52.87523	1 in 16
7108	133.36	CO	131.45	300			VC	16.05292	1 in 13
6402	140.82	CO	139.15	150			VC	31	1 in 38
9502	129.64	CO	128.77	150			VC	40	1 in 9
9502	129.64	CO	128.77	150			VC	40	1 in 9
7801	130.56	CO	129.09	375			VC	125.4831	1 in 155
5205	143.06	CO	141.21	150			VC	29.06888	1 in 23
5315		SW		150			VC	6.651833	
4311		CO		100			VC	20.26013	
6352	138.07	SW	136.05	225			VC	43.28972	1 in 34
6209		FO		100			VC	6.159784	
6028		CO		150			VC	8.335339	
6509		CO		100			PVC	11.71412	
6104	142.95	CO	141.5	225			VC	33.37664	1 in 88
5021		CO		100			VC	16.50526	
5021		CO		100			VC	16.50526	
5312		SW		100			VC	5.16437	
4509		CO		150			VC	4.029942	
6506		CO		225			VC	11.99336	
8301	131.36	CO	128.3	300			VC	23.02173	1 in 85
6404	137.62	CO	136.17	225			VC	45.1885	1 in 21
9105		FO	0	150			VC	8.769351	
9105		FO	0	150			VC	8.769351	
5010		SW		100			VC	10.36825	
5010		SW		100			VC	10.36825	
7110		SW	0	225			VC	21.37756	
8311		CO		100			VC	10.22824	
8402	131.51	CO	129.42	300			VC	48.01041	1 in 141
6001	143.15	CO	141.1	150			VC	13	1 in 16
6001	143.15	CO	141.1	150			VC	13	1 in 16
9514		CO		150			VC	13.25243	
9514		CO		150			VC	13.25243	
9101	128.33	CO	124.49	375			VC	84.24303	
5103	148.15	CO	146.26	225			VC	20.02498	1 in 12
6901	142.65	CO	140.62	150			VC	33.52611	
6901	142.65	CO	140.62	150			VC	33.52611	
5903	147.64	CO	146.06	225			VC	41.41968	1 in 153
5903	147.64	CO	146.06	225			VC	41.41968	1 in 153
9401	127.4	SW	125.89	225			VC	63.78872	1 in 114
9401	127.4	SW	125.89	225			VC	63.78872	1 in 114
9503	129.65	CO	128.75	225			VC	78.60026	1 in 167
8211		SW	0	1200			CO	10.42294	
5303	142.78	SW	140.69	225			VC	89.00562	1 in 19
6301		SW		100			VC	15.70444	
5304	142.85	CO	140.6	150			VC	89.00562	1 in 19
7001	138.75	CO	137.12	225			VC	12	1 in 52
8101	132.35	CO	127.19	375			VC	87.0922	1 in 32
5305	143.67	SW	142.04	150			VC	55.44366	1 in 43
7252	136.99	SW	135.46	150			VC	35.51056	1 in 34
8201	131.75	CO	127.84	300			VC	49.0102	1 in 189
8208		FO	0	150			VC	9.870977	
7103	137.65	CO	135.62	300			VC	38.0526	1 in 17
9204		FO	0	150			VC	15.54262	
9208		SW	0	150			VC	8.339096	
7902	134.56	CO	132.2	225			VC	25.07987	
7902	134.56	CO	132.2	225			VC	25.07987	
5402	146.45	SW	143.57	150			VC	60.00833	1 in 22
5951	147.89	SW	146.31	225			VC	31.75702	1 in 110
5951	147.89	SW	146.31	225			VC	31.75702	1 in 110
5106	145.69	CO	143.6	225			VC	46.17358	1 in 19
7116		CO		100			VC	8.611727	
5208	147.51	SW	145.77	150			VC	16.03122	1 in 38
6012		CO		100			VC	14.06792	
6012		CO		100			VC	14.06792	
5115		CO		100			VC	7.270682	
7210		CO		100			VC	46.62286	
5211		CO		100			VC	9.218862	
8209		FO	0	150			VC	15.32173	
6002	142.03	CO	139.61	225			VC	35	
6002	142.03	CO	139.61	225			VC	35	
8210		SW	0	1200			CO	25.59933	
4351		SW	0	450			VC	26.07681	
6025		CO		150			VC	15.68411	
6025		CO		150			VC	15.68411	
6401	137.73	CO	136.91	150			VC	44.18144	1 in 67
4302	148.1	CO	146.3	150			VC	32.24903	1 in 19
6101	142.77	CO	141.77	150			VC	41.04875	1 in 61
6202	141.14	CO	139.93	150			VC	30.06659	1 in 13
6203	139.82	SW	137.92	225			VC	56.22277	1 in 30
6107	137.78	CO	136.17	300			VC	29.20616	1 in 56
4320		FO		150			VC	19.07128	
5131		CO		150			VC	8.943102	
8206		FO	0	150			VC	27.52164	
4453	148.67	SW	147.07	450			CO	19	
8302		CO		100			VC	7.223713	
7052	138.69	SW	137.67	225			VC	41.01219	1 in 73
7052	138.69	SW	137.67	225			VC	41.01219	1 in 73
7102	138.82	SW	136.76	300			VC	38.01316	1 in 34
7105	137.07	SW	134.96	150			VC	8	1 in 10
7002	134.41	CO	0	375			VC	15.23155	
9104		FO	0	150			VC	30.94014	
5020		CO		100			VC	8.621748	
8207		FO	0	150			VC	10.14789	
8205		FO	0	150			VC	14.64333	
7255	132.99	SW	131.72	225			VC	18.43909	
6102	143.19	SW	141.15	300			VC	50.24938	1 in 19
6451	137.83	SW	136.95	150			VC	49.0408	1 in 75
5001	150.47	SW	148.6	225			VC	47	1 in 12
5001	150.47	SW	148.6	225			VC	47	1 in 12
7051	138.8	SW	137.11	225			VC	11	1 in 73
5201	147.57	CO	145.22	150			VC	76.41989	1 in 21
9402	127.49	SW	124.88	150			VC	62.96825	1 in 89
9402	127.49	SW	124.88	150			VC	62.96825	1 in 89
7401	132.29	CO	130.9	225			VC	35.22789	1 in 24
0302	125.89	CO	123.57	225			VC	28.28427	1 in 141
0302	125.89	CO	123.57	225			VC	28.28427	1 in 141
7109	133.49	SW	131.48	300			VC	41.7732	1 in 52
5907		CO		100			VC	8.634017	
5907		CO		100			VC	8.634017	
7202	137.01	CO	133.41	225			VC	40.22437	1 in 161
6026		CO		150			VC	17.4993	
6026		CO		150			VC	17.4993	
5206	143.07	SW	141.48	225			VC	31.14482	1 in 26
5117		CO		150			VC	17.68896	
5012		CO		100			VC	7.33593	
5012		CO		100			VC	7.33593	
4301	148.11	SW	146.56	150			VC	34	1 in 19
5901	147.9	CO	146.28	225			VC	32.6757	1 in 149
5901	147.9	CO	146.28	225			VC	32.6757	1 in 149
6405	135.27	CO	134.03	225			VC	47.26521	1 in 169
7402		CO		100			VC	9.133412	
4202	149.58	SW	147.92	150			VC	37.01351	1 in 17
8401	131.87	CO	129.06	300			VC	51.0098	1 in 131
7204	134.64	CO	132.55	225			VC	34.23449	1 in 17
6201	141.21	SW	140.28	225			VC	28.16026	1 in 12
7104	137.72	SW	135.63	300			VC	11.04536	1 in 28
8212		SW	0	225			VC	22.66748	
6105	142.97	SW	141.53	225			VC	33.54102	1 in 96
5209	147.56	SW	146.22	150			VC	31.257	1 in 71
7253	136.28	SW	134.38	150			VC	30.8707	1 in 23
5128		CO		150			VC	11.31361	
9301	126.55	SW	124.75	300			VC	79.05694	1 in 68
9301	126.55	SW	124.75	300			VC	79.05694	1 in 68
6507		SW	0	225			VC	13.80739	
5108	145.66	SW	143.56	300			VC	42.42641	1 in 24
6017		CO		150			VC	5.374222	
6017		CO		150			VC	5.374222	
5104	146.77	SW	144.59	300			VC	49.72927	1 in 49
4520		CO		150			VC	14.40294	
6136		CO		150			VC	2.892454	
6027		CO		150			VC	15.49922	
7302	136.35	CO	133.74	225			VC	87.20665	1 in 349
6011		CO		150			VC	15.45388	
6011		CO		150			VC	15.45388	
4102		CO		150			VC	18.58792	
6204	139.78	CO	137.59	150			VC	50.35872	1 in 26
8306		CO		100			VC	7.756478	
4402	151.25	CO	149.7	225			VC	23.34524	1 in 7
6403	140.49	CO	138.24	225			VC	48.50773	1 in 24
8502	131.94	CO	128.62	300			VC	85	1 in 193
5101	149.43	SW	147.76	225			VC	46.01087	1 in 16
8215		SW	0	1200			CO	29.1768	
9106		CO	0	375			VC	73.83726	
9106		CO	0	375			VC	73.83726	
8214		SW	0	225			VC	11.63949	
7203	136.24	CO	133.15	225			VC	30.08322	1 in 56
5505	145.53	SW	143.9	150			VC	46.09772	1 in 13
6003	142.71	SW	141.81	150			VC	46.09772	1 in 39
6003	142.71	SW	141.81	150			VC	46.09772	1 in 39
7106	134.96	CO	133.25	300			VC	41.54111	1 in 23
7004	138.69	CO	137.67	225			VC	14	
7004	138.69	CO	137.67	225			VC	14	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
6103	143.15	CO	141.1	225			VC	24.18677	1 in 18
7251	137.39	SW	135.91	300			VC	88.27797	1 in 74
5102	148.5	CO	146.61	225			VC	6	1 in 19
6024		CO		100			VC	9.351251	
7254	134.73	SW	133.02	225			VC	25.01999	1 in 19
7304	136.26	SW	134.68	375			VC	52.03845	1 in 42
5302	146.9	CO	144.57	150			VC	67.47592	1 in 17
7214		SW		100			VC	15.43684	
6205	138.43	SW	137.38	150			VC	34.20526	1 in 19
5009		SW		100			VC	8.425817	
5009		SW		100			VC	8.425817	
8003		CO		100			VC	7.522595	
8003		CO		100			VC	7.522595	
7206		CO		100			VC	27.4881	
7003	134.31	CO	127.82	375			VC	12.64911	
7003	134.31	CO	127.82	375			VC	12.64911	
9102	125.39	SW	123.7	225			VC	80.09994	1 in 30
9102	125.39	SW	123.7	225			VC	80.09994	1 in 30
5212		CO		100			VC	9.532503	
7101	138.8	CO	136.71	300			VC	44.01136	1 in 70
4403	148.51	CO	146.17	225			VC	13.0384	1 in 5
9404	126.54	SW	125.3	225			VC	31.14482	1 in 59
9404	126.54	SW	125.3	225			VC	31.14482	1 in 59
6108	137.75	SW	136.15	300			VC	30.80584	1 in 62
5011		CO		100			VC	6.109969	
5011		CO		100			VC	6.109969	
9505		CO		100			VC	14.87616	
6109	140.03	SW	137.58	300			VC	32.01562	1 in 23
7205	132.57	CO	130.48	225			VC	29.15476	1 in 29
5301	146.84	SW	144.78	150			VC	35.22783	1 in 17
6302	138.16	CO	135.84	150			VC	43.41659	1 in 21
7501	132.95	CO	130.95	225			VC	96.60745	1 in 58
5202	147.54	SW	145.24	150			VC	72.44308	1 in 22
6902	140.45	CO	0	225			VC	86.12201	
6902	140.45	CO	0	225			VC	86.12201	
5308		SW		100			VC	15.69961	
8109		CO		150			VC	32.25142	
8202	131.99	CO	127.55	300			VC	52.03845	1 in 186
5204	143.58	SW	141.9	225			VC	24.35159	1 in 59
5316		SW		150			VC	7.138891	
5027		CO		100			VC	7.239471	
5027		CO		100			VC	7.239471	
5413		CO		100			VC	2.703207	
9103	125.68	SW	123.43	225			VC	58.81641	
9103	125.68	SW	123.43	225			VC	58.81641	
9203	125.2	SW	123.57	300			VC	50.86196	1 in 116
9203	125.2	SW	123.57	300			VC	50.86196	1 in 116
5126		CO		100			VC	1.46813	
5013		CO		100			VC	5.333201	
5013		CO		100			VC	5.333201	
5028		CO		100			VC	8.797112	
5028		CO		100			VC	8.797112	
8310		FO		100			VC	2.718939	
5401	146.54	CO	143.64	225			VC	65.03076	1 in 22
5002	149.63	CO	147.6	225			VC	28.95601	1 in 20
5002	149.63	CO	147.6	225			VC	28.95601	1 in 20
4408		CO		100			PVC	4.549045	
5024		CO		100			VC	12.15971	
5024		CO		100			VC	12.15971	
5120		CO		100			VC	11.5146	
8318		FO		100			VC	17.63972	
5004	147.65	CO	146.18	225			VC	61	1 in 39
5004	147.65	CO	146.18	225			VC	61	1 in 39
5410		CO		100			VC	14.96296	
8152	132.12	SW	130.66	300			VC	42.11641	1 in 16
7452	134.86	SW	133.42	375			VC	17.54303	1 in 18
0408		CO		150			VC	36.69068	
7127		CO		100			VC	5.52399	
5014		CO		100			VC	25.38035	
5014		CO		100			VC	25.38035	
8005		CO		225			VC	61.89595	
8005		CO		225			VC	61.89595	
7901	134.66	CO	128.28	375			VC	96.38464	1 in 219
7901	134.66	CO	128.28	375			VC	96.38464	1 in 219
6124		SW		100			VC	14.92871	
5003	146.12	SW	144.63	300			VC	61	1 in 3050
5003	146.12	SW	144.63	300			VC	61	1 in 3050
0404		CO		150			VC	2.481389	
0404		CO		150			VC	2.481389	
6123		FO		100			VC	15.18166	
8317		FO		100			VC	10.99632	
8002		CO		150			VC	21.59494	
8002		CO		150			VC	21.59494	
4409		CO		100			VC	12.23959	
5133		CO		150			VC	9.536632	
6454	137.68	SW	136.18	225			VC	24.54714	1 in 8
5313		SW		100			VC	16.67135	

LEGEND

	Abandoned	Foul	Surface Water	Combined
Public Sewer	─▶─	─▶─	─▶─	─▶─
Private Sewer		- -▶- -	- -▶- -	- -▶- -
Section 104		-·▶·-	-·▶·-	-·▶·-
Rising Main	┼┼▶┼┼	┼┼▶┼┼	┼┼▶┼┼	┼┼▶┼┼
Sludge Main	─▶─	─▶─		
Overflow	─▶─	─────▶─────		
Water Course	- -▶- -	- - - - -▶- - - - -		
Highway Drain	- -▶- -	- - - - -▶- - - - -		

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- ● Manhole
- HS Head of System
- ES Extent of Survey
- RE Rodding Eye
- IN Inlet
- DP Discharge Point
- HY Vortex
- PE Penstock
- WO Washout Chamber
- VA Valve
- AV Air Valve
- NRV Non Return Valve
- SO Soakaway
- GU Gully
- CA Cascade
- FM Flow Meter
- HA Hatch Box
- OI Oil Interceptor
- SM Summit
- DS Drop Shaft
- OP Orifice Plate
- Side Entry Manhole
- Outfall
- ▦ Screen Chamber
- IC Inspection Chamber
- Bifurcation Chamber
- LH Lamp Hole
- T Junction / Saddle
- CA Catchpit
- VC Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- WwTW Ww Treatment Works
- ▲ Ww Pumping Station
- ST Septic Tank
- CK Control Kiosk
- ● DNM Network Monitoring Point
- ▽ Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforecd Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

Scobell Street Bury,

OS sheet Number: SD7712SE
Scale: 1:1250 **Date:** 12/07/2024
Nodes: 288
Sheet: 2 of 4

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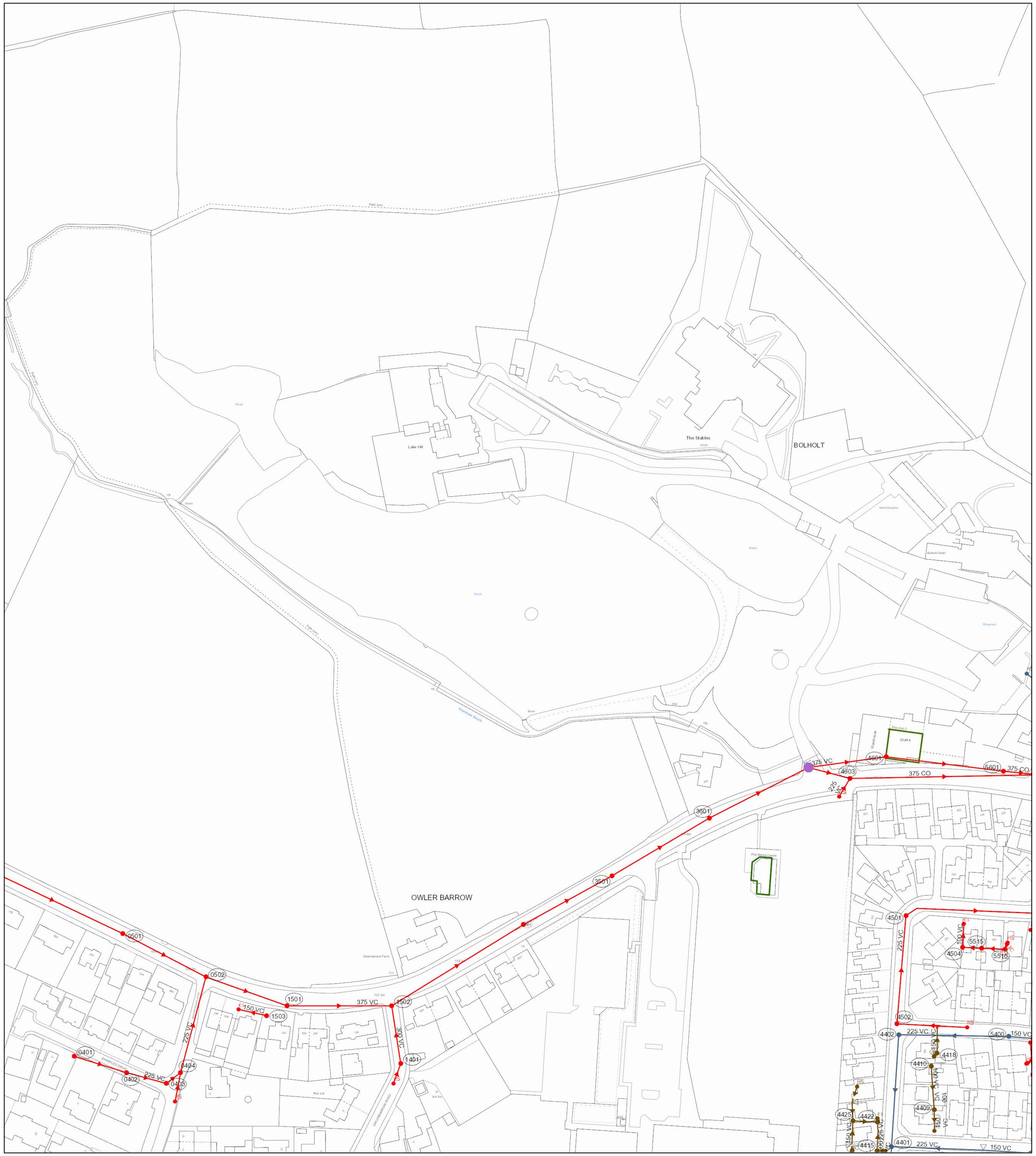
SEWER RECORDS

United Utilities
Water for the North West



BOLHOLT
The Stables
Lake Hill
OWLER BARROW
4601
4603
5601
3501
3601
2501
0501
0502
1501
1503
1502
1401
0401
0402
0403
0404
4501
4502
4504
5515
5516
4402
4401
5400
4410
4409
4418
4422
4425
4415
375 VC
375 CO
225 VC
150 VC
300 VC
100 VC

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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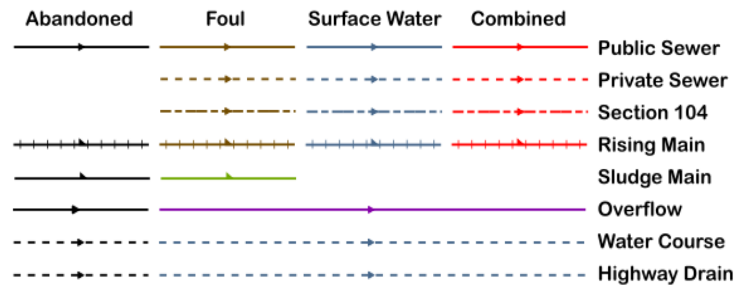
Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4601	112.17	CO	110.03	375			VC	65.49046	1 in 107
3501		CO	0	375			VC	62.76942	
0404	126.91	CO	123.22	225			VC	54.81788	1 in 322
4401	113.45	SW	111.75	300			VC	61.07373	1 in 107
4415		FO		225			VC	16.08274	
4501	114.56	CO	111.64	225			VC	80.27272	1 in 96
4410		FO		100			VC	24.20906	
5601	111.63	CO	109.42	375			CO	20.17738	
0403	127.14	CO	124.11	225			VC	10	1 in 14
2501	117.64	CO	114.51	375			VC	55.9464	
9501	129.11	CO	125.75	375			VC	86.33076	1 in 81
5515		CO		100			VC	10.67127	
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
0501	126.95	CO	124.22	375			VC	51.88449	1 in 89
5400	116.79	SW	115.07	225			VC	61.0082	1 in 24
4502	114.18	CO	112.29	225			VC	60.20797	1 in 97
1502	121.27	CO	116.95	375			VC	85.75546	1 in 74
4422		FO		225			VC	2.073137	
1401	122.4	CO	117.52	300			VC	32.38827	1 in 95
4409		FO		150			VC	11.75707	
3601		CO	0	375			VC	61.76581	
4402	114.15	SW	112.55	225			VC	62.1289	1 in 80
4425		FO		150			VC	13.60189	
1503		CO		150			VC	15.83225	
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
0401	128.32	CO	126.14	225			VC	30.36445	1 in 43
4603	112.92	CO	109.34	375			CO	105.0994	1 in 84
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
0402	127.8	CO	125.43	225			VC	22.80351	1 in 17
4504		CO		100			VC	13.12257	
0502	125.85	CO	122.62	375			VC	47.75982	1 in 87
1501	124.13	CO	120.03	375			VC	58	1 in 57
4418		FO		150			VC	15.01898	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND



Abandoned
Foul
Surface Water
Combined
Public Sewer
Private Sewer
Section 104
Rising Main
Sludge Main
Overflow
Water Course
Highway Drain

All point assets follow the standard colour convention:

red - combined
blue - surface water
brown - foul
purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- DNM Network Monitoring Point
- Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
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OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

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BR	Brick
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CSU	Concrete Segment Unbolted
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PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

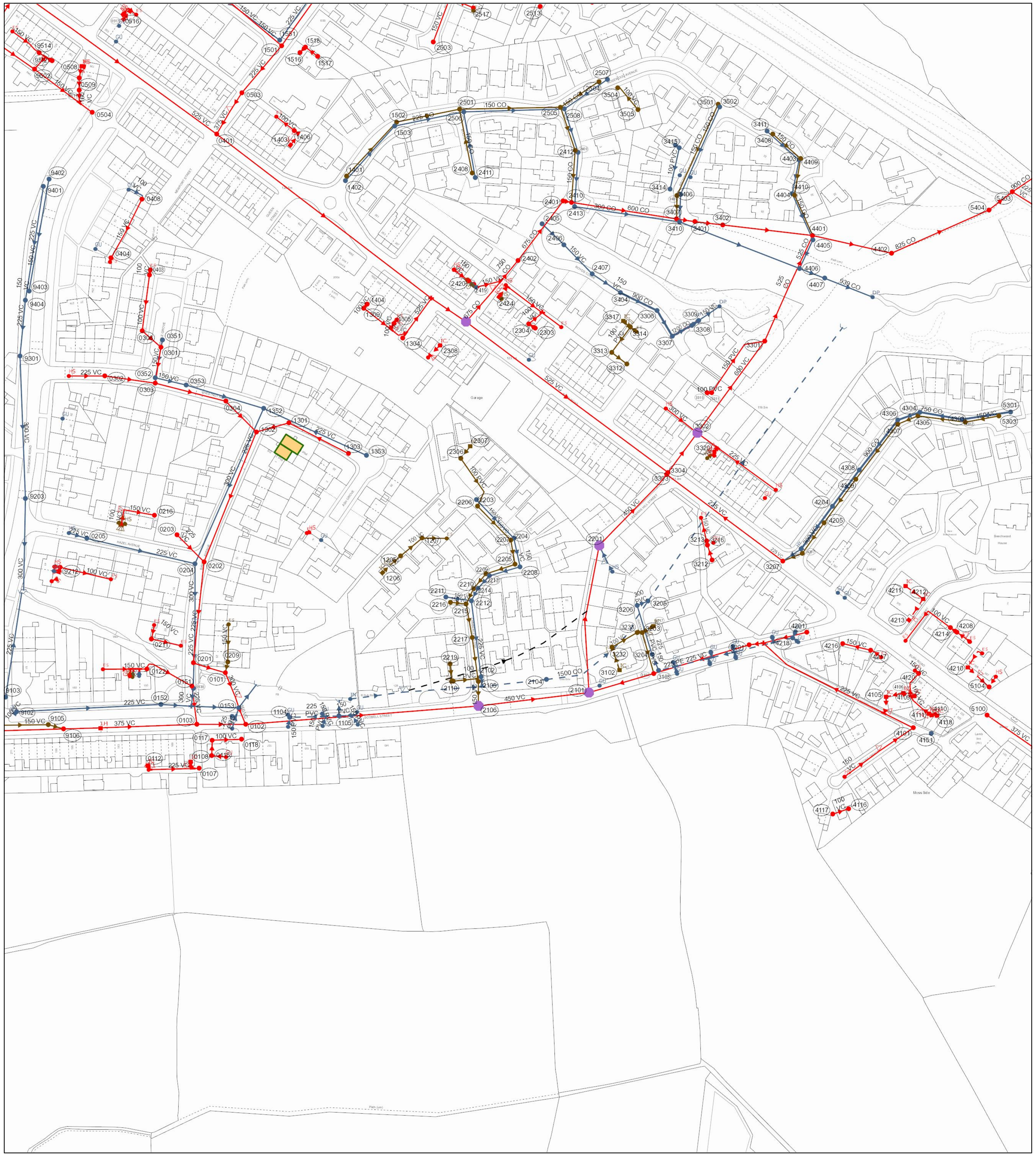
Scobell Street Bury,

OS sheet Number: SD7811NW
Scale: 1:1250 **Date:** 12/07/2024
Nodes: 33
Sheet: 3 of 4

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West



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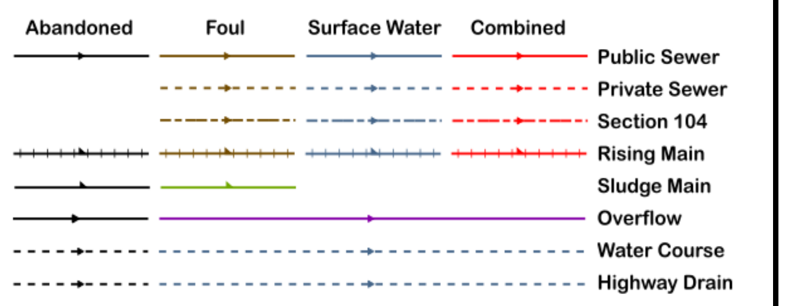
Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
2207	123.04	SW	121.48	150			VC	16.22087	1 in 18
3408	123.65	FO	121.53	150			CO	20.60849	1 in 61
2506	125.08	SW	121.4	300			CO	55.87791	1 in 175
2411	123.04	SW	121.77	225			CO	37.09344	1 in 100
4302	121.16	SW	119.13	750			CO	23.67344	1 in 395
0509		CO		100			VC	6.789247	
0509		CO		100			VC	6.789247	
0103	122.48	CO	119.17	375			VC	26.99811	1 in 36
1205		FO		100			VC	15.46056	
0511		CO		100			VC	6.949281	
0511		CO		100			VC	6.949281	
5301	121.4	SW	119.22	750			CO	27.19953	1 in 194
4409	123.26	SW	121.6	150			CO	18.9314	1 in 9
2508	124.47	SW	121.08	300			CO	25.30915	1 in 211
2212	122.65	SW	120.01	225			VC	42.60234	1 in 23
5100	122.15	CO	119.54	375			VC	63.24555	1 in 30
2419		CO		150			VC	15.92925	
4308	121.1	SW	118.81	900			CO	24.9724	1 in 357
2205	122.19	FO	119.35	150			VC	17.00632	1 in 90
3415		SW		100			PVC	23.27598	
3308		SW	0	1200			CO	4.709405	
9212		CO		100			VC	28.92301	
9212		CO		100			VC	28.92301	
0205	124.92	SW	123.43	225			VC	61.61169	1 in 36
0205	124.92	SW	123.43	225			VC	61.61169	1 in 36
4404	123.29	FO	119.26	150			CO	24.60179	1 in 4
1207		FO		100			VC	13.64622	
4208		CO		100			VC	4.520051	
3216		CO		150			VC	13.29628	
2201	117.55	CO		450			VC	1.312103	
9512		CO		150			VC	4.193076	
9512		CO		150			VC	4.193076	
1518		CO		100			VC	4.3201	
0303	125.79	CO	123.36	225			VC	40.26164	1 in 84
3402	122.46	CO	0	600			CO	50.2609	
2217	120.88	FO	118.67	150			VC	24.72985	1 in 14
1353	126.07	SW	123.62	225			VC	62.64982	1 in 99
1551	127.47	SW	124.66	225			VC	68.8186	1 in 156
2101	118.59	CO	115.71	450			VC	82.24214	1 in 135
9502	129.64	CO	128.77	150			VC	40	1 in 9
9502	129.64	CO	128.77	150			VC	40	1 in 9
3310		CO		100			PVC	2.70083	
3307		SW	0	1200			CO	12.28105	
0203	124.06	CO	121.65	225			VC	21.2132	1 in 106
0204	123.75	SW	121.72	300			VC	34	1 in 46
3404		SW	0	900			CO	22.65708	
3502	125.49	SW	123.92	150			CO	53.05423	1 in 16
3206	119.63	SW	117.49	300			PVC	6.507165	1 in 108
4303	121.16	FO	119.41	150			VC	26.51647	1 in 884
2106	119.26	CO	116.6	450			VC	61.78039	1 in 76.2720833
9105		FO	0	150			VC	8.769351	
9105		FO	0	150			VC	8.769351	
3212		CO		100			VC	8.560339	
4401	121.95	CO	113.75	825			CO	44.78347	
3101	119.26	CO	116.62	225			VC	37.43061	1 in 44
2507	125.28	SW	123.7	150			CO	28.78914	1 in 11
2110		FO		100			PVC	13.71591	
1503	125.44	SW	123.84	225			CO	39.09339	1 in 16
4405	121.96	SW	116.97	150			CO	17.50477	1 in 10
9514		CO		150			VC	13.25243	
9514		CO		150			VC	13.25243	
1401	125.82	FO	123.9	150			CO	40.7949	1 in 91
9101	128.33	CO	124.49	375			VC	84.24303	
4407	117.89	SW	115.23	939			CO	28.55718	
3406	122.34	FO	119.66	150			CO	12.90614	1 in 10
9401	127.4	SW	125.89	225			VC	63.78872	1 in 114
9401	127.4	SW	125.89	225			VC	63.78872	1 in 114
2209	122.26	SW	120.24	225			VC	9.555045	1 in 87
2501	125.09	FO	121.69	150			CO	56.01735	1 in 45
0503	128.01	CO	123.9	225			VC	13.0384	1 in 652
2408	123.22	FO	121.11	150			CO	36.10463	
3410	121.68	SW	119.45	300			CO	71.31841	1 in 17
2214	121.96	FO	119.03	150			VC	9.549798	1 in 68
1352	125.54	SW	122.96	300			VC	94.02127	1 in 78
4305	121.34	FO	119.38	150			VC	12.07767	1 in 93
3407	121.71	CO	118.42	600			CO	10.20073	1 in 1020
4214		CO		100			VC	35.96318	
4204	121.69	SW	118.74	900			CO	29.29535	1 in 419
3313		FO		100			PVC	10.57405	
5404	117.83	CO	113.47	900			CO	16.40122	
2407		SW	0	150			VC	18.82653	
2413	121.43	SW	119.9	300			CO	58.78921	1 in 131
0401	127.8	CO	123.49	525			VC	149.8065	
2504	125.12	FO	123.15	150			CO	25.54655	1 in 9
2105	119.72	FO	116.89	150			VC	13.536	1 in 47
1517		CO		100			VC	8.610612	
3301	116.88	CO	114.01	600			VC	31.19753	
4207	121.12	FO	118.65	300			VC	11.68171	1 in 83
2204	123.06	FO	120.42	150			VC	13.53197	1 in 13
3409	122.42	SW	120.58	150			CO	15.29454	1 in 14
3311		CO		150			PVC	43.55569	
2409	123.16	FO	120.15	150			CO	28.85642	1 in 20
3401	122.04	CO	118.41	600			CO	15.53446	
2505	124.53	FO	120.44	150			CO	25.25582	1 in 87
9104		FO	0	150			VC	30.94014	
1303	125.99	CO	123.38	225			VC	37.12142	1 in 52
2213	122.23	FO	119.16	150			VC	10.53399	1 in 81
4304	121.32	SW	119.07	750			CO	13.08836	1 in 436
2211	122.45	SW	120.55	150			VC	14.27273	1 in 26
3411	123.74	SW	122.1	150			CO	23.98211	1 in 48
0211		CO		150			VC	16.7258	
9402	127.49	SW	124.88	150			VC	62.96825	1 in 89
9402	127.49	SW	124.88	150			VC	62.96825	1 in 89
0117		CO		100			VC	16.16931	
3306		SW	0	900			CO	16.38696	
1302	125.69	CO	122.38	225			VC	77.62087	1 in 80
0302	125.89	CO	123.57	225			VC	28.28427	1 in 141
0302	125.89	CO	123.57	225			VC	28.28427	1 in 141
0301	125.59	CO	123.71	150			VC	20.22375	1 in 81
0403		CO		100			VC	31.28467	
5303	121.36	FO	119.58	150			VC	18.86913	1 in 111
2216	122.35	FO	119.45	150			VC	8.843946	1 in 16
5403		CO	0	900			CO	62.68174	
4309	121.23	FO	118.99	300			VC	29.9487	1 in 136
0115		CO		100			VC	8.645335	
0352	125.79	SW	123.79	150			VC	17.46425	1 in 65
0202	123.99	CO	121.41	225			VC	56.32051	1 in 73
2410	121.55	CO	118.74	600			CO	58.95068	1 in 184
1402	125.87	SW	124.56	225			CO	40.68954	1 in 57
9301	126.55	SW	124.75	300			VC	79.05694	1 in 68
9301	126.55	SW	124.75	300			VC	79.05694	1 in 68
0102	121.87	CO	118.41	450			VC	129.4144	1 in 71
2303		CO		100			VC	4.383643	
2406		SW	0	150			VC	22.53142	
4101	123.71	CO	121.2	225			VC	95.95419	
4201	121.01	CO	119.82	225			VC	24.73863	
2215	121.65	FO	118.89	150			VC	18.74032	1 in 85
2306		FO		100			PVC	31.26718	
2206	124.73	SW	123.14	150			VC	29.74626	1 in 18
4402	117.84	CO	114.61	825			CO	59.09315	1 in 52
3201	120.79	CO	117.94	225			VC	55.08337	
2203	124.56	FO	121.73	150			VC	26.4061	1 in 20
4217		CO		150			VC	15.95258	
2401	121.51	CO	118.74	600			CO	4.656627	
2102	119.87	SW	118.18	225			VC	5.265672	
2304		CO		100			VC	9.630923	
2201	117.55	CO	115.07	450			VC	54.38112	
4306	121.29	SW	118.89	900			CO	34.8793	1 in 436
2210	122	SW	120.13	225			VC	7.729482	1 in 64
9106		CO	0	375			VC	73.83726	
9106		CO	0	375			VC	73.83726	
0353	125.74	SW	123.49	225			VC	44.92215	1 in 90
3505		FO		100			VC	16.98711	
2420		CO		150			VC	4.255867	
0351	125.54	SW	124.1	150			VC	21.37756	1 in 97
4406	120.03	SW	115.23	150			CO	14.9256	1 in 32
3501	125.51	FO	123.48	150			CO	55.44241	1 in 15
1301	125.66	CO	122.66	225			VC	18.68154	1 in 89
3302	121.15	CO	114.01	600			VC	63.07193	1 in 1577
2208	122.17	SW	120.56	225			VC	17.68954	1 in 55
4205	121.66	FO	118.77	300			VC	20.71889	1 in 173
9102	125.39	SW	123.7	225			VC	80.09994	1 in 30
9102	125.39	SW	123.7	225			VC	80.09994	1 in 30
4307	121.3	FO	119.25	150			VC	38.29487	1 in 147
2412	123.08	SW	120.96	300			CO	30.02278	1 in 28
2405		SW	0	150			VC	16.61417	
9404	126.54	SW	125.3	225			VC	31.14482	1 in 59
9404	126.54	SW	125.3	225			VC	31.14482	1 in 59
0304	125.63	CO	122.81	225			VC	24.04163	1 in 65
1501	127.56	CO	124.17	225			VC	34.05877	1 in 131
2402	122.22	CO	118.85	675			CO	41.36455	1 in 259
3303	121.44	CO	114.29	525			VC	27.22215	1 in 97
4403	123.27	FO	121.19	150			CO	20.44138	1 in 11
4410	123.3	SW	119.57	150			CO	28.01653	1 in 11
1502	125.48	FO	123.45	150			CO	35.67051	1 in 26
3207	121.06	CO	118.51	225			VC	80.39213	1 in 149
1406		CO		100			VC	12.503	
3213		CO		150			VC	2.280688	
4117		CO		100			VC	9.325867	
0130		CO		225			VC	21.25368	
9103	125.68	SW	123.43	225			VC	58.81641	
9103	125.68	SW	123.43	225			VC	58.81641	
9203	125.2	SW	123.57	300			VC	50.86196	1 in 116
9203	125.2	SW	123.57	300			VC	50.86196	1 in 116
0101	121.52	CO	119.19	300			VC	14.36404	1 in 42
0151	122.07	SW	120.18	300			VC	10.04988	
3233		FO		100			VC	2.893265	
3204	119.28	SW	117.85	225			PVC	28.25806	1 in 105
1304	121.25	CO	119.45	525			VC	27.20294	
4206	121.17	SW		225			VC	0.3112202	
2503	126.4	CO	125.17	150			VC	56.64804	1 in 94
0201	122.4	CO	120.6	225			VC	18.5859	1 in 15
3232		FO		100			VC	16.15425	
3314		FO		100			PVC	17.50356	
1105		SW		225			PVC	27.25902	
4218		SW		225			PE	76.42719	
1105		SW		225			PVC	8.880525	
3309		SW	0	150			VC	0.1323974	
0152	122.62	SW	121	225			VC	17.02939	
0408		CO		150			VC	36.69068	
0209		FO		150			VC	6.028591	
0122		CO		150			VC	29.94805	
3203	119.43	FO	117.2	150			PVC	23.53245	1 in 46
4120		CO		150			VC	2.641838	
0404		CO		150			VC	2.481389	
0404		CO		150			VC	2.481389	
2517		CO		100			VC	14.14794	
0306		CO		100			VC	13.65297	
1309		CO		150			VC	28.49817	
2219		FO		100			PVC	9.615021	
3103		SW		225			PE	9.789553	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
2104	119.03	SW	114.92	1500			CO	75.45509	1 in 443.853498
1404		CO		100			VC	2.920134	
0153	122.21	SW	120.16	225			VC	16.30049	1 in 116

LEGEND



All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- ● Manhole
- HS Head of System
- ES Extent of Survey
- RE Rodding Eye
- IN Inlet
- DP Discharge Point
- HY Vortex
- PE Penstock
- WO Washout Chamber
- VA Valve
- AV Air Valve
- NRV Non Return Valve
- SO Soakaway
- GU Gully
- CA Cascade
- FM Flow Meter
- HA Hatch Box
- OI Oil Interceptor
- SM Summit
- DS Drop Shaft
- OP Orifice Plate
- Side Entry Manhole
- Outfall
- ▦ Screen Chamber
- IC Inspection Chamber
- Bifurcation Chamber
- LH Lamp Hole
- T Junction / Saddle
- CA Catchpit
- VC Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- WwTW Ww Treatment Works
- ▲ Ww Pumping Station
- ST Septic Tank
- CK Control Kiosk
- ● DNM Network Monitoring Point
- ▽ Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforecd Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:

Scobell Street Bury,

OS sheet Number: SD7812SW
Scale: 1:1250 **Date:** 12/07/2024
Nodes: 204
Sheet: 4 of 4

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West

Appendix 3B: Response of 10th July 2024

From: wastewaterdeveloperservices@uuplc.co.uk
To: John Lees
Subject: RE: FW: Scobell Street, Bury: Proposed Drainage Strategy 6718/5.1
Date: 10 July 2024 13:33:36

Good Afternoon, John

Pre Development Enquiry for: Scobell Street, Bury   UU Reference Number : 05968433

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.
If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 6723 723 or refer to the link below:
https://www.unitedutilities.com/builders-developers/working-near-our-assets/

Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.
Our preferred point of discharge would be to the 375mm diameter public combined sewer within Church street located to the West of your proposed development at an unrestricted rate.
If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.
In accordance with our infrastructure plans we may ask you to change your point of connection. Therefore please contact us when you are ready to formalise your drainage proposals, we would suggest before you submit for Full Planning.

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.
Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.
This is outlined as follows, in order of priority:

1. **into the ground (infiltration);**
2. **to a surface waterbody;**
3. **to a surface water sewer or highway drain;**
4. **to a combined sewer.**

For guidance, The **North West SuDS Pro-Forma** provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.
The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).
The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.
A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of

the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:

https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

https://www.gov.uk/government/publications/groundwater-protection-position-statements

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

Waterbody

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you contact the Lead Local Flood Authority and/or Environment Agency to discuss a point of discharge to the waterbody (Walshaw Brook) located in the site boundary of the proposed site.

We would encourage you to identify and engage with any third party landowner and riparian owner to agree access and discharge rights to the water body if this is not in your ownership.

Highway Drainage

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you investigate the possibility of draining surface water to the highway drain where this ultimately discharges to a watercourse, by contacting the relevant Highway Authority.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the pubic sewerage network under any circumstances

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address: DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:

https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/

Connection Application

Although we may discuss and agree discharge points and rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below:

https://www.unitedutilities.com/builders-developers/wastewater-services/sewer-connections/sewer-connection/

We recommend that the detailed design should confirm the locations of all utilities in the area

and ensure that any proposed drainage solution considers routing and clash checks where required.
If we can be of any further assistance please don't hesitate to contact us further.

Sewer Adoptions

You have indicated on your application form that you intend to put the sewers forward for adoption (including any SuDS components that can come within the meaning of a sewer).
United Utilities assess adoption applications based on the current Design & Construction Guidance and local practices which have now replaced 'Sewers For Adoption 6th Edition'.
We recommend that you submit a pre design assessment to the sewer adoption mailbox (SewerAdoptions@uuplc.co.uk) stating pre design assessment in the title
Please refer to links below to obtain further guidance:
https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-adoptions/
Site drainage must be designed in accordance with Building Regulations, National Planning Policy, and local flood authority guidelines, we would recommend that you speak and make suitable agreements with the relevant statutory bodies.
If you intend to put forward your wastewater assets for adoption by United Utilities, the proposed detail design will be subject to a technical appraisal by an Adoption Engineer as we need to be sure that the proposals meets the requirements set out in the Design & Construction Guidance. The proposed design should give consideration to long term operability and give United Utilities a safe and cost effective proposal for the lifetime of the assets. In these cases, we strongly recommend that no construction commences until the detailed drainage design, submitted as part of the Section 104 application, has been assessed and accepted in writing by United Utilities. Any work carried out prior to the technical assessment being approved is done entirely at the developer's own risk and could be subject to change.

SuDS

If your development proposal incorporates any SuDS component(s) which interact with a sewer network you plan on offering for adoption to United Utilities; contact should be made with our technical team at your earliest convenience, please complete the 'Section 104 pre-application form : ' and include as much relevant detail as you can. These discussions can help prevent delays later in the development process.
Section 104 Pre application form (1b)
As per the sewerage sector guidance, all SuDS should be designed in accordance with the standards within the Design & construction guidance & the CIRIA SuDS manual (C753)

Codes For Adoption

The new Codes for Adoption are outlined on the Water UK Website. The link below takes you to their webpage:
https://www.water.org.uk/technical-guidance/developers-services/codes-for-adoption/
A free copy of the new Design & Construction Guidance can be downloaded via the link below**:**
https://www.water.org.uk/sewerage-sector-guidance-approved-documents/

Many thanks and kind regards,

James Darlington
Developer Engineer
Developer Services & Metering
M: 07917096253
unitedutilities.com

If you have received a great service today why not tell us?
Visit: unitedutilities.com/wow

--------------- Original Message ---------------
From: John Lees [j.lees@leesroxburgh.co.uk]

Appendix 3C: Response of 7th November 2024

From: seweradoptions@uuplc.co.uk
To: John Lees
Cc: jcoxon@emeryplanning.com; hleggett@emeryplanning.com; john.turton@wainestates.co.uk
Subject: RE: Land off Church Street/Scobell Street, Walshaw, Bury: Consultation Response - Your ref. DC/24/1914, Date 13-AUG-24 6718/5.1
Date: 07 November 2024 13:04:19
Attachments: image001.png
image002.png
image003.png
Export.pdf

Good Afternoon,

As requested the information for the flood volumes to manhole 2106 @ 1 in 100 year event is 232.1m3 and for Manhole 2101 is 662m3 please see a screen shot attached indicating the area and manholes.

Please note that United Utilities Water Limited (UUW) can only record and check flooding events which are reported to us, and we have to comply with our Regulators instructions on the qualification of flooding events.
Our response does not include:

- any sewer flooding events caused by blockages or collapses which are the result of third-party actions, natural events or other actions over which UUW has no control and not a facet of sewer capacity; or
- any historical sewer flooding events that have been resolved from investment in our infrastructure.

sewers.

Please note that our modelling data is indicative, and only representative of the 1:100year storm event.

And our plans are indicative and that everything will need to be check on site for confirmation.

Regards,

James Darlington
Developer Engineer
Developer Services & Metering
T: 01925 429095
M: 07917096253
unitedutilities.com

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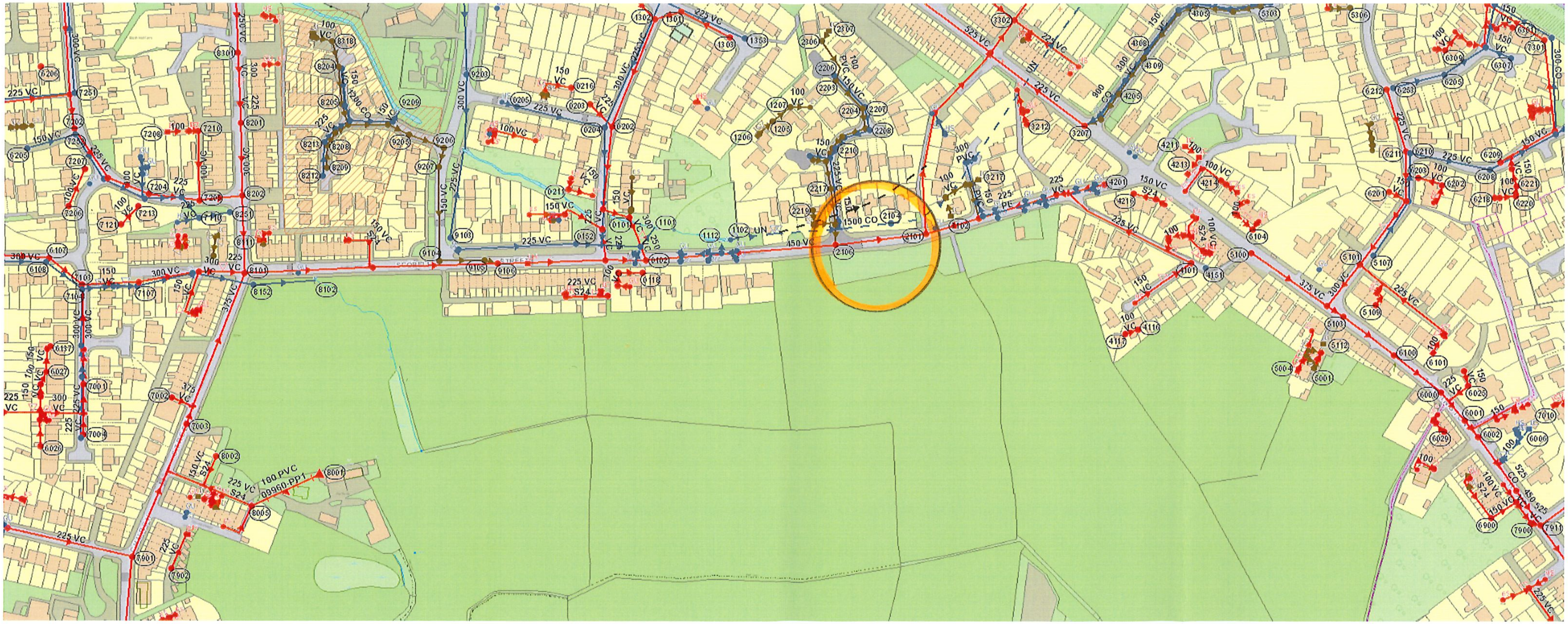
Visit: unitedutilities.com/wow


225 VC
300 VC
150 VC
100 VC
375 VC
1500 CO
900 CO
525 VC
225 PE
150 PVC
300 PVC
100 PVC
1200 CO
100 PVC
09960-PP1
S24
2100
2101
2104
2102
2217
2219
2210
2206
2208
2204
2209
2207
1102
1112
1101
0101
0102
0118
0152
9103
9104
9105
9106
8101
8102
8152
8001
8002
8005
7002
7003
7901
7902
6000
6001
6002
6100
6101
5100
5101
5103
5104
4101
4201
3207
3212
3217
3302
4209
4308
5308
6301
7301
7900
7911
6900

Appendix 4: Existing Run Off Rates

FEH Wallingford

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Lees Roxburgh
Site name:	6718 Scobell Street
Site location:	Bury

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.60544° N
Longitude:	2.32931° W
Reference:	1447428074
Date:	Jul 01 2024 10:02

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha): 1

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.333
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.08

Hydrological characteristics

	Default	Edited
SAAR (mm):	1137	1137
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

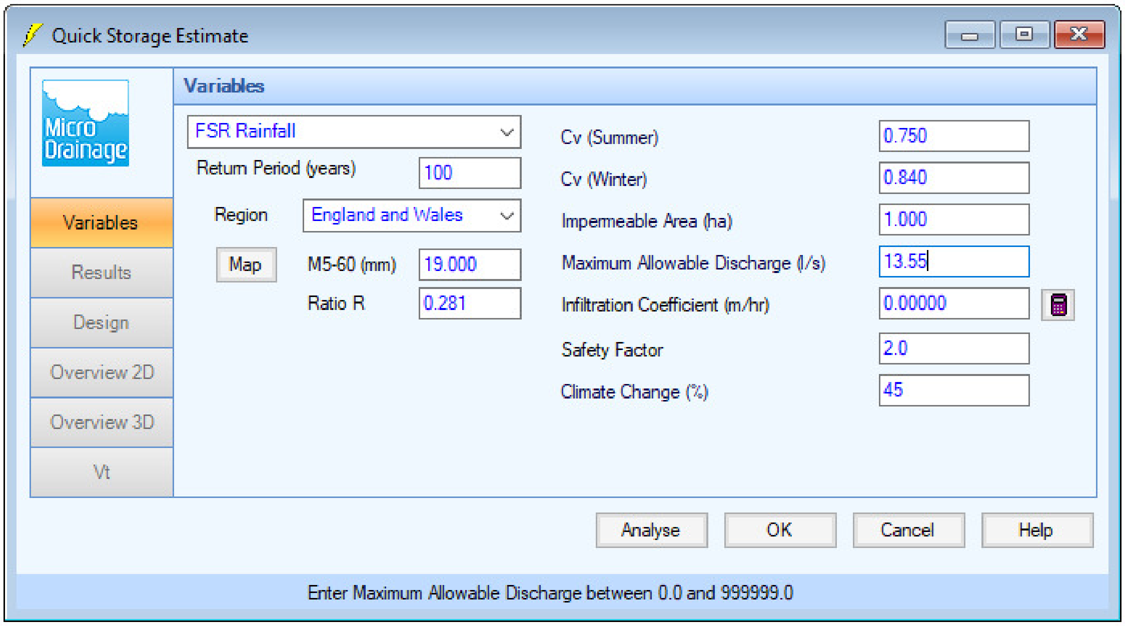
Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):		13.55
1 in 1 year (l/s):		11.78
1 in 30 years (l/s):		23.03
1 in 100 year (l/s):		28.18
1 in 200 years (l/s):		32.1

Appendix 5: Outline Drainage Strategy

Appendix 5A: Preliminary Surface Water Attenuation Calculations

6718 Scobell Street Bury – Storage Estimate per Hectare


Quick Storage Estimate
Micro Drainage
Variables
Results
Design
Overview 2D
Overview 3D
Vt
Map
Analyse
OK
Cancel
Help

Variables

FSR Rainfall

Return Period (years) 100

Region England and Wales

M5-60 (mm) 19.000

Ratio R 0.281

Cv (Summer) 0.750

Cv (Winter) 0.840

Impermeable Area (ha) 1.000

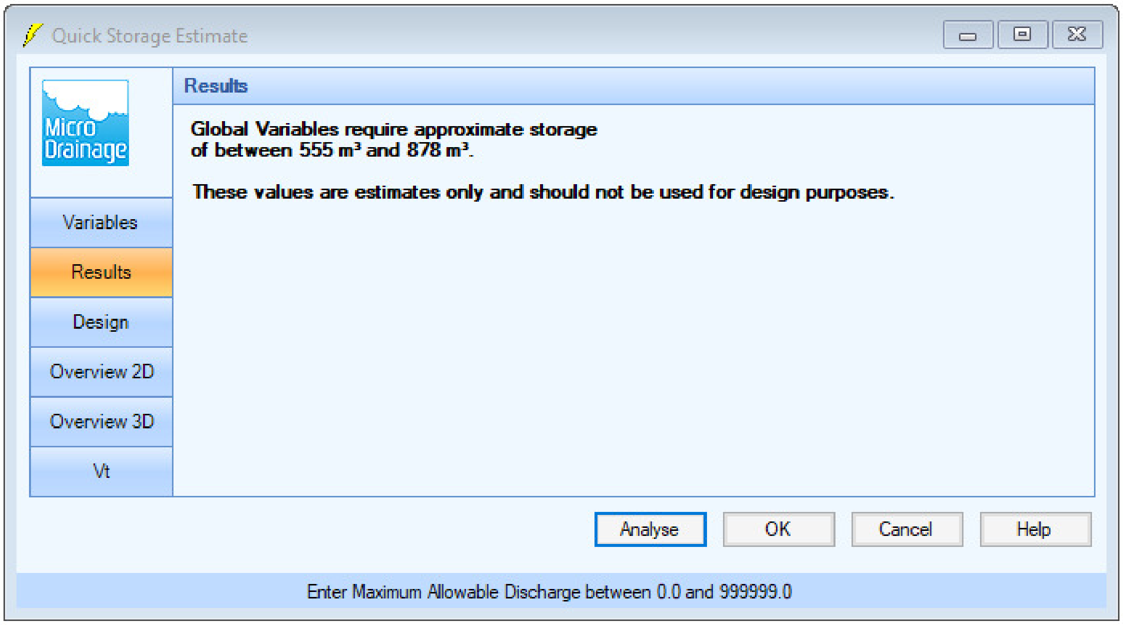
Maximum Allowable Discharge (l/s) 13.55

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 45

Enter Maximum Allowable Discharge between 0.0 and 999999.0


Quick Storage Estimate
Micro Drainage
Variables
Results
Design
Overview 2D
Overview 3D
Vt
Analyse
OK
Cancel
Help

Results

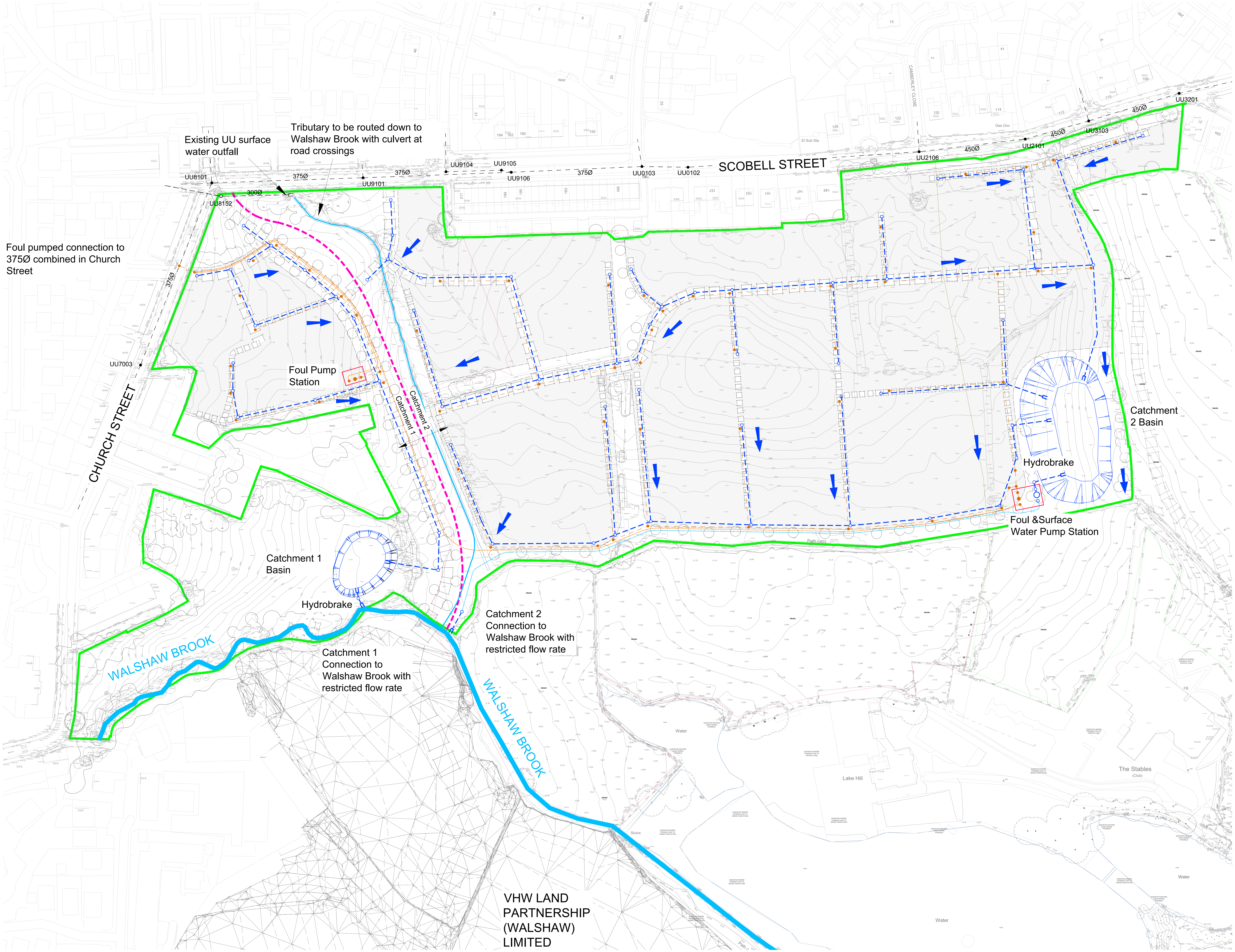
Global Variables require approximate storage of between 555 m³ and 878 m³.

These values are estimates only and should not be used for design purposes.

Enter Maximum Allowable Discharge between 0.0 and 999999.0

Appendix 5B: Outline Drainage Strategy

Drg. No. 6718/01-01A


SCOBELL STREET
CHURCH STREET
Existing UU surface water outfall
Tributary to be routed down to Walshaw Brook with culvert at road crossings
Foul pumped connection to 375Ø combined in Church Street
UU8101
UU8152
UU9101
UU9104
UU9105
UU9106
UU0103
UU0102
UU2106
UU2101
UU3103
UU3201
UU7003
300Ø
375Ø
450Ø
Foul Pump Station
Catchment 1
Catchment 2
Catchment 1 Basin
Hydrobrake
Catchment 2 Basin
Foul &Surface Water Pump Station
Catchment 2 Connection to Walshaw Brook with restricted flow rate
Catchment 1 Connection to Walshaw Brook with restricted flow rate
WALSHAW BROOK
VHW LAND PARTNERSHIP (WALSHAW) LIMITED
CAMBERLEY CLOSE
Lake Hill
The Stables (Club)
Water

Notes

KEY

- Walshaw Brook
- Approximate Catchment Split
- Existing UU Surface Water
- Existing UU Combined
- Proposed Foul Drainage
- Proposed Foul Rising Main
- Proposed Surface Water Drainage
- Proposed Surface Water Rising Main
- Catchment 1 Basin
- Catchment 2 Basin
- Catchment 1 - Foul Pump Station
- Catchment 2 - Foul and Surface Water Pump Station
- Exceedance Flows

Developable area = 7.23 Ha

Greenfield Runoff Rates - Per Hectare

QBar ... 13.55 l/s
Q1 ... 11.78 l/s
Q30 ... 23.03 l/s
Q100 ... 28.18 l/s

Surface Water Attenuation

The online pipe system and online attenuation basin to be designed to accommodate all storm events up to and including 1:100yr + 45% allowance for climate change.

Hydrobrake to restrict discharge rate to QBar rate prior to connection to Walshaw Brook.

Catchment 1 to drain by gravity to Walshaw Brook. Catchment 2 to be pumped to Walshaw Brook

Rev	Revision	By	Date
A	Minor amendments	RD	21.01.25

Wain ESTATES

Scobell Street
Bury

Outline Drainage Strategy

Lees Roxburgh
Consulting Engineers
The Genesis Centre
Science Park South
Birchwood
Warrington
WA3 7BH
01925 812898
office@leesroxburgh.co.uk
www.leesroxburgh.co.uk

Job No.	Drawing No.	Revision.
6718	01-01	A

Scale 1:1000@A1
Date December 2024

Drawn By	Designed By	Checked By
CB	CB	JEL

11 - Air Quality

Air Quality Assessment

Land off Church Street and Scobell Street, Walshaw

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Executive Summary

Redmore Environmental Ltd was commissioned by Wain Estates (Land) Limited to undertake an Air Quality Assessment in support of a residential development on land off Church Street and Scobell Street, Walshaw.

An Air Quality Assessment was undertaken to:

- Assess potential impacts associated with fugitive dust emissions during the construction phase of the proposed development;
- Assess potential impacts associated with road transport emissions during the operational phase of the proposed development; and,
- Identify any requirement for relevant mitigation measures.

Potential construction phase air quality impacts from fugitive dust emissions were assessed as a result of earthworks, construction and trackout activities. It is considered that the use of the identified site-specific control measures would provide suitable mitigation for a development of this size and nature and reduce potential impacts to an acceptable level.

Potential impacts during the operational phase of the proposals may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. Dispersion modelling was therefore undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the local highway network both with and without the development in place. Results were subsequently verified using local monitoring data.

Review of the dispersion modelling results indicated that predicted air quality impacts as a result of traffic generated by the development were not predicted to be significant at any sensitive location in the vicinity of the site.

Based on the assessment results, air quality factors are not considered a constraint to planning consent for the development.

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1.0 INTRODUCTION

1.1 Instruction

1.1.1 Redmore Environmental Ltd was commissioned by Wain Estates (Land) Limited to undertake an Air Quality Assessment in support of a residential development on land off Church Street and Scobell Street, Walshaw.

1.2 Site Location and Context

1.2.1 The site is located on land east of Church Street and south of Scobell Street, at approximate National Grid Reference (NGR): 378143, 412014. The relevant Local Authority (LA) is Bury Council (BC). Reference should be made to Figure 1 for a map of the site and surrounding area.

1.2.2 The proposals comprise an outline application for up to 300 dwellings with associated open space and infrastructure.

1.3 Assessment Scope

1.3.1 The proposals have the potential to cause air quality impacts at sensitive locations. As such, an Air Quality Assessment was undertaken to:

- Assess potential impacts associated with fugitive dust emissions during the construction phase of the development;
- Assess potential impacts associated with road transport emissions during the operational phase of the development; and,
- Identify any requirement for relevant mitigation measures.

1.3.2 This is detailed in the following report.

2.0 LEGISLATION AND POLICY

2.1 Legislation

2.1.1 The Air Quality Standards Regulations (2010) and subsequent amendments include Air Quality Limit Values (AQLVs) for the following pollutants:

- Nitrogen dioxide (NO_2);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10μm (PM_{10});
- Particulate matter with an aerodynamic diameter of less than 2.5μm ($PM_{2.5}$);
- Benzene; and,
- Carbon monoxide.

2.1.2 Air Quality Target Values were also provided for several additional pollutants. It should be noted that the AQLV for $PM_{2.5}$ stated in the Air Quality Standards Regulations (2010) was amended in the Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020).

2.1.3 The Air Quality Strategy (AQS) was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published on 28th April 2023[1]. The document contains standards, objectives and measures for improving ambient air quality, including a number of Air Quality Objectives (AQOs). These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedences over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

2.1.4 The Environmental Improvement Plan 2023[2] was published in January 2023, providing long term and Interim Targets in order to reduce population exposure to $PM_{2.5}$. The concentration target for 2040 was subsequently adopted in the Environmental Targets (Fine Particulate Matter) (England) Regulations (2023).

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[1] AQS: Framework for Local Authority Delivery, DEFRA, 2023.

[2] Environmental Improvement Plan 2023, DEFRA, 2023.

2.1.5 Table 1 presents the AQOs and Interim Target for pollutants considered within this assessment.

Table 1 Air Quality Objectives/Interim Target

Pollutant	Air Quality Objective/Interim Target	
	Concentration (µg/m³)	Averaging Period
NO_2	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM_{10}	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
$PM_{2.5}$	12(a)	Annual mean

Note: (a) Interim Target to be achieved by end of January 2028.

2.1.6 Table 2 summarises the advice provided in DEFRA guidance[3] on where the AQOs for pollutants considered within this report apply.

Table 2 Examples of Where the Air Quality Objectives Apply

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
Annual mean	All locations where members of the public might be regularly exposed Building façades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access Hotels, unless people live there as their permanent residence Gardens of residential properties Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
24-hour mean	All locations where the annual mean objective would apply, together with hotels Gardens of residential properties	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term

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[3] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Averaging Period	Objective Should Apply At	Objective Should Not Apply At
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Kerbside sites where the public would not be expected to have regular access

2.2 Local Air Quality Management

2.2.1 LAs are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 2, are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.3 Dust

2.3.1 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

> "any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

2.3.2 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

2.4 National Planning Policy

2.4.1 The revised National Planning Policy Framework[4] (NPPF) was published in December 2024 and sets out the Government's planning policies for England and how these are expected to be applied.

2.4.2 The purpose of the planning system is to contribute to the achievements of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

> "c) an environmental objective - to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

2.4.3 Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

> "Planning policies and decisions should contribute to and enhance the natural and local environment by:
>
> […]
>
> e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality […]."

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[4] NPPF, Ministry of Housing, Communities and Local Government, 2024.

2.4.4 The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

> "Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

2.4.5 The implications of the NPPF have been considered throughout this assessment.

2.5 National Planning Practice Guidance

2.5.1 The National Planning Practice Guidance[5] (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 to support the NPPF and make it more accessible. The air quality pages are summarised under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality considerations be relevant to the development management process?
6. What specific issues may need to be considered when assessing air quality impacts?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

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[5] https://www.gov.uk/guidance/air-quality--3.

2.5.2 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

2.6 Local Planning Policy

2.6.1 The Bury Unitary Development Plan (UDP)[6] was adopted by BC on 29th August 1997. A review of the document indicated that the policies of relevance to the assessment have been replaced by JP-P1 and JP-S5 in the Places for Everyone Joint Development Plan Document[7] as outlined below.

2.6.2 The 'Places for Everyone Joint Development Plan Document'[8] was adopted by the Greater Manchester Combined Authority (GMCA) on 21st March 2024. Review of the document indicated the following policy of relevance to this assessment:

> "Policy JP-P1: Sustainable Places
> We aim to become one of the most liveable city regions in the world, consisting of a series of beautiful, healthy and varied places, each having the following key attributes that all development, wherever appropriate, should be consistent with:
> 1. Distinctive, with a clear identity that:
>   A. Conserves and enhances the natural environment, landscape features, historic environment and local history and culture;
>   B. Enables a clear understanding of how the place has developed; and
>   C. Respects and acknowledges the character and identity of the locality in terms of design, siting size, scale and materials used.
> 2. Visually stimulating, creating interesting and imaginative environments which raise the human spirit through the use of green space, public art and quality design
> 3. Socially inclusive:
>   A. Responding to the needs of all parts of society;
>   B. Enabling everyone to participate equally and independently;
>   C. Providing opportunities for social contact and support; and
>   D. Promoting a sense of community

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[6] Bury UDP, BC, 1997.

[7] Places for Everyone Joint Development Plan Document, GMCA, 2024.

[8] Places for Everyone Joint Development Plan Document, GMCA, 2024.

4. Resilient, capable of dealing with major environmental events
5. Adaptable, able to respond easily to varied and changing needs and technologies
6. Durable, being built to last and using robust materials that reflect local character, weather well and are easily maintained
7. Resource-efficient with:
   A. A low carbon footprint;
   B. Efficient use of land;
   C. Minimise use of new materials;
   D. High levels of recycling
8. Safe, including by designing out crime and terrorism, reducing opportunities for anti-social behaviour and by ensuring that development make appropriate provision for response and evacuation in the case of emergency or disaster
9. Supported by critical infrastructure, such as energy, water and drainage and green spaces
10. Functional and convenient, enabling people and uses to act efficiently with minimal effort, and responding to needs relating to servicing, recycling facilities, refuse collection and storage
11. Incorporating inclusive design within all spaces with support for tackling inequality and poverty to form part of creating sustainable places
12. Legible, being easy to understand and navigate with the protection and enhancement of key views and new development well-integrated into the place
13. Easy to move around for those if all mobility levels, particularly walking and cycling, with enjoyable routes free from obstacles and disorienting stimuli and with places to rest
14. Well-connected to other places, particularly by public transport and digital infrastructure enabling everyone to take advantage of the employment, cultural and leisure opportunities across Greater Manchester and beyond
15. Comfortable and inviting, with indoor and outdoor environments:
   A. Offering a high level of amenity that minimizes exposure to pollution; and
   B. Addressing microclimate issues such as sunlight, indoor air quality, overheating, shade, wind and shelter
16. Incorporating high quality and well managed green infrastructure and quality public realm, with:
   A. Opportunities for recreation and outdoor play for children, and interaction between the generations;

B. Public and private spaces clearly distinguished;
C. Development clearly defining, and promoting activity within, public spaces;
D. High quality landscaping with schemes
17. Well-served by local shops, services and amenities, including education and health facilities."

"Policy JP-S5: Clean Air

A comprehensive range of measures will be taken to support improvements in air quality, focusing particularly on locations where people live, where children learn and play, where there are impacts on the green infrastructure network and where air quality targets are not being met, including:

1. Locating and designing development, and focusing transport investment, so as to reduce reliance on forms of transport that generate air pollution;
2. Determining planning applications having regard to the most recent development and planning control guidance published jointly by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK), and the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction, or relevant successor guidance, including the requirement for developers to submit construction management plans as appropriate;
3. Requiring applications for developments that could have an adverse impact on air quality to submit relevant air pollution data so that adverse impacts on air quality can be fully assessed and development only permitted where they are acceptable and/or suitable mitigation can be provided;
4. Restricting developments that would generate significant point source pollution such as some types of industrial activity and energy generation;
5. Significantly expanding the existing commercial network of electric vehicle charging points, both for public and private use, including as part of new developments;
6. Implementing the Clean Air Plan and associated measures;
7. Facilitating the more sustainable distribution of goods within the urban area, including through accommodating urban consolidation centres and urban distribution centres that use ultra-low-emission vehicles, and local delivery facilities to reduce repeat delivery attempts;

> 8. Designing streets to avoid trapping air pollution at ground level, including through the appropriate location and scale of buildings and trees;
> 9. Controlling traffic and parking within and around schools, early years sites and other locations that are particularly sensitive to air quality;
> 10. Promoting actions that help remove pollutants from the air, such as enhancing the green infrastructure network and using innovative building materials that capture air pollutants; and
> 11. Development should be located in areas that maximise the use of sustainable travel modes and be designed to minimise exposure to high levels of air pollution, particularly for vulnerable users."

2.6.3 The above policies were taken into consideration throughout the undertaking of the assessment.

2.7 Greater Manchester Air Quality Plan

2.7.1 The UK Government has instructed a number of LAs to take rapid action to reduce harmful roadside levels of NO_2 within their areas of jurisdiction in the quickest possible timeframe. The GMCA and Transport for Greater Manchester (TfGM) have collaborated to develop a Clean Air Plan (CAP) to ensure Greater Manchester achieves compliance with the relevant AQOs for NO_2 by 2026 at the latest. The initial CAP proposal included implementation of a Class C charging Clean Air Zone. The GMCA has subsequently updated the CAP proposals[9] to comprise an investment-led, non-charging approach. This is currently under review by the UK Government. The implications of the CAP were taken into account during the undertaking of this assessment.

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[9] Case for a New GM Clean Air Plan, GMCA and TfGM, 2022.

3.0 METHODOLOGY

3.1 Introduction

3.1.1 The proposed development has the potential to cause air quality impacts during the construction and operational phases. These have been assessed in accordance with the following methodology, which was agreed with Rebecca Jones, Environmental Protection Department at BC, on 31st July 2024.

3.2 Construction Phase Assessment

3.2.1 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction V2.2'[10].

3.2.2 Activities on the proposed construction site have been divided into three types to reflect their different potential impacts. These are:

- Earthworks;
- Construction; and,
- Trackout.

3.2.3 The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and,
- The risk of health effects due to a significant increase in exposure to PM_{10}.

3.2.4 The assessment steps are detailed below.

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[10] Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

Step 1 - Screen the Need for an Assessment

3.2.5 Step 1 screens the requirement for a more detailed assessment. Should human receptors be identified within 250m from the boundary or 50m from the construction vehicle route up to 250m from the site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or the construction vehicle route up to 250m from the site entrance, then the assessment also proceeds to Step 2.

3.2.6 Should sensitive receptors not be present within the relevant distances then **negligible** impacts would be expected and further assessment is not necessary.

Step 2 - Assess the Risk of Dust Impacts

3.2.7 Step 2 assesses the risk of potential dust impacts. A site is allocated a risk category based on two factors:

- The scale and nature of the works, which determines the magnitude of dust arising as: small, medium or large (Step 2A); and,
- The sensitivity of the area to dust impacts, which can be defined as low, medium or high sensitivity (Step 2B).

3.2.8 The two factors are combined in Step 2C to determine the risk of dust impacts without mitigation applied.

3.2.9 Step 2A defines the potential magnitude of dust emission through the construction phase. The relevant criteria are summarised in Table 3.

Table 3 Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Earthworks	• Total site area greater than 110,000m^2 • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • More than 10 heavy earth moving vehicles active at any one time • Formation of bunds greater than 6m in height

Magnitude	Activity	Criteria
	Construction	- Total building volume greater than 75,000m^3 - On site concrete batching - Sandblasting
	Trackout	- More than 50 Heavy Duty Vehicle (HDV) trips per day - Potentially dusty surface material (e.g. high clay content) - Unpaved road length greater than 100m
Medium	Earthworks	- Total site area 18,000m^2 to 110,000m^2 - Moderately dusty soil type (e.g. silt) - 5 to 10 heavy earth moving vehicles active at any one time - Formation of bunds 3m to 6m in height
	Construction	- Total building volume 12,000m^3 to 75,000m^3 - Potentially dusty construction material (e.g. concrete) - On site concrete batching
	Trackout	- 20 to 50 HDV trips per day - Moderately dusty surface material (e.g. high clay content) - Unpaved road length 50m to 100m
Small	Earthworks	- Total site area less than 18,000m^2 - Soil type with large grain size (e.g. sand) - Less than 5 heavy earth moving vehicles active at any one time - Formation of bunds less than 3m in height
	Construction	- Total building volume less than 12,000m^3 - Construction material with low potential for dust release (e.g. metal cladding or timber)
	Trackout	- Less than 20 HDV trips per day - Surface material with low potential for dust release - Unpaved road length less than 50m

3.2.10 Step 2B defines the sensitivity of the area around the development to potential dust impacts. The sensitivities of specific receptors are shown in Table 4.

Table 4 Construction Dust - Sensitivities of People and Ecological Receptors

Receptor Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	• Users expect high levels of amenity • High aesthetic or value property • People expected to be present continuously for extended periods of time • Locations where members of the public are exposed over a time period relevant to the AQO for PM_{10}. e.g. residential properties, hospitals, schools and residential care homes	• Internationally or nationally designated site e.g. Special Area of Conservation
Medium	• Users would expect to enjoy a reasonable level of amenity • Aesthetics or value of their property could be diminished by soiling • People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g. parks and places of work	• Nationally designated site e.g. Sites of Special Scientific Interest
Low	• Enjoyment of amenity would not reasonably be expected • Property would not be expected to be diminished in appearance • Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, farmland, short term car parks and roads	• Locally designated site e.g. Local Nature Reserve

3.2.11 The criteria for determining the sensitivity of the area to dust soiling effects on people and property is summarised in Table 5.

Table 5 Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 250
High	More than 100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 250
	1 - 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

3.2.12 Table 6 outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 6 Construction Dust - Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Background Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			Less than 20	Less than 50	Less than 100	Less than 250
High	Greater than 32µg/m^3	More than 100	High	High	High	Medium
		10 - 100	High	High	Medium	Low
		1 - 10	High	Medium	Low	Low
	28 - 32µg/m^3	More than 100	High	High	Medium	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low
	24 - 28µg/m^3	More than 100	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	Less than 24µg/m^3	More than 100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	Greater than 32µg/m^3	More than 10	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	28 - 32µg/m^3	More than 10	Medium	Low	Low	Low
		1 - 10	Low	Low	Low	Low

Receptor Sensitivity	Background Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)			
			Less than 20	Less than 50	Less than 100	Less than 250
	24 - 28µg/m³	More than 10	Low	Low	Low	Low
		1 -10	Low	Low	Low	Low
	Less than 24µg/m³	More than 10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	-	1 or more	Low	Low	Low	Low

3.2.13 Table 7 outlines the criteria for determining the sensitivity of the area to ecological impacts.

Table 7 Construction Dust - Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (m)	
	Less than 20	Less than 50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

3.2.14 Step 2C combines the dust emission magnitude with the sensitivity of the area to determine the risk of unmitigated impacts.

3.2.15 Table 8 outlines the risk category from earthworks, construction and trackout activities.

Table 8 Construction Dust - Dust Risk Category from Earthworks, Construction and Trackout Activities

Receptor Sensitivity	Dust Emission Magnitude		
	Large	Medium	Small
High	High	Medium	Low
Medium	Medium	Medium	Low
Low	Low	Low	Negligible

Step 3 - Site-specific Mitigation

3.2.16 Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance[11] to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with **negligible** risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

Step 4 - Determine Significant Effects

3.2.17 Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final step is to determine the significance of any residual impacts. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be **not significant**.

3.2.18 The determination of significance relies on professional judgement and reasoning should be provided as far as practicable. The IAQM guidance suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix 2.

3.3 Operational Phase Assessment

3.3.1 The development has the potential to affect existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site. Potential impacts have therefore been defined by predicting pollutant concentrations at sensitive locations using dispersion modelling for the following scenarios:

- 2022 - Verification;
- Opening year Do-Minimum (DM) (predicted traffic flows in 2030 should the proposals not proceed); and,
- Opening year Do-Something (DS) (predicted traffic flows in 2030 should the proposals be completed).

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[11] Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

3.3.2 Reference should be made to Appendix 1 for assessment input data and details of the verification process.

3.3.3 Locations sensitive to potential changes in off-site pollutant concentrations were identified within 200m of the highway network in accordance with the guidance provided within the Design Manual for Roads and Bridges (DMRB)[12] on the likely limits of pollutant dispersion from road sources. The criteria provided within DEFRA guidance[13] on where the AQOs apply, as summarised in Table 2, was utilised to determine worst-case receptor positions in the vicinity of links likely to be affected by changes in traffic flows as a result of the development.

3.3.4 The significance of predicted air quality impacts was determined in accordance with the guidance provided within the IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality'[14]. Using this methodology impacts were defined based on the interaction between the predicted pollutant concentration from the DS scenario and the magnitude of change between the DM and DS scenarios, as outlined in Table 9.

Table 9 Significance of Operational Phase Road Vehicle Exhaust Emissions Impact

Concentration at Receptor in Assessment Year	Predicted Concentration Change as Proportion of AQO/Interim Target (%)			
	1	2 - 5	6 - 10	> 10
75% or less of AQO/Interim Target	Negligible	Negligible	Slight	Moderate
76 - 94% of AQO/Interim Target	Negligible	Slight	Moderate	Moderate
95 - 102% of AQO/Interim Target	Slight	Moderate	Moderate	Substantial
103 - 109% of AQO/Interim Target	Moderate	Moderate	Substantial	Substantial
110% or more of AQO/Interim Target	Moderate	Substantial	Substantial	Substantial

3.3.5 The matrix shown in Table 9 is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which makes it clearer which cell the impact falls within. It should be noted that changes of 0%, i.e. less than 0.5%, are described as **negligible**.

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[12] LA 105: Air Quality, Highways England, 2019.

[13] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

[14] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

3.3.6 Following the prediction of impacts at discrete receptor locations, the IAQM document[15] provides guidance on determining the overall air quality impact significance of the operation of a development. The following factors are identified for consideration by the assessor:

- The existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and,
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

3.3.7 The IAQM guidance states that an assessment must reach a conclusion on the likely significance of the predicted impact. Where the overall effect is **moderate** or **substantial**, the effect is likely to be considered **significant**, whilst if the impact is **slight** or **negligible**, the impact is likely to be considered **not significant**. It should be noted that this is a binary judgement of either it is **significant** or it is **not significant**.

3.3.8 The determination of significance relies on professional judgement and reasoning has been provided as far as practicable. The IAQM guidance[16] suggests the provision of details of the assessor's qualifications and experience. These are provided in Appendix 2.

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[15] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

[16] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

4.0 BASELINE

4.1 Introduction

4.1.1 Existing air quality conditions in the vicinity of the proposed development site were identified in order to provide a baseline for assessment. These are detailed in the following Sections.

4.2 Local Air Quality Management

4.2.1 As required by the Environment Act (1995), as amended by the Environment Act (2021), BC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that annual mean concentrations of NO_2 are above the AQO within the borough. As such, a number of roads within Bury have been included within the GMCA AQMA. This is described as follows:

> "This is the part of the Greater Manchester Combined Authority AQMA located within the Bury Council area."

4.2.2 The development is located approximately 1.5km north-west of the AQMA. As such, there is the potential for vehicles travelling to and from the site to increase pollution levels in this sensitive area. This has been considered throughout the assessment.

4.2.3 BC have concluded that concentrations of all other pollutants considered within the AQS are currently below the relevant AQOs. As such, no further AQMAs have been designated.

4.3 Air Quality Monitoring

4.3.1 Monitoring of pollutant concentrations is undertaken by BC throughout their area of jurisdiction. Data has also been collected by the GMCA to inform the CAP. Recent NO_2 concentrations recorded in the vicinity of the development, as provided in the 'Greater Manchester LAQM and CAP NO_2 Diffusion Tube Results 2011-2022'[17] spreadsheet, are shown in Table 10. Exceedences of the AQO are shown in **bold**.

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[17] Greater Manchester LAQM and CAP NO2 Diffusion Tube Results 2011-2022, GMCA, 2023.

Table 10 Monitoring Results

Monitoring Site		Monitored NO_2 Concentration (μg/m³)		
		2020	2021	2022
BUR03[(a)]	Bury Bridge	-	-	22.6
BU6NO	Bulton Road, Bury	27.5	30.4	30.7
BU9NO	Crostons Road	27.1	26.9	30.2
BU10NO	Bury Bridge	27.3	27.9	30.7
BU14NO	Angouleme Way	26.9	26.8	30.7
CAP_BURY_014	B6214 (Brandlesholme Road)	29.4	29.0	33.1
CAP_BURY_013	B6213 (Tottingham Road)	24.2	27.0	31.2
CAP_BURY_012	B6213 (Crostons Road)	23.7	27.8	26.6
CAP_BURY_037[(a)]	Crostons Road	-	-	28.8
CAP_BURY_038[(a)]	Bury Bridge	-	-	29.2
CAP_BURY_039[(a)]	Bury Bridge	-	-	30.9
CAP_BURY_018	A58 (Bolton Road)	23.5	29.3	27.3
CAP_BURY_019	A58 (Bolton Road)	24.9	27.8	28.5
CAP_BURY_016	A58 (Bolton Road)	34.7	35.0	**42.7**
CAP_BURY_020	A58 (Bolton Road)	36.3	38.3	39.9
CAP_BURY_017	A58 (Bolton Road)	23.4	25.7	26.4

Note: (a) Monitor commissioned in 2022.

4.3.2 As shown in Table 10, annual mean NO_2 concentrations were above the AQO of 40μg/m³ at the CAP_BURY_016 monitor in 2022. As the site is positioned at a roadside location within an AQMA, elevated results would be expected. Levels were below the AQO at all remaining monitors in recent years. Reference should be made to Figure 2 for a map of the survey positions.

4.3.3 Pollutant concentrations during 2020 and 2021 were affected by changes to travel patterns associated with the COVID-19 pandemic. The results should therefore be viewed with caution. However, data for 2022 is now considered representative of post-pandemic conditions. This is supported by the IAQM[18], who have adopted the following position:

> "ambient air quality monitoring data for the year 2022 and beyond is generally considered to represent the current post-pandemic baseline."

4.3.4 Monitoring of PM_{10} or $PM_{2.5}$ concentrations is not undertaken within the vicinity of the site.

4.4 Background Pollutant Concentrations

4.4.1 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of air quality. The proposed development site is partly located in four grid squares. Data for these locations was downloaded from the DEFRA website[19] for the purpose of the assessment and is summarised in Table 11.

Table 11 Background Pollutant Concentration Predictions

NGR (m)	Predicted Background Pollutant Concentration (µg/m³)								
	NO_2			PM_{10}			$PM_{2.5}$		
	2022	2024	2030	2022	2024	2030	2022	2024	2030
377500, 411500	10.47	9.79	8.56	10.21	10.02	9.86	6.94	6.79	6.67
377500, 412500	10.68	9.98	8.71	10.40	10.20	10.04	7.06	6.91	6.79
378500, 411500	11.58	10.83	9.46	10.77	10.58	10.42	7.29	7.14	7.02
378500, 412500	10.79	10.08	8.80	10.89	10.70	10.54	7.21	7.06	6.94

4.4.2 As shown in Table 11, predicted background NO_2, PM_{10} and $PM_{2.5}$ concentrations are below the relevant AQOs and Interim Target at the development site.

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[18] Use of 2020 and 2021 Monitoring Datasets - IAQM Position Statement V1.1, IAQM, 2023.

[19] http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018.

4.5 Sensitive Receptors

4.5.1 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. These have been defined for construction dust and road vehicle exhaust emission impacts in the following Sections.

Construction Phase Sensitive Receptors

4.5.2 Receptors sensitive to potential dust impacts during earthworks and construction were identified from a desk-top study of the area up to 250m from the development boundary. These are summarised in Table 12.

Table 12 Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	More than 100	0
Up to 50	More than 100	0
Up to 100	More than 100	-
Up to 250	More than 100	-

4.5.3 Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 250m of the site access. These are summarised in Table 13.

Table 13 Trackout Dust Sensitive Receptors

Distance from Site Access Route (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	More than 100	0
Up to 50	More than 100	0

4.5.4 There are no ecological receptors within 50m of the development boundary or the access route within 500m of the site entrance. As such, ecological impacts have not been assessed further within this report.

4.5.5 Based on the criteria shown in Table 4, the sensitivity of the receiving environment to potential dust impacts was determined as **high**. This was because the identified receptors included residential properties and Christ Church C.E. Primary School.

Operational Phase Sensitive Receptors

4.5.6 Locations sensitive to potential operational phase road vehicle exhaust emission impacts were identified from a desk-top study and are summarised in Table 14. It should be noted that the receptor height was defined as the lowest floor of relevant exposure to allow for less sensitive land uses, such as retail space, at ground level.

Table 14 Operational Phase Road Vehicle Exhaust Emission Sensitive Receptor Locations

Receptor		NGR (m)		Height (m)
		X	Y	
R1	Residential - B6213 Market Street	377682.4	412773.0	1.5
R2	Residential - Booth Street	377711.0	412720.9	1.5
R3	Residential - Booth Street	377734.4	412604.1	1.5
R4	Residential - Booth Street	377801.3	412516.7	1.5
R5	Residential - Scobell Street	377836.7	412173.4	1.5
R6	Residential - Church Street	377810.6	412147.5	1.5
R7	Residential - Bank Street	377700.7	411823.4	1.5
R8	Residential - Hall Street	377594.2	411821.1	1.5
R9	Residential - High Stret	377602.4	411741.7	1.5
R10	Residential - Lowercroft Road	377611.0	411240.9	1.5
R11	Residential - Lowercroft Road	377513.4	410443.1	1.5
R12	Residential - B6196 Church Street	377443.8	410414.9	1.5
R13	Residential - B6292 Sterling Road	377458.7	410310.1	1.5
R14	Residential - B6196 Ainsworth Road	378285.0	410592.2	1.5
R15	Residential - B6196 Ainsworth Road	379405.7	410731.3	1.5
R16	Residential - A58 Bolton Road	378441.6	409909.3	1.5

Receptor		NGR (m)		Height (m)
		X	Y	
R17	Residential - A58 Bolton Road	379189.9	410486.0	1.5
R18	Residential - A58 Bolton Road	379541.1	410792.3	3.5
R19	Residential - A58 Bolton Road	379582.9	410832.1	3.5
R20	Residential - A58 Bolton Road	379658.5	410887.1	3.5
R21	Residential - B6216 Millett Street	379825.2	410876.1	1.5
R22	Residential - Peel Way	380067.2	410931.3	1.5
R23	Residential - Sankey Street	379923.1	410788.8	1.5
R24	Dream Big Little One Nursery	379934.0	410741.2	1.5
R25	Residential - Jubilee Way	379974.2	410670.6	1.5
R26	Spring Lane School	380176.1	410552.2	1.5
R27	Townside Primary Care Centre	380425.9	410459.0	3.5
R28	Residential - A56 Manchester Road	380135.5	410302.4	1.5
R29	Residential - A56 Manchester Road	380165.2	410205.1	1.5
R30	Residential - A56 Manchester Road	380226.9	409987.9	1.5
R31	Residential - B6214 Brandlesholme Road	379637.7	411186.5	1.5
R32	Residential - B6214 Brandlesholme Road	379656.5	411262.3	1.5
R33	Residential - B6214 Brandlesholme Road	379679.3	411273.3	1.5
R34	Woodbank Primary School	379549.1	411902.8	1.5
R35	Residential - B6214 Brandlesholme Road	379186.4	412676.1	1.5
R36	Residential - B6213 Tottington Road	379613.4	411192.0	1.5
R37	Farraday House	379450.8	411379.9	1.5
R38	Residential - B6213 Bury Road	378527.5	412149.0	1.5
R39	Residential - B6213 Bury Road	378413.5	412234.5	1.5
R40	Residential - B6213 Bury Road	378162.9	412458.7	1.5
R41	Residential - B6213 Bury Road	377841.1	412660.3	1.5
R42	Residential - Scobell Street	378069.6	412160.1	1.5

Receptor		NGR (m)		Height (m)
		X	Y	
R43	Residential - Scobell Street	378384.8	412200.1	1.5
R44	Residential - Walshaw Street	377657.5	411669.2	1.5
R45	Residential - Walshaw Street	378445.1	411624.8	1.5
R46	Residential - Walshaw Street	379208.6	411360.4	1.5
R47	Residential - Walshaw Street	379584.7	411173.3	1.5

4.5.7 Reference should be made to Figure 3 for a graphical representation of road vehicle exhaust emission sensitive receptor locations.

5.0 CONSTRUCTION PHASE ASSESSMENT

5.1 Introduction

5.1.1 There is the potential for air quality impacts as a result of the construction of the proposed development. These are assessed in the following Sections.

5.2 Step 1 - Screen the Need for an Assessment

5.2.1 The undertaking of activities such as excavation, ground works, cutting, construction, concrete batching and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from haul roads and highway surfaces.

5.2.2 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

5.2.3 The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 250m of the site boundary. As such, a detailed assessment of potential dust impacts was required.

5.3 Step 2a - Define the Potential Dust Emission Magnitude

Earthworks

5.3.1 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as site levelling and landscaping. The proposed site covers an area greater than 110,000m^2. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from earthworks is therefore **large.**

Construction

5.3.2 Due to the size of the development, the total building volume is likely to be greater than 75,000m^3. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from construction is therefore **large**.

Trackout

5.3.3 Based on the site area, it is anticipated that the unpaved road length may be greater than 100m during certain stages of construction. In accordance with the criteria outlined in Table 3, the magnitude of potential dust emissions from trackout is therefore **large.**

5.4 Step 2b - Define the Sensitivity of the Area

Dust Soiling

5.4.1 Table 12 shows that there are more than 100 **high** sensitivity receptors within 20m of the site boundary. The sensitivity of the area with respect to dust soiling from earthworks and construction, as defined using the criteria summarised in Table 5, is therefore considered to be **high**.

5.4.2 Table 13 shows that there are more than 100 **high** sensitivity receptors within 20m of the road network within 250m of the site access. The sensitivity of the area with respect to dust soiling from trackout, as defined using the criteria summarised in Table 5, is therefore considered **high**.

Human Health

5.4.3 As shown in Table 11, the annual mean PM_{10} background concentration at the site is 10.70μg/m^3. As shown in Table 6, where the background annual mean PM_{10} concentration is below 24μg/m^3 and there are more than 100 **high** sensitivity receptors within 20m of the site boundary, the sensitivity of the area to potential human health from earthworks and construction is **medium**.

5.4.4 There are more than 100 **high** sensitivity receptors within 20m of the road network within 250m of the site access. The sensitivity of the area with respect to human health from trackout, as defined using the criteria in Table 6, is therefore considered to be **medium**.

5.5 Step 2c - Define the Risk of Dust Impacts

5.5.1 The derived dust emission magnitude for each activity has been combined with the sensitivity of the area to determine the risk of unmitigated impacts in line with the methodology set out in Table 8. A summary of the risk from each dust generating activity is provided in Table 15.

Table 15 Summary of Potential Unmitigated Dust Risks

Potential Impact	Risk		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Medium	Medium	Medium

5.5.2 As indicated in Table 15, the potential risk of dust soiling is **high** from earthworks, construction and trackout. The potential risk of human health impacts is **medium** from earthworks, construction and trackout.

5.5.3 It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual risk is likely to be lower than that predicted during the majority of the construction phase.

5.6 Step 3 - Site-specific Mitigation

5.6.1 The IAQM guidance[20] provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. These have been adapted for the development site as summarised in Table 16. These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan or similar if required by the LA.

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[20] Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

Table 16 Fugitive Dust Emission Mitigation Measures

Issue	Control Measure
Communications	• Develop and implement a stakeholder communications plan that includes community engagement before work commences on site • Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager • Display the head or regional office contact information • Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the LA
Site management	• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken • Make the complaints log available to the LA upon request • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book
Monitoring	• Undertake daily on-site and off-site inspection to monitor dust, record inspection results, and make the log available to the LA upon request • Carry out regular site inspections, record inspection results, and make an inspection log available to the LA upon request • Increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
Site preparation	• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible • Erect solid screens or barriers around dusty activities or the site • Fully enclose site or specific operations where there is a high potential for dust production and they are active for an extensive period • Avoid site runoff of water or mud • Keep site fencing, barriers and scaffolding clean using wet methods • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used • Cover, seed or fence stockpiles to prevent wind whipping
Operating vehicle/machinery and sustainable travel	• Ensure all vehicles switch off engines when stationary - no idling vehicles • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable • Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials

Issue	Control Measure
Operations	• Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques • Ensure an adequate water supply on the site for effective dust suppression, using non-potable water where possible and appropriate • Use enclosed chutes and conveyors and covered skips • Minimise drop heights and use fine water sprays wherever appropriate • Ensure equipment is available to clean any dry spillages, and clean up spillages as soon as reasonably practicable using wet cleaning methods
Waste management	• Avoid bonfires or burning of waste materials
Earthworks	• Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil as soon as practicable • Only remove the cover in small areas and not all at once
Construction	• Avoid scabbling (roughening of concrete surfaces) if possible • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery
Trackout	• Use water-assisted dust sweeper on access and local roads, if required • Avoid dry sweeping of large areas • Ensure vehicles entering and leaving site are covered to prevent escape of materials • Implement a wheel washing system, if required • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits • Access gates to be located at least 10m from receptors where possible

5.7 Step 4 - Determine Significant Effects

5.7.1 Assuming the relevant mitigation measures outlined in Table 16 are implemented, the residual impacts from all dust generating activities is predicted to be **not significant**, in accordance with the IAQM guidance[21].

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[21] Guidance on the Assessment of Dust from Demolition and Construction V2.2, IAQM, 2024.

6.0 OPERATIONAL PHASE ASSESSMENT

6.1 Introduction

6.1.1 The development has the potential to increase concentrations of NO_2, PM_{10} and $PM_{2.5}$ as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. An assessment was therefore undertaken using dispersion modelling in order to quantify potential changes in pollutant concentrations at sensitive locations in the vicinity of the site.

6.1.2 The assessment considered the following scenarios:

- 2022 - Verification;
- 2030 - DM; and,
- 2030 - DS.

6.1.3 The DM scenario (i.e. without development) included baseline traffic data, inclusive of anticipated growth and committed developments for the relevant assessment year. The DS scenario (i.e. with development) included baseline traffic data, inclusive of anticipated growth and committed developments for the relevant assessment year, in addition to predicted vehicle trips associated with the operation of the proposals.

6.1.4 For the purpose of the assessment, traffic data for 2030 was utilised as the development opening year. Air quality is predicted to improve in the future. However, in order to provide a robust assessment, emission factors for 2022 were utilised within the dispersion model. The use of 2030 traffic data and 2022 emission factors is considered to provide a worst-case scenario and therefore a sufficient level of confidence can be placed within the predicted pollution concentrations.

6.1.5 Reference should be made to Appendix 1 for full assessment input details.

6.2 Predicted Concentrations

6.2.1 Annual mean NO_2 concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 17.

Table 17 Predicted Annual Mean NO_2 Concentrations

Receptor		Predicted Annual Mean NO_2 Concentration (µg/m^3)		
		DM	DS	Change
R1	Residential - B6213 Market Street	24.68	24.75	0.07
R2	Residential - Booth Street	24.30	24.38	0.08
R3	Residential - Booth Street	29.97	30.05	0.08
R4	Residential - Booth Street	27.89	27.98	0.09
R5	Residential - Scobell Street	27.78	28.15	0.37
R6	Residential - Church Street	27.58	28.18	0.60
R7	Residential - Bank Street	21.49	21.75	0.26
R8	Residential - Hall Street	21.11	21.36	0.25
R9	Residential - High Stret	21.96	22.17	0.21
R10	Residential - Lowercroft Road	21.35	21.54	0.19
R11	Residential - Lowercroft Road	26.96	27.21	0.25
R12	Residential - B6196 Church Street	24.78	24.89	0.11
R13	Residential - B6292 Sterling Road	24.31	24.45	0.14
R14	Residential - B6196 Ainsworth Road	20.63	20.64	0.01
R15	Residential - B6196 Ainsworth Road	29.25	29.27	0.02
R16	Residential - A58 Bolton Road	31.83	31.83	0.00
R17	Residential - A58 Bolton Road	34.83	34.84	0.01
R18	Residential - A58 Bolton Road	26.38	26.40	0.02
R19	Residential - A58 Bolton Road	26.28	26.29	0.01
R20	Residential - A58 Bolton Road	26.04	26.06	0.02
R21	Residential - B6216 Millett Street	20.82	20.85	0.03
R22	Residential - Peel Way	26.31	26.35	0.04
R23	Residential - Sankey Street	22.66	22.71	0.05
R24	Dream Big Little One Nursery	22.34	22.38	0.04
R25	Residential - Jubilee Way	22.65	22.70	0.05

Receptor		Predicted Annual Mean NO_2 Concentration (µg/m^3)		
		DM	DS	Change
R26	Spring Lane School	29.28	29.36	0.08
R27	Townside Primary Care Centre	22.96	22.97	0.01
R28	Residential - A56 Manchester Road	26.12	26.22	0.10
R29	Residential - A56 Manchester Road	25.94	26.04	0.10
R30	Residential - A56 Manchester Road	26.16	26.27	0.11
R31	Residential - B6214 Brandlesholme Road	36.01	36.12	0.11
R32	Residential - B6214 Brandlesholme Road	30.83	30.88	0.05
R33	Residential - B6214 Brandlesholme Road	31.19	31.24	0.05
R34	Woodbank Primary School	24.52	24.53	0.01
R35	Residential - B6214 Brandlesholme Road	23.02	23.03	0.01
R36	Residential - B6213 Tottington Road	33.69	33.93	0.24
R37	Farraday House	29.51	29.79	0.28
R38	Residential - B6213 Bury Road	21.67	21.80	0.13
R39	Residential - B6213 Bury Road	24.84	25.27	0.43
R40	Residential - B6213 Bury Road	35.58	35.67	0.09
R41	Residential - B6213 Bury Road	23.42	23.48	0.06
R42	Residential - Scobell Street	18.92	18.94	0.02
R43	Residential - Scobell Street	19.42	19.58	0.16
R44	Residential - Walshaw Street	20.92	21.01	0.09
R45	Residential - Walshaw Street	19.26	19.27	0.01
R46	Residential - Walshaw Street	28.83	28.84	0.01
R47	Residential - Walshaw Street	25.60	25.71	0.11

6.2.2 As indicated in Table 17, predicted annual mean NO_2 concentrations were below the AQO of 40µg/m^3 at all receptors in both scenarios.

6.2.3 Annual mean PM_{10} concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 18.

Table 18 Predicted Annual Mean PM_{10} Concentrations

Receptor		Predicted Annual Mean PM_{10} Concentration (µg/m^3)		
		DM	DS	Change
R1	Residential - B6213 Market Street	13.55	13.57	0.02
R2	Residential - Booth Street	13.35	13.37	0.01
R3	Residential - Booth Street	14.46	14.47	0.02
R4	Residential - Booth Street	14.03	14.05	0.02
R5	Residential - Scobell Street	14.01	14.08	0.08
R6	Residential - Church Street	13.95	14.08	0.12
R7	Residential - Bank Street	12.80	12.85	0.05
R8	Residential - Hall Street	12.88	12.94	0.06
R9	Residential - High Stret	13.16	13.22	0.05
R10	Residential - Lowercroft Road	13.04	13.09	0.05
R11	Residential - Lowercroft Road	13.91	13.96	0.05
R12	Residential - B6196 Church Street	13.77	13.79	0.03
R13	Residential - B6292 Sterling Road	13.82	13.86	0.04
R14	Residential - B6196 Ainsworth Road	12.84	12.84	0.00
R15	Residential - B6196 Ainsworth Road	14.42	14.43	0.00
R16	Residential - A58 Bolton Road	15.35	15.35	0.00
R17	Residential - A58 Bolton Road	16.10	16.11	0.00
R18	Residential - A58 Bolton Road	13.51	13.51	0.00
R19	Residential - A58 Bolton Road	13.47	13.48	0.00
R20	Residential - A58 Bolton Road	13.47	13.48	0.01
R21	Residential - B6216 Millett Street	12.71	12.71	0.01
R22	Residential - Peel Way	13.92	13.93	0.01

Receptor		Predicted Annual Mean PM_{10} Concentration (µg/m^3)		
		DM	DS	Change
R23	Residential - Sankey Street	13.29	13.31	0.01
R24	Dream Big Little One Nursery	13.24	13.25	0.01
R25	Residential - Jubilee Way	13.34	13.35	0.01
R26	Spring Lane School	14.70	14.72	0.02
R27	Townside Primary Care Centre	13.24	13.24	0.00
R28	Residential - A56 Manchester Road	14.35	14.38	0.03
R29	Residential - A56 Manchester Road	14.32	14.35	0.03
R30	Residential - A56 Manchester Road	14.39	14.42	0.03
R31	Residential - B6214 Brandlesholme Road	16.19	16.22	0.03
R32	Residential - B6214 Brandlesholme Road	15.10	15.12	0.01
R33	Residential - B6214 Brandlesholme Road	15.46	15.47	0.01
R34	Woodbank Primary School	13.89	13.89	0.00
R35	Residential - B6214 Brandlesholme Road	13.50	13.50	0.00
R36	Residential - B6213 Tottington Road	15.89	15.96	0.07
R37	Farraday House	15.23	15.31	0.08
R38	Residential - B6213 Bury Road	13.12	13.16	0.03
R39	Residential - B6213 Bury Road	13.83	13.92	0.09
R40	Residential - B6213 Bury Road	15.79	15.81	0.02
R41	Residential - B6213 Bury Road	13.51	13.52	0.01
R42	Residential - Scobell Street	12.29	12.29	0.00
R43	Residential - Scobell Street	12.45	12.48	0.03
R44	Residential - Walshaw Street	12.84	12.87	0.02
R45	Residential - Walshaw Street	12.48	12.48	0.00
R46	Residential - Walshaw Street	14.25	14.25	0.00
R47	Residential - Walshaw Street	13.83	13.86	0.03

6.2.4 As indicated in Table 18, predicted annual mean PM_{10} concentrations were below the AQO of 40μg/m^3 at all receptors in both the DM and DS scenarios.

6.2.5 Annual mean $PM_{2.5}$ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. These are summarised in Table 19.

Table 19 Predicted Annual Mean $PM_{2.5}$ Concentrations

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration (μg/m^3)		
		DM	DS	Change
R1	Residential - B6213 Market Street	8.94	8.95	0.01
R2	Residential - Booth Street	8.84	8.84	0.01
R3	Residential - Booth Street	9.44	9.45	0.01
R4	Residential - Booth Street	9.20	9.21	0.01
R5	Residential - Scobell Street	9.19	9.23	0.04
R6	Residential - Church Street	9.16	9.23	0.07
R7	Residential - Bank Street	8.53	8.56	0.03
R8	Residential - Hall Street	8.58	8.61	0.03
R9	Residential - High Stret	8.73	8.76	0.03
R10	Residential - Lowercroft Road	8.66	8.69	0.03
R11	Residential - Lowercroft Road	9.14	9.17	0.03
R12	Residential - B6196 Church Street	9.06	9.07	0.01
R13	Residential - B6292 Sterling Road	9.09	9.11	0.02
R14	Residential - B6196 Ainsworth Road	8.55	8.55	0.00
R15	Residential - B6196 Ainsworth Road	9.42	9.42	0.00
R16	Residential - A58 Bolton Road	9.92	9.92	0.00
R17	Residential - A58 Bolton Road	10.32	10.32	0.00
R18	Residential - A58 Bolton Road	8.93	8.93	0.00
R19	Residential - A58 Bolton Road	8.91	8.91	0.00
R20	Residential - A58 Bolton Road	8.91	8.91	0.00

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration (μg/m³)		
		DM	DS	Change
R21	Residential - B6216 Millett Street	8.48	8.49	0.00
R22	Residential - Peel Way	9.14	9.15	0.01
R23	Residential - Sankey Street	8.80	8.81	0.01
R24	Dream Big Little One Nursery	8.77	8.78	0.01
R25	Residential - Jubilee Way	8.82	8.83	0.01
R26	Spring Lane School	9.57	9.58	0.01
R27	Townside Primary Care Centre	8.77	8.77	0.00
R28	Residential - A56 Manchester Road	9.37	9.38	0.02
R29	Residential - A56 Manchester Road	9.35	9.36	0.02
R30	Residential - A56 Manchester Road	9.39	9.41	0.02
R31	Residential - B6214 Brandlesholme Road	10.37	10.39	0.02
R32	Residential - B6214 Brandlesholme Road	9.78	9.79	0.01
R33	Residential - B6214 Brandlesholme Road	9.97	9.98	0.01
R34	Woodbank Primary School	9.12	9.12	0.00
R35	Residential - B6214 Brandlesholme Road	8.91	8.91	0.00
R36	Residential - B6213 Tottington Road	10.21	10.24	0.04
R37	Farraday House	9.84	9.88	0.04
R38	Residential - B6213 Bury Road	8.71	8.72	0.02
R39	Residential - B6213 Bury Road	9.09	9.14	0.05
R40	Residential - B6213 Bury Road	10.16	10.17	0.01
R41	Residential - B6213 Bury Road	8.91	8.92	0.01
R42	Residential - Scobell Street	8.26	8.26	0.00
R43	Residential - Scobell Street	8.34	8.36	0.02
R44	Residential - Walshaw Street	8.56	8.57	0.01
R45	Residential - Walshaw Street	8.36	8.36	0.00
R46	Residential - Walshaw Street	9.32	9.33	0.00

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration (µg/m³)		
		DM	DS	Change
R47	Residential - Walshaw Street	9.09	9.11	0.01

6.2.6 As indicated in Table 19, predicted annual mean $PM_{2.5}$ concentrations were below the Interim Target of 12µg/m³ at all receptors in both the DM and DS scenarios.

6.3 Predicted Impacts

6.3.1 Predicted impacts on annual mean NO_2 concentrations at the sensitive receptor locations are summarised in Table 20.

Table 20 Predicted Impacts - NO_2

Receptor		Predicted Annual Mean NO_2 Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R1	Residential - B6213 Market Street	Below 75% of AQO	0	Negligible
R2	Residential - Booth Street	Below 75% of AQO	0	Negligible
R3	Residential - Booth Street	76 - 94% of AQO	0	Negligible
R4	Residential - Booth Street	Below 75% of AQO	0	Negligible
R5	Residential - Scobell Street	Below 75% of AQO	1	Negligible
R6	Residential - Church Street	Below 75% of AQO	2 - 5	Negligible
R7	Residential - Bank Street	Below 75% of AQO	1	Negligible
R8	Residential - Hall Street	Below 75% of AQO	1	Negligible
R9	Residential - High Stret	Below 75% of AQO	1	Negligible
R10	Residential - Lowercroft Road	Below 75% of AQO	0	Negligible
R11	Residential - Lowercroft Road	Below 75% of AQO	1	Negligible
R12	Residential - B6196 Church Street	Below 75% of AQO	0	Negligible
R13	Residential - B6292 Sterling Road	Below 75% of AQO	0	Negligible
R14	Residential - B6196 Ainsworth Road	Below 75% of AQO	0	Negligible

Receptor		Predicted Annual Mean NO_2 Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R15	Residential - B6196 Ainsworth Road	Below 75% of AQO	0	Negligible
R16	Residential - A58 Bolton Road	76 - 94% of AQO	0	Negligible
R17	Residential - A58 Bolton Road	76 - 94% of AQO	0	Negligible
R18	Residential - A58 Bolton Road	Below 75% of AQO	0	Negligible
R19	Residential - A58 Bolton Road	Below 75% of AQO	0	Negligible
R20	Residential - A58 Bolton Road	Below 75% of AQO	0	Negligible
R21	Residential - B6216 Millett Street	Below 75% of AQO	0	Negligible
R22	Residential - Peel Way	Below 75% of AQO	0	Negligible
R23	Residential - Sankey Street	Below 75% of AQO	0	Negligible
R24	Dream Big Little One Nursery	Below 75% of AQO	0	Negligible
R25	Residential - Jubilee Way	Below 75% of AQO	0	Negligible
R26	Spring Lane School	Below 75% of AQO	0	Negligible
R27	Townside Primary Care Centre	Below 75% of AQO	0	Negligible
R28	Residential - A56 Manchester Road	Below 75% of AQO	0	Negligible
R29	Residential - A56 Manchester Road	Below 75% of AQO	0	Negligible
R30	Residential - A56 Manchester Road	Below 75% of AQO	0	Negligible
R31	Residential - B6214 Brandlesholme Road	76 - 94% of AQO	0	Negligible
R32	Residential - B6214 Brandlesholme Road	76 - 94% of AQO	0	Negligible
R33	Residential - B6214 Brandlesholme Road	76 - 94% of AQO	0	Negligible
R34	Woodbank Primary School	Below 75% of AQO	0	Negligible
R35	Residential - B6214 Brandlesholme Road	Below 75% of AQO	0	Negligible
R36	Residential - B6213 Tottington Road	76 - 94% of AQO	1	Negligible
R37	Farraday House	Below 75% of AQO	1	Negligible

Receptor		Predicted Annual Mean NO_2 Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R38	Residential - B6213 Bury Road	Below 75% of AQO	0	Negligible
R39	Residential - B6213 Bury Road	Below 75% of AQO	1	Negligible
R40	Residential - B6213 Bury Road	76 - 94% of AQO	0	Negligible
R41	Residential - B6213 Bury Road	Below 75% of AQO	0	Negligible
R42	Residential - Scobell Street	Below 75% of AQO	0	Negligible
R43	Residential - Scobell Street	Below 75% of AQO	0	Negligible
R44	Residential - Walshaw Street	Below 75% of AQO	0	Negligible
R45	Residential - Walshaw Street	Below 75% of AQO	0	Negligible
R46	Residential - Walshaw Street	Below 75% of AQO	0	Negligible
R47	Residential - Walshaw Street	Below 75% of AQO	0	Negligible

6.3.2 As indicated in Table 20, impacts on annual mean NO_2 concentrations as a result of the proposed development were predicted to be **negligible** at all receptors.

6.3.3 Predicted impacts on annual mean PM_{10} concentrations at the sensitive receptor locations are summarised in Table 21.

Table 21 Predicted Impacts - PM_{10}

Receptor		Predicted Annual Mean PM_{10} Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R1	Residential - B6213 Market Street	Below 75% of AQO	0	Negligible
R2	Residential - Booth Street	Below 75% of AQO	0	Negligible
R3	Residential - Booth Street	Below 75% of AQO	0	Negligible
R4	Residential - Booth Street	Below 75% of AQO	0	Negligible
R5	Residential - Scobell Street	Below 75% of AQO	0	Negligible
R6	Residential - Church Street	Below 75% of AQO	0	Negligible

Receptor		Predicted Annual Mean PM_{10} Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R7	Residential - Bank Street	Below 75% of AQO	0	Negligible
R8	Residential - Hall Street	Below 75% of AQO	0	Negligible
R9	Residential - High Stret	Below 75% of AQO	0	Negligible
R10	Residential - Lowercroft Road	Below 75% of AQO	0	Negligible
R11	Residential - Lowercroft Road	Below 75% of AQO	0	Negligible
R12	Residential - B6196 Church Street	Below 75% of AQO	0	Negligible
R13	Residential - B6292 Sterling Road	Below 75% of AQO	0	Negligible
R14	Residential - B6196 Ainsworth Road	Below 75% of AQO	0	Negligible
R15	Residential - B6196 Ainsworth Road	Below 75% of AQO	0	Negligible
R16	Residential - A58 Bolton Road	Below 75% of AQO	0	Negligible
R17	Residential - A58 Bolton Road	Below 75% of AQO	0	Negligible
R18	Residential - A58 Bolton Road	Below 75% of AQO	0	Negligible
R19	Residential - A58 Bolton Road	Below 75% of AQO	0	Negligible
R20	Residential - A58 Bolton Road	Below 75% of AQO	0	Negligible
R21	Residential - B6216 Millett Street	Below 75% of AQO	0	Negligible
R22	Residential - Peel Way	Below 75% of AQO	0	Negligible
R23	Residential - Sankey Street	Below 75% of AQO	0	Negligible
R24	Dream Big Little One Nursery	Below 75% of AQO	0	Negligible
R25	Residential - Jubilee Way	Below 75% of AQO	0	Negligible
R26	Spring Lane School	Below 75% of AQO	0	Negligible
R27	Townside Primary Care Centre	Below 75% of AQO	0	Negligible
R28	Residential - A56 Manchester Road	Below 75% of AQO	0	Negligible
R29	Residential - A56 Manchester Road	Below 75% of AQO	0	Negligible
R30	Residential - A56 Manchester Road	Below 75% of AQO	0	Negligible
R31	Residential - B6214 Brandlesholme Road	Below 75% of AQO	0	Negligible

Receptor		Predicted Annual Mean PM_{10} Concentration	Predicted Concentration Change as Proportion of AQO (%)	Impact Significance
R32	Residential - B6214 Brandlesholme Road	Below 75% of AQO	0	Negligible
R33	Residential - B6214 Brandlesholme Road	Below 75% of AQO	0	Negligible
R34	Woodbank Primary School	Below 75% of AQO	0	Negligible
R35	Residential - B6214 Brandlesholme Road	Below 75% of AQO	0	Negligible
R36	Residential - B6213 Tottington Road	Below 75% of AQO	0	Negligible
R37	Farraday House	Below 75% of AQO	0	Negligible
R38	Residential - B6213 Bury Road	Below 75% of AQO	0	Negligible
R39	Residential - B6213 Bury Road	Below 75% of AQO	0	Negligible
R40	Residential - B6213 Bury Road	Below 75% of AQO	0	Negligible
R41	Residential - B6213 Bury Road	Below 75% of AQO	0	Negligible
R42	Residential - Scobell Street	Below 75% of AQO	0	Negligible
R43	Residential - Scobell Street	Below 75% of AQO	0	Negligible
R44	Residential - Walshaw Street	Below 75% of AQO	0	Negligible
R45	Residential - Walshaw Street	Below 75% of AQO	0	Negligible
R46	Residential - Walshaw Street	Below 75% of AQO	0	Negligible
R47	Residential - Walshaw Street	Below 75% of AQO	0	Negligible

6.3.4 As indicated in Table 21, impacts on annual mean PM_{10} concentrations as a result of the proposed development were predicted to be **negligible** at all receptors.

6.3.5 Predicted impacts on annual mean $PM_{2.5}$ concentrations at the sensitive receptor locations are summarised in Table 22.

Table 22 Predicted Impacts - $PM_{2.5}$

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration	Predicted Concentration Change as Proportion of Interim Target (%)	Impact Significance
R1	Residential - B6213 Market Street	Below 75% of Interim Target	0	Negligible
R2	Residential - Booth Street	Below 75% of Interim Target	0	Negligible
R3	Residential - Booth Street	76 - 94% of Interim Target	0	Negligible
R4	Residential - Booth Street	76 - 94% of Interim Target	0	Negligible
R5	Residential - Scobell Street	76 - 94% of Interim Target	0	Negligible
R6	Residential - Church Street	76 - 94% of Interim Target	1	Negligible
R7	Residential - Bank Street	Below 75% of Interim Target	0	Negligible
R8	Residential - Hall Street	Below 75% of Interim Target	0	Negligible
R9	Residential - High Stret	Below 75% of Interim Target	0	Negligible
R10	Residential - Lowercroft Road	Below 75% of Interim Target	0	Negligible
R11	Residential - Lowercroft Road	76 - 94% of Interim Target	0	Negligible
R12	Residential - B6196 Church Street	76 - 94% of Interim Target	0	Negligible
R13	Residential - B6292 Sterling Road	76 - 94% of Interim Target	0	Negligible
R14	Residential - B6196 Ainsworth Road	Below 75% of Interim Target	0	Negligible
R15	Residential - B6196 Ainsworth Road	76 - 94% of Interim Target	0	Negligible
R16	Residential - A58 Bolton Road	76 - 94% of Interim Target	0	Negligible
R17	Residential - A58 Bolton Road	76 - 94% of Interim Target	0	Negligible
R18	Residential - A58 Bolton Road	Below 75% of Interim Target	0	Negligible
R19	Residential - A58 Bolton Road	Below 75% of Interim Target	0	Negligible
R20	Residential - A58 Bolton Road	Below 75% of Interim Target	0	Negligible
R21	Residential - B6216 Millett Street	Below 75% of Interim Target	0	Negligible
R22	Residential - Peel Way	76 - 94% of Interim Target	0	Negligible

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration	Predicted Concentration Change as Proportion of Interim Target (%)	Impact Significance
R23	Residential - Sankey Street	Below 75% of Interim Target	0	Negligible
R24	Dream Big Little One Nursery	Below 75% of Interim Target	0	Negligible
R25	Residential - Jubilee Way	Below 75% of Interim Target	0	Negligible
R26	Spring Lane School	76 - 94% of Interim Target	0	Negligible
R27	Townside Primary Care Centre	Below 75% of Interim Target	0	Negligible
R28	Residential - A56 Manchester Road	76 - 94% of Interim Target	0	Negligible
R29	Residential - A56 Manchester Road	76 - 94% of Interim Target	0	Negligible
R30	Residential - A56 Manchester Road	76 - 94% of Interim Target	0	Negligible
R31	Residential - B6214 Brandlesholme Road	76 - 94% of Interim Target	0	Negligible
R32	Residential - B6214 Brandlesholme Road	76 - 94% of Interim Target	0	Negligible
R33	Residential - B6214 Brandlesholme Road	76 - 94% of Interim Target	0	Negligible
R34	Woodbank Primary School	76 - 94% of Interim Target	0	Negligible
R35	Residential - B6214 Brandlesholme Road	Below 75% of Interim Target	0	Negligible
R36	Residential - B6213 Tottington Road	76 - 94% of Interim Target	0	Negligible
R37	Farraday House	76 - 94% of Interim Target	0	Negligible
R38	Residential - B6213 Bury Road	Below 75% of Interim Target	0	Negligible
R39	Residential - B6213 Bury Road	76 - 94% of Interim Target	0	Negligible
R40	Residential - B6213 Bury Road	76 - 94% of Interim Target	0	Negligible
R41	Residential - B6213 Bury Road	Below 75% of Interim Target	0	Negligible
R42	Residential - Scobell Street	Below 75% of Interim Target	0	Negligible
R43	Residential - Scobell Street	Below 75% of Interim Target	0	Negligible

Receptor		Predicted Annual Mean $PM_{2.5}$ Concentration	Predicted Concentration Change as Proportion of Interim Target (%)	Impact Significance
R44	Residential - Walshaw Street	Below 75% of Interim Target	0	Negligible
R45	Residential - Walshaw Street	Below 75% of Interim Target	0	Negligible
R46	Residential - Walshaw Street	76 - 94% of Interim Target	0	Negligible
R47	Residential - Walshaw Street	76 - 94% of Interim Target	0	Negligible

6.3.6 As indicated in Table 22, impacts on annual mean $PM_{2.5}$ concentrations as a result of the proposed development were predicted to be **negligible** at all receptors.

6.4 Overall Impact Significance

6.4.1 The overall significance of operational phase road traffic emission impacts was determined as **negligible**. This was based on the overall predicted impacts at discrete receptor locations and the considerations outlined previously. Further justification is provided in Table 23.

Table 23 Overall Impact Significance

Guidance	Comment
The existing and future air quality in the absence of the development	Predicted annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations were below the relevant AQOs and Interim Target at all locations in the DM scenario It is considered unlikely that future air quality conditions will change significantly in the absence of the development given the relatively established nature of the area
The extent of current and future population exposure to the impacts	The development is not predicted to affect the population exposed to exceedences of the AQOs and Interim Target

Guidance	Comment
The influence and validity of any assumptions adopted when undertaking the prediction of impacts	It was assumed that vehicle exhaust emission rates and background pollution levels will not reduce in future years. This provides worst-case results when compared with the DEFRA and National Highways methodologies Due to the adopted assumptions it is considered the presented results are sufficiently robust for an assessment of this nature

6.4.2 The IAQM guidance[22] states that only if the impact is greater than **slight**, the effect is considered **significant**. As impacts were predicted to be **negligible**, overall effects are considered **not significant**, in accordance with the stated methodology.

6.5 Interim Planning Guidance for $PM_{2.5}$

6.5.1 Interim Planning Guidance[23] on the consideration of the $PM_{2.5}$ targets identified in the Environment Act (2021) in planning decisions has been produced by DEFRA. This requires evidence that the key sources of air pollution within a development have been identified and appropriate action to minimise $PM_{2.5}$ and its precursors as far as is reasonably practicable be provided in support of planning applications. To assist the process, two questions and associated considerations are provided. These are summarised in Table 24, along with the development response.

Table 24 Interim Planning Guidance Questions

Question	Response
How has exposure to $PM_{2.5}$ been considered when selecting the development site? • Site proximity to people (particularly large populations and/or vulnerable groups, e.g. schools, hospitals, care homes, areas of deprivation) and	The proposed development is located in a predominantly residential area. The Elton High School is located approximately 400m south of the Site boundary. This has been considered within the assessment (R45) and concentrations are predicted to be below the Concentration Target with the proposed development in place The site is distanced from major roads and AQMAs. It is therefore unlikely that future residents will be exposed to elevated pollutant concentrations As outlined in Table 16, a number of mitigation measures will be used throughout the construction phase in order to reduce fugitive dust emissions as far

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[22] Land-Use Planning & Development Control: Planning for Air Quality, IAQM, 2017.

[23] https://uk-air.defra.gov.uk/pm25targets/planning.

Question	Response
the impact of the development on these • Site proximity to pollution sources and the impact of these on users of the development • Exposure and emissions during both construction and in-use	as practicable. This will control potential exposure at off-site locations
What actions and/or mitigations have been considered to reduce $PM_{2.5}$ exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of $PM_{2.5}$ and its precursors? • Site layout • The development's design • Technology used in the construction or installed for use in the development • Construction and future use of the development	A number of mitigation measures have been incorporated into the design of the proposed development in order to reduce $PM_{2.5}$ exposure for future residents. These include the following: • Trees will be planted along the site boundary. This will provide screening from potential vehicle exhaust emissions In order to reduce emissions of $PM_{2.5}$ with associated impacts at nearby receptors, the following measures have also been included: • Installation of Electric Vehicle Charging points for each dwelling; and • Provision of secure cycle storage to encourage the use of sustainable transport modes Further to the above, in order to reduce emissions during the construction phase, a number of mitigation measures will be used to minimise dust generation from associated activities

6.5.2 Based on the responses provided in Table 24 and the assessment results, as outlined in Sections 6.2 to 6.4, it is considered that the development has identified key sources of air pollution and taken appropriate action to minimise emissions of $PM_{2.5}$.

7.0 CONCLUSION

7.1.1 Redmore Environmental Ltd was commissioned by Wain Estates (Land) Limited to undertake an Air Quality Assessment in support of a residential development on land off Church Street and Scobell Street, Walshaw.

7.1.2 The development has the potential to cause air quality impacts at sensitive locations during the construction and operational phases. As such, an Air Quality Assessment was undertaken in order to determine baseline conditions and assess potential effects as a result of the construction and operation of the proposals.

7.1.3 During the construction phase of the development there is the potential for air quality impacts as a result of fugitive dust emissions from the site. These were assessed in accordance with the IAQM methodology. Site-specific dust control measures were subsequently determined. Following implementation, the residual significance of potential air quality impacts from dust generated by earthworks, construction and trackout activities are predicted to be **not significant**.

7.1.4 Potential impacts during the operational phase of the proposals may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the site. Dispersion modelling was therefore undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the local highway network both with and without the development in place. Results were subsequently verified using local monitoring data.

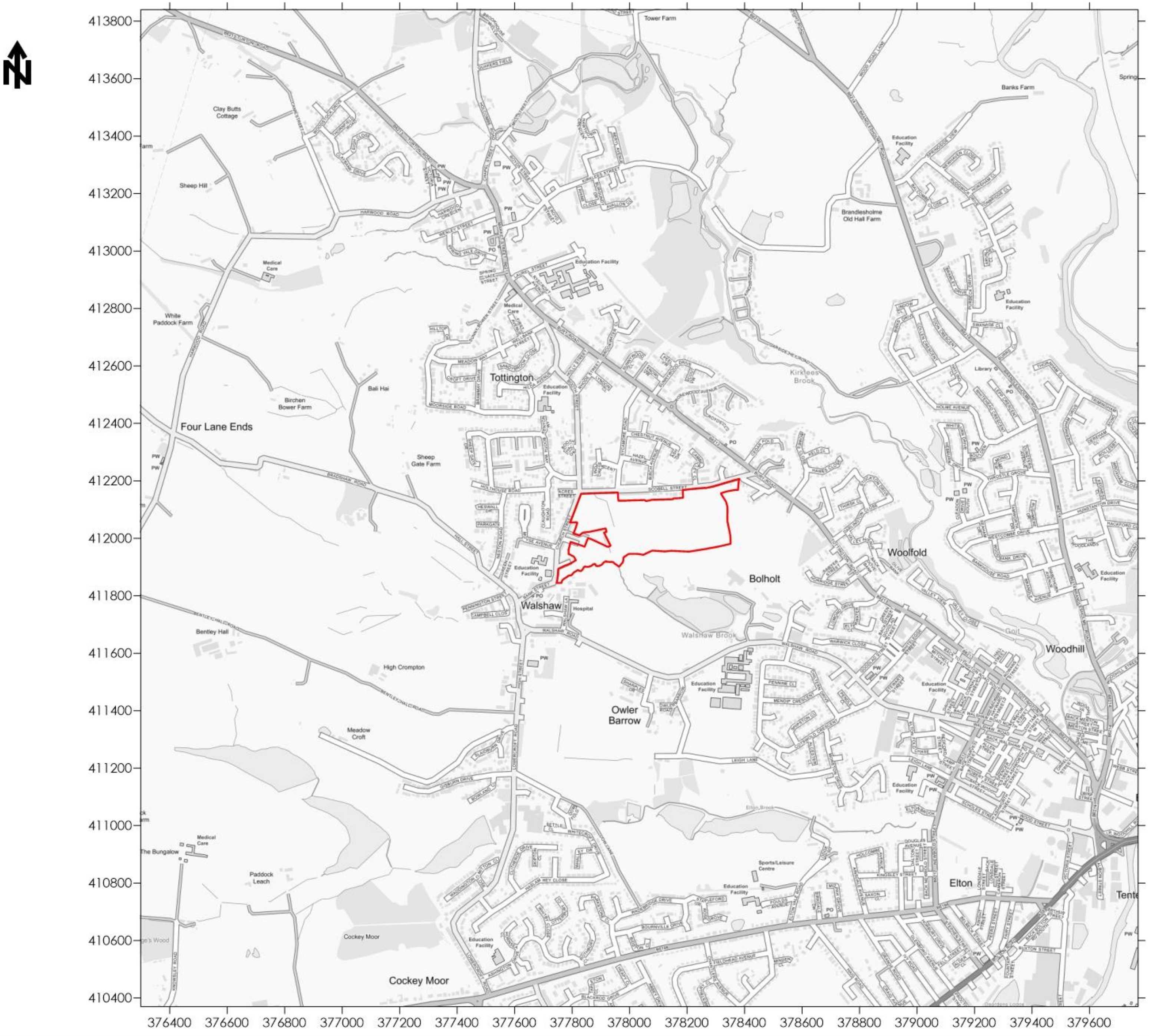
7.1.5 Review of the dispersion modelling results indicated that impacts on annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations as a result of traffic generated by the development were predicted to be **negligible** at all receptors. Following consideration of the relevant issues, air quality impacts as a result of the operation of the development were considered to be **not significant**, in accordance with the IAQM guidance.

7.1.6 Based on the assessment results, air quality factors are not considered a constraint to the development.

8.0 ABBREVIATIONS

AADT	Annual Average Daily Traffic
ADM	Atmospheric Dispersion Modelling
AQMA	Air Quality Management Area
AQLV	Air Quality Limit Value
AQO	Air Quality Objective
AQS	Air Quality Strategy
BC	Bury Council
CAP	Clean Air Plan
CERC	Cambridge Environmental Research Consultants
DEFRA	Department for Environment, Food and Rural Affairs
DM	Do-Minimum
DMP	Dust Management Plan
DMRB	Design Manual for Roads and Bridges
DS	Do-Something
EB	Eastbound
GMCA	Greater Manchester Combined Authority
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
NB	Northbound
NGR	National Grid Reference
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NPPF	National Planning Policy Framework
NPPG	National Planning Policy Guidance
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10µm
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5µm
SB	Southbound
SP	Slow Phase
TfGM	Transport for Greater Manchester
UDP	Unitary Development Plan
WB	Westbound
z_0	Roughness length

Figures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Sheep Hill
Brandlesholme Old Hall Farm
White Paddock Farm
Tottington
Birchen Bower Farm
Bali Hai
Four Lane Ends
Sheep Gate Farm
Kirklees Brook
Woolfold
Bolholt
Walshaw
Hospital
Walshaw Brook
Bentley Hall
High Crompton
Woodhill
Owler Barrow
Meadow Croft
Elton Brook
Elton
The Bungalow
Paddock Leach
Cockey Moor
Sports/Leisure Centre
SCOBELL STREET

Legend

Site Boundary

Title

Figure 1 - Site Location Plan

Project

Air Quality Assessment
Land off Church Street/Scobell Street, Walshaw

Project Reference

2890-1

Client

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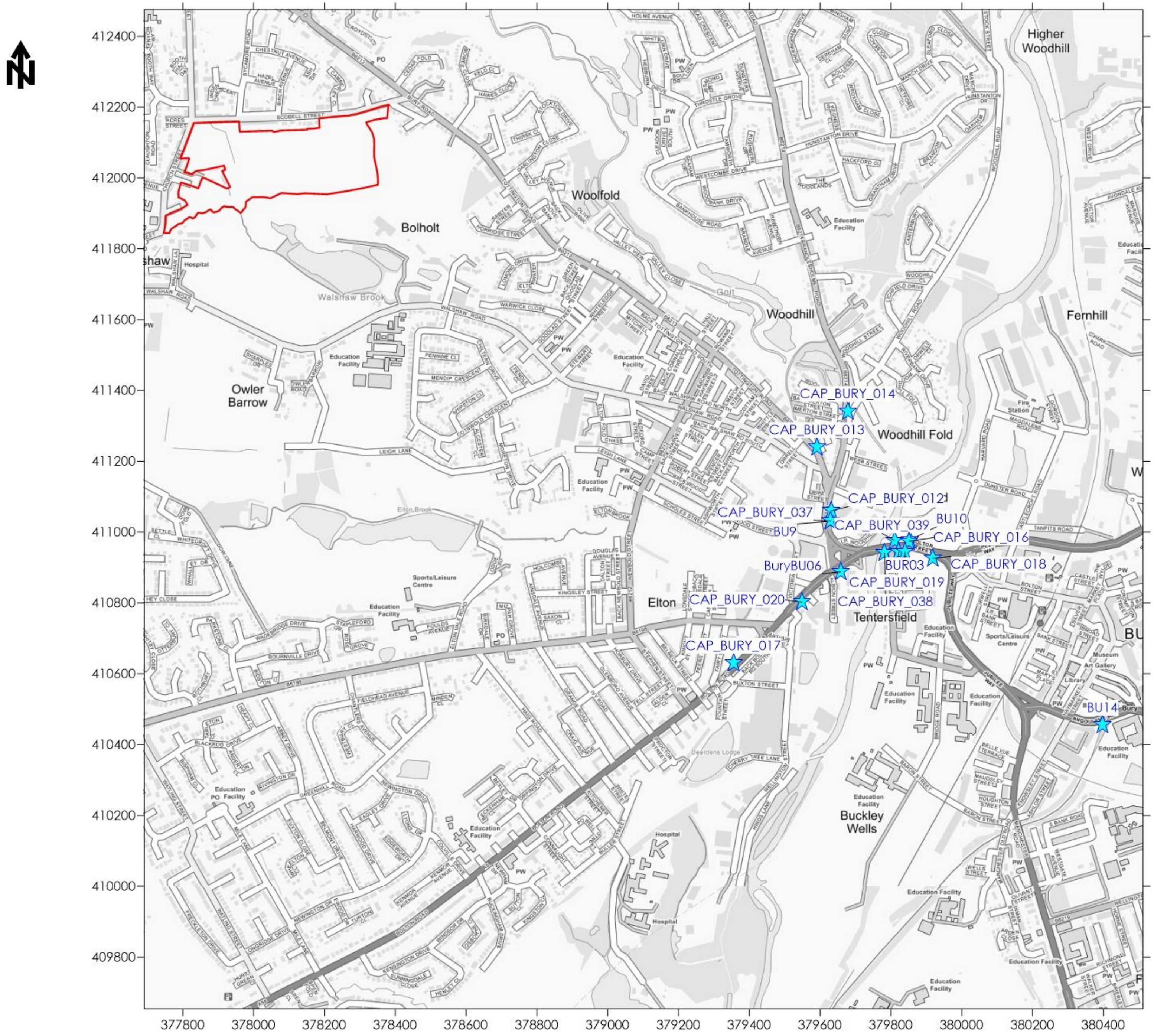
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Owler Barrow
Woodhill Fold
Elton
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Buckley Wells
CAP_BURY_014
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CAP_BURY_012
CAP_BURY_037
CAP_BURY_039
BU10
BU9
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CAP_BURY_018
BUR03
BuryBU06
CAP_BURY_019
CAP_BURY_020
CAP_BURY_038
CAP_BURY_017
BU14

Legend

Site Boundary

☆ Monitor

Title

Figure 2 - Monitoring Locations

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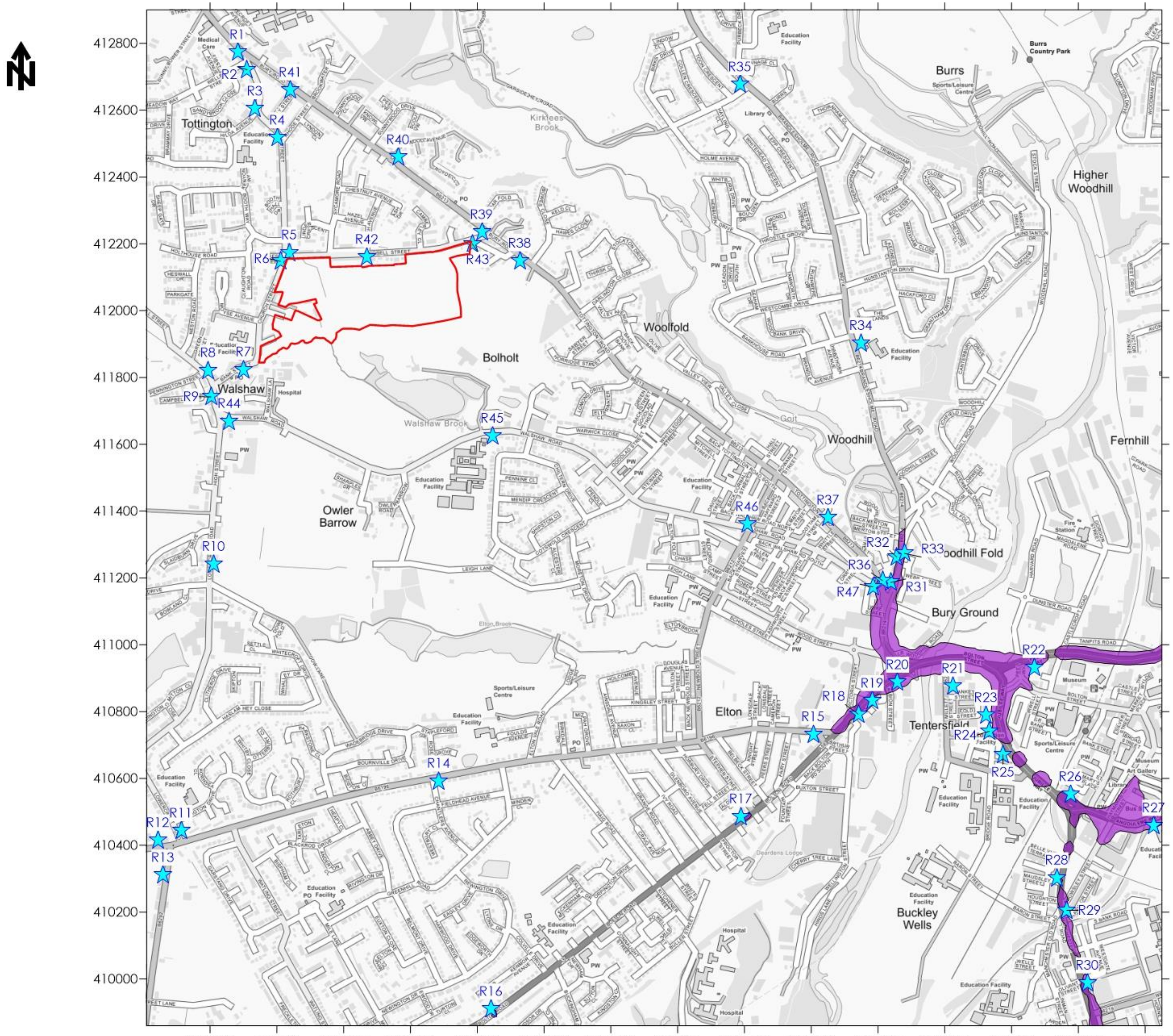
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R47

Legend

Site Boundary

☆ Sensitive Receptor

■ AQMA Extents

Title

Figure 3 - Road Vehicle Exhaust Emissions Sensitive Receptor Locations and AQMA Extents

Project

Air Quality Assessment
Land off Church Street/Scobell Street, Walshaw

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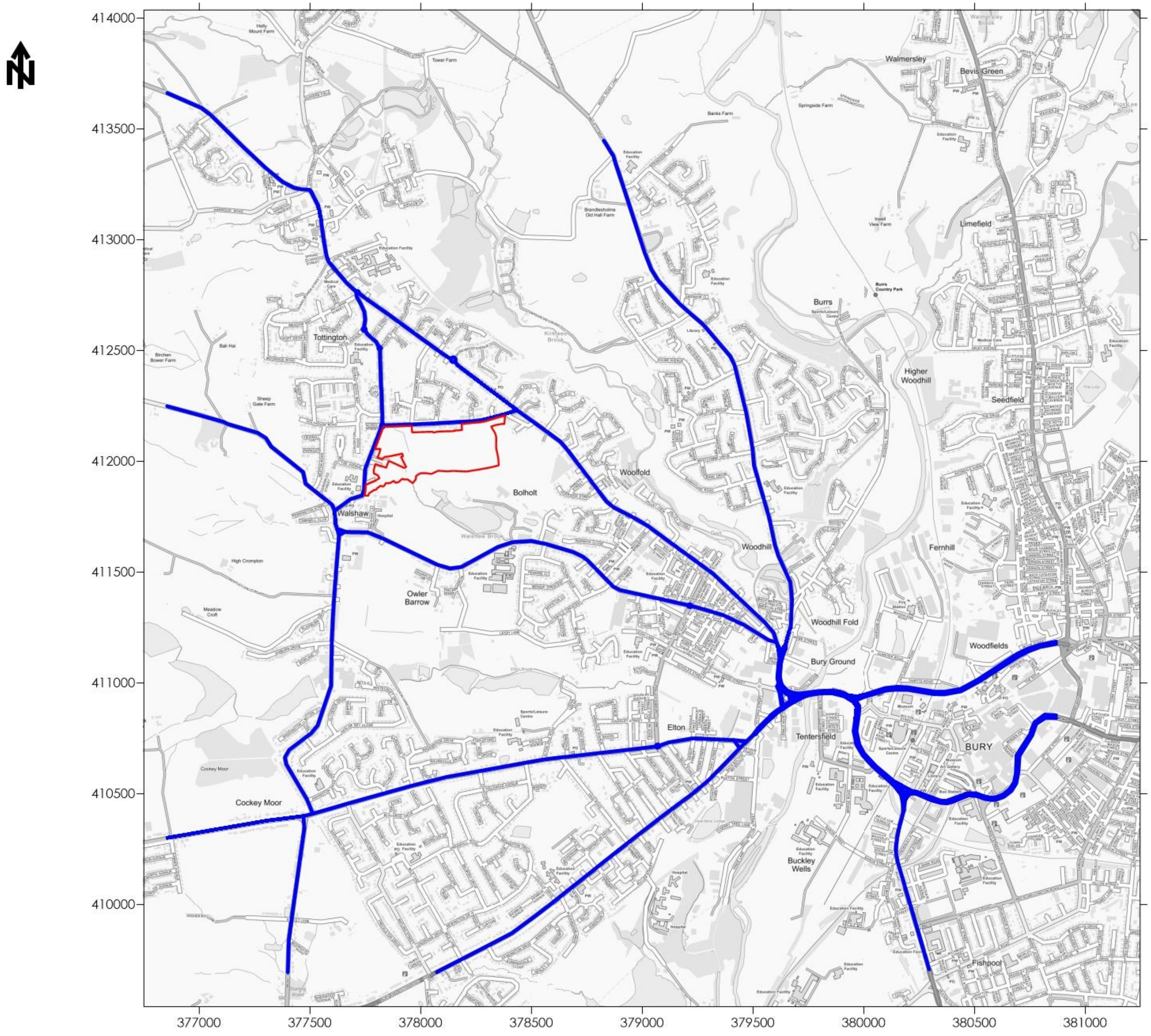
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Bevis Green
Limefield
Burrs
Higher Woodhill
Seedfield
Tottington
Woolfold
Bolholt
Walshaw
Woodhill
Fernhill
Owler Barrow
Woodhill Fold
Bury Ground
Woodfields
Elton
Tentersfield
BURY
Cockey Moor
Buckley Wells
Fishpool
High Crompton
Meadow Croft
Sheep Gate Farm
Birchen Bower Farm
Bali Hai
Holly Mount Farm
Tower Farm
Banks Farm
Brandlesholme Old Hall Farm
Springside Farm
Kirklees Brook
Walshaw Brook

Legend

🟥 Site Boundary

Road Link

Title
Figure 4 - ADMS-Roads Inputs

Project
Air Quality Assessment
Land off Church Street/Scobell Street, Walshaw

Project Reference
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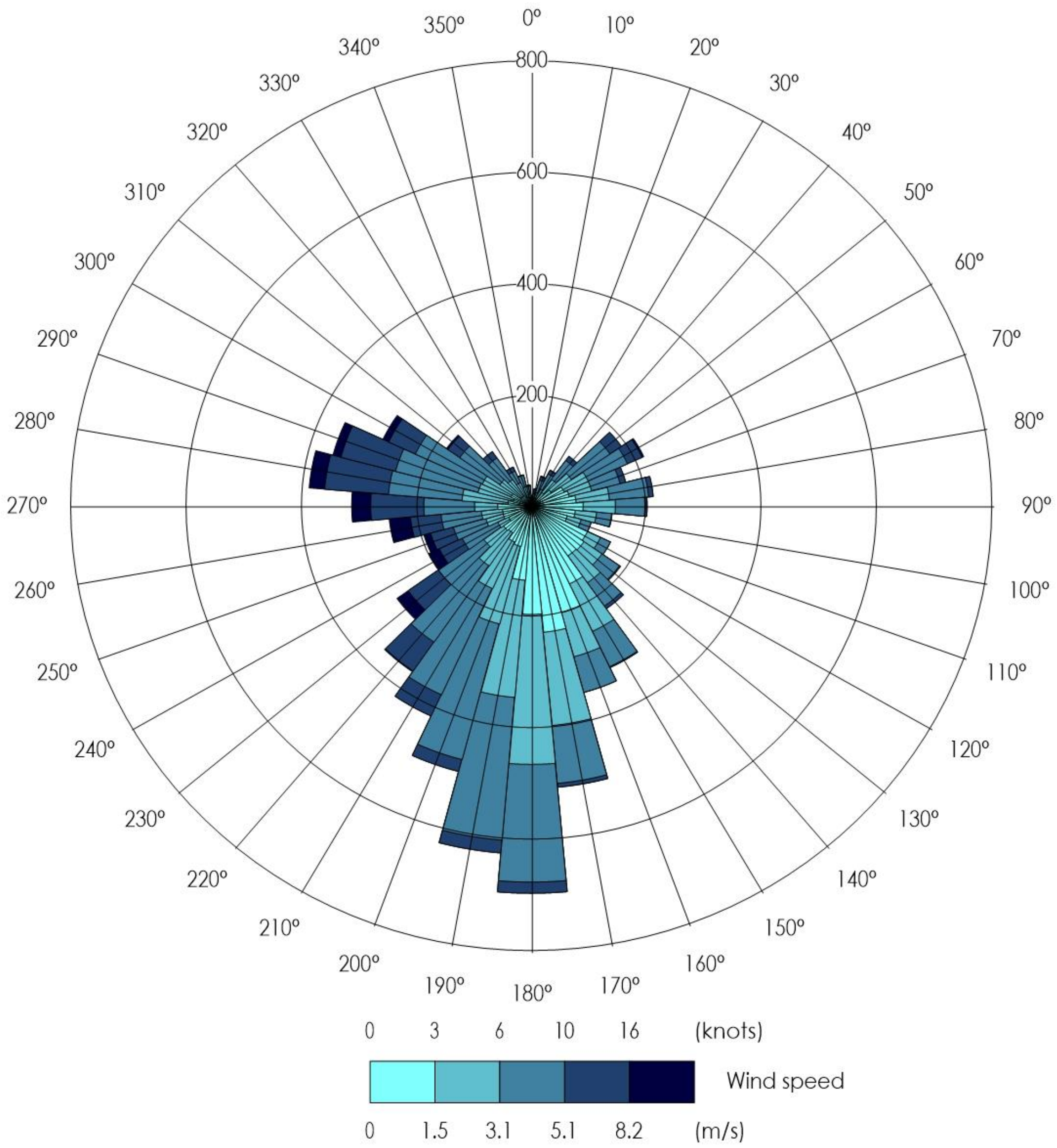

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Figure 5 - Wind Rose of 2022 Manchester Airport Meteorological Data

Project

Air Quality Assessment
Land off Church Street/Scobell Street, Walshaw

Project Reference

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Appendix 1 - Assessment Input Data

Introduction

The proposed development has the potential to cause air quality impacts as a result of exhaust emissions associated with vehicles travelling to and from the site. In order to assess NO_2, PM_{10} and $PM_{2.5}$ concentrations at sensitive locations, detailed dispersion modelling was undertaken in accordance with the following methodology.

Dispersion Model

Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.0.1.3). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and DEFRA.

The model requires input data that details the following parameters:

- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length (z_0); and,
- Monin-Obukhov length.

The relevant inputs are detailed in the following Sections.

Traffic Flow Data

Traffic data for use in the assessment, including 24-hour Annual Average Daily Traffic (AADT) flows and fleet composition as HDV proportion, was provided by SLR Consulting Limited, the Transport Consultants for the project.

Road widths and vehicle speeds were estimated from aerial photography and UK highway design standards. A summary of the traffic flow data is provided in Table A1.1.

Table A1.1 Traffic Data

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2022	2030 DM	2030 DS			
L1	B6213 Turton Road	12,008	12,875	13,026	5.60	7.3	45
L2	B6213 Turton Road, south of Chapel Street	12,008	12,875	13,026	5.60	7.4	45
L3	B6213 Turton Road, north of Wesley Street	12,008	12,875	13,026	5.60	5.8	45
L4	B6213 Turton Road, south of Wesley Street	12,008	12,875	13,026	5.60	6.1	45
L5	B6123 Market Street	12,008	12,875	13,026	5.60	6.1	45
L6	B6123 Market Street, south of Spring Street	12,008	12,875	13,026	5.60	7.1	45
L7	B6123 Market Street, south of Spring Vale Drive	12,008	12,875	13,026	5.60	8.9	45
L8	B6123 Market Street, west of Booth Street, Slow Phase (SP)	12,008	12,875	13,026	5.60	8.5	20
L9	B6123 Bury Road, east of Booth Street, SP	12,008	12,875	12,961	5.60	7.9	20
L10	B6123 Bury Road, east of Booth Street	12,008	12,875	12,961	5.60	7.9	45
L11	B6123 Bury Road, west of Rosewood Avenue, SP	12,008	12,875	12,961	5.60	8.1	20
L12	B6123 Bury Road, east of Rosewood Avenue, SP	12,008	12,875	12,961	5.60	8.5	20
L13	B6123 Bury Road, west of Scobell Street	12,008	12,875	12,961	5.60	8.2	45
L14	B6123 Bury Road, between Scobell Street and Walshaw Road	12,008	12,875	13,228	5.60	7.6	45
L15	B6213 Bury Road, northbound (NB)	6,084	6,521	6,700	5.68	4.9	45
L16	B6213 Bury Road, southbound (SB), SP	5,924	6,354	6,532	5.52	7.9	20
L17	B6214 Crostons Road, between B6213 NB and SB	8,823	9,345	9,345	5.87	11.7	45
L18	B6214 Crostons Road, north of B6213 NB	8,823	9,345	9,352	5.87	7.0	45
L19	B6214 Crostons Road, north of B6213 SB, SP	8,736	9,253	9,260	5.86	10.8	20
L20	B6214 Brandlesholme Road, SP	17,559	18,597	18,612	5.86	7.8	20
L21	B6214 Brandlesholme Road	17,559	18,597	18,612	5.86	6.8	45

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2022	2030 DM	2030 DS			
L22	B6214 Crostons Road, south of B6213 SB	8,736	9,253	9,413	5.86	12.4	45
L23	B6214 Crostons Road, east of Waterloo Street, SB, SP	8,736	9,253	9,413	5.86	13.8	20
L24	B6214 Crostons Road, east of Waterloo Street, NB	8,823	9,345	9,503	5.87	8.0	45
L25	B6214 Crostons Road, east of A58 Bolton Road, NB	8,823	9,345	9,503	5.87	8.0	45
L26	A58 Bolton Street, approach to B6214 Crostons Road, NB, SP	8,823	9,345	9,503	5.87	8.1	20
L27	A58 Bolton Street, north of Peel Way,	12,420	13,142	13,300	8.03	11.6	45
L28	A58 Bolton Road, NB, to A58 Bolton Street	7,459	8,064	8,075	8.00	15.3	45
L29	A58 Bolton Street, Eastbound (EB), north of A56 Peel Way, SP	10,005	10,590	10,751	5.90	12.9	20
L30	A58 Bolton Street, SB, SP	10,005	10,590	10,702	5.90	8.2	20
L31	A56 Jubilee Way, SB, south of Peel Way	10,005	10,590	10,702	5.90	8.0	45
L32	A56 Jubilee Way, SB, north of A56 Manchester Road, SP	8,004	8,472	8,584	5.90	7.8	20
L33	A56 Jubilee Way, SB, slip road to A58 Angouleme Way, EB, SP	2,001	2,118	2,118	5.90	7.4	20
L34	A58 Angouleme Way, west of B6218 Market Street, SP	10,005	10,590	10,590	5.90	7.6	20
L35	A58 Rochdale Road, NB, east of B6218 Market Street	10,005	10,590	10,590	5.90	7.1	45
L36	A58 Rochdale Road, north of Lord Street	10,005	10,590	10,590	5.90	8.5	45
L37	A58 Rochdale Road, SB, east of B6218 Market Street, SP	12,420	13,142	13,142	8.03	7.9	20
L38	A58 Angouleme Way, SB, west of B6218 Market Street	12,420	13,142	13,142	8.03	7.6	45
L39	A58 Angouleme Way, SB, SP	12,420	13,142	13,142	8.03	7.2	20
L40	A58 Angouleme Way, SB, approach to A56 Jubilee Way, NB	9,936	10,514	10,514	8.03	7.3	45

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2022	2030 DM	2030 DS			
L41	A58 Angouleme Way Nb, approach from A56 Manchester Road	10,005	10,590	10,590	5.90	7.9	45
L42	A56 Manchester Road, SB, at A58 Angouleme Way Junction	8,663	9,283	9,395	5.60	7.4	45
L43	A58 Angouleme Way, slip to A56 Manchester Road SB, SP	3,152	3,341	3,341	9.13	5.2	20
L44	A56 Manchester Road, SB, south of A58 Angouleme Way	8,663	9,283	9,395	5.60	7.1	45
L45	A56 Manchester Road	17,372	18,615	18,838	5.46	9.2	45
L46	A56 Manchester Road, NB, south of A58 Angouleme Way, SP	8,709	9,333	9,442	5.31	15.0	20
L47	A56 Jubilee Way, NB, south of Peel Way	12,420	13,142	13,252	8.03	7.2	45
L48	A56 Jubilee Way, NB, south of Peel Way, SP	12,420	13,142	13,252	8.03	19.1	20
L49	A56 Peel Way, EB, SP	17,600	18,649	18,697	9.93	16.1	20
L50	A56 Peel Way, EB	17,600	18,649	18,697	9.93	8.5	45
L51	A56 Peel Way, WB	15,759	16,703	16,750	9.13	8.5	45
L52	A56 Peel Way, WB, approach to A58 Bolton Street, SP	15,759	16,703	16,750	9.13	10.8	20
L53	A58 Bolton Road, WB, east of Waterloo Street, SP	9,233	9,957	9,968	7.85	8.3	15
L54	A58 Bolton Road, WB, at Waterloo Street junction, SP	9,233	9,957	9,968	7.85	11.1	15
L55	A58 Bolton Road, WB, east of Victoria Street, SP	9,233	9,957	9,968	7.85	9.7	15
L56	A58 Bolton Road, EB, east of Victoria Street, SP	8,288	8,960	8,971	8.00	9.5	15
L57	A58 Bolton Road, EB, at Waterloo Street Junction, SP	8,288	8,960	8,971	8.00	11.2	15
L58	A58 Bolton Road, EB, east of Waterloo Street Junction, SP	8,288	8,960	8,971	8.00	11.2	15
L59	A58 Bolton Road, EB, SP	7,459	8,064	8,075	8.00	11.2	15

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2022	2030 DM	2030 DS			
L60	A58 Bolton Road, EB, slip road to B6214 NB	829	896	896	8.00	5.7	15
L61	Waterloo Street, SB, SP	1,747	1,851	1,851	5.86	6.2	15
L62	Waterloo Street, NB, SP	1,747	1,851	1,851	5.86	5.7	15
L63	A58 Bolton Road, east of B6196, SP	17,521	18,918	18,939	8.05	17.1	20
L64	A58 Bolton Road, between B6196 exit/access	17,521	18,918	18,918	8.05	14.5	45
L65	A58 Bolton Road, south of B6196, SP	17,521	18,918	18,918	8.05	13.5	20
L66	A58 Bolton Road	17,521	18,918	18,918	8.05	11.4	30
L67	B6196 exit to A58, SP	5,302	5,604	5,625	6.75	7.1	20
L68	B6196 exit from A58	5,349	5,653	5,653	5.70	6.0	45
L69	B6196 east of B6212 Newbold Street, SP	10,651	11,257	11,278	6.22	7.2	20
L70	B6196 west of B6212 Newbold Street, SP	10,651	11,257	11,278	6.22	7.3	20
L71	B6196 between B6212 Newbold Street and Lowercroft Road	10,651	11,257	11,278	6.22	8.8	45
L72	B6196 east of Lowercroft Road, SP	10,651	11,257	11,278	6.22	11.1	20
L73	B6196 west of Lowercroft Road, SP	9,880	10,551	10,854	6.58	8.7	20
L74	B6196 Cockey Moor Road	9,880	10,551	10,632	6.58	7.7	45
L75	B6292, SP	9,880	10,551	10,773	6.58	7.0	20
L76	B6292	9,880	10,551	10,773	6.58	6.9	45
L77	Lowercroft Road, SP	6,780	7,382	7,707	6.51	10.8	20
L78	Lowercroft Road	6,780	7,382	7,707	6.51	9.1	45
L79	Lowercroft Road, west of Walshaw Road	6,780	7,382	7,707	6.51	10.3	45
L80	Hall Street, north of Walshaw Road	6,780	7,382	7,717	6.51	5.6	45
L81	Bradshaw Road, north of Bank Street	2,266	2,416	2,593	7.08	4.9	45
L82	Church Street, SP	6,780	7,382	7,894	6.51	7.3	20
L83	Scobell Street, SP	2,622	2,771	2,771	4.84	6.9	20

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2022	2030 DM	2030 DS			
L84	Booth Street, south of Rhode Street, SP	6,780	7,382	7,454	6.51	7.7	20
L85	Booth Street, between Rhode Street and Hilda Avenue, SP	6,780	7,382	7,454	6.51	7.6	20
L86	Booth Street, north of Hilda Avenue, SP	6,780	7,382	7,454	6.51	7.0	20
L87	Walshaw Road, approach/exit to Hall Street, SP	2,717	2,876	2,880	6.31	11.4	20
L88	Walshaw Road, approach/exit to High Street, SP	2,717	2,876	2,880	6.31	10.8	20
L89	Walshaw Road	5,433	5,753	5,757	6.31	6.9	45
L90	Walshaw Road, west of B6212 Newbold Street, SP	5,433	5,753	5,757	6.31	7.1	20
L91	Walshaw Road, between B6212 Newbold Street and B6214, SP	5,433	5,753	5,757	6.31	6.7	20
L92	Scobell Street, east of site access towards B6213 Bury Road, SP	2,622	2,771	3,210	4.84	6.7	20
R1	B6213 Market Street/Bury Road mini roundabout	10,266	11,044	11,080	5.60	3.5	20
R2	B6213 Bury Road mini roundabout	12,008	12,875	12,918	5.60	5.3	20
R3	B6196 mini roundabout	10,651	11,257	11,267	5.70	5.3	20
R4	Walshaw Road mini roundabout	5,433	5,753	5,755	6.31	5.7	20
R5	Church Street/Scobell Street/Booth Street mini roundabout	5,394	5,845	6,137	6.51	5.2	20
R6	Booth Street/ Rhode Street mini roundabout	6,780	7,382	7,418	6.51	2.8	20
R7	Booth Street/ Hilda Avenue mini roundabout	6,780	7,382	7,418	6.51	5.2	20

Reference should be made to Figure 4 for a graphical representation of the road link locations.

Emission Factors

Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 12.1). This has been produced by DEFRA and incorporates COPERT 5.6 vehicle emission factors and fleet information.

There is current uncertainty over NO_2 concentrations within the UK, with the implementation of new vehicle emission standards not resulting in the previously expected reduction in roadside levels. Therefore, 2022 emission factors were utilised in preference to the development opening year in order to provide robust model outputs. As predictions for 2022 were verified, it is considered the results are a robust indication of worst-case concentrations for the future year.

Meteorological Data

Meteorological data used in the assessment was taken from Manchester Airport meteorological station over the period 1st January 2022 to 31st December 2022 (inclusive). Manchester Airport is located at NGR: 381792, 384116, which is approximately 27.9km south of the development. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for an assessment of this nature.

All meteorological records used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 5 for a wind rose of utilised meteorological data.

Roughness Length

The z_0 is a modelling parameter applied to allow consideration of surface height roughness elements. A z_0 of 0.5m was used to describe the modelling extents. This value is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'parkland, open suburbia'.

A z_0 of 0.2m was used to describe the meteorological site. This value is considered appropriate for the morphology of the area due to the large expanse of surrounding flat land use, such as runways and surrounding grassland, and is suggested within ADMS-Roads as being suitable for 'agricultural areas (min)'.

Monin-Obukhov Length

The Monin-Obukhov length provides a measure of the stability of the atmosphere. A minimum Monin-Obukhov length of 30m was used to describe the modelling extents and meteorological site. This is considered appropriate for the nature of both areas and is suggested within ADMS-Roads as being suitable for 'cities and large towns'.

Background Concentrations

Annual mean NO_2, PM_{10} and $PM_{2.5}$ background concentrations used in the assessment were obtained from the DEFRA mapping study for the grid square containing the Bury 14 - Angouleme Way monitor, NGR: 380500, 410500. These are shown in Table A1.2.

Table A1.2 Background Pollutant Concentrations - Modelling Extents

Pollutant	Predicted 2022 Background Concentration (μg/m^3)
NO_2	16.72
PM_{10}	11.83
$PM_{2.5}$	8.01

The values were chosen to represent concentrations throughout the dispersion modelling extents without the contribution from road vehicles as they were higher than the DEFRA backgrounds for the grid squares containing the site, as shown in Table 11.

Similarly to emission factors, background concentrations from 2022 were utilised in preference to the future year. This provided a robust assessment and is likely to overestimate pollutant concentrations during the operation of the proposal.

NO_x to NO_2 Conversion

Predicted annual mean NO_x concentrations were converted to NO_2 concentrations using the spreadsheet (version 8.1) provided by DEFRA, which is the method detailed within DEFRA guidance[24].

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[24] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Verification

The results from a dispersion model may differ from measures concentrations for a large number of reasons, including:

- Estimates of background concentrations;
- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and,
- Uncertainties associated with monitoring data, including locations.

Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

For the purpose of the assessment, model verification was undertaken for 2022 using traffic data, meteorological data and monitoring results from this year.

Monitoring of NO_2 concentrations was undertaken at 16 locations within the vicinity of roads included within the model during 2022. The results were obtained and the road contributions to total NO_x concentrations calculated following the methodology contained within DEFRA guidance[25]. The monitored annual mean NO_2 concentrations and calculated road NO_x concentrations are summarised in Table A1.3.

Table A1.3 NO_x Verification - Monitoring Results

Monitoring Location		Monitored NO_2 Concentration (μg/m^3)	Calculated Road NO_x Concentration (μg/m^3)
BU6NO	Bulton Road, Bury	30.70	27.44
BU9NO	Crostons Road	30.20	26.40
BU10NO	Bury Bridge	30.70	27.44
BU14NO	Angouleme Way	30.70	27.44
CAP_BURY_014	B6214 (Brandlesholme Road)	33.10	32.50

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[25] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Monitoring Location		Monitored NO_2 Concentration (µg/m³)	Calculated Road NO_x Concentration (µg/m³)
CAP_BURY_013	B6213 (Tottingham Road)	31.20	28.48
CAP_BURY_012	B6213 (Crostons Road)	26.60	19.04
CAP_BURY_037	Crostons Road	29.0	23.42
CAP_BURY_038	Bury Bridge	29.21	24.34
CAP_BURY_039	Bury Bridge	30.88	27.81
CAP_BURY_018	A58 (Bolton Road)	27.33	20.50
CAP_BURY_019	A58 (Bolton Road)	28.50	22.89
CAP_BURY_016	A58 (Bolton Road)	42.71	53.97
CAP_BURY_020	A58 (Bolton Road)	39.90	47.50
CAP_BURY_017	A58 (Bolton Road)	26.40	18.64
BUR03	Bury Bridge	22.60	11.14

The annual mean road NO_x concentrations predicted from the dispersion model and the 2022 road NO_x concentrations calculated from the monitoring results are summarised in Table A1.4.

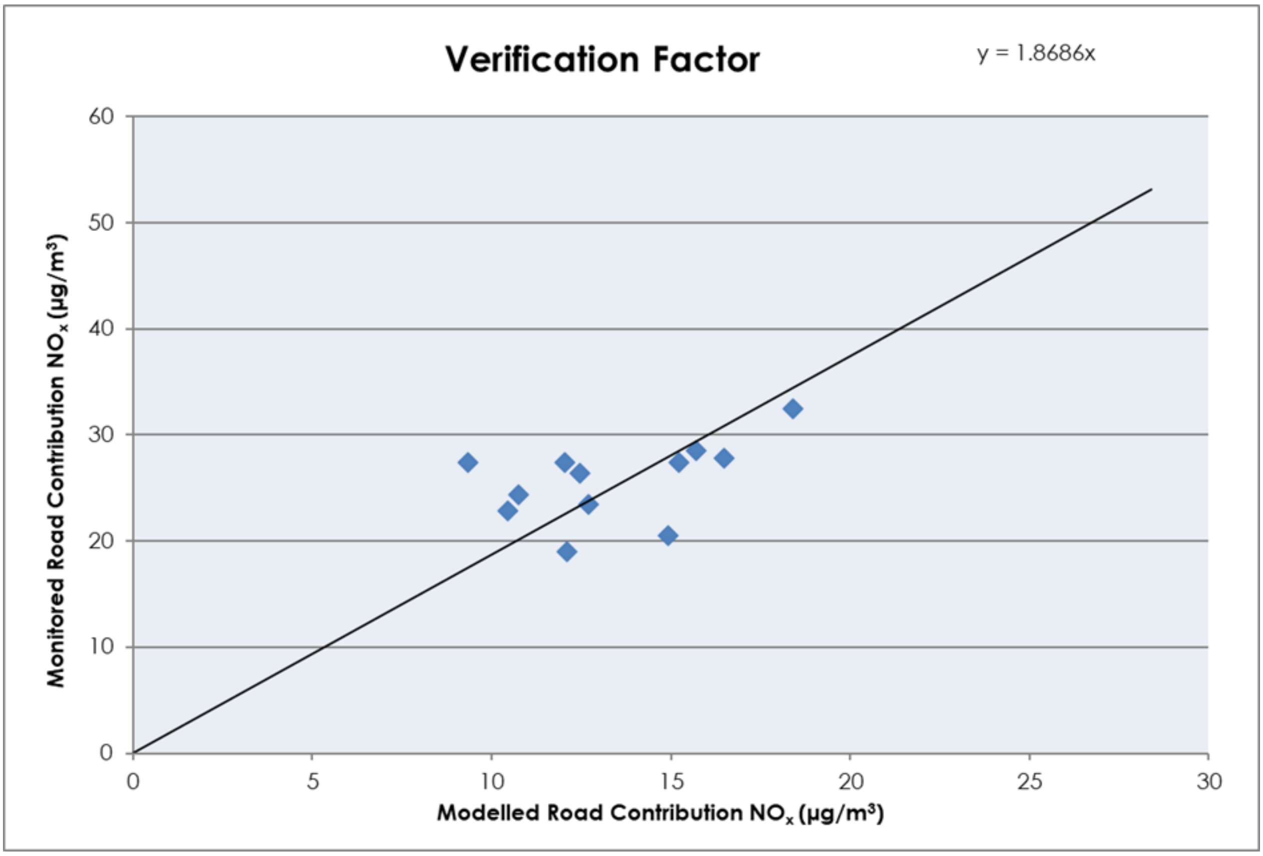
Table A1.4 NO_x Verification - Modelling Results

Monitoring Location		Calculated Road NO_x Concentration (µg/m³)	Modelled Road NO_x Concentration (µg/m³)
BU6NO	Bulton Road, Bury	27.44	12.05
BU9NO	Crostons Road	26.40	12.47
BU10NO	Bury Bridge	27.44	15.24
BU14NO	Angouleme Way	27.44	9.34
CAP_BURY_014	B6214 (Brandlesholme Road)	32.50	18.41
CAP_BURY_013	B6213 (Tottingham Road)	28.48	15.71
CAP_BURY_012	B6213 (Crostons Road)	19.04	12.11
CAP_BURY_037	Crostons Road	23.42	12.71
CAP_BURY_038	Bury Bridge	24.34	10.74

Monitoring Location		Calculated Road NO_x Concentration (µg/m³)	Modelled Road NO_x Concentration (µg/m³)
CAP_BURY_039	Bury Bridge	27.81	16.49
CAP_BURY_018	A58 (Bolton Road)	20.50	14.93
CAP_BURY_019	A58 (Bolton Road)	22.89	10.46
CAP_BURY_016	A58 (Bolton Road)	53.97	20.02
CAP_BURY_020	A58 (Bolton Road)	47.50	13.44
CAP_BURY_017	A58 (Bolton Road)	18.64	19.71
BUR03	Bury Bridge	11.14	11.11

The monitored and modelled road NO_x concentrations were graphed and the equation of the trendline based on linear progression through zero calculated. This indicated that a verification factor of 1.8686 was required to be applied to all modelling results, as shown in Graph 1.

Graph 1 NO_x Verification Factor



Monitoring of PM_{10} and $PM_{2.5}$ concentrations is not undertaken within the assessment extents. The NO_x verification factor was therefore used to adjust model predictions of these species in lieu of more accurate data in accordance with DEFRA guidance[26].

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[26] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Appendix 2 - Curricula Vitae

JETHRO REDMORE

Director

BEng (Hons), MSc, MIAQM, MIEnvSc, PIEMA, CEnv

KEY EXPERIENCE:

Jethro is a Chartered Environmentalist and Director of Redmore Environmental with specialist experience in the air quality and odour sectors. His key capabilities include:

- Production and management of Air Quality, Dust and Odour Assessments for a wide-range of clients from the retail, residential, infrastructure, commercial and industrial sectors.
- Production and co-ordination of Environmental Permit applications for a variety of industrial sectors.
- Detailed dispersion modelling of road vehicle and industrial emissions using ADMS-Roads, ADMS-5, AERMOD-PRIME and BREEZE-ROADS. Studies have included impact assessment of ground level pollutant and odour concentrations and assessment of suitability of development sites for proposed end-use.
- Project management and co-ordination of Environmental Impact Assessments and scoping reports for developments throughout the UK.
- Provision of expert witness services at Planning Inquiries.
- Design and project management of pollutant monitoring campaigns.
- Co-ordination and management of large-scale multi-disciplinary projects and submissions.

  Provision of expert advice to local government and international environmental bodies, as well as involvement in production of industry guidance.

SELECT PROJECTS SUMMARY:

Industrial and Agricultural

Discovery Park, Sandwich - Air Quality Assessment including dispersion modelling of gas fired steam generating boilers in support of a Medium Combustion Plant (MCP) Environmental Permit Application.

St Thomas House, Ellesmere Port - Air Quality Assessment including dispersion modelling of two biomass boilers firing wood pellets.

Herriard Anaerobic Digester - H1 Screening Assessment in accordance with Environment Agency guidance.

Halls Farm, Bude - Ammonia and Odour Assessments in support of a proposed farm expansion, including the construction of a cattle slurry lagoon and livestock housing

London Luton Airport - Air Quality Assessment including dispersion modelling of gas fired boilers in support of a MCP Environmental Permit Application.

Rectory Farm, Aldborough - Odour Assessment in support of the development of livestock housing.

Ashfields, Tilbury - Dust Assessment in support of the extraction of Pulverised Fuel Ash associated with the former Tilbury Power Station.

Poplar Farm, Bedfield - Dust Assessment and Management Plan for an aggregate processing facility.

Crown Chicken, Kenninghall - Air Quality, Odour and Dust Environmental Impact Assessment (EIA) in support of a farm expansion.

Newport Chalk Pit - Air Quality Assessment in support of a recycling and restoration project.

Residential

Jack Chase Way, Caister - Air Quality EIA in support of a planning application for circa 725 dwellings.

New Road, Tintwistle - Odour Assessment including dispersion modelling of the Tintwistle Sewage Treatment Works in order to determine suitability of adjacent land for residential use

St Nicholas Circle, Leicester - Air Quality Assessment including dispersion modelling of road traffic sources to determine suitability of the site for student accommodation.

Land East and West of A140, Long Stratton - Air Quality EIA for a large scale residential development.

Meadley Square, Knaresborough - Odour Assessment including site surveys and a risk assessment to determine potential for loss of amenity to future occupants due to adverse odours generated by an adjacent takeaway.

Main Street, Port Rush - Kitchen Odour Impact Assessment in support of a proposed restaurant with residential apartments above

Commercial and Retail

Downtown Grantham Designer Outlet - Air Quality EIA in support the development of a retail outlet

North Acton Road, London - Air Quality Assessment in support of the development of a seven storey building to include a café and commercial floor space.

Great Homer Street, Liverpool - Investigative Odour Survey at an existing McDonalds restaurant.

Ashdown Business Park, Kent - Air Quality Assessment in support of a Premier Inn Hotel and Drive-Thru Costa Coffee.

Sandbrook Park, Rochdale - Air Quality Assessment in support of 14 business/industrial units.

EMILY MACEY

Senior Air Quality Consultant

BSc (Hons), MSc, MIEnvSc, MIAQM

Tel: 0161 706 0075 | Email: emily.macey@red-env.co.uk

KEY EXPERIENCE:

Emily is a Senior Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:

- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle exhaust emissions using ADMS-Roads. Studies have included assessment of road traffic exhaust emissions on sensitive receptors and exposure of new residents to poor air quality.
- Advanced canyon modelling to evaluate the impact of altered urban topography on air quality in built up areas.
- Assessment of construction dust impacts from a range of development sizes.
- Definition of baseline air quality and identification of sensitive areas across the UK.
- Production of air quality mitigation strategies specifically tailored to address issues at individual sites.
- Air quality monitoring at industrial sites to quantify pollutant concentrations
- Odour surveys to assess amenity and suitability of sites for potential future development for residential use.

SELECT PROJECTS SUMMARY:

Bowlers Yard, Manchester

Air Quality Assessment in support of an eleven storey residential development to provide circa 65 units on land known as Bowlers Yard, Manchester. The site was located in an Air Quality Management Area (AQMA) and concerns were raised regarding the exposure of future occupants to poor air quality due to road traffic emissions. Detailed dispersion modelling was undertaken using ADMS-roads to assess $PM_{2.5}$, PM_{10} and NO_2 concentrations across the site. Results indicated that pollution levels were below the air quality objectives across the development.

Freemasons Arms Hotel, Heywood

Air Quality Assessment to support a residential-led development in an AQMA. Detailed dispersion modelling was undertaken with the inclusion of advanced canyon modelling to evaluate the impact of the urban topography within the locality on the dispersion of traffic related pollutants. Predicted concentrations of NO_2 were found to exceed air quality criteria at the building façade fronting Market Place at first floor level. As such, mitigation was specified for the affected units to ensure future residents would not be exposed to poor air quality.

Griffin Road, London

Air Quality Assessment in support of a residential development located in an AQMA. Detailed dispersion modelling was undertaken using ADMS-roads to assess PM_{10} and NO_2 concentrations across the site. Results indicated that pollution levels were classified as APEC - A in accordance with the London Councils Air Quality and Planning Guidance.

High Street, Dudley

Odour Impact Assessment in support of a proposed residential-led development. Due to the location of the site, being above an existing hot food takeaway, odour surveys were required to assess the level of odour across the development. A risk assessment was also undertaken in accordance with the relevant odour guidance. An appropriate ventilation system was identified on the basis of the assessment results.

East Common Lane, Selby

Air Quality Assessment in support of an industrial development on land associated with Access 63 Business Park, East Common Lane Selby. Due to the size of the development it was possible that traffic generated from the scheme may cause negative impacts on sensitive receptors nearby. NO_2 and PM_{10} concentrations were quantified at specific receptor points to ensure there would be no significant increases in pollution levels. Results revealed negligible impacts.

Wharton Road, Winsford

Air Quality Assessment in support of a residential development of circa 138 units on land off Wharton Road, Winsford. Using sensitive receptors, located in areas where increased road traffic may affect NO_2 concentrations, a comparison was made between overall concentrations with and without the development in place. Results revealed pollutant concentrations were below the relevant standards across the site and impacts not significant.

NATASHA JONES

Graduate Air Quality Consultant

BSc (Hons), MSc, AMIEnvSc

Tel: 0161 706 0075 | Email: natasha.jones@red-env.co.uk

KEY EXPERIENCE:

- Natasha is a Graduate Environmental Consultant with specialist experience in the air quality sector. Her key capabilities include:
- Production of Air Quality Assessments in accordance with Department for Environment, Food and Rural Affairs (DEFRA) methodologies for a range of residential, commercial and industrial sectors.
- Detailed dispersion modelling of road vehicle exhaust emissions using ADMS-Roads. Studies have included impact assessments on sensitive receptors and exposure of new residents to poor air quality.
- Assessment of construction dust impacts from a range of development sites.
- Odour Surveys to assess amenity and suitability of sites for potential future developments for residential use, including the production of Odour Assessments in support of planning applications.
- Production of Air Quality Neutral Assessments in accordance with The London Plan.
- Periodic bioaerosol monitoring campaigns at a permitted waste facility in support of a permit application.
- Measurement and assessment of workplace air quality. This includes monitoring of different parameters in accordance with the EH40/2005 Workplace Exposure Limits (WELS).

SELECT PROJECTS SUMMARY:

Redbeck Motel, Crofton

Air Quality Assessment in support of a residential development comprising demolition of the existing motel and construction of up to 90 dwellings on land off Doncaster Road, Crofton. The development had the potential to expose future occupants to any existing air quality issues and cause impacts at sensitive locations. Dispersion modelling was undertaken using ADMS-Roads due to the number of vehicle movements expected to be generated by the development. A construction dust assessment was also performed to provide mitigation for proposed dust generating activities. Results of the study indicated that air quality impacts and fugitive dust emissions were not significant.

Arundel Road, Tangemere

Air Quality Assessment in support of a residential development at Cassons Restaurant, Tangmere. Following concerns from the Local Authority regarding the potential exposure of future residents to poor air quality, dispersion modelling was undertaken in order to predicted air quality conditions across the site. Results indicated concentrations did not represent a constraint to planning consent.

Hespin Wood, Carlisle

Monitoring and assessment of Ambient Bioaerosols in support of Environmental Permit compliance for an Open Windrow Compost. The facility has the potential to impact nearby sensitive receptors to Aspergillus fumigatus and Mesophilic bacteria. As such, monitoring was undertaken in accordance with the EA M9 guidance to determine conditions within the vicinity of the site. The results indicated both species were below the EA benchmark levels at all positions.

Land off Hayward Gardens, Ashburton South Estate, Putney

Air Quality Neutral Assessment in support of demolition of existing structures and construction of two new buildings to provide 43 dwellings, with a community room. The assessment was carried out in accordance with the London Plan requirements to ensure proposals did not lead to further deterioration of existing air quality. Following discussions and implementation of the identified strategies, compliance with the London Plan was achieved.

Arcade Street, Wigan

Odour Assessment in support of a conversion from existing offices to provide seven apartments. The proposals were located in close proximity to a number of hot food takeaways. As such, the Local Authority raised concerns that odour emissions may cause loss of amenity to future residents. A programme of Field Odour Surveys was undertaken to assess odour impacts from said premises. Results indicated odour effects at the site were not considered significant.

Placefirst, Exchange Quay

Workplace Air Quality Monitoring to investigate concerns that employees may be at risk of exposure to poor air quality as a result of the existing ventilation. Following a previous programme of monitoring, relative humidity levels (RH) were below the Health and Safety Executive guidelines (HSE). As such, an additional programme of monitoring was undertaken. This included monitoring of inhalable and respirable dusts, Volatile Organic Compounds, Carbon monoxide, Carbon dioxide, RH and temperature. Results indicated all parameters were below the relevant WELs and within HSE guidelines.

ES Volume Three, Technical Appendix 11.1 - Air Quality Dispersion Modelling Inputs

Land off Church Street/Scobell Street, Walshaw

Client: Wain Estates (Land) Limited

Reference: 2890-1

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1.0 INTRODUCTION

1.1.1 This Technical Appendix provides the dispersion modelling inputs utilised in order to predict air quality impacts at sensitive locations in the vicinity of the Proposed Development as a result of operational phase road vehicle exhaust emissions. It should be read in conjunction with the Air Quality Chapter of the Environmental Statement and the other Technical Appendices.

2.0 METHODOLOGY

2.1 Introduction

2.1.1 The Proposed Development has the potential to cause air quality impacts as a result of exhaust emissions associated with vehicles travelling to and from the Site during the operational phase. In order to assess nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than 10μm (PM_{10}) and particulate matter with an aerodynamic diameter of less than 2.5μm ($PM_{2.5}$) concentrations at sensitive locations, detailed dispersion modelling was undertaken in accordance with the following methodology.

2.2 Dispersion Model

2.2.1 Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.0.1.3). ADMS-Roads is developed by Cambridge Environmental Research (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and the Department for Environment Food and Rural Affairs (DEFRA).

2.2.2 The model required input data that details the following parameters:

- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length (z_0); and,
- Monin-Obukhov length.

2.2.3 The following Sections detail the relevant inputs utilised in the assessment.

Traffic Flow Data

2.2.4 Traffic data for the Proposed Development was provided by the project Transport Consultant, SLR Consulting. As detailed in **ES Volume Two, Chapter 11**, the following scenarios were modelled:

- 2023 - Model Verification (comparison of predicted and measured pollutant concentrations allowing a verification factor to be made to adjust results accordingly);
- Opening year Do-Minimum (DM) (predicted flows in 2030 should the Proposed Development not proceed); and,
- Opening year Do-Something (DS) (predicted flows in 2030 should the Proposed Development be completed).

2.2.5 Road widths and vehicle speeds were estimated from aerial photography and UK highway design standards. A summary of the traffic flow data for the Proposed Development is provided in Table 11.1.1.

Table 11.1.1 Traffic Data - Proposed Development

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2030 DM	2030 DS			
L1	B6213 Turton Road	12,110	12,875	13,026	5.60	7.3	45
L2	B6213 Turton Road, south of Chapel Street	12,110	12,875	13,026	5.60	7.4	45
L3	B6213 Turton Road, north of Wesley Street	12,110	12,875	13,026	5.60	5.8	45
L4	B6213 Turton Road, south of Wesley Street	12,110	12,875	13,026	5.60	6.1	45
L5	B6123 Market Street	12,110	12,875	13,026	5.60	6.1	45
L6	B6123 Market Street, south of Spring Street - Canyon	12,110	12,875	13,026	5.60	7.1	45
L7	B6123 Market Street, south of Spring Vale Drive	12,110	12,875	13,026	5.60	8.9	45

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2030 DM	2030 DS			
L8	B6123 Market Street, west of Booth Street, Slow Phase (SP)	12,110	12,875	13,026	5.60	8.5	20
L9	B6123 Bury Road, east of Booth Street, SP	12,110	12,875	12,961	5.60	7.9	20
L10	B6123 Bury Road, east of Booth Street	12,110	12,875	12,961	5.60	7.9	45
L11	B6123 Bury Road, west of Rosewood Avenue, SP	12,110	12,875	12,961	5.60	8.1	20
L12	B6123 Bury Road, east of Rosewood Avenue, SP	12,110	12,875	12,961	5.60	8.5	20
L13	B6123 Bury Road, west of Scobell Street	12,110	12,875	12,961	5.60	8.2	45
L14	B6123 Bury Road, between Scobell Street and Walshaw Road	12,110	12,875	13,314	5.60	7.6	45
L15	B6213 Bury Road, northbound (NB)	6,135	6,521	6,700	5.68	4.9	45
L16	B6213 Bury Road, southbound (SB), SP	5,974	6,354	6,532	5.52	7.9	20
L17	B6214 Crostons Road, between B6213 NB and SB	8,897	9,345	9,345	5.87	11.7	45
L18	B6214 Crostons Road, north of B6213 NB	8,897	9,345	9,352	5.87	7.0	45
L19	B6214 Crostons Road, north of B6213 SB, SP	8,810	9,253	9,260	5.86	10.8	20
L20	B6214 Brandlesholme Road, SP	17,707	18,597	18,612	5.86	7.8	20
L21	B6214 Brandlesholme Road	17,707	18,597	18,612	5.86	6.8	45
L22	B6214 Crostons Road, south of B6213 SB	8,810	9,253	9,413	5.86	12.4	45
L23	B6214 Crostons Road, east of Waterloo Street, SB, SP	8,810	9,253	9,413	5.86	13.8	20
L24	B6214 Crostons Road, east of Waterloo Street, NB	8,897	9,345	9,503	5.87	8.0	45
L25	B6214 Crostons Road, east of A58 Bolton Road, NB	8,897	9,345	9,503	5.87	8.0	45
L26	A58 Bolton Street, approach to B6214 Crostons Road, NB, SP	8,897	9,345	9,503	5.87	8.1	20

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2030 DM	2030 DS			
L27	A58 Bolton Street, north of Peel Way,	12,524	13,142	13,300	8.03	11.6	45
L28	A58 Bolton Road, NB, to A58 Bolton Street	7,522	8,064	8,075	8.00	15.3	45
L29	A58 Bolton Street, Eastbound (EB), north of A56 Peel Way, SP	10,089	10,590	10,751	5.90	12.9	20
L30	A58 Bolton Street, SB, SP	10,089	10,590	10,702	5.90	8.2	20
L31	A56 Jubilee Way, SB, south of Peel Way	10,089	10,590	10,702	5.90	8.0	45
L32	A56 Jubilee Way, SB, north of A56 Manchester Road, SP	8,071	8,472	8,584	5.90	7.8	20
L33	A56 Jubilee Way, SB, slip road to A58 Angouleme Way, EB, SP	2,018	2,118	2,118	5.90	7.4	20
L34	A58 Angouleme Way, west of B6218 Market Street, SP	10,089	10,590	10,590	5.90	7.6	20
L35	A58 Rochdale Road, NB, east of B6218 Market Street	10,089	10,590	10,590	5.90	7.1	45
L36	A58 Rochdale Road, north of Lord Street	10,089	10,590	10,590	5.90	8.5	45
L37	A58 Rochdale Road, SB, east of B6218 Market Street, SP	12,524	13,142	13,142	8.03	7.9	20
L38	A58 Angouleme Way, SB, west of B6218 Market Street	12,524	13,142	13,142	8.03	7.6	45
L39	A58 Angouleme Way, SB, SP	12,524	13,142	13,142	8.03	7.2	20
L40	A58 Angouleme Way, SB, approach to A56 Jubilee Way, NB	10,019	10,514	10,514	8.03	7.3	45
L41	A58 Angouleme Way Nb, approach from A56 Manchester Road	10,089	10,590	10,590	5.90	7.9	45
L42	A56 Manchester Road, SB, at A58 Angouleme Way Junction	8,736	9,283	9,395	5.60	7.4	45
L43	A58 Angouleme Way , slip to A56 Manchester Road SB, SP	3,178	3,341	3,341	9.13	5.2	20
L44	A56 Manchester Road, SB, south of A58 Angouleme Way	8,736	9,283	9,395	5.60	7.1	45

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2030 DM	2030 DS			
L45	A56 Manchester Road	17,518	18,615	18,838	5.46	9.2	45
L46	A56 Manchester Road, NB, south of A58 Angouleme Way, SP	8,782	9,333	9,442	5.31	15.0	20
L47	A56 Jubilee Way, NB, south of Peel Way	12,524	13,142	13,252	8.03	7.2	45
L48	A56 Jubilee Way, NB, south of Peel Way, SP	12,524	13,142	13,252	8.03	19.1	20
L49	A56 Peel Way, EB, SP	17,748	18,649	18,697	9.93	16.1	20
L50	A56 Peel Way, EB	17,748	18,649	18,697	9.93	8.5	45
L51	A56 Peel Way, WB	15,892	16,703	16,750	9.13	8.5	45
L52	A56 Peel Way, WB, appraoch to A58 Bolton Street, SP	15,892	16,703	16,750	9.13	10.8	20
L53	A58 Bolton Road, WB, east of Waterloo Street, SP	9,310	9,957	9,968	7.85	8.3	15
L54	A58 Bolton Road, WB, at Waterloo Street junction, SP	9,310	9,957	9,968	7.85	11.1	15
L55	A58 Bolton Road, WB, east of Victoria Street, SP	9,310	9,957	9,968	7.85	9.7	15
L56	A58 Bolton Road, EB, east of Victoria Street, SP	8,358	8,960	8,971	8.00	9.5	15
L57	A58 Bolton Road, EB, at Waterloo Street Junction, SP	8,358	8,960	8,971	8.00	11.2	15
L58	A58 Bolton Road, EB, east of Waterloo Street Junction, SP	8,358	8,960	8,971	8.00	11.2	15
L59	A58 Bolton Road, EB, SP	7,522	8,064	8,075	8.00	11.2	15
L60	A58 Bolton Road, EB, slip road to B6214 NB	836	896	896	8.00	5.7	15
L61	Waterloo Street, SB, SP	1,762	1,851	1,851	5.86	6.2	15
L62	Waterloo Street, NB, SP	1,762	1,851	1,851	5.86	5.7	15
L63	A58 Bolton Road, east of B6196, SP	17,668	18,918	18,939	7.98	17.1	20

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2030 DM	2030 DS			
L64	A58 Bolton Road, between B6196 exit/access	17,668	18,918	18,918	7.98	14.5	45
L65	A58 Bolton Road, south of B6196, SP	17,668	18,918	18,918	7.98	13.5	20
L66	A58 Bolton Road	17,668	18,918	18,918	7.98	11.4	30
L67	B6196 exit to A58, SP	5,347	5,604	5,625	6.75	7.1	20
L68	B6196 exit from A58	5,394	5,653	5,653	5.70	6.0	45
L69	B6196 east of B6212 Newbold Street, SP	10,741	11,257	11,278	6.22	7.2	20
L70	B6196 west of B6212 Newbold Street, SP	10,741	11,257	11,278	6.22	7.3	20
L71	B6196 between B6212 Newbold Street and Lowercroft Road	10,741	11,257	11,278	6.22	8.8	45
L72	B6196 east of Lowercroft Road, SP	10,741	11,257	11,278	6.22	11.1	20
L73	B6196 west of Lowercroft Road, SP	9,963	10,551	10,854	6.58	8.7	20
L74	B6196 Cockey Moor Road	9,963	10,551	10,632	6.58	7.7	45
L75	B6292, SP	9,963	10,551	10,773	6.58	7.0	20
L76	B6292	9,963	10,551	10,773	6.58	6.9	45
L77	Lowercroft Road, SP	6,837	7,382	7,707	6.51	10.8	20
L78	Lowercroft Road	6,837	7,382	7,707	6.51	9.1	45
L79	Lowercroft Road, west of Walshaw Road	6,837	7,382	7,707	6.51	10.3	45
L80	Hall Street, north of Walshaw Road	6,837	7,382	7,717	6.51	5.6	45
L81	Bradshaw Road, north of Bank Street	2,285	2,416	2,593	7.08	4.9	45
L82	Church Street, SP	6,837	7,382	7,894	6.51	7.3	20
L83	Scobell Street, SP	2,644	2,771	2,771	4.84	6.9	20
L84	Booth Street, south of Rhode Street, SP	6,837	7,382	7,454	6.51	7.7	20
L85	Booth Street, between Rhode Street and Hilda Avenue, SP	6,837	7,382	7,454	6.51	7.6	20

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Road Width (m)	Avg. Vehicle Speed (km/h)
		2023	2030 DM	2030 DS			
L86	Booth Street, north of Hilda Avenue, SP	6,837	7,382	7,454	6.51	7.0	20
L87	Walshaw Road, approach/exit to Hall Street, SP	2,739	2,876	2,880	6.31	11.4	20
L88	Walshaw Road, approach/exit to High Street, SP	2,739	2,876	3,201	6.31	10.8	20
L89	Walshaw Road, west of new link road	5,479	5,753	5,757	6.31	6.9	45
L90	Walshaw Road, west of B6212 Newbold Street, SP	5,479	5,753	5,757	6.31	7.1	20
L91	Walshaw Road, between B6212 Newbold Street and B6214, SP	5,479	5,753	5,757	6.31	6.7	20
L92	Scobell Street, east of site access towards B6213 Bury Road, SP	2,644	2,771	3,210	4.84	6.7	20
L93	B6213 Tottington Road, south of Darlington Close	12,110	12,875	13,228	5.60	7.7	45
L94	Walshaw Road, east of new link road	5,479	5,753	5,757	6.31	6.9	45
L95	Lowercroft Road, south of link road	6,837	7,382	7,894	6.51	6.1	45
R1	B6213 Market Street/Bury Road mini roundabout	10,352	11,044	11,080	5.60	3.5	20
R2	B6213 Bury Road mini roundabout	12,110	12,875	12,918	5.60	5.3	20
R3	B6196 mini roundabout	10,741	11,257	11,267	5.70	5.3	20
R4	Walshaw Road mini roundabout	5,479	5,753	5,755	6.31	5.7	20
R5	Church Street/Scobell Street/Booth Street mini roundabout	5,439	5,845	6,137	6.51	5.2	20
R6	Booth Street/ Rhode Street mini roundabout	6,837	7,382	7,418	6.51	2.8	20
R7	Booth Street/ Hilda Avenue mini roundabout	6,837	7,382	7,418	6.51	5.2	20

2.2.6 A summary of the traffic flow data for the JPA 9 Allocation Cumulative Assessment is provided in Table 11.1.2.

Table 11.1.2 Traffic Data - JPA 9 Allocation Cumulative Assessment

Link		24-hour AADT Flow Cumulative 2030 DS	HDV Prop. of Fleet (%)
L1	B6213 Turton Road	14,043	5.60
L2	B6213 Turton Road, south of Chapel Street	14,043	5.60
L3	B6213 Turton Road, north of Wesley Street	14,043	5.60
L4	B6213 Turton Road, south of Wesley Street	14,043	5.60
L5	B6123 Market Street	14,043	5.60
L6	B6123 Market Street, south of Spring Street - Canyon	14,043	5.60
L7	B6123 Market Street, south of Spring Vale Drive	14,043	5.60
L8	B6123 Market Street, west of Booth Street, Slow Phase (SP)	14,043	5.60
L9	B6123 Bury Road, east of Booth Street, SP	13,624	5.60
L10	B6123 Bury Road, east of Booth Street	13,624	5.60
L11	B6123 Bury Road, west of Rosewood Avenue, SP	13,624	5.60
L12	B6123 Bury Road, east of Rosewood Avenue, SP	13,624	5.60
L13	B6123 Bury Road, west of Scobell Street	13,624	5.60
L14	B6123 Bury Road, between Scobell Street and Walshaw Road	13,345	5.60
L15	B6213 Bury Road, northbound (NB)	7,512	5.68
L16	B6213 Bury Road, southbound (SB), SP	7,346	5.52
L17	B6214 Crostons Road, between B6213 NB and SB	9,395	5.87
L18	B6214 Crostons Road, north of B6213 NB	9,429	5.87
L19	B6214 Crostons Road, north of B6213 SB, SP	9,337	5.86
L20	B6214 Brandlesholme Road, SP	18,767	5.86
L21	B6214 Brandlesholme Road	18,767	5.86
L22	B6214 Crostons Road, south of B6213 SB	10,047	5.86
L23	B6214 Crostons Road, east of Waterloo Street, SB, SP	10,047	5.86

Link		24-hour AADT Flow Cumulative 2030 DS	HDV Prop. of Fleet (%)
L24	B6214 Crostons Road, east of Waterloo Street, NB	10,127	5.87
L25	B6214 Crostons Road, east of A58 Bolton Road, NB	10,127	5.87
L26	A58 Bolton Street, approach to B6214 Crostons Road, NB, SP	10,127	5.87
L27	A58 Bolton Street, north of Peel Way,	13,915	8.03
L28	A58 Bolton Road, NB, to A58 Bolton Street	8,578	8.00
L29	A58 Bolton Street, Eastbound (EB), north of A56 Peel Way, SP	11,375	5.90
L30	A58 Bolton Street, SB, SP	11,152	5.90
L31	A56 Jubilee Way, SB, south of Peel Way	11,152	5.90
L32	A56 Jubilee Way, SB, north of A56 Manchester Road, SP	9,025	5.90
L33	A56 Jubilee Way, SB, slip road to A58 Angouleme Way, EB, SP	2,126	5.90
L34	A58 Angouleme Way, west of B6218 Market Street, SP	10,631	5.90
L35	A58 Rochdale Road, NB, east of B6218 Market Street	10,631	5.90
L36	A58 Rochdale Road, north of Lord Street	10,631	5.90
L37	A58 Rochdale Road, SB, east of B6218 Market Street, SP	13,183	8.03
L38	A58 Angouleme Way, SB, west of B6218 Market Street	13,183	8.03
L39	A58 Angouleme Way, SB, SP	13,183	8.03
L40	A58 Angouleme Way, SB, approach to A56 Jubilee Way, NB	10,546	8.03
L41	A58 Angouleme Way Nb, approach from A56 Manchester Road	10,631	5.90
L42	A56 Manchester Road, SB, at A58 Angouleme Way Junction	10,129	5.60
L43	A58 Angouleme Way , slip to A56 Manchester Road SB, SP	3,365	9.13
L44	A56 Manchester Road, SB, south of A58 Angouleme Way	10,129	5.60

Link		24-hour AADT Flow Cumulative 2030 DS	HDV Prop. of Fleet (%)
L45	A56 Manchester Road	20,299	5.46
L46	A56 Manchester Road, NB, south of A58 Angouleme Way, SP	10,170	5.31
L47	A56 Jubilee Way, NB, south of Peel Way	13,692	8.03
L48	A56 Jubilee Way, NB, south of Peel Way, SP	13,692	8.03
L49	A56 Peel Way, EB, SP	18,995	9.93
L50	A56 Peel Way, EB	18,995	9.93
L51	A56 Peel Way, WB	17,044	9.13
L52	A56 Peel Way, WB, appraoch to A58 Bolton Street, SP	17,044	9.13
L53	A58 Bolton Road, WB, east of Waterloo Street, SP	10,516	7.85
L54	A58 Bolton Road, WB, at Waterloo Street junction, SP	10,516	7.85
L55	A58 Bolton Road, WB, east of Victoria Street, SP	10,516	7.85
L56	A58 Bolton Road, EB, east of Victoria Street, SP	9,523	8.00
L57	A58 Bolton Road, EB, at Waterloo Street Junction, SP	9,523	8.00
L58	A58 Bolton Road, EB, east of Waterloo Street Junction, SP	9,523	8.00
L59	A58 Bolton Road, EB, SP	8,575	8.00
L60	A58 Bolton Road, EB, slip road to B6214 NB	947	8.00
L61	Waterloo Street, SB, SP	1,861	5.86
L62	Waterloo Street, NB, SP	1,861	5.86
L63	A58 Bolton Road, east of B6196, SP	20,039	7.98
L64	A58 Bolton Road, between B6196 exit/access	19,942	7.98
L65	A58 Bolton Road, south of B6196, SP	19,942	7.98
L66	A58 Bolton Road	19,942	7.98
L67	B6196 exit to A58, SP	5,701	6.75
L68	B6196 exit from A58	5,653	5.70

Link		24-hour AADT Flow Cumulative 2030 DS	HDV Prop. of Fleet (%)
L69	B6196 east of B6212 Newbold Street, SP	11,354	6.22
L70	B6196 west of B6212 Newbold Street, SP	11,354	6.22
L71	B6196 between B6212 Newbold Street and Lowercroft Road	11,354	6.22
L72	B6196 east of Lowercroft Road, SP	11,354	6.22
L73	B6196 west of Lowercroft Road, SP	12,227	6.58
L74	B6196 Cockey Moor Road	11,201	6.58
L75	B6292, SP	11,855	6.58
L76	B6292	11,855	6.58
L77	Lowercroft Road, SP	7,242	6.51
L78	Lowercroft Road	7,242	6.51
L79	Lowercroft Road, west of Walshaw Road	7,242	6.51
L80	Hall Street, north of Walshaw Road	8,060	6.51
L81	Bradshaw Road, north of Bank Street	3,289	7.08
L82	Church Street, SP	7,242	6.51
L83	Scobell Street, SP	2,771	4.84
L84	Booth Street, south of Rhode Street, SP	7,661	6.51
L85	Booth Street, between Rhode Street and Hilda Avenue, SP	7,661	6.51
L86	Booth Street, north of Hilda Avenue, SP	7,661	6.51
L87	Walshaw Road, approach/exit to Hall Street, SP	3,612	6.31
L88	Walshaw Road, approach/exit to High Street, SP	2,871	6.31
L89	Walshaw Road, west of new link road	6,483	6.31
L90	Walshaw Road, west of B6212 Newbold Street, SP	6,514	6.31
L91	Walshaw Road, between B6212 Newbold Street and B6214, SP	6,514	6.31

Link		24-hour AADT Flow Cumulative 2030 DS	HDV Prop. of Fleet (%)
L92	Scobell Street, east of site access towards B6213 Bury Road, SP	3,050	4.84
L93	B6213 Tottington Road, south of Darlington Close	14,117	5.60
L94	Walshaw Road, east of new link road	6,514	6.31
L95	Lowercroft Road, south of link road	8,737	6.51
R1	B6213 Market Street/Bury Road mini roundabout	11,520	5.60
R2	B6213 Bury Road mini roundabout	13,484	5.60
R3	B6196 mini roundabout	11,305	5.70
R4	Walshaw Road mini roundabout	6,128	6.31
R5	Church Street/Scobell Street/Booth Street mini roundabout	5,961	6.51
R6	Booth Street/ Rhode Street mini roundabout	7,452	6.51
R7	Booth Street/ Hilda Avenue mini roundabout	7,452	6.51

2.2.7 Reference should be made to Figure 11.3 in Technical Appendix 11.2 for a graphical representation of the road link locations.

Emission Factors

2.2.8 Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 12.1). This has been produced by DEFRA and incorporates COPERT 5.6 vehicle emission factors and fleet information. Emission factors for 2023 were utilised for the verification model.

2.2.9 There is current uncertainty over NO_2 concentrations within the UK, with the implementation of new vehicle emission standards not resulting in the previously expected reduction in roadside levels. Therefore, 2023 emission factors were utilised in preference to the development opening year in the DM and DS models order to provide robust outputs. As predictions for 2023 were verified, it is considered the results are a robust indication of worst-case concentrations for the future year.

Meteorological Data

2.2.10 Meteorological data used in the assessment was taken from Manchester Airport meteorological station over the period 1st January 2023 to 31st December 2023 (inclusive). Manchester Airport meteorological station is located at NGR: 381792, 384116 which is approximately 27.9km south of the development. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for an assessment of this nature.

2.2.11 All meteorological records used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 11.4 in Technical Appendix 11.2 for a wind rose of the utilised meteorological data.

Roughness Length

2.2.12 The z_0 is a modelling parameter applied to allow consideration of surface height roughness elements. A z_0 of 0.5m was used to describe the modelling extents. This is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'parkland, open suburbia'.

2.2.13 A z_0 of 0.2m to describe the meteorological site. This is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'agricultural areas (min)'.

Monin-Obukhov Length

2.2.14 The Monin-Obukhov length provides a measure of the stability of the atmosphere. A minimum Monin-Obukhov length of 30m was used to describe the modelling extents and meteorological site. This value is considered appropriate for the nature of both areas and is suggested within ADMS-Roads as being suitable for 'cities and large towns'.

Background Concentrations

2.2.15 Annual mean NO_2, PM_{10} and $PM_{2.5}$ background concentrations used in the assessment were obtained from the DEFRA mapping study for the grid square containing the Bury 14 - Angouleme Way monitor, NGR: 380500, 410500. These are shown in Table 11.1.3.

Table 11.1.3 Background Pollutant Concentrations - Modelling Extents

Pollutant	Predicted 2023 Background Concentration (μg/m$^{3)}$
NO_2	15.55
PM_{10}	12.16
$PM_{2.5}$	7.18

2.2.16 The values were chosen to represent concentrations throughout the dispersion modelling extents without the contribution from road vehicles as they were higher than the DEFRA backgrounds for the grid squares containing the site, as shown in **ES Volume Two, Chapter 11, Table 11.11.**

2.2.17 Similarly to emission factors, background concentrations from 2023 were utilised throughout the assessment in preference to the development opening year. This provided a robust assessment and is likely to overestimate pollutant concentrations during the operation of the proposal.

Model Verification

2.2.18 It is necessary to compare the modelled results versus monitored results at relevant locations to enable the adjustment of model outputs and minimise the inherent uncertainties associated with dispersion modelling. The predicted results from a dispersion model may differ from measured concentrations for a number of reasons, including:

- Estimates of background concentrations;
- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and,
- Uncertainties associated with monitoring data, including locations.

2.2.19 Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

2.2.20 For the purpose of the assessment, model verification was undertaken for 2023 using traffic data, meteorological data and monitoring results from this year.

2.2.21 Monitoring of NO_2 concentrations was undertaken at eight monitors in the vicinity of roads included within the modelling extents during 2023. The results were obtained and the road contributions to total NO_x concentrations calculated following the methodology contained within DEFRA guidance[1]. The monitored annual mean NO_2 concentrations and calculated road NO_x concentrations are summarised in Table 11.1.4.

Table 11.1.4 NO_x Verification - Monitoring Results

Monitoring Site		Monitored NO_2 Concentration (μg/m^3)	Calculated Road NO_x Concentration (μg/m^3)
BU6	Bulton Road, Bury	27.30	27.69
BU9	Crostons Road	25.00	21.81
BU10	Bury Bridge	26.90	26.65
BU14	Angouleme Way	29.60	33.84
CAP_BURY_016	A58 (Bolton Road)	36.40	53.84
CAP_BURY_020	A58 (Bolton Road)	41.10	69.46
BUR03	Bury Bridge	22.00	14.50
CAP_BURY_042	A58 (Bolton Road)	23	17.62

2.2.22 The annual mean road NO_x concentrations predicted from the dispersion model and the calculated 2023 road NO_x monitoring results are summarised in Table 11.1.5.

---

[1] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Table 11.1.5 NO_x Verification - Modelling Results

Monitoring Site		Calculated Road NO_x Concentration ($\mu g/m^3$)	Modelled Road NO_x Concentration ($\mu g/m^3$)
BU6	Bulton Road, Bury	27.69	11.00
BU9	Crostons Road	21.81	10.54
BU10	Bury Bridge	26.65	12.81
BU14	Angouleme Way	33.84	8.25
CAP_BURY_016	A58 (Bolton Road)	53.84	16.89
CAP_BURY_020	A58 (Bolton Road)	69.46	12.39
BUR03	Bury Bridge	14.50	10.00
CAP_BURY_042	A58 (Bolton Road)	17.62	11.77

2.2.23 The monitored and modelled road NO_x concentrations were graphed and the equation of the trendline based on linear progression through zero calculated. This indicated a verification factor of 2.871 was required to be applied to all road NO_x modelling results, as shown in Graph 1.

2.2.24 Monitoring of PM_{10} and $PM_{2.5}$ concentrations is not undertaken within the assessment extents. The NO_2 verification factor was therefore used to adjust model predictions of these species in lieu of more accurate data in accordance with DEFRA guidance[2].

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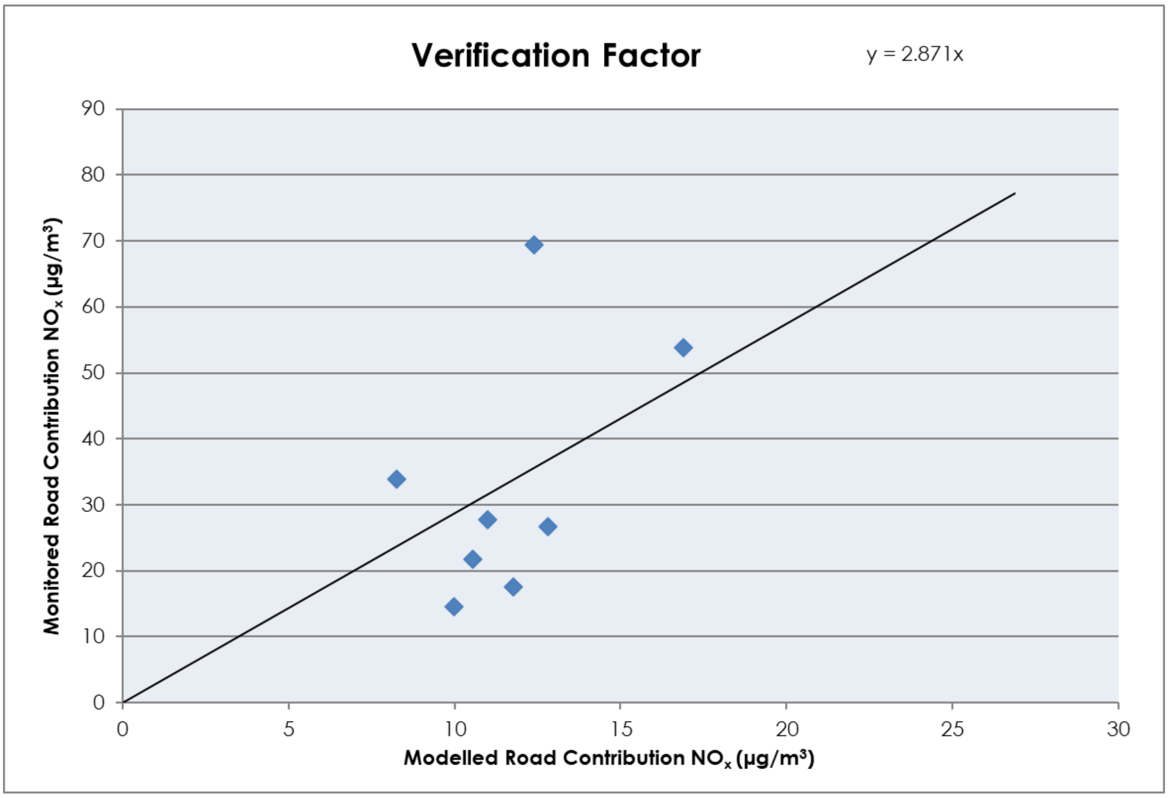
[2] Local Air Quality Management Technical Guidance (TG22), DEFRA, 2022.

Graph 1 - Verification Factor



ES Volume Three, Technical Appendix 11.2 - Air Quality Figures

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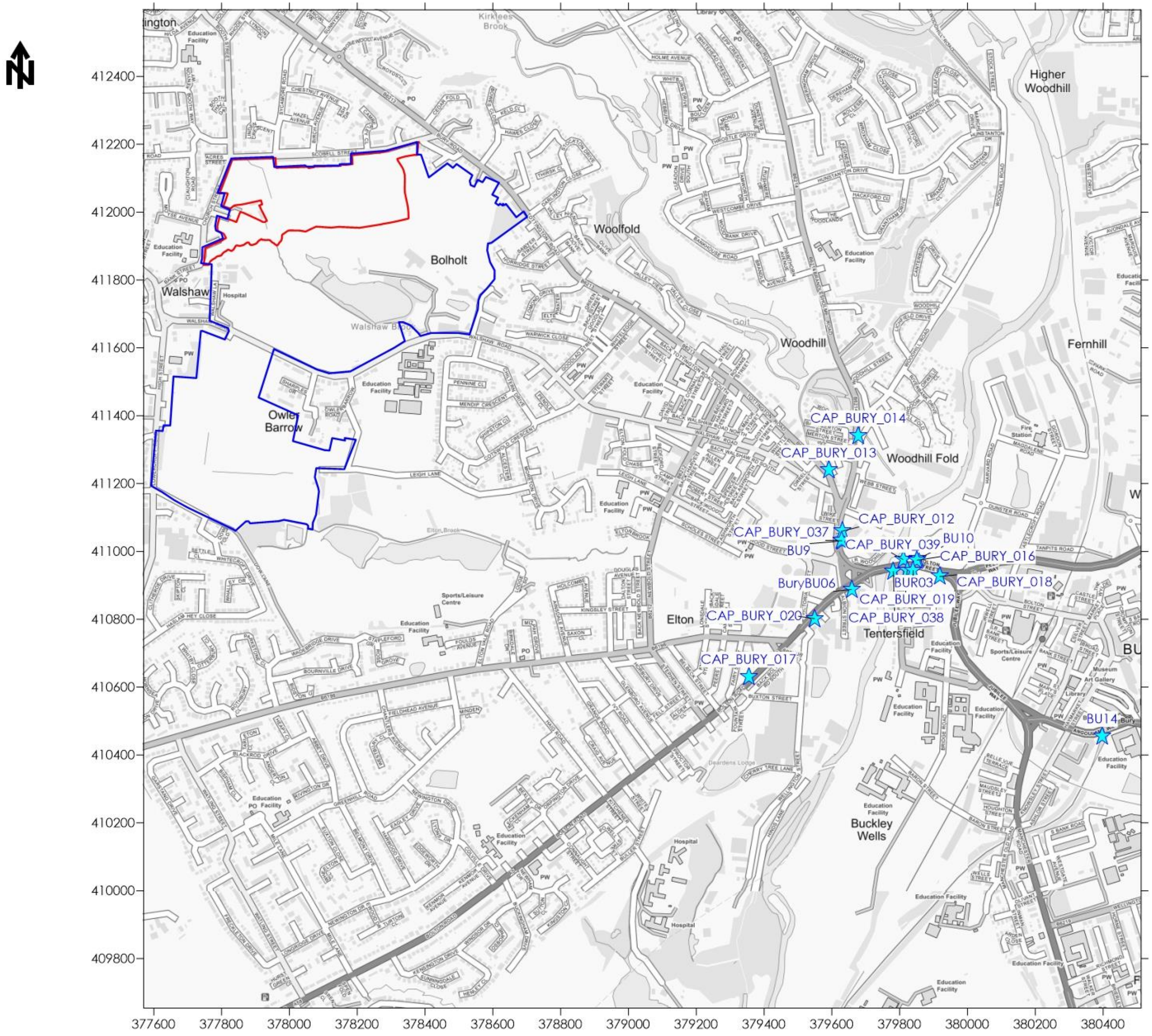
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Elton
Tentersfield
Buckley Wells
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CAP_BURY_013
CAP_BURY_012
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BU9
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BU10
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CAP_BURY_019
CAP_BURY_020
CAP_BURY_038
CAP_BURY_017
BU14

Legend

Site Boundary

JPA 9 Walshaw Allocation Boundary

☆ Monitor

Title
Figure 11.1 - Monitoring Locations

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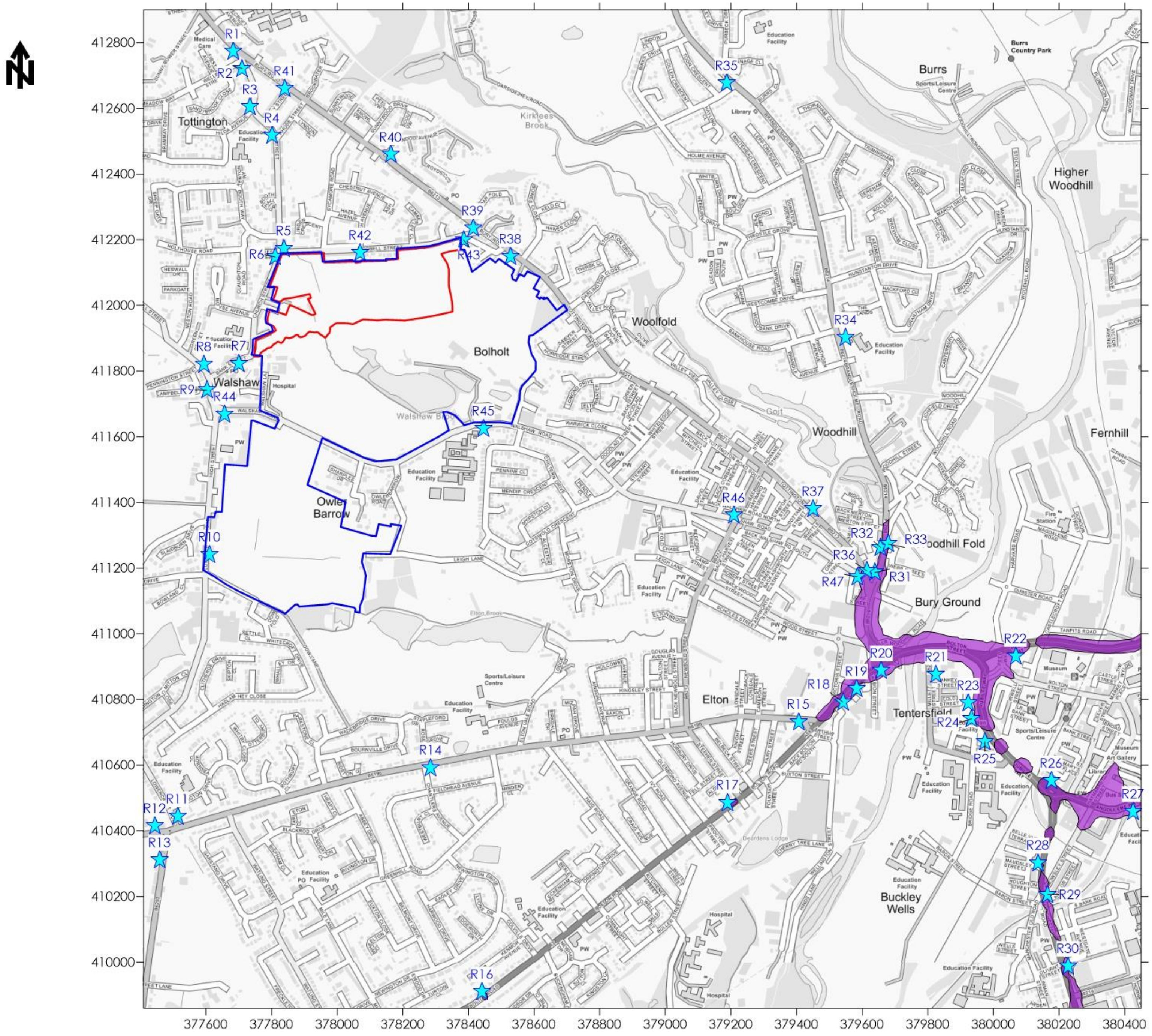
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Burrs
Higher Woodhill
Fernhill
Woodhill Fold
Bury Ground
Elton
Tentersfield
Buckley Wells
Kirklees Brook
Burrs Country Park
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Legend

Site Boundary

JPA 9 Walshaw Allocation Boundary

☆ Sensitive Receptor

▨ AQMA Extents

Title

Figure 11.2 - Road Vehicle Exhaust Emissions Sensitive Receptor Locations and AQMA Extents

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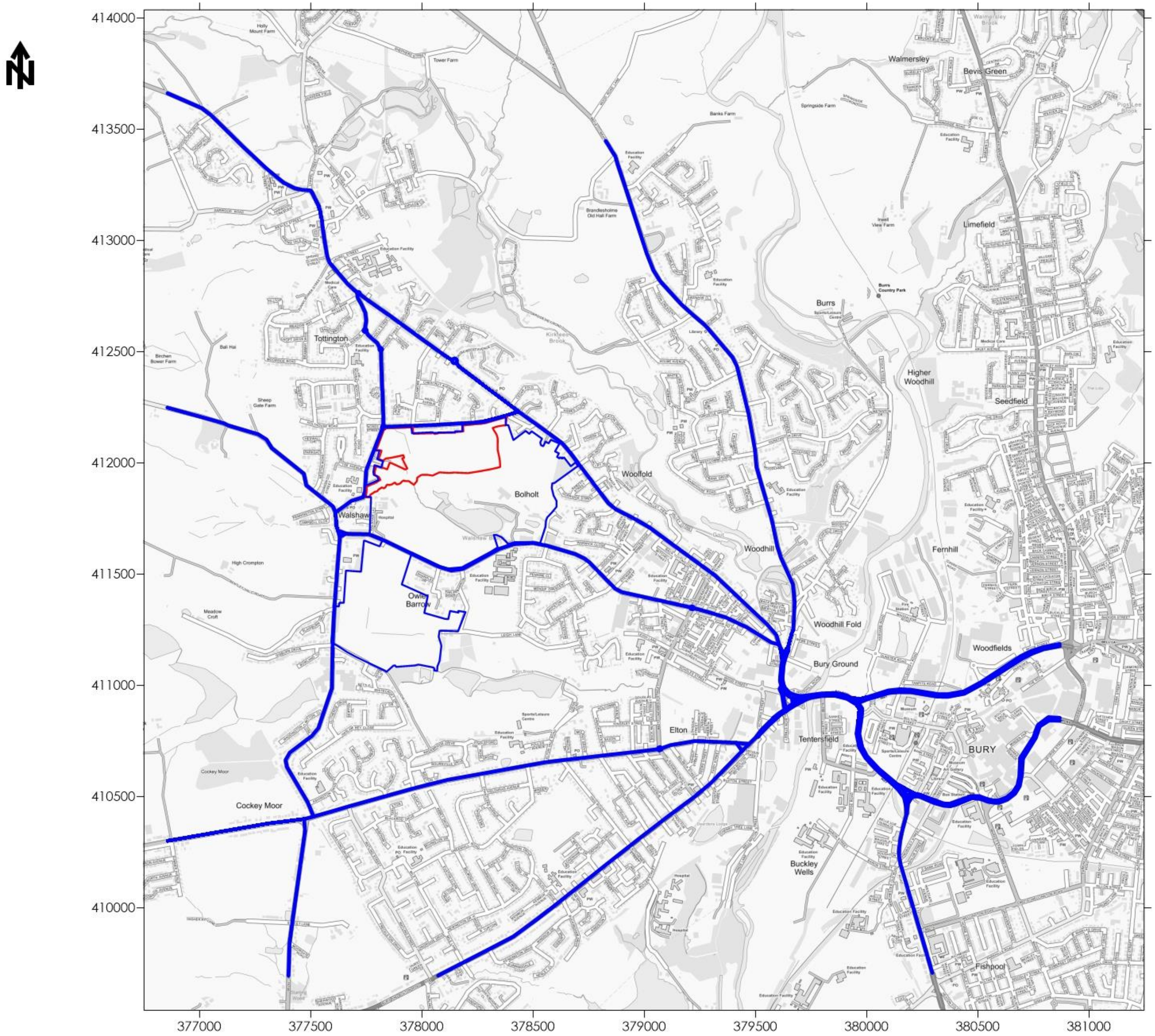
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381000
Tottington
Walshaw
Bolholt
Woolfold
Woodhill
Woodhill Fold
Bury Ground
Elton
Tentersfield
BURY
Cockey Moor
Owlet Barrow
Burrs
Higher Woodhill
Seedfield
Limefield
Walmersley
Bevis Green
Fernhill
Woodfields
Buckley Wells
Fishpool
High Crompton
Meadow Croft
Sheep Gate Farm
Birchen Bower Farm
Bali Hai
Holly Mount Farm
Tower Farm
Banks Farm
Springside Farm
Brandlesholme Old Hall Farm
Burrs Country Park
Kirklees Brook
Cockey Moor

Legend

🟥 Site Boundary

🟦 JPA 9 Walshaw Allocation Boundary

╱ Road Link

Title

Figure 11.3 - ADMS-Roads Inputs

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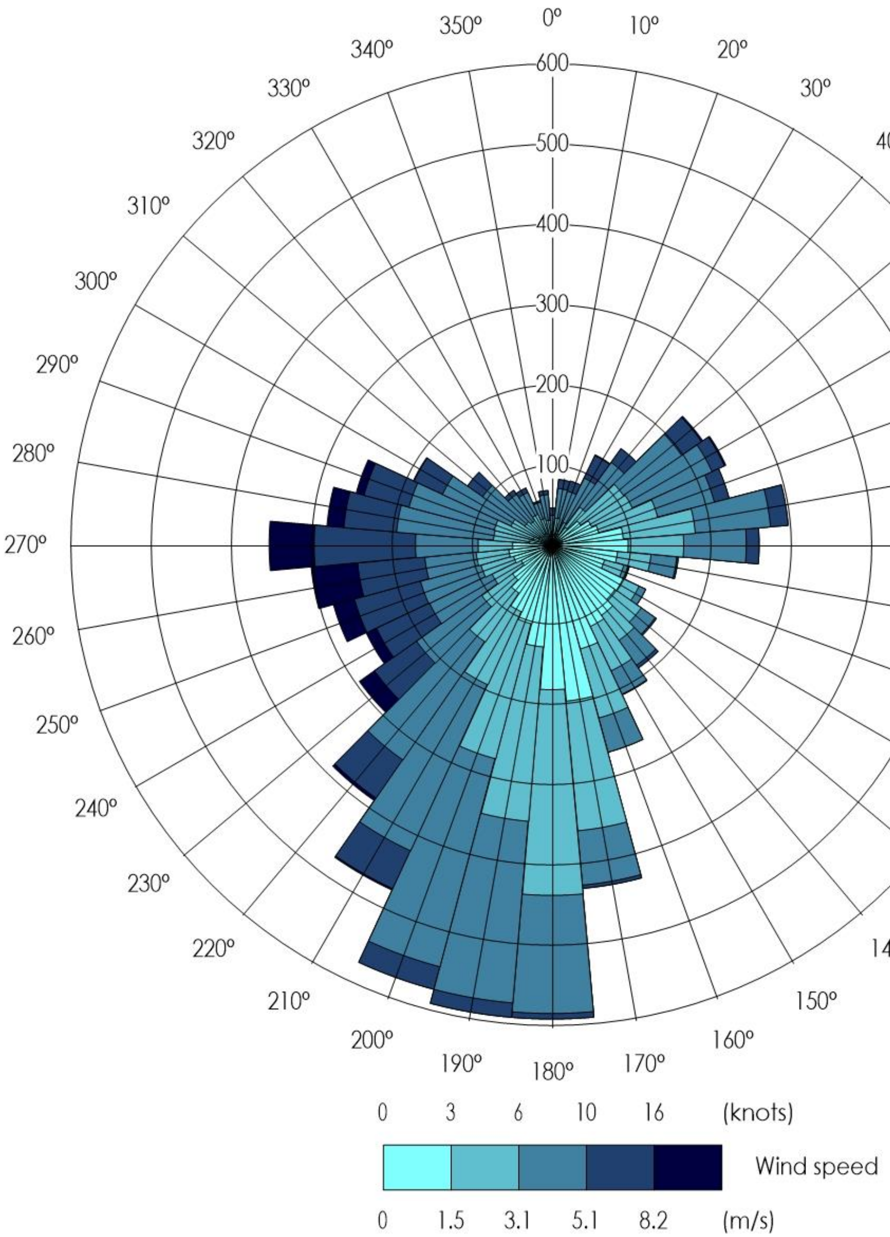

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Figure 11.4 Wind Rose of 2023 Manchester Airport Meteorological Data

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12 - Noise

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SCOBELL ST, BURY

NOISE IMPACT ASSESSMENT

DECEMBER 2024

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WAIN ESTATES LIMITED

SCOBELL STREET, BURY

NOISE IMPACT ASSESSMENT

DECEMBER 2024

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ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
INFRASTRUCTURE AND UTILITIES
LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT

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EXECUTIVE SUMMARY

Purpose of this Report

Wardell Armstrong (WA) LLP has been instructed by Wain Estates Limited to undertake a noise assessment to support the outline planning application for the proposed residential development off Scobell St, Bury

Assessment

This assessment has been undertaken in line with the current planning approval and technical guidance.

A baseline sound level survey was undertaken in August 2024 and has been used to inform the assessment. The measurements have been used in to determine indicative design requirements (glazing, background ventilation, external wall and roof specifications).

Findings

The results of the assessment show that, with the implementation of the recommended window and ventilation systems in this report, the noise level from transportation can achieve the requirements in BS8233:2014.

The results of the assessment show that with embedded mitigation i.e. proposed garden fencing noise criteria for external amenity spaces can be achieved.

With the implementation of the mitigation measures outlined in this report, recommended internal and external sound levels can be achieved, and as such will accord with planning policy.

1 INTRODUCTION

1.1 Background

1.1.1 By instruction from Wain Estates, WA has been commissioned to undertake a noise assessment for a residential development on land off Scobell St, Bury.

1.1.2 This report details the noise monitoring, modelling and assessment carried out to support the outline planning application.

1.2 Site Location

1.2.1 The proposed development location is in Walshaw within the wider area of Bury. The Site is within a predominantly residential. The site is bounded by Scobell St to the north and Church St to the west. South and east of the site is currently open agricultural land, however, this will form the wider proposed development.

1.3 Proposed Development

1.3.1 The proposed development consists of:

- Up to 270 dwellings; and
- Associated open space, landscaping, attenuation and infrastructure.

1.4 Scope of Assessment

1.4.1 In summary, this report outlines the noise assessment of the proposed development at the Site, including survey methodology and assessment. The pertinent aspects of the Scope of Work are as follows:

- Using the measured sound levels at the site boundary the likely impact upon the proposed sensitive receptors will be determined; and

- Assess sound levels in accordance with the methodology outlined in British Standard 8233: 2014 *Guidance on sound Insulation and noise reduction for buildings*[1] (BS 8233).

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[1] British Standards Institution (2014). BS 8223:2014, Guidance on sound insulation and noise reduction on buildings. BSI: London, UK

2 ASSESSMENT METHODOLOGY

2.1.1 The noise assessment considers noise at sensitive residential areas of the proposed development, specifically in terms of the potential impact of existing noise, in line with current guidance.

2.1.2 The noise assessment will consider the following current guidance and standards:

- National Planning Policy Framework, 2024[2] (NPPF);
- Planning Practice Guidance - Noise, 2019[3] (PPG-N);
- Noise Policy Statement for England, 2010[4] (NPSE);
- ProPG Planning & Noise – Professional Practice Guidance on Planning & Noise, 2017[5] (ProPG);
- British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings[1] (BS8233).
- The Building Regulations 2010 – Ventilation Approved Document F, 2021[6] (AD-F)
- World Health Organisation (WHO) Guidelines for community noise, 1999[7]
- Transport and Road Research Laboratory – Converting the UK traffic noise index $L_{A10,18hr}$ to EU Noise indices for noise mapping[8] (TRL PR/SE/451/02) (TRL)

2.2 Residential Suitability

2.2.1 An assessment has been undertaken in accordance with Stage 1 and Stage 2 of ProPG.

2.2.2 To determine appropriate façade specification and any other required mitigation, an assessment has been undertaken in accordance with the guidance and criteria provided within ProPG. The ProPG criteria for continuous daytime and night-time noise levels due to transport sources is reproduced in **Table 1** below, with additional categories between the negligible, medium and low categories as provided in the guidance.

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[2] Ministry of Housing, Communities & Local Government (2024). National Planning Policy Framework. [online] Available at: https://www.gov.uk/guidance/national-planning-policy-framework [Accessed 18/12/2024].

[3] Ministry of Housing, Communities & Local Government. (2019). Planning Practice Guidance, Noise. (online). Available at: https://www.gov.uk/guidance/noise--2 (Accessed 05/12/2023)

[4] Department for Environment, Food and Rural Affairs (2010). Noise Policy Statement for England (NPSE). [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69533/ pb13750-noise-policy.pdf [Accessed 6/12/2023].

[5] Association of noise consultants (ANC), Institute of Acoustics (IOA) & Chartered Institute of Environmental Health (CIEH), 2017. Professional Practice Guidance on Planning & Noise, New Residential Development. May 2017.

[6] HM Government, 2021. The Building Regulations 2010, Approved Document F - Ventilation

[7] World Health Organization (1999). Guidelines for community noise. WHO, Geneva.

[8] TRL and Casella Stanger (2002). Method for Converting the UK Road Traffic Noise Index LA10,18h to the EU Noise Indices for Road Noise Mapping. [online] Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20130402151656/ http:/archive.defra.gov.uk/environment/quality/noise/research/crtn/documents/noise_crtn.pdf [Accessed 25 August 2021].

Table 1: Criteria for Residential Suitability		
Risk category	**Daytime sound levels**	**Night-time sound levels**
High	>70 dB $L_{Aeq,16hr}$	>60 dB $L_{Aeq,8hr}$
Medium	65 – 70 dB $L_{Aeq,16hr}$	55 – 60 dB $L_{Aeq,8hr}$
Medium – Low	60 – 65 dB $L_{Aeq,16hr}$	50 – 55 dB $L_{Aeq,8hr}$
Low	55 – 60 dB $L_{Aeq,16hr}$	45 – 50 dB $L_{Aeq,8hr}$
Low – Negligible	50 – 55 dB $L_{Aeq,16hr}$	40 – 45 dB $L_{Aeq,8hr}$
Negligible	< 50 dB $L_{Aeq,16hr}$	< 40 dB $L_{Aeq,8hr}$

1.1.1 Requirements for internal ambient sound levels are presented in below **Table 2**.

Table 2: Recommended Internal Ambient Noise Levels			
Activity	**Location**	**07:00 – 23:00 Hrs**	**23:00 – 07:00 Hrs**
Resting	Living Room	35 dB $L_{Aeq,16\ hr}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq,16\ hr}$	-
Sleeping	Bedroom	35 dB $L_{Aeq,16\ hr}$	30 dB $L_{Aeq,8\ hr}$ 45 dB L_{AFmax}

2.3 Planning Policy Context

To enable the assessment of the proposed development in terms of LOAEL and SOAEL**, Table 3** presents equivalent noise levels and associated actions with the target noise level criteria identified. The noise level criteria below have been derived from standards and design guidance.

Table 3: Noise Level Criteria and Actions			
Effect Level	**Noise Sources**	**Noise Level Criteria**	**Justification for Effect Level-Action Required**
No Observed Adverse Effect Level (NOAEL)	Absolute internal noise criteria for the following noise sources with windows closed: • Road traffic noise	Noise levels are below: *Living Rooms:* • *35 dB$L_{Aeq,16hours}$* *Kitchens, Dining Rooms, and Studies:* • *40 dB$L_{Aeq,16hours}$* *Bedrooms Rooms:* • *35 dB$L_{Aeq,16hours}$* • *30dB $L_{Aeq,8hr}$* $L_{AFmax,2min}$ noise levels do not exceed: *45dB L_{AFmax} based on 10th highest $L_{AFmax,2min}$ sample)*	***Justification for Effect Level:*** Less than threshold values in Table 4 in BS8233:2014 and Table 1 in World Health Organisation (1999) Guidelines on Community Noise ***Action Required:*** None

Table 3: Noise Level Criteria and Actions

Effect Level	Noise Sources	Noise Level Criteria	Justification for Effect Level-Action Required
Lowest Observed Adverse Effect Level (LOAEL)	Absolute internal noise criteria for the following noise sources with windows closed: • Road traffic noise	Noise levels are between: *Living Rooms:* • *35-40 dB$L_{Aeq,16hours}$* *Kitchens, Dining Rooms, and Studies:* • *40-45 dB$L_{Aeq,16hours}$* *Bedrooms Rooms:* • *35-40 dB$L_{Aeq,16hours}$* • *30-35dB $L_{Aeq,8hr}$* $L_{AFmax,2min}$ noise levels do not exceed: *45dB L_{AFmax} based on 10th highest $L_{AFmax,2min}$ sample)*	***Justification for Effect Level:*** Exceed threshold guidelines in Table 4 of BS8233:2014 and World Health Organisation (1999) Guidelines on Community Noise by no greater than 5dB to achieve *reasonable internal conditions* as defined by Note 7 to Table 1 in BS8233:2014 ***Action Required:*** Mitigate and reduce to a minimum the exceedance over the threshold
Significant Observed Adverse Effect Level (SOAEL)	Absolute internal noise criteria for the following noise sources with windows closed: • Road traffic noise	Noise levels are between: *Living Rooms:* • *40-45 dB$L_{Aeq,16hours}$* *Kitchens, Dining Rooms, and Studies:* • *45-50 dB$L_{Aeq,16hours}$* *Bedrooms Rooms:* • *40-45 dB$L_{Aeq,16hours}$* • *35-40dB $L_{Aeq,8hr}$* 45-55dB $L_{AFmax,2min}$ *based on 10th highest $L_{AFmax,2min}$ sample)*	***Justification for Effect Level:*** Exceeds BS8233:2014 $L_{Aeq,T}$ reasonable criteria by 5dB or exceeds $L_{AFmax,1min}$ (10th highest sample) ***Action Required:*** Additional mitigation required to achieve effect of LOAEL or less.
Unacceptable Observed Adverse Effect Level (UOAEL)	Absolute internal noise criteria for the following noise sources with windows closed: • Road traffic noise	Noise levels exceed: *Living Rooms:* • *45 dB$L_{Aeq,16hours}$* *Kitchens, Dining Rooms, and Studies:* • *50 dB$L_{Aeq,16hours}$* *Bedrooms Rooms:* • *45 dB$L_{Aeq,16hours}$* • *40dB $L_{Aeq,8hr}$* $L_{AFmax,2min}$ noise levels exceeds: 55dB *L_{AFmax} based on 10th highest $L_{AFmax,2min}$ sample*	***Justification for Effect Level:*** Exceeds BS8233:2014 $L_{Aeq,T}$ reasonable criteria by 10dB or exceeds $L_{AFmax,1min}$ (10th highest sample) by 10dB or more. ***Action Required:*** Additional mitigation required to achieve effect of LOAEL or less.

3 NOISE SURVEY

3.1.1 WA undertook an attended noise survey during the daytime on the 29th August 2024[9] at two locations at the proposed development site. Corresponding measurements were undertaken during the night-time on the 4th September 2024[10].

3.1.2 Noise measurements were taken at locations which are representative of noise from Scobell St and Church St. These noise sources were found to be the dominant noise sources affecting the site.

3.1.3 The sound level meter was calibrated to a reference level of 94 dB at 1 kHz both before, and on completion of, the noise survey.

3.1.4 A-weighted[11] L_{eq}[12], L_{90}[13] and L_{10}[14] noise levels, together with the maximum and minimum sound pressure levels, were also measured to provide additional information.

3.1.5 The noise measurements were made using a Class 1, integrating sound level meter. The microphone was mounted vertically on a tripod 1.5 m above the ground and more than 3.5 metres from any other reflecting surfaces.

3.1.6 **Table 4** below summarises the monitoring locations and shown on **Figure 1.**

Table 4: Monitoring Locations

Monitoring Location	Description	Co-ordinates	
		x	y
ML1	Located on the northern boundary of the site adjacent to Scobell St	378300	412180
ML2	Located on the northern boundary of the site adjacent to Church St	377818	412109

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[9] Daytime survey

[10] Night-time survey

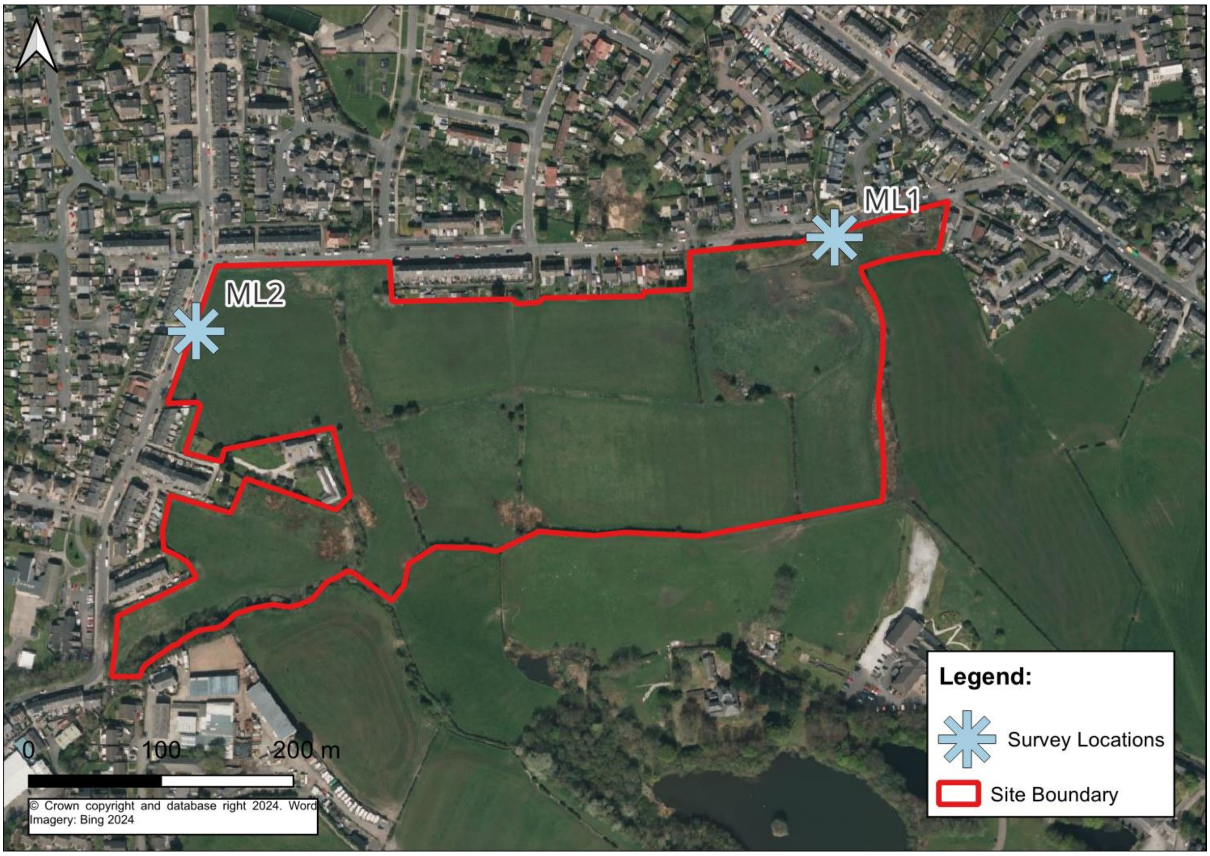
[11] A' Weighting — An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions

[12] L_{eq} — Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.

[13] L_{90} — The noise level which is exceeded for 90% of the measurement period.

[14] L_{10} — The noise level which is exceeded for 10% of the measurement period.

Figure 1 Monitoring Locations


ML1
ML2
0
100
200 m
© Crown copyright and database right 2024. Word Imagery: Bing 2024
Legend:
Survey Locations
Site Boundary

Observations

3.1.7 Based on observations during the survey, the main contributor to the acoustic environment is traffic movements on Scobell St and Church St. Other observations included bird song, pedestrians and wind in the flora.

3.2 Summary of Monitoring Results

3.2.1 **Table 5** presents the summary of measured results during the daytime.

Table 5: Summary of Monitored Sound Levels - Daytime

	Background Sound Level, dB $L_{A90,T}$		Ambient Sound Level, dB $L_{Aeq,T}$		Maximum Sound Level, dB $L_{AFmax,T}$	
	ML1	ML2	ML1	ML2	ML1	ML2
Range	39 - 44	42 - 50	54 - 57	53 - 59	68 - 73	64 - 76
25th %ile	41	43	54	54	69	68
Median	42	44	56	56	69	72
75th %ile	42	45	57	57	71	74
Arithmetic Avg	41	44	55	56	70	71
Log Avg	-	-	56	56	-	-

3.2.2 **Table 6** presents the summary of measured results during the daytime.

Table 6: Summary of Monitored Sound Levels – Night-time

	Background Sound Level, dB $L_{A90,T}$		Ambient Sound Level, dB $L_{Aeq,T}$		Maximum Sound Level, dB $L_{AFmax,T}$	
	ML1	**ML2**	**ML1**	**ML2**	**ML1**	**ML2**
Range	30-50	33-48	34-63	51-62	40-76	64-78
25th %ile	31	34	48	56	64	71
Median	33	37	57	57	72	71
75th %ile	36	40	75	59	75	72
Arithmetic Avg	35	37	66	57	66	71
Log Avg	-	-	73	58	-	-

3.2.3 **Table 7** details the weather on site during the noise survey.

Table 7: Details of Onsite Weather Conditions During Noise Survey.

Period	Temperature (°C)	Wind Speed (m/s)	Precipitation (mm)
29/08/2024	9-12	1-5	0
04/09/2024	12	<5	0

3.3 Uncertainty

3.3.1 To reduce the level of uncertainty within the assessment, the following steps have been taken,

- In accordance with guidance, during the noise survey the microphone was mounted vertically on a tripod 1.5m above the ground. The monitoring was carried out more than 3.5 metres from any other reflecting surfaces;
- The results of each measurement period were reported to the nearest 0.1dB,
- Noise measurements were made using a Class 1, integrating sound level meter;
- The sound level meter was calibrated prior to and following the noise survey, no significant drift in calibration was recorded; and,
- The distance between the source and nearest receptors has been measured from scale plans showing the location of the development.

Determination of Representative Sound Levels

3.3.2 To determine representative sound levels the shortened measurement method as described in CRTN has been used and measured sound levels converted to L_{day} and L_{night} in accordance with method 3 as described in TRL.

3.3.3 For ML1 and ML2 an $L_{A10,3hr}$ of 60 dB and 59 dB have been measured, respectively. As such, the L_{day} is 57 dBA for ML1 and ML2. The L_{night} is 50 dBA and 49 dBA for ML1 and ML2, respectively.

3.3.4 To determine the representative night-time L_{AFmax} sound level at ML1 and ML2, the 10th highest event has been chosen as recommended by ProPG. As such, for ML1 the representative L_{AFmax} is 74 dB, and 72 dB for ML2.

4 ACOUSTIC DESIGN STATEMENT

4.1 Stage 1: Initial Site Risk Assessment

4.1.1 In accordance with ProPG, a Site Noise Risk Assessment (SNRA) has been carried out. The SNRA assesses the initial risk of noise from transportation sources to have an adverse impact on a proposed development based on the overall measured levels with no mitigation in place.

4.1.2 When comparing the measured sound levels with Figure 1 of ProPG, the results of the Stage 1 noise risk assessment show that the site is **Low Risk** during the daytime and night-time.

4.1.3 Therefore, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed.

4.2 Stage 2: Full Assessment

4.2.1 Stage 2 of a ProPG assessment comprises of four elements. Together these elements ensure that a robust acoustic design for the Proposed Development is achieved. As full detailed design information has not yet been determined, the following sections present an indicative assessment and recommendations to inform the detailed design stage.

Element 1 – Good acoustic design process

4.2.2 Good acoustic design should be a factor considered at the detailed design stage to ensure acceptable internal and external noise environments are achieved.

4.2.3 It is recommended that, where possible, habitable rooms (living/dining areas and bedrooms) are positioned facing away from the adjacent roads to minimise internal noise levels, particularly for housing falling within the medium noise risk area. Conversely, rooms which are less sensitive (kitchens, bathrooms, storage rooms, corridors etc.) should be placed on the noisy side of the building. This should avoid the potential for significant adverse effects of individual noise events ($L_{AFmax,T}$) on sleep i.e. behavioural awakenings and physiological impacts. An additional way of minimising the intrusion of noise is to minimise the number of doors and windows on the noisy side of dwellings. These elements will be confirmed at the detailed design stage.

Element 2 – Internal noise level guidance

4.2.4 The recommended guideline noise level for living rooms and bedrooms during the daytime period is 35dB $L_{Aeq,16hour}$. The recommended noise levels for bedrooms during the night-time period are 30dB $L_{Aeq,8hour}$ and 45dB $L_{AFmax,T}$.

4.2.5 As windows may be required to be shut for habitable rooms which are most exposed to noise, consideration is given to the specification of the building envelope to achieve the necessary acoustic performance.

4.2.6 For the purposes of this assessment, the 'building envelope' refers to the façade, windows, roof, ventilation openings, and any other external element of the buildings which may form a transmission path for external noise to enter habitable rooms.

4.2.7 Contributions to the internal noise levels through the walls and roof are normally negligible compared to the contribution through windows and ventilation systems as these elements normally have the poorest acoustic performance. As such, the minimum acoustic performance required for windows and ventilation systems has been considered.

4.2.8 Single figure break in calculations, undertaken in accordance with BS EN 12354-1 'Building acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound' (BSI, 2000) have been undertaken.

4.2.9 Indicative calculations presented in **Table 8** demonstrate that with appropriate glazing and ventilation acceptable internal conditions can be achieved with windows closed.

4.2.10 For ground floor habitable spaces the calculations are based on thermal double glazing and passive window trickle ventilation achieving a minimum 25 dB R_w+C_{tr} (i.e. 4-16-4) and 32 dB $D_{n,ew}$ per unit in the open position (i.e. Greenwoods 4000s).

4.2.11 For first floor habitable spaces the calculations are based on thermal double glazing and passive window trickle ventilation achieving a minimum 29 dB R_w+C_{tr} (i.e. 8-16-4) and 40 dB $D_{n,ew}$ per unit in the open position (i.e. Greenwoods 2500EA.AC1).

Table 8: Indicative Break-in Calculations			
	Daytime	Night-time	
	$L_{Aeq,T}$	$L_{Aeq,T}$	L_{AFmax}
Example sound pressure level, dBA	57	50	74
Window Sound Reduction Index (SRI), dB $R_w + C_{tr}$	25	29	29
Window Area, m^2	2	2	2
Wall SRI, dB $R_w + C_{tr}$	47	47	47
Wall Area, m^2	11	11	11
Vent SRI, dB $D_{n,e,w} + C_{tr}$	32	40	40
No. of vent units	2	2	2
Corrected Vent SRI, dB $D_{n,e,w}$ for No. of vent units	29	37	37
Composite (Whole Façade) Weighted SRI, dB R_w	23	29	29
Average sound pressure level in receiving room, normalised to 10 m^2 absorption, dBA $L_{2,n}$	**34**	**21**	**45**

4.2.12 Dwellings further into the site away from the surrounding road network, benefit from the dwellings closest to the road screening the noise, and therefore reducing the sound insulation requirements. The facade sound insulation can be value engineered once a fixed layout is known.

4.2.13 Based on the above, internal spaces would not be affected by noise levels that cannot be mitigated to achieve the threshold values in ProPG with commercially available solutions using standard construction techniques.

Element 3 – External amenity area noise assessment

4.2.14 BS8233:2014 states the following:

"the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$".

4.2.15 Based on a measured L_{day} sound level at the boundary of the site of 57 dBA, external amenity areas are likely to achieve <55 dB $L_{Aeq,16hr}$ in all gardens with standard embedded measures i.e. boundary garden fencing. Furthermore, the external amenity areas are likely to below the BS 8233:2014 guideline of 50 dB $L_{Aeq,16hr}$ when moving towards the centre of the site.

4.2.16 Once a layout fixed, boundary treatment measures can be optimised ot reduce noise levels to be less than the threshold criteria needed in ProPG and BS8233:2014.

4.2.17 Based on the above, external spaces would not be affected by noise levels that cannot be mitigated to achieve the threshold values needed using standard construction methods i.e. 1,8m boundary fencing and by optimising layout during the reserved matters planning stage.

Element 4 – Assessment of other relevant issues

Compliance with relevant national and local policy

4.2.18 The assessment demonstrates that noise from transport sources is unlikely to cause a significant effect across the Site. However, to minimise potential impacts it is recommended good acoustic design is used to achieve acceptable internal sound levels within habitable rooms. On this basis, and in consideration of national planning policy, it is considered that adverse effects due to internal noise levels will be no greater than NOAEL.

4.2.19 Therefore, the results of the assessment indicate that the Proposed Development accords with national planning policies.

Magnitude and extent of compliance with ProPG

4.2.20 The assessment has demonstrated that, subject to further assessment at the detailed design stage, all proposed housing areas will comply with the recommendations for internal and external noise levels due to transport sources set out in ProPG, with good acoustic design taken into consideration. If further assessment at the detailed design stage indicated non-compliance with any of the criteria at any proposed dwelling, recommendations will be made to increase stand-off distances to nearby noise sources in order to ensure compliance.

Likely occupants of the development

4.2.21 The guidance under paragraph 2.26 of ProPG states that the 'detailed design may, to a certain extent, both reflect and influence the likely occupants of new residential development… certain groups such as families with young children, students and the elderly may all have different requirements and sensitivities as regards to acoustic conditions and, in particular, varying needs for access to quiet external space….'.

4.2.22 The Proposed Development is considered typical in terms of its layout, setting and features. Future residents would therefore be expected to be composed of a typical mix of ages etc. The as-built scheme will offer good access to private and public quiet external spaces. Some areas will be exposed to higher noise levels than others, as plots which are centrally located are anticipated to benefit from greater levels of local acoustic screening, and hence lower ambient noise levels.

4.2.23 On this basis it is considered that the Proposed Development is not prejudicial to any future occupants in terms of access to varying acoustic conditions appropriate to their likely requirements.

Acoustic design vs unintended adverse consequences

4.2.24 ProPG identifies several unintended consequences that may arise when addressing acoustic challenges. These include, but are not limited to:

- affecting the attractiveness of the living environment;
- sealed balconies reducing the connection with the external environment;
- roadside barriers removing views or preventing road crossings; and
- sealed façades affecting personal control over the internal environment.

4.2.25 During the detailed design stage, the specification of any required acoustic fences should be undertaken with care to ensure that no gardens are enclosed on all sides with tall boundary treatments.

5 CONCLUSIONS

5.1.1 This noise assessment has been undertaken to support the outline planning application for Land off Scobell St Bury. The assessment has considered noise from the surrounding road network on proposed dwellings and has been undertaken in accordance with current planning and technical guidance.

5.1.2 The assessment of noise upon the development site has been informed by a noise survey undertaken on the 29th August 2024 and 4th September 2024. The data has informed calculations made to determine an indicative glazing and ventilation strategy to ensure recommended internal ambient noise levels achieved.

5.1.3 The assessment shows that sound levels are likely to be <50 dB $L_{Aeq,T}$ in the majority of gardens and <55 dB $L_{Aeq,T}$ in all gardens.

5.1.4 For habitable spaces, the majority of the site will likely be ventilated through openable windows. However, Dwellings adjacent to Scobell St and Church St may require a closed window solution to maintain recommended internal sound levels. As such, indicative window and ventilation elements have been recommended for these dwellings.

5.1.5 Finally, with the implementation of the proposed scheme of mitigation within this report, internal sound levels in accordance with BS 8233 can be achieved and the proposed development will accord with national planning policies.

APPENDICES

Appendix A

Policy, Standards and Guidance

Table A1 presents a summary of the policy used to inform the assessment.

Table A1: Policy relevant to the noise assessment	
Guidance document	**Summary**
National Planning Policy Framework (NPPF)	Paragraph 187 states that the planning system should contribute to and enhance the natural and local environment by (amongst other considerations) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of noise pollution. Paragraph 198 states that planning policies and decisions should ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution. This involves, in particular, mitigating and reducing to a minimum, potential adverse impacts resulting from noise; avoiding noise that gives rise to significant adverse impacts on health and the quality of life In addition, tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value should be identified and protected. Paragraph 200 states that planning policies and decisions should ensure that new development can be integrated effectively with existing business and community facilities, with existing businesses not having unreasonable restrictions placed on them as a result of new development permitted after the business was established. Where the operation of an existing business or community facility could have a significant adverse effect on a new development, the application should provide suitable mitigation before the development is complete. This should be taken into account when considering whether proposed development is an acceptable use of land.
Noise Policy Statement for England (NPSE)	Paragraph 1.6 sets out the long-term vision of Government noise policy, i.e. to "*promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.*" Paragraph 1.7 states that the NPSE vision is supported by aims to effectively manage and control environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development by avoiding significant adverse impacts, mitigating and minimising adverse impacts and contributing to the improvement of health and quality of life. Paragraph 2.20 states that to identify "significant adverse" and "adverse" impact in line with the three aims of NPSE, there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organization: No Observed Effect Level (NOEL): This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. Lowest Observed Adverse Effect Level (LOAEL): This is the level above which adverse effects on health and quality of life can be detected.

<table>
<tr><th colspan="2">Table A1: Policy relevant to the noise assessment</th></tr>
<tr><th>Guidance document</th><th>Summary</th></tr>
<tr><td></td><td>Significant Observed Adverse Effect Level (SOAEL). This is the level above which significant adverse effects on health and quality of life occur.
Paragraph 2.24 states that where an impact lies somewhere between LOAEL and SOAEL, all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.
Paragraph 2.22 notes that the NPSE states <i>“it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”</i></td></tr>
<tr><td>Planning Practice Guidance - Noise (PPG-N)</td><td>The PPG-N provides guidance in the form of a noise exposure hierarchy, which details the levels of perception to noise exposure and the expected outcomes and required actions.
<table>
<tr><th colspan="4">Table 1 PPG Noise exposure Hierarchy</th></tr>
<tr><th>Perception</th><th>Examples of Outcomes</th><th>Increasing Effect Level</th><th>Action</th></tr>
<tr><td>Not Present</td><td>No Effect</td><td>No Observed Effect</td><td>No Specific Measures Required</td></tr>
<tr><td>Present and not intrusive</td><td>Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.</td><td>No Observed Adverse Effect</td><td>No Specific Measures Required</td></tr>
<tr><th colspan="4">Lowest Observed adverse Effect Level (LOAEL)</th></tr>
<tr><td>Present and not intrusive</td><td>Noise can be heard and causes small changes in behaviour, attitude or other physiological</td><td>Observed Adverse Effect</td><td>Mitigate and reduce to</td></tr>
</table></td></tr>
</table>

Table A1: Policy relevant to the noise assessment

Guidance document	Summary			
		response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.		a minimum
	Significant Observed adverse Effect Level (SOAEL)			
	Present and not disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid

Table A1: Policy relevant to the noise assessment				
Guidance document	**Summary**			
	Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

Table A2 presents a summary of the standards and guidance used to inform the assessment.

Table A2: Guidance relevant to the noise assessment	
Guidance document	**Summary**
BS 7445-1:2003 *Description and measurement of environmental noise. Guide to quantities and procedures*	Details standardised guidance for the measurement of environmental noise. The pertinent details of BS 7445-1:2003**Error! Bookmark not defined.** adopted in this assessment are a s follows: • instrumentation to measure equivalent continuous A-weighted sound pressure level conforming to Type 1 as given is BS EN 61672-1:2013 *Electroacoustics. Sound level meters - specifications.*[15]; • all equipment calibrated and the calibration shall follow manufacturer's instructions. All WSP sound monitoring equipment is calibrated at an accredited laboratory at a minimum interval of 24 months. To maintain confidence in recorded sound levels, sound level meters were field calibrated prior to and after use with the recommended manufacturer's calibrator. No significant drift (i.e., greater than 0.5 dB) in calibration was recorded; and minimise the influence of reflections by, whenever possible, undertaking measurements at least 3.5 m from any reflective surface other than the ground. Preferred measurement height is 1.2 m to 1.5 m above the ground.
Professional Practice Guidance on Planning and Noise, New Residential Development,	This Professional Practice Guidance on Planning and Noise (ProPG) has been produced to provide practitioners with guidance on a recommended

---

[15] British Standards Institution (2013). BS 61672-1:2013 Electroacoustics. Sound level meters – specifications. BSI, London.

2017 (ProPG).	approach to the management of noise within the planning system in England.
BS 8233:2014 Guidance on sound insulation and noise reduction for buildings	BS8233:2014 presents design criteria for noise within habitable rooms in new residential developments to avoid adverse impacts on sustainability for the intended use. In summary, these are: • Resting in Living Rooms: 35 dB $L_{Aeq,16h}$ (daytime) • Dining in Dining Rooms / Areas: 40 dB $L_{Aeq,16h}$ (daytime) • Sleeping or resting in Bedrooms: 35 dB $L_{Aeq,16h}$ (daytime) / 30 dB $L_{Aeq,8\,h}$ (night-time).
Department for Transport (1988) Calculation of Road Traffic Noise (CRTN)	Describes procedures for calculating noise from road traffic.
TRL (2002) Transport and Road Research Laboratory – Converting the UK traffic noise index $L_{A10,18hr}$ to EU Noise indices for noise mapping (TRL PR/SE/451/02)	A method for converting the road traffic noise indexes described in CRTN to produce outputs in the form of European Union indices, in particular *TRL Method 2* which outlines the conversion of the $L_{A10,18hr}$ noise indices to the $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$ indices.
World Health Organization (WHO) (1999) Guidelines for Community Noise	Presents guideline noise levels for community noise in specific residential environments, e.g., outdoor living areas.

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From: Hall, Rob A
To: Sharp, Alex
Subject: RE: methodology and scope advice for a residential development
Date: 25 January 2024 10:19:44
Attachments: image008.png
image009.jpg
image010.png
image011.png
image012.png
image013.jpg
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image015.png
image016.png
image017.png
image018.png
image019.jpg

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Alex

Thanks for the info. I am happy for you to carry out the assessment in accordance to the guidance you have stated. The council doesn't have any other guidance that we would wish you to follow.

Thanks

Rob Hall
Unit Manager, Commercial Team
Bury Council | Department for Operations | Public Protection
3 Knowsley Place | Duke Street | Bury | BL9 0EJ
Email: r.a.hall@bury.gov.uk

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From: Sharp, Alex <asharp@wardell-armstrong.com>
Sent: Thursday, January 25, 2024 9:47 AM
To: Hall, Rob A <R.A.Hall@bury.gov.uk>
Subject: RE: methodology and scope advice for a residential development

Hi Rob,

The application hasn't been submitted yet so there isn't an application number, but I've attached the red line of the part of the site that's under my purview if it's any help.

Thanks,

Alex

Alex Sharp | Acoustic Consultant
Wardell Armstrong LLP
41-50 Futura Park, Aspinall Way, Middlebrook, Bolton, BL6 6SU
07557 439 877 01204 227 227

From: Hall, Rob A <R.A.Hall@bury.gov.uk>
Sent: Thursday, January 25, 2024 9:12 AM
To: Sharp, Alex <asharp@wardell-armstrong.com>
Subject: RE: methodology and scope advice for a residential development

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Alex

Good morning, with regards your information before I can comment can you provide me with the planning application number and exact address so I can check the planning portal and relevant information.

Kind regards

Rob Hall
Unit Manager, Commercial Team
Bury Council | Department for Operations | Public Protection
3 Knowsley Place | Duke Street | Bury | BL9 0EJ
Email: r.a.hall@bury.gov.uk

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From: Sharp, Alex <asharp@wardell-armstrong.com>
Sent: Tuesday, January 23, 2024 4:01 PM
To: Customer Contact Team <CustomerContactTeam@bury.gov.uk>
Subject: methodology and scope advice for a residential development

FAO: environmental Health officer – Noise at Bury Council

Hello,

We have been recently instructed to undertake a noise assessment for a development off Scobell street in Bury.

From information provided, we understand that the proposed site is approximately 64Ha in size, and is being put forward as a consortium development between, Wain Estates, Redrow and VHW Partnership, however each developer is submitting their own planning applications for their respective areas of the site.

Our assessment area of the site being brought forward by Wain Estates is located in the north of the proposed development site, and will be for the construction of approximately 300 residential dwellings and associated infrastructure.

As part of the outline planning application for the whole site a noise screening assessment as confirmed by Bury council was completed by us and submitted on the 3rd of April 2020.

We believe that the outcomes of the assessment are likely to accord with the original assessment and on this basis believe a full impact will not be necessary and simply another screening report will suffice; however we would like to confirm this with you.

We will conduct the assessment in line with the following guidance:

- National Planning Policy Framework, 2023 (NPPF).
- Planning Practice Guidance- Noise, 2019 (PPG).
- Noise Policy Statement for England, 2010 (NPSE).
- British Standard 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS4142).
- ProPG Planning & Noise – Professional Practice Guidance on Planning & Noise, 2017 (ProPG).
- British Standard 8233:2014 Guidance on Sound Insulation & Noise Reduction for Buildings (BS8233).
- The ANC Acoustics, Ventilation and Overheating Guide, 2020 (AVO).
- Building Regulations Document F:Ventilation.
- Building Regulations Document O:Overheating.

If the council has it’s own noise guidelines or any additional guidance you would like us to consider please let me know.

Thank you,

Alex

Alex Sharp | Acoustic Consultant
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13 - Ground Conditions

Phase 1 Desk Study Report
Land off Scobell Street, Bury

Prepared for
Wain Estates (Land) Ltd

April 2024

10/2399/001 Rev. 00

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Document Control Sheet

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Document	Phase 1 Desk Study Report	
Project Name	Land off Scobell Street, Bury	
Reference	10/2399/001 Rev. 00	
Date	April 2024	

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Document Origin

Revision	Date	Revision Description		Name
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			Checked	Desy Korai Associate desy.korai@clancy.co.uk
			Approved	Nick Riding Divisional Director nick.riding@clancy.co.uk

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Executive Summary

Client	Wain Estates (Land) Ltd
Location	Off Scobell St, Bury at OS Grid Reference 378060, 412040.
Description	The site covers an area of approximately 11.75 hectares. Copthorne Cattery buildings are present in the west of the site, with the remaining areas forming predominantly undeveloped grassland with shrubs and trees. An unnamed stream is present in the north west of the site, leading to “sinks” in the central western part of the site. A spring is located in the south west with a drainage ditch or small stream leading southwards. There is evidence of invasive plant species being present in the north east and south west of the site. The surrounding area is predominantly residential in nature. A stream is located 15m to the north of the site with Walshaw Brook forming part of the southern site boundary.
Development	The site is proposed to be developed for residential purposes though no site plans have been provided at this stage. For the purposes of this assessment, we have assumed low rise housing of 2 to 3 storeys.
Site History	The majority of the site has been largely undeveloped though several small buildings have been constructed and demolished in the central and western parts of the site over time. A sand pit and brick works were also historically located in the north east of the site. The Copthorne Cattery buildings have been present in the west of the site prior to the first available OS historical map of the area in the 1800s and has remained largely unchanged. A well was located in the south west of the site before later being shown as a spring, which is still present. Another well was historically present on the north eastern boundary of the site. The surrounding area has had a varied development history including industrial and residential uses. Mills, works, a laundry, reservoirs, pits, quarries and refuse heaps have all historically been present within close proximity to the site.
Geology	The area is indicated to be underlain by both Glaciofluvial Deposits and Devensian Till, with solid strata indicated to be mix of sandstone, siltstone, mudstone and coal of the Pennine Lower Coal Measures, Canal Rock and Old Lawrence Rock. Potentially elevated concentrations of lead are anticipated to occur naturally within the superficial deposits.
Radon	The site is not indicated to be in an area affected by Radon Gas.
Mining & Ground Stability	The site is located within a Coal Mining Reporting Area with an area of Development High Risk present across the middle of the site. The western part of the Development High Risk Area is also indicated to be at risk from probable shallow mine workings. The site is not indicated to be at risk from ground stability hazards with regard to ground dissolution, collapsible ground, compressible ground, landslides, shrinking / swelling clay and running sand. The historic sand pit on site is a recorded mineral site. Further mineral sites are also recorded within the wider area.

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Flood Risk

The site is not indicated to be at risk from flooding from seas or rivers. The site is however indicated to be at risk from groundwater flooding at surface and from surface water / pluvial flooding. Given the size of the site, a flood risk assessment will be required.

Environmental Setting

The Glaciofluvial Deposits are indicated by the EA to be a Secondary A Aquifer. The Devensian Till is indicated to be a Secondary Undifferentiated Aquifer. The bedrock (Pennine Lower Coal Measures, Cannel Rock and Old Lawrence Rock) is indicated to be a Secondary A Aquifer.

The nearest surface water feature is an unnamed stream in the west of the site. Another unnamed stream runs from 15m to the north of the site into a “sinks”. It is unclear where the stream runs after the sinks, though it is possible it runs in culvert beneath the north east of the site. Walshaw Brook is present along the south western boundary of the site.

The site is not indicated to be within an SPZ and no groundwater or surface water abstractions for potable supply are indicated to be present within 1km of the site.

The site is located within an area of adopted green belt.

Waste and Landfill

Several areas of potentially infilled land are present on site and within the surrounding area. These include the sand pit, brick works, infilled ponds and wells / shaft on site, reservoirs, pits and refuses heaps.

UXO

The site is indicated to be in an area at low risk from UXO.

Further Works / Considerations

On the basis of the above, the following further works are recommended as an initial phase of intrusive investigation:

- Culvert survey to establish if the stream to the north of the site runs beneath the north east of the site and investigation into the nature of the “sinks” on site.
- Investigations to locate the historical wells in north east and south west.
- A Flood Risk Assessment will be required by planning along with soil infiltration testing to assist with the development of a drainage strategy.
- Invasive plant species survey.
- Carry out an intrusive site investigation to confirm ground conditions at the site.
- In-situ testing and geotechnical soil sampling should be carried out during intrusive investigation to provide adequate recommendations for foundation design.
- A mining investigation will be required to assess the risk from possible shallow mine working across the central portion of the site along with trial pit excavations and or probing to locate the mine entry in the south west of the site. Reference should be made to the Coal Mining Risk Assessment report undertaken and presented under a separate cover.
- Soil samples should be recovered from selected exploratory holes and tested for potential contaminants of concern. A contamination assessment should be undertaken to establish the risk from contaminants of concern to proposed site users and environmental receptors.
- Installation of monitoring wells to ground gas and groundwater monitoring across the site.
- Should contaminants of concern be encountered beneath the site, groundwater samples should be retrieved from groundwater monitoring wells and surface water samples retrieved from the surface watercourses to assess the impact to controlled waters.

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Appendix II	Historical Maps
Appendix III	Zetica Bomb Risk Mapping
Appendix IV	Geological Maps
Appendix V	EA Site Sensitivity & Flood Risk Maps
Appendix VI	Environmental Datasheets

1.0 Introduction

1.1 Background

Clancy Consulting Ltd has been instructed by Wain Estates (Land) Ltd to carry out a Phase 1 Desk Study Report for a site located off Scobell Street, Bury. A site location plan is included in Appendix I.

The site is proposed to be developed with low rise residential housing, associated infrastructure, private gardens and POS as part of the wider Walshaw Garden Neighbourhood development. At the time of writing, a copy of the Walshaw Garden Neighbourhood Development Framework has been made available to Clancy Consulting Ltd, though no specific proposed development plans have been provided for the subject site.

1.2 Objectives

The objectives of this investigation are summarised below:

- Provide a review of the site’s land use history by reference to ordnance survey maps of the area.
- Assess the environmental setting, geology, hydrology, hydrogeology, mining and subsidence history of the site and surrounding area.
- Consider the potential risk from unexploded ordnance (UXO).
- Consider the potential risk to end users of the site from hazardous ground gas.
- Develop a preliminary risk assessment and a detailed ‘conceptual site model’ with regard to potential contamination sources, pathways and receptors.
- Provide recommendations regarding the requirement for further investigations if required, to satisfy the Local Planning Authority and to inform detailed civil and structural design.

1.3 Limitations of the Study

Clancy Consulting Ltd cannot be held responsible for any omissions, misrepresentation, errors or inaccuracies with the supplied third-party report information. The report is written in the context of an agreed scope of work and budget and should not be used in a different context. New information or improved practices and changes in legislation may require a reinterpretation of the report in whole or in part.

Clancy Consulting Ltd reserves the right to amend either conclusions or recommendations in light of any further information that may become available. The report is provided for the sole use of Wain Estates (Land) Ltd for the objectives discussed previously only and is confidential to them.

The report may not be relied upon by any other party without prior written consent of Clancy Consulting Ltd. Those using this information in subsequent assessments or evaluations do so at their own risk.

2.0 Desk Study

2.1 General

Background information was sought from the following sources:

- Ordnance Survey historical maps (selected copies included in Appendix II).
- Zetica Bomb Risk Mapping (Appendix III).
- British Geological Survey (BGS) sheets (Appendix IV).
- Environment Agency site sensitivity & flood risk maps (Appendix V).
- Environmental datasheets (Appendix VI).

2.2 Site Setting and Description

The site is located off Scobell Street, Tottington approximately 2.5 km north west of Bury town centre, at OS Reference 378060, 412040. The site is roughly rectangular in shape covering an area of approximately 11.75 hectares, with a cluster of buildings and access road associated with Copthorne Cattery in the west of the site. A small cluster of unspecified structures within a compound are also present in the north east of the site. With the exception of these structures, the site forms predominantly undeveloped open grassland with some areas of rougher vegetation, split into several sections by field boundaries, hedgerows and mature / semi mature trees. A small stream or drainage ditch runs from the north west of the site in a south easterly direction before entering “sinks” in the central western area, east of the Copthorne Cattery buildings. A spring is present to the south east of the Copthorne Cattery buildings along with another drainage ditch, leading southwards towards Walshaw Brook. A footpath leads from the central northern boundary of the site towards the middle of the site and to Copthorne Cattery, before leading south past the spring towards Walshaw Brook.

The site generally slopes from west (approximately 135m to 130m AOD) to the east and south east (approximately 120m AOD) with an approximate change in elevation of 10m to 15m. Steeper slopes are present around the north western boundary and west of the site, where the site dips towards the stream / drainage ditch. A small raised area is present in the centre of the site with an elevation of 126m AOD. Scobell Street is at a lower elevation to the site along the north eastern boundary.

The north of the site is bound by Scobell Street along with a central row of houses with further housing and a partially culverted stream beyond. The west of the site is bound by Church Street, Collins Street and Pleasant Street with associated houses to the west of Cop Thornes. Additional areas of open grassland, hedgerows and footpaths form the eastern and southern site boundaries with Walshaw Brook forming the south western boundary. A series of large ponds, fields and Stables Country Club are present to the south of the site with the majority of the surrounding area comprising residential buildings with associated infrastructure, some light industrial and commercial buildings and open fields. There is evidence of invasive plant species being present in the north east and south west of the site.

2.3 Site History

To investigate the development history and previous land uses at the site and surrounding area, historical OS maps were examined. Copies of the maps are presented in Appendix II.

Table 1 below is not intended to provide a comprehensive review of all the changes which have occurred at the site and instead provides a summary of the most salient points relating to the development history of the site. The most significant historical land uses are highlighted in bold text for ease of reference.

Table 1 – Site History

Date(s)	Site	Surrounding Land
1850	The site was largely **undeveloped** with several field boundaries across the site and trackways leading north, south and west of the **‘Cop Thorns’** buildings in the central south west of the site. A **well** was	The surrounding area is predominantly **undeveloped** with small clusters of likely **residential or farm buildings** with associated infrastructure and **wells / pumps** within close proximity. A **stream** forms the

Date(s)	Site	Surrounding Land
	also present in the south west, along the southern trackway. A **sand pit**, **brick field** and **well** were present in the north east of the site.	south western boundary of the site, leading to large **ponds / reservoirs** 160m south of the site. Another **stream** ran west to east approximately 90m becoming 15m to the north of the site, entering **sinks** immediately north east of the site. **Mills** were present 20m to the north east, 165m to the south west and within the wider area. **Bleach works** were present from 325m to the south east along with within the wider area. An **irrigation works** with associated **filter beds** and **tanks** was present 420m to the north east along Kirklees Brook. A **sand pit** was present 390m to the north.
1893	The **well** in the south west of the site was shown as a **spring**. The **sand pit** in the north east was no longer marked. A **pond** was shown in the north east of the site.	**Housing** had been constructed immediately to the north, north west and west of the site. The mill 20m to the north was shown as **disused** and a **cotton mill** constructed with associated **reservoirs**. A **tramline** had been constructed 55m to the north east. Additional **reservoirs** had been constructed in several locations within the wider area. A **gravel pit** was marked 40m to the north west, **'old clay pits'** 345m to the south east with **reservoirs** beyond and a **brick field** 365m to the north. The sand pit to the north had been replaced with **housing**. An **'old wagon works'** was present 275m to the east with **sidings** leading to the **Tottington Branch Railway** 290m to the north east of the site. The **bleach and print works** had expanded to 225m to the south east. Further **works and mills** had been constructed / extended within the wider area. An **'old shaft'** was marked 380m to the south.
1910 - 1911	No significant change.	The mill 20m to the north had been demolished and replaced with a **laundry**. The tramline had been **dismantled**. The gravel pit to the north was no longer marked though the outline was still present and the old clay pits to the south east had become **reservoirs**. **Embankments** were shown 115m to the north east. The wagon works to the east had been **demolished** while some **sidings** remained.
1929 – 1930	A **structure** was shown in the **brick field** in the north east of the site with several other small **buildings** constructed in the central north and south west. Additional boundaries / pens were shown adjacent to **Cop Thorns** and a **cricket ground** with **pavilion** was shown in the north west. A **drainage ditch** ran along the eastern boundary of the cricket ground and a **cutting** was present along the north west boundary. An additional **pond**, an area of **marshland** and a **cutting** were marked in the location of the historic **sand pit** in the north east.	**Refuse heaps** were shown 85m and 140m to the north east. Unspecified **farm buildings** had been constructed 100m to the south east and additional buildings had been constructed at the bleach and print (now marked as a **print works**) works 225m to the south east. A building has been built over the old shaft to the south of the site and it was marked as a **pump house**. A **saw mill** was present 350m to the south east. Additional housing had been constructed to the north of the site and in the surrounding area along with **industrial buildings** including a **dye works**. Additional

Date(s)	Site	Surrounding Land
		reservoirs and **embankments** had been constructed along Kirklees Brook.
1938	No significant change.	Additional predominantly **residential buildings** had been constructed within the surrounding area.
1955 - 1960	Additional **buildings** had been constructed adjacent to **Cop Thorns** with several of the small **buildings** in the center and south west of the site no longer shown. The **pavilion** at the cricket ground was shown as a ruin and **sinks** were shown where the **drainage ditch** met the footpath / trackway in the central west of the site. An **allotment garden** was shown in the south west of the site and the **brick field** in the north east of the site had been replaced with an **allotment** with green houses. One of the greenhouses was shown as a **ruin**. The former **sand pit**, marsh and **ponds** in the north east were no longer shown.	**Residential buildings** had been constructed immediately to the north of the site. The laundry to the north east was marked as a **works** and the **refuse tips** had expanded. Several of the reservoirs within the surrounding area were no longer shown / **infilled or had been built over**. The cotton mill to the south west was shown as **partially disused** and **demolished** with other parts shown as **works** and a **depot**. The saw mill to the south east had been demolished and redeveloped as **housing**. Additional housing and a **school** had been constructed in the wider area.
1970 – 1976	No significant changes.	The old shaft and pump house to the south had been redeveloped as **housing.** The railway to the east had been **dismantled**. Large **housing development** had occurred from 60m to the west and north west and within the wiser surrounding area.
1982	The **well** in the north east of the site was no longer shown.	One of the larger buildings at the print works to the south east had been **demolished** along with the disused cotton mill building to the south west. The engineering works and mill to the south east were marked as **warehous**es. Several of the reservoirs and filter beds along Kirklees Brook were no longer shown and had potentially been **infilled**.
1992	An area of marsh was shown along the **drainage ditch** and **sinks**.	The reservoirs associated with the cotton mill 20m to the north were no longer shown and the refuses to the north east was no longer marked. The former laundry, now a **works** had been expanded. The reservoirs from 400m to the south east had been **infilled** and redeveloped as **housing.**
2006	Several of the small **buildings** associated with **Cop Thorns** had been demolished.	The cotton mill 20m to the north had been **demolished.** This area and the former gravel pit 40m to the north had been redeveloped as **housing**. The remainder of the former cotton mill buildings to the south west had been demolished and redeveloped as housing. Several of the mill buildings within the wider area had been **demolished / redeveloped.**
2016	No significant changes.	The former laundry to the north east had been demolished and redeveloped as **housing**. Some of the mill buildings within the wider area had been **demolished / redeveloped**.
2024	Additional **buildings** had been constructed at **Cop Thorns,** relating to **Copthorne Cattery**. The **allotments** in	Further **mill** buildings and one of the schools within the wider area had been **demolished / redeveloped.**

Date(s)	Site	Surrounding Land
	the north east and south west were no longer shown. An unspecified **building** had been constructed in the north east of the site at the former **allotments**.	

2.4 UXO Risk Assessment

A review of publicly available bomb risk mapping from Zetica indicates the site to be in an area of low UXO risk. Therefore, no further assessment of the risk posed by UXO is required.

Zetica bomb risk mapping for the site is included in Appendix III.

2.5 Geology

The British Geological Survey (BGS) map of the area indicates both Glaciofluvial Deposits and Devensian Till to be present beneath the site. The Glaciofluvial Deposits are likely to comprise predominantly sand and gravel and are anticipated to be present in parts of the north, central west and south west of the site. Beneath this and across the remainder of the site, Devensian Till comprising a mix of clay, silt, sand and gravel is indicated to be present.

Bedrock is shown to be a mix of sandstone, siltstone, mudstone and coal of the Pennine Lower Coal Measures Formation and across much of the west of the site, sandstone of the Cannel Rock. A small section of sandstone of the Old Lawrence Rock is also indicated in the north east of the site. Two coal seams sub-crop beneath the site.

Fault lines trending north to south or north west to south east are shown along the western boundary, through the centre of the site and through the north east of the site.

Historic borehole records from within the surrounding area indicate a variable depth of Made Ground, up to 5.80m bgl. Natural strata were noted to be a mix of sands, gravels and locally silts underlain by sandy and gravelly clay with bands of sand and gravel. Bedrock was encountered from approximately 20m to 30m bgl within the wider area.

Areas of worked ground are shown in the north east of the site, in the location of the historic sand pit. It is likely that some Made Ground would be present in this location associated with any backfilling activities.

Given the limited development history of the rest of the site, a significant thickness of Made Ground is not anticipated to be present overlying natural strata. No previous site investigation information has been reviewed to confirm this.

Copies of the geological plans are provided in Appendix IV.

2.6 Mining and Ground Stability

Two coal seams are indicated to sub-crop beneath the site. According to Coal Authority (CA) records (freely available on the CA website), the site is located within a Coal Mining Reporting Area with a Development High Risk Area present broadly trending east / west across the middle of the site. The Development High Risk Area in the west of the site is also indicated to be at risk from probable shallow coal mine workings. A mine entry is indicated to be present in the south west of the site with a further mine entry immediately south of the site boundary. Given this, a desk based Coal Mining Risk Assessment is required to further assess the risk posed by historic coal mining to the proposed development. A Coal Mining Risk Assessment report has been carried out by Clancy Consulting Ltd and presented under separate cover.

The environmental database report indicates that the site represents a very low to no risk with regard to ground stability issues relating to ground dissolution, collapsible ground, compressible ground, landslides, shrinking / swelling clay and running sand.

A BGS recorded mineral site is located in the north east of the site, associated with the historic ‘sand pit’ identified on historic mapping of the area. The record (Leemans Hill) is listed as open cast extraction of sandstone of the Pennine Lower Coal Measures Formation. The status is listed as ‘ceased’. Two other recorded mineral sites are located within 500m of the site. Copp Hill Sand Pit is located 411m to the north, extracting sand from the Glaciofluvial Sheet Deposits and Devensian Till. Brown Hill Brick Field is indicated to be present 458m to the north, extracting clay and shale from the Pennine Lower Coal Measures Formation. The status of both of these operations is ceased, and the areas since developed over.

In addition to the above a brick field was located in the north east of the site, noted on historic mapping of the area until 1960. A gravel pit was also noted on historic mapping of the area 40m to the north of the site and a clay pit was noted approximately 345m to the south east. These two sites were no longer labelled on mapping by 1910 and have since been developed over.

2.7 Hydrogeology

The Glaciofluvial Deposits present in the north and central west of the site have been classified by the Environment Agency (EA) as a Secondary A Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The underlying Devensian Till has been classified as a Secondary Undifferentiated Aquifer. These are aquifers where it has not been possible to apply either a Secondary A or B definition, owing to the variable characteristics of the soil type.

The bedrock (Pennine Lower Coal Measures, Cannel Rock and Old Lawrence Rock) has been classified as a Secondary A Aquifer.

According to the EA, the site is not located within a groundwater Source Protection Zone (SPZ).

No licenced groundwater abstractions for potable supply are recorded within 1km of the site. Two other groundwater abstraction licences are indicated to be present within 1km of the site. The closest is located 55m to the south east of the site at Bolholt Farm. The licence is in relation to general agricultural use. The other is located 645m to the east at Activecraft Ltd Papermakers. The licence is in relation to process water. It is however noteworthy that Activecraft Ltd went into liquidation and was dissolved in 2012. It is therefore unclear if this abstraction remains active.

The groundwater quality beneath the site has been classified as ‘Poor’ under an EA Local River Basin Management Plan.

2.8 Hydrology

An unnamed stream is present running north to south in the west of the site, connecting to Walshaw Brook which forms the south western boundary of the site. Walshaw Brook runs eastwards towards Kirklees Brook / Woodhill Brook approximately 610m to the east. An un-name stream also runs within close proximity to the north east boundary of the site. The stream may be culverted east of a ‘sinks’ location. The location of the stream as it heads east from the “sinks” is not certain and may run through a portion of the north east of the site.

The chemical quality of Kirklees Brook has been classified as ‘Fail’ under the EA River Basin Management Plan for the area. The un-named stream on site, the unnamed stream to the north of the site and Walshaw Brook have not been classified.

Four active surface water abstractions licences are indicated to be present within 1km of the site. Two are associated with Activecraft Ltd Papermakers 434m to the north east and 653m to the east. The licences are in relation to process water. The other two are associated with The Elton Cop Dyeing Co Ltd 977m and 992m to the south east. The licences are in relation to process water. It is however noteworthy that Activecraft Ltd went in to liquidation and was dissolved in 2012 and The Elton Cop Dyeing Company Ltd went into liquidation and was dissolved in 2020. It is therefore unclear if these abstractions remain active.

A potentially active discharge consent is located 361m to the north west of the site associated with a domestic property and the discharge of treated effluent. This is not considered to pose a significant risk to the site.

A significant incident to controlled waters is recorded in the central north west of the site, associated with unknown oils. Very limited information was however recorded about the incident with no information regarding its location or receiving water provided. A note is given for the incident referencing the 'River Ogden' (which flows into the River Irwell 8km north of the site) and the catchment being the River Irwell. No other records of significant or major incidents to controlled waters are recorded within 500m of the site.

A significant substantiated pollution incident is recorded 442m to the north west associated with a fuel spillage. Given its distance from the site, it is unlikely to have resulted in significant contamination mobilising to site.

2.9 Soil Geochemistry

According to the BGS National Geoscience Information Service, the following background soil concentrations can be expected within natural soils at the site:

- Arsenic – <15-25 mg/kg
- Cadmium - <1.8 mg/kg
- Chromium – 60-90 mg/kg
- Lead – 200-600 mg/kg
- Nickel – 15-45 mg/kg

These concentrations are generally not considered to be elevated, with the exception of lead.

It should be noted that the soil geochemistry has been estimated solely on the basis of published geology and not empirical data.

2.10 Flood Risk

According to the Flood Map for Planning, the site is site is not at risk from flooding from seas or rivers without defenses and does not benefit from flood defenses.

The environmental database report indicates that there is potential for groundwater flooding to occur at the ground surface.

Parts of the north east of the site, eastern boundary of the site, along the surface water feature in the west of the site and the south western boundary of the site are also indicated to be at risk from surface water flooding / pluvial flooding.

If one is not already available, it is recommended that a Flood Risk Assessment is undertaken for the proposed development.

Copies of the site sensitivity and flood risk maps are included in Appendix V.

2.11 Radon Risk Potential

The radon guidance on protective measures for new dwellings indicates that radon gas protection measures are not necessary in the construction of new dwellings or extensions.

2.12 Waste and Landfill Sites

The environmental database report details records of four historic landfill sites within 500m of the site. These are as follows:

Table 2 – Historic Landfill Sites

Distance From Site (m)	Direction	Dates Active	Other Details / Notes
92	North East	1875 - 1977	Industrial waste Noted on historic OS mapping from 1910 to 1988
248	South East	1980 – 1984	A 'registered landfill site'. Receiving inert and industrial waste along with construction / demolition wastes. Not indicated on historic OS mapping as a landfill. Several small reservoirs were infilled in this location during this time.
278	South West	Not Supplied	Newhive Works, no other details supplied. Historic OS mapping indicates this location to be part of a reservoir associated with the Newhive Works until the late 1990s when the location was redeveloped as housing.
430	East	1984 – 1986	A 'registered landfill site'. Receiving inert waste and construction / demolition wastes. Noted as a reservoir on historic OS mapping prior to its infill.

An additional landfill was noted on historical OS mapping of the area. This is located 85m to the north east of the site before expanding to 60m north east. The site appeared to be associated with a historic laundry and works building and was noted from 1930 to 1988.

No licenced waste management facilities are indicated to be present within 500m of the site.

The environmental database report indicates five areas of potentially infilled land 'non water' and twenty three areas of potentially infilled land 'water' to be present within 500m of the site. These are as follows;

Table 3 – Potentially Infilled Land

Distance From Site (m)	Direction	Dates Present on Historic OS Maps	Other Details / Notes
On site	North East	1850 – 1893	Sand pit
On site	North East	1850 – 1960	Brick field
On site	North East	1893 – 1960	Ponds
22	North	1893 – 1992	Reservoirs
36	North East	-	Indicated to have been infilled in 1911, in the location of a mill building on Historic OS mapping. No other information available.
149	North East	1893 - 1960	Reservoir
151	North East	1850 - 1960	Reservoir
245	South East	1850 - 1893	Pond
255	South East	1893 - 1959	Filter beds
258	North	1850 - 1969	Pond
259	South East	1850 – 1893	Reservoir
270	South East	1850 - 1975	Reservoir, partial infill.
305	South East	1911 - 1959	Filter beds
306	East	1893 - 1930	Pond
327	South East	1956 – 1959	Pond
336	North	1893 - 1910	Brick field and ponds
351	North East	1850 - 1969	Pond
361	North West	1850 - 1971	Un-named stream, partially culverted from 1971
364	South	1850 - 1938	Pond
388	North East	1893 - 1960	Filter Beds
395	North	1850 - 1893	Sand Pit
400	South	1893 - 1969	Shaft. Marked as a pump house from 1929
414	North East	1850 - 1960	Kirklees Brook, partially culverted from 1960
420	South East	1930 - 1956	Filter bed
433	North East	1893 - 1960	Filter beds
478	South East	1850 - 1982	Reservoirs
497	North	1930 - 1970	Reservoir

In addition to the above, there are several historic wells and pumps within the surrounding area that have the potential to have been infilled in the past, including the well present on the north eastern boundary of the stie, present on historic OS mapping from 1850 to 1982.

Other areas of potentially infilled land have also been identified during a review of historic OS mapping. A historic gravel pit was present 40m to the north west between 1893 and 2006. A reservoir was present 220m to the south west from 1850 to 1999. Clay pits were also present 345m to the south east between 1893 and 1910 before becoming a reservoir. The reservoir was present until 1992.

Many of the above areas of potentially infilled land have since been redeveloped and built over.

2.13 Industrial Land Uses

One Local Authority Pollution Prevention and Control permit is located within 500m of the site. This relates to a petrol filling station 490m to the south east.

The historical ‘Cop Thornes’ buildings on site are listed as a Cattery.

Thirteen active Contemporary Trade Directory entries are recorded within 500m of the site. These include garage services, vehicle dealers, vehicle servicing and repair, vehicle painters and sprayers, coal and smokeless fuel merchants, clothing and fabrics manufacturers, firefighting equipment and printers. The closest is a garage services 21m to the north.

Several points of interest – manufacturing and production are noted within close proximity to the site. These include a tank 42m to the south west at a farm, works buildings 46m to the north east and 206m to the south west.

Full details of the waste management and industrial land uses are detailed in the environmental database presented in Appendix VI.

2.14 Sensitive Land Uses

The site is located within an area of adopted green belt.

Kirklees Valley Local Nature Reserve is present 274m to the north east.

Natural England data indicates that there are no other ecologically sensitive sites indicated within 500m of the site that constitute environmental receptors as defined within Table 1 of the DEFRA Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012).

2.15 Potential Geotechnical Constraints

The table below summarises the potential geotechnical hazards associated with the development. The table provides an assessment of whether the site is likely to be affected by the hazard and the possible consequences and engineering considerations.

Table 4 – Geotechnical Risk Register

Hazard Description	Is hazard likely to be present / affect the site?	Comments/possible engineering requirements where hazard present
Sudden lateral/vertical changes in ground conditions	M	The site has had a limited development history however deeper Made Ground may be present in the north east of the site in the location of the historic sand pit and brick field. The main variation is likely to be associated with the thickness of Made Ground and the composition and strength characteristics of the underlying superficial deposits.

Hazard Description	Is hazard likely to be present / affect the site?	Comments/possible engineering requirements where hazard present
Highly compressible/low bearing capacity soils, (including peat and soft clay)	L/M	Made Ground would not form suitable bearing layers for traditional foundations. The underlying Glaciofluvial Deposits or Devensian Till may represent suitably competent soils to support traditional foundations, if present at shallow depth. This would need to be confirmed by an intrusive site investigation.
Ground dissolution features/natural cavities	L	Strata indicated to be present at shallow depth beneath the site are not susceptible to these hazards.
Shrinking and swelling clays	M	Cohesive layers of the Glaciofluvial Deposits and Devensian Till may be susceptible to volume change hazards.
Slope stability/Retaining wall issues	M	Several slopes and historic cuttings are present on site. Any temporary or permanent slopes or retaining walls created as part of the development should be subject to appropriate geotechnical design based on site-specific site investigation information.
High groundwater table (including waterlogged ground)	M/H	A stream runs through the north west of the site with a spring present in the south west. Historically ponds and boggy ground were present in the north east of the site in the location of the historic sand pit and boggy ground was also noted on historic maps of the area in the south west. A groundwater monitoring program should be undertaken to establish the groundwater depths beneath the site. Excavations may require groundwater exclusion and control measures.
Filled and Made Ground (including embankments)	H	An historic sand pit and brick field are present in the north east of the site which could have resulted in the generation of deep Made Ground. Limited thicknesses of Made Ground may also be present in the locations of former buildings and structures on site.
Obstructions (including foundations, services, basements, tunnels and adjacent sub-structures)	M	The site has had a limited development history with small buildings and structures historically present in the central and western parts of the site. It is considered likely that some buried obstructions may be present. The removal of these structures will likely be achievable using standard construction plant. The historic well along the north east boundary, well / spring in the south west of the site and potential culvert through the north east of the site may however be more substantial in nature, requiring heavier construction plant if planned to be removed or treatment if planned to be retained.
Underground mining	H	The site is located within a Coal Mining Reporting area with a Development Hight Risk Area across the middle of the site. Two coal seams are indicated to sub-crop beneath the site and a mine entry is indicated to be present in the south west of the site. A further mine entry is indicated immediately south of the site boundary. A Coal Mining Risk Assessment is therefore required.
Concrete classification	L/M	Made Ground and natural soils beneath the site may contain elevated concentrations of sulphate potential harmful to buried structures.
Seismic Activity	L	The Eurocode 8 seismic hazard zoning maps for the UK (Musson and Sargeant, 2007) indicate that horizontal Peak Ground Acceleration (PGA) values with 10% probability of being exceeded in 50 years (475 year return period) are between 0.00g and 0.02g, which is considered very low.
NOTES: H – High Risk M – Medium Risk L – Low Risk		

3.0 Phase 1 Risk Assessment

3.1 General

The “suitable for use” approach is adopted for the assessment of contaminated land and remedial measures are only undertaken where unacceptable risk to human health or the environment can be proven when taking into account the proposed use of the site and environmental setting.

A risk assessment process should be carried out to determine potential hazards to human health and the environment and be based on the “source” “pathway” “receptor” principal. For a potential risk to be present there must be a viable pollutant linkage whereby a contamination source may impact upon a receptor. The absence of one or more of these key components (source, pathway or receptor) prohibits a viable pollution linkage being formed.

3.2 Preliminary Conceptual Site Model

In accordance with the ‘Land Contamination Risk Management’ (LCRM) guidance on the gov.uk website (updated July 2023) and BSI 10175 “Code of Practice for Investigation of Potentially Contaminated Land” (2011), a Preliminary Conceptual Site Model was developed to identify potential contamination sources, migration pathways and receptors within the study area.

3.3 Potential Contaminant Sources

The majority of the site has had a limited development history though Made Ground and contamination may be locally present where historic buildings were constructed / demolished. Any contamination present would however likely be derived from the construction / demolition process. Contaminants of concern would include metals / metalloids, PAHs and asbestos.

In the north east of the site, a sand pit and brick field were historically present. Any backfill that may have happened since extraction ceased in these two areas could be viewed as a potential source of contamination. Depending on the composition of any Made Ground present, contaminants of concern may include metals / metalloids, PAHs, TPHs and asbestos.

The natural soils beneath the site are indicated to naturally contain potentially elevated concentrations of lead.

Historic land use has also been limited though allotments in the north east and south west of the site could have resulted in some localised Made Ground and contamination. Contaminants of concern include metals / metalloids, PAHs, pesticides and asbestos.

Deeper Made Ground may be present in the locations of the historic wells and mine shaft.

Historic land use within the immediate surrounding area has been relatively limited with the closest potential contamination sources of concern relating to the historic mills with associated tanks and chimneys, laundry, infilled reservoirs and landfill from 20m to the north east of the site and the mill with associated reservoir and chimney to the south west of the site. The historic use of these sites may have resulted in significant volumes of potentially mobile contamination with the potential for any mobile contamination present to migrate to the site. Contaminants of concern include metals / metalloids, PAHs, TPHs, solvents, detergents and pesticides.

The majority of the potential contamination sources within the wider area are considered either too far away to pose a significant risk to the site or are located to the south east, which is anticipated to be downhill and downstream of the site (based on the flow directions of the streams on site and within the surrounding area).

Infilled land both on site and within the surrounding area should be viewed as potential sources of hazardous ground gases with any organic contamination present viewed as a potential source of harmful vapours. The depth and nature of any infilled land on site is currently unknown. Should significant thicknesses be present or large volumes of putrescible materials, these areas could have a ‘high’ gas generation potential in accordance with Figure 6 of BS 8576:2013 ‘Guidance on Investigations for Ground Gas’.

Off site sources include infilled reservoirs, ponds, pits and refuse heaps / landfills. While the infill material of the infilled reservoirs, ponds and pits is unknown, the refuse heaps / landfills are indicated to comprise predominantly inert construction / demolition and industrial wastes. Such wastes are likely to have a ‘very low’ to ‘low’ gas generation potential. Depending on the infill material of the reservoirs, ponds and pits within close proximity to the site, these could have a ‘very low’ ranging to ‘high’ gas generation potential owing to the variable age of their infill. It is however noteworthy that the majority of these features have since undergone redevelopment / been built over.

Given that a mine shaft is indicated to be present on site and the presence of two coal seams sub-cropping the site, any site investigation should consider the potential for mine gases to migrate into proposed buildings and impacting upon human health receptors and affecting building structures. The presence of several faults running through the site and a potential mine shaft provides potential preferential pathways though which gases could migrate. Given the likely age of any workings present, these are likely to have a ‘moderate’ gas generation potential.

The following potential sources of contamination have been identified at the site:

- Potential Made Ground and contamination associated with historic construction and demolition at the site, sand pit and brick fields in the north east of the site.
- Potential contamination associated with historic land use including pit, brick field and allotments.
- Migration of potential contamination associated with historic land uses around the site, including mills / works, infilled pits and ponds, landfills and construction of residential properties.
- Potential generation of hazardous ground gases associated with deep Made Ground and putrescible materials present on site and within the surrounding area.
- Potential for hazardous ground gases associated with potential historical coal mining beneath the site and surrounding area.

3.4 Potential Pathways

The site is proposed to be developed for residential purposes with associated access roads, car parking and soft landscaped areas / private gardens. The following potential pathways are considered applicable at the site:

- Direct contact (within gardens and areas of soft landscaping at the site)
- Inhalation (dust / vapors)
- Ingestion
- Vertical / lateral migration (of both contamination and potentially hazardous ground gases)

3.5 Potential Receptors

Potential human health receptors include future site users and neighboring residential property occupiers.

The proposed new buildings at the site are also be considered as receptors.

The underlying superficial Glaciofluvial Deposits Secondary A Aquifer, bedrock Pennine Lower Coal Measures, Cannel Rock and Old Lawrence Rock Secondary A Aquifers, un-named stream running across the west of the site, un-named stream to the north (potentially culverted through the north east of the site) and Walshaw Brook to the south of the site are considered the main environmental receptors of concern.

3.6 Preliminary Risk Assessment

A preliminary risk assessment can be carried out using guidance outlined in Section 6.3 of CIRIA Document C552 “Contaminated Land Risk Assessment – A Guide to Good Practice” (2001). For a risk to be present there must be a viable pollutant linkage whereby a contamination source can impact on a receptor via a pathway. To carry out the risk assessment an estimate must be made of the potential severity of the risk and the likelihood of the risk occurring. The following Tables set out the criteria for this principal.

Table 5 - Severity of Risk

Severity	Description
Severe	Acute risk to human health likely to result in 'significant harm' i.e. very high concentrations of contamination or ground gases. Catastrophic damage to building i.e. by explosion from high gassing sites or VOC concentrations. Major pollution of controlled waters i.e. surface watercourses and Principal aquifers, source protection zones. Short term damage to ecosystems.
Medium	Long term risk to human health likely to result in 'significant harm' i.e. elevated concentrations of contaminants or ground gases. Pollution of sensitive controlled watercourses i.e. Principal or Secondary Aquifers. Significant effects on sensitive ecosystems or species.
Mild	Pollution of non-sensitive waters i.e. smaller surface watercourses or unproductive strata. Significant damage to crops, buildings, structures or services i.e. by explosion from sites with medium gassing potential, elevated concentrations of contaminants.
Minor	Non-permanent human health effects i.e. requirement for protective equipment during site works to mitigate health effects. Damage to non-sensitive ecosystems or species. Minor damage to buildings, structures or services.

Table 6 - Probability of Risk Occurring

Probability	Description
High Likelihood	Pollutant linkage may be present that appears very likely in the short term and risk is almost certain to occur in long term or evidence of harm to receptor exists.
Likely	Pollutant linkage may be present and is likely that the risk will occur over the long term.
Low Likelihood	Pollutant linkage may be present and there is a possibility of the risk occurring although no certainty that it will do so.
Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur even in the long term are improbable.

Table 7 - Comparison of Risk & Probability

Probability	Severity			
	Severe	Medium	Mild	Minor
High Likelihood	Very High	High	Moderate	Moderate/Low
Likely	High	Moderate	Moderate/Low	Low
Low Likelihood	Moderate	Moderate/Low	Low	Very Low
Unlikely	Moderate/Low	Low	Very Low	Very Low

A summary of potential pollutant linkages and perceived risks for this site are outlined in the Table below:

Table 8 - Pollutant Linkages & Perceived Risk

Sources of Contamination	Pathways	Receptors	Severity	Probability	Risk	Justification	Further Action Required
On site: Localised Made Ground associated with historic buildings, mine shaft, well and potentially infilled land associated with former pits and brickworks. Naturally elevated concentrations of lead.	Inhalation, ingestion and dermal contact of soil	Future site users	**Medium** Long term risk to human health	**Low Likelihood**	**Moderate / Low**	Contaminants of concern may be present locally beneath the site, associated with any Made Ground from the construction and demolition of historic buildings on site. Made ground and contamination may also be present associated with the historic allotments on site with the historic wells. Deeper Made Ground is likely to be present in locations of the historic brick works, sand pit and potential mine shaft. It is however considered of low likelihood that contaminant of concern would be present in significant volumes across the majority of the site.	Site investigation to confirm the contamination status of shallow soils beneath the site.
		Construction workers during development	**Minor** Requirement for protective equipment during site works to mitigate health effects	**Low Likelihood**	**Very Low**	If construction workers come into contact with potential contaminated soils during the construction phase, such contact would be short term, limiting potential exposure. Construction workers are expected to undertake good working practices including regular hand washing and other hygiene techniques which would reduce the likelihood of long-term exposure to any contamination.	
	Acidic ground conditions affecting future site buildings	Building infrastructure	**Minor** Minor damage to buildings	**Low Likelihood**	**Very Low**	Made Ground and natural soils beneath the site may contain elevated concentrations of sulphates and low pH. Chemical testing for water soluble sulphate and pH should be undertaken to inform concrete classification. Any organic contamination present beneath the site could have an impact on proposed water pipeline material selection.	
	Vertical and lateral migration	Neighbouring residential properties	**Medium** Long term risk to human health	**Low Likelihood**	**Moderate / Low**	Any contamination present has the potential to migrate off site via groundwater and via dust generation during development. It is however of low likelihood that significant volumes of contamination are present beneath the site.	
		Surface waters	**Mild** Pollution of non-sensitive controlled water receptors	**Likely**	**Moderate / Low**	An un-named stream runs through the west of the site with a second un-named stream to the north of the site and potentially culverted through the north east of the site. Walshaw Brook forms the south western site boundary, leading towards Kirklees Brook. It is considered likely that any mobile contamination present would migrate to these watercourses.	
		Groundwater	**Medium** Pollution of sensitive controlled water receptors	**Likely**	**Moderate**	The site is underlain by Secondary A Aquifers, relating to the Glaciofluvial Deposits and bedrock Pennine Lower Coal Measures, Cannel Rock and Old Lawrence Rock. The site is not located within a groundwater SPZ. The nearest groundwater abstraction is indicated to be present 55m to the south east however, this abstraction is not indicated to be for potable supply.	
Off site: Infilled land, landfills, historic industrial land uses.	Lateral migration onto site with subsequent dermal contact of soils	Future site users	**Medium** Long term risk to human health	**Low Likelihood**	**Moderate / Low**	While the current surrounding land use is predominantly residential in nature, diverse industrial land use including cotton mills, infilled reservoirs, pits and ponds, a laundry and a refuse have historically all been present within close proximity to the north east of the site with further industrial land uses within the wider area. Any mobile contamination present has the potential to migrate to site however it is considered of low likelihood that it would do so in significant volumes.	
Potential hazardous ground gas and vapours from Made Ground, landfill, infilled land and mine workings.	Migration of ground gas	Future site users	**Severe** Acute risk to human health (asphyxiation)	**Low Likelihood**	**Moderate**	Several potential sources of hazardous ground gases have been identified on site including infilled land, potential mine workings and mine shaft. The gas generation for these sources indicated to potentially be 'moderate' to 'high'. While the likely low permeability, cohesive nature of the Devensian Till would afford the site a degree of protection from off site sources of hazardous ground gases, the Glaciofluvial Deposits are anticipated to be predominantly granular in nature and therefore more likely to provide a preferential pathway. The identified sources within the surrounding area have a potential gas generation potential ranging from 'very low' to 'high'	Monitoring wells should be installed as part of the site investigation and monitoring undertaken to assess the risk posed by ground gases.
		Building Infrastructure	**Mild** Significant damage to buildings (explosion)	**Low Likelihood**	**Low**		

4.0 Desk Study Conclusions

The site is located off Scobell Street, Tottington, in an area of adopted green belt. The site currently comprises predominantly undeveloped land with buildings associated with Copthorne Cattery located in the west of the site. A stream is present in the west of the site. Evidence of invasive species has been noted in the north east and south west of the site, and an invasive species survey is recommended to be undertaken for the site, if one is not already available. The surrounding area is predominantly residential in nature.

The majority of the site has had a limited development history with some small buildings predominantly associated with Copthorne Cattery, historically present in the center and west of the site. In the north east of the site, a sand pit and a brick works were historically present which may have resulted in deeper Made Ground deposits. Any backfill material associated with the historic sand pit could also be viewed as a potential source of contamination. The surrounding area has been a mix of residential and industrial uses with mills, works, a laundry, reservoirs, infilled land and refuses within close proximity to the site. This historic land use may have resulted in potentially mobile contamination that could migrate to the site.

The site is indicated to be underlain by both Glaciofluvial Deposits and Devensian Till, followed by bedrock comprising a mix of sandstone, siltstone, mudstone and coal of the Pennine Lower Coal Measures, Cannel Rock and Old Lawrence Rock. Two coal seams are indicated to sub-crop beneath the site. Fault lines trending north south or north west south east are indicated to be present along the western boundary of the site, through the center of the site and running through the north east of the site.

The natural soils beneath the site may naturally contain elevated concentrations of lead.

The site is in a Coal Mining Reporting Area with a Development High Risk Area present across the middle of the site. The Development High Risk Area in the west of the site is indicated to be at risk from probably shallow mine workings and a mine entry is indicated to be present in the south west of the site. Further mine entries are indicated to be within close proximity to the southern site boundary, with one of them within 20m of the site boundary. A Coal Mining Risk Assessment is therefore required; Clancy Consulting Ltd has prepared one which is presented under a separate cover. The findings of the Coal Mining Risk Assessment should be taken into account when designing any intrusive site investigations.

The Glaciofluvial Deposits beneath the site is indicated to be a Secondary A Aquifer, the Devensian Till a Secondary Undifferentiated Aquifer and the underlying bedrock indicated to be Secondary A Aquifers.

An unnamed stream is present in the west of the site with a spring in the central west. These features run into Walshaw Brook which forms the south western boundary of the site and in turn is a tributary of Kirklees Brook. An un-named stream is present from 15m to the north of the site which may be partially culverted through the north east of the site. The path of this stream should be confirmed, along with the nature of the ‘sinks’ associated with the un-named stream on site.

The site is not located within a groundwater SPZ and no groundwater or surface water abstractions for potable supply are indicated to be present within 1km of the site. A groundwater abstraction for general agricultural use is indicated to be present at Bolholt Farm 55m to the south east.

The site is indicated to be at risk from groundwater flooding at ground surface with parts of the north east, eastern boundary of the site, along the un-named stream in the west of the site and along the south western boundary indicated to be at risk from surface water flooding /pluvial flooding. Parts of the north east, south west and along the un-named stream site have also historically been noted as boggy or being occupied by marshland. If one is not already available, it is recommended that a Flood Risk Assessment be undertaken for the site. Groundwater monitoring should be undertaken to establish groundwater levels beneath the site.

Made Ground beneath the site would not form suitable bearing strata for traditional foundations. The underlying Glaciofluvial Deposits and Devensian Till may support strip or pad foundations for light to moderate loads if present at relatively shallow depth. If the thickness of Made Ground is found to be significant or the shallow natural strata found to be of low bearing capacity, a piled foundation solution terminating in the deeper Devensian Till or underlying bedrock would likely be required. Should historic coal mine workings be present beneath the site, treatment may be required and piles may be required to extend beyond the base of any workings present. Site investigations should be undertaken to confirm the ground conditions beneath the site and into the potential for historic coal mine workings beneath the site as well as to confirm the presence and extent of the coal mine shafts on site and within 20m of the site boundary, to inform detailed foundation design.

The stability of the slopes present across site, most notably associated with the boundary between the site and Scobell Street should be taken into consideration during development. A slope stability assessment may be required.

Several potential sources of hazardous ground gas have been identified both on site and within the surrounding area including potentially infilled sand pit and brick works in the north east of the stie, infilled land and refuse heaps within close proximity to the site. Potential historic mine workings beneath the site could have resulted in mine gases with the potential historic mine shafts and faults running across site forming preferential pathways for any gases present to migrate. A ground gas monitoring program should therefore be undertaken as part of any site investigation.

Two historic wells are indicated to be present on site, identified from historic OS maps of the area. One is located on the north east boundary of the site and may fall outside boundary, depending on the accuracy of the maps. The second is in the location of the ‘spring’ in the south west of the site. These features should be investigated during any intrusive investigation to establish their nature, construction and potential backfill.

On the basis of the above, the following further works are recommended:

- Culvert survey to establish if the stream to the north of the site runs beneath the north east of the site and investigation into the nature of the “sinks” on site.
- Investigations to locate the historical wells in north east and south west.
- A Flood Risk Assessment will be required by planning along with soil infiltration testing to assist with the development of a drainage strategy.
- Invasive plant species survey.
- Carry out an intrusive site investigation to confirm ground conditions at the site.
- In-situ testing and geotechnical soil sampling should be carried out during intrusive investigation to provide adequate recommendations for foundation design.
- A mining investigation will be required to assess the risk from possible shallow mine working across the central portion of the site along with trial pit excavations and or probing to locate the mine entry in the south west of the site. Reference should be made to the Coal Mining Risk Assessment report undertaken and presented under a separate cover.
- Soil samples should be recovered from selected exploratory holes and tested for potential contaminants of concern. A contamination assessment should be undertaken to establish the risk from contaminants of concern to proposed site users and environmental receptors.
- Installation of monitoring wells to ground gas and groundwater monitoring across the site.
- Should contaminants of concern be encountered beneath the site, groundwater samples should be retrieved from groundwater monitoring wells and surface water samples retrieved from the surface watercourses to assess the impact to controlled waters.

APPENDIX I

DRAWINGS

Birmingham 0121 200 7800 . Glasgow 0141 222 1720 . Liverpool 0151 227 5300 . London 020 3077 0970 . Manchester 0161 613 6000 . Newcastle 0191 221 0702 . Norwich 01603 305190 . Prestwick 01292 475375 . Reading 0118 941 7888

Client	Wain Estates (Land) Ltd
Project	Scobell Street, Bury
Title	Site Location Plan
Office	Manchester
Discipline	Geo

clancy consulting

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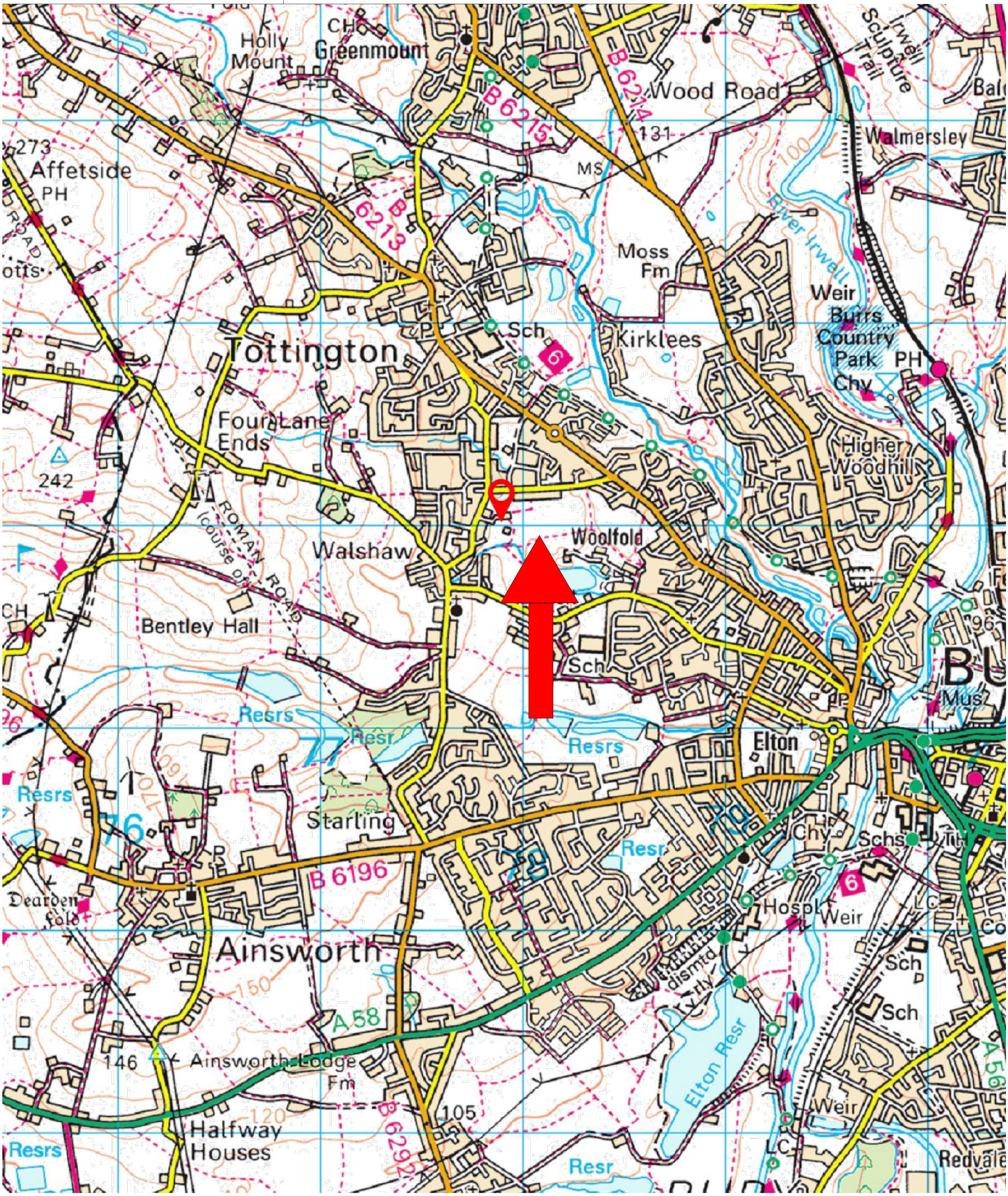
Holly Mount
CH
Greenmount
B 6215
B 6214
Wood Road
131
MS
Irwell Sculpture Trail
Walmersley
Affetside
PH
273
B 6213
Moss Fm
River Irwell
Weir
Burrs Country Park
PH
Chy
Sch
Kirklees
Tottington
6
Four Lane Ends
242
Higher Woodhill
ROMAN ROAD (course of)
Walshaw
Woolfold
CH
Bentley Hall
Sch
BU
Mus
Resrs
Resr
Resrs
Elton
Resrs
Starling
Chy
Schs
Resr
B 6196
76
Dearden Fold
Hospl
Weir
6
Ainsworth
150
dismtd rly
Sch
A 58
Elton Resr
146
Ainsworth Lodge Fm
A 56
105
Halfway Houses
120
B 6292
Weir
Resrs
LC
Resr
Redvale

Drawn	PJH	Date	24/04/2024	Job number	10/2399
Checked	DK	Scale @ A4	NTS	Drawing number	001
Approved	NR	Status	Live	Revision	-

REV Rev	DATE Date	DESCRIPTION Description	BY By	CHK. Check	APP. App.

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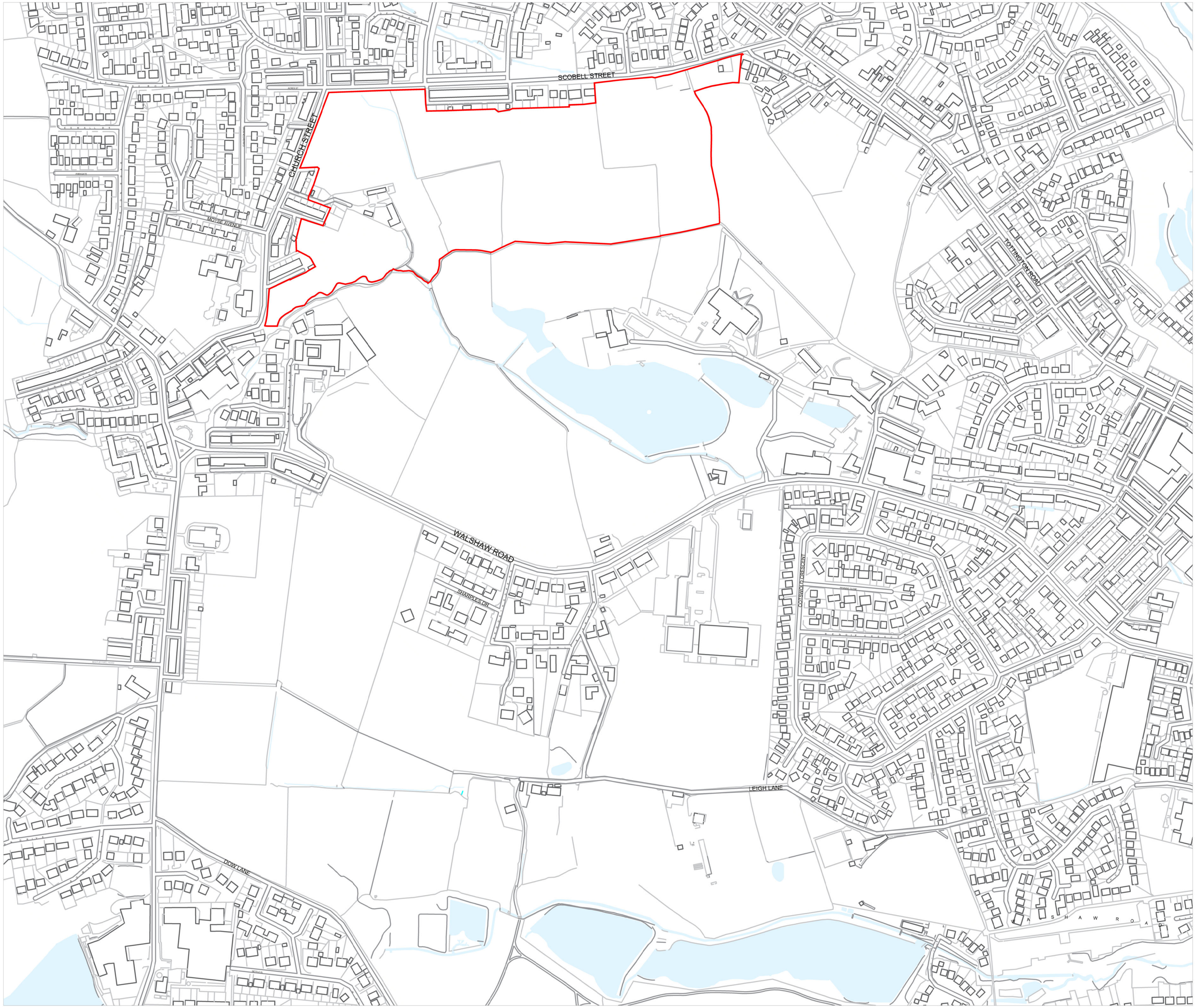
ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
DO NOT TURN ON LAYERS THAT HAVE BEEN TURNED OFF.
DO NOT THAW LAYERS THAT HAVE BEEN FROZEN.


SCOBELL STREET
CHURCH STREET
MOYSE AVENUE
TOTTINGTON ROAD
WALSHAW ROAD
SHARPLES DR
COTSWOLD CRESCENT
LEIGH LANE
DOW LANE
W A L S H A W R O A D

The scaling of this drawing cannot be assured

Revision	Date	Drn	Ckd
-	-	-	-

N

LEGEND

🟥 Site Boundary (c.11.7ha)

Project

Walshaw (Land at), Bury

Drawing Title

Site Boundary (HIMOR Controlled Lar

Date	Scale	Drawn by	Check by
03/12/19	1:5000@A3	SW	SW

Project No	Drawing No	Revision
30860	BW01	-

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J:\JOBS\30000 - 30999\30800 - 30899\30860 - Walshaw (Land At), Bury\A4 - Drawings & Registers\Masterplanning\30860-MR-M-03-Site Boundary_HIMOR.dwg - A3(1_5000@A3)

APPENDIX II

HISTORICAL MAPS

Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500

Quarry
Gravel Pit
Sand Pit
Clay Pit
Shingle
Refuse Heap
Sloping Masonry
Flat Rock
Marsh
Reeds
Osiers
Rough Pasture
Furze
Wood
Mixed Wood
Brushwood
Orchard
Fir
Ford
Stepping Stones
Ferry
Waterfall
Lock
Trig. Station
507 Altitude at Trig. Station
B.M.325·9 Bench Mark
342 Surface Level
Arrow denotes flow of water
Antiquities (site of)
Cutting
Embankment
Railway crossing Road
Level Crossing
Road crossing Railway
Railway crossing River or Canal
B.R. Road over single stream
Road over River or Canal

County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	*P.C.B*	Police Call Box
B.R.	Bridle Road	*P*	Pump
E.P	Electricity Pylon	*S.P*	Signal Post
F.B.	Foot Bridge	*Sl.*	Sluice
F.P.	Foot Path	*Sp.*	Spring
G.P	Guide Post or Board	*T.C.B*	Telephone Call Box
M.S	Mile Stone	*Tr.*	Trough
M.P M.R	Mooring Post or Ring	*W*	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250

Inactive Quarry, Chalk Pit or Clay Pit
Active Quarry, Chalk Pit or Clay Pit
Rock
Boulders
Cliff
Slopes
Top
Roofed Building
Glazed Roof Building
Top
Sloping Masonry
Archway
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
B M Bench Mark
Antiquity (site of)
Cave Entrance
Triangulation Station
Electricity Pylon
E T L Electricity Transmission Line

County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy London Borough Boundary
Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250

Cliff
Slopes
Top
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Positioned Boulder
Scree
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
Triangulation Station
Antiquity (site of)
E T L Electricity Transmission Line
Electricity Pylon
BM 231.60m Bench Mark
Buildings with Building Seed
Roofed Building
Glazed Roof Building
Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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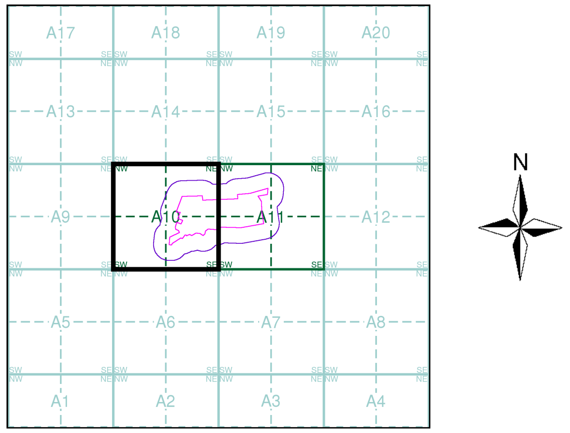
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:2,500	1893	2
Lancashire And Furness	1:2,500	1910	3
Lancashire And Furness	1:2,500	1930	4
Ordnance Survey Plan	1:1,250	1959 - 1960	5
Additional SIMs	1:1,250	1959 - 1989	6
Ordnance Survey Plan	1:2,500	1960 - 1967	7
Ordnance Survey Plan	1:2,500	1970	8
Ordnance Survey Plan	1:1,250	1971 - 1975	9
Additional SIMs	1:1,250	1988	10
Large-Scale National Grid Data	1:1,250	1992	11
Historical Aerial Photography	1:2,500	2001	12

Historical Map - Segment A10



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National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

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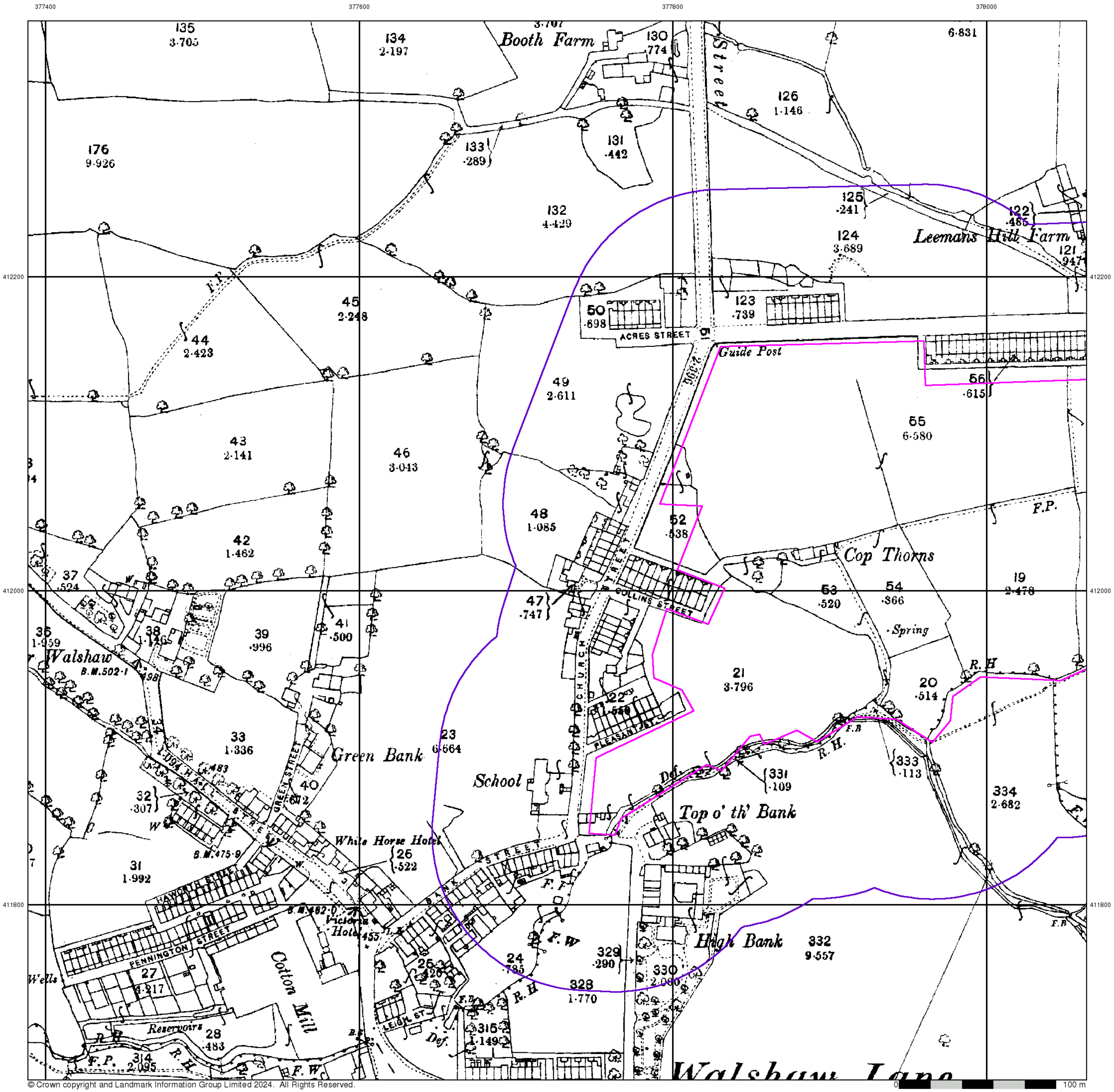

377400
377600
377800
378000
412200
412000
411800
Booth Farm
Street
Leemans Hill Farm
ACRES STREET
Guide Post
Cop Thorns
Spring
COLLING STREET
CHURCH STREET
PLEASANT ST.
Walshaw
B.M.502·1
Green Bank
School
GREEN STREET
White Horse Hotel
Victoria Hotel
PENNINGTON STREET
HAWORTH STREET
Top o' th' Bank
High Bank
Cotton Mill
Reservoirs
LEIGH ST.
Wells
F.P.
F.W.
R.H.
F.B.
Def.
B.M.475·9
B.M.462·0
Walshaw Lane
135 3·705
134 2·197
130 ·774
126 1·146
6·831
176 9·926
133 ·289
131 ·442
132 4·429
125 ·241
124 3·689
122 ·486
121 ·947
45 2·248
44 2·423
50 ·698
123 ·739
49 2·611
56 ·615
55 6·580
43 2·141
46 3·043
48 1·085
52 ·538
42 1·462
37 ·524
47 ·747
53 ·520
54 ·366
19 2·478
36 1·959
38 1·146
39 ·996
41 ·500
21 3·796
20 ·514
33 1·336
23 6·664
22 1·540
331 ·109
333 ·113
32 ·307
40 ·612
334 2·682
31 1·992
26 ·522
24 ·735
329 ·290
328 1·770
330 2·000
332 9·557
27 3·217
25 ·320
28 ·483
314 2·095
315 1·149
0
100 m

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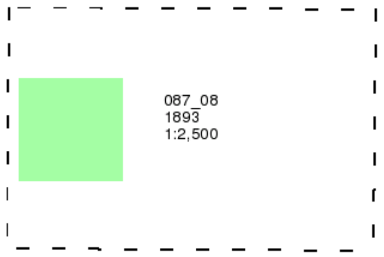
Map Name(s) and Date(s)



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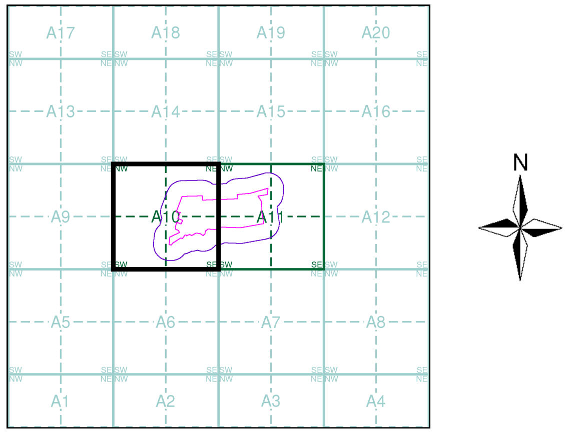
1893
1:2,500

Historical Map - Segment A10



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A18
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A12
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A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
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Site Area (Ha):	11.76
Search Buffer (m):	100

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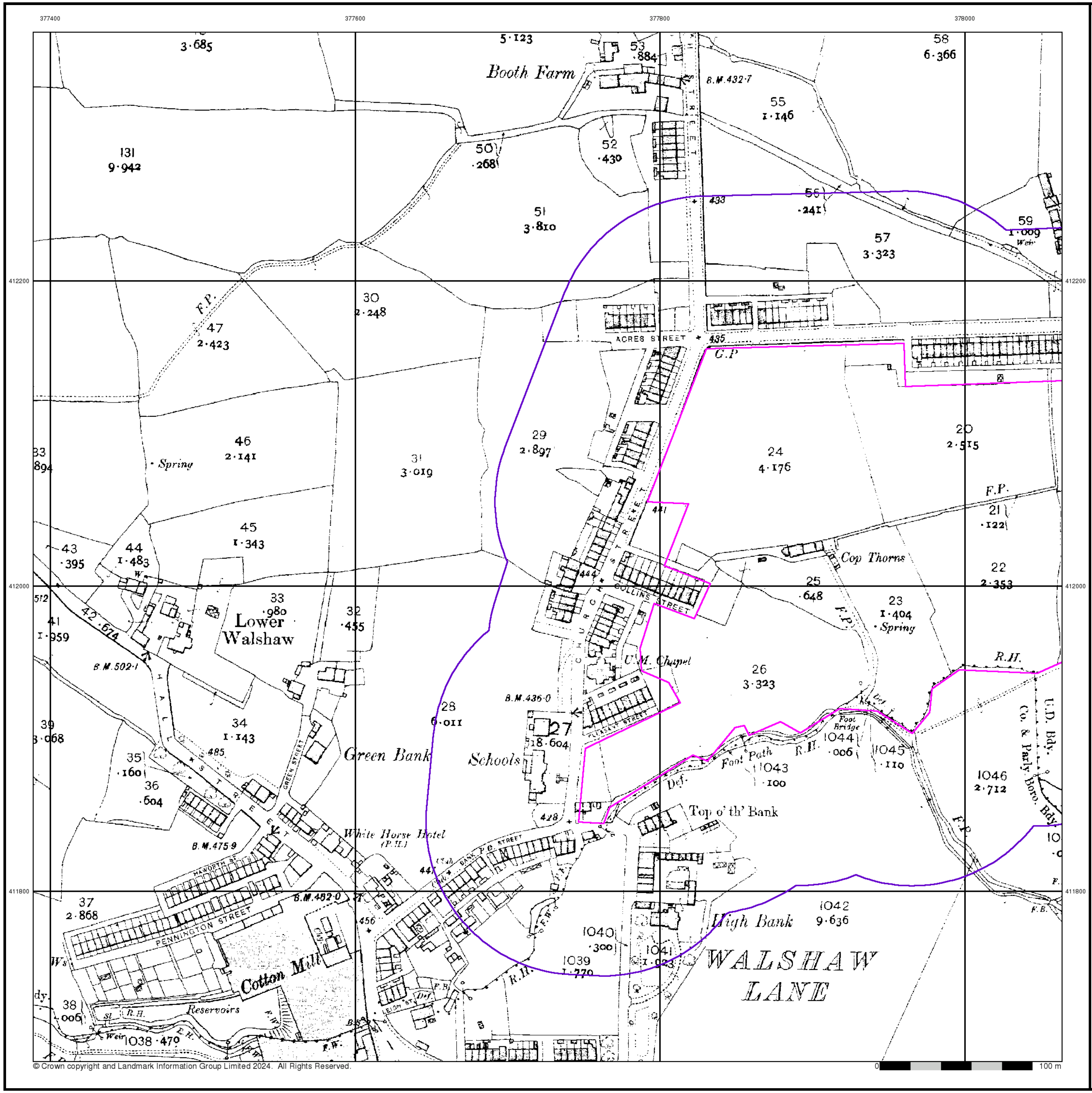
377400
377600
377800
378000
412200
412000
411800
Booth Farm
ACRES STREET
G.P.
Spring
Lower Walshaw
Green Bank
Schools
U.M. Chapel
COLLINS STREET
Cop Thorns
Foot Path
Foot Bridge
Top o' th' Bank
High Bank
WALSHAW LANE
White Horse Hotel (P.H.)
Cotton Mill
Reservoirs
PENNINGTON STREET
HAWORTH ST.
GREEN STREET
U.D. Bdy.
Co. & Parly. Boro. Bdy.
F.P.
R.H.
B.M.432·7
B.M.436·0
B.M.475·9
B.M.482·0
B.M.502·1
0
100 m

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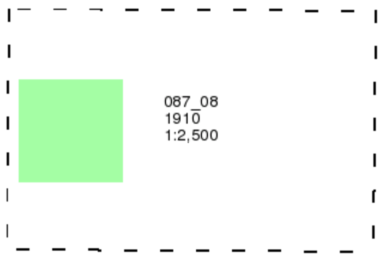
Map Name(s) and Date(s)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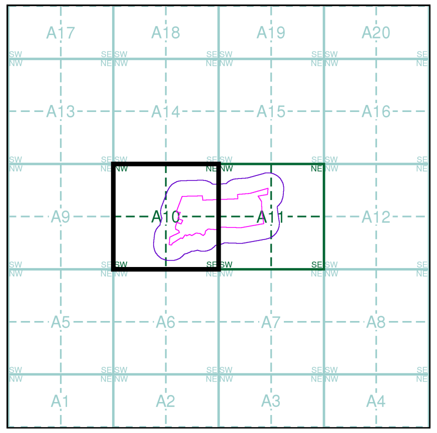
1910
1:2,500

Historical Map - Segment A10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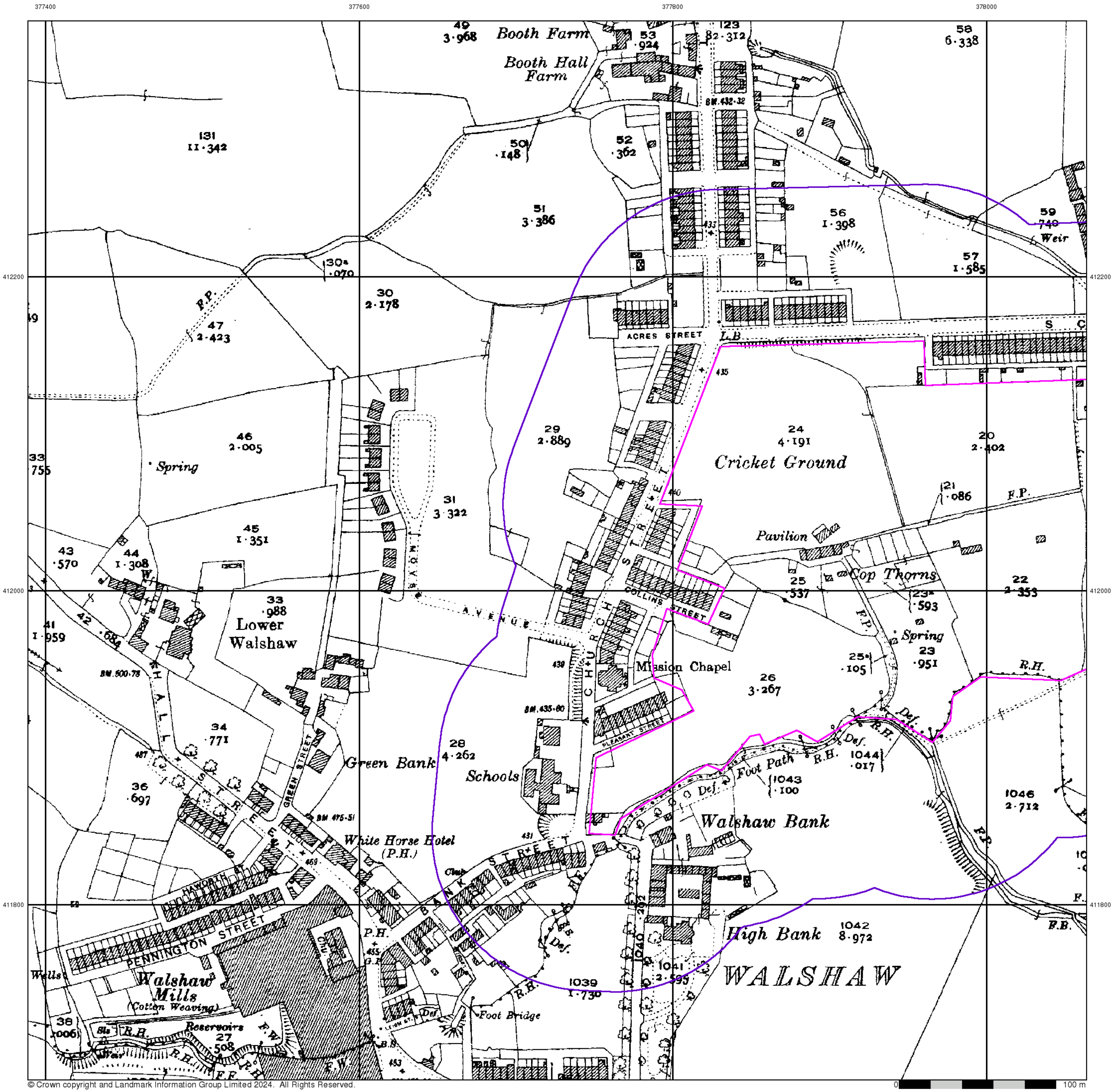

377400
377600
377800
378000
412200
412000
411800
Booth Farm
Booth Hall Farm
Acres Street
Cricket Ground
Pavilion
Cop Thorns
Spring
Lower Walshaw
Avenue
Collins Street
Church Street
Mission Chapel
Schools
Green Bank
Green Street
Hall Street
White Horse Hotel (P.H.)
Haworth Street
Pennington Street
Walshaw Mills (Cotton Weaving)
Reservoirs
Wells
Foot Path
Foot Bridge
Walshaw Bank
High Bank
WALSHAW
Weir
Pleasant Street
F.P.
F.B.
R.H.
Def.
P.H.
0
100 m

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Published 1930

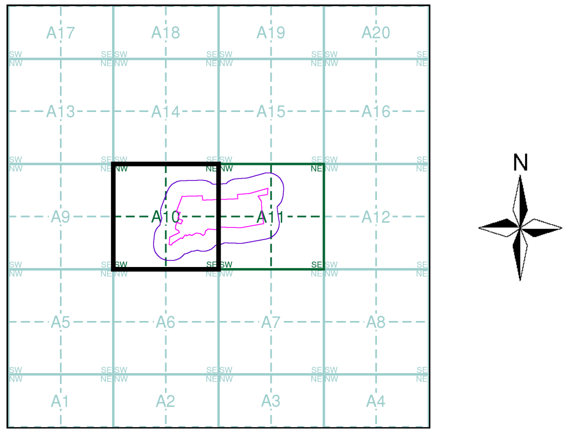
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

🟩 087_08
1930
1:2,500

Historical Map - Segment A10



A17
A18
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A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

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INFORMATION GROUP

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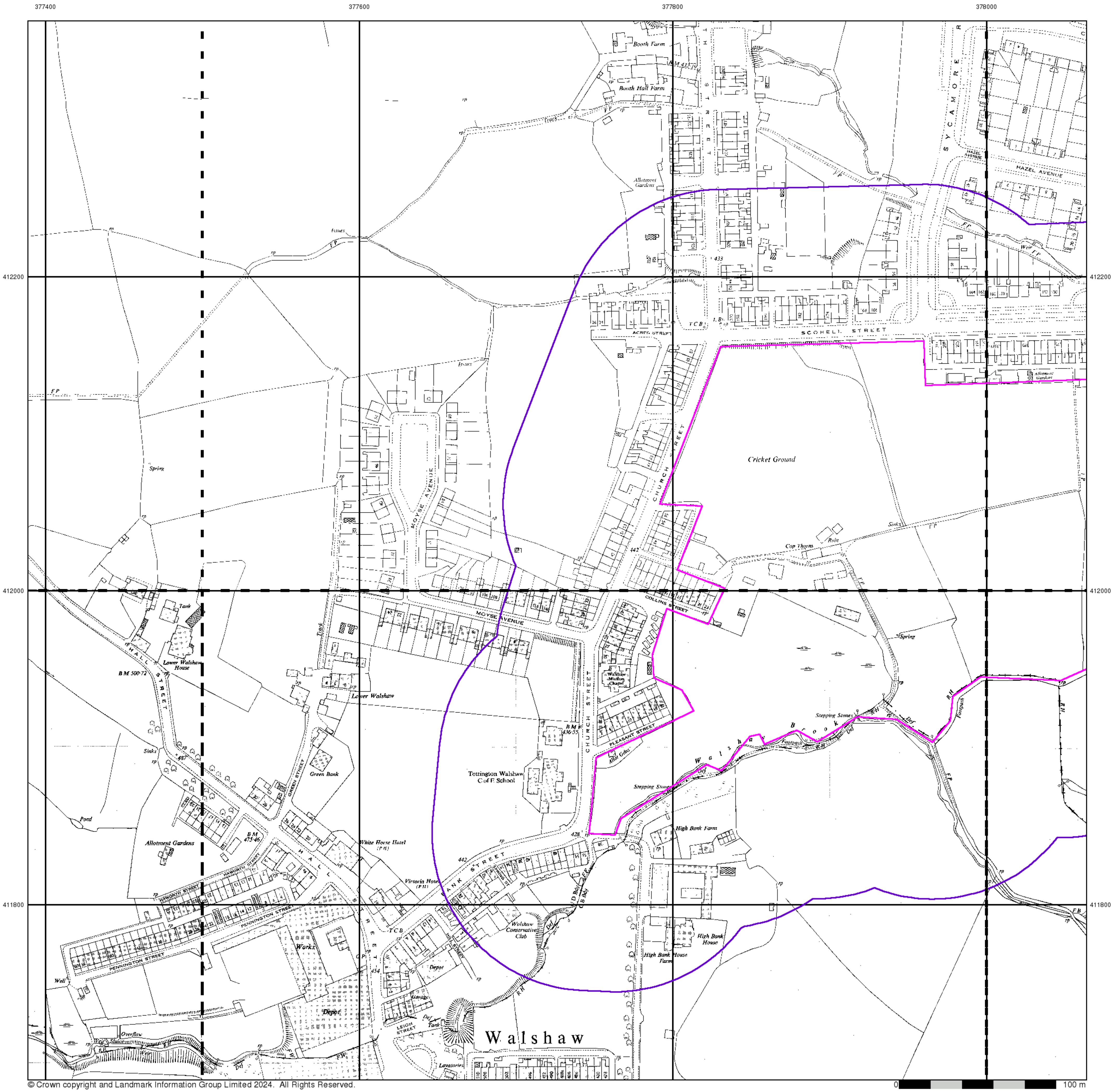
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



377400
377600
377800
378000
412200
412000
411800
Booth Farm
Booth Hall Farm
Allotment Gardens
SYCAMORE
HAZEL AVENUE
Weir
SCOBELL STREET
ACRE STREET
T C B
Spring
Cricket Ground
Cop Thorns
Ruin
Sinks
CHURCH STREET
MOYSE AVENUE
COLLINS STREET
HALL STREET
Lower Walshaw House
B M 500·72
Lower Walshaw
Walshaw Methodist Chapel
PLEASANT STREET
Stepping Stones
Walshaw Brook
Footpath
Green Bank
GREEN STREET
Tottington Walshaw C of E School
Pond
Allotment Gardens
HAWORTH STREET
PENNINGTON STREET
Works
White Horse Hotel (P.H.)
Victoria Hotel (P.H.)
BANK STREET
High Bank Farm
High Bank House
High Bank House Farm
Walshaw Conservative Club
Depot
Garage
LEIGH STREET
Well
Overflow
Sluice
Walshaw
Lavatories
0
100 m

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Ordnance Survey Plan

Published 1959 - 1960

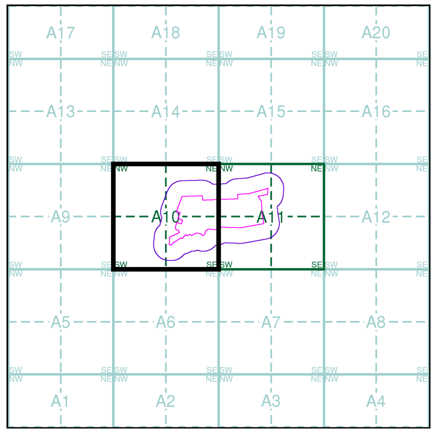
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

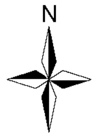
Map Name(s) and Date(s)

SD7712SW 1960 1:1,250	🟩 SD7712SE 1960 1:1,250	SD7812SW 1960 1:1,250
SD7711NW 1959 1:1,250	🟩 SD7711NE 1959 1:1,250	SD7811NW 1959 1:1,250

Historical Map - Segment A10



A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4



Order Details

Order Number: 340522593_1_1
Customer Ref: 10/2399
National Grid Reference: 378060, 412040
Slice: A
Site Area (Ha): 11.76
Search Buffer (m): 100

Site Details

Scobell Street, Tottington, BURY

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INFORMATION GROUP

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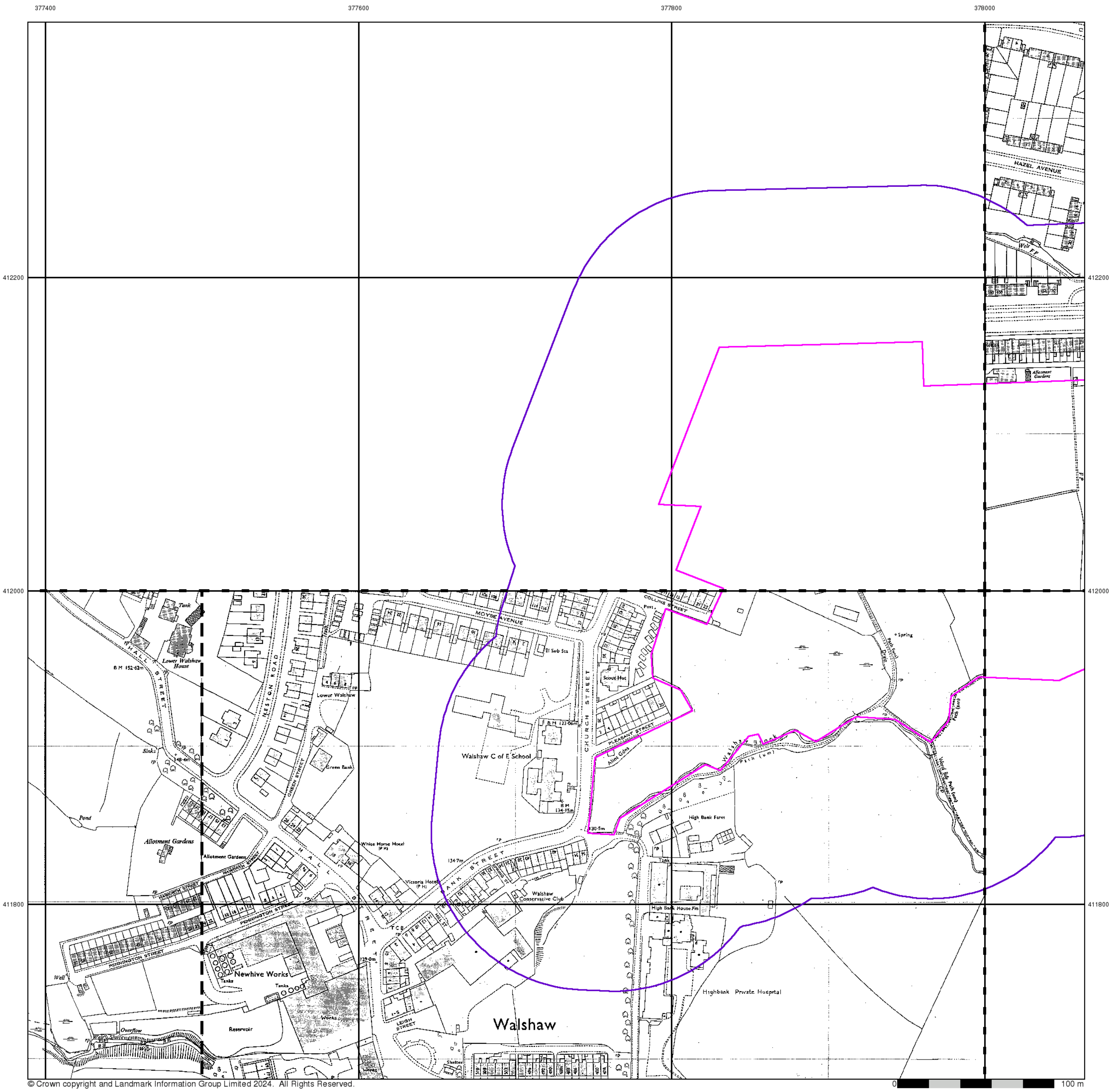

377400
377600
377800
378000
412200
412000
411800
HAZEL AVENUE
Weir
FP
Allotment Gardens
MOYSE AVENUE
COLLINS STREET
El Sub Sta
Scout Hut
CHURCH STREET
PLEASANT STREET
Tank
Lower Walshaw House
B M 152·62m
HALL STREET
Lower Walshaw
NESTON ROAD
GREEN STREET
Green Bank
Walshaw C of E School
Spring
Sinks
Pond
Allotment Gardens
HAWORTH STREET
PENNINGTON STREET
Well
Newhive Works
Tanks
Works
Reservoir
Overflow
Sluice
White Horse Hotel (P H)
Victoria Hotel (P H)
BANK STREET
Walshaw Conservative Club
High Bank Farm
High Bank House Fm
Highbank Private Hospital
LEIGH STREET
TCB
Walshaw
0
100 m

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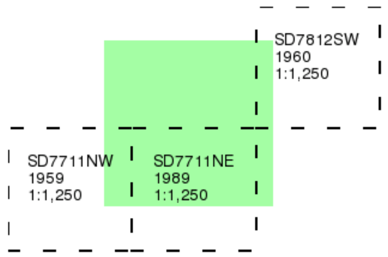
Additional SIMs

Published 1959 - 1989

Source map scale - 1:1,250

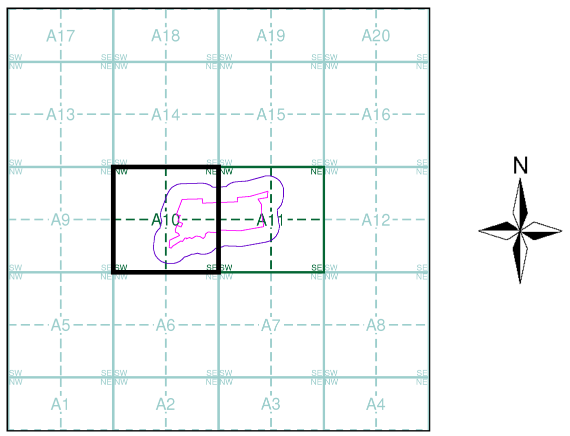
The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



SD7812SW
1960
1:1,250
SD7711NW
1959
1:1,250
SD7711NE
1989
1:1,250

Historical Map - Segment A10



A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

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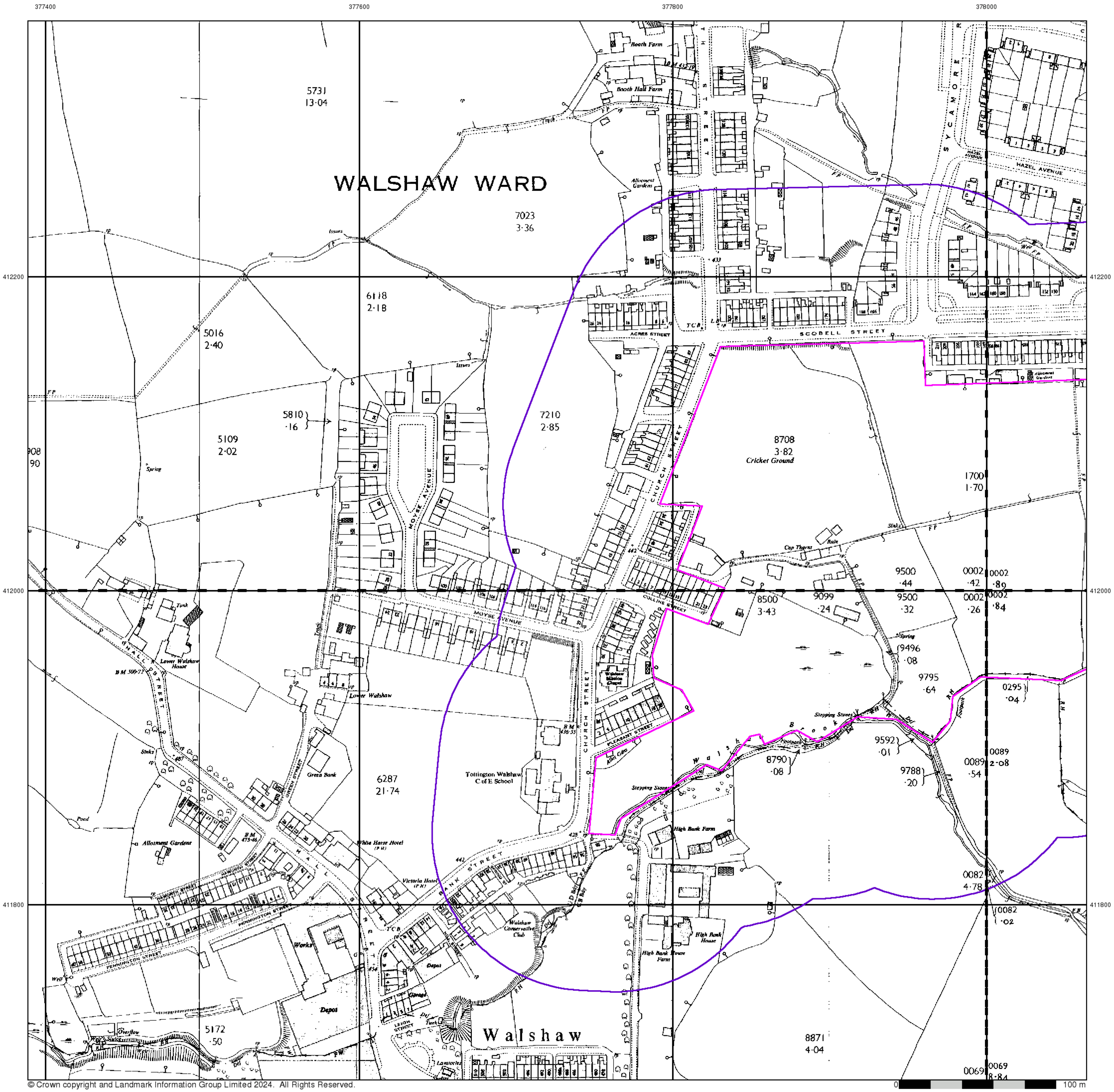
377400
377600
377800
378000
412200
412000
411800
WALSHAW WARD
Booth Farm
Booth Hall Farm
5731
13·04
7023
3·36
Allotment Gardens
6118
2·18
5016
2·40
5810
·16
5109
2·02
7210
2·85
8708
3·82
Cricket Ground
1700
1·70
SCOBELL STREET
ACRES STREET
SYCAMORE
HAZEL AVENUE
CHURCH STREET
MOYSE AVENUE
COLLINS STREET
PLEASANT STREET
9500
·44
9500
·32
8500
3·43
9099
·24
0002
·42
0002
·89
0002
·26
0002
·84
9496
·08
9795
·64
0295
·04
Stepping Stones
Walshaw Brook
9592
·01
8790
·08
9788
·20
0089
·54
0089
2·08
Lower Walshaw
Lower Walshaw House
HALL STREET
Green Bank
6287
21·74
Tottington Walshaw C of E School
White Horse Hotel
Victoria Hotel
Walshaw Conservative Club
High Bank Farm
High Bank House
High Bank House Farm
Allotment Gardens
PENNINGTON STREET
Works
Depot
Walshaw
5172
·50
8871
4·04
0082
4·78
0082
·02
0069
0069
8·84
0
100 m

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Ordnance Survey Plan

Published 1960 - 1967

Source map scale - 1:2,500

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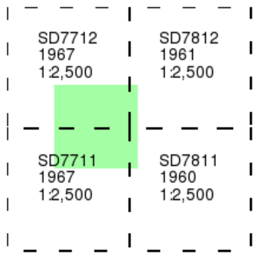
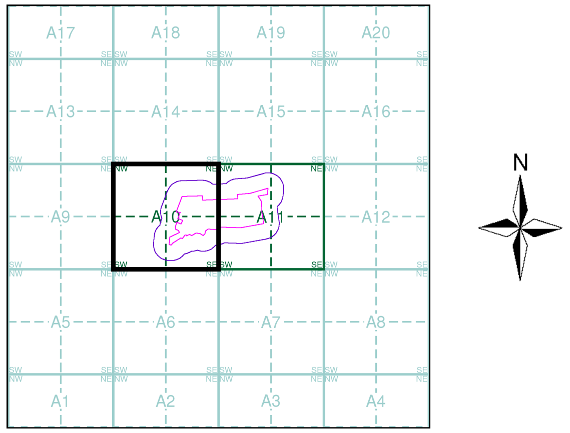
Map Name(s) and Date(s)


SD7712
1967
1:2,500
SD7812
1961
1:2,500
SD7711
1967
1:2,500
SD7811
1960
1:2,500

Historical Map - Segment A10


A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

Landmark

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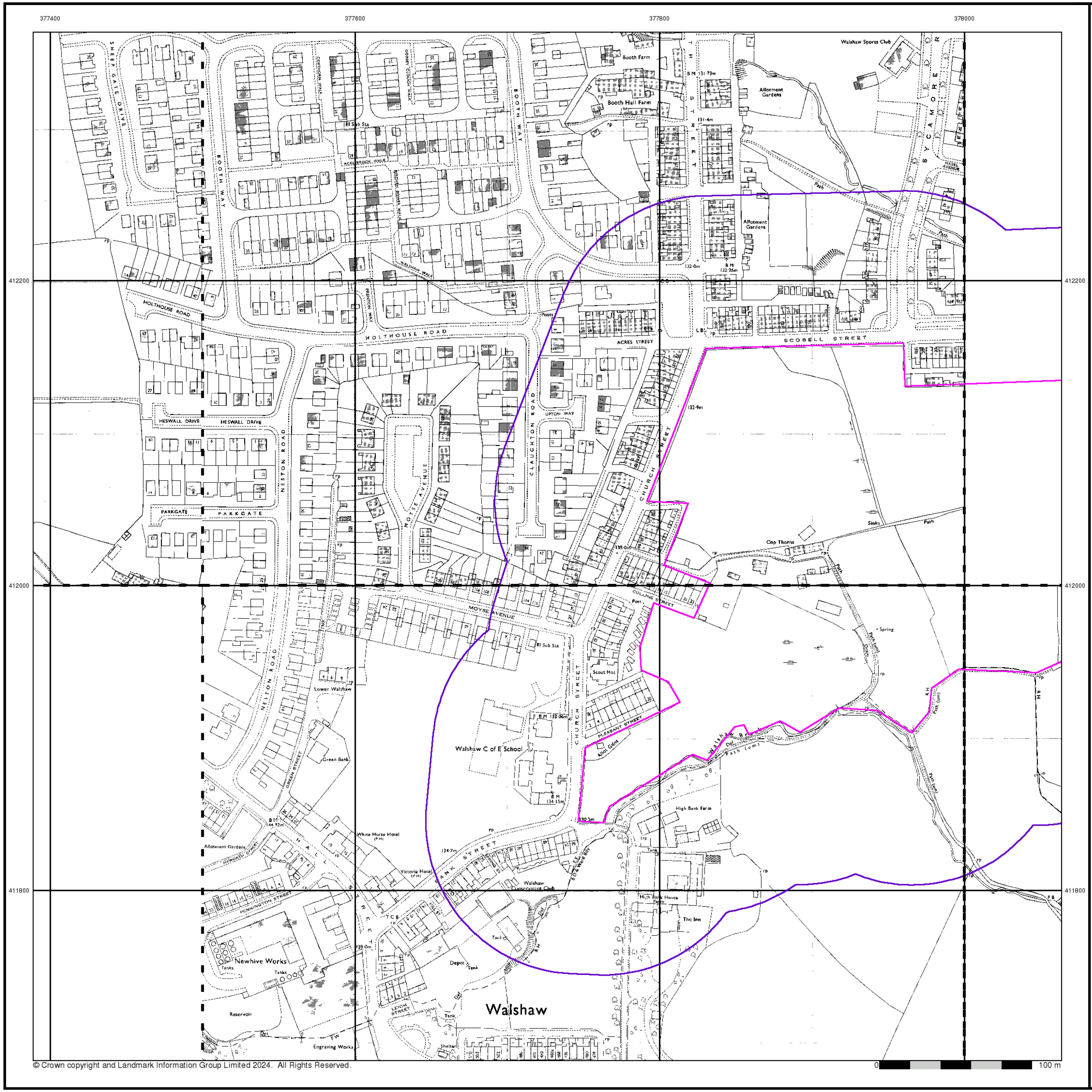
377400
377600
377800
378000
412200
412000
411800
SHEEPGATE DRIVE
BOOTH WAY
Booth Farm
Booth Hall Farm
Allotment Gardens
Walshaw Sports Club
SYCAMORE
THE STREET
El Sub Sta
ACRESBROOK WALK
WALSHAW WALK
HOLTHOUSE ROAD
HESWALL DRIVE
PARKGATE
NESTON ROAD
MOYSE AVENUE
CLAUGHTON ROAD
UPTON WAY
ACRES STREET
SCOBELL STREET
CHURCH STREET
Cop Thorns
Sinks
Path
Spring
COLLING STREET
Scout Hut
PLEASANT STREET
Walshaw C of E School
Lower Walshaw
Green Bank
GREEN STREET
High Bank Farm
White Horse Hotel (P H)
Victoria Hotel (P H)
BANK STREET
Walshaw Conservative Club
High Bank House
The Inn
Allotment Gardens
PENNINGTON STREET
Newhive Works
Tanks
Reservoir
Depot
Tank
LEIGH STREET
Walshaw
Engraving Works
Shelter
0
100 m

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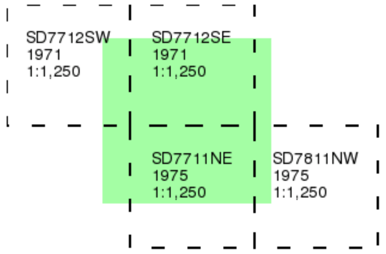
Ordnance Survey Plan

Published 1971 - 1975

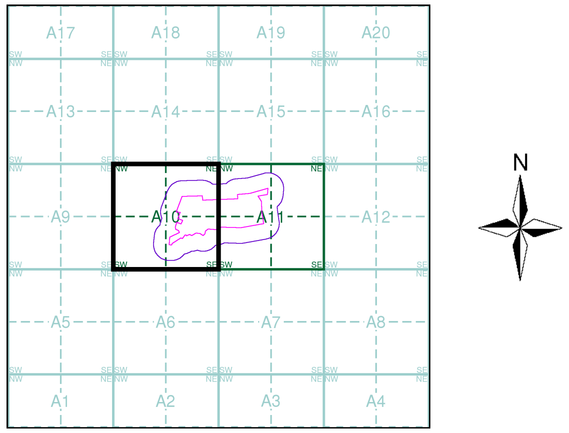
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)


SD7712SW
1971
1:1,250
SD7712SE
1971
1:1,250
SD7711NE
1975
1:1,250
SD7811NW
1975
1:1,250

Historical Map - Segment A10


A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

Landmark
INFORMATION GROUP

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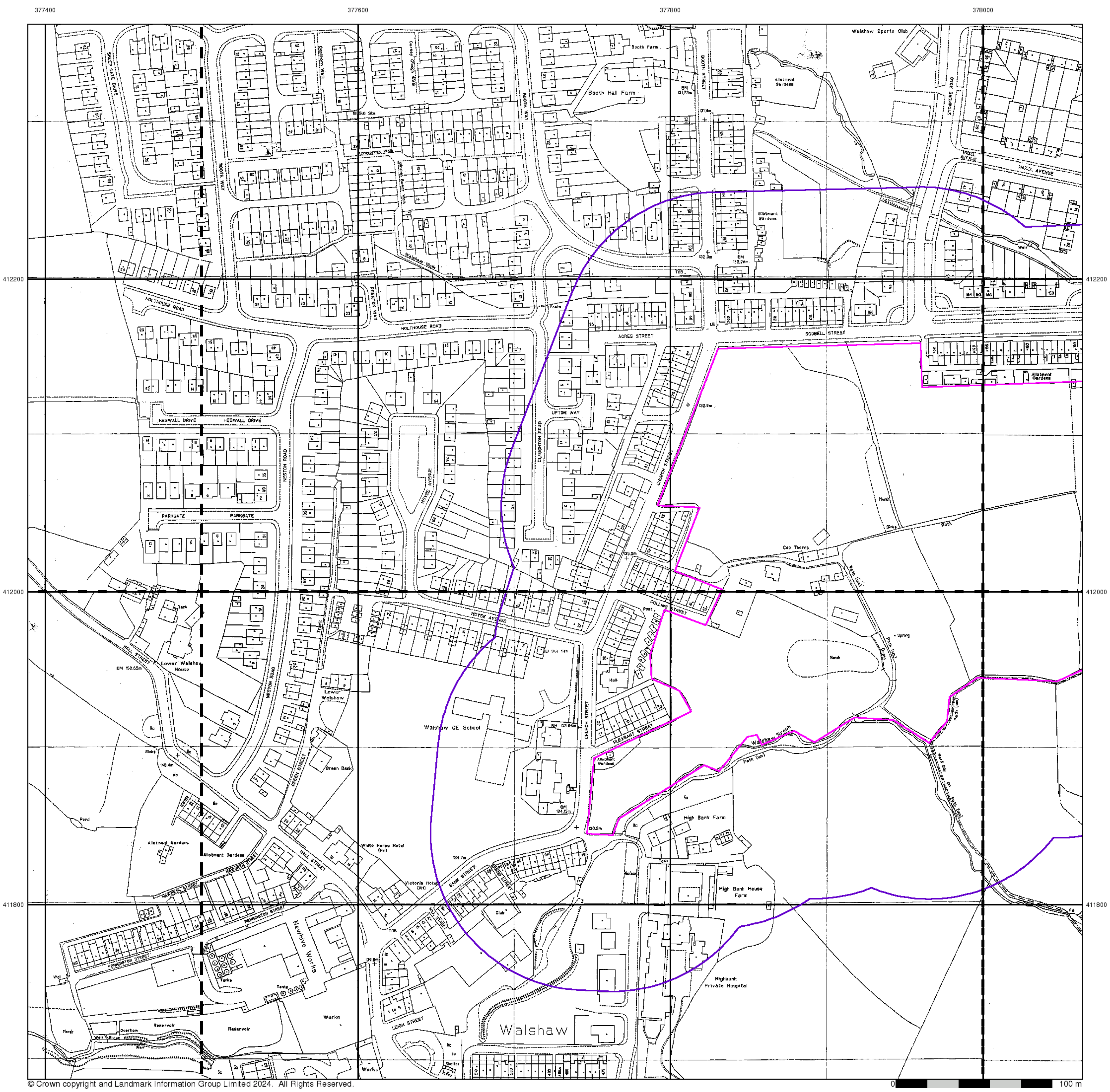
377400
377600
377800
378000
412200
412000
411800
Booth Farm
Booth Hall Farm
Walshaw Sports Club
Allotment Gardens
BOOTH WAY
BOOTH STREET
HOLTHOUSE ROAD
SCOBELL STREET
ACRES STREET
HESWALL DRIVE
PARKGATE
NESTON ROAD
UPTON WAY
CLAUGHTON ROAD
HOYLE AVENUE
CHURCH STREET
COLLINS STREET
PLEASANT STREET
Cap Thorns
Marsh
Path
Spring
Lower Walshaw House
Lower Walshaw
Walshaw CE School
Walshaw Brook
High Bank Farm
High Bank House Farm
Highbank Private Hospital
White Horse Hotel (PH)
Victoria Hotel (PH)
BANK STREET
HALL STREET
GREEN STREET
Green Bank
PENNINGTON STREET
Newhive Works
Works
Reservoir
Tank
Pond
Walshaw
LEIGH STREET
Club
0
100 m

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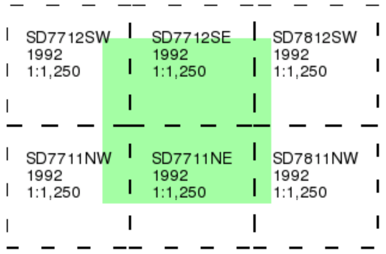
Large-Scale National Grid Data

Published 1992

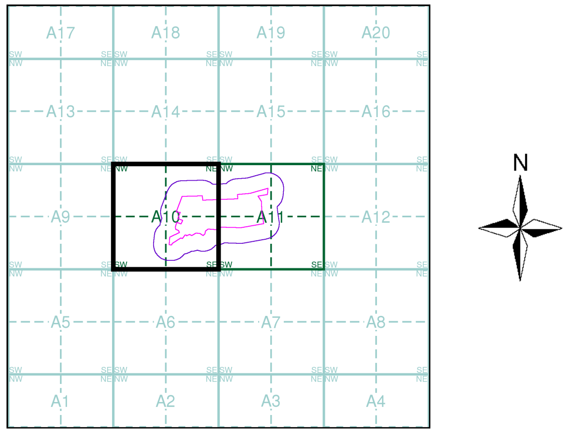
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)


SD7712SW 1992 1:1,250
SD7712SE 1992 1:1,250
SD7812SW 1992 1:1,250
SD7711NW 1992 1:1,250
SD7711NE 1992 1:1,250
SD7811NW 1992 1:1,250

Historical Map - Segment A10


A17
A18
A19
A20
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A15
A16
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A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
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Search Buffer (m):	100

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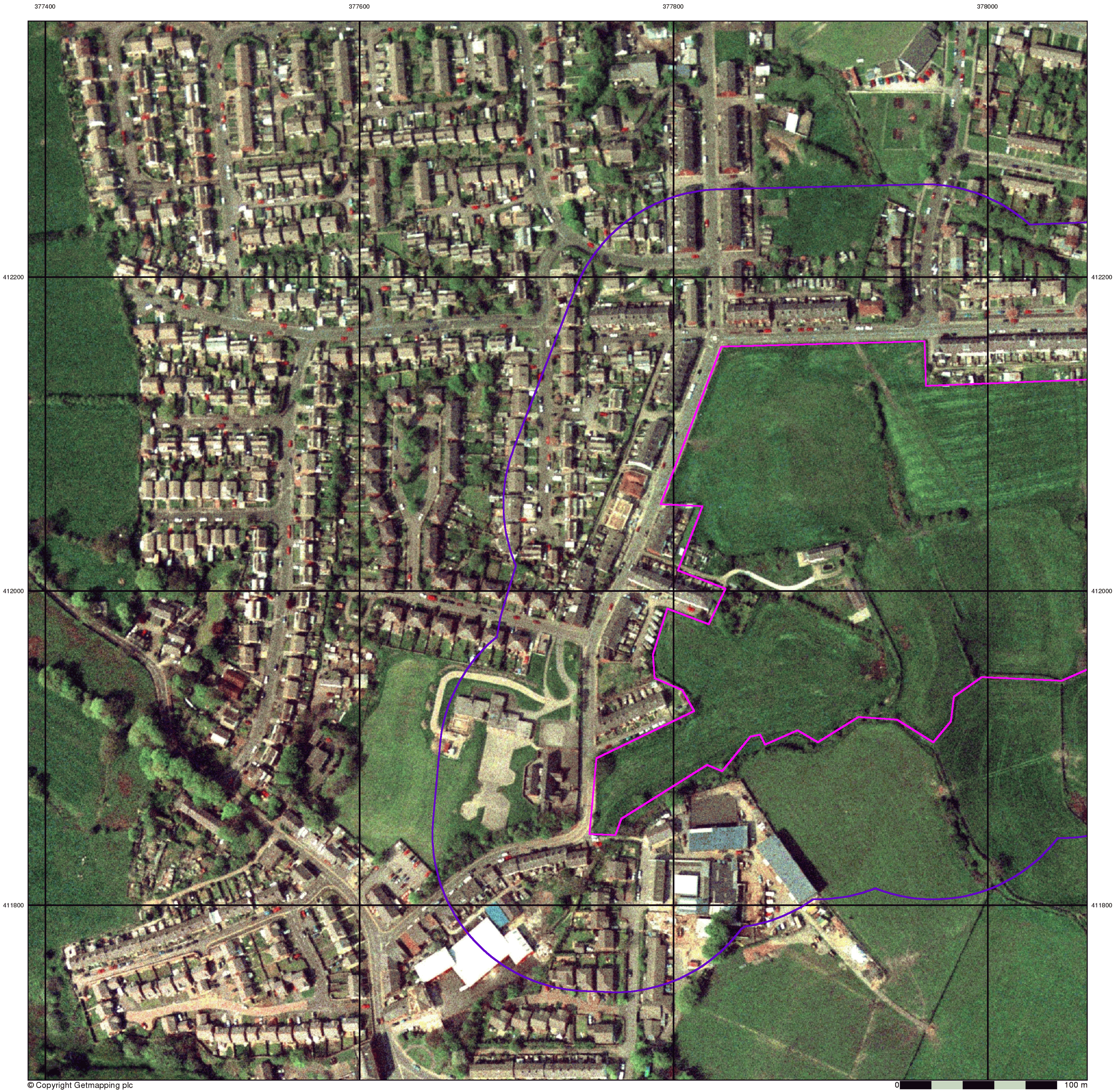
377400
377600
377800
378000
412200
412200
412000
412000
411800
411800
0
100 m

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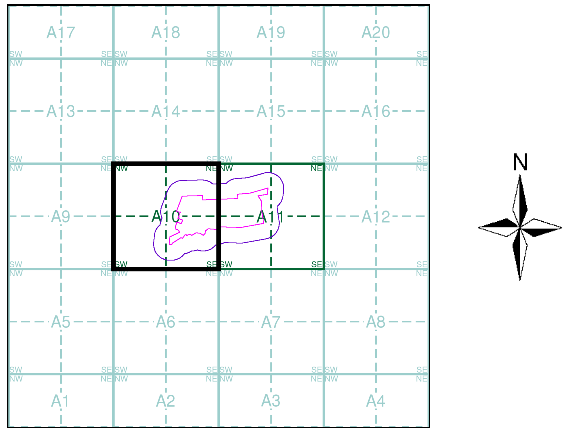
Historical Aerial Photography

Published 2001

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A10


A17
A18
A19
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A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
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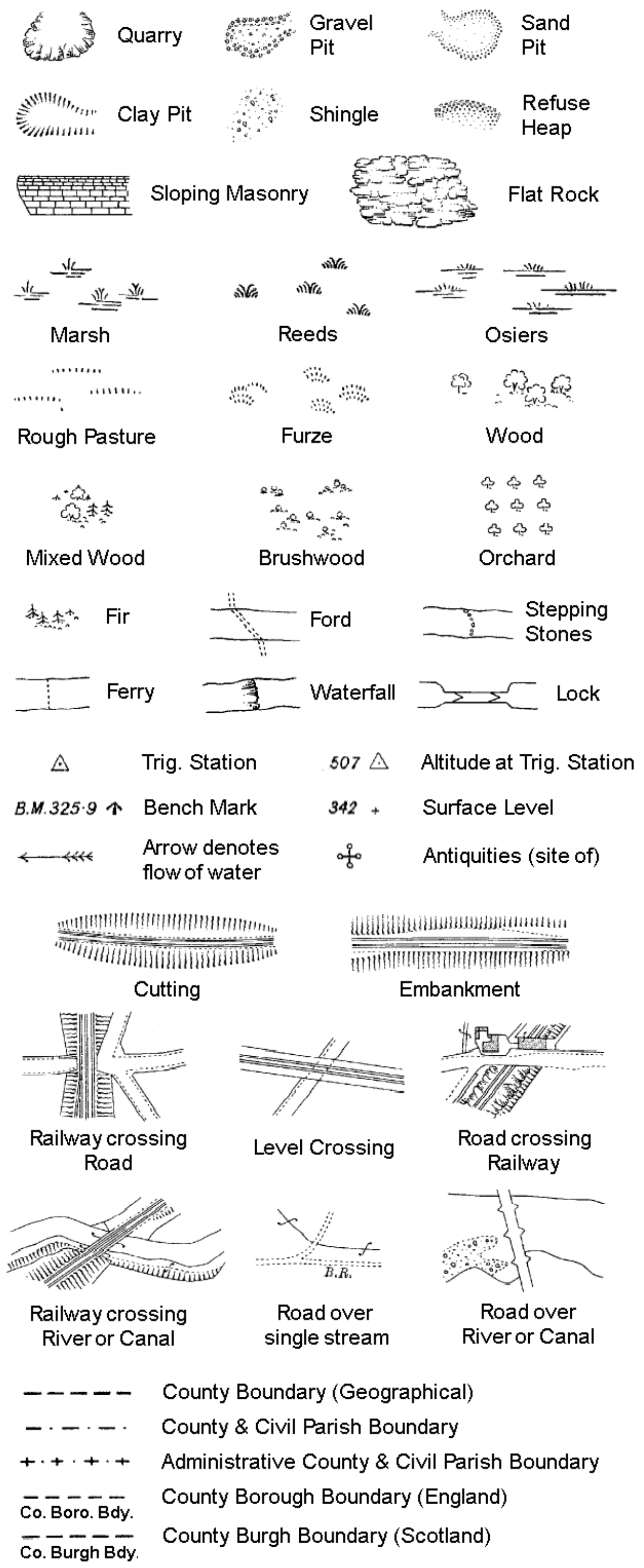
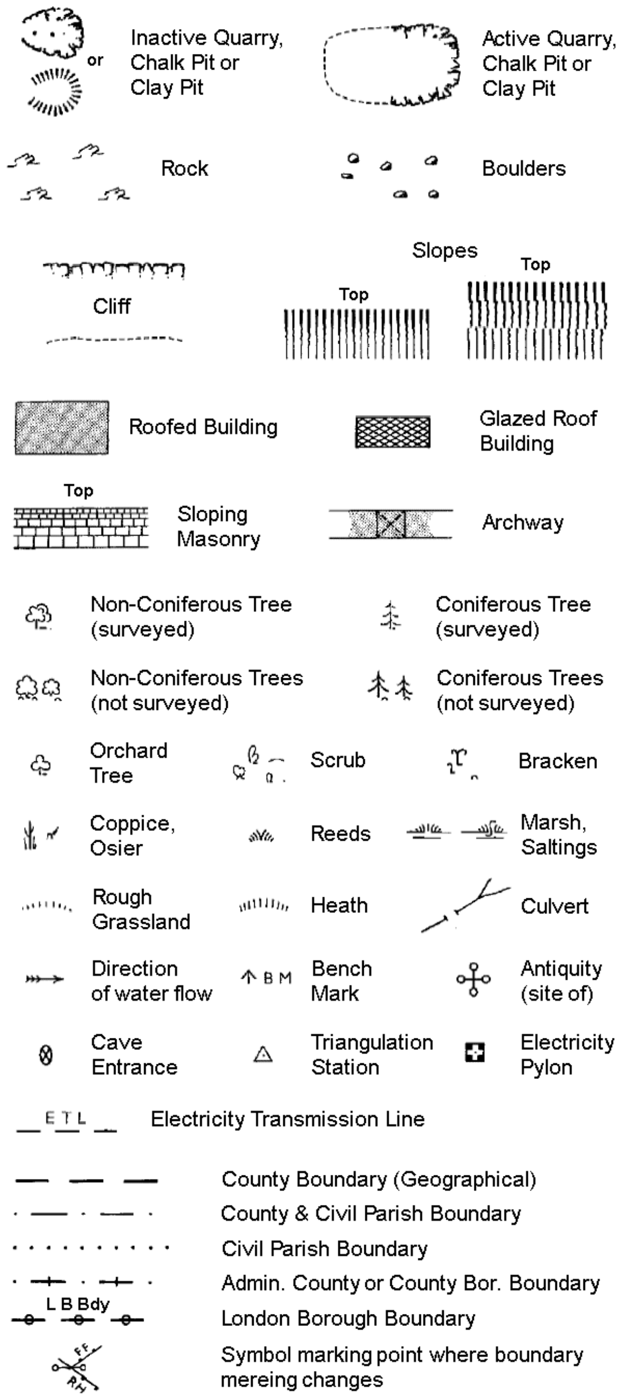
Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500


Quarry
Gravel Pit
Sand Pit
Clay Pit
Shingle
Refuse Heap
Sloping Masonry
Flat Rock
Marsh
Reeds
Osiers
Rough Pasture
Furze
Wood
Mixed Wood
Brushwood
Orchard
Fir
Ford
Stepping Stones
Ferry
Waterfall
Lock
Trig. Station
507 Altitude at Trig. Station
B.M.325·9 Bench Mark
342 Surface Level
Arrow denotes flow of water
Antiquities (site of)
Cutting
Embankment
Railway crossing Road
Level Crossing
Road crossing Railway
B.R.
Railway crossing River or Canal
Road over single stream
Road over River or Canal
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy.
County Borough Boundary (England)
Co. Burgh Bdy.
County Burgh Boundary (Scotland)

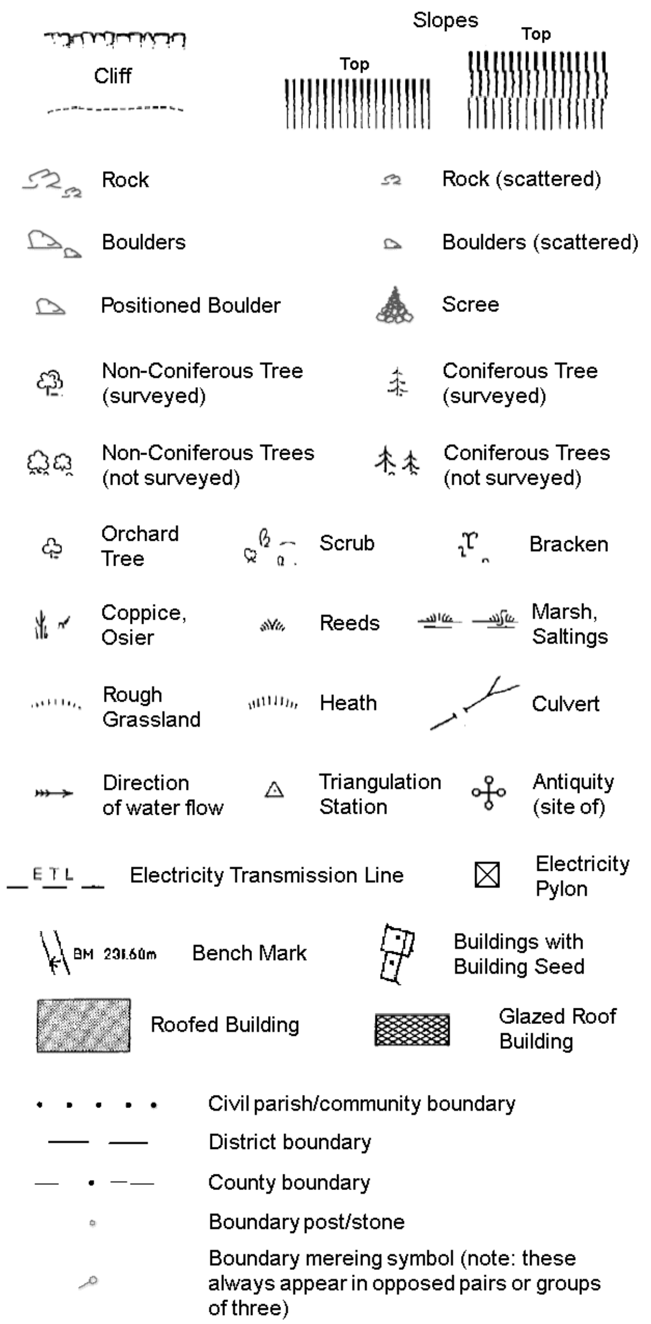
B P B S	Boundary Post or Stone	*P.C.B*	Police Call Box
B.R.	Bridle Road	*P*	Pump
E.P	Electricity Pylon	*S.P*	Signal Post
F.B.	Foot Bridge	*Sl.*	Sluice
F.P.	Foot Path	*Sp.*	Spring
G.P	Guide Post or Board	*T.C.B*	Telephone Call Box
M.S	Mile Stone	*Tr.*	Trough
M.P M.R	Mooring Post or Ring	*W*	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250


or
Inactive Quarry, Chalk Pit or Clay Pit
Active Quarry, Chalk Pit or Clay Pit
Rock
Boulders
Slopes
Top
Top
Cliff
Roofed Building
Glazed Roof Building
Top
Sloping Masonry
Archway
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
B M
Bench Mark
Antiquity (site of)
Cave Entrance
Triangulation Station
Electricity Pylon
E T L
Electricity Transmission Line
County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy
London Borough Boundary
FF
RH
Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250


Slopes
Top
Top
Cliff
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Positioned Boulder
Scree
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
Triangulation Station
Antiquity (site of)
E T L
Electricity Transmission Line
Electricity Pylon
BM 231.60m
Bench Mark
Buildings with Building Seed
Roofed Building
Glazed Roof Building
Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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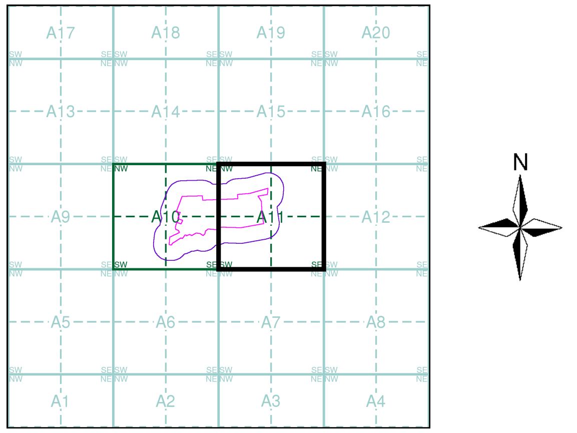
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:2,500	1893	2
Lancashire And Furness	1:2,500	1910	3
Lancashire And Furness	1:2,500	1930	4
Ordnance Survey Plan	1:1,250	1959 - 1960	5
Ordnance Survey Plan	1:2,500	1960 - 1961	6
Additional SIMs	1:1,250	1960 - 1985	7
Ordnance Survey Plan	1:1,250	1967 - 1978	8
Ordnance Survey Plan	1:2,500	1970	9
Supply of Unpublished Survey Information	1:1,250	1974	10
Supply of Unpublished Survey Information	1:1,250	1975	11
Additional SIMs	1:1,250	1985 - 1988	12
Additional SIMs	1:1,250	1987	13
Additional SIMs	1:1,250	1988	14
Ordnance Survey Plan	1:1,250	1990	15
Large-Scale National Grid Data	1:1,250	1992	16
Large-Scale National Grid Data	1:1,250	1993	17
Large-Scale National Grid Data	1:1,250	1996	18
Historical Aerial Photography	1:2,500	2001	19

Historical Map - Segment A11


A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
SW
SE
NW
NE
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

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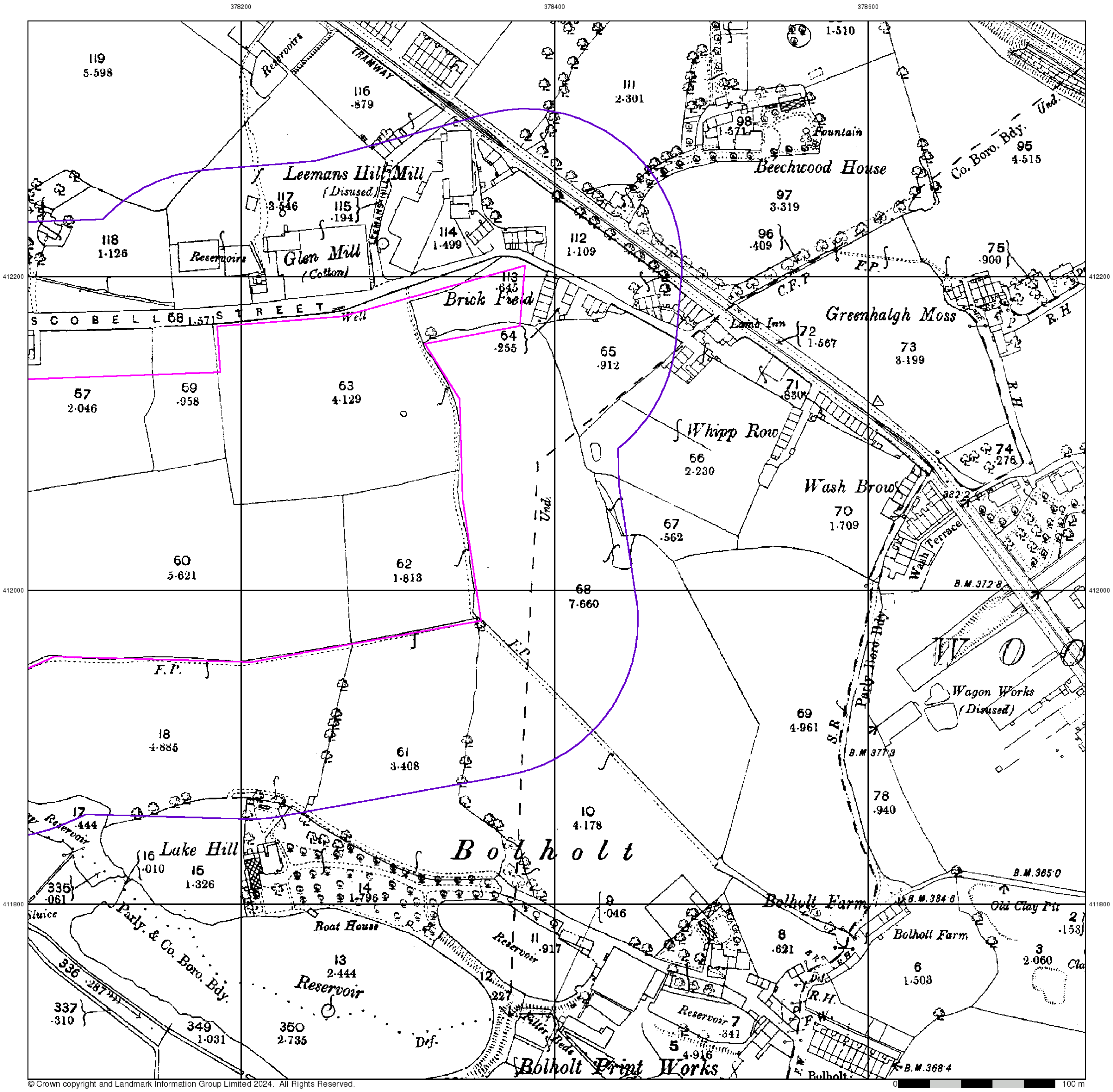
378200
378400
378600
412200
412000
411800
Reservoirs
TRAMWAY
Leemans Hill Mill
(Disused)
Glen Mill
(Cotton)
Reservoirs
SCOBELL STREET
Brick Field
Well
Beechwood House
Fountain
Co. Boro. Bdy.
Greenhalgh Moss
Lamb Inn
Whipp Row
Wash Brow
Wash Terrace
B.M. 372·8
Wagon Works
(Disused)
Parly. Boro. Bdy.
B.M. 377·3
Lake Hill
Boat House
Reservoir
Parly. & Co. Boro. Bdy.
Bolholt
Bolholt Farm
Old Clay Pit
B.M. 365·0
B.M. 384·6
B.M. 368·4
Bolholt Print Works
Sluice
F.P.
C.F.P.
R.H.
Und.
Def.
0
100 m

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Lancashire And Furness

Published 1893

Source map scale - 1:2,500

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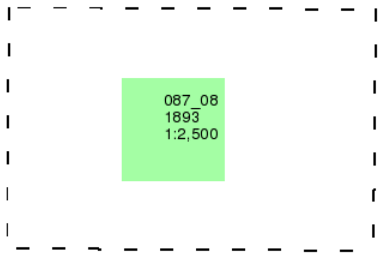
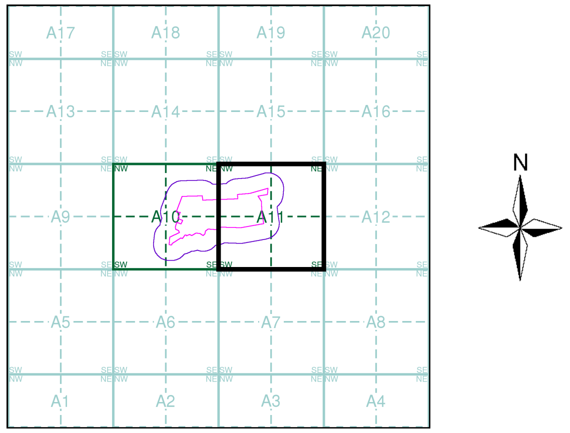
Map Name(s) and Date(s)


087_08
1893
1:2,500

Historical Map - Segment A11


A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
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National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

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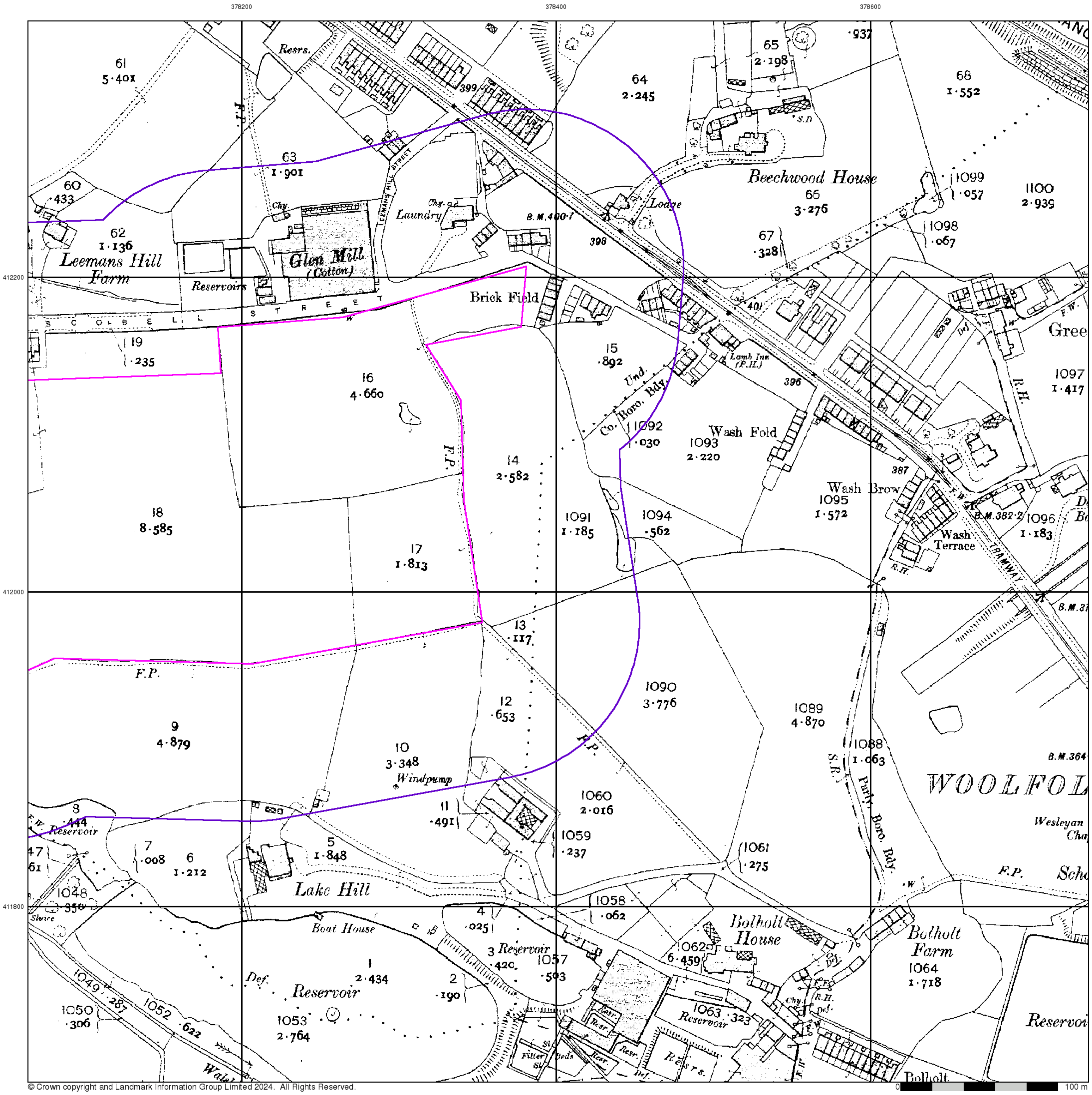
378200
378400
378600
412200
412000
411800
Resrs.
61
5·401
F.P.
63
1·901
399
64
2·245
65
2·198
·937
68
1·552
s.n
60
·433
Chy
LEEMANS HILL STREET
Chy.
Laundry
B.M.400·7
Lodge
Beechwood House
65
3·276
1099
·057
1100
2·939
62
1·136
Leemans Hill Farm
Reservoirs
Glen Mill (Cotton)
398
67
·328
1098
·067
SCOBELL STREET
Brick Field
401
Gree
19
·235
15
·892
Und. Co. Boro. Bdy.
Lamb Inn (P.H.)
396
R.H.
1097
1·417
16
4·660
1092
·030
Wash Fold
1093
2·220
14
2·582
F.P.
387
Wash Brow
1095
1·572
18
8·585
1091
1·185
1094
·562
B.M.382·2
1096
1·183
Wash Terrace
17
1·813
R.H.
TRAMWAY
13
·117
B.M.37
F.P.
1090
3·776
1089
4·870
12
·653
9
4·879
10
3·348
Windpump
F.P.
1088
1·063
S.R.
Parly. Boro. Bdy.
B.M.364
WOOLFOL
8
·444
Reservoir
11
·491
1060
2·016
Wesleyan Cha
47
61
7
·008
6
1·212
5
1·848
1059
·237
1061
·275
F.P.
Sch
1048
·350
Sluice
Lake Hill
4
·025
1058
·062
Boat House
3 Reservoir
·420
1057
·503
Bolholt House
1062
6·459
Bolholt Farm
1064
1·718
1
2·434
2
·190
Def.
Reservoir
1049
·287
1052
·622
1050
·306
1053
2·764
1063
·323
Reservoir
Reservoi
Filter Beds
Resr.
Bolholt
Wal
0
100 m

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Envirocheck®

LANDMARK INFORMATION GROUP®

Lancashire And Furness

Published 1910

Source map scale - 1:2,500

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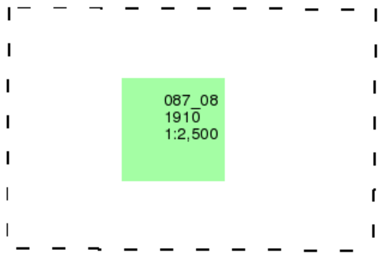
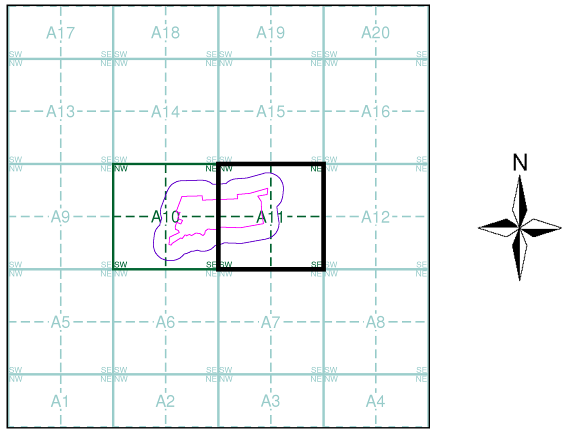
Map Name(s) and Date(s)


087_08
1910
1:2,500

Historical Map - Segment A11


A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

Landmark
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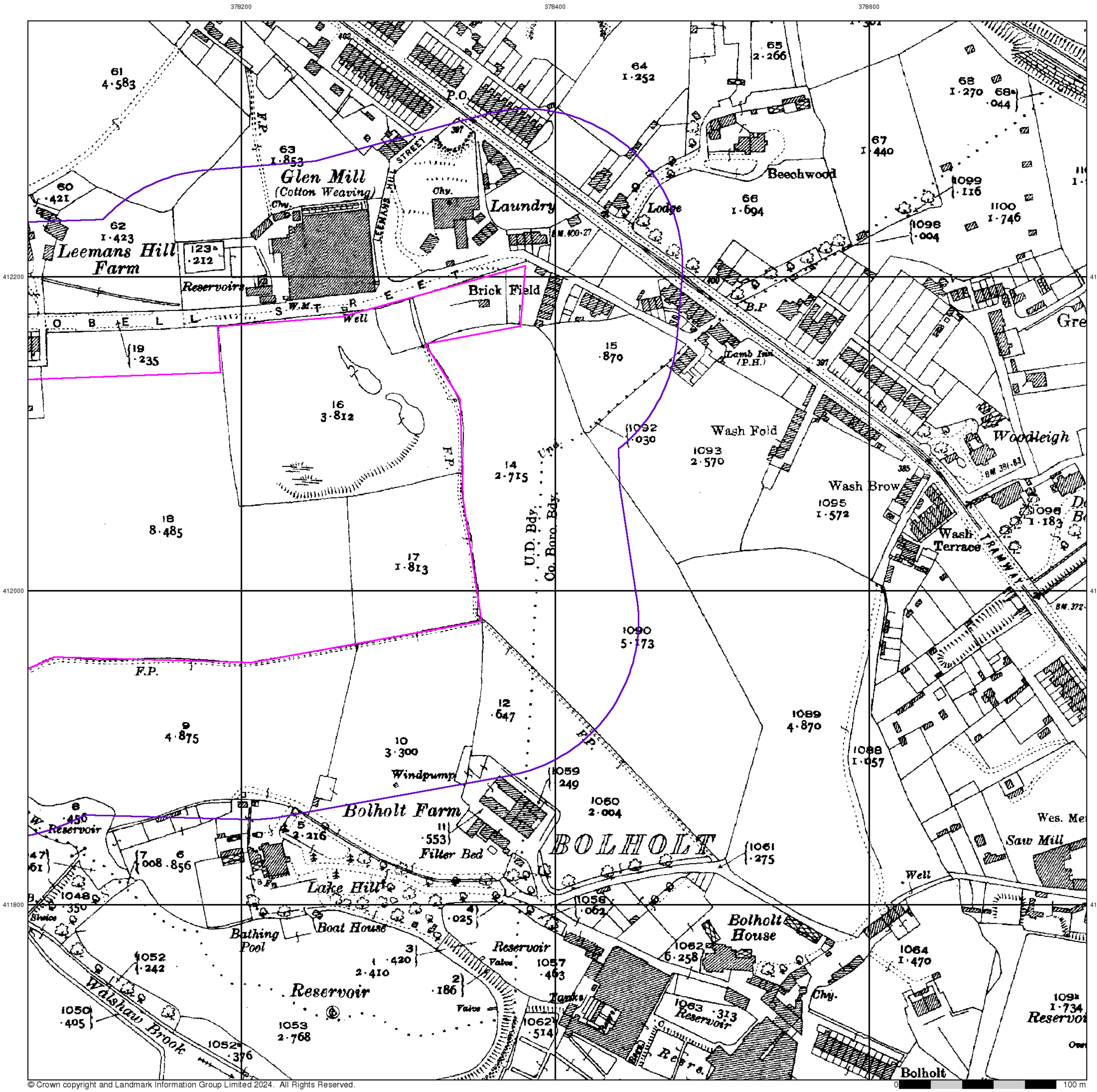
378200
378400
378600
412200
412000
411800
61
4·583
60
·421
62
1·423
Leemans Hill Farm
123a
·212
Reservoirs
63
1·853
Glen Mill
(Cotton Weaving)
Chy.
LEEMANS HILL STREET
Laundry
B.M. 400·27
P.O.
64
1·252
65
2·266
Beechwood
Lodge
66
1·694
67
1·440
68
1·270
68a
·044
1099
1·116
1100
1·746
1098
·004
S C O B E L L S T R E E T
S.W.M.T.
Well
Brick Field
B.P.
Lamb Inn (P.H.)
Gre
19
·235
16
3·812
15
·870
F.P.
Una
U.D. Bdy.
Co. Boro. Bdy.
1092
·030
1093
2·570
Wash Fold
Woodleigh
B.M. 391·63
14
2·715
Wash Brow
1095
1·572
Wash Terrace
TRAMWAY
1096
1·183
18
8·485
17
1·813
B.M. 372·
1090
5·173
F.P.
12
·647
1089
4·870
9
4·875
10
3·300
Windpump
1088
1·057
1059
·249
1060
2·004
8
·456
Reservoir
Bolholt Farm
5
2·216
11
·553
Filter Bed
BOLHOLT
1061
·275
Wes. Me
Saw Mill
Well
7
·008
6
·856
Lake Hill
1048
·350
Sluice
Bathing Pool
Boat House
4
·025
1058
·062
Bolholt House
1062
5·258
1064
1·470
1052
·242
3
·420
2·410
Reservoir
Valves
1057
·463
2
·186
Reservoir
Tanks
1063 ·313
Reservoir
Chy.
109
1·734
Reservoir
1050
·405
Walshaw Brook
1053
2·768
Valve
1062
·514
1052a
·376
Res.
Bolholt

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0 100 m

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LANDMARK INFORMATION GROUP®

Lancashire And Furness

Published 1930

Source map scale - 1:2,500

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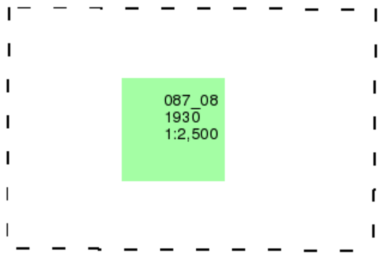
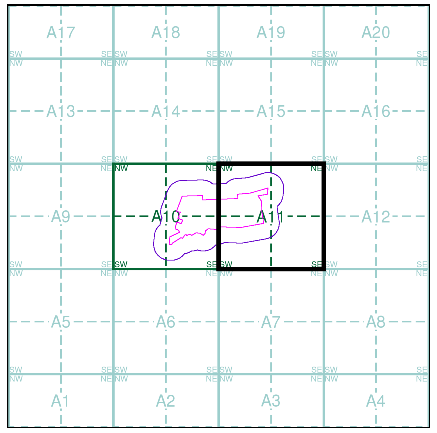
Map Name(s) and Date(s)


087_08
1930
1:2,500

Historical Map - Segment A11


A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

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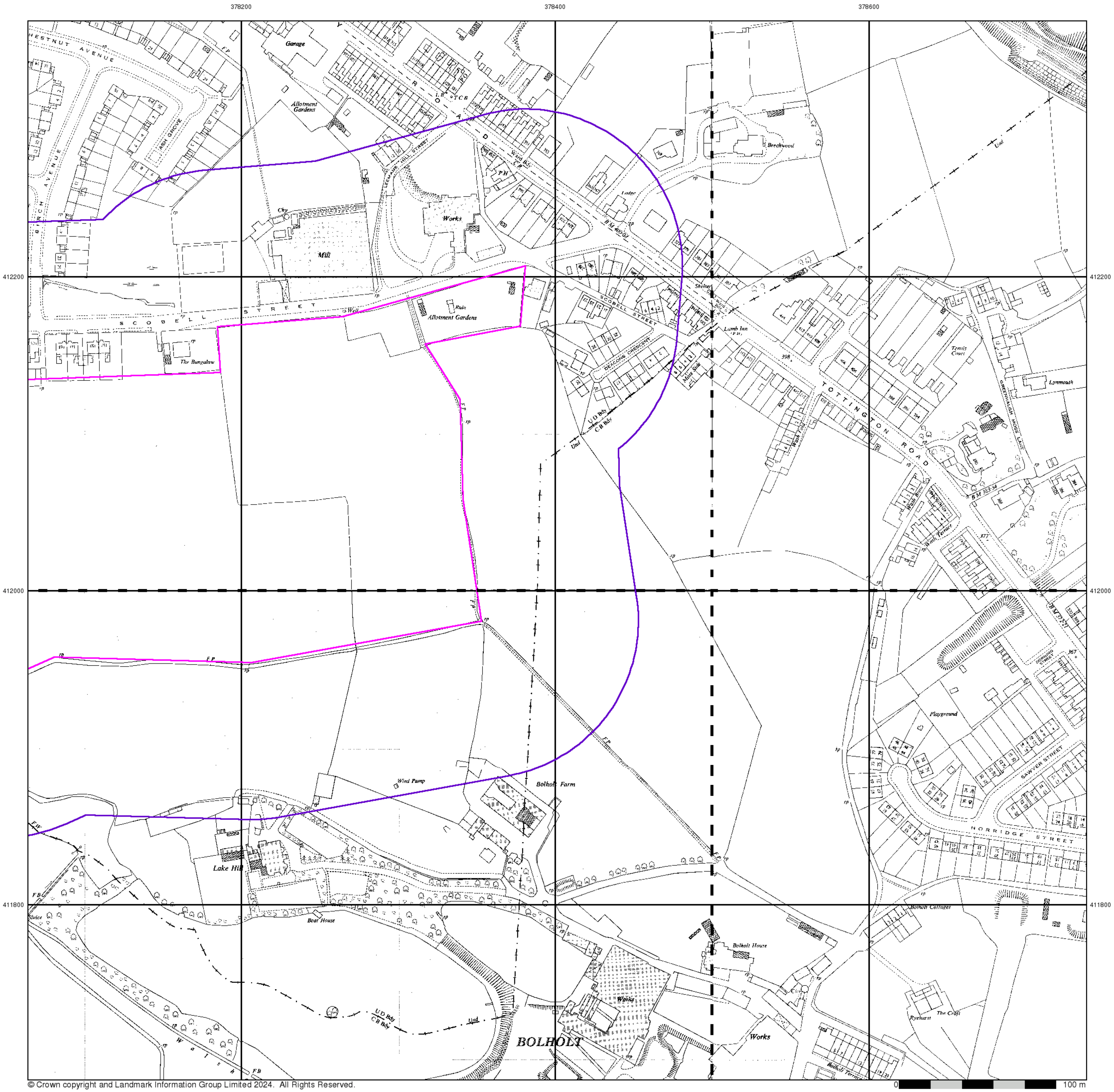
378200
378400
378600
412200
412000
411800
CHESTNUT AVENUE
BIRCH AVENUE
ASH GROVE
Garage
Allotment Gardens
Works
Mill
Chy
SCOBELL STREET
Allotment Gardens
Ruin
The Bungalow
Brechwood
Lodge
Shelter
Lamb Inn
SCOBELL STREET
DEACONS CRESCENT
Tennis Court
Lynmouth
TOTTINGTON ROAD
Playground
SAWYER STREET
HORRIDGE STREET
Wind Pump
Bolholt Farm
Lake Hill
Boat House
Bolholt House
Bolholt Cottages
Works
The Croft
Ryehurst
BOLHOLT
Sluice
UD Bdy
CB Bdy
FP
FB

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0 100 m

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Ordnance Survey Plan

Published 1959 - 1960

Source map scale - 1:1,250

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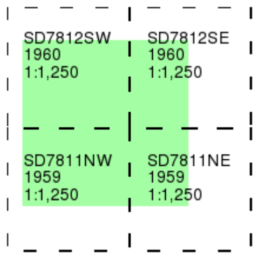
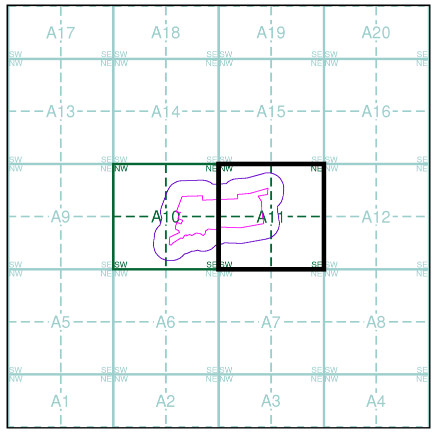
Map Name(s) and Date(s)


SD7812SW
1960
1:1,250
SD7812SE
1960
1:1,250
SD7811NW
1959
1:1,250
SD7811NE
1959
1:1,250

Historical Map - Segment A11


A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

Order Number:	340522593_1_1
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National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
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Site Details

Scobell Street, Tottington, BURY

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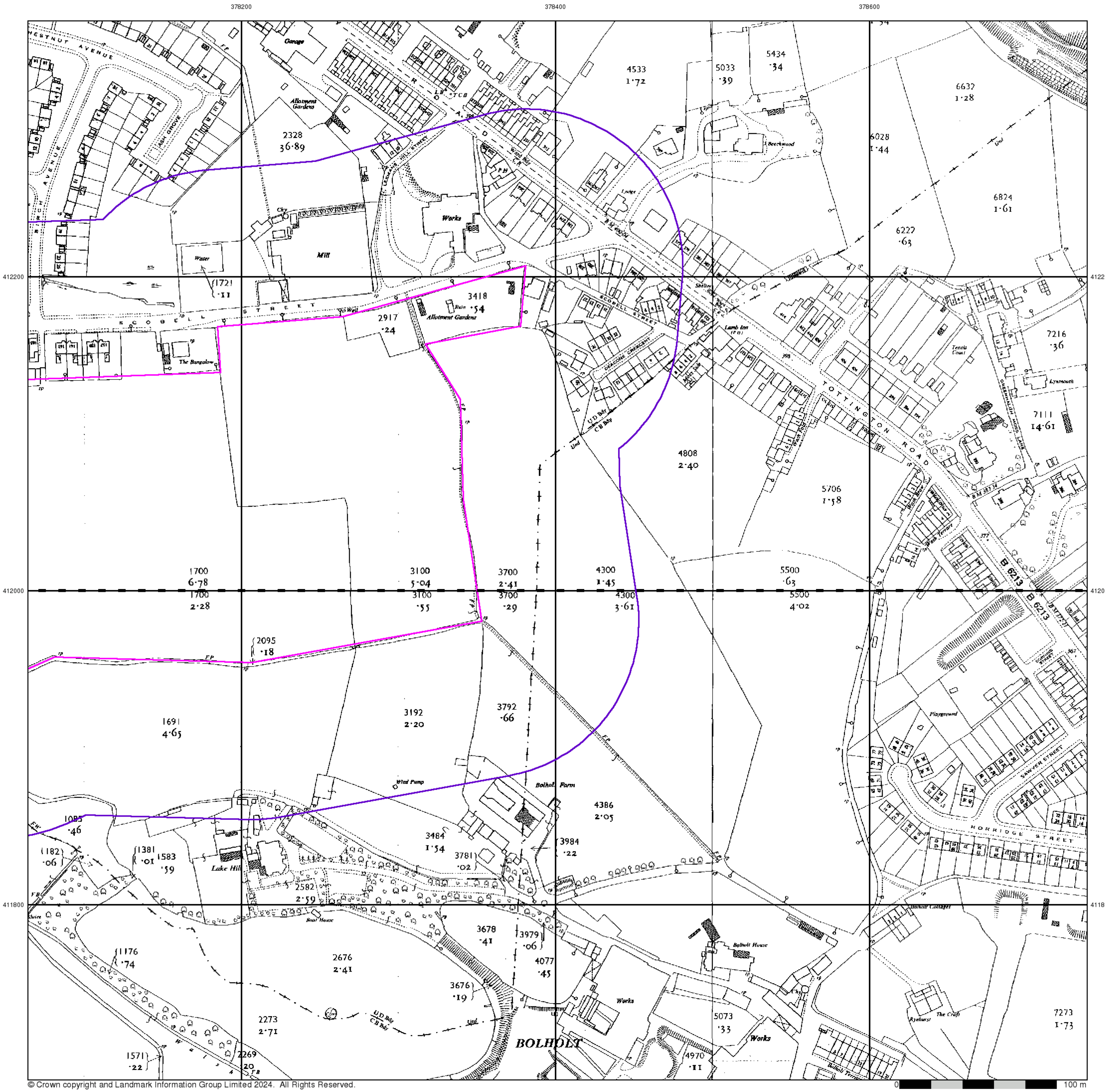
378200
378400
378600
412200
412000
411800
Garage
Allotment Gardens
2328
36·89
Works
Mill
Water
Chy
1721
·11
SCOBELL STREET
Well
Ruin
3418
·54
2917
·24
The Bungalow
4533
1·72
5033
·39
5434
·34
6632
1·28
6028
1·44
6824
1·61
6222
·63
Beechwood
Lodge
Lamb Inn
TOTTINGTON ROAD
Tennis Court
7216
·36
Lynmouth
7111
14·61
4808
2·40
5706
1·58
UD Bdy
CB Bdy
Und
1700
6·78
1700
2·28
3100
5·04
3100
·55
3700
2·41
3700
·29
4300
1·45
4300
3·61
5500
·63
5500
4·02
B 6213
2095
·18
1691
4·65
3192
2·20
3792
·66
Playground
SAWYER STREET
HORRIDGE STREET
Wind Pump
Bolholt Farm
4386
2·05
1085
·46
1182
·06
1381
·01
1583
·59
Lake Hill
3484
1·54
3781
·02
3984
·22
2582
2·59
Boat House
2676
2·41
3678
·41
3979
·06
4077
·45
3676
·19
Bolholt House
Bolholt Cottages
Works
5073
·33
Works
The Croft
7273
1·73
1176
·74
2273
2·71
1571
·22
2269
20
BOLHOLT
4970
·11
0
100 m

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Ordnance Survey Plan

Published 1960 - 1961

Source map scale - 1:2,500

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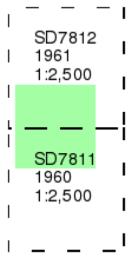
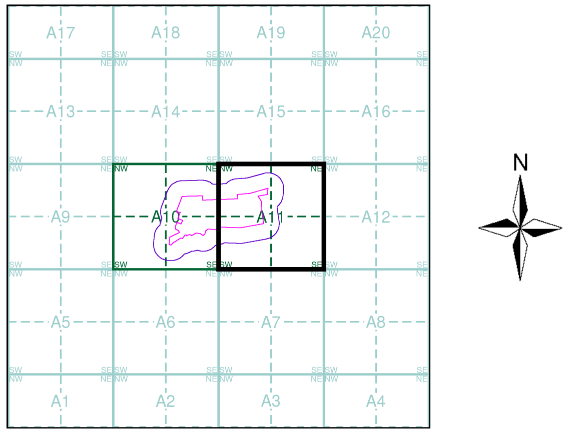
Map Name(s) and Date(s)


SD7812
1961
1:2,500
SD7811
1960
1:2,500

Historical Map - Segment A11


A17
A18
A19
A20
A13
A14
A15
A16
A9
A10
A11
A12
A5
A6
A7
A8
A1
A2
A3
A4
N

Order Details

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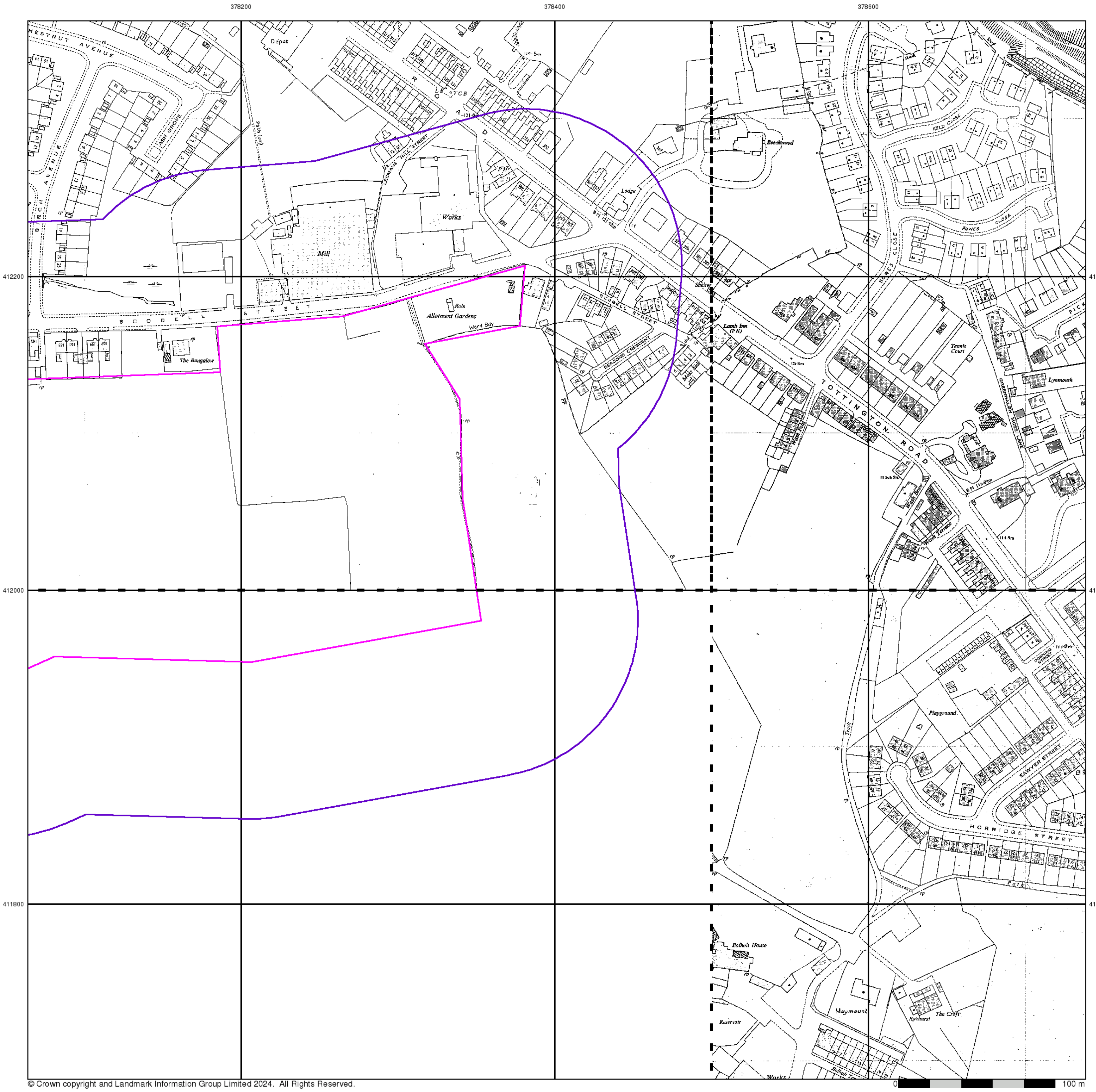
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY


378200
378400
378600
412200
412000
411800
ESTNUT AVENUE
ASH GROVE
BIRCH
AVENUE
Depot
Mill
Works
SCOBELL STREET
Ruin
Allotment Gardens
Ward Bdy
The Bungalow
Beechwood
Lodge
Lamb Inn (P H)
TOTTINGTON ROAD
Tennis Court
Lynmouth
KELD CLOSE
DAWES CLOSE
Playground
SAWYER STREET
HORRIDGE STREET
Bolholt House
Reservoir
Maymount
The Croft
Works
0
100 m

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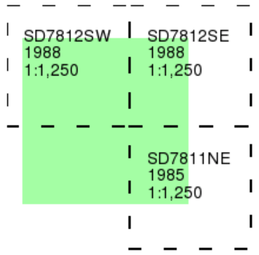
Additional SIMs

Published 1985 - 1988

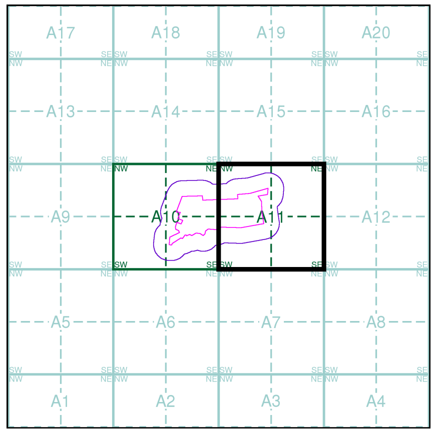
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)


SD7812SW
1988
1:1,250
SD7812SE
1988
1:1,250
SD7811NE
1985
1:1,250

Historical Map - Segment A11


A17
A18
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A16
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A12
A5
A6
A7
A8
A1
A2
A3
A4

N

Order Details

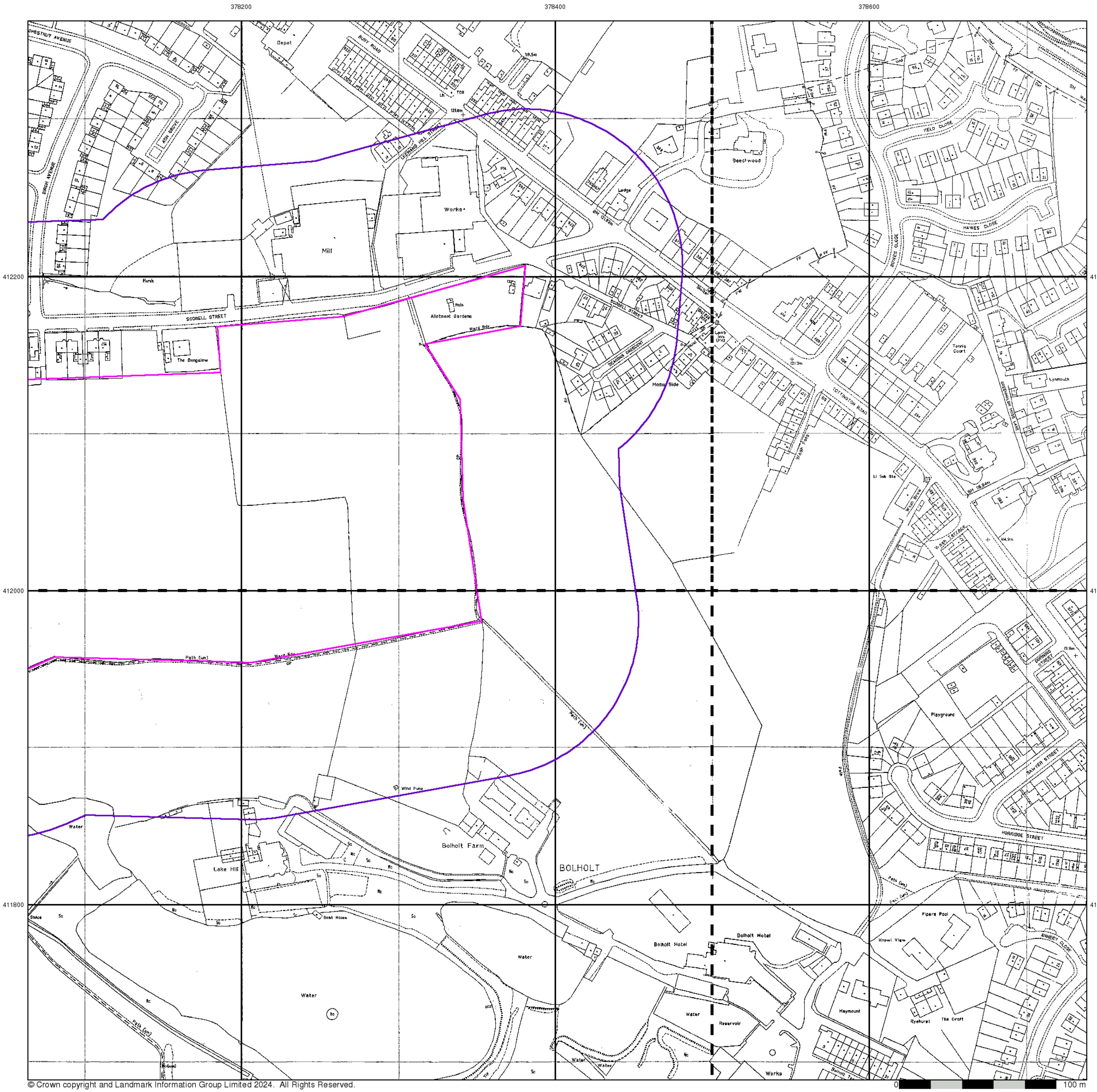
Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

Landmark®
INFORMATION GROUP

Tel:	0844 844 9952
Fax:	0844 844 9951
Web:	www.envirocheck.co.uk


378200
378400
378600
412200
412000
411800
Depot
Mill
Works
Marsh
SCOBELL STREET
Allotment Gardens
Ward Bdy
The Bungalow
Beechwood
Lodge
Tennis Court
Lynmouth
Moss Side
TOTTINGTON ROAD
HAWES CLOSE
FIELD CLOSE
Playground
SAWYER STREET
HORRIDGE STREET
Path (um)
Wind Pump
Water
Bolholt Farm
BOLHOLT
Lake Hill
Boat House
Bolholt Hotel
Reservoir
Works
Pipers Pool
Knowl View
Haymount
Ryehurst
The Croft
0
100 m

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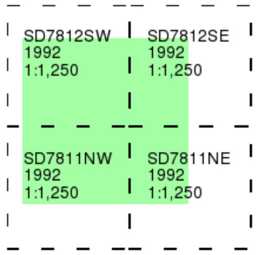
Large-Scale National Grid Data

Published 1992

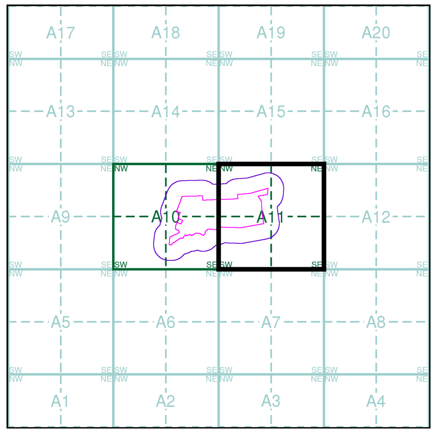
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)


SD7812SW
1992
1:1,250
SD7812SE
1992
1:1,250
SD7811NW
1992
1:1,250
SD7811NE
1992
1:1,250

Historical Map - Segment A11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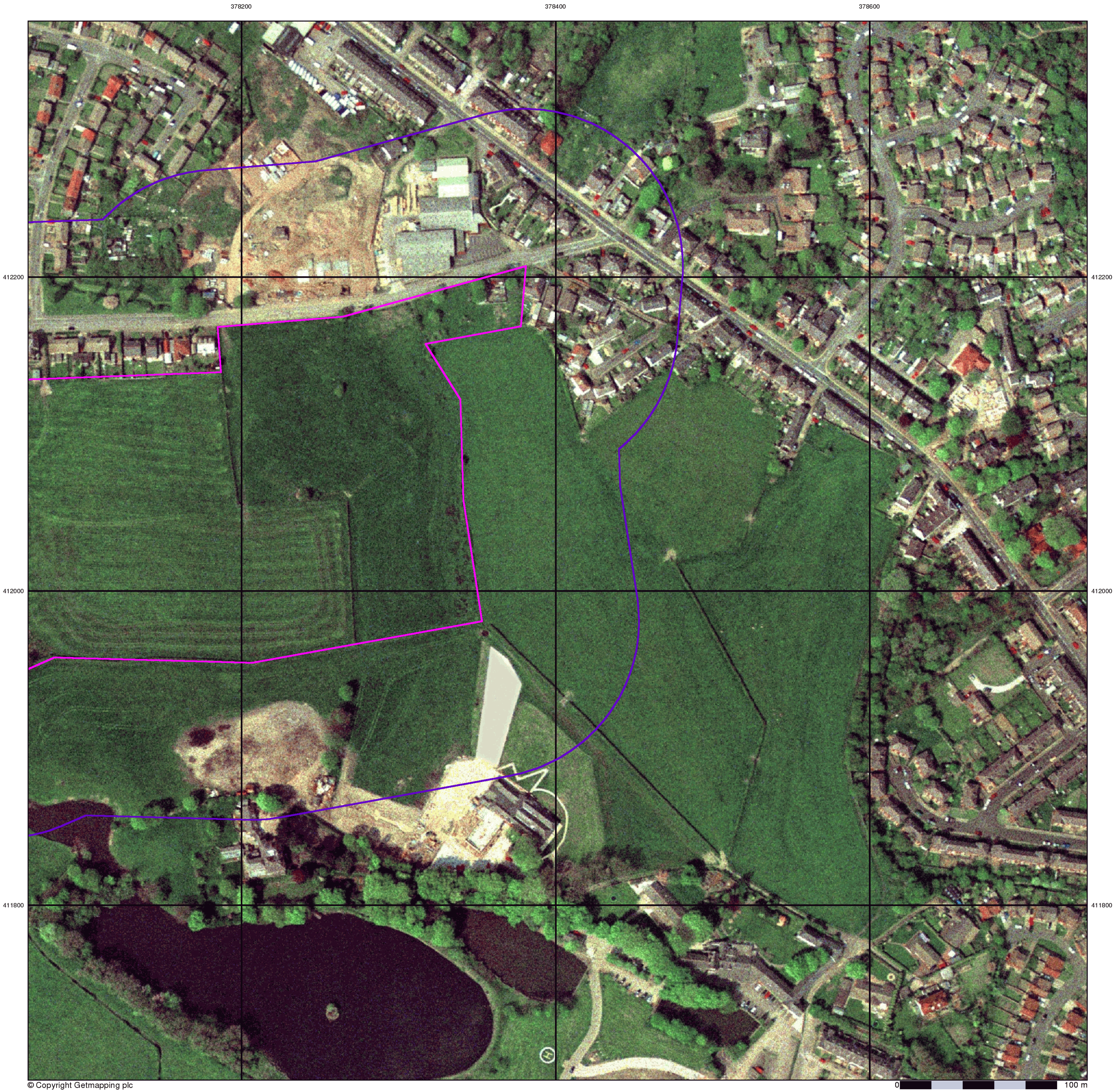
378200
378400
378600
412200
412000
411800
0
100 m

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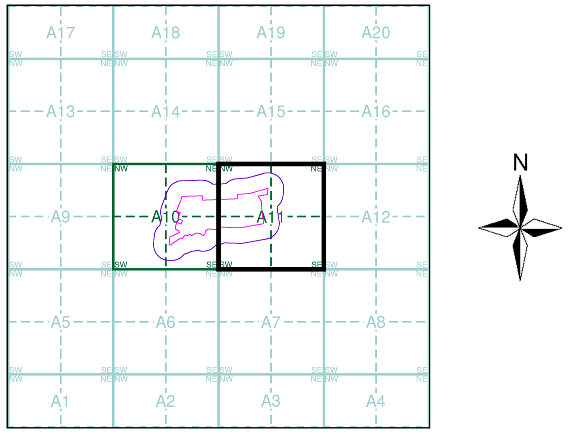
Historical Aerial Photography

Published 2001

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A11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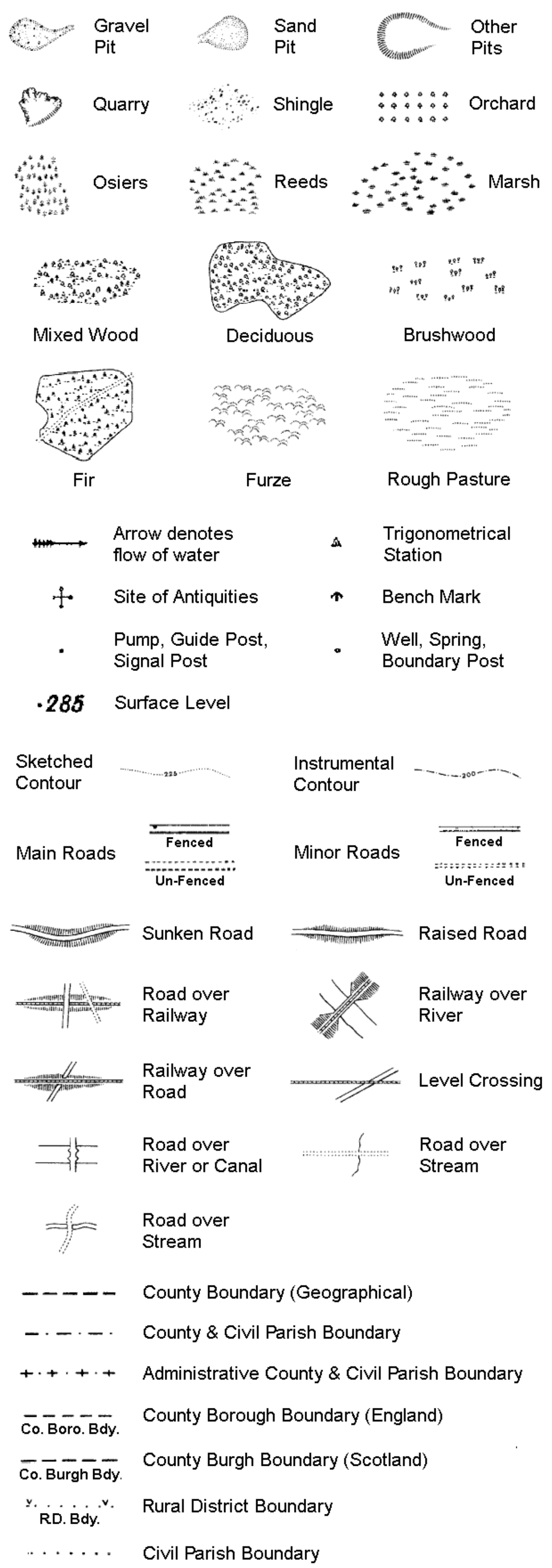
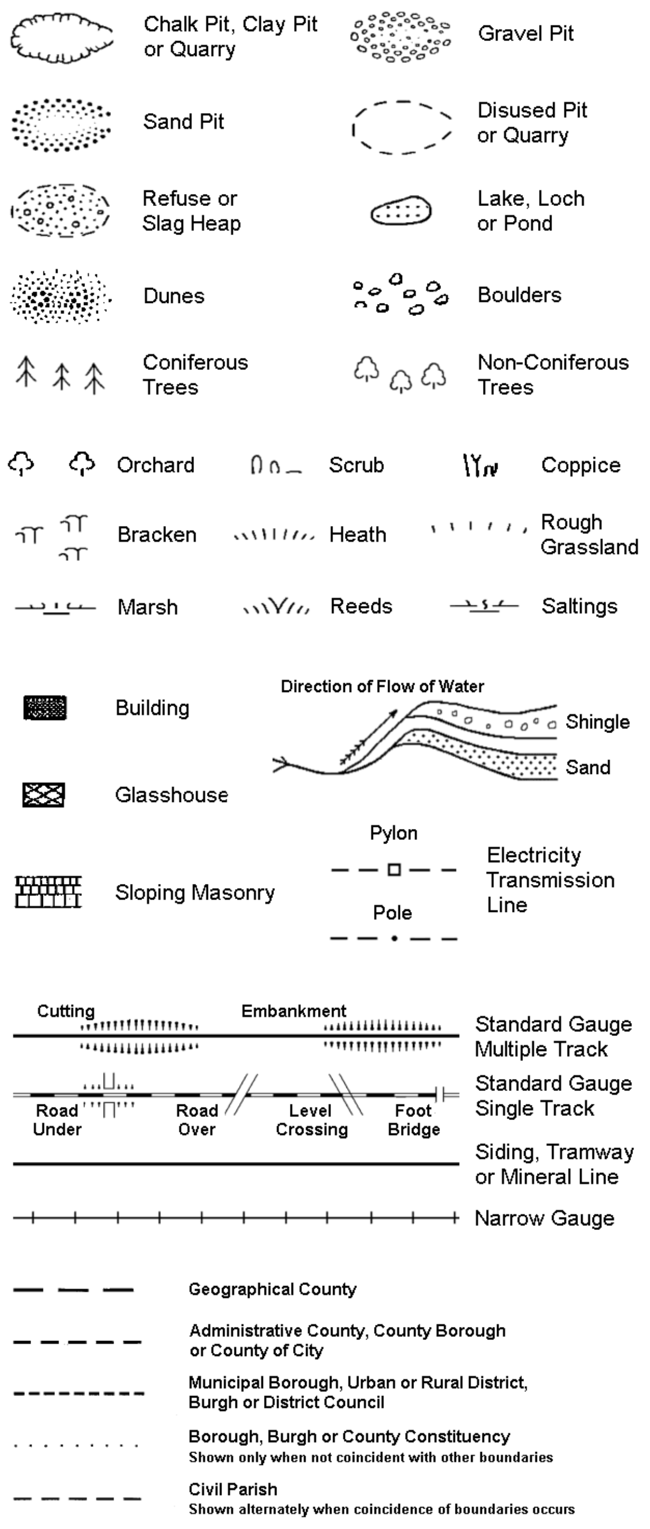
Historical Mapping Legends

Ordnance Survey County Series 1:10,560



Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285
Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy.
County Borough Boundary (England)
Co. Burgh Bdy.
County Burgh Boundary (Scotland)
RD. Bdy.
Rural District Boundary
Civil Parish Boundary

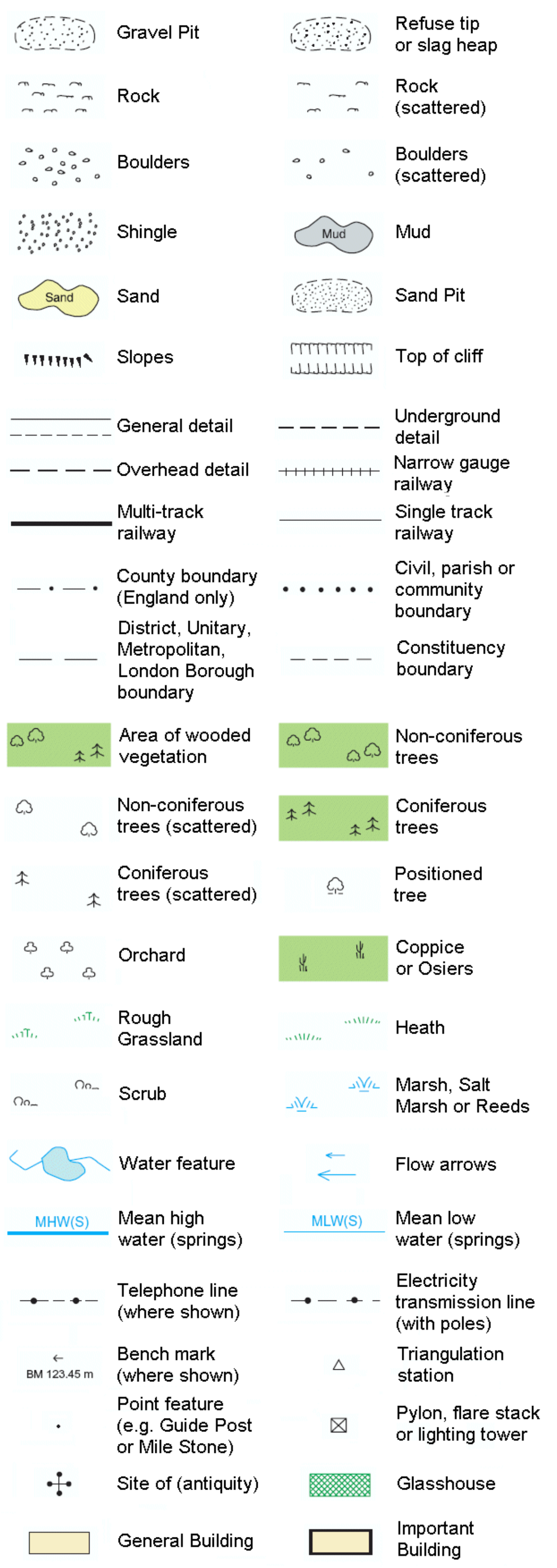
Ordnance Survey Plan 1:10,000



Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping



Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Mud
Sand
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S)
Mean high water (springs)
MLW(S)
Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m
Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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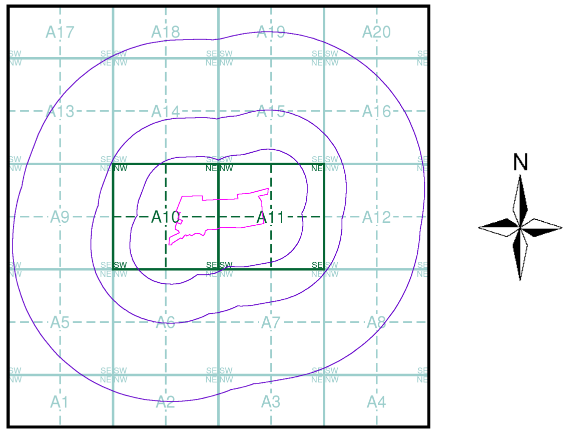
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:10,560	1850	3
Lancashire And Furness	1:10,560	1894	4
Lancashire And Furness	1:10,560	1911	5
Lancashire And Furness	1:10,560	1931	6
Lancashire And Furness	1:10,560	1938	7
Ordnance Survey Plan	1:10,000	1956	8
Ordnance Survey Plan	1:10,000	1969	9
Ordnance Survey Plan	1:10,000	1974	10
Manchester	1:25,000	1975	11
Ordnance Survey Plan	1:10,000	1982	12
10K Raster Mapping	1:10,000	1999	13
10K Raster Mapping	1:10,000	2006	14
VectorMap Local	1:10,000	2024	15

Historical Map - Slice A



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A8
A1
A2
A3
A4
N

Order Details

Order Number: 340522593_1_1
Customer Ref: 10/2399
National Grid Reference: 378060, 412040
Slice: A
Site Area (Ha): 11.76
Search Buffer (m): 1000

Site Details

Scobell Street, Tottington, BURY

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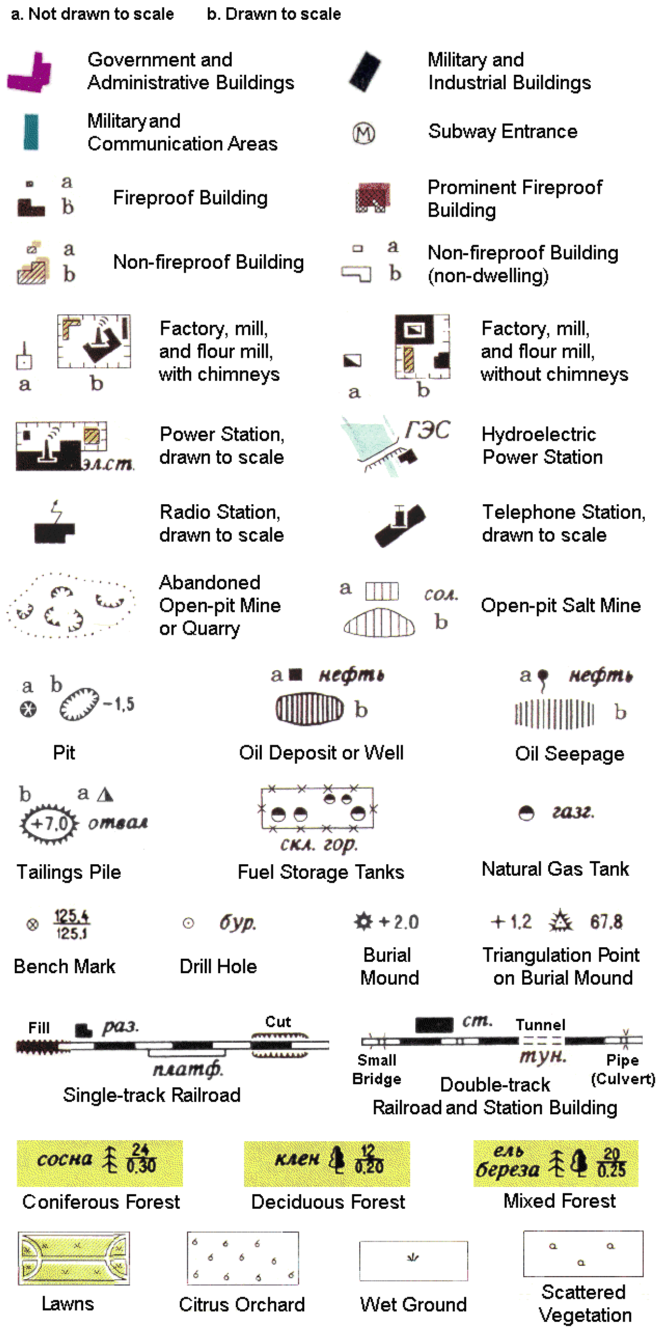
Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping

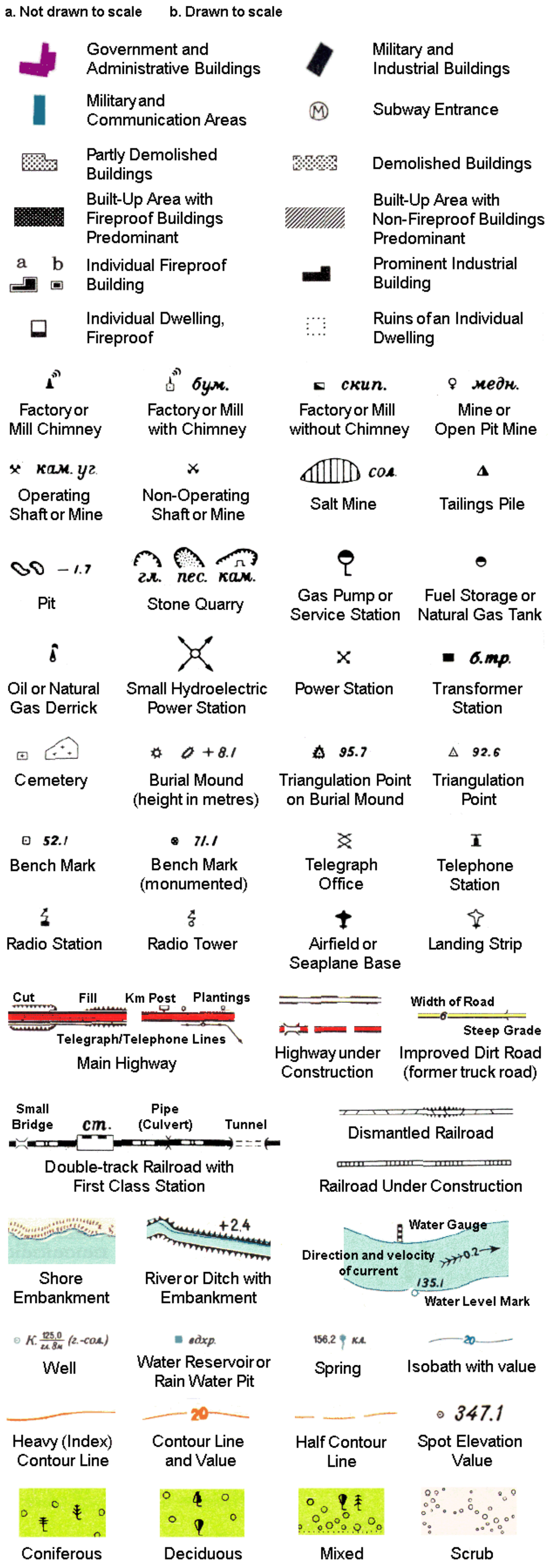

a. Not drawn to scale
b. Drawn to scale
Government and Administrative Buildings
Military and Industrial Buildings
Military and Communication Areas
Subway Entrance
Fireproof Building
Prominent Fireproof Building
Non-fireproof Building
Non-fireproof Building (non-dwelling)
Factory, mill, and flour mill, with chimneys
Factory, mill, and flour mill, without chimneys
Power Station, drawn to scale
эл.ст.
ГЭС
Hydroelectric Power Station
Radio Station, drawn to scale
Telephone Station, drawn to scale
Abandoned Open-pit Mine or Quarry
соль
Open-pit Salt Mine
–1,5
Pit
нефть
Oil Deposit or Well
нефть
Oil Seepage
+7,0
отвал
Tailings Pile
скл. гор.
Fuel Storage Tanks
газ.
Natural Gas Tank
125,4
125,1
Bench Mark
бур.
Drill Hole
+2,0
Burial Mound
+1,2
67,8
Triangulation Point on Burial Mound
Fill
раз.
Cut
платф.
Single-track Railroad
ст.
Tunnel
тун.
Small Bridge
Pipe (Culvert)
Double-track Railroad and Station Building
сосна
24/0,30
Coniferous Forest
клен
12/0,20
Deciduous Forest
ель береза
20/0,25
Mixed Forest
Lawns
Citrus Orchard
Wet Ground
Scattered Vegetation

243,8	Values for prominent elevations
186,0	Numbers for spot elevations, depth soundings, contour lines, etc.
0,2	Velocity of the current, width of river bed, depth of river
$\frac{180}{12}$ $\frac{180}{12}$	Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)
Б б (B)
В в (V)
Г г (G)
Д д (D)
Е е (E)
Ё ё (YO)
Ж ж (ZH)
З з (Z)
И и (I)
Й й (Y)
К к (K)
Л л (L)
М м (M)
Н н (N)
О о (O)
П п (P)
Р р (R)
С с (S)
Т т (T)
У у (U)
Ф ф (F)
Х х (KH)
Ц ц (TS)
Ч ч (CH)
Ш ш (SH)
Щ щ (SHCH)
ъ (–)
ы (Y)
ь (')
Э э (E)
Ю ю (YU or IU)
Я я (YA or IA)

1:25,000 mapping


a. Not drawn to scale
b. Drawn to scale
Government and Administrative Buildings
Military and Industrial Buildings
Military and Communication Areas
Subway Entrance
Partly Demolished Buildings
Demolished Buildings
Built-Up Area with Fireproof Buildings Predominant
Built-Up Area with Non-Fireproof Buildings Predominant
Individual Fireproof Building
Prominent Industrial Building
Individual Dwelling, Fireproof
Ruins of an Individual Dwelling
Factory or Mill Chimney
бум.
Factory or Mill with Chimney
скип.
Factory or Mill without Chimney
медн.
Mine or Open Pit Mine
кам. уг.
Operating Shaft or Mine
Non-Operating Shaft or Mine
соль
Salt Mine
Tailings Pile
–1.7
Pit
гл. пес. кам.
Stone Quarry
Gas Pump or Service Station
Fuel Storage or Natural Gas Tank
Oil or Natural Gas Derrick
Small Hydroelectric Power Station
Power Station
б.тр.
Transformer Station
Cemetery
+8.1
Burial Mound (height in metres)
95.7
Triangulation Point on Burial Mound
92.6
Triangulation Point
52.1
Bench Mark
71.1
Bench Mark (monumented)
Telegraph Office
Telephone Station
Radio Station
Radio Tower
Airfield or Seaplane Base
Landing Strip
Cut
Fill
Km Post
Plantings
Telegraph/Telephone Lines
Main Highway
Highway under Construction
Width of Road
Steep Grade
Improved Dirt Road (former truck road)
Small Bridge
ст.
Pipe (Culvert)
Tunnel
Double-track Railroad with First Class Station
Dismantled Railroad
Railroad Under Construction
Shore Embankment
+2.4
River or Ditch with Embankment
Water Gauge
Direction and velocity of current
0.2
135.1
Water Level Mark
Well
Water Reservoir or Rain Water Pit
156.2
Spring
20
Isobath with value
Heavy (Index) Contour Line
20
Contour Line and Value
Half Contour Line
347.1
Spot Elevation Value
Coniferous
Deciduous
Mixed
Scrub

Key to Numbers on Mapping

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:10,560	1850	3
Lancashire And Furness	1:10,560	1894	4
Lancashire And Furness	1:10,560	1911	5
Lancashire And Furness	1:10,560	1931	6
Lancashire And Furness	1:10,560	1938	7
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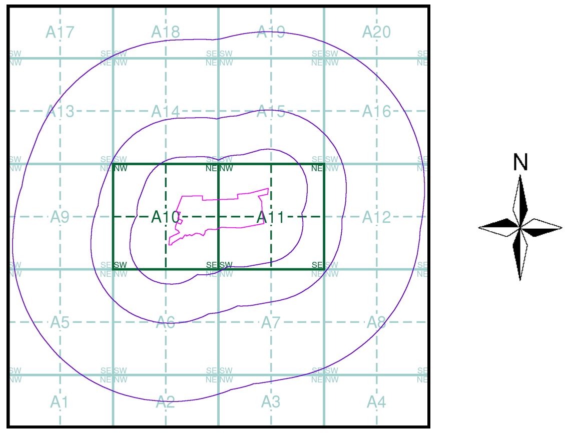
Ordnance Survey Plan	1:10,000	1974	10
Manchester	1:25,000	1975	11
Ordnance Survey Plan	1:10,000	1982	12
10K Raster Mapping	1:10,000	1999	13
10K Raster Mapping	1:10,000	2006	14
VectorMap Local	1:10,000	2024	15

Russian Map - Slice A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N

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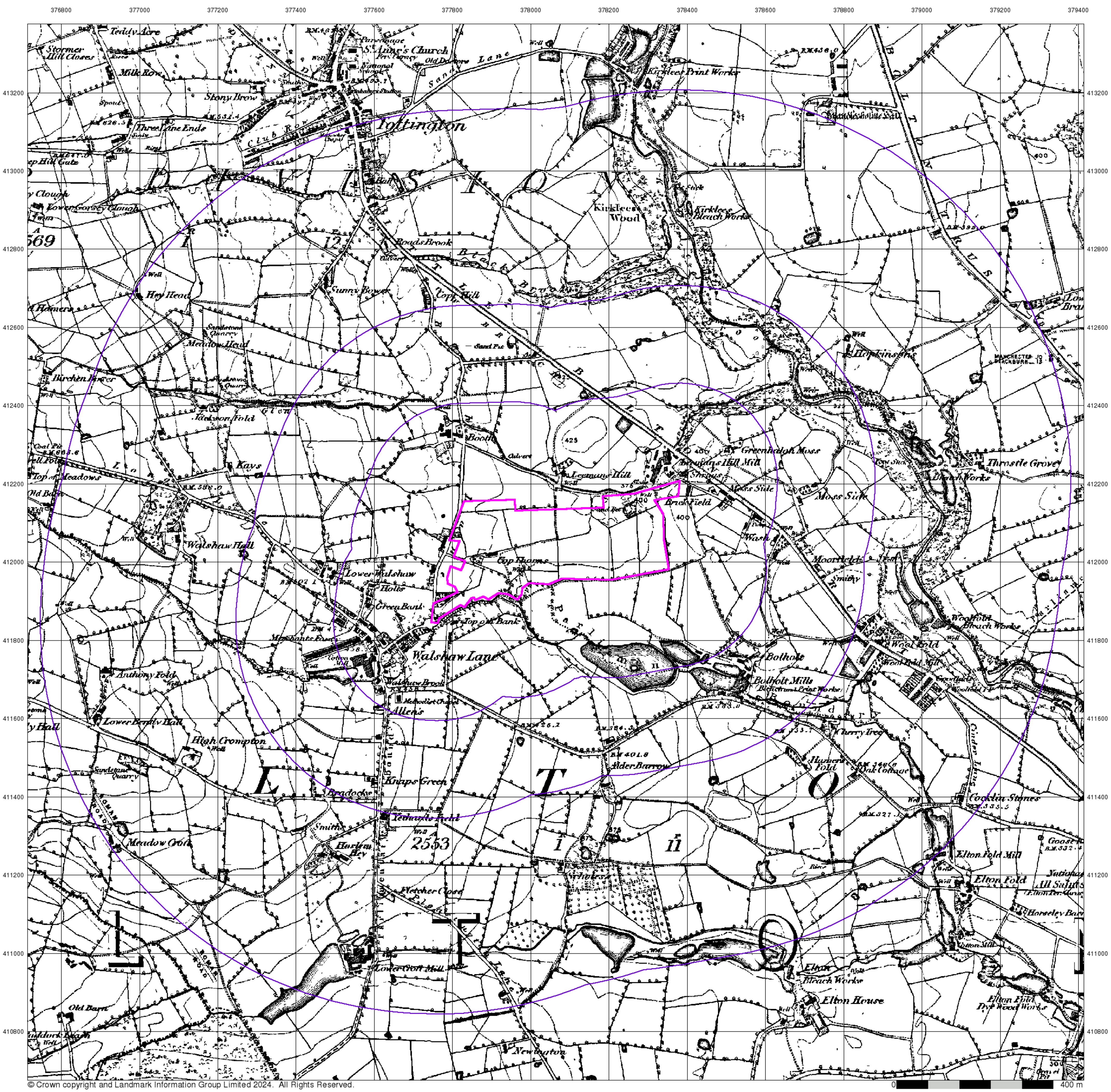
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379200
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413200
413000
412800
412600
412400
412200
412000
411800
411600
411400
411200
411000
410800
Teddy Acre
Stormer Hill Closes
Milk Row
St. Anne's Church
Kirklees Print Works
Stony Brow
Three Lane Ends
Tottington
Kirklees Wood
Kirklees Bleach Works
Roads Brook
Hey Head
Gunny Bower
Copt Hill
Meadow Head
Birchen Bower
Hopkinsons
Jackson Fold
Kays
Booth
Leemans Hill
Greenhalgh Moss
Throstle Grove
Top o' th' Meadows
Moss Side
Brick Field
Walshaw Hall
Lower Walshaw
Holts
Green Bank
Top o' th' Bank
Moorfields
Walshaw Lane
Walshaw Brook
Allens
Bolholt
Bolholt Mills
Wool Fold
Anthony Fold
Lower Bentley Hall
High Crompton
Cherry Tree
Hunters Fold
Oak Cottage
Knaps Green
Cockles Stones
Meadow Croft
Smiths
Elton Fold Mill
Elton Fold
Fletcher Close
Lower Croft Mill
Old Barn
Elton
Elton Bleach Works
Elton House
Newington
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0
400 m

Envirocheck®
LANDMARK INFORMATION GROUP®

Lancashire And Furness

Published 1850

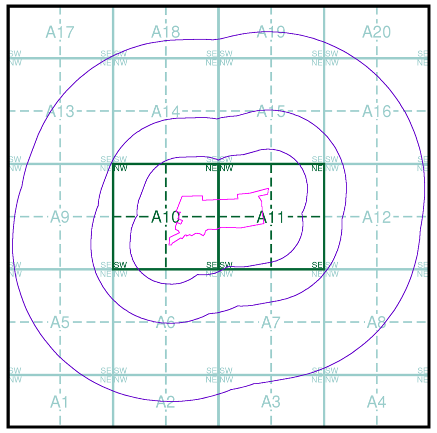
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

08700
1850
1:10,560 🟩

Historical Map - Slice A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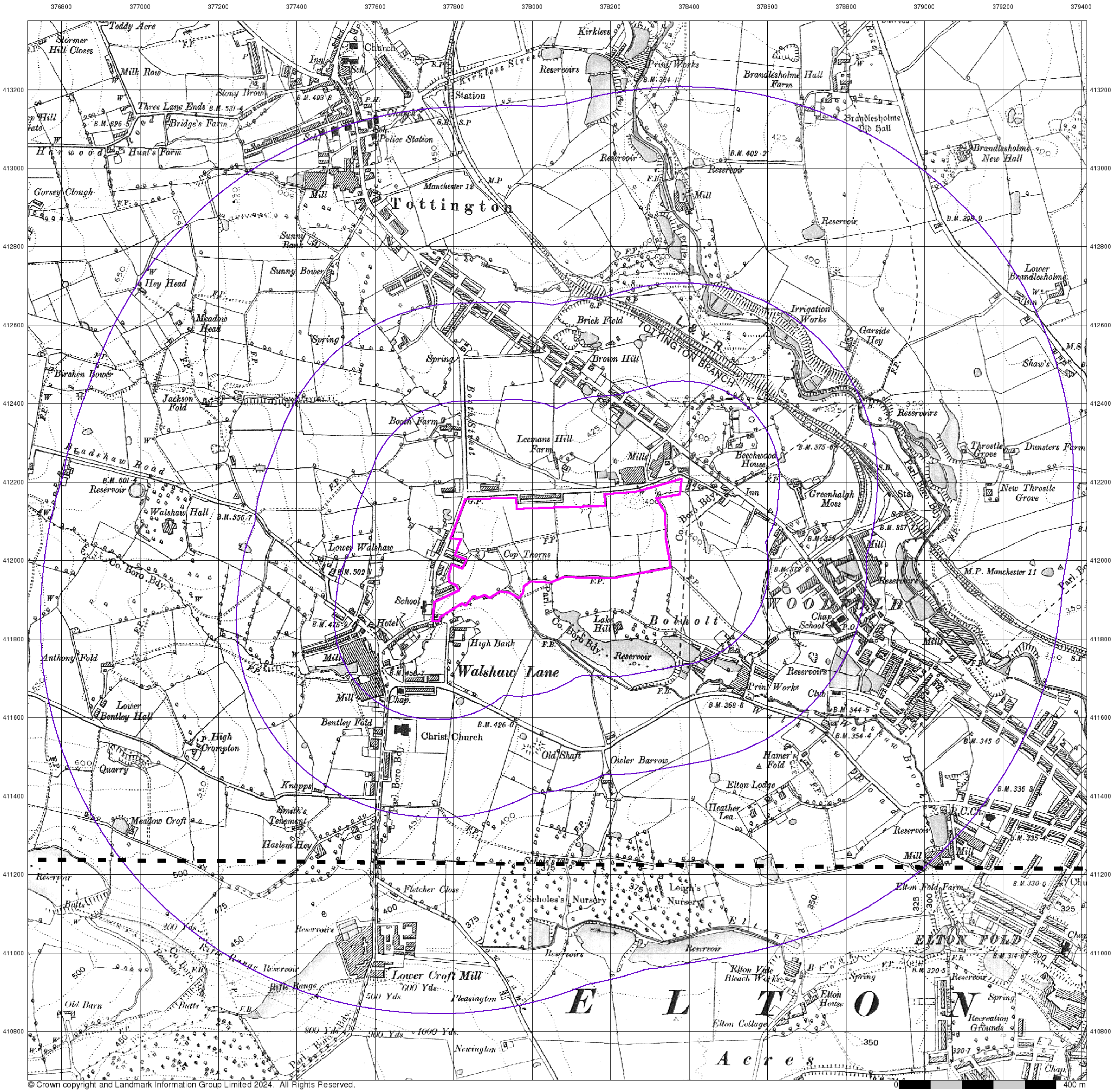
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379200
379400
413200
413000
412800
412600
412400
412200
412000
411800
411600
411400
411200
411000
410800
Toddy Acre
Kirklees
Church
Stormer Hill Closes
Mill Row
Station
Reservoirs
Print Works
Brandlesholme Hall Farm
Three Lane Ends
Bridge's Farm
Brandlesholme Old Hall
Police Station
Brandlesholme New Hall
Hunt's Farm
Gorsey Clough
Mill
Tottington
Sunny Bank
Sunny Bower
Reservoir
Hey Head
Lower Brandlesholme
Meadow Head
Brick Field
Irrigation Works
Garside Hey
Spring
L. & Y. R. Tottington Branch
Brown Hill
Birchen Bower
Shaw's
Jackson Fold
Booth Farm
Booth Street
Leemans Hill Farm
Reservoirs
Throstle Grove
Dunsters Farm
Bradshaw Road
Beechwood House
Reservoir
Walshaw Hall
Greenhalgh Moss
New Throstle Grove
Lower Walshaw
Cop Thorns
Co. Boro. Bdy.
School
Hotel
Lake Hill
Bolholt
Woodhill
High Bank
Walshaw Lane
Anthony Fold
Print Works
Lower Bentley Hall
Bentley Fold
Christ Church
High Crompton
Quarry
Old Shaft
Ouler Barrow
Hamer Fold
Knapps
Elton Lodge
Heather Lea
Meadow Croft
Smith's Tenement
Haslem Hey
Fletcher Close
Scholes's Nursery
Leigh's Nursery
Elton Fold Farm
Rifle Range
Lower Croft Mill
Elton Vale Bleach Works
Elton House
Elton Fold
Old Barn
Pleasington
Newington
Elton Cottage
Recreation Grounds
ELTON
Acres
0
400 m

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LANDMARK INFORMATION GROUP®

Lancashire And Furness

Published 1894

Source map scale - 1:10,560

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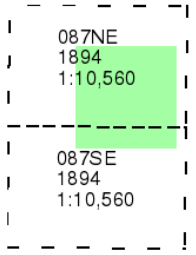
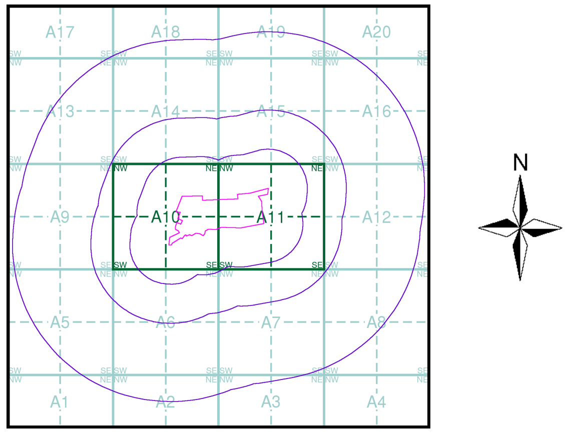
Map Name(s) and Date(s)


087NE
1894
1:10,560
087SE
1894
1:10,560

Historical Map - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY

Landmark

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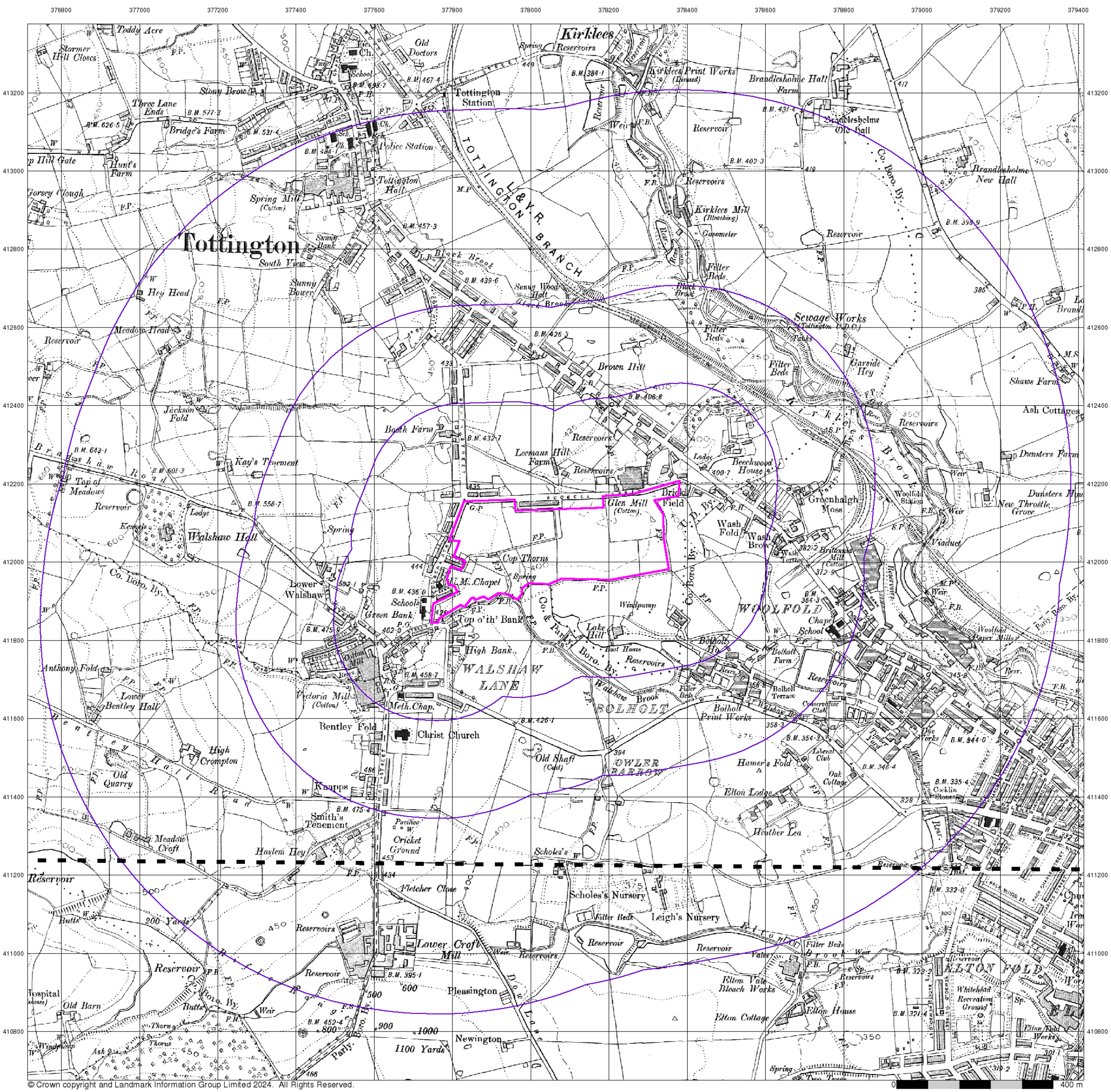
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411200
411000
410800
Kirklees Reservoirs
Kirklees Print Works (Disused)
Brandlesholme Hall Farm
Brandlesholme Old Hall
Brandlesholme New Hall
Teddy Acre
Stormer Hill Closes
Old Doctors
Tottington Station
Three Lane Ends
Bridge's Farm
Stony Brow
Police Station
Hunt's Farm
Gorsey Clough
Spring Mill (Cotton)
Tottington Hall
Tottington
South View
Sunny Bank
Sunny Bower
L. & Y. R. Tottington Branch
Reservoirs
Kirklees Mill (Bleaching)
Gasometer
Reservoir
Filter Beds
Sewage Works (Tottington U.D.C.)
Black Brook
Sunny Wood Hall
Hey Head
Meadow Head
Reservoir
Brown Hill
Garside Hey
Shaws Farm
Ash Cottages
Jackson Fold
Booth Farm
Lomans Hill Farm
Reservoirs
Beechwood House
Lodge
Dunsters Farm
Kay's Tenement
Top of Meadows
Walshaw Hall
Kennels
Glen Mill (Cotton)
Brick Field
Wash Fold
Wash Brow
Greenhalgh Moss
Woolfold Station
Brittania Mill (Cotton)
Cop Thorns
M. Chapel
Spring
Lower Walshaw
School
Green Bank
Top o' th' Bank
Windpump
Lake Hill
Boat House
Reservoirs
Woolfold
Chapel
School
Bolholt Farm
Woolfold Paper Mills
High Bank
Walshaw Lane
Anthony Fold
Lower Bentley Hall
Victoria Mill (Cotton)
Meth. Chap.
Walshaw Brook
Bolholt
Bolholt Print Works
Bolholt Terrace
Conservative Club
Liberal Club
Bentley Fold
Christ Church
High Crompton
Old Quarry
Old Shaft (Coal)
Owler Barrow
Hamer's Fold
Oak Cottage
Knapps
Elton Lodge
Heather Lea
Smith's Tenement
Pavilion
Cricket Ground
Meadow Croft
Haslem Hey
Scholes's
Reservoir
Fletcher Close
Scholes's Nursery
Leigh's Nursery
Filter Beds
Butts
200 Yards
Reservoirs
Lower Croft Mill
Reservoir
Filter Beds
Elton Vale Bleach Works
Elton Fold
Whitehead Recreation Ground
Elton House
Elton Cottage
Elton Fold Works
Pleasington
Old Barn
Hospital
Newington
1100 Yards
Bentley Hall Road
Co. Boro. By.
Parly. Boro. By.
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Lancashire And Furness

Published 1911

Source map scale - 1:10,560

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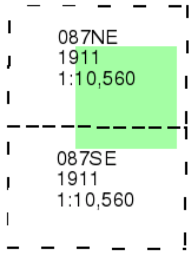
Map Name(s) and Date(s)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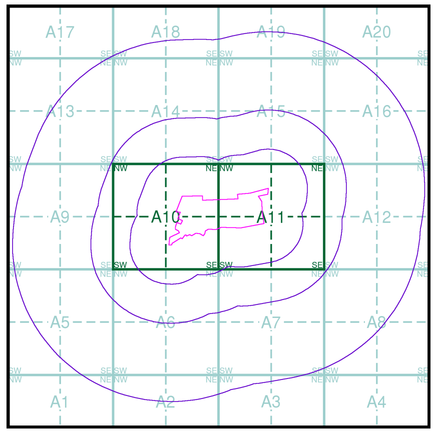
1911
1:10,560
087SE
1911
1:10,560

Historical Map - Slice A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Search Buffer (m):	1000

Site Details

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Landmark

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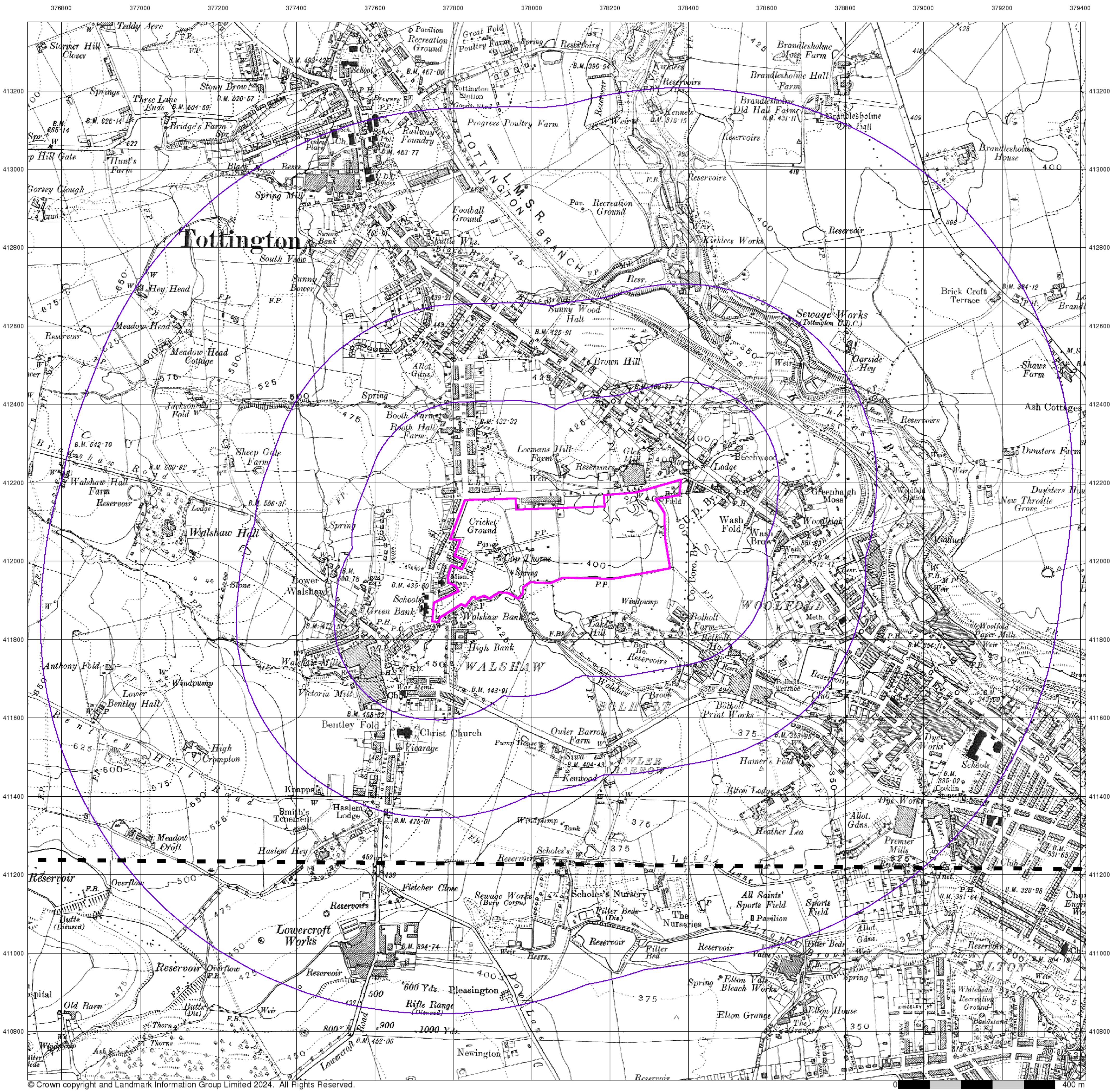

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411400
411200
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410800
Tottington
Teddy Acre
Stormer Hill Closes
Springs
Three Lane Ends
Bridge's Farm
Hunt's Farm
Gorsey Clough
Stony Brow
Spring Mill
Pavilion Recreation Ground
Great Fold Poultry Farm
Reservoirs
Progress Poultry Farm
Railway Foundry
Tottington Station
L.M.S.R. TOTTINGTON BRANCH
Football Ground
Recreation Ground
Brandlesholme Moss Farm
Brandlesholme Hall Farm
Brandlesholme Old Hall Farm
Brandlesholme Old Hall
Brandlesholme House
Kirklees Works
Kirklees
Reservoirs
Sunny Bank
South View
Sunny Bower
Hey Head
Meadow Head
Meadow Head Cottage
Jackson's Fold
Sunny Wood Hall
Brown Hill
Sewage Works (Tottington U.D.C.)
Brick Croft Terrace
Shaws Farm
Ash Cottages
Garside Hey
Booth Farm
Booth Hall Farm
Leemans Hill Farm
Glen
Beechwood
Lodge
Greenhalgh Moss
Woolfold
Wash Fold
Wash Brow
Dunsters Farm
Dunsters Hill
New Throstle Grove
Sheep Gate Farm
Walshaw Hall Farm
Walshaw Hall
Cricket Ground
Cop Thorne
Spring
Schools
Green Bank
Walshaw Bank
High Bank
WALSHAW
Lower Walshaw
Walshaw Mills
Victoria Mill
War Memorial
Windpump
Lake Hill
Bolholt Farm
Bolholt House
Reservoirs
WOOLFOLD
Woolfold Paper Mills
Bolholt Terrace
Bolholt Print Works
Anthony Fold
Lower Bentley Hall
Bentley Fold
Christ Church
Vicarage
Owler Barrow Farm
OWLER BARROW
Kenwood
Hamer's Fold
Elton Lodge
Heather Lea
Dye Works
Schools
Premier Mill
High Crompton
Knapps
Smith's Tenement
Haslem Lodge
Haslem Hey
Meadow Croft
Scholes's
Scholes's Nursery
Fletcher Close
Sewage Works (Bury Corpn)
Filter Beds
The Nurseries
All Saints' Sports Field
Sports Field
Reservoir
Lowercroft Works
Butts (Disused)
Overflow
Old Barn
Pleasington
Rifle Range (Disused)
Newington
Elton Vale Bleach Works
Elton Grange
Elton House
The Grange
Whitehead Recreation Ground
ELTON
Lowercroft Road
Bentley Hall Road
Brandlesholme Road

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0 400 m

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Lancashire And Furness

Published 1931

Source map scale - 1:10,560

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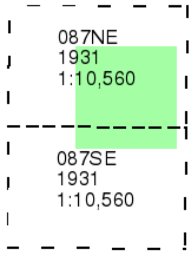
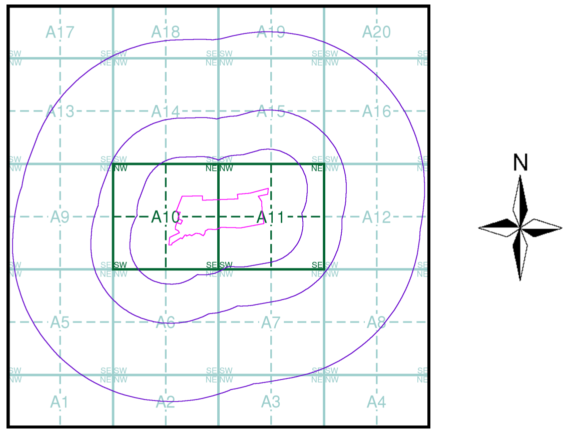
Map Name(s) and Date(s)



087NE
1931
1:10,560
087SE
1931
1:10,560

Historical Map - Slice A



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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

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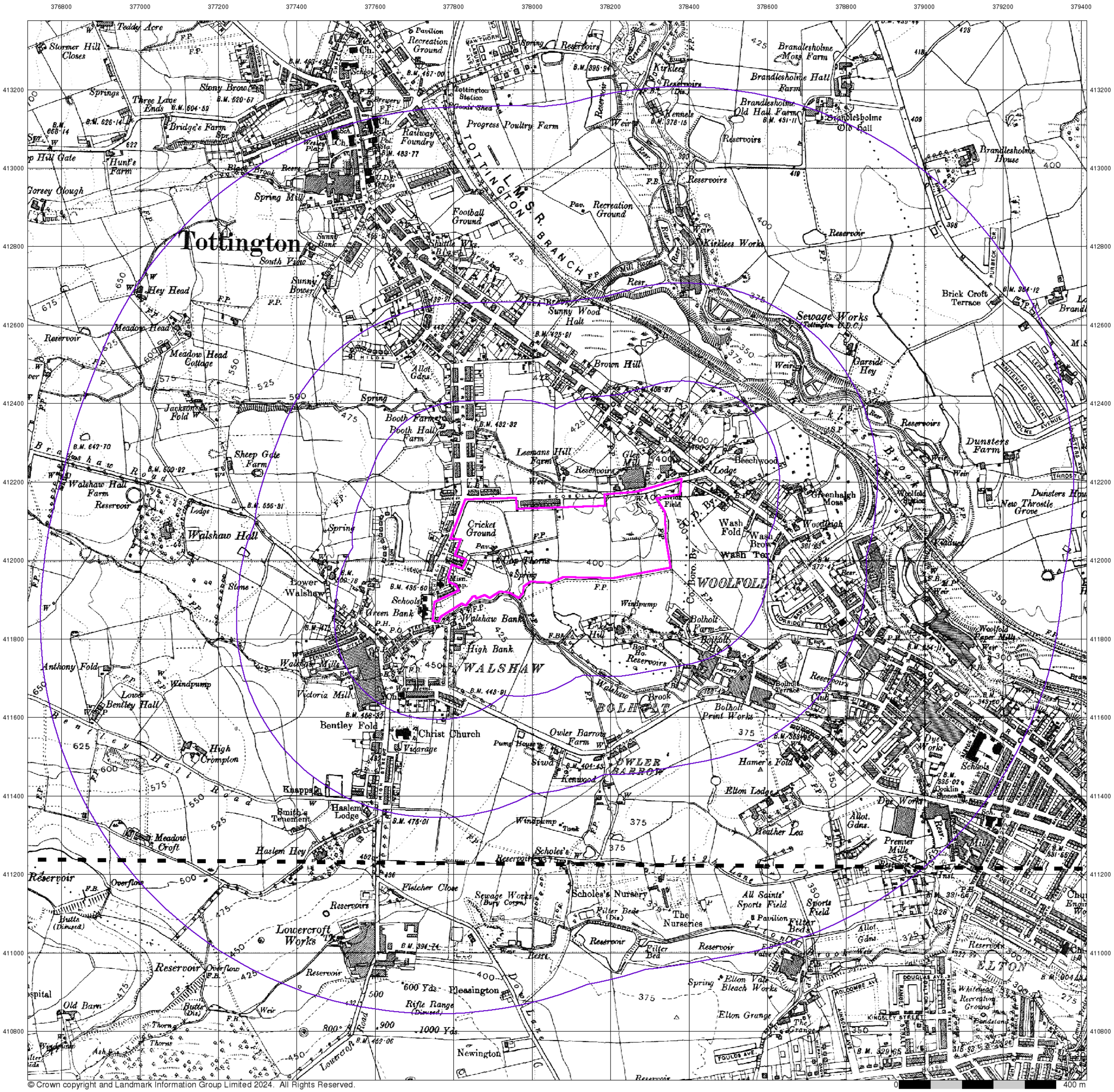
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Tottington
L. M. S. R. TOTTINGTON BRANCH
Walshaw Hall
WALSHAW
WOOLFOLD
BOLHOLT
OWLER BARROW
ELTON
Cricket Ground
Brandlesholme Old Hall
Kirklees Works
Sewage Works
Christ Church
Lowercroft Works
Elton Vale Bleach Works
0
400 m

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Lancashire And Furness

Published 1938

Source map scale - 1:10,560

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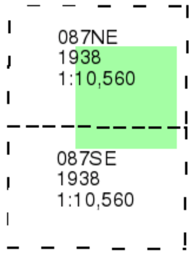
Map Name(s) and Date(s)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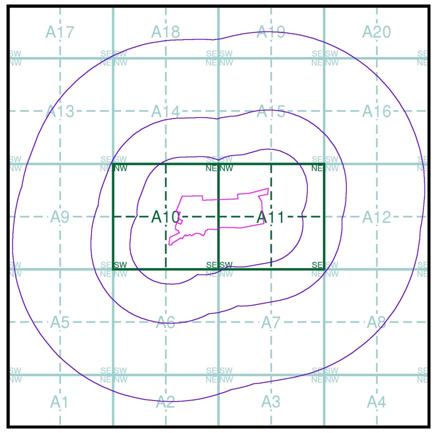
1:10,560
087SE
1938
1:10,560

Historical Map - Slice A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Order Details

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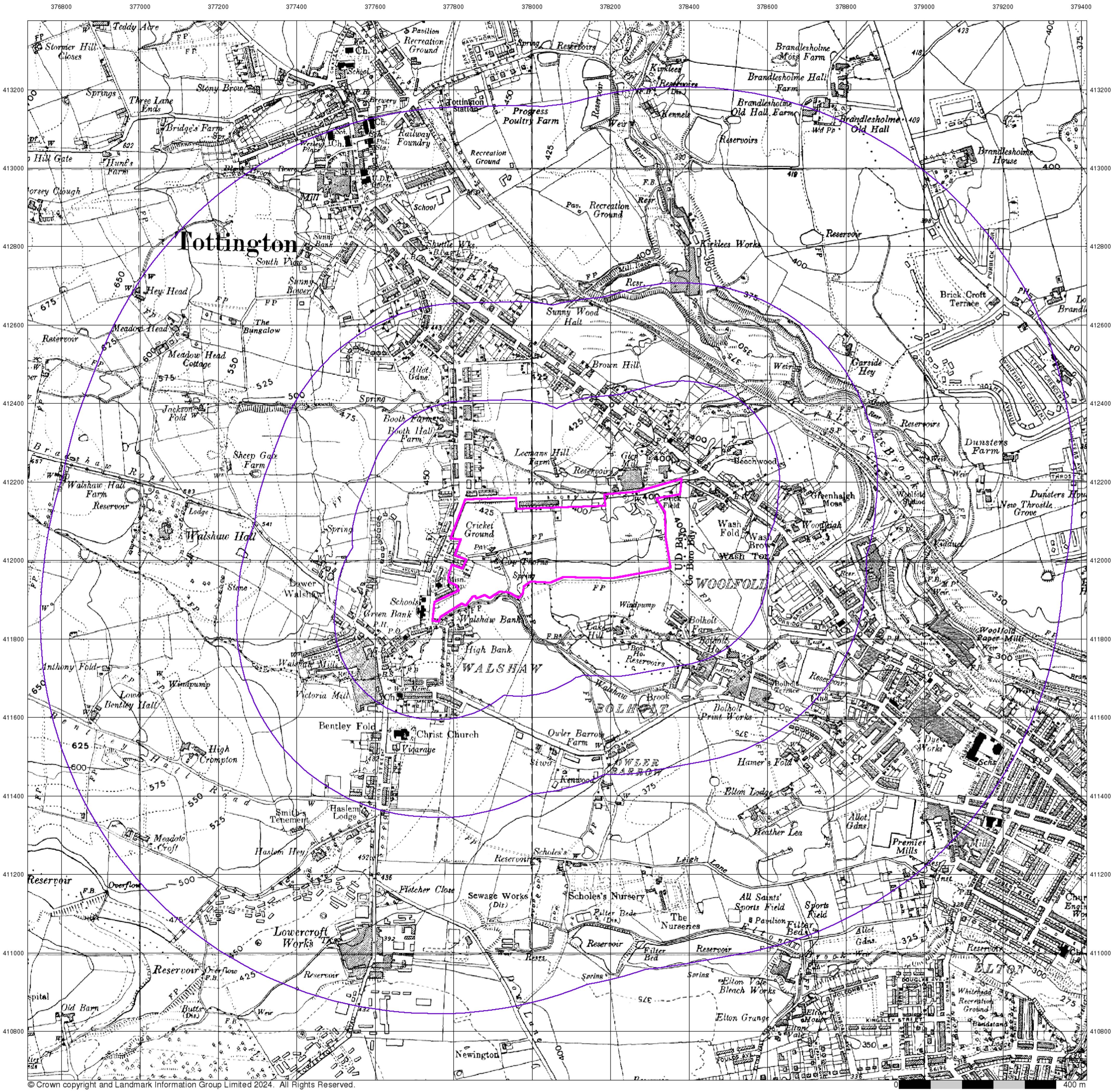
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Tottington
Stormer Hill Closes
Teddy Acre
Springs
Three Lane Ends
Stony Brow
Bridge's Farm
Hill Gate
Hunt's Farm
Horsey Clough
Tottington Station
Railway Foundry
Progress Poultry Farm
Recreation Ground
Pavilion Recreation Ground
Reservoirs
Kirklees
Brandlesholme Moss Farm
Brandlesholme Hall Farm
Brandlesholme Old Hall Farm
Brandlesholme Old Hall
Brandlesholme House
Kirklees Works
Reservoir
Brick Croft Terrace
Hey Head
Meadow Head
Meadow Head Cottage
The Bungalow
Sunny Bower
Sunny Wood Hall
Brown Hill
Garside Hey
Jackson's Fold
Booth Farm
Booth Hall Farm
Sheep Gap Farm
Leemans Hill Farm
Glen Mill
Beechwood
Dunsters Farm
Walshaw Hall Farm
Walshaw Hall
Cricket Ground
Greenhalgh Moss
Wash Fold
Wash Brow
Wash Ter.
Woolfold
New Throstle Grove
Dunsters Row
Lower Walshaw
Schools
Green Bank
Walshaw Bank
High Bank
WALSHAW
Windpump
Bolholt Farm
Bolholt
Woolfold Paper Mills
Anthony Fold
Lower Bentley Hall
Walshaw Mills
Victoria Mill
Christ Church
Vicarage
Bentley Fold
Owler Barrow Farm
OWLER BARROW
BOLHOLT
Bolholt Print Works
Bolholt Terrace
High Crompton
Bentley Hall Road
Bradshaw Road
Hamer's Fold
Elton Lodge
Heather Lea
Premier Mills
Smith's Tenement
Haslem Lodge
Haslam Hey
Meadow Croft
Reservoir
Fletcher Close
Sewage Works
Scholes's Nursery
The Nurseries
All Saints' Sports Field
Sports Field
Filter Beds
Lowercroft Works
Elton Vale Bleach Works
Elton Grange
ELTON
Whitehead Recreation Ground
Old Barn
Newington
Leigh Lane
Dow Lane
0
400 m

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Ordnance Survey Plan

Published 1956

Source map scale - 1:10,000

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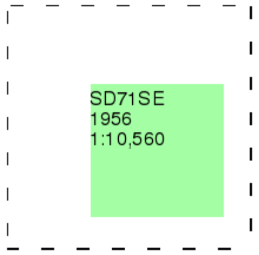
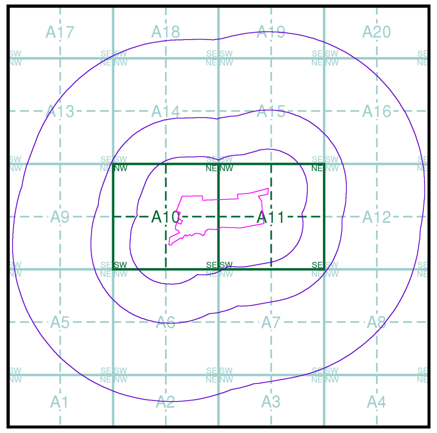
Map Name(s) and Date(s)


SD71SE
1956
1:10,560

Historical Map - Slice A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Search Buffer (m):	1000

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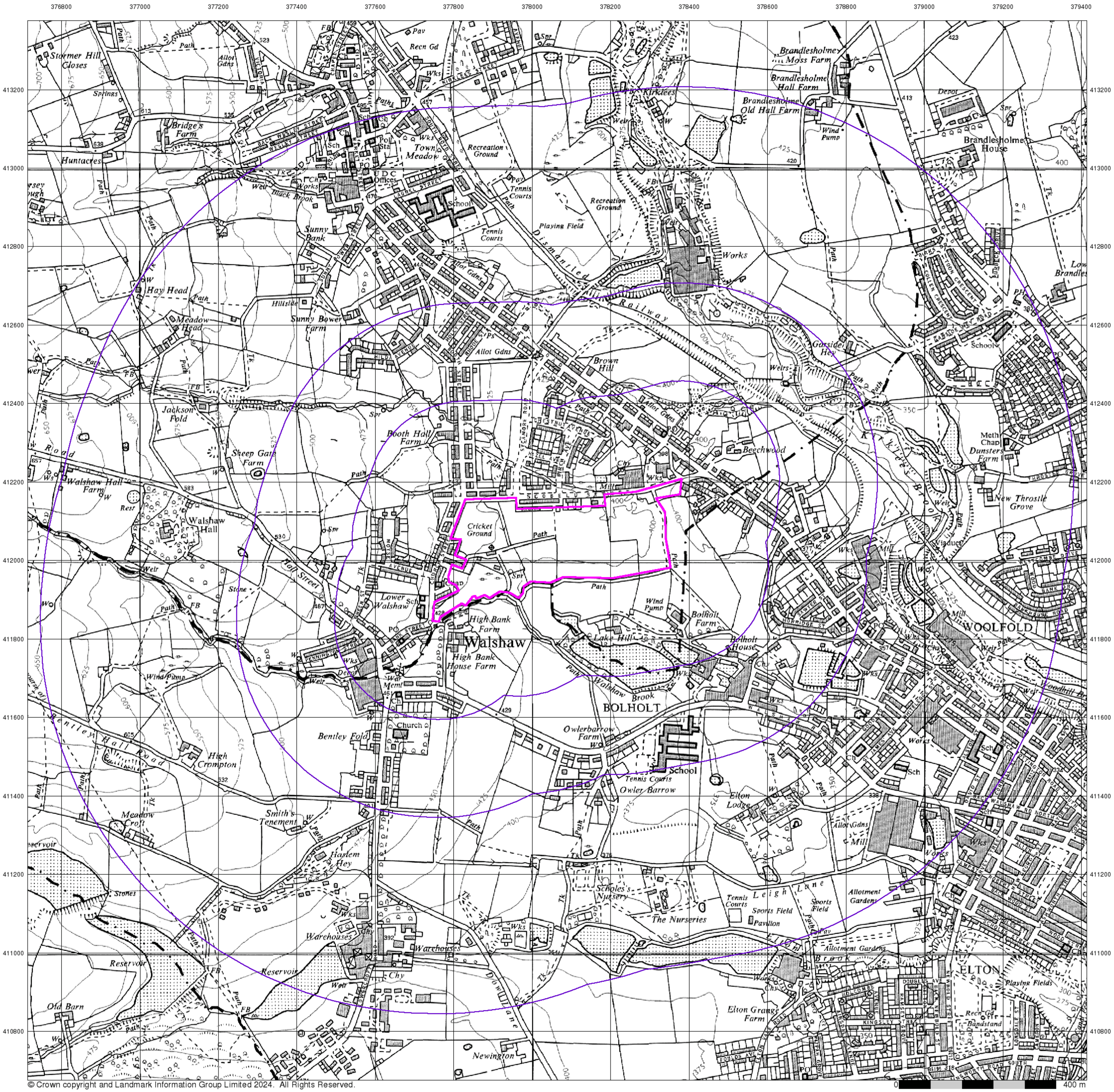
Walshaw
BOLHOLT
WOOLFOLD
ELTON
Cricket Ground
High Bank Farm
Lower Walshaw
Brandlesholme Old Hall Farm
Walshaw Hall
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400 m

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Ordnance Survey Plan

Published 1969

Source map scale - 1:10,000

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Map Name(s) and Date(s)

SD71SE
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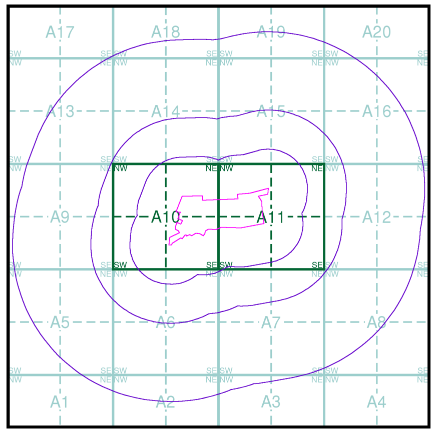
1:10,560

Historical Map - Slice A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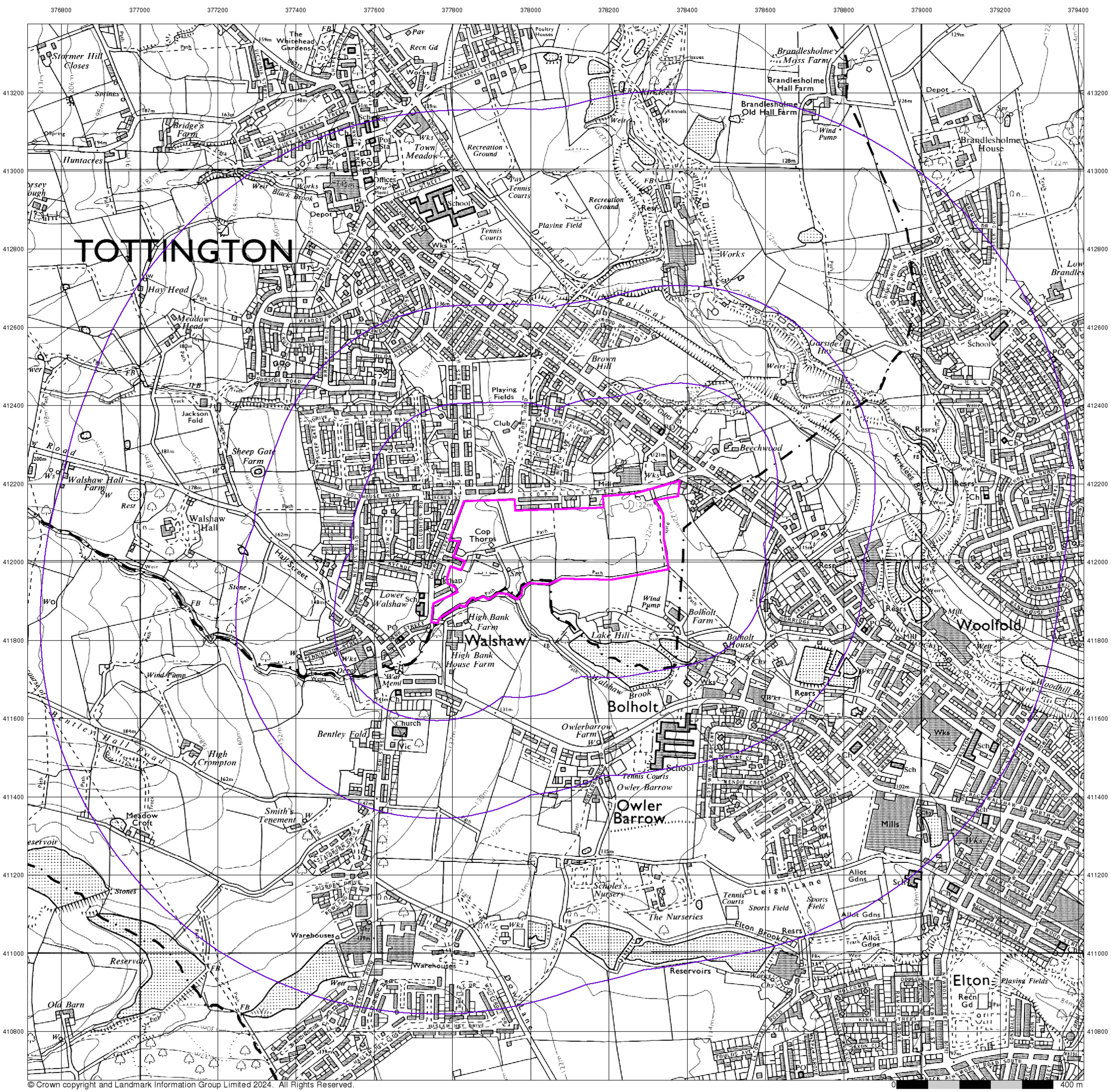
TOTTINGTON
Walshaw
Bolholt
Owler Barrow
Woolfold
Elton
Cop Thorns
Lower Walshaw
High Bank Farm
High Bank House Farm
Lake Hill
Bolholt Farm
Bolholt House
Brown Hill
Beechwood
Playing Fields
Sheep Gate Farm
Walshaw Hall
Walshaw Hall Farm
Hay Head
Meadow Head
Jackson Fold
Bentley Fold
High Crompton
Smith's Tenement
Meadow Croft
Old Barn
Reservoir
Stones
Scholes's Nursery
The Nurseries
Leigh Lane
Elton Brook
Reservoirs
Mills
Warehouses
Brandlesholme Moss Farm
Brandlesholme Hall Farm
Brandlesholme Old Hall Farm
Brandlesholme House
Low Brandles
Garside Hey
Kirklees
Stormer Hill Closes
Bridge's Farm
Huntacres
Springs
Town Meadow
Recreation Ground
Playing Field
Tennis Courts
Dismantled Railway
Owlerbarrow Farm
Walshaw Brook
Wind Pump
Kirklees Brook
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Ordnance Survey Plan

Published 1974

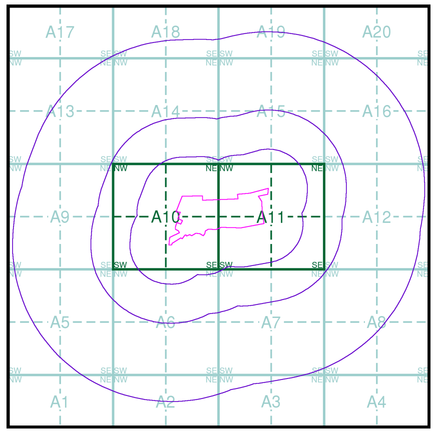
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SD71SE
1974
1:10,000

Historical Map - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY

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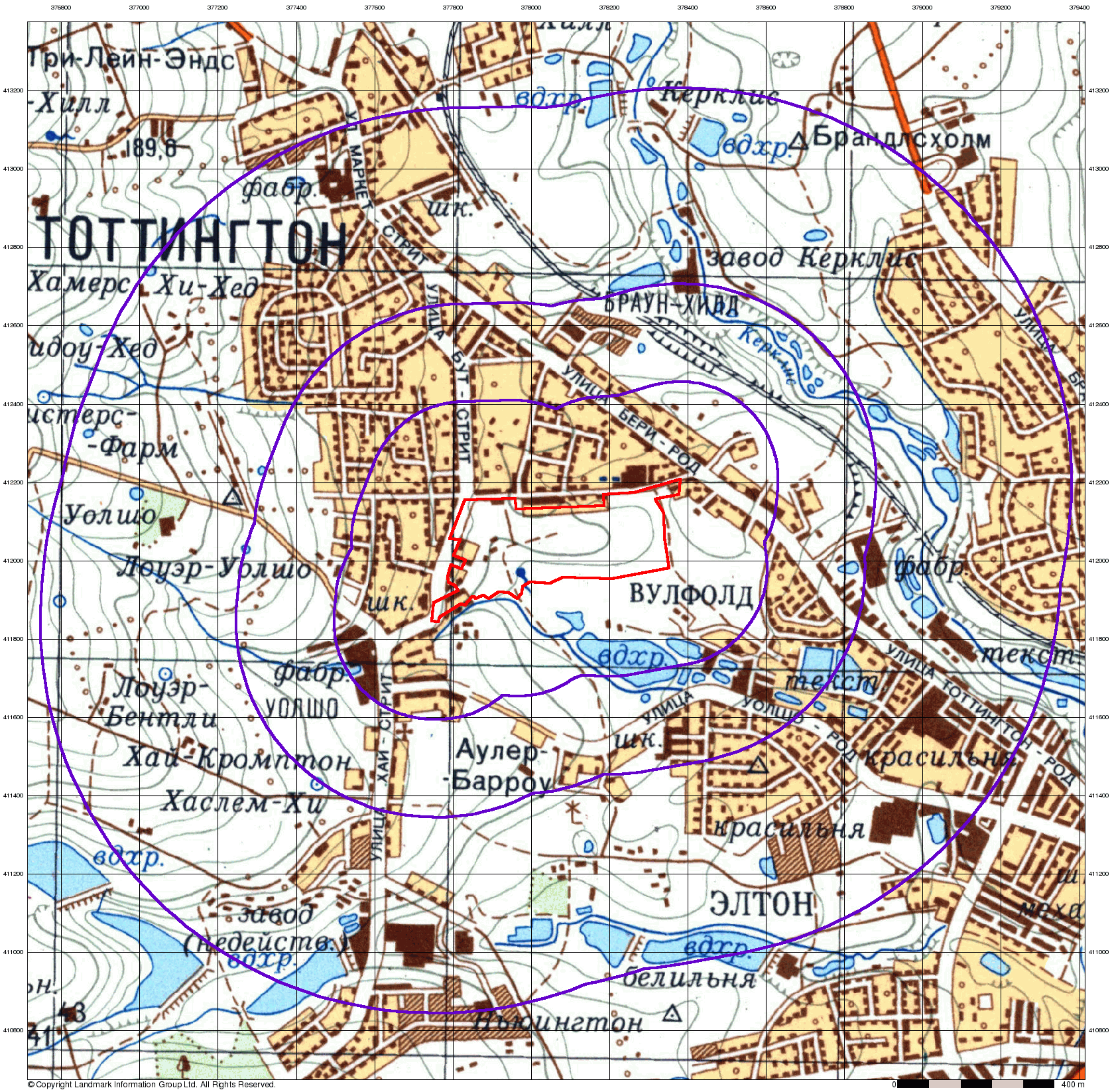
Fax:	0844 844 9951
Web:	www.envirocheck.co.uk



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вдхр.
завод
(недейств.)
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УЛИЦА БУТ-СТРИТ
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Керклис
Брандлсхолм
завод Керклис
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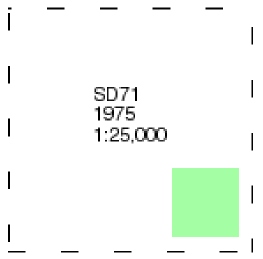
Manchester

Published 1975

Source map scale - 1:25,000

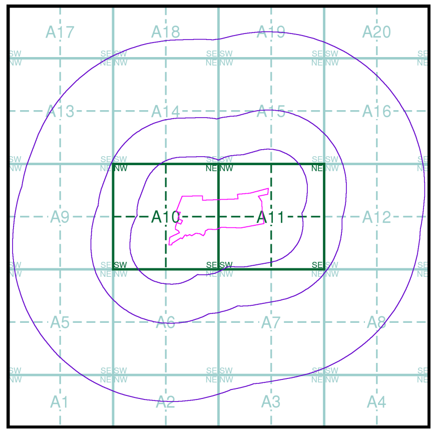
These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use.
They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that are mapped.

Map Name(s) and Date(s)



SD71
1975
1:25,000

Russian Map - Slice A



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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

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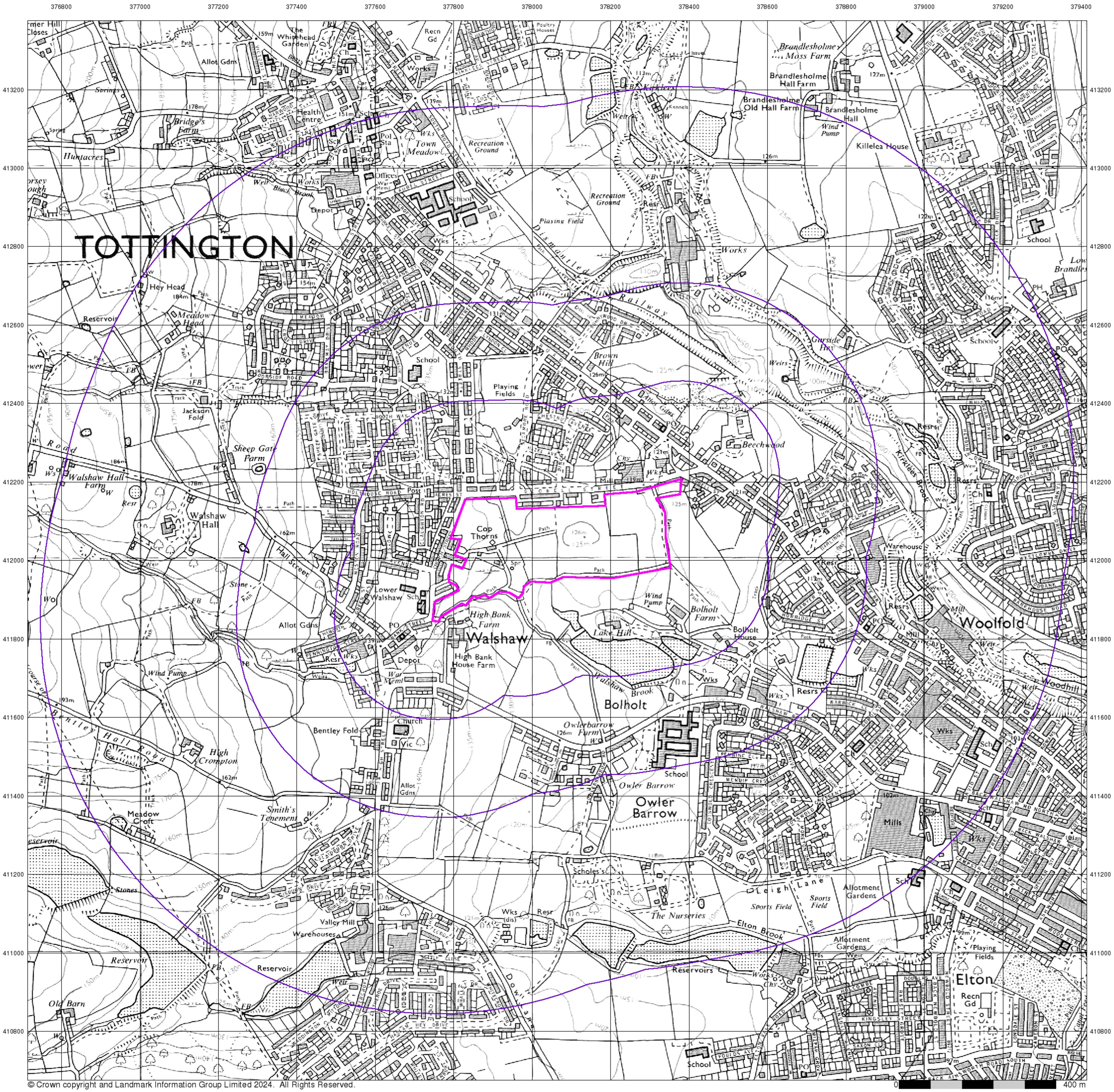
Fax:	0844 844 9951
Web:	www.envirocheck.co.uk



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TOTTINGTON
Walshaw
Woolfold
Bolholt
Owler Barrow
Elton
Cop Thorns
Lower Walshaw
High Bank Farm
High Bank House Farm
Lake Hill
Bolholt Farm
Bolholt House
Wind Pump
Brown Hill
Beechwood
Walshaw Hall
Walshaw Hall Farm
Sheep Gate Farm
Jackson Fold
Meadow Head
Hey Head
Bridge's Farm
Huntacres
Springs
Brandlesholme Moss Farm
Brandlesholme Hall Farm
Brandlesholme Old Hall Farm
Brandlesholme Hall
Killelea House
Town Meadow
Recreation Ground
Playing Field
Playing Fields
Dismantled Railway
Works
School
Bentley Fold
High Crompton
Meadow Croft
Smith's Tenement
Valley Mill
Warehouses
Reservoir
Reservoirs
Old Barn
Owlerbarrow Farm
Scholes's
Leigh Lane
Sports Field
Allotment Gardens
The Nurseries
Elton Brook
Walshaw Brook
Kirklees Brook
Mills
Warehouse
Woodhill
Bentley Hall Road
Hall Street
Stones
Allot Gdns
Church
Gurside Tip
0
400 m

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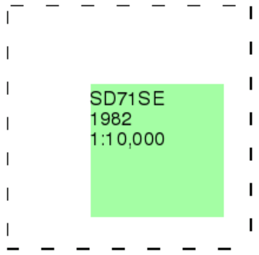
Ordnance Survey Plan

Published 1982

Source map scale - 1:10,000

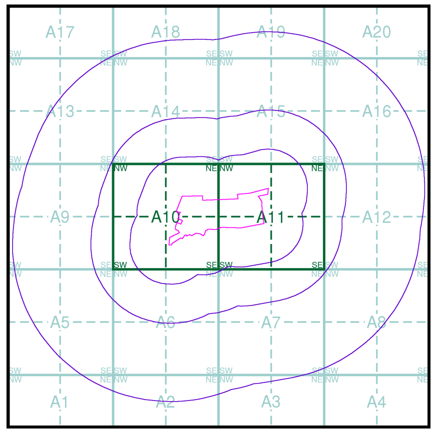
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



SD71SE
1982
1:10,000

Historical Map - Slice A



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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY

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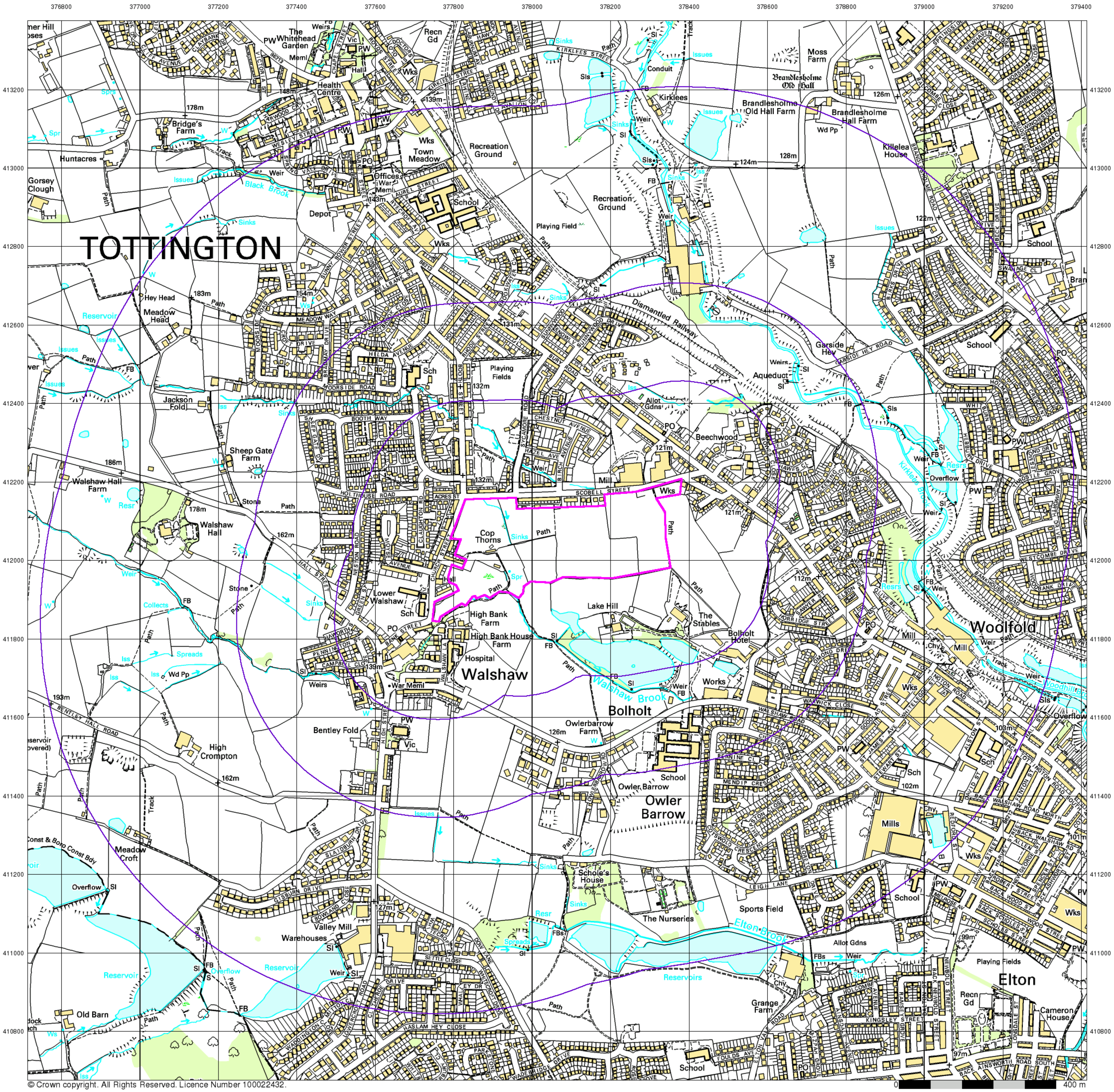
Fax:	0844 844 9951
Web:	www.envirocheck.co.uk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TOTTINGTON
Walshaw
Bolholt
Owler Barrow
Woolfold
Elton
Bridge's Farm
Huntacres
Gorsey Clough
Hey Head
Meadow Head
Jackson Fold
Sheep Gate Farm
Walshaw Hall Farm
Walshaw Hall
Cop Thorns
Lower Walshaw
High Bank Farm
High Bank House Farm
Hospital
Lake Hill
The Stables
Bolholt Hotel
Beechwood
Allot Gdns
Mill
SCOBELL STREET
Wks
Playing Fields
Recreation Ground
Town Meadow
School
Depot
Dismantled Railway
Brandlesholme Old Hall Farm
Brandlesholme Hall Farm
Moss Farm
Kirklees
Killelea House
Garside Hey
Aqueduct
Bentley Fold
High Crompton
Owlerbarrow Farm
Works
Mills
Meadow Croft
Old Barn
Valley Mill
Warehouses
Schole's House
The Nurseries
Sports Field
Grange Farm
Cameron House
Walshaw Brook
Elton Brook
Black Brook
Kirklees Brook
Reservoir
Reservoirs
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400 m

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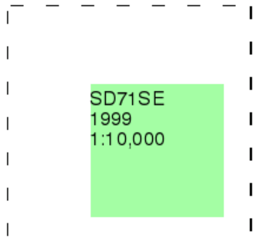
10k Raster Mapping

Published 1999

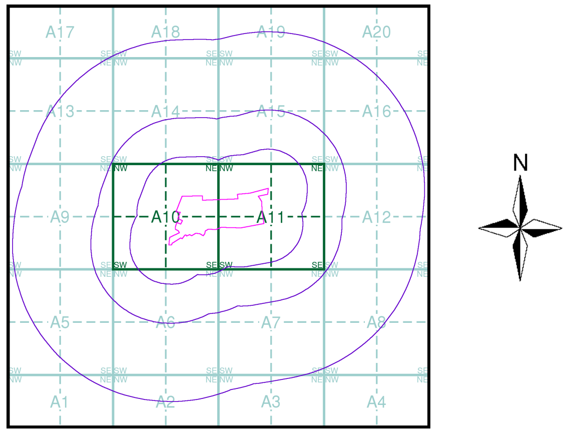
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)


SD71SE
1999
1:10,000

Historical Map - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY

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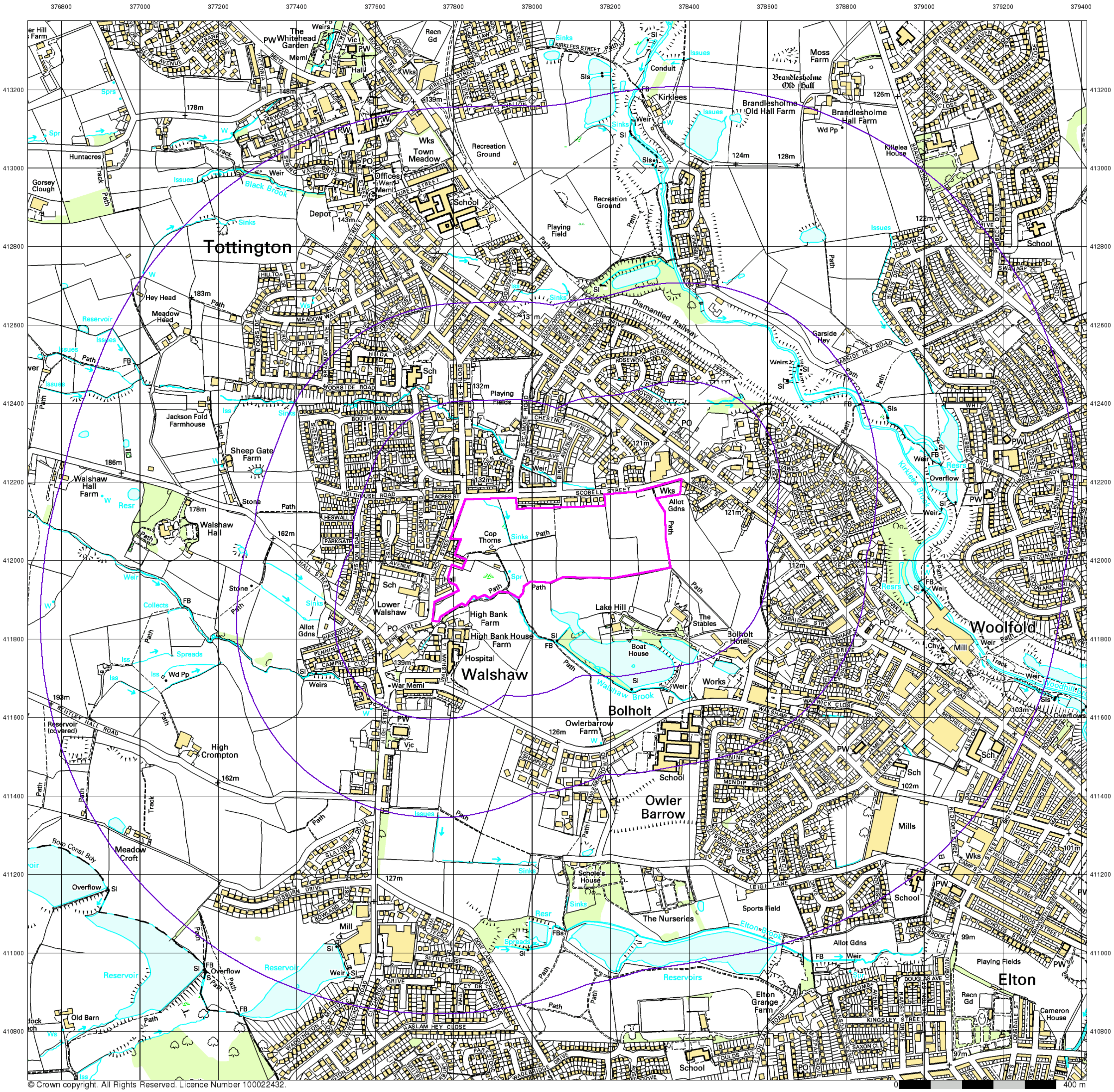

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Tottington
Walshaw
Bolholt
Owler Barrow
Woolfold
Elton
Kirklees
Moss Farm
Brandlesholme Old Hall
Brandlesholme Old Hall Farm
Brandlesholme Hall Farm
Huntacres
Gorsey Clough
Hey Head
Meadow Head
Jackson Fold Farmhouse
Sheep Gate Farm
Walshaw Hall Farm
Walshaw Hall
High Crompton
Meadow Croft
Cop Thorns
High Bank Farm
High Bank House Farm
Lower Walshaw
Lake Hill
The Stables
Bolholt Hotel
Boat House
Owlerbarrow Farm
Schole's House
The Nurseries
Elton Grange Farm
Cameron House
Old Barn
Town Meadow
Recreation Ground
Playing Field
Playing Fields
Sports Field
Black Brook
Walshaw Brook
Elton Brook
Kirklees Brook
Dismantled Railway
SCOBELL STREET
Reservoir
Reservoirs

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10k Raster Mapping

Published 2006

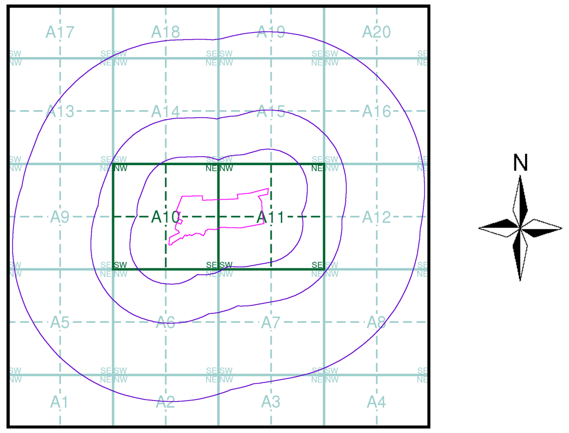
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SD71SE
2006
1:10,000

Historical Map - Slice A



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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

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Landmark®
INFORMATION GROUP

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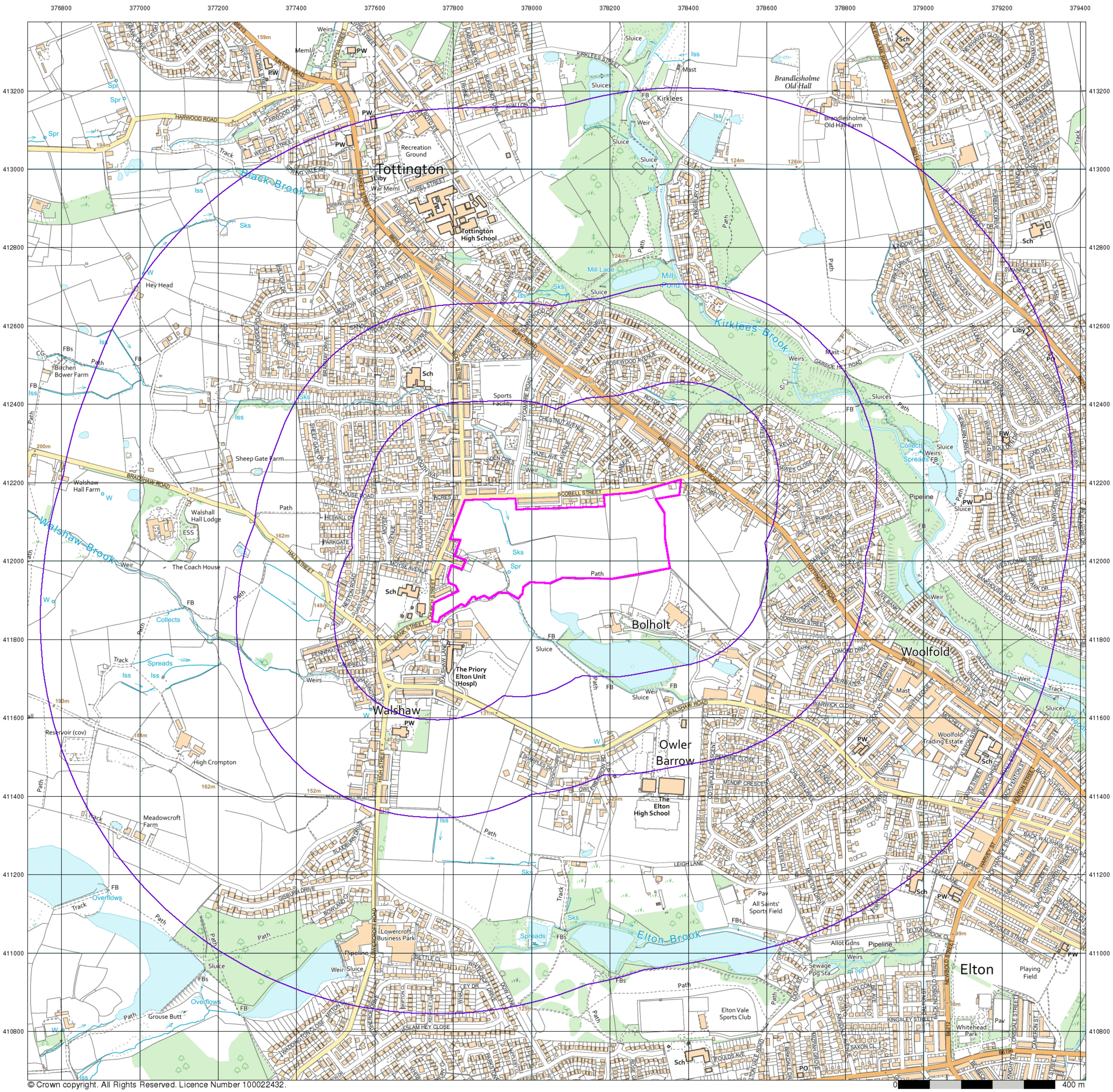
Web:	www.envirocheck.co.uk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411200
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410800
Tottington
Tottington High School
Recreation Ground
Kirklees
Brandlesholme Old Hall
Black Brook
Kirklees Brook
Hey Head
Birchen Bower Farm
Sheep Gate Farm
Sports Facility
Scobell Street
Walshaw Hall Farm
Walshall Hall Lodge
Walshaw Brook
The Coach House
Bolholt
The Priory Elton Unit (Hospl)
Walshaw
Woolfold
Woolfold Trading Estate
Owler Barrow
The Elton High School
High Crompton
Reservoir (cov)
Meadowcroft Farm
Lowercroft Business Park
All Saints' Sports Field
Elton Brook
Elton
Playing Field
Elton Vale Sports Club
Grouse Butt
Whitehead Park
0
400 m

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VectorMap Local

Published 2024

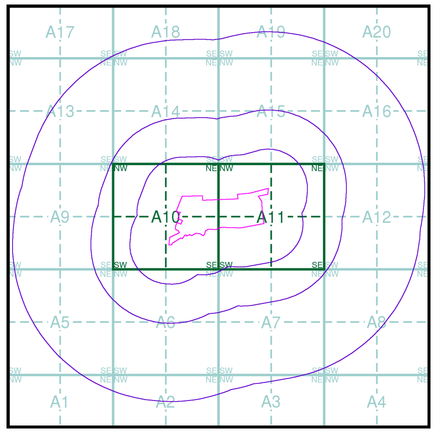
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SD71SE
2024
Variable

Historical Map - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY

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INFORMATION GROUP

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Fax:	0844 844 9951
Web:	www.envirocheck.co.uk

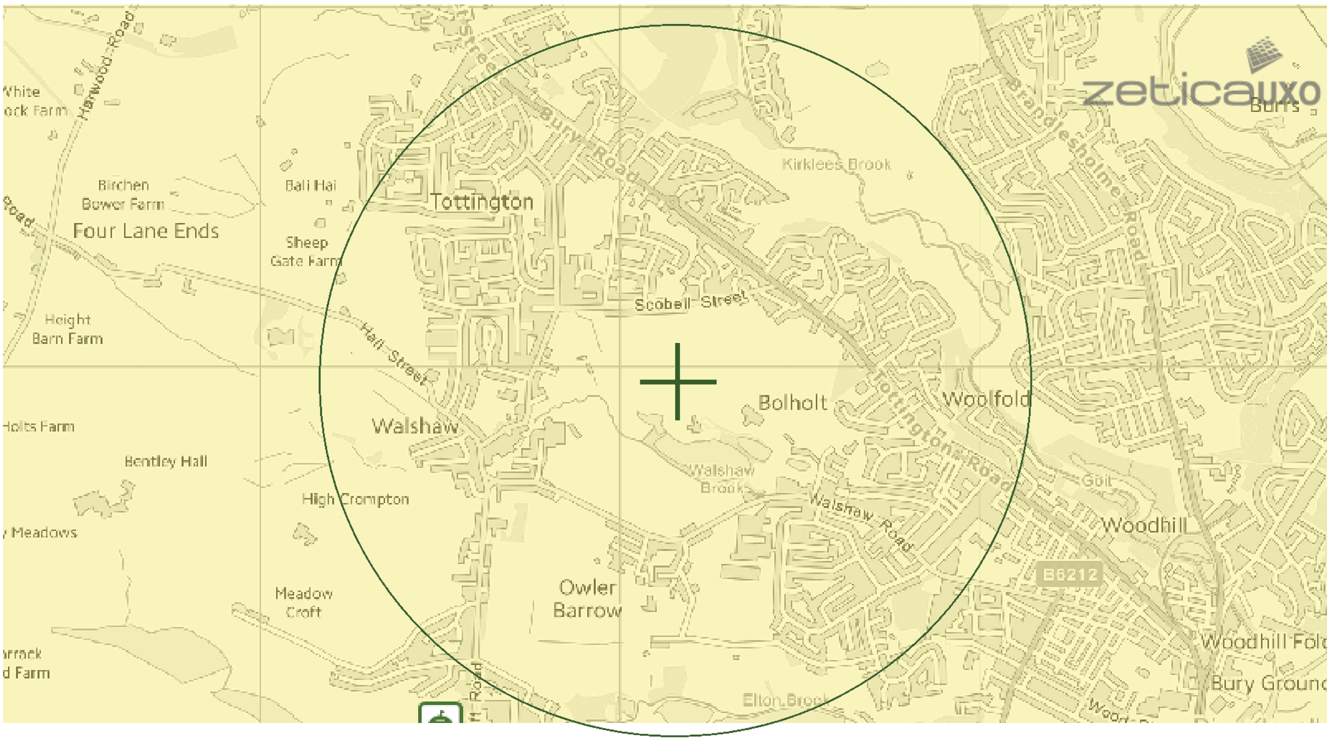
APPENDIX III

ZETICA BOMB RISK MAPPING

UNEXPLODED BOMB RISK MAP

SITE LOCATION

Map Centre: 378124,412009



zeticauxo
Harwood Road
White
ock Farm
Birchen
Bower Farm
Four Lane Ends
Bali Hai
Sheep
Gate Farm
Tottington
Bury Road
Kirklees Brook
Brandlesholme Road
Burrs
Height
Barn Farm
Scobell Street
Hall Street
Bolholt
Woolfold
Walshaw
Tottington Road
Holts Farm
Bentley Hall
High Crompton
Walshaw
Brook
Walshaw Road
Golf
Woodhill
Meadows
Meadow
Croft
Owler
Barrow
B6212
Woodhill Fold
Bury Ground
Elton Brook
Road

This map principally indicates a hazard from Unexploded Bombs (UXB) due to WWII bombardment. Other sources of Unexploded Ordnance (UXO) may be present. It should be noted that this map does not represent UXO risk and should not be reported as such when reproduced.

LEGEND

🟥 **High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.

🟧 **Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.

🟨 **Low:** Areas indicated as having 15 bombs per 1000acre or less.

Miltary
Industry
UXO find
Other
Transport
Docks
Luftwaffe targets
Utilities
Bombing decoy
Airfields

How to use your Unexploded Bomb (UXB) risk map?

This map indicates the potential for UXBs to be present because of World War Two (WWII) bombing. It can be incorporated into a technical report, such as a Phase 1 Desk Study, or similar document as an indication of the potential for UXO encounter on a Site. Other sources of UXO may also be indicated, although note that these are not comprehensive and more detailed research is required to confirm their presence.

What if my Site is in a moderate or high density area?

We typically recommend that a detailed UXO desk study and risk assessment is undertaken for sites in an area with a moderate or high bombing density.
Additionally, if your site is in close proximity to a strategic target, military establishment, airfield or bombing decoy, then additional detailed research is recommended.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirm that there is a low potential for UXO to be present on your site, then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

If you are unsure whether other sources of UXO may be present, you can request one of our pre-desk study assessments (PDSA) by emailing a site boundary and location to uxo@zetica.com.

You should never plan site work or undertake a risk assessment using these maps alone. More detail is required, to include an assessment of the likelihood of a source of UXO hazard from other military activity not reflected on these maps.

If I have any questions, who do I contact?

tel: +44 (0) 1993 886682 **email:** uxo@zetica.com **web:** www.zeticauxo.com

The information in this UXB risk map is derived from a range of sources and should be used with the accompanying notes on our website.

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgement. The copyright remains with Zetica Ltd.

APPENDIX IV

GEOLOGICAL MAPS

Geology 1:10,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
▨	WGR	Worked Ground (Undivided)	Void	Holocene - Holocene
🟥	WMGR	Infilled Ground	Artificial Deposit	Holocene - Holocene
🟥	MGR	Made Ground (Undivided)	Artificial Deposit	Holocene - Holocene
▥	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Quaternary - Quaternary

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
🟨	ALV	Alluvium	Clay, Silt, Sand and Gravel	Flandrian - Pleistocene
🟪	GFDUD	Glaciofluvial Deposits, Devensian	Sand and Gravel	Devensian - Ipswichian
🟦	TILLD	Till, Devensian	Diamicton	Devensian - Ipswichian
🟧	RTD1	River Terrace Deposits, 1	Sand and Gravel	Quaternary - Ryazanian

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
🟨	OL	Old Lawrence Rock	Sandstone	Langsettian - Langsettian
🟨	CAR	Cannel Rock (South Lancashire)	Sandstone	Langsettian - Langsettian
⬜	PLCM	Pennine Lower Coal Measures Formation	Mudstone, Siltstone and Sandstone	Langsettian - Langsettian
🟨	PLCM	Pennine Lower Coal Measures Formation	Sandstone	Langsettian - Langsettian
🟨	HER	Helpet Edge Rock	Sandstone	Langsettian - Langsettian
🟨	MLRS	Milnrow Sandstone	Sandstone	Langsettian - Langsettian
🟨	TRBR	Trencherbone Rock	Sandstone	Langsettian - Langsettian
🟨	GAS	Great Arc Sandstone	Sandstone	Langsettian - Langsettian
🟨	GNR	Ganister Rock	Sandstone	Langsettian - Langsettian
🟨	WH	Woodhead Hill Rock	Sandstone	Langsettian - Langsettian
🟨	ON	Ousel Nest Grit	Sandstone	Langsettian - Langsettian
╱	Rock			
╱	Fault			

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Geology 1:10,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:10,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around a site. This mapping may be more up to date than previously published paper maps.

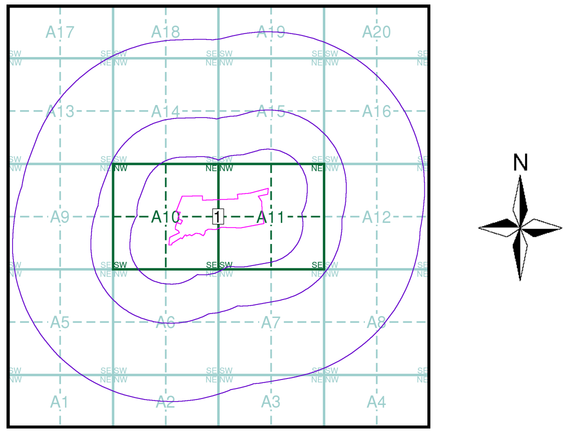
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page.

Please Note: Not all of the layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:10,000 Maps Coverage

Map ID: 1
Map Name: SD71SE
Map Date: 2007
Bedrock Geology: Available
Superficial Geology: Available
Artificial Geology: Available
Faults: Available
Landslip: Available
Rock Segments: Available

Geology 1:10,000 Maps - Slice A



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Search Buffer (m): 1000

Site Details

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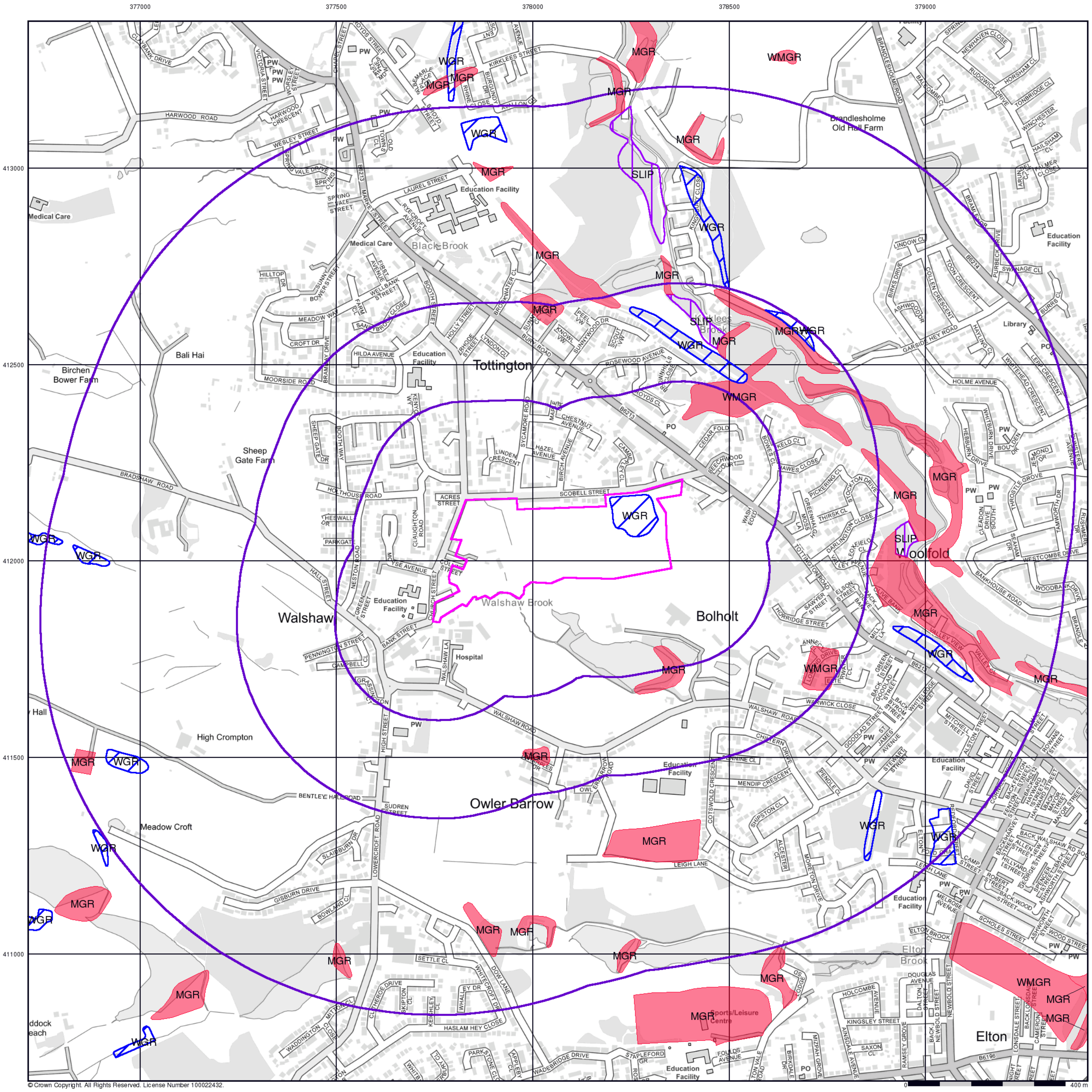

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Owler Barrow
Elton
Walshaw Brook
Black Brook
Kirklees Brook
Elton Brook
Birchen Bower Farm
Bali Hai
Sheep Gate Farm
High Crompton
Meadow Croft
Brandlesholme Old Hall Farm
Hospital
Education Facility
Medical Care
Library
Sports/Leisure Centre
MGR
WMGR
WGR
SLIP
SCOBELL STREET
WALSHAW ROAD
BRADSHAW ROAD
HARWOOD ROAD
LEIGH LANE
0
400 m

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Artificial Ground and Landslip

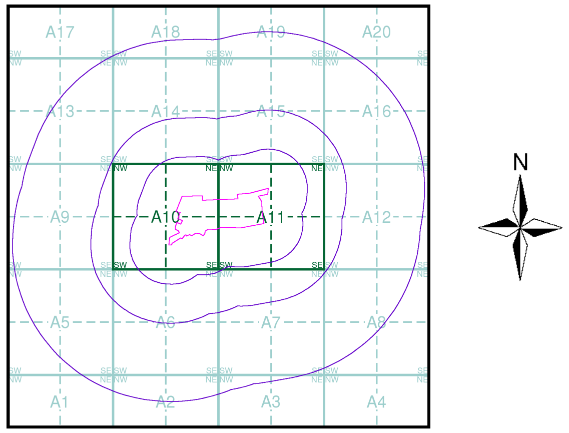
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



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Order Details

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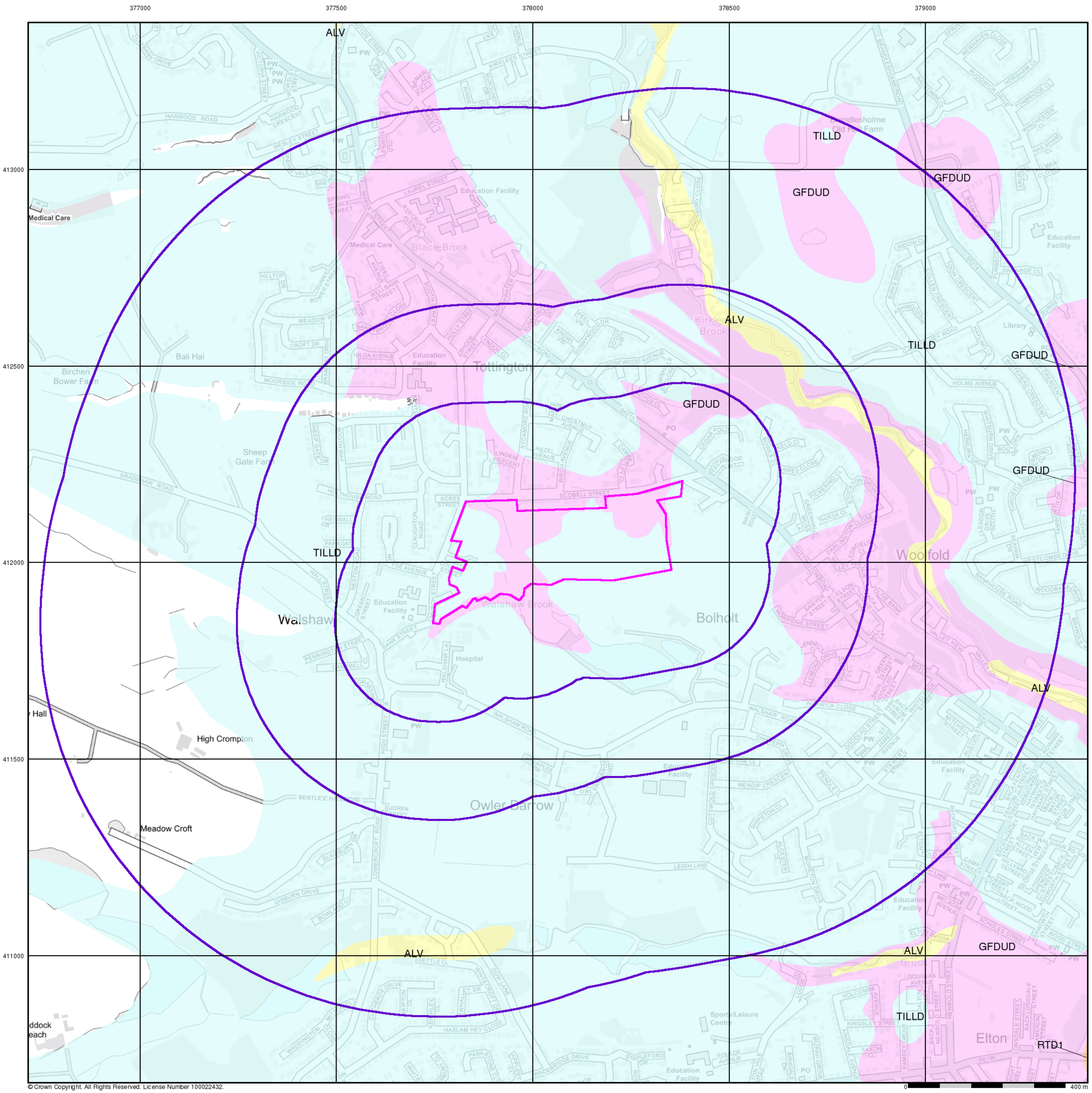
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Birchen Bower Farm
Sheep Gate Farm
High Crompton
Meadow Croft
Medical Care
Education Facility
Hospital
Library
Sports/Leisure Centre
Scobell Street
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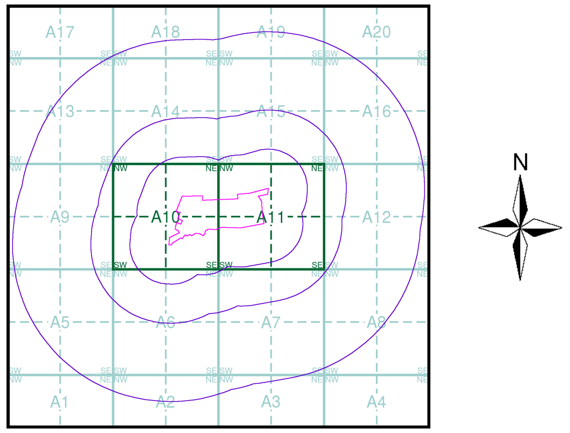
Superficial Geology

BGS 1:10,000 Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A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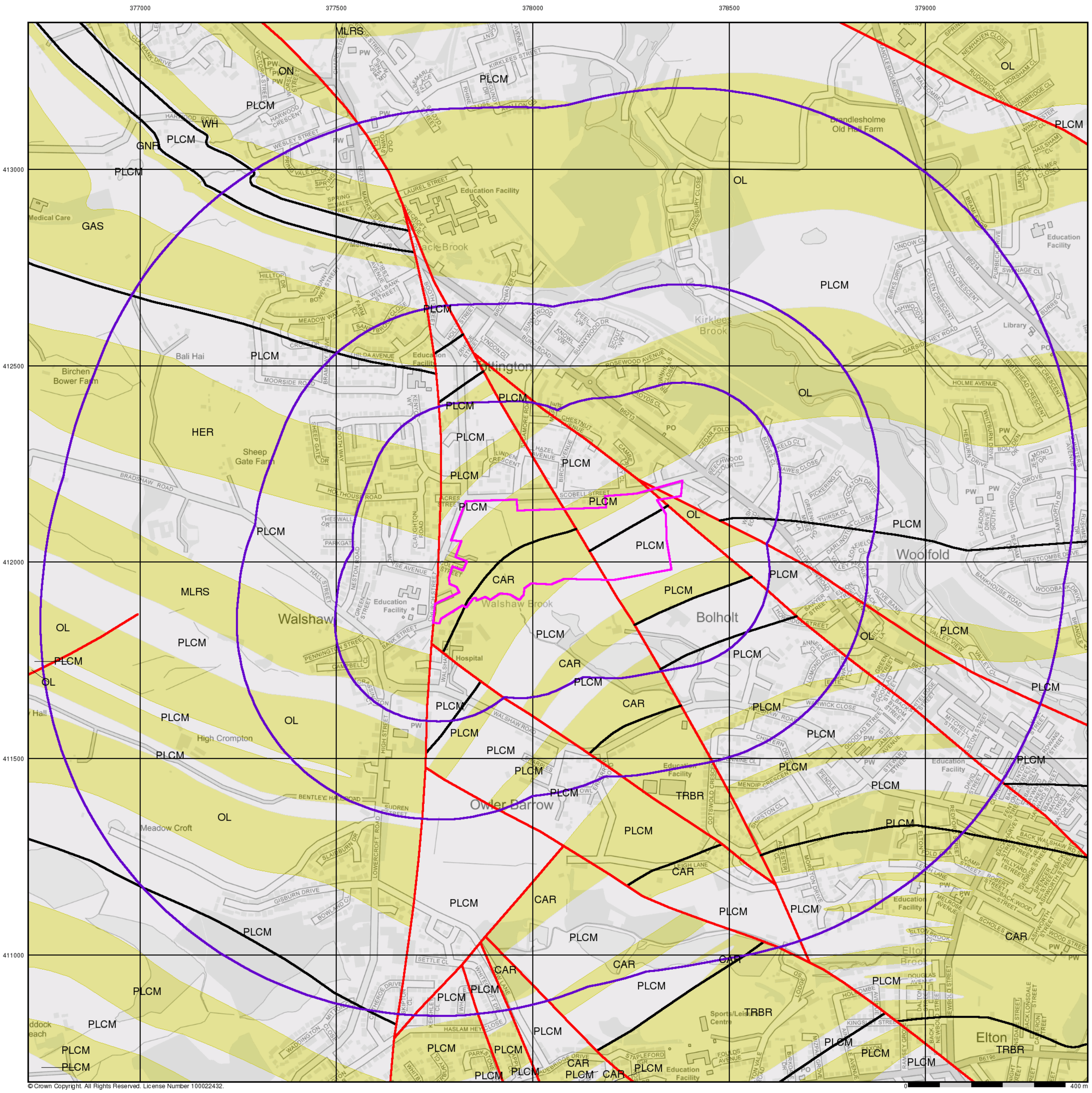
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Bedrock and Faults

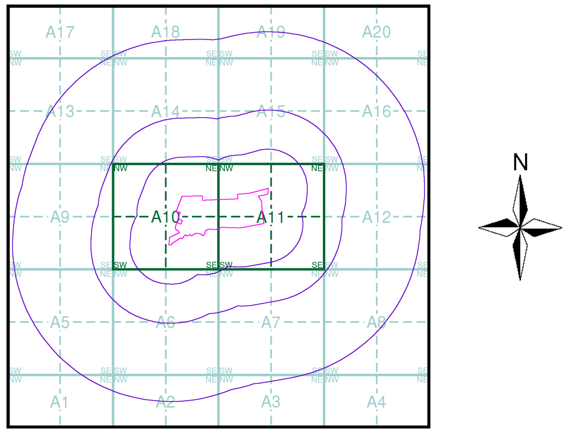
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults and thin beds mapped as lines such as coal seams and mineral veins. These are not restricted by age and could relate to features of any of the 1:10,000 geology datasets.

Bedrock and Faults Map - Slice A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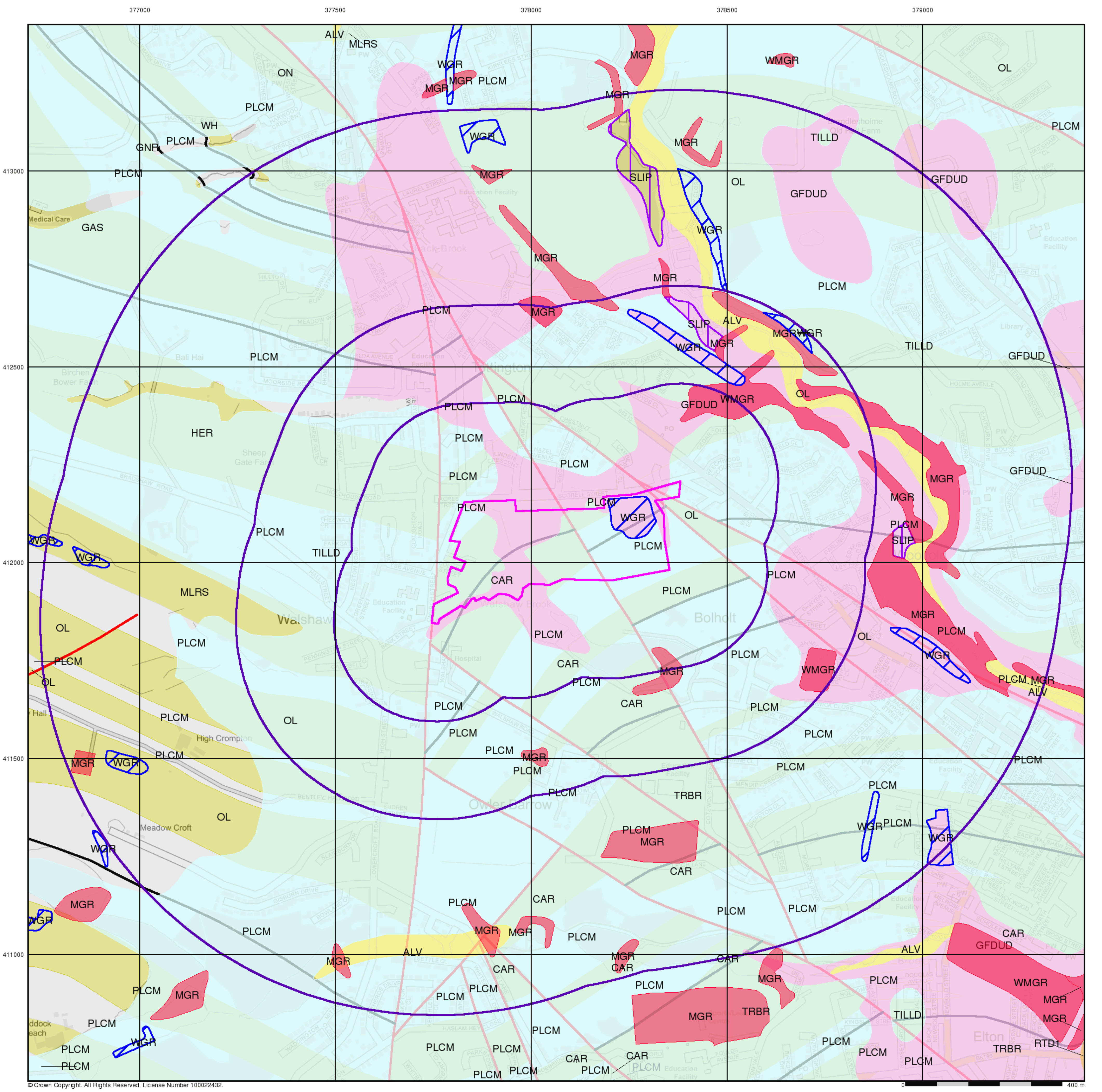
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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

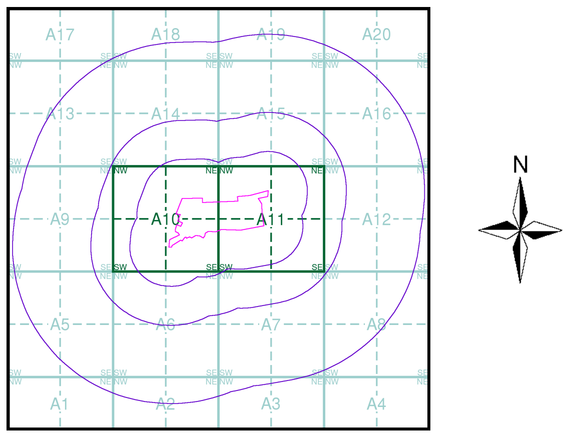
Additional Information

More information on 1:10,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A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Order Details

Order Number:	340522593_1_1
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Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

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APPENDIX V

EA SITE SENSITIVITY

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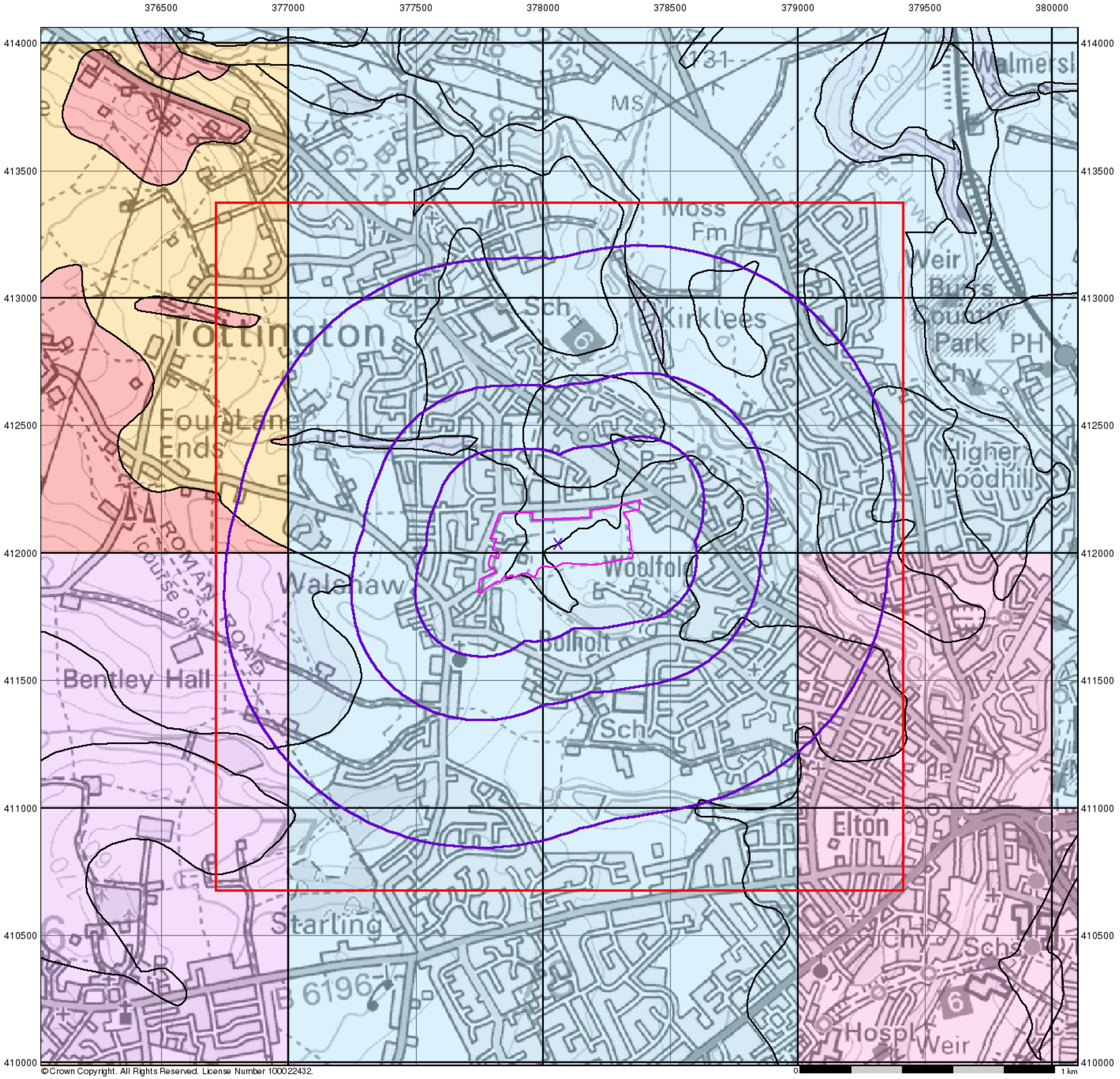
FLOOR RISK MAPS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Groundwater Vulnerability

General

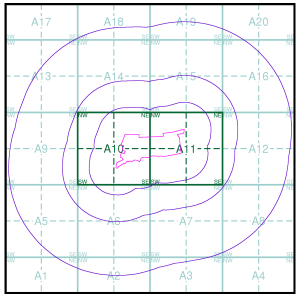
Specified Site
Specified Buffer(s)
X Bearing Reference Point
☐ Slice
8 Map ID

Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
🟥 High Vulnerability, Principal Aquifer	🟧 High Vulnerability, Principal Aquifer
🟥 High Vulnerability, Secondary Aquifer	🟨 High Vulnerability, Secondary Aquifer
🟪 Medium Vulnerability, Principal Aquifer	🟪 Medium Vulnerability, Principal Aquifer
🟪 Medium Vulnerability, Secondary Aquifer	🟪 Medium Vulnerability, Secondary Aquifer
🟦 Low Vulnerability, Principal Aquifer	🟦 Low Vulnerability, Principal Aquifer
🟦 Low Vulnerability, Secondary Aquifer	🟦 Low Vulnerability, Secondary Aquifer

⬜ Unproductive Aquifer
⁞ Soluble Rock

Site Sensitivity Context Map - Slice A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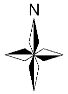

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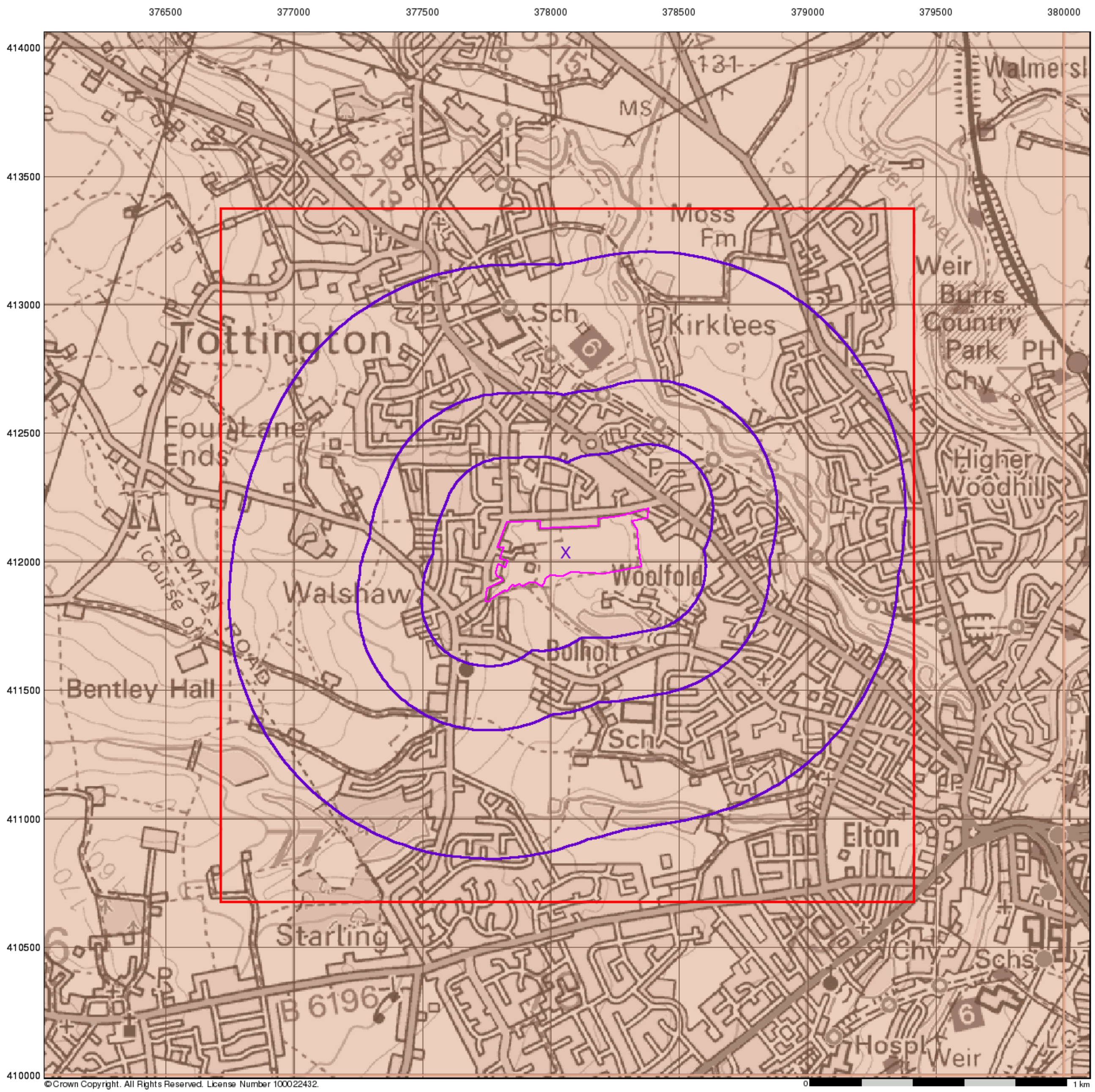
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Bedrock Aquifer Designation

General

Specified Site
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X Bearing Reference Point
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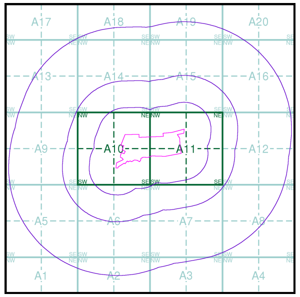
8 Map ID

Agency and Hydrological

Geological Classes

🟪 Principal Aquifer
🟫 Secondary A Aquifer
🟧 Secondary B Aquifer
🟨 Secondary Undifferentiated
⬜ Unproductive Strata
🟩 Unknown
🟦 Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A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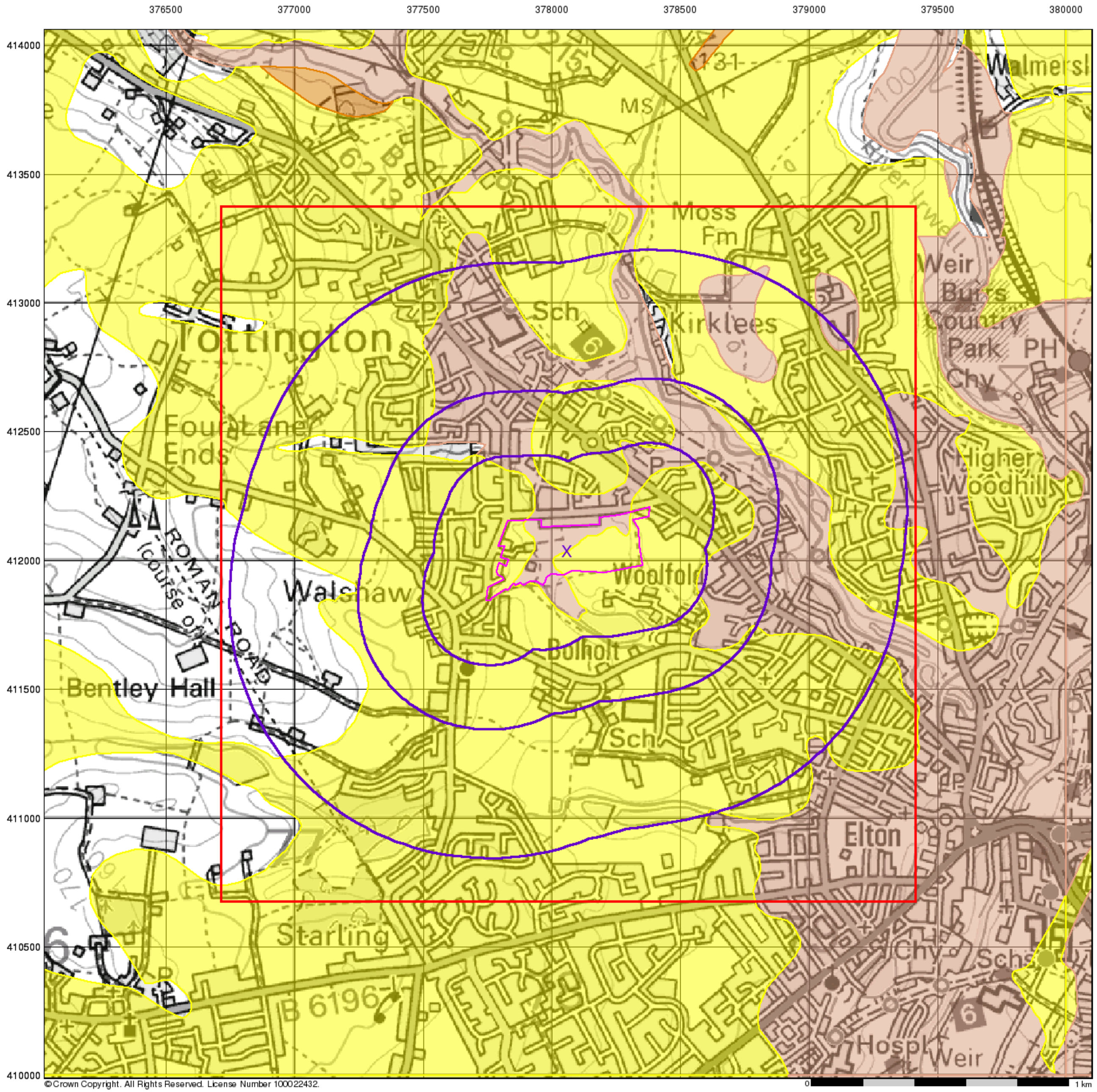
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Superficial Aquifer Designation

General

Specified Site   Specified Buffer(s)   X Bearing Reference Point

☐ Slice   8 Map ID

Agency and Hydrological

Geological Classes

🟪 Principal Aquifer

🟫 Secondary A Aquifer

🟧 Secondary B Aquifer

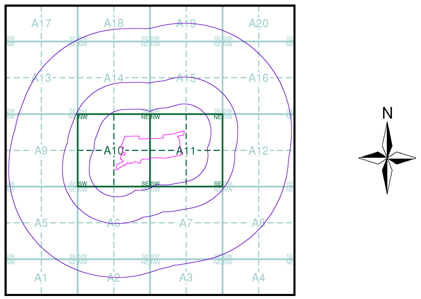
🟨 Secondary Undifferentiated

⬜ Unproductive Strata

🟩 Unknown

🟦 Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A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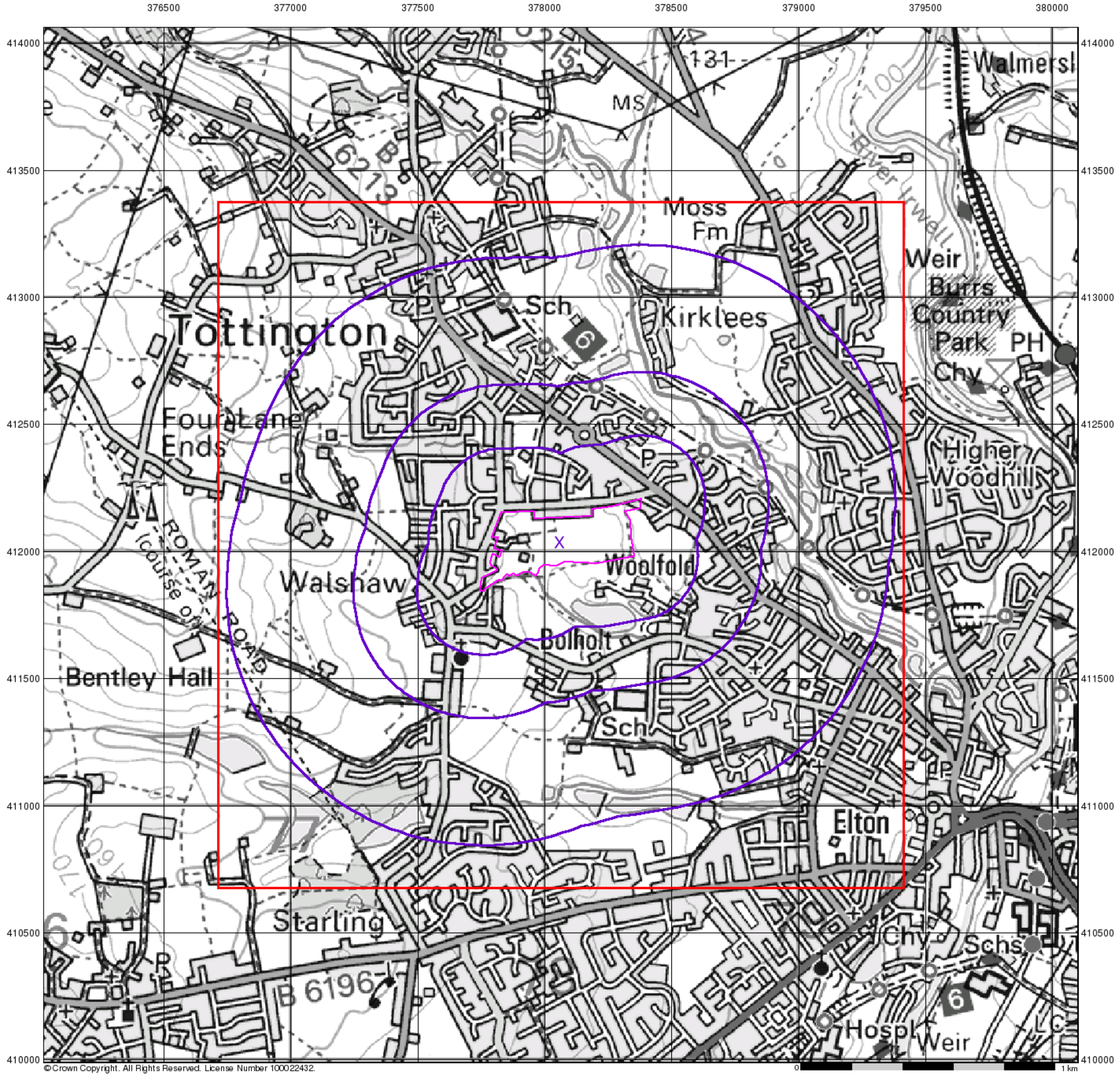
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Source Protection Zones

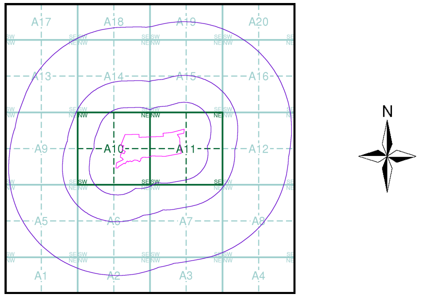
General

Specified Site
Specified Buffer(s)
X Bearing Reference Point
☐ Slice
8 Map ID

Agency and Hydrological

🟥 Inner zone (Zone 1)
▨ Inner zone - subsurface activity only (Zone 1c)
🟩 Outer zone (Zone 2)
▨ Outer zone - subsurface activity only (Zone 2c)
🟦 Total catchment (Zone 3)
▨ Total catchment - subsurface activity only (Zone 3c)
🟫 Special interest (Zone 4)

Site Sensitivity Context Map - Slice A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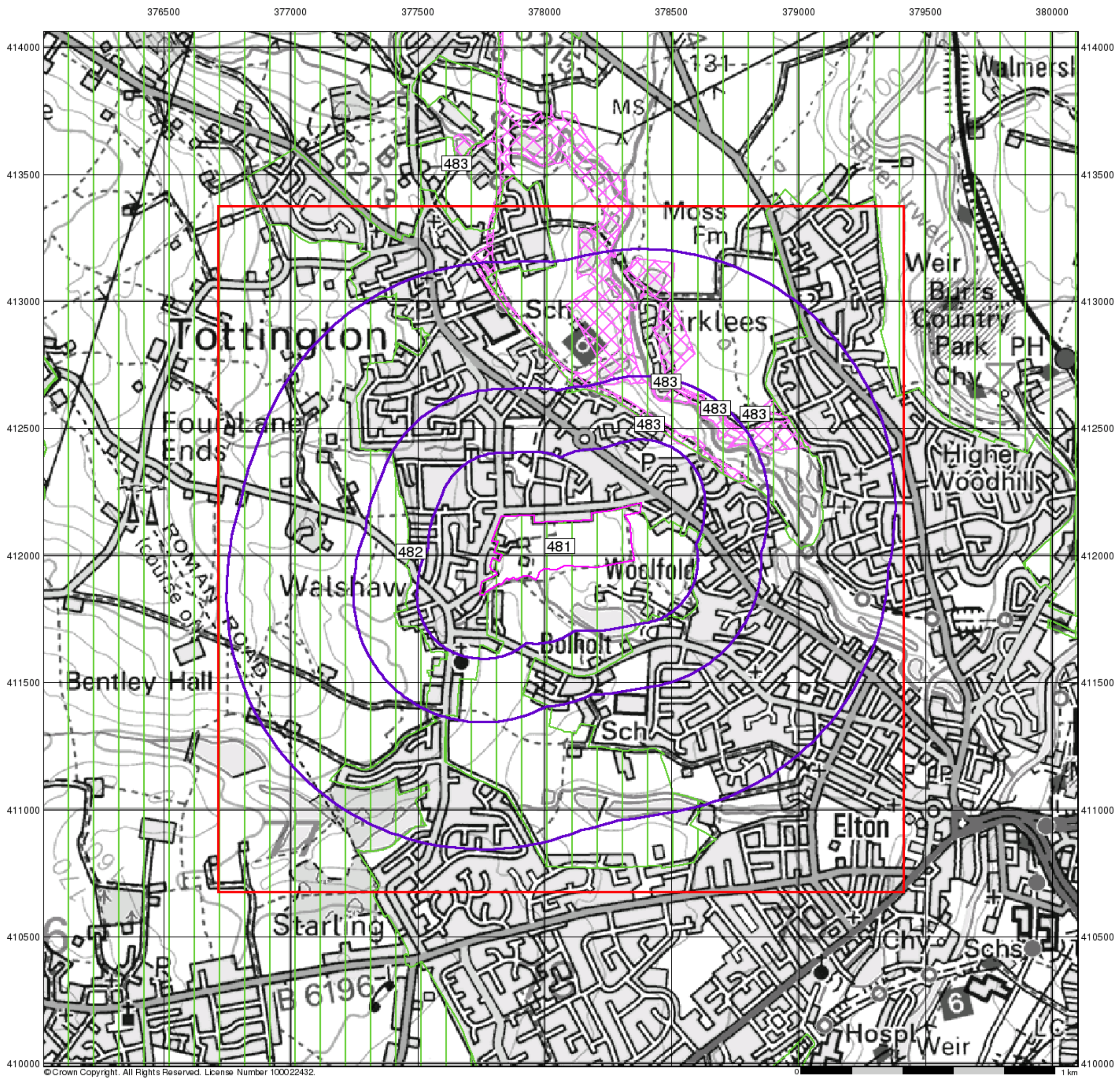
Site Details

Scobell Street, Tottington, BURY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Four Lane Ends
Higher Woodhill
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Sensitive Land Uses

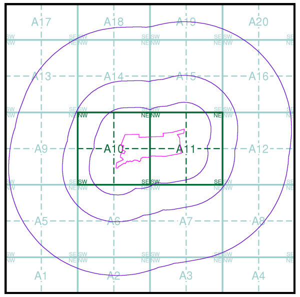
General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- ☐ Slice
- 8 Map ID

Sensitive Land Uses

- 🟥 Ancient Woodland
- ▥ Area of Adopted Green Belt
- ▨ Area of Unadopted Green Belt
- ■ Area of Outstanding Natural Beauty
- ▨ Environmentally Sensitive Area
- ▦ Forest Park
- ☒ Local Nature Reserve
- ▦ Marine Nature Reserve
- ▨ National Nature Reserve
- ☒ National Park
- ▥ Nitrate Sensitive Area
- ▨ Nitrate Vulnerable Zone
- ▨ Ramsar Site
- ▤ Site of Special Scientific Interest
- ▨ Special Area of Conservation
- ▨ Special Protection Area
- 🟨 World Heritage Sites

Site Sensitivity Context Map - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY

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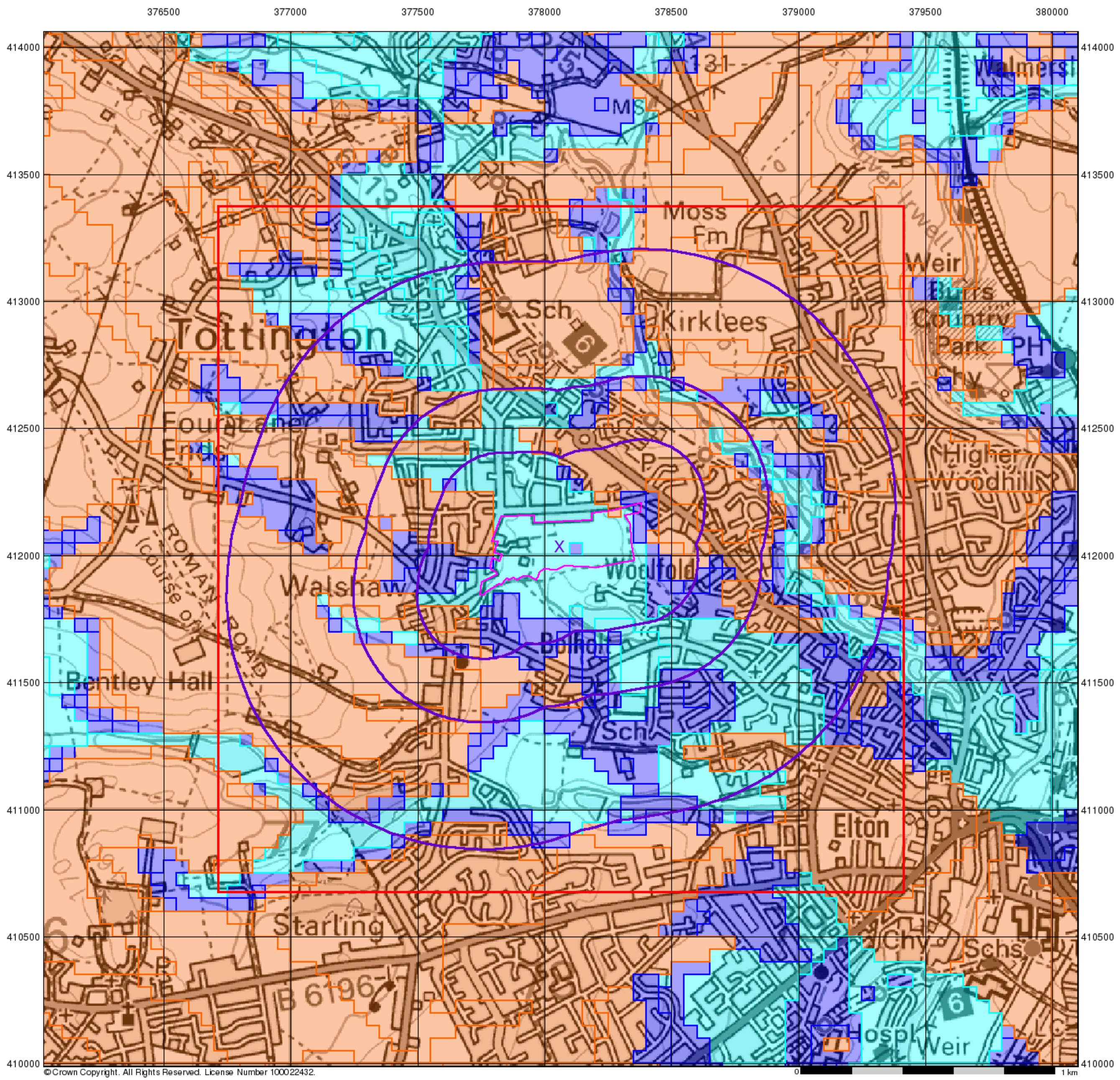
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Higher Woodhill
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BGS Flood GFS Data

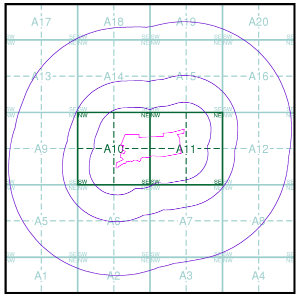
General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- ☐ Slice

Agency and Hydrological (Flood)

- 🟧 Limited Potential for Groundwater Flooding to Occur
- 🟦 Potential for Groundwater Flooding of Property Situated Below Ground Level
- ▨ Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A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Order Details

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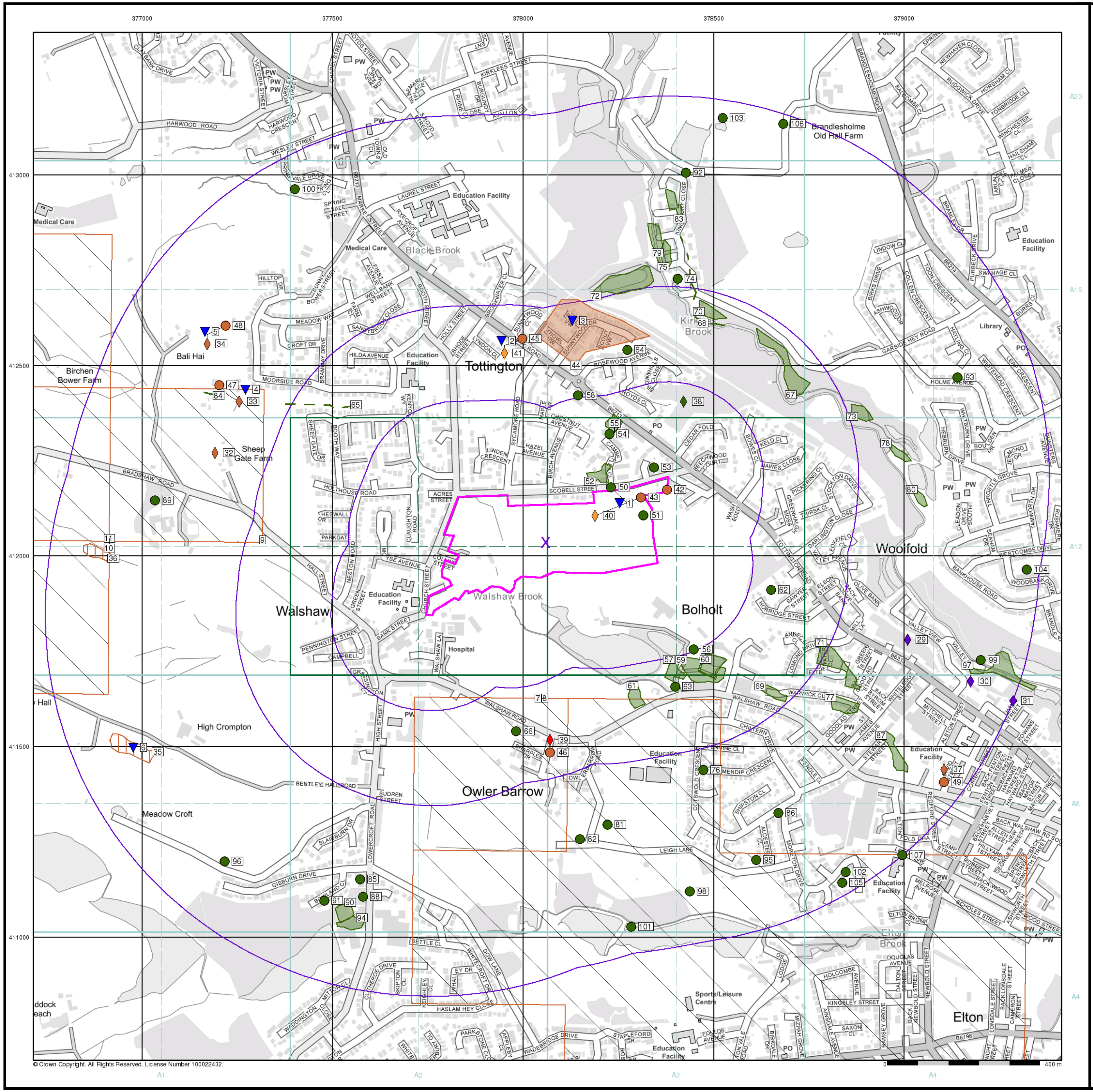
APPENDIX VI

ENVIRONMENTAL DATASHEETS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Elton
High Crompton
Meadow Croft
Birchen Bower Farm
Bali Hai
Sheep Gate Farm
Brandlesholme Old Hall Farm
Black Brook
Kirk Brook
Walshaw Brook
Elton Brook
Education Facility
Medical Care
Hospital
Library
Sports/Leisure Centre
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Historical Land Use Information (1:10,000)

General

Specified Site	Specified Buffer(s)
X Bearing Reference Point	8 Map ID
☐ Several of Type at Location	

Potentially Contaminative Industrial Uses (Past Land Uses - Mining)

	Point	Line	Polygon
Air Shafts	◆	—	▨
Disturbed Ground	◆	—	▨
General Quarrying	◆	—	▨
Heap, unknown constituents	◆	—	▨
Mineral Railway	◆	—	▨
Mining and Quarrying General	◆	—	▨
Mining of Coal & Lignite	◆	—	▨
Quarrying of Sand and Clay, Operation of Sand and Gravel Pits	◆	—	▨

Historical Land Use

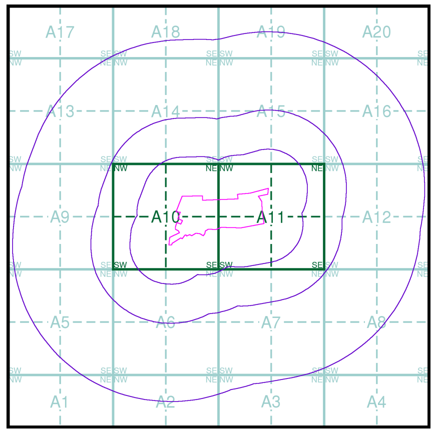
	Point	Line	Polygon
Potentially Infilled Land (Non-Water)	●	- - -	■
Potentially Infilled Land (Water)	●	- - -	■
Former Marsh	✣		

Mining Data

▨ Potential Mining Area

▼ BGS Recorded Mineral Site

Mining and Ground Stability - Slice A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Order Details

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Site Details

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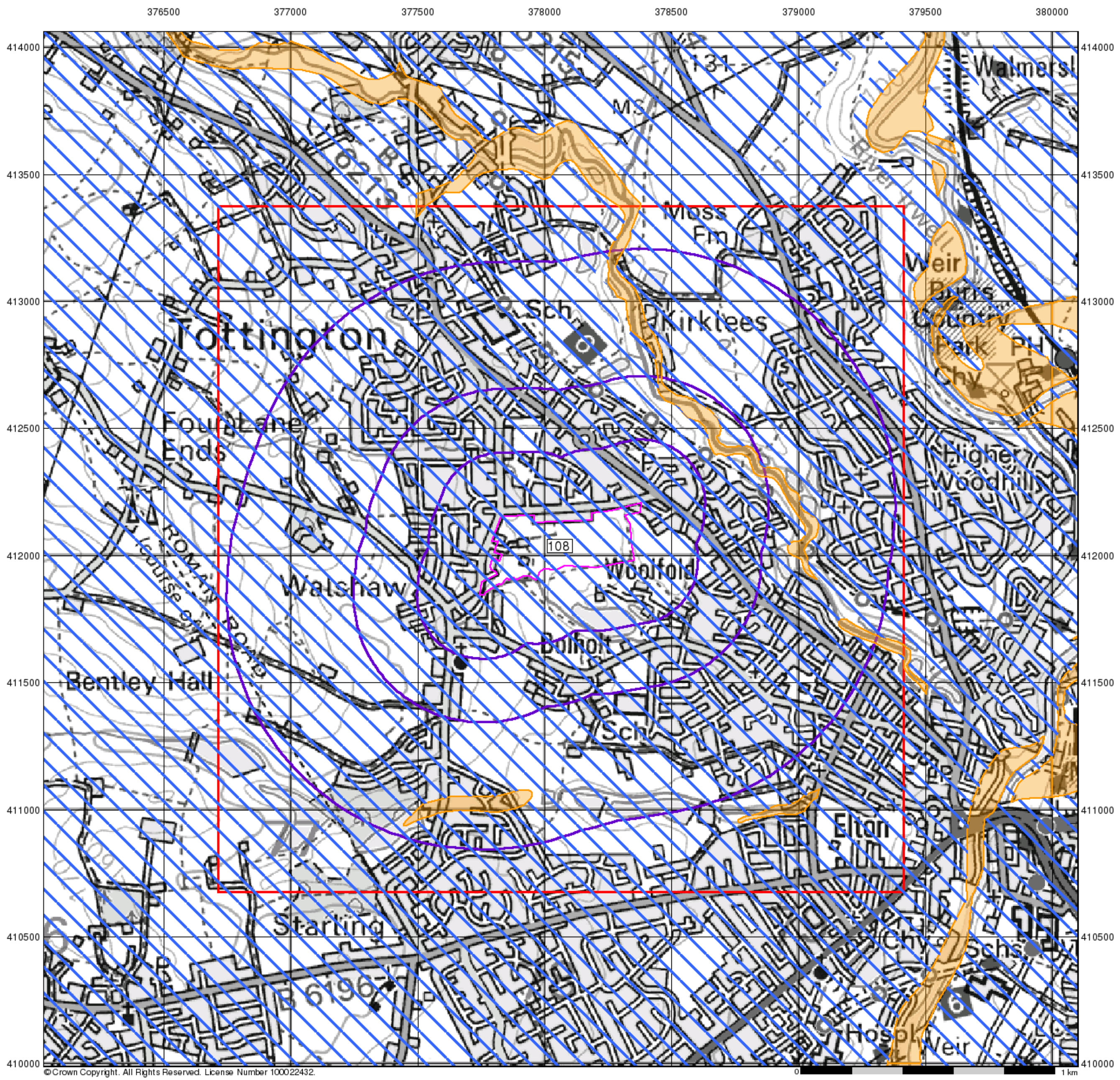
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Ground Stability Data (1:50,000)

General

⬠	Specified Site	⬠	Specified Buffer(s)	X	Bearing Reference Point
☐	Slice	8	Map ID		

Potential for Compressible Ground Stability Hazards

🟥	High	🟩	Low
🟧	Moderate	🟦	Very Low

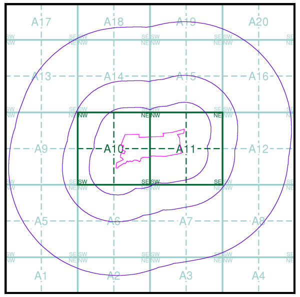
Potential for Collapsible Ground Stability Hazards

▨	High	▨	Low
▨	Moderate	▨	Very Low

Brine Pumping and Salt Mining

	Point	Polygon
Brine Pumping Related Feature	▲	▨
Salt Mining Related Feature	▲	▨

Mining and Ground Stability - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
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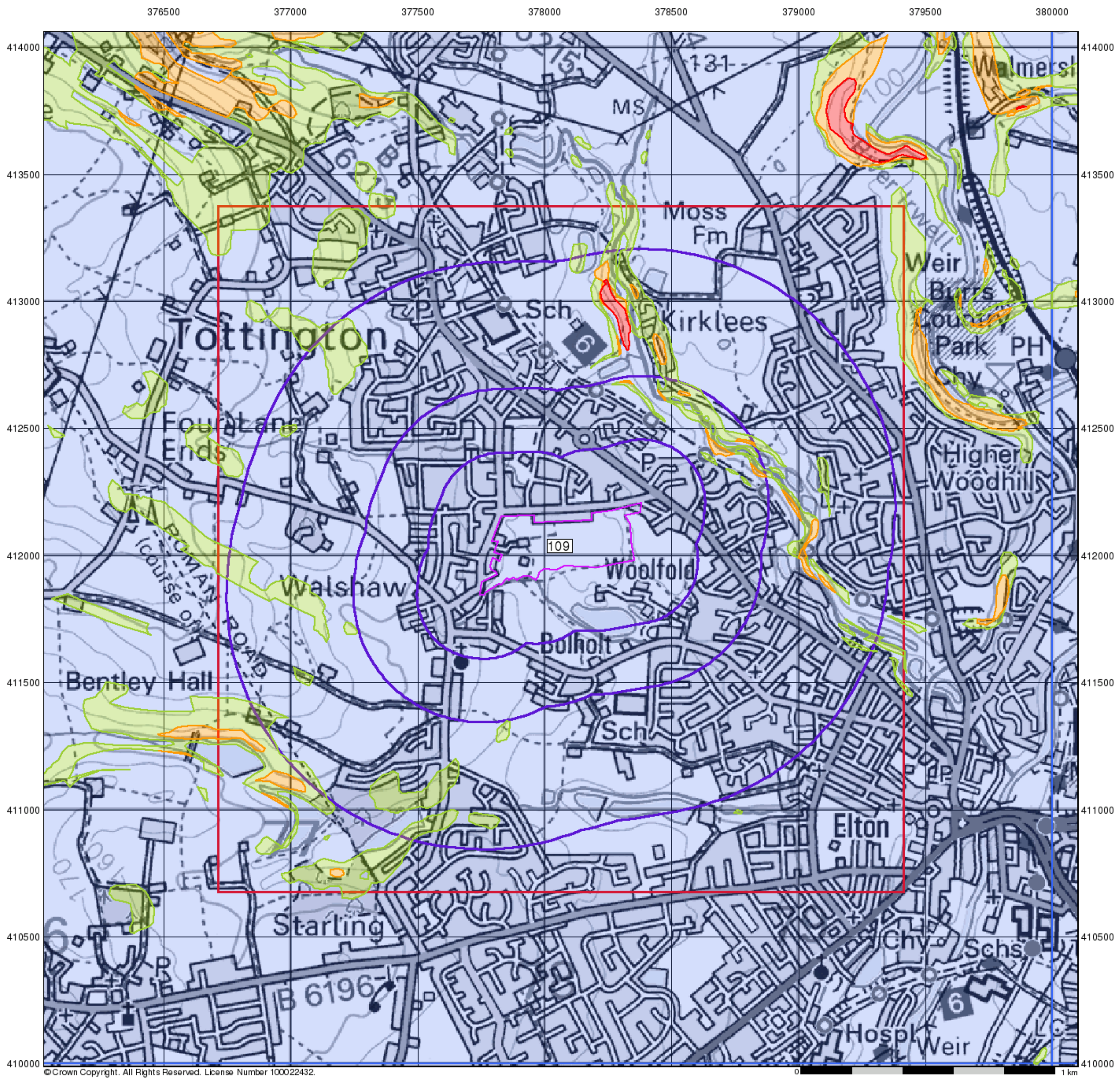
Site Details

Scobell Street, Tottington, BURY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Ground Stability Data (1:50,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point
☐ Slice
8 Map ID

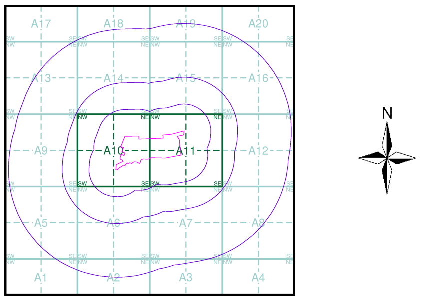
Potential for Landslide Ground Stability Hazards

🟥	High	🟩	Low
🟧	Moderate	🟦	Very Low

Potential for Ground Dissolution Stability Hazards

▨	High	▨	Low
▨	Moderate	▨	Very Low

Mining and Ground Stability - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
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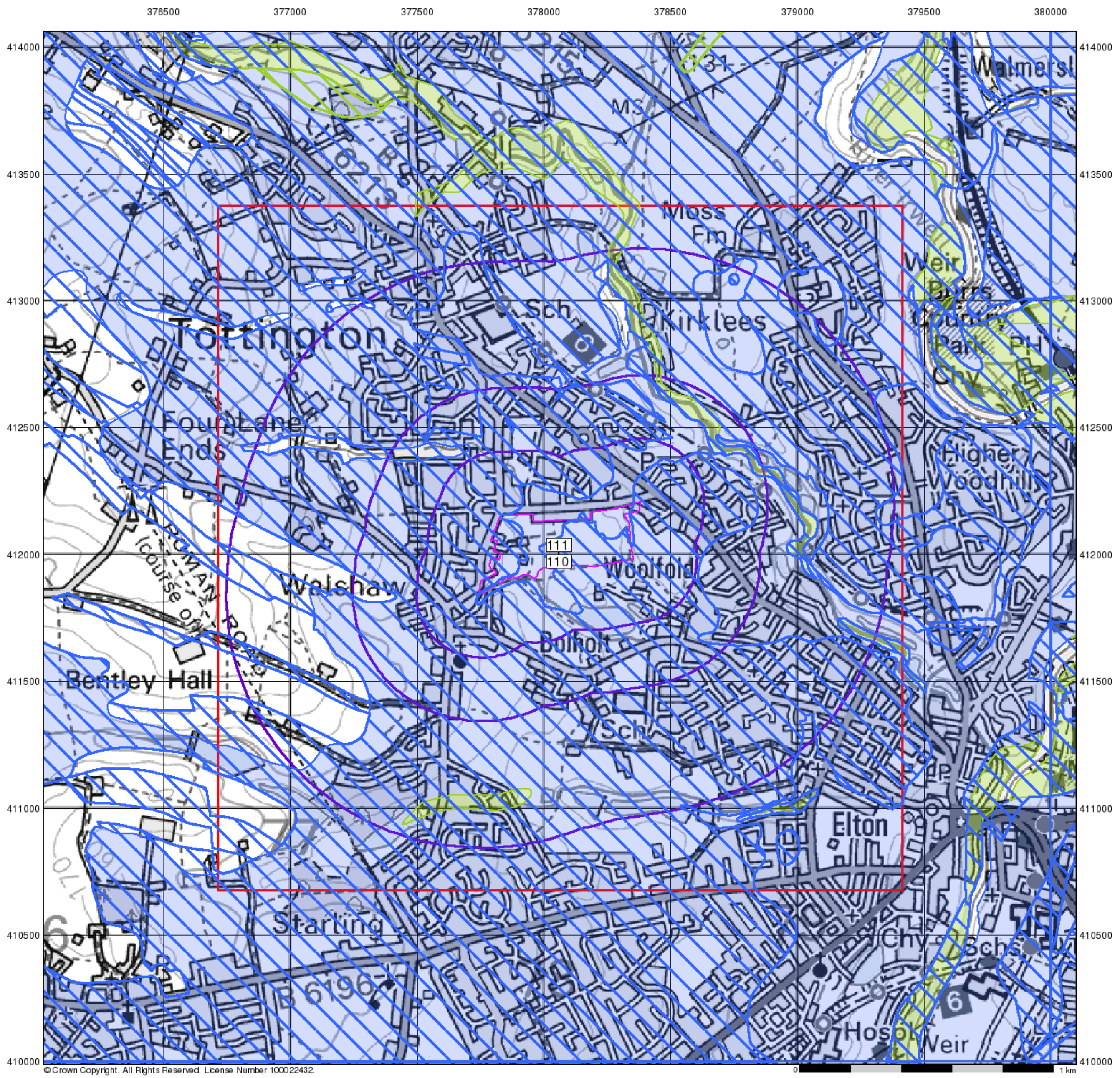
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Four Lane Ends
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Ground Stability Data (1:50,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point
☐ Slice
Map ID

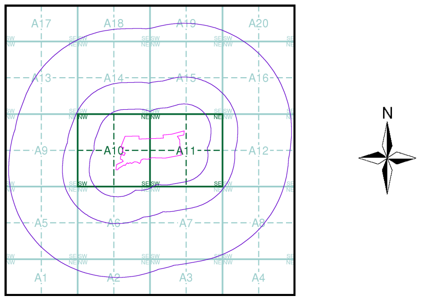
Potential for Running Sand Ground Stability Hazards

🟥 High
🟩 Low
🟧 Moderate
🟦 Very Low

Potential for Shrinking or Swelling Clay Ground Stability Hazards

▨ High
▨ Low
▨ Moderate
▨ Very Low

Mining and Ground Stability - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

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Envirocheck® Report:

Mining and Ground Stability Datasheet

Order Details:

Order Number:
340522593_1_1

Customer Reference:
10/2399

National Grid Reference:
378060, 412040

Slice:
A

Site Area (Ha):
11.76

Search Buffer (m):
1000

Site Details:

Scobell Street
Tottington
BURY

Client Details:

Mr N Riding
Clancy Consulting Ltd
Dunham Court
2 Dunham Road
Altrincham
Cheshire
WA14 4NX

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Contents

Report Section and Details	Page Number
Summary	**-**
The Summary section provides an overview of the data contained within the report, detailing the number of data set features or the existence of a data set in relation to the buffer selected. For ease of reference, the report is broken down into 4 sections of data; Mining and Natural Cavities Data, Historical Land Use Information (1:2,500), Historical Land Use Information (1:10,000) and Ground Stability Data (1:50,000).	
Mining and Natural Cavities Data	**1**
The Mining and Natural Cavities Data section features data sets related to the existence of mining areas and their potential hazards; and details of naturally formed cavities. Data sets within this section are not plotted, with the exception of BGS Recorded Mineral Sites and Potential Mining Areas which feature on the Historical Land Use Information (1:10,000) map.	
Historical Land Use Information (1:2,500)	**3**
The Historical Land Use Information (1:2,500) section contains data captured from analysis carried out by Landmark of 1:1,250 and 1:2,500 scale historical Ordnance Survey mapping, identifying areas where, historically, the land uses were potentially contaminative. For the purpose of this Envirocheck module, only historical data relating to mining and ground stability has been included and plotted on the corresponding Historical Land Use Information (1:2,500) map. This section also includes the Subterranean Features data set, which details various man-made and man-used underground spaces obtained from the Subterranea Britannica society.	
Historical Land Use Information (1:10,000)	**5**
The Historical Land Use (1:10,000) section covers data captured from the systematic analysis carried out by Landmark of 1:10, 560 and 1:10,000 scale historical Ordnance Survey mapping dating back to the mid-19th century, identifying potentially contaminative past industrial land uses. For the purpose of this Envirocheck module, only data relating to mining and ground stability has been included and plotted on the accompanying Historical Land Use Information (1:10,000) map.	
Ground Stability Data (1:50,000)	**9**
The Ground Stability (1:50,000) section includes the BGS Geosure data suite, reporting features to 250m and plotted onto 3 separate maps. Also reported is brine subsidence, brine mining and salt mining data sets, of which Brine Pumping and Salt Mining Related Features are plotted, and subsidence insurance claims and insurance investigations data, which is not plotted.	
Historical Map List	**10**
The Historical Map List section details the historical mapping that has been analysed for your site, in relation to the Historical Land Use Information sections.	
Data Currency	**11**
Data Suppliers	**12**
Useful Contacts	**13**

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Report Version v53.0

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
Mining and Natural Cavities Data					
BGS Recorded Mineral Sites	pg 1	1		2	3
Coal Mining Affected Areas	pg 2	Yes	n/a	n/a	n/a
Man Made Mining Cavities					
Mining Instability	pg 2	Yes	n/a	n/a	n/a
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential Mining Areas	pg 2		2	1	2
Historical Land Use Information (1:2,500)					
Extractive Industries or Potential Excavations from 1855-1909 (100m)	pg 3	1	4	n/a	n/a
Extractive Industries or Potential Excavations from 1893-1915 (100m)	pg 3		2	n/a	n/a
Extractive Industries or Potential Excavations from 1906-1937 (100m)	pg 3	1	7	n/a	n/a
Extractive Industries or Potential Excavations from 1924-1949 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1950-1980 (100m)	pg 4		2	n/a	n/a
Subterranean Features (100m)				n/a	n/a
Historical Land Use Information (1:10,000)					
Air Shafts					
Disturbed Ground	pg 5				3
General Quarrying	pg 5				6
Heap, unknown constituents	pg 5		1		
Mineral Railway					
Mining & quarrying general	pg 5			1	
Mining of coal & lignite					
Quarrying of sand & clay, operation of sand & gravel pits	pg 5	1		1	
Former Marshes					
Potentially Infilled Land (Non-Water)	pg 5	2		3	3
Potentially Infilled Land (Water)	pg 6	2	5	16	35
Ground Stability Data (1:50,000)					
CBSCB Compensation District			n/a	n/a	n/a
Brine Pumping Related Features					
Brine Subsidence Solution Area					
Potential for Collapsible Ground Stability Hazards	pg 9	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 9	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 9	Yes		n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 9	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 9	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 9	Yes		n/a	n/a
Salt Mining Related Features					

Summary

Report Version v53.0

Mining and Natural Cavities Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**BGS Recorded Mineral Sites** Site Name: Leemans Hill Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96452 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A11NW (NE)	0	1	378253 412143
2	**BGS Recorded Mineral Sites** Site Name: Copp Hill Sand Pit Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96453 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A14SE (N)	411	1	377943 412569
3	**BGS Recorded Mineral Sites** Site Name: Brown Hill Brick Field Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96473 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A15SW (N)	458	1	378129 412622
4	**BGS Recorded Mineral Sites** Site Name: Jacksons Fold Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96454 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A13SE (NW)	628	1	377271 412441
5	**BGS Recorded Mineral Sites** Site Name: Meadow Head Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96451 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A13SE (NW)	797	1	377165 412593
6	**BGS Recorded Mineral Sites** Site Name: Lower Bently Hall Location: Walshaw, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96456 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A5NW (SW)	843	1	376977 411501

Mining and Natural Cavities Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A10NE (SW)	0	2	378060 412036
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A10NE (SW)	0	3	378060 412036
	Non Coal Mining Areas of Great Britain No Hazard				
7	**Potential Mining Areas** Name: Elton Ceased Operation: 1876 Commodity: Coal; Hynes Reference: 839 Alternate Name/Mine: Not Supplied Custodian: Not Supplied	A6NE (S)	216	4	378057 411627
8	**Potential Mining Areas** Name: Alderbarrow Ceased Operation: 1878 Commodity: Coal; Seam unnamed Reference: 839D Alternate Name/Mine: Not Supplied Custodian: Not Supplied	A6NE (S)	216	4	378057 411627
9	**Potential Mining Areas** Name: Four Lane Ends Ceased Operation: 1854 Commodity: Coal; Seam unnamed Reference: Not Supplied Alternate Name/Mine: Long Lane Custodian: Geo. Heywood Son and Hughes, Queen Street, Oldham.	A9NE (W)	457	4	377317 412043
10	**Potential Mining Areas** Name: Four Lane Ends Ceased Operation: 1862 Commodity: Coal; Mountain Reference: Not Supplied Alternate Name/Mine: Not Supplied Custodian: Law and Grimshaw, Bank Chambers, Atherton, near Manchester.	A9NW (W)	834	4	376915 412046
11	**Potential Mining Areas** Name: Elton Ceased Operation: 1862 Commodity: Coal; Seam unnamed Reference: Not Supplied Alternate Name/Mine: Not Supplied Custodian: Geo. Heywood Son and Hughes, Queen Street, Oldham.	A9NW (W)	849	4	376915 412046

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**Extractive Industries or Potential Excavations from 1855-1909** Use: Brick Field First Map Published Date: 1893 Last Map Published Date: Not Applicable	A11NW (NE)	0	-	378316 412157
13	**Extractive Industries or Potential Excavations from 1855-1909** Use: Well First Map Published Date: 1893 Last Map Published Date: Not Applicable	A11NW (NE)	5	-	378264 412180
14	**Extractive Industries or Potential Excavations from 1855-1909** Use: Reservoirs First Map Published Date: 1893 Last Map Published Date: Not Applicable	A11NW (NE)	32	-	378160 412203
15	**Extractive Industries or Potential Excavations from 1855-1909** Use: Unspecified Pit First Map Published Date: 1893 Last Map Published Date: Not Applicable	A10NE (NW)	40	-	377924 412199
16	**Extractive Industries or Potential Excavations from 1855-1909** Use: Reservoir First Map Published Date: 1893 Last Map Published Date: Not Applicable	A10SE (S)	70	-	378045 411874
17	**Extractive Industries or Potential Excavations from 1893-1915** Use: Reservoirs First Map Published Date: 1910 Last Map Published Date: Not Applicable	A11NW (NE)	31	-	378163 412203
18	**Extractive Industries or Potential Excavations from 1893-1915** Use: Reservoir First Map Published Date: 1910 Last Map Published Date: Not Applicable	A10SE (S)	70	-	378048 411873
19	**Extractive Industries or Potential Excavations from 1906-1937** Use: Unspecified Pit First Map Published Date: 1930 Last Map Published Date: Not Applicable	A11NW (E)	0	-	378222 412068
20	**Extractive Industries or Potential Excavations from 1906-1937** Use: Well First Map Published Date: 1930 Last Map Published Date: Not Applicable	A11NW (NE)	5	-	378265 412180
21	**Extractive Industries or Potential Excavations from 1906-1937** Use: Unspecified Pit First Map Published Date: 1930 Last Map Published Date: Not Applicable	A10SE (SW)	11	-	377737 411857
22	**Extractive Industries or Potential Excavations from 1906-1937** Use: Reservoirs First Map Published Date: 1930 Last Map Published Date: Not Applicable	A11NW (NE)	31	-	378164 412202

Historical Land Use Information (1:2,500)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**Extractive Industries or Potential Excavations from 1906-1937** Use: Unspecified Deposited Material First Map Published Date: 1930 Last Map Published Date: Not Applicable	A10SE (SW)	36	-	377972 411866
24	**Extractive Industries or Potential Excavations from 1906-1937** Use: Unspecified Pit First Map Published Date: 1930 Last Map Published Date: Not Applicable	A10NE (NW)	37	-	377906 412196
25	**Extractive Industries or Potential Excavations from 1906-1937** Use: Reservoir First Map Published Date: 1930 Last Map Published Date: Not Applicable	A10SE (S)	67	-	378048 411876
26	**Extractive Industries or Potential Excavations from 1906-1937** Use: Unspecified Deposited Material First Map Published Date: 1930 Last Map Published Date: Not Applicable	A11NW (NE)	78	-	378324 412278
27	**Extractive Industries or Potential Excavations from 1950-1980** Use: Well First Map Published Date: 1960 Last Map Published Date: N/A	A11NW (NE)	3	-	378265 412178
28	**Extractive Industries or Potential Excavations from 1950-1980** Use: Unspecified Deposited Material First Map Published Date: 1960 Last Map Published Date: N/A	A11NW (NE)	54	-	378305 412255

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
29	**Disturbed Ground** Use: Not Supplied Date of Mapping: 1911	A12SW (E)	686	-	379008 411781
30	**Disturbed Ground** Use: Not Supplied Date of Mapping: 1911	A8NE (E)	878	-	379174 411672
31	**Disturbed Ground** Use: Not Supplied Date of Mapping: 1911	A8NE (E)	1000	-	379286 411621
32	**General Quarrying** Use: Not Supplied Date of Mapping: 1931	A9NE (W)	638	-	377191 412271
33	**General Quarrying** Use: Not Supplied Date of Mapping: 1850	A13SE (NW)	660	-	377227 412422
34	**General Quarrying** Use: Not Supplied Date of Mapping: 1850	A13SE (NW)	786	-	377171 412582
35	**General Quarrying** Use: Not Supplied Date of Mapping: 1850 - 1894	A5NW (SW)	792	-	377041 411486
36	**General Quarrying** Use: Not Supplied Date of Mapping: 1931	A9SW (W)	833	-	376925 411993
37	**General Quarrying** Use: Not Supplied Date of Mapping: 1894	A8NE (SE)	925	-	379103 411441
38	**Heap, unknown constituents** Use: Not Supplied Date of Mapping: 1982	A15SE (NE)	204	-	378421 412406
39	**Mining & quarrying general** Use: Not Supplied Date of Mapping: 1894	A7NW (S)	400	-	378070 411518
40	**Quarrying of sand & clay, operation of sand & gravel pits** Use: Not Supplied Date of Mapping: 1850	A11NW (NE)	0	-	378250 412132
41	**Quarrying of sand & clay, operation of sand & gravel pits** Use: Not Supplied Date of Mapping: 1850	A14SE (N)	395	-	377950 412553
42	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A11NW (NE)	0	-	378377 412174
43	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A11NW (NE)	0	-	378250 412132
44	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A15SW (N)	336	-	378139 412501
45	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A14SE (N)	395	-	377950 412553
46	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A7NW (S)	400	-	378070 411518
47	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A13SE (NW)	660	-	377227 412422
48	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A13SE (NW)	786	-	377171 412582
49	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A8NE (SE)	925	-	379103 411441

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
50	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11NW (NE)	0	-	378280 412133
51	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11NW (E)	0	-	378316 412107
52	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11NW (NE)	22	-	378176 412196
53	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A11NW (NE)	36	-	378343 412233
54	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11NW (NE)	149	-	378227 412321
55	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A11NW (NE)	151	-	378240 412324
56	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A11SE (SE)	245	-	378447 411755
57	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11SW (SE)	255	-	378388 411729
58	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A15SW (N)	258	-	378143 412422
59	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A11SE (SE)	259	-	378415 411727
60	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11SE (SE)	270	-	378479 411742
61	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7NW (SE)	305	-	378288 411660
62	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A11SE (E)	306	-	378651 411912
63	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7NW (SE)	327	-	378399 411657
64	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A15SW (NE)	351	-	378273 412541
65	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A14SW (NW)	361	-	377562 412396
66	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A6NE (S)	364	-	377982 411541
67	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15SE (NE)	388	-	378702 412423
68	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15SE (NE)	414	-	378471 412611
69	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A7NE (SE)	420	-	378622 411659
70	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15SE (NE)	433	-	378461 412642

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
71	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A12SW (E)	478	-	378782 411773
72	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A15SW (N)	497	-	378190 412682
73	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A16SW (E)	510	-	378864 412366
74	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A15NE (NE)	522	-	378405 412728
75	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15NW (NE)	549	-	378369 412758
76	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7NE (SE)	556	-	378473 411439
77	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A8NW (SE)	575	-	378807 411629
78	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12NW (E)	579	-	378952 412297
79	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15NW (N)	589	-	378353 412795
80	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A12NW (E)	641	-	379020 412174
81	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SW (S)	660	-	378222 411295
82	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SW (S)	673	-	378149 411257
83	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15NE (N)	676	-	378411 412885
84	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A13SE (NW)	683	-	377201 412421
85	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A6SW (SW)	716	-	377572 411151
86	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A7SE (SE)	728	-	378669 411326
87	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8NW (SE)	741	-	378940 411530
88	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A6SW (SW)	758	-	377580 411106
89	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A9NW (W)	761	-	377034 412146
90	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A6SW (SW)	781	-	377547 411091
91	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A6SW (SW)	796	-	377478 411096

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
92	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A15NE (N)	801	-	378427 413006
93	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A16SE (E)	803	-	379140 412469
94	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A6SW (SW)	813	-	377577 411051
95	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SE (SE)	820	-	378611 411203
96	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A5SE (SW)	837	-	377217 411198
97	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A12SE (E)	857	-	379166 411713
98	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SE (S)	863	-	378437 411120
99	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A12SE (E)	885	-	379200 411727
100	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A14NW (NW)	915	-	377401 412963
101	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SW (S)	930	-	378284 411028
102	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8SW (SE)	949	-	378847 411171
103	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A19SE (NE)	954	-	378523 413150
104	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A12SE (E)	965	-	379321 411965
105	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8SW (SE)	966	-	378838 411146
106	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A19SE (NE)	976	-	378682 413135
107	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8SW (SE)	999	-	378994 411216

Ground Stability Data (1:50,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	CBSCB Compensation District The site does not fall within the brine compensation area.				
	Brine Subsidence Solution Area The site does not fall within the brine subsidence solution area.				
108	**Potential for Collapsible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
109	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
110	**Potential for Running Sand Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
111	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A10NE (NW)	0	1	378048 412062

Historical Map List

The following mapping has been analysed for Historical Land Use Information (1:2,500):

1:2,500	Mapsheet	Published Date
Lancashire And Furness	087_08	1893
Lancashire And Furness	087_08	1893
Lancashire And Furness	087_08	1910
Lancashire And Furness	087_08	1910
Lancashire And Furness	087_08	1930
Lancashire And Furness	087_08	1930

The following mapping has been analysed for Historical Land Use Information (1:10,000):

1:10,560	Mapsheet	Published Date
Lancashire And Furness	087_00	1850
Lancashire And Furness	087_NE	1894
Lancashire And Furness	087_SE	1894
Lancashire And Furness	087_NE	1911
Lancashire And Furness	087_SE	1911
Lancashire And Furness	087_NE	1931
Lancashire And Furness	087_SE	1931
Ordnance Survey Plan	SD71SE	1956
1:10,000	**Mapsheet**	**Published Date**
Ordnance Survey Plan	SD71SE	1982

Mining and Cavities Data	Version	Update Cycle
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	January 2024	Bi-Annually
Coal Mining Affected Areas The Coal Authority - Property Searches	February 2023	Annual Rolling Update
Man Made Mining Cavities Stantec UK Ltd	December 2023	Bi-Annually
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Natural Cavities Stantec UK Ltd	December 2023	Bi-Annually
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable

Historical Land Use Information (1:2,500)	Version	Update Cycle
Subterranean Features Landmark Information Group Limited	July 2023	Bi-Annually

Ground Stability Data (1:50,000)	Version	Update Cycle
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Brine Subsidence Solution Area Johnson Poole & Bloomer	December 2020	

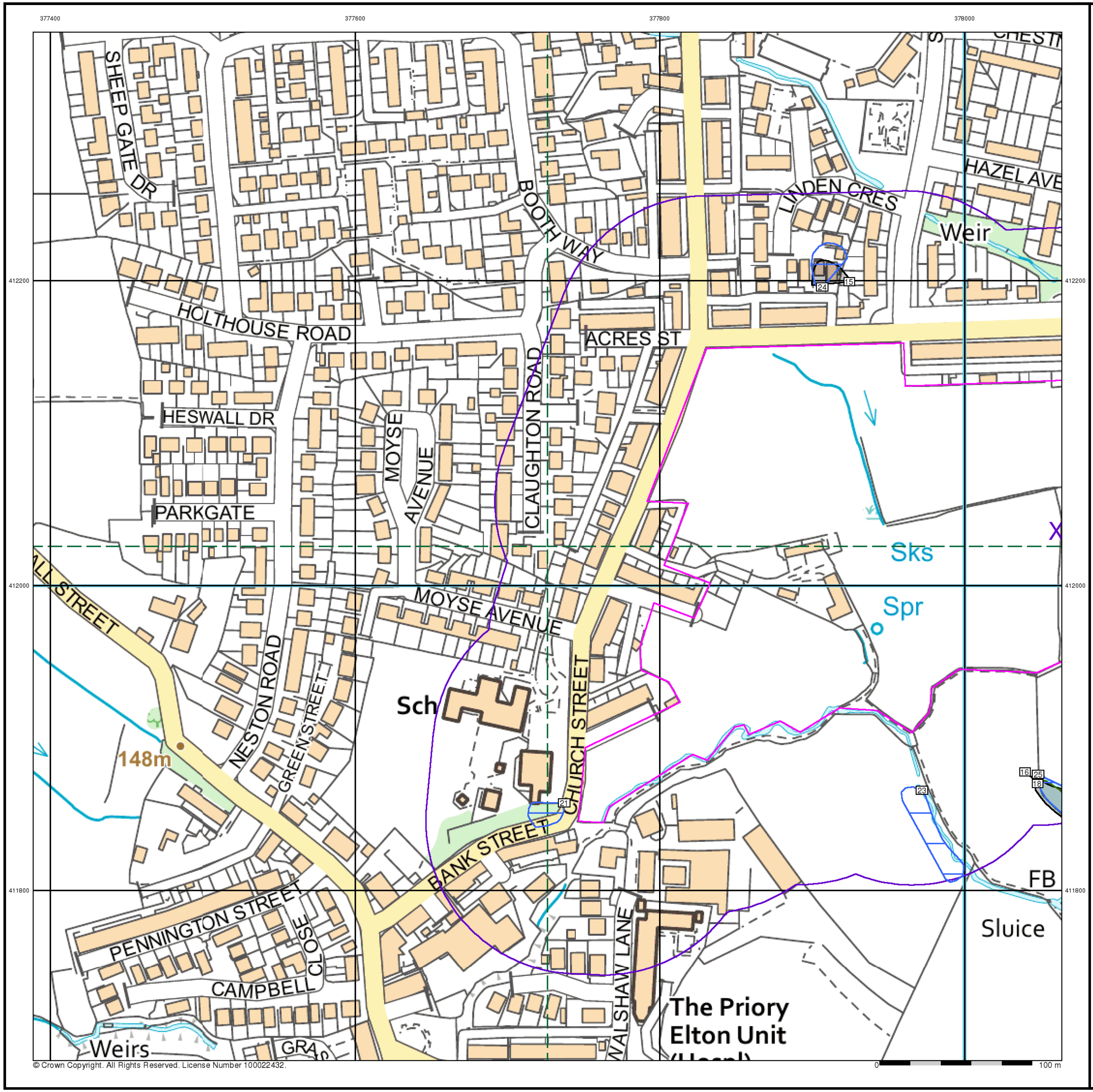
Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Map data
British Geological Survey	BGS 1835 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
The Coal Authority	The Coal Authority
Ove Arup	ARUP
Stantec UK Ltd	Stantec
Wardell Armstrong	wardell armstrong your earth our world
Johnson Poole & Bloomer	JPB

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**The Coal Authority - Property Searches** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
3	**Ove Arup & Partners** Central Square, Forth Street, Newcastle upon Tyne, Tyne and Wear, NE1 3PL	Telephone: 0191 261 6080 Fax: 0191 261 7879
4	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9960 Fax: 0844 844 9951 Email: customerservice@promap.co.uk Website: www.landmarkinfo.co.uk
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk



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LANDMARK INFORMATION GROUP®

Historical Land Use Information (1:2,500)

General

⬠ Specified Site ⬠ Specified Buffer(s) X Bearing Reference Point 8 Map ID

☐ Several of Type at Location

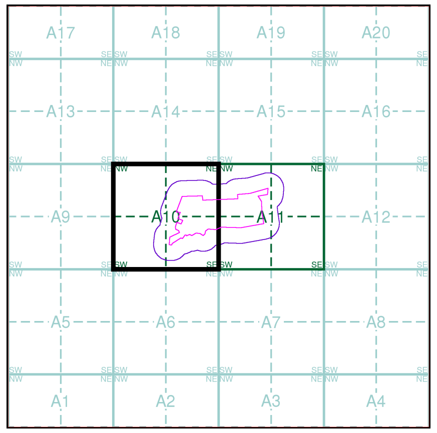
Potentially Contaminative Industrial Uses (Extractive Industries Activity)

	Point	Line	Polygon
Extractive Industries Activity from 1855 - 1909	▲	—	▢
Extractive Industries Activity from 1893 - 1915	▲	—	▨
Extractive Industries Activity from 1906 - 1937	▲	—	▤
Extractive Industries Activity from 1924 - 1949	▲	—	▨
Extractive Industries Activity from 1950 - 1980	▲	—	▥

Subterranean Features

	Point	Line	Polygon
Subterranean Features	▼	- - -	🟥

Mining and Ground Stability - Segment A10



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Order Details

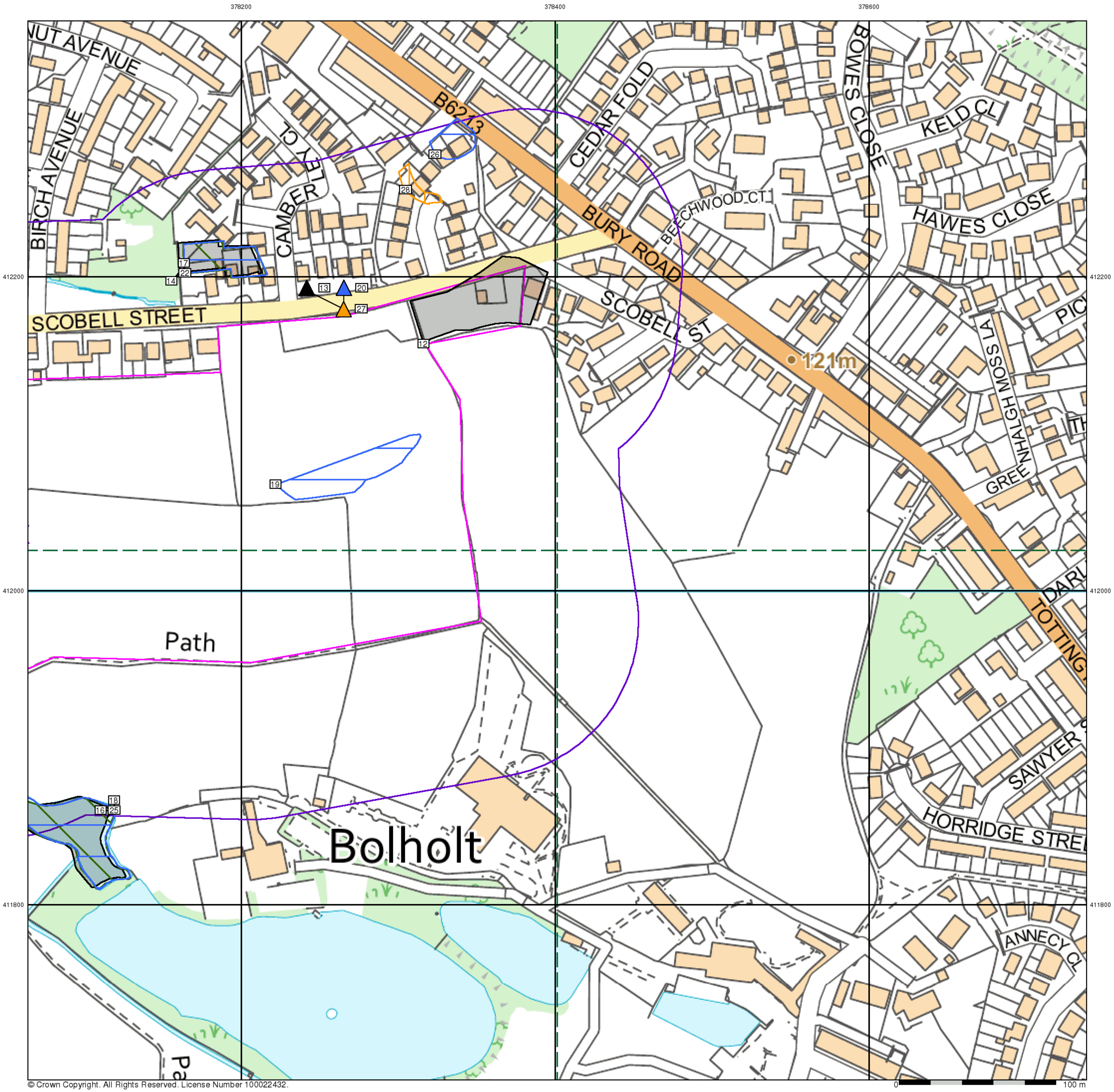
Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Plot Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

Landmark
INFORMATION GROUP

Tel:	0844 844 9952
Fax:	0844 844 9951
Web:	www.envirocheck.co.uk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B6213
CEDAR FOLD
BOWES CLOSE
KELD CL
BEECHWOOD CT
HAWES CLOSE
BURY ROAD
SCOBELL STREET
SCOBELL ST
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NHALGH MOSS LA
GREE
DARL
TOTTING
SAWYER
HORRIDGE STREE
ANNECY CL
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Bolholt
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Historical Land Use Information (1:2,500)

General

⬠ Specified Site ⬠ Specified Buffer(s) X Bearing Reference Point 8 Map ID

☐ Several of Type at Location

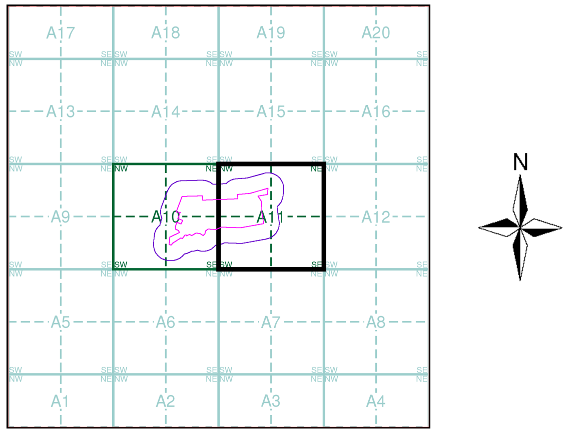
Potentially Contaminative Industrial Uses (Extractive Industries Activity)

	Point	Line	Polygon
Extractive Industries Activity from 1855 - 1909	▲	—	■
Extractive Industries Activity from 1893 - 1915	▲	—	▨
Extractive Industries Activity from 1906 - 1937	▲	—	▤
Extractive Industries Activity from 1924 - 1949	▲	—	▨
Extractive Industries Activity from 1950 - 1980	▲	—	▥

Subterranean Features

	Point	Line	Polygon
Subterranean Features	▼	---	■

Mining and Ground Stability - Segment A11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Order Details

Order Number: 340522593_1_1
Customer Ref: 10/2399
National Grid Reference: 378060, 412040
Slice: A
Site Area (Ha): 11.76
Plot Buffer (m): 100

Site Details

Scobell Street, Tottington, BURY

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INFORMATION GROUP
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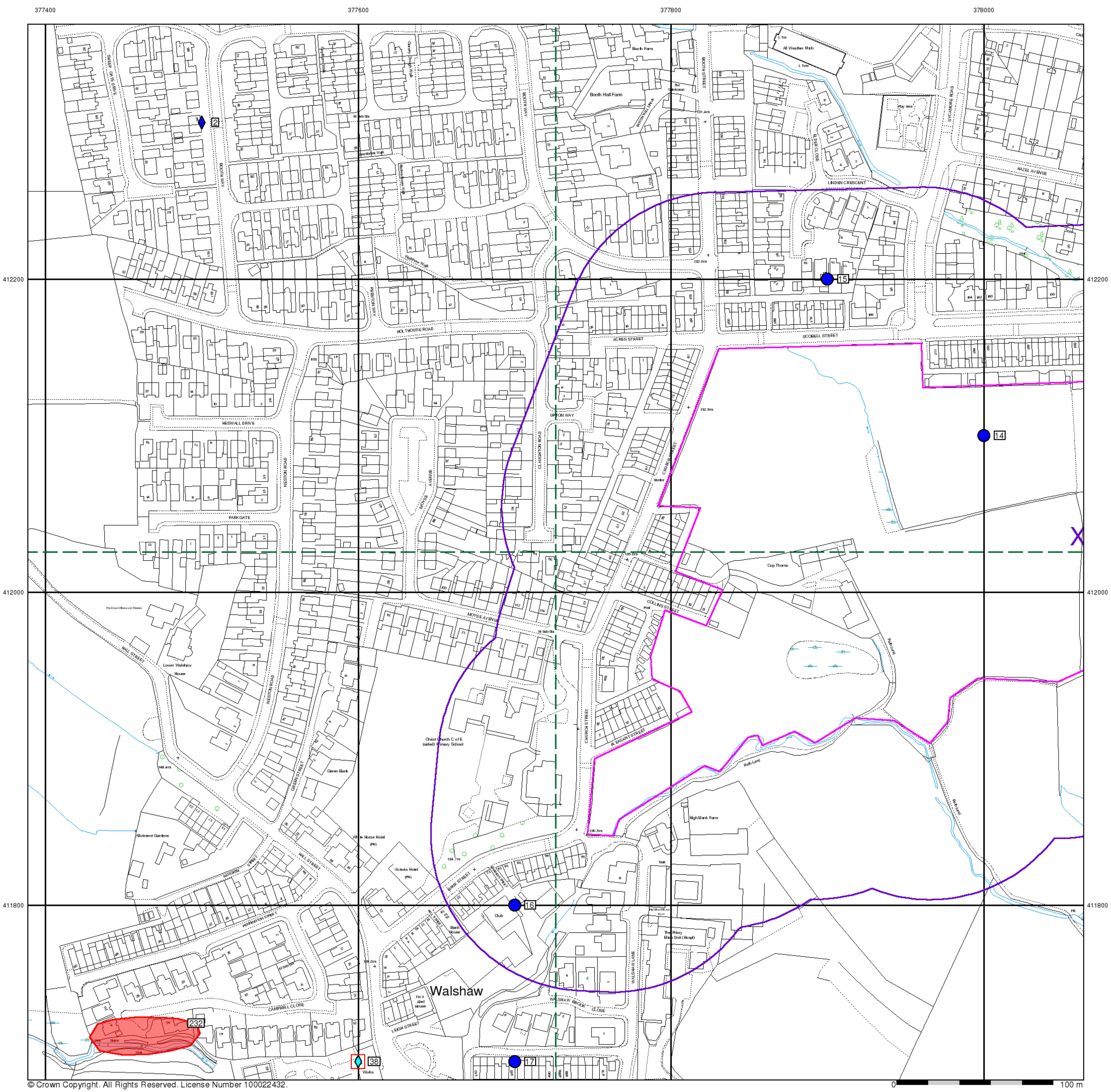

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Walshaw
SCOBELL STREET
HOLTHOUSE ROAD
ACRES STREET
UPTON WAY
HESWALL DRIVE
PARKGATE
MOYSE AVENUE
COLLINS STREET
CHURCH STREET
HALL STREET
CAMPBELL CLOSE
WALSHAW LANE
Christ Church C of E (aided) Primary School
Booth Hall Farm
Booth Farm
All Weather Pitch
Cop Thorns
Lower Walshaw House
Allotment Gardens
Green Bank
High Bank Farm
Victoria Hotel (PH)
White Horse Hotel (PH)
Club
Walshaw Brook
Works
Sluice

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0 100 m

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General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- 8 Map ID
- ☐ Several of Type at Location
- ■ Pylon
- Overhead Transmission Line

Agency and Hydrological

- ● Contaminated Land Register Entry or Notice (Location)
- ▨ Contaminated Land Register Entry or Notice
- ◆ Discharge Consent
- ▲ Enforcement or Prohibition Notice
- ▲ Integrated Pollution Control
- ■ Integrated Pollution Prevention Control
- ■ Local Authority Integrated Pollution Prevention and Control
- ▲ Local Authority Pollution Prevention and Control
- ▼ Local Authority Pollution Prevention and Control Enforcement
- ● Pollution Incident to Controlled Waters
- ▼ Prosecution Relating to Authorised Processes
- ◆ Prosecution Relating to Controlled Waters
- ▲ Registered Radioactive Substance
- River Network or Water Feature
- ✚ River Quality Sampling Point
- ⬟ Substantiated Pollution Incident Register
- ◆ Water Abstraction
- ◆ Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- ✖ Planning Hazardous Substance Consent
- ✖ Planning Hazardous Substance Enforcement

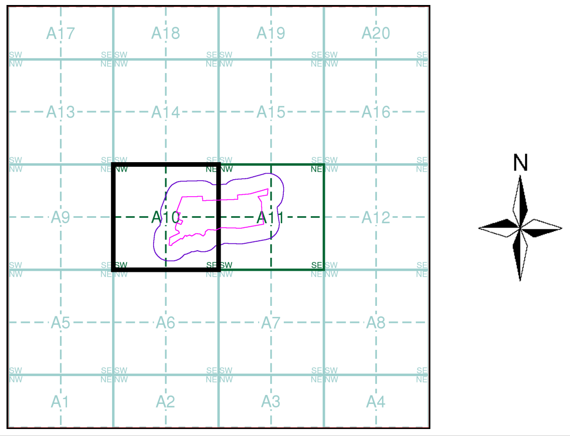
Geological

- ▼ BGS Recorded Mineral Site

Waste

- ▼ BGS Recorded Landfill Site (Location)
- ▨ BGS Recorded Landfill Site
- ● EA Historic Landfill (Buffered Point)
- ■ EA Historic Landfill (Polygon)
- ▲ Integrated Pollution Control Registered Waste Site
- ▨ Licensed Waste Management Facility (Landfill Boundary)
- ● Licensed Waste Management Facility (Location)
- ■ Local Authority Recorded Landfill Site (Location)
- ▥ Local Authority Recorded Landfill Site
- ● Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- ▨ Potentially Infilled Land (Non-water)
- ▶ Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- ▨ Potentially Infilled Land (Water)
- ▨ Registered Landfill Site
- ▶ Registered Landfill Site (Location)
- ▤ Registered Landfill Site (Point Buffered to 100m)
- ▤ Registered Landfill Site (Point Buffered to 250m)
- ⬟ Registered Waste Transfer Site (Location)
- ▥ Registered Waste Transfer Site
- ⬟ Registered Waste Treatment or Disposal Site (Location)
- ▤ Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A10



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SW
SE
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Order Details

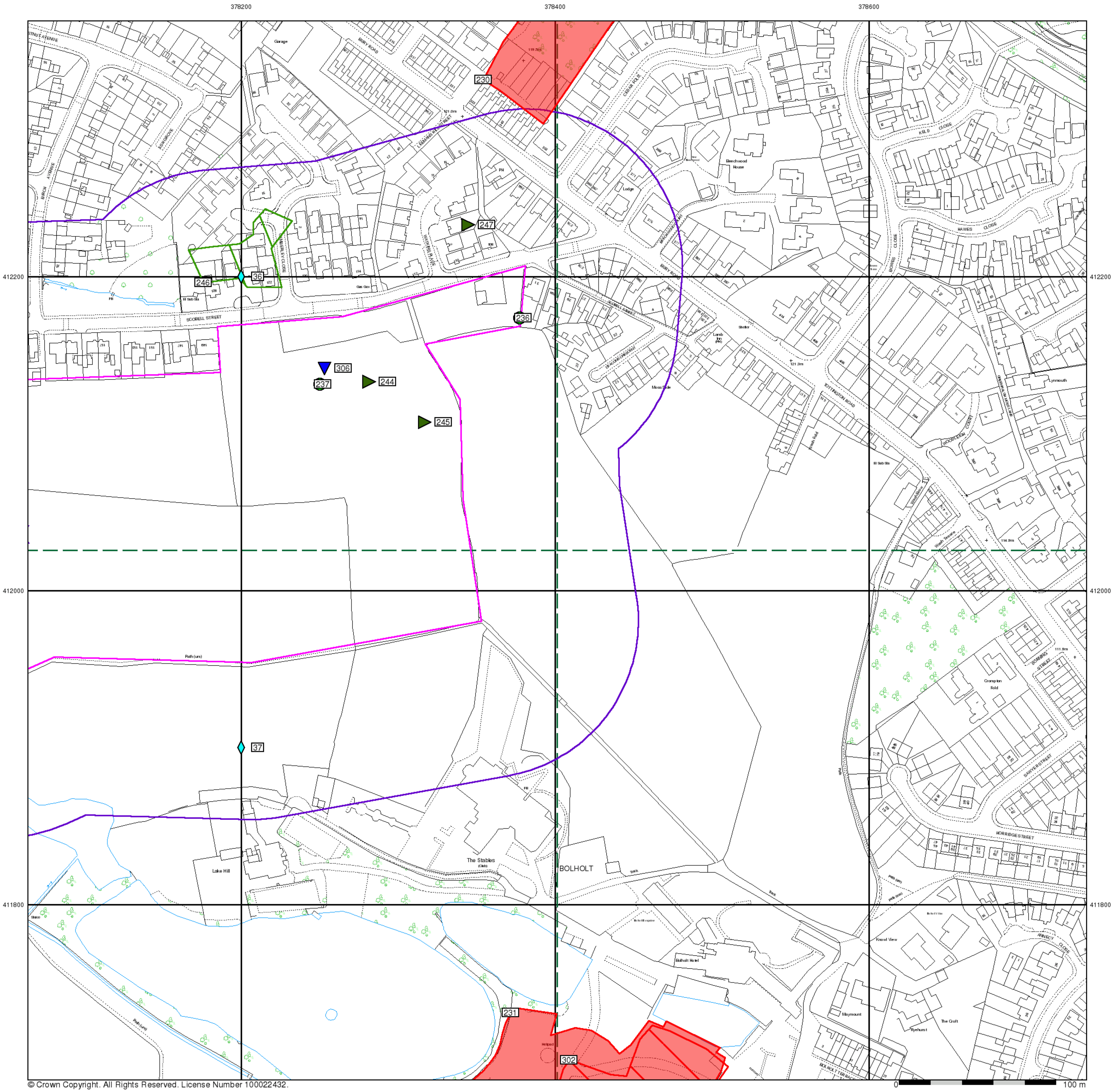
Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Plot Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

Landmark® INFORMATION GROUP

Tel:	0844 844 9952
Fax:	0844 844 9951
Web:	www.envirocheck.co.uk



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Envirocheck®

LANDMARK INFORMATION GROUP®

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location
- Pylon
- Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Geological

- BGS Recorded Mineral Site

Waste

- BGS Recorded Landfill Site (Location)
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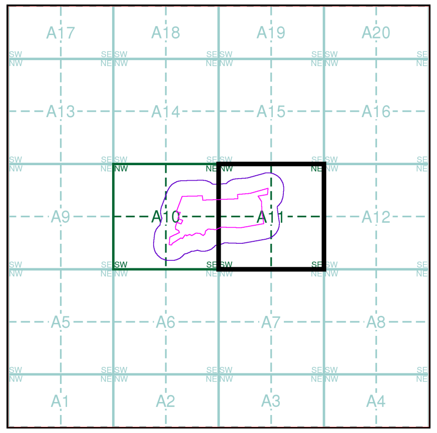
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Non-water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Potentially Infilled Land (Water)
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A11



Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Plot Buffer (m):	100

Site Details

Scobell Street, Tottington, BURY

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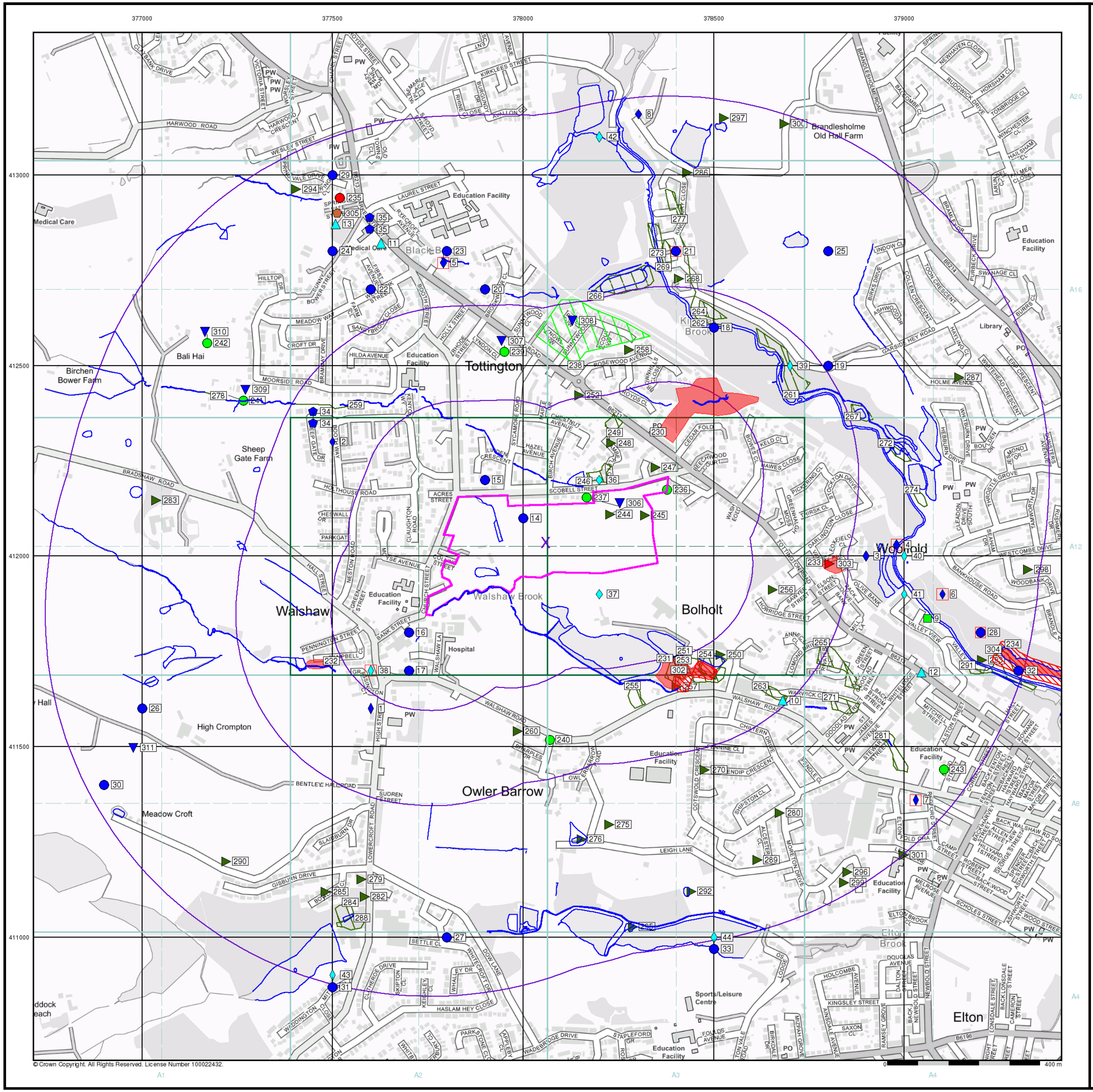
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Tottington
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Owler Barrow
Elton
Woolfold
Walshaw Brook
Birchen Bower Farm
Bali Hai
Sheep Gate Farm
High Crompton
Meadow Croft
Brandlesholme Old Hall Farm
Hospital
Education Facility
Medical Care
Library
Sports/Leisure Centre
Elton Brook
SCOBELL STREET
WALSHAW ROAD
BRADSHAW ROAD
LEIGH LANE
HARWOOD ROAD
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LANDMARK INFORMATION GROUP®

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- 8 Map ID
- ☐ Several of Type at Location

Agency and Hydrological

- ● Contaminated Land Register Entry or Notice (Location)
- ▨ Contaminated Land Register Entry or Notice
- ◆ Discharge Consent
- ▲ Enforcement or Prohibition Notice
- ▲ Integrated Pollution Control
- ■ Integrated Pollution Prevention Control
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- ⬟ Substantiated Pollution Incident Register
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Hazardous Substances

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- Explosive Site
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Geological

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- Potentially Infilled Land (Non-water)
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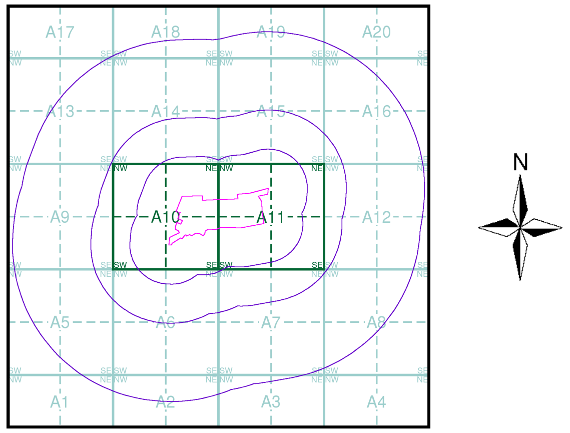
- Potentially Infilled Land (Water)
- ▨ Potentially Infilled Land (Water)
- ▨ Registered Landfill Site
- ▶ Registered Landfill Site (Location)
- ▤ Registered Landfill Site (Point Buffered to 100m)
- ▤ Registered Landfill Site (Point Buffered to 250m)
- ⬟ Registered Waste Transfer Site (Location)
- ▥ Registered Waste Transfer Site
- ⬟ Registered Waste Treatment or Disposal Site (Location)
- ▤ Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A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Order Details

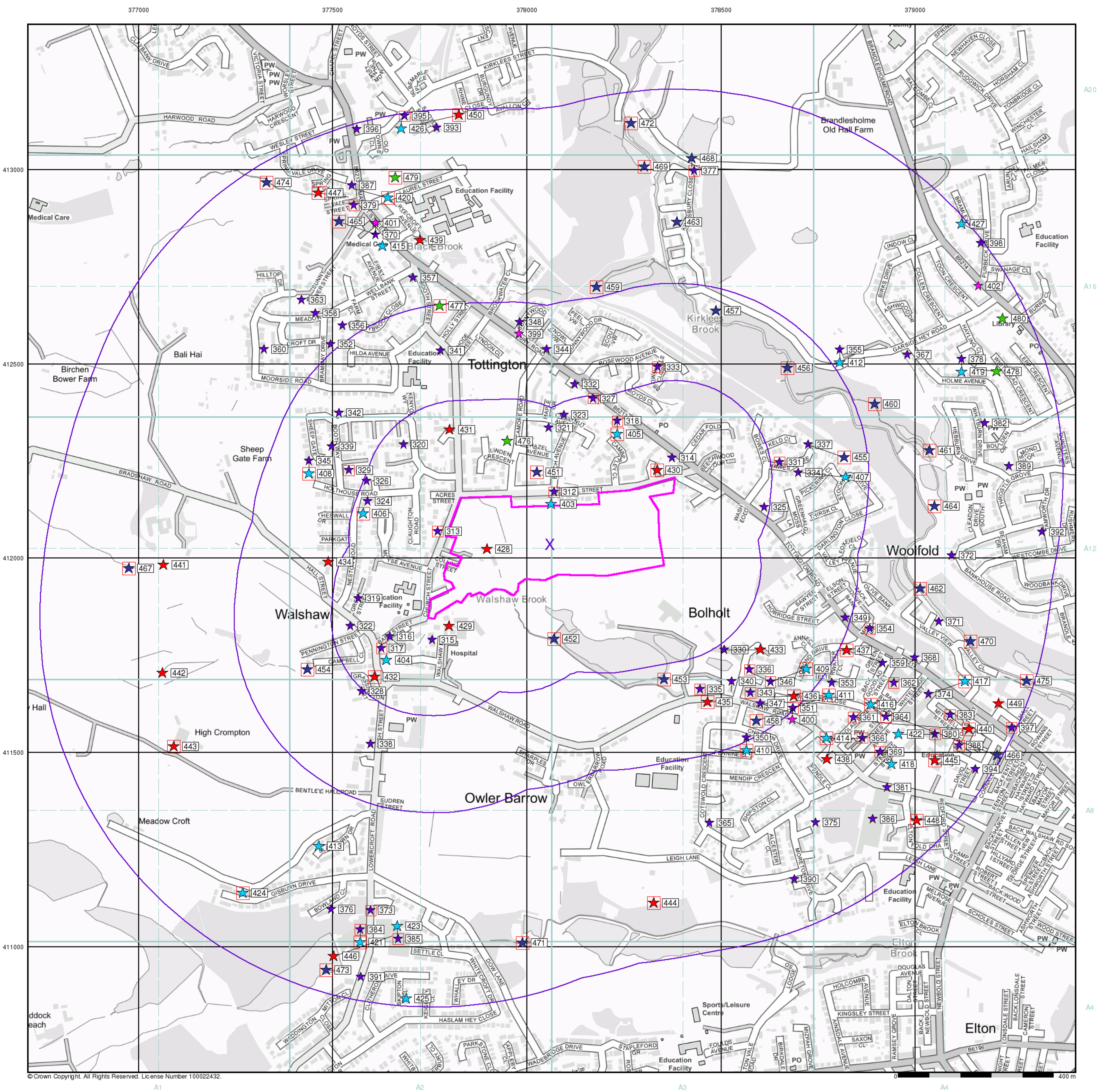
Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY

Landmark
INFORMATION GROUP

Tel:	0844 844 9952
Fax:	0844 844 9951
Web:	www.envirocheck.co.uk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Tottington
Walshaw
Bolholt
Woolfold
Owler Barrow
Elton
Bali Hai
Birchen Bower Farm
Sheep Gate Farm
High Crompton
Meadow Croft
Brandlesholme Old Hall Farm
Kirklees Brook
Walshaw Brook
Black Brook
Elton Brook
Hospital
Medical Care
Education Facility
Library
Sports/Leisure Centre
X
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Industrial Land Use Map

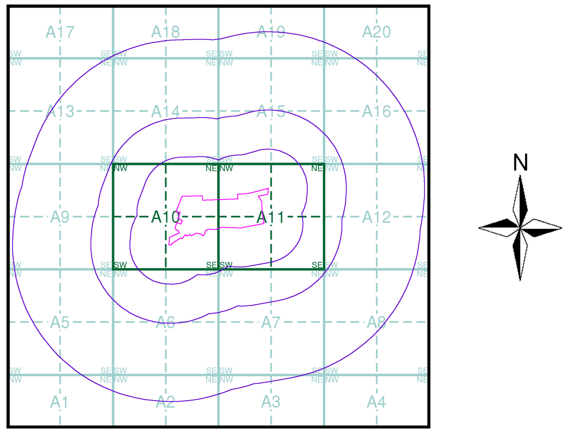
General

Specified Site
Specified Buffer(s)
X Bearing Reference Point
☐ Slice
8 Map ID

Industrial Land Use

★ Contemporary Trade Directory Entry
★ Fuel Station Entry
Gas Pipeline
★ Points of Interest - Commercial Services
★ Points of Interest - Education and Health
★ Points of Interest - Manufacturing and Production
★ Points of Interest - Public Infrastructure
★ Points of Interest - Recreational and Environmental
Underground Electrical Cables

Industrial Land Use Map - Slice A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Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

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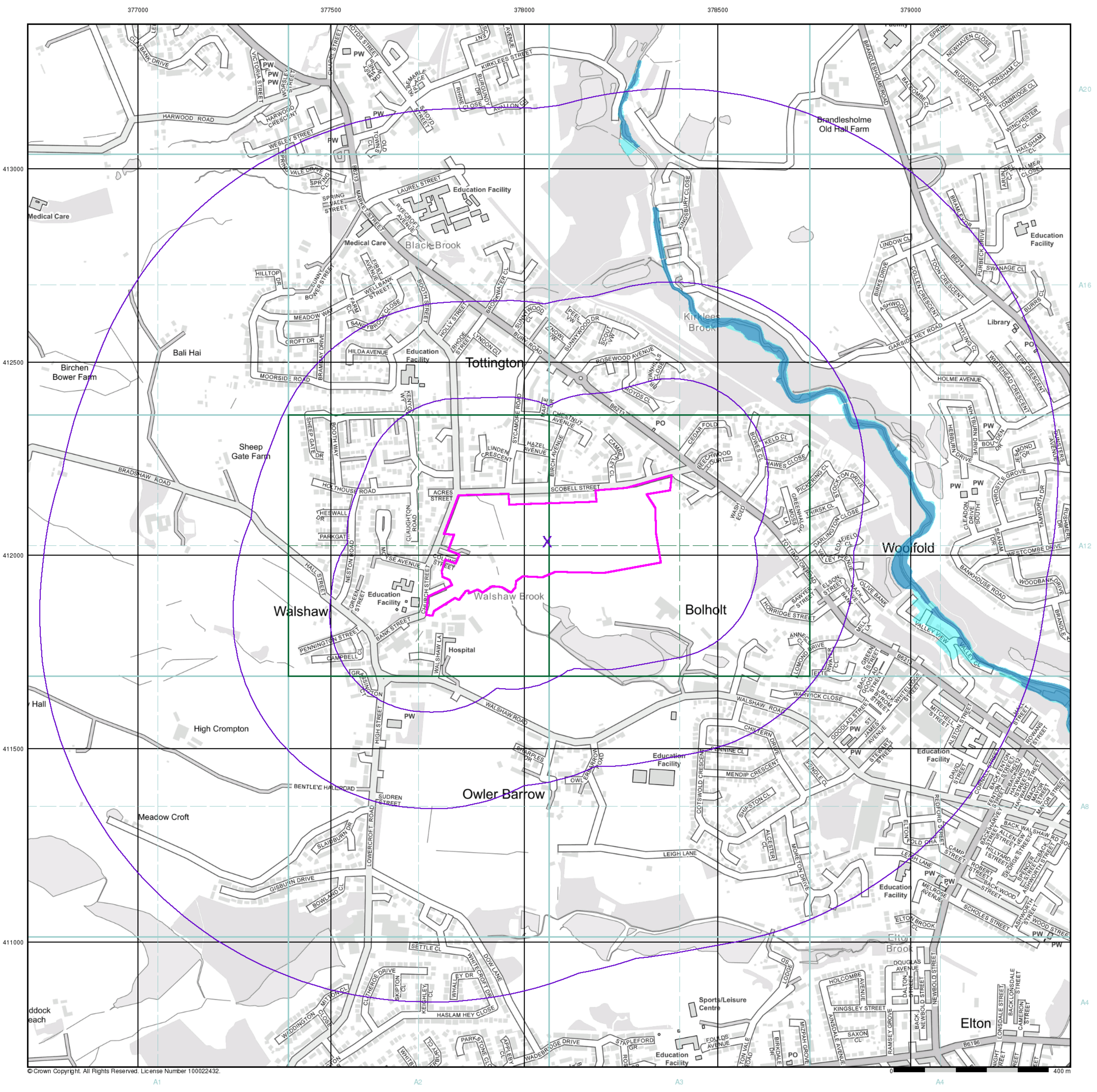
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Owler Barrow
Elton
High Crompton
Meadow Croft
Birchen Bower Farm
Bali Hai
Sheep Gate Farm
Brandlesholme Old Hall Farm
Black Brook
Kirklees Brook
Walshaw Brook
Elton Brook
Medical Care
Education Facility
Hospital
Library
Sports/Leisure Centre
PW
PO
SCOBELL STREET
BRADSHAW ROAD
WALSHAW ROAD
HARWOOD ROAD
MOORSIDE ROAD
HOLTHOUSE ROAD
LEIGH LANE
BENTLEY HALL ROAD
LOWERCROFT ROAD
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Envirocheck®

LANDMARK INFORMATION GROUP®

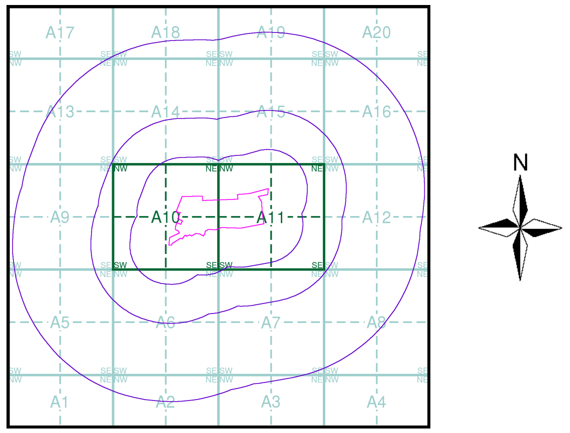
General

- ⬠ Specified Site
- ⬠ Specified Buffer(s)
- X Bearing Reference Point

Agency and Hydrological (Flood)

- 🟦 Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- 🟦 Flooding from Rivers or Sea without Defences (Zone 3)
- ▨ Area Benefiting from Flood Defence
- ▨ Flood Water Storage Areas
- -·- Flood Defence

Flood Map - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
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Site Details

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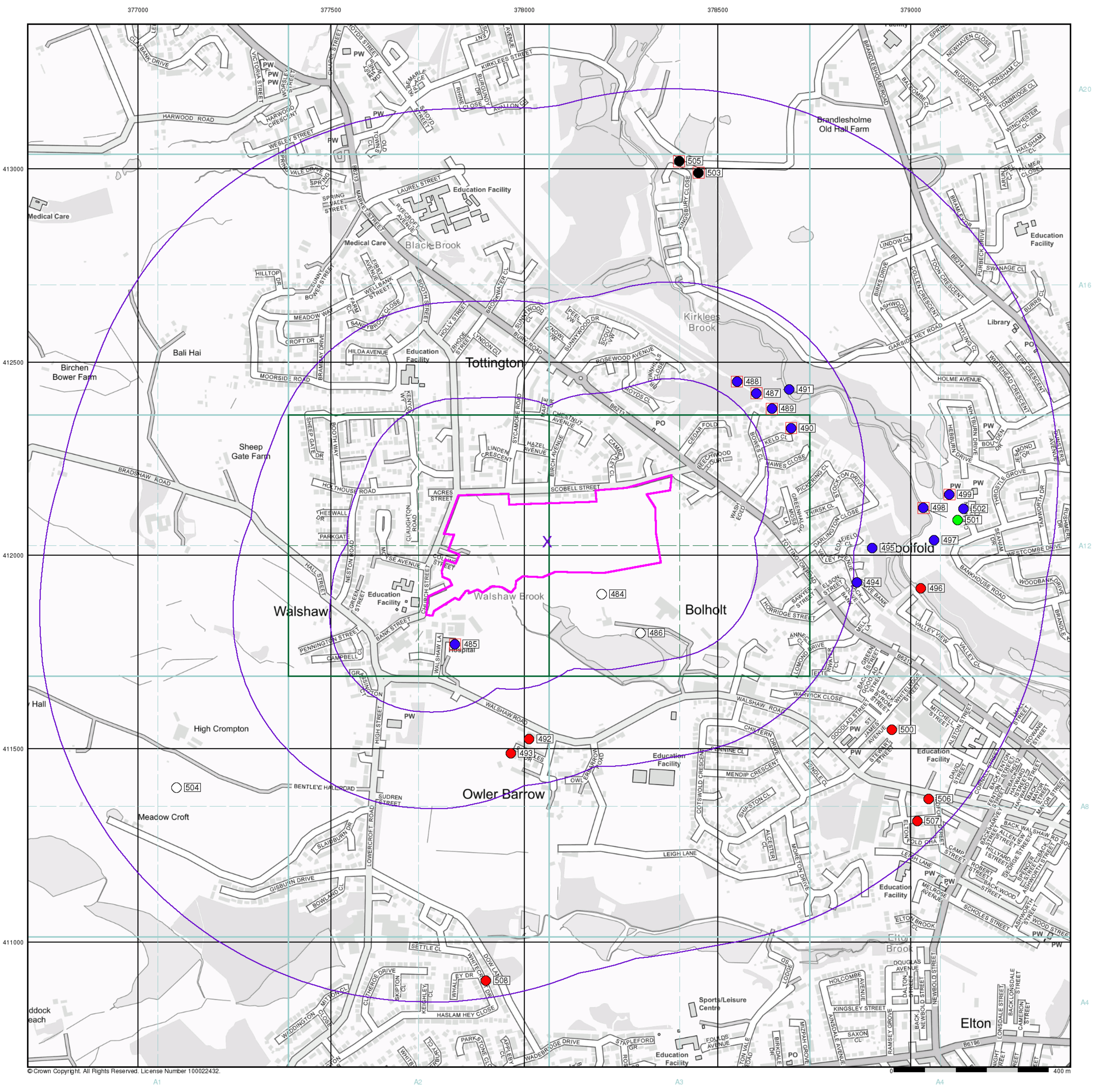

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Owler Barrow
Elton
Black Brook
Kirklees Brook
Walshaw Brook
Elton Brook
Brandlesholme Old Hall Farm
Birchen Bower Farm
Bali Hai
Sheep Gate Farm
High Crompton
Meadow Croft
Medical Care
Education Facility
Library
Hospital
Sports/Leisure Centre
PW
PO
SCOBELL STREET
WALSHAW ROAD
BRADSHAW ROAD
HARWOOD ROAD
BENTLEY HALL ROAD
LEIGH LANE
HOLME AVENUE
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Envirocheck®

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General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- 8 Map ID
- ☐ Several of Type at Location

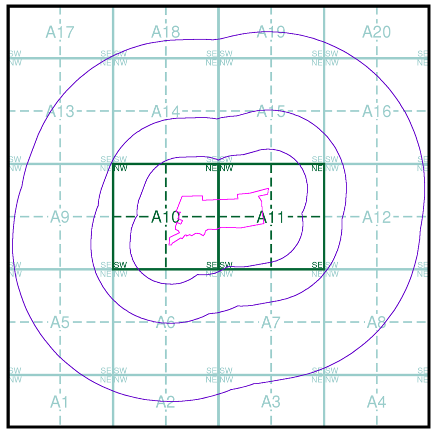
Agency and Hydrological (Boreholes)

- ● BGS Borehole Depth 0 - 10m
- ● BGS Borehole Depth 10 - 30m
- ● BGS Borehole Depth 30m +
- ● Confidential
- ○ Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



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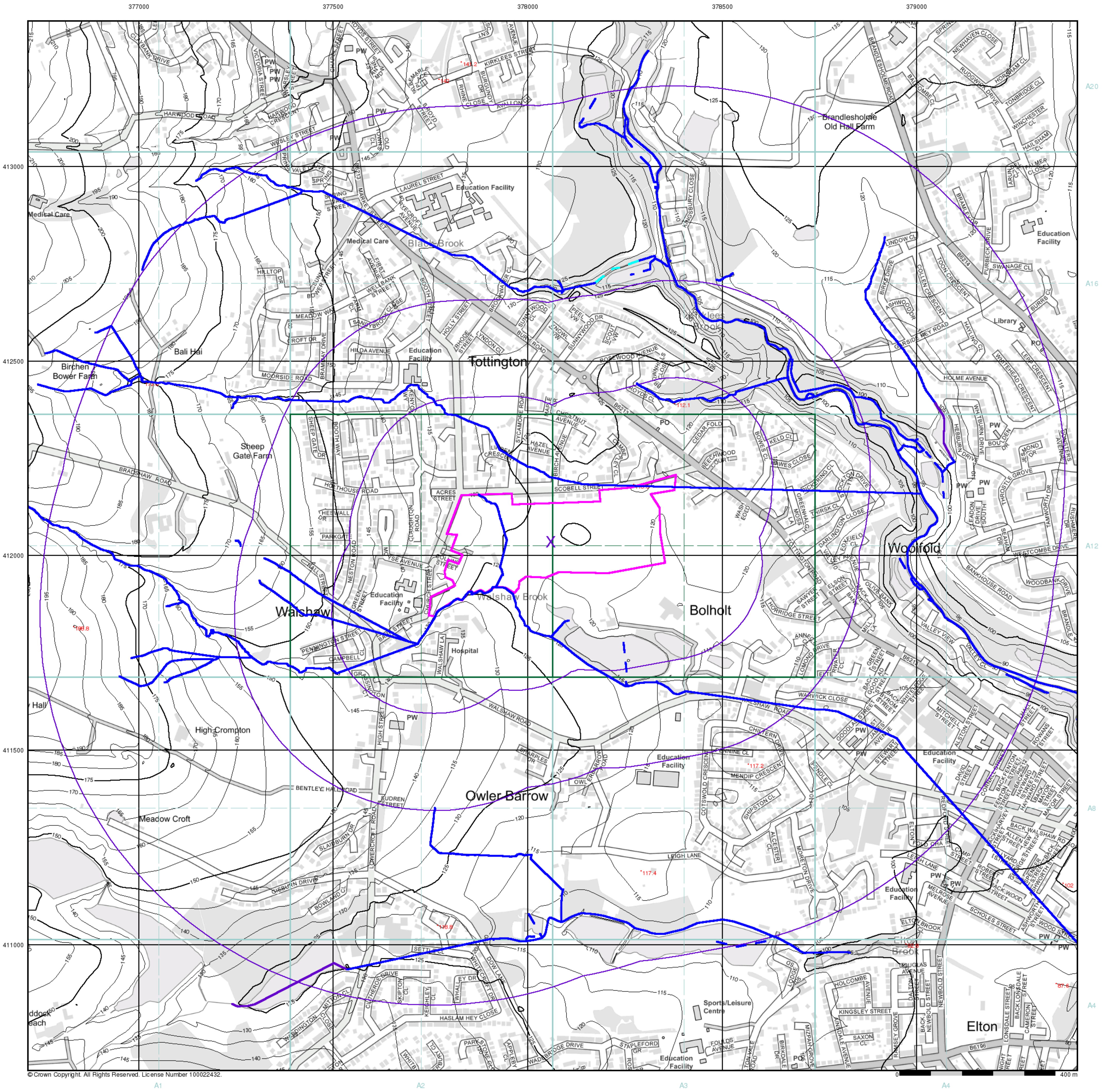
Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY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Bali Hai
Sheep Gate Farm
High Crompton
Meadow Croft
Black Brook
Walshaw Brook
Elton Brook
Hospital
Education Facility
Medical Care
Library
Sports/Leisure Centre
Scobell Street
Walshaw Road
Bradshaw Road
Bentley Hall Road
Leigh Lane
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Envirocheck®

LANDMARK INFORMATION GROUP®

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

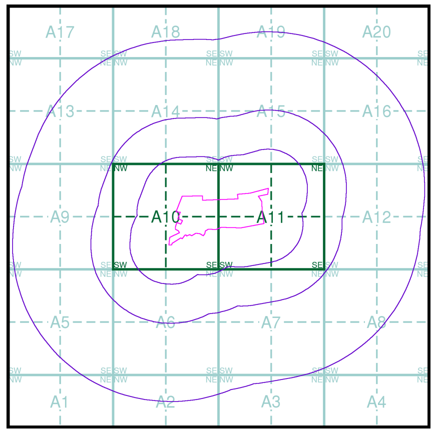
OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

Contours (height in meters)

- Standard Contour
- Master Contour
- Spot Height 167.3
- Mean Low Water
- Mean High Water

OS Water Network Map - Slice A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Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

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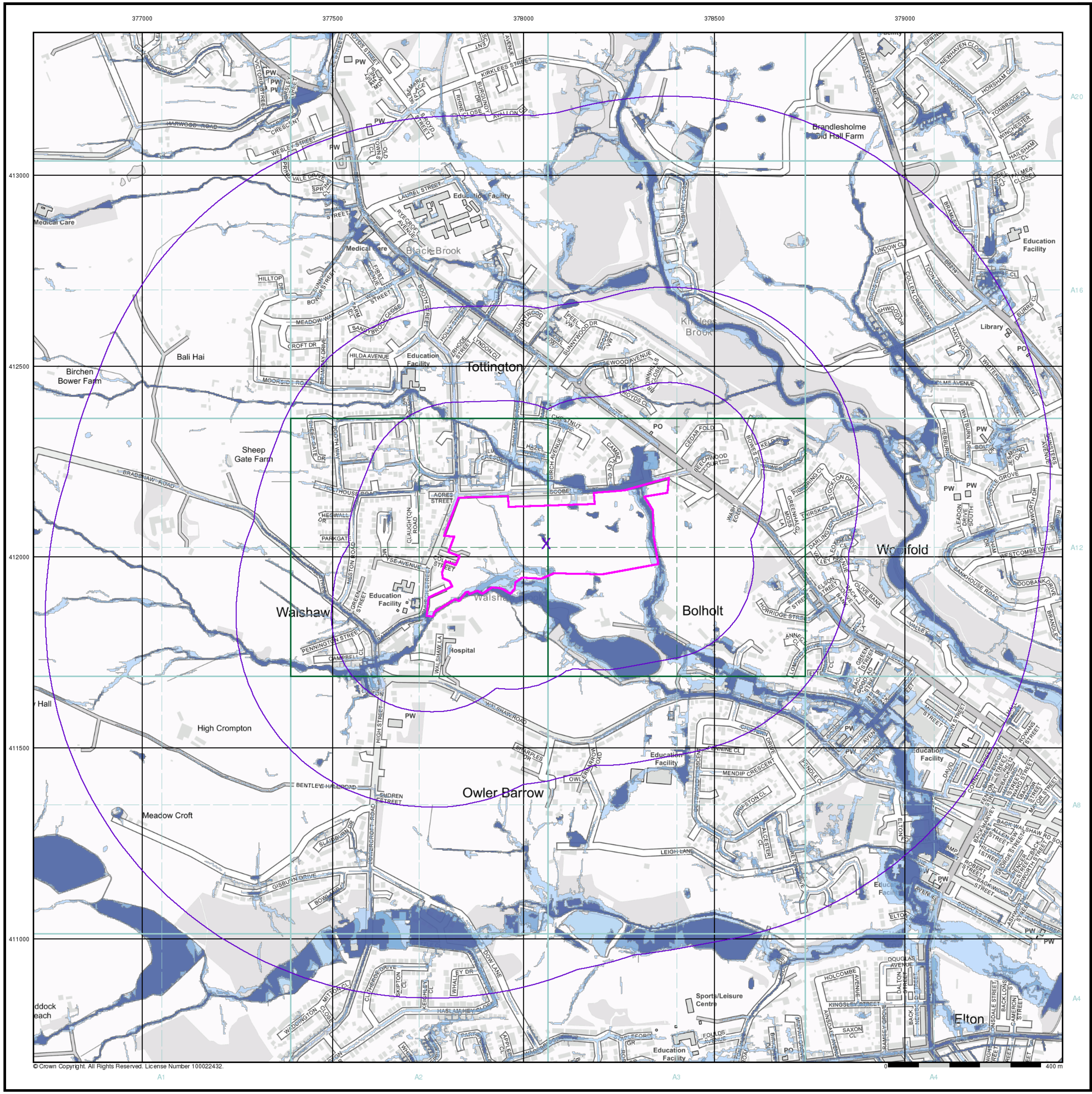
Fax:	0844 844 9951
Web:	www.envirocheck.co.uk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Walshaw
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Woolfold
Hospital
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General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Risk of Flooding from Surface Water

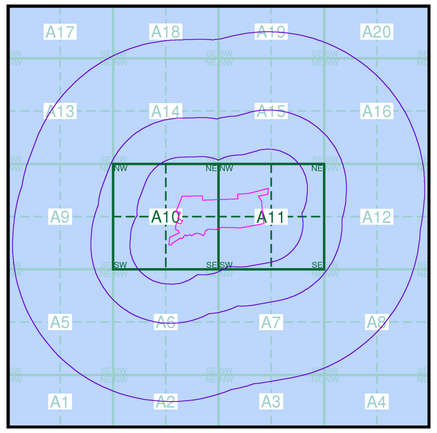
- ■ High - 30 Year Return
- ■ Medium - 100 Year Return
- ■ Low - 1000 Year Return

Suitability

See the suitability map below

- ■ National to county
- ■ County to town
- ■ Town to street
- ■ Street to parcels of land
- ■ Property

EA/NRW Suitability Map - Slice A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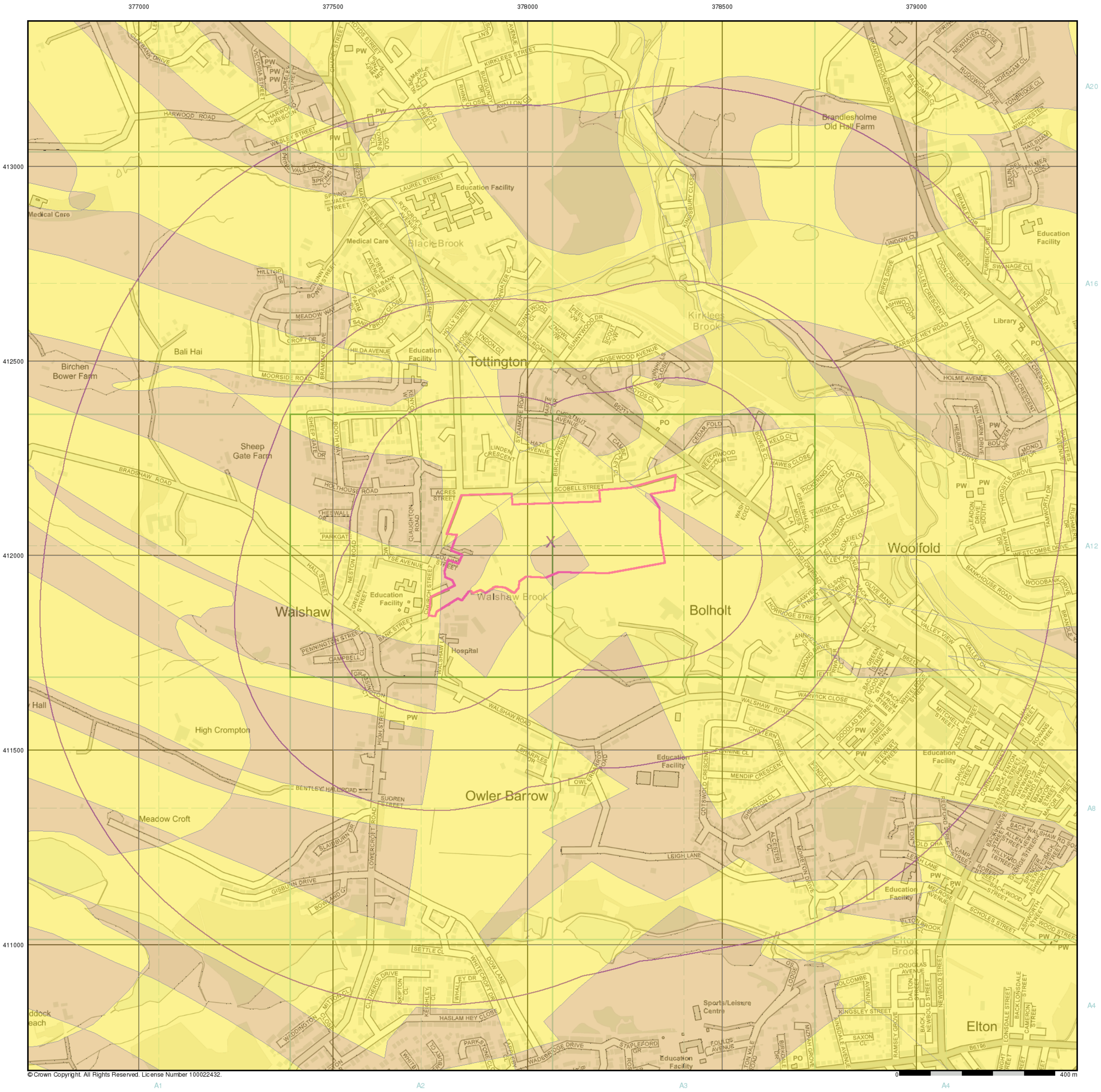
Order Details

Order Number:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY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General

Specified Site

Specified Buffer(s)

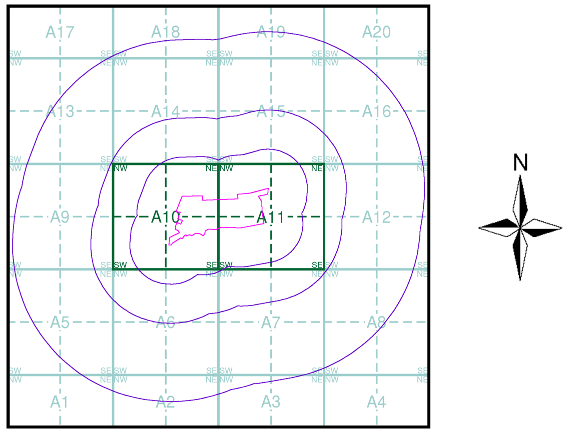
X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

🟫	< 15
🟨	15 - 25
🟧	25 - 35
🟫	35 - 45
🟩	45 - 60
🟩	60 - 120
🟦	> 120

Estimated Soil Chemistry Arsenic - Slice A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Order Details

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National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

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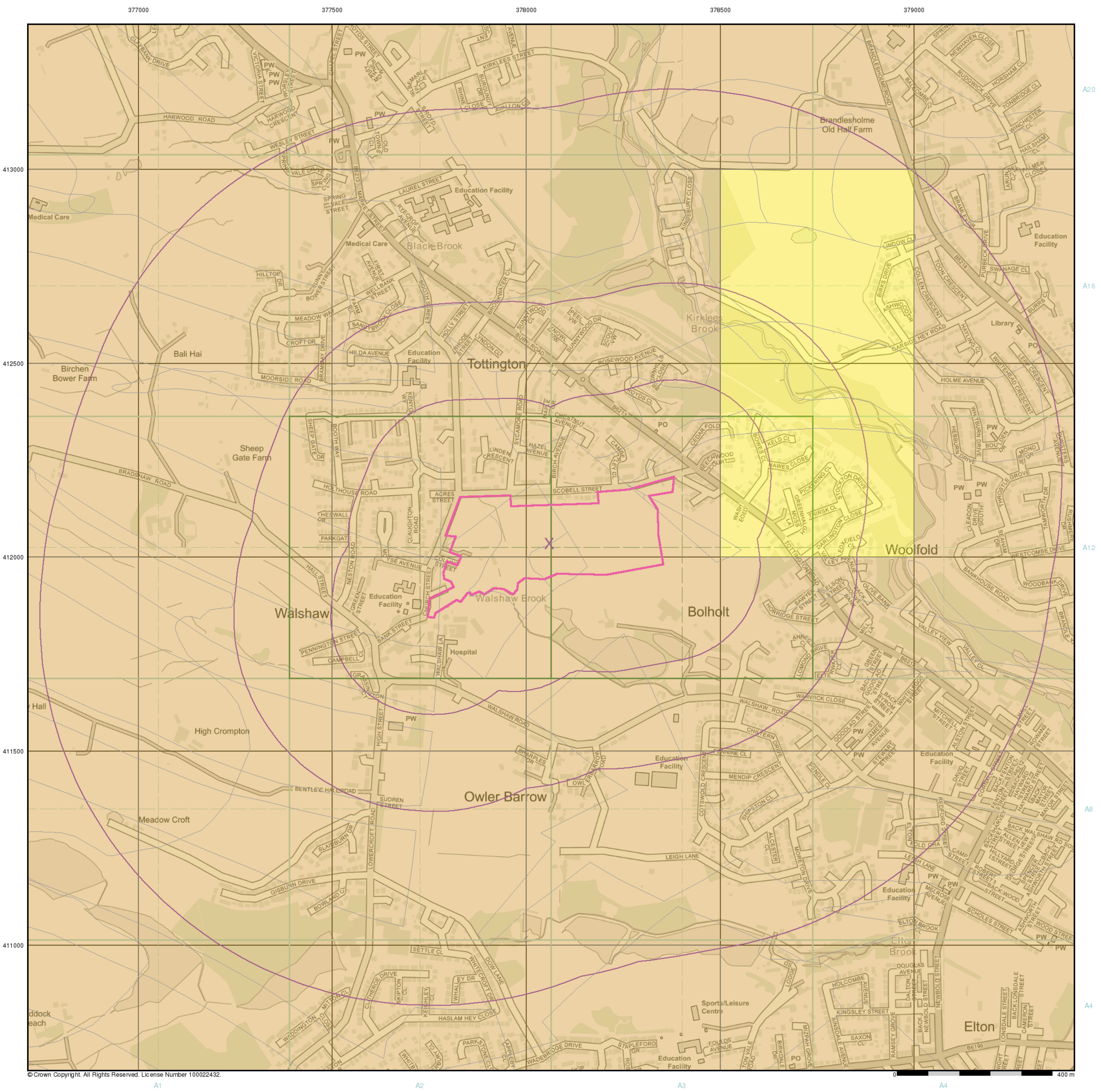
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BRADSHAW ROAD
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General

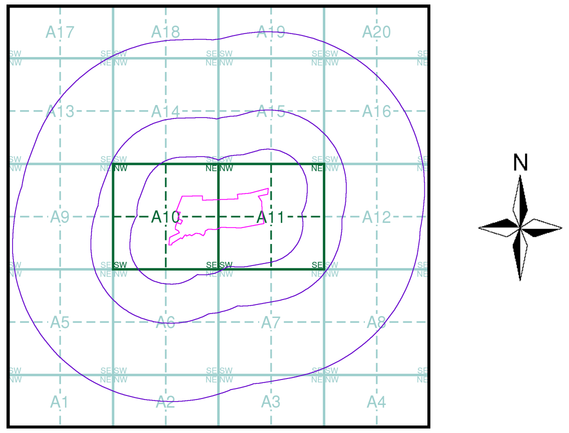
Specified Site Specified Buffer(s) X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

▨	< 1.8
▨	1.8 - 2.2
▨	2.2 - 3.0
▨	> 3.0

Estimated Soil Chemistry Cadmium - Slice A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Order Details

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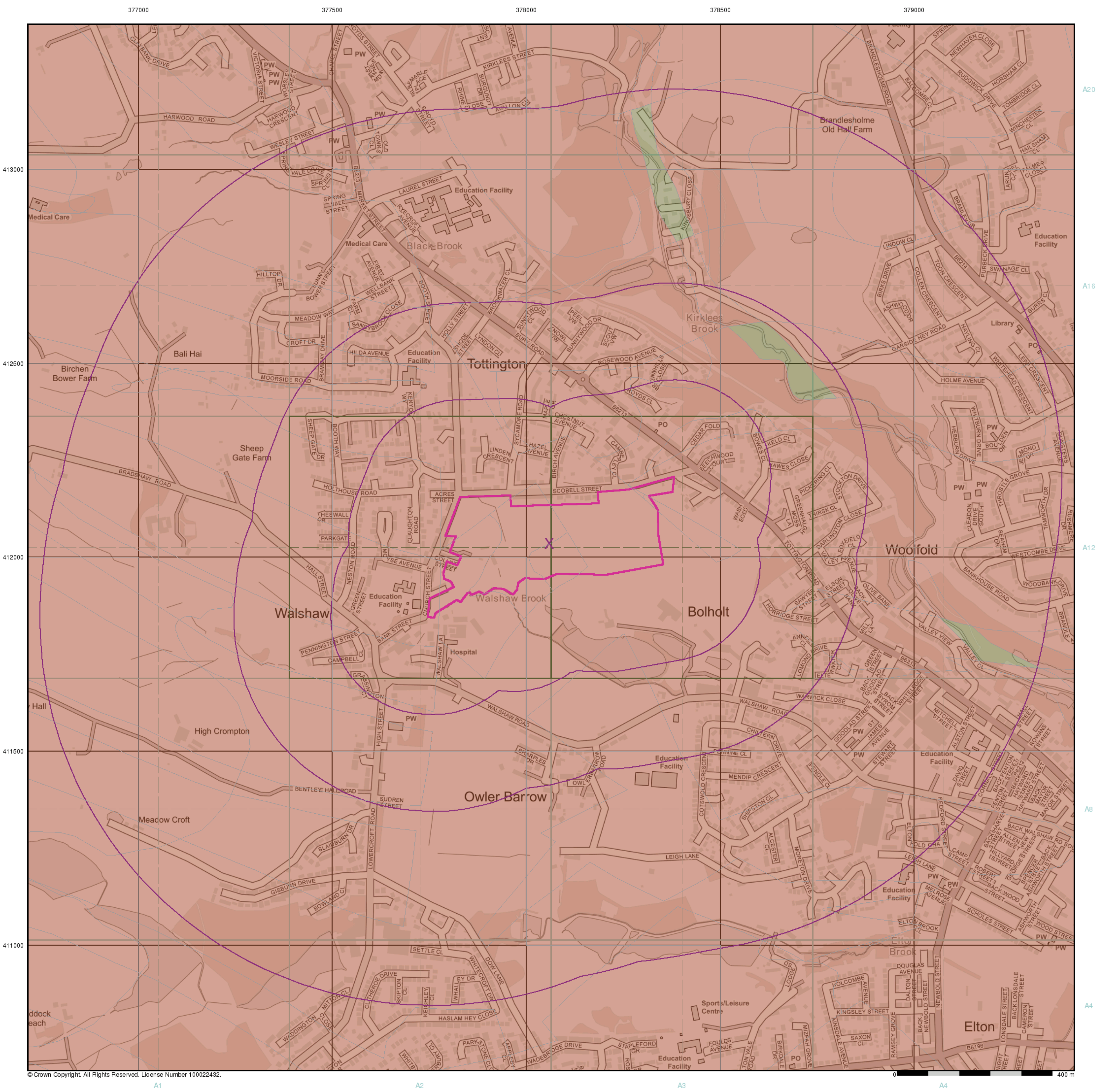
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Owler Barrow
Meadow Croft
Sports/Leisure Centre
Elton Brook
Elton
Library
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General

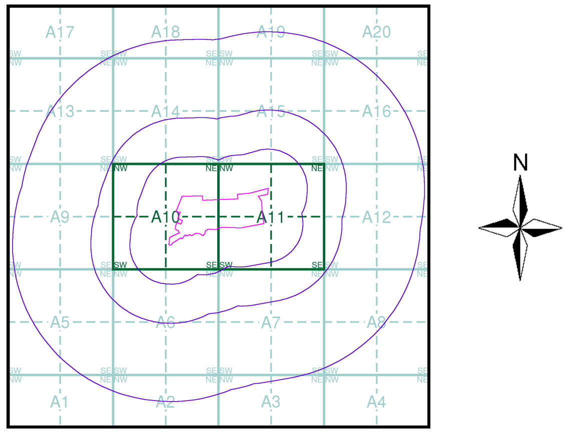
Specified Site
Specified Buffer(s)
X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

▨	< 20
▨	20 - 40
▨	40 - 60
▨	60 - 90
▨	90 - 120
▨	120 - 180
▨	> 180

Estimated Soil Chemistry Chromium - Slice A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Order Details

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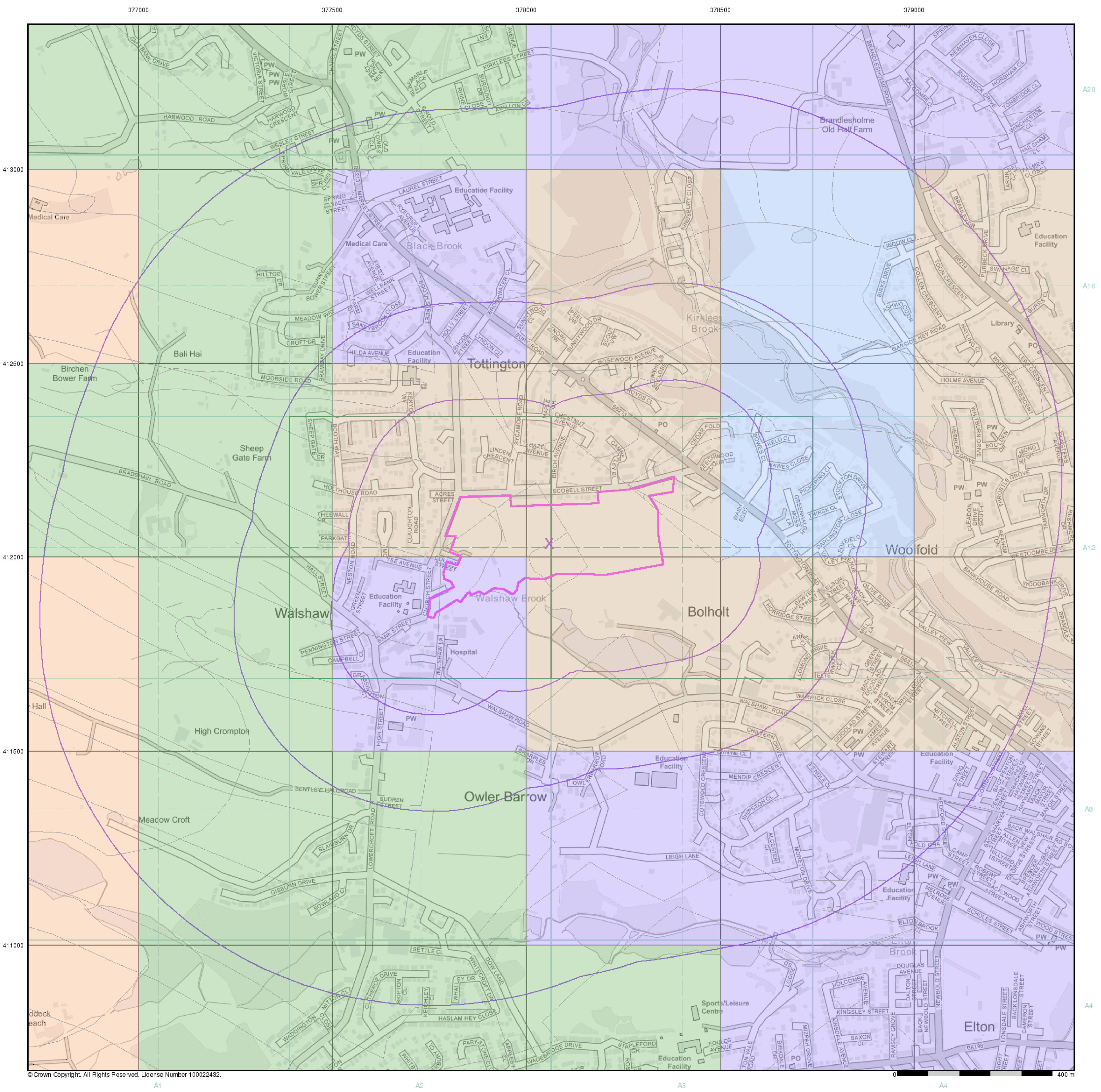
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY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General

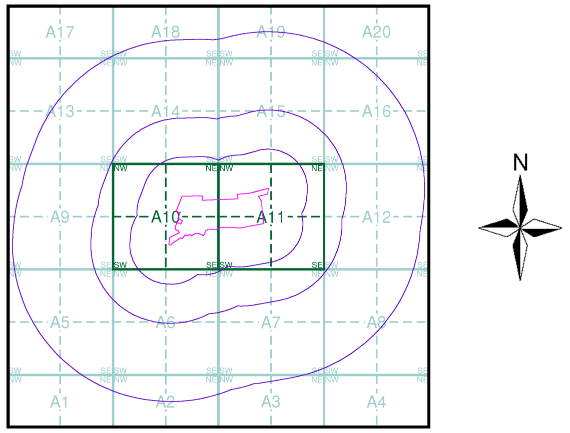
Specified Site
Specified Buffer(s)
X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

🟧 <100 mg/kg
🟩 100 - 200
🟪 200 - 300
🟫 300 - 600
🟦 600 - 1200
🟦 >1200

Estimated Soil Chemistry Lead - Slice A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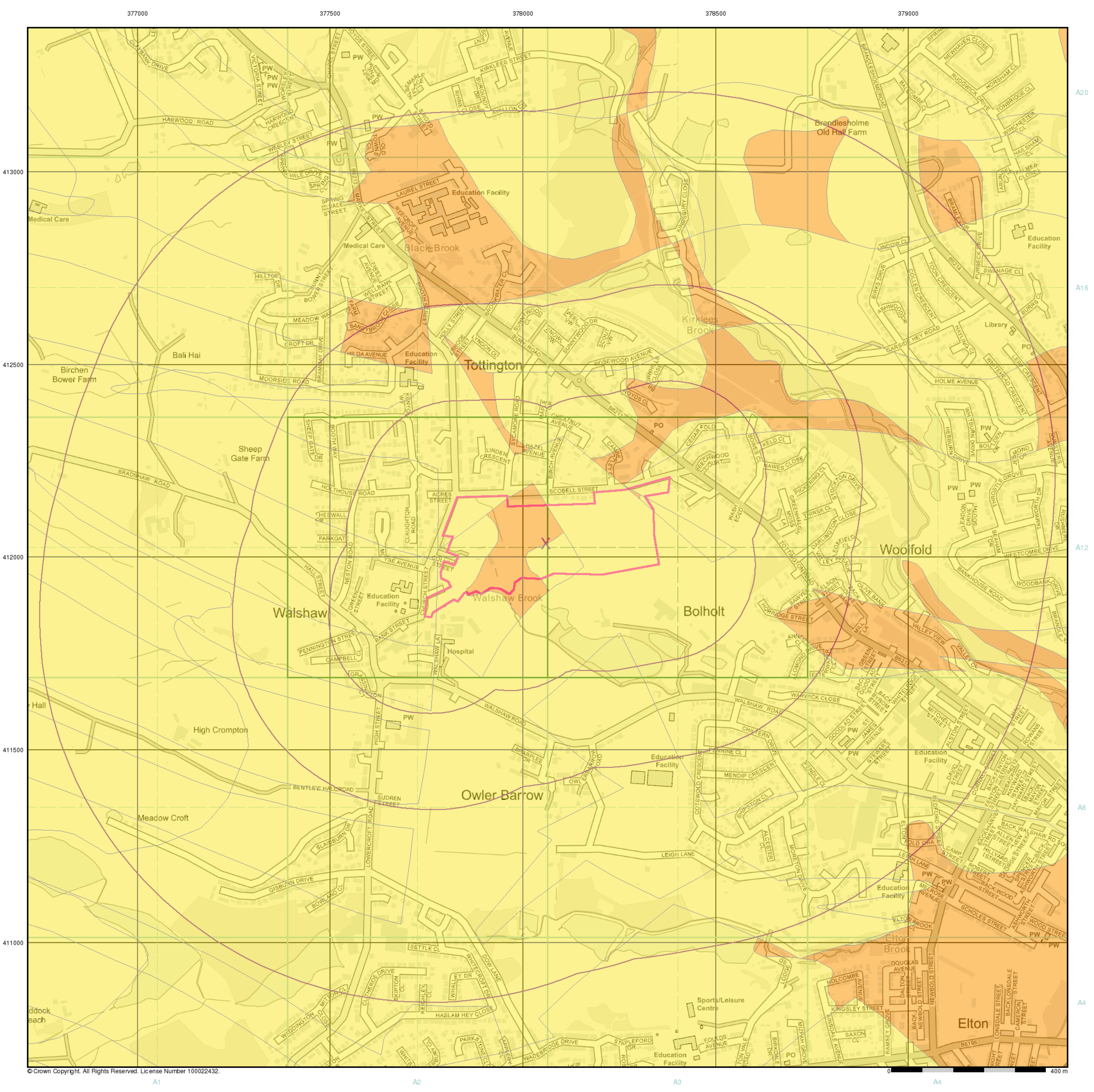
Order Details

Order Details:	340522593_1_1
Customer Ref:	10/2399
National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

Scobell Street, Tottington, BURY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Education Facility
Medical Care
Hospital
Library
Sports/Leisure Centre
SCOBELL STREET
HOLTHOUSE ROAD
BRADSHAW ROAD
WALSHAW ROAD
BENTLEY HALL ROAD
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General

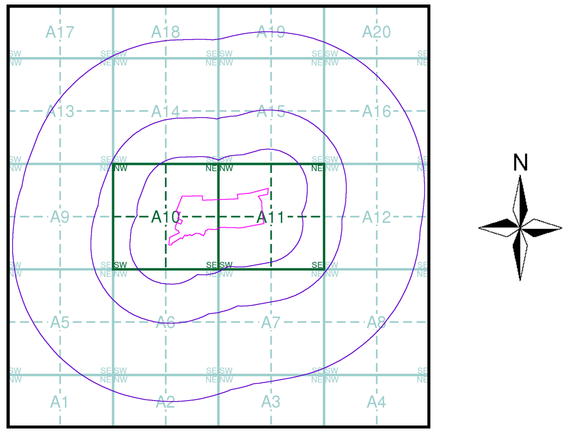
Specified Site
Specified Buffer(s)
X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

🟫	< 15
🟨	15 - 30
🟧	30 - 45
🟫	45 - 60
🟩	60 - 80
🟩	80 - 100
🟦	> 100

Estimated Soil Chemistry Nickel - Slice A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Order Details

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National Grid Reference:	378060, 412040
Slice:	A
Site Area (Ha):	11.76
Search Buffer (m):	1000

Site Details

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Envirocheck® Report:

Datasheet

Order Details:

Order Number:
340522593_1_1

Customer Reference:
10/2399

National Grid Reference:
378060, 412040

Slice:
A

Site Area (Ha):
11.76

Search Buffer (m):
1000

Site Details:

Scobell Street
Tottington
BURY

Client Details:

Mr N Riding
Clancy Consulting Ltd
Dunham Court
2 Dunham Road
Altrincham
Cheshire
WA14 4NX

Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	50
Hazardous Substances	-
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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 5			2	14
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control	pg 9				1
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 9			1	3
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature		Yes			
Pollution Incidents to Controlled Waters	pg 10	1	3	1	17
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality	pg 14			1	1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 14			1	1
Water Abstractions	pg 14		4	1	5 (*38)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 26	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 28	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 28	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 28	5	23	29	128

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 50		2	2	1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 51				1
Local Authority Landfill Coverage	pg 51	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 51	2		3	3
Potentially Infilled Land (Water)	pg 51	2	5	16	35
Registered Landfill Sites	pg 54			2	1
Registered Waste Transfer Sites	pg 55				1
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 56	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 56	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 75	1		2	3
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas	pg 76	Yes	n/a	n/a	n/a
Mining Instability	pg 76	Yes	n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 76	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 76	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 76	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 77	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 77	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 78		24	41	102
Fuel Station Entries	pg 92			2	2
Points of Interest - Commercial Services	pg 92		8	12	32
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 97	1	6	8	25
Points of Interest - Public Infrastructure	pg 100		4	25	41
Points of Interest - Recreational and Environmental	pg 106		1	2	5
Gas Pipelines					
Underground Electrical Cables					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt	pg 107	1		1	
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 107			1	
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (E)	0	1	378350 412050
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11NW (NE)	0	1	378200 412200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SE (W)	0	1	377800 412000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A10NE (SW)	0	1	378060 412036
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (E)	0	1	378100 412036
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10NE (W)	0	1	377800 412036
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (E)	20	1	378400 412100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SE (SW)	22	1	377900 411850
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11NW (NE)	43	1	378150 412250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11NE (E)	47	1	378450 412050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (E)	48	1	378400 412036
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11NW (E)	57	1	378400 412050
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10SW (SW)	65	1	377700 411800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11NW (N)	89	1	378100 412250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SE (SW)	95	1	377850 411750
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10SE (SW)	96	1	377750 411750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SE (E)	98	1	378450 412000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11NE (E)	99	1	378450 412036
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11NE (E)	120	1	378500 412200
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11SE (E)	148	1	378500 412000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A11SW (S)	153	1	378100 411800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NE (N)	157	1	378060 412300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SE (E)	168	1	378500 411900
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6NE (S)	195	1	377900 411600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SW (S)	200	1	378100 411750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NW (SW)	201	1	377700 411650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (NW)	204	1	377650 412250
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A11SW (SE)	205	1	378200 411750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SE (E)	213	1	378550 411900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SE (S)	221	1	378060 411700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (W)	228	1	377550 412036
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SE (N)	241	1	378050 412400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NW (SW)	245	1	377600 411650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SW (S)	255	1	378150 411700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SW (SE)	258	1	378250 411700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6NE (S)	268	1	378060 411650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SW (NW)	277	1	377700 412400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A10SW (SW)	287	1	377500 411700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NW (S)	288	1	378100 411650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SW (N)	295	1	378250 412500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SE (E)	298	1	378650 412000
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NW (S)	305	1	378200 411650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NW (S)	305	1	378150 411650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A7NW (SE)	308	1	378250 411650

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SW (N)	318	1	378200 412500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A15SW (N)	330	1	378100 412500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SE (NE)	332	1	378650 412400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SW (W)	347	1	377400 411900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A11SE (E)	349	1	378700 411950
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A10NW (W)	351	1	377400 412036
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SW (N)	353	1	378250 412550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SE (NW)	354	1	377750 412500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A11SE (E)	357	1	378700 411900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A15SE (NE)	363	1	378650 412450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SE (NE)	364	1	378500 412550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A15SW (N)	366	1	378200 412550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NE (S)	371	1	377950 411500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A15SE (NE)	373	1	378700 412400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10SW (SW)	376	1	377400 411700
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NW (E)	381	1	378750 412300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SE (N)	393	1	378050 412550
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SW (NE)	394	1	378400 412600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A10NW (W)	395	1	377400 412100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NW (NE)	396	1	378750 412350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SE (NE)	398	1	378650 412500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A15SW (N)	399	1	378200 412700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A9SE (W)	400	1	377350 411800
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SE (NE)	402	1	378700 412450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A9SE (W)	408	1	377350 411750
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NW (E)	430	1	378800 412300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NE (SE)	442	1	378450 411550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A15SW (NE)	443	1	378350 412650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NW (S)	444	1	378150 411500
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SW (N)	445	1	378300 412650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A15SE (NE)	450	1	378600 412600
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A15SW (N)	451	1	378250 412650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A9NE (W)	455	1	377300 412036
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NW (S)	455	1	378200 411500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NW (S)	456	1	378200 411450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NW (S)	457	1	378250 411500
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A15SE (NE)	459	1	378500 412650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NE (S)	466	1	378000 411400
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6NW (SW)	469	1	377600 411400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A9SE (SW)	470	1	377300 411700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NW (E)	472	1	378850 412250
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A15SE (NE)	475	1	378550 412650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NW (E)	478	1	378850 412050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (NW)	478	1	377500 412500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A12NW (E)	479	1	378850 412300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A7NW (S)	482	1	378300 411450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A16SW (NE)	485	1	378800 412450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NW (S)	490	1	378150 411450
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SE (N)	491	1	378000 412650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SE (N)	492	1	377950 412650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6SE (SW)	495	1	377750 411350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A14SE (NW)	496	1	377800 412650
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (S)	496	1	377900 411350
1	**Discharge Consents** Operator: Campbell Technical Waxes Ltd Property Type: MAKING OF CHEMICALS + CHEMICAL PRODUCTS Location: Dussek Campbell Ltd Newhive Works, Walshaw, Bury, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016990436 Permit Version: 1 Effective Date: 1st September 1983 Issued Date: Not Supplied Revocation Date: 13th February 1991 Discharge Type: Trade Discharges - Cooling Water Discharge Environment: Freshwater Stream/River Receiving Water: Walshaw Brook **Status:** **Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A6NW (SW)	286	2	377600 411600
2	**Discharge Consents** Operator: Valerie Hayes Property Type: DOMESTIC PROPERTY (SINGLE) (INCL FARM HOUSE) Location: Bali-Hai Bradshaw Road, Tottington, Bury, Lancashire, Bl8 3pl Authority: Environment Agency, North West Region Catchment Area: Irwell Reference: 01m/61 Permit Version: 1 Effective Date: 21st April 1964 Issued Date: 21st April 1964 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unknown **Status:** **Transferred from Water Resources Act 1963** Positional Accuracy: Located by supplier to within 100m	A10NW (NW)	361	2	377500 412300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Discharge Consents** Operator: United Utilities Water Limited Property Type: PUMPING STATION ON SEWERAGE NETWORK (WATER COMPANY) Location: Darlington Close E/Cs, Darlington Close, Bury, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016950450 Permit Version: 1 Effective Date: 28th October 1983 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Kirklees Brook **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A12SW (E)	548	2	378900 412000
4	**Discharge Consents** Operator: United Utilities Water Limited Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Darlington Close, Bury Mdc, Bury, Lancashire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01BRY0058 Permit Version: 2 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: 1st January 1995 Discharge Type: Sewage Discharges - Unspecified - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Kirklees Brook **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A12NW (E)	619	2	378980 412030
4	**Discharge Consents** Operator: United Utilities Water Limited Property Type: WWTW/SEWAGE TREATMENT WORKS (WATER COMPANY) Location: Darlington Close, Bury Mdc, Bury, Lancashire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01bry0058 Permit Version: 1 Effective Date: 1st April 1991 Issued Date: Not Supplied Revocation Date: 31st December 1994 Discharge Type: Sewage Discharges - Unspecified - Water Company Discharge Environment: Not Supplied Receiving Water: Not Supplied **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A12NW (E)	619	2	378980 412030
4	**Discharge Consents** Operator: United Utilities Water Limited Property Type: PUMPING STATION ON SEWERAGE NETWORK (WATER COMPANY) Location: Darlington Cls Sps, Bury, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016981499 Permit Version: 1 Effective Date: 1st January 1900 Issued Date: Not Supplied Revocation Date: 1st January 1900 Discharge Type: Storm /emergency overflow Discharge Environment: Freshwater Stream/River Receiving Water: Kirklees Brook **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A12SW (E)	620	2	378980 412025

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consents				
5	Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: New Street Combined Sewer Overflow 13 New Street, Tottington, Bury, Greater Manchester, Bl8 3ha Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01bry0008 Permit Version: 3 Effective Date: 5th February 2016 Issued Date: 5th February 2016 Revocation Date: 26th November 2019 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Black Brook **Status:** **Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A14NE (N)	626	2	377785 412780
	Discharge Consents				
5	Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: New Street Combined Sewer Overflow 13 New Street, Tottington, Bury, Greater Manchester, Bl8 3ha Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01bry0008 Permit Version: 4 Effective Date: 27th November 2019 Issued Date: 27th November 2019 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Black Brook **Status:** **Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A14NE (N)	629	2	377784 412783
	Discharge Consents				
5	Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: New Street Combined Sewer Overflow 13 New Street, Tottington, Bury, Greater Manchester, Bl8 3ha Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01bry0008 Permit Version: 2 Effective Date: 3rd September 2010 Issued Date: 3rd September 2010 Revocation Date: 4th February 2016 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Black Brook **Status:** **Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A14NE (N)	636	2	377790 412790
	Discharge Consents				
5	Operator: United Utilities Water Limited Property Type: STORM TANK/CSO ON SEWERAGE NETWORK (WATER COMPANY) Location: New Street Combined Sewer Overflow 13 New Street, Tottington, Bury, Greater Manchester, Bl8 3ha Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01BRY0008 Permit Version: 1 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: 2nd September 2010 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Black Brook **Status:** **Varied under EPR 2010** Positional Accuracy: Located by supplier to within 100m	A14NE (N)	636	2	377790 412790

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Discharge Consents** Operator: Activecraft Ltd Property Type: WWTW (NOT WATER CO) (NOT STP AT A PRIVATE PREMISES) Location: Wollfold Paper Mill, Wollfold Paper Mills, Bury, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016991386 Permit Version: 2 Effective Date: 5th May 1994 Issued Date: 5th May 1994 Revocation Date: 30th September 2005 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Kirklees Brook **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A12SE (E)	752	2	379100 411900
6	**Discharge Consents** Operator: Activecraft Ltd Property Type: WWTW (NOT WATER CO) (NOT STP AT A PRIVATE PREMISES) Location: Wollfold Paper Mill, Wollfold Paper Mills, Bury, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016991386 Permit Version: 1 Effective Date: 19th June 1989 Issued Date: Not Supplied Revocation Date: 4th May 1994 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Kirklees Brook **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 100m	A12SE (E)	752	2	379100 411900
7	**Discharge Consents** Operator: Elton Cop Dyeing Co Property Type: MAKING OF TEXTILES Location: Elton Cop Dyeing Co Ltd, Walshaw Rd, Bury, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016990539 Permit Version: 1 Effective Date: 13th November 1984 Issued Date: Not Supplied Revocation Date: 9th May 2001 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Walshaw Brook **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8NW (SE)	897	2	379000 411360
7	**Discharge Consents** Operator: Elton Cop Dyeing Co Property Type: MAKING OF TEXTILES Location: Elton Cop Dyeing Co Ltd, Walshaw Rd, Bury, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016990538 Permit Version: 1 Effective Date: 13th November 1984 Issued Date: Not Supplied Revocation Date: 9th May 2001 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Walshaw Brook **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8NW (SE)	912	2	379030 411370

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	**Discharge Consents** Operator: Elton Cop Dyeing Co Property Type: MAKING OF TEXTILES Location: Elton Cop Dyeing Co Ltd, Walshaw Rd, Bury, Greater Manchester Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016990537 Permit Version: 1 Effective Date: 13th November 1984 Issued Date: Not Supplied Revocation Date: 9th May 2001 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Walshaw Brook **Status:** **Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A8NW (SE)	919	2	379030 411360
8	**Discharge Consents** Operator: Holcombe Hunt Property Type: KENNEL/DRY CLEANING/HAIRDRESSER/OTHER PERSONAL SERVICES Location: The Kennels, Kirklees, Bury, Lancashire, Bl8 4lp Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01m/388 Permit Version: 1 Effective Date: 27th June 1962 Issued Date: 27th June 1962 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Tottingham Brook **Status:** **Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A19SW (N)	957	2	378302 413160
9	**Integrated Pollution Prevention And Control** Name: Activecraft Limited Location: Activecraft Ltd, Olives Paper Mill,Activecraft Ltd, Tottington Road,Woolford,, Bury, BL8 1SL Authority: Environment Agency, North West Region Permit Reference: Bj6674ik Original Permit Ref: Bj6674ik Effective Date: 18th May 2011 **Status:** **Revoked** Application Type: New App. Sub Type: Not Supplied Positional Accuracy: Automatically positioned to the address Activity Code: 6.1 A(1) (B) Activity Description: Paper, Pulp And Board; Producing Paper/Board Greater Than 20T/D Primary Activity: Y	A12SW (E)	723	2	379061 411837
10	**Local Authority Pollution Prevention and Controls** Name: Walshaw Road Filling StationHooshang Ghayouri Location: 316 Walshaw Road, BURY, Lancashire, . Authority: Bury Metropolitan Borough Council, Environmental Health Department Permit Reference: Ps20 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status:** **Authorised** Positional Accuracy: Manually positioned to the address or location	A7NE (SE)	490	3	378681 411617
11	**Local Authority Pollution Prevention and Controls** Name: Tottington Motor Co Location: Market Street, Tottington, BURY, Lancashire, BL8 3LS Authority: Bury Metropolitan Borough Council, Environmental Health Department Permit Reference: Ps23 Dated: Not Supplied Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status:** **Authorisation revoked** Positional Accuracy: Manually positioned to the address or location	A14NW (NW)	692	3	377627 412817

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**Local Authority Pollution Prevention and Controls** Name: Sunnywood Garage Location: Tottington Road, BURY, Lancashire, . Authority: Bury Metropolitan Borough Council, Environmental Health Department Permit Reference: LAPPC05-04 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Authorisation revoked** Positional Accuracy: Manually positioned to the address or location	A12SW (E)	751	3	379045 411691
13	**Local Authority Pollution Prevention and Controls** Name: Village Garage Location: 13 Spring Vale Street, Tottington, Bl8 3lr Authority: Bury Metropolitan Borough Council, Environmental Health Department Permit Reference: LAPPC06-04 Dated: 1st October 2006 Process Type: Local Authority Pollution Prevention and Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A14NW (NW)	805	3	377536 412904
	Nearest Surface Water Feature	A10SE (SW)	0	-	377932 411956
14	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: River Ogden Incident Date: 24th July 1995 Incident Reference: 95621845 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A10NE (NW)	0	2	378000 412100
15	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Lancashire Authority: Environment Agency, North West Region Pollutant: Unknown Note: No Pollution Found Incident Date: 16th January 1996 Incident Reference: 96620105 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A10NE (NW)	43	2	377900 412200
16	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Colour Note: Walshaw Brook; Drain Tracing Dye Incident Date: 12th August 1994 Incident Reference: 94621846 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Miscellaneous/Other Pollution Type Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A10SW (SW)	65	2	377700 411800
17	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: Walshaw Brook; No Pollution Found Incident Date: 4th July 1995 Incident Reference: 95621637 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A10SW (SW)	153	2	377700 411700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
18	**Pollution Incidents to Controlled Waters** Property Type: Domestic/Residential Location: Brook Near To Old Mill Rest, RAMSBOTTOM Authority: Environment Agency, North West Region Pollutant: Oils - Gas Oil Note: Seepage Of Heating Oil Incident Date: 20th May 1998 Incident Reference: SO980901 Catchment Area: Irwell Receiving Water: Freshwater Stream/River Cause of Incident: Leaking Tank Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15SE (NE)	411	2	378500 412600
19	**Pollution Incidents to Controlled Waters** Property Type: Pollution Found Source Not Determined Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Colour Note: Swinnel Brook Incident Date: 14th October 1995 Incident Reference: 95622540 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16SW (NE)	512	2	378800 412500
20	**Pollution Incidents to Controlled Waters** Property Type: WSC Sewage, Sewerage & Supply: Northumbrian Water Ltd Location: Black Brook, Near New Street, TOTTINGTON, Greater Manchester Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Not Supplied Incident Date: 10th July 1999 Incident Reference: 29971 Catchment Area: Irwell Receiving Water: River Stretch (Freshwater) Cause of Incident: Drainage Failures : Combined Sewer Failure Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 10m	A14SE (N)	543	2	377900 412700
21	**Pollution Incidents to Controlled Waters** Property Type: Manufacturing: Other Manufacturing Location: Kirkless Industrial Estate, Brandlesholme, Bury Area, Greater Manchester Authority: Environment Agency, North West Region Pollutant: General Biodegradable : Industrial & Commercial Note: Not Supplied Incident Date: 15th June 1999 Incident Reference: 28534 Catchment Area: Irwell Receiving Water: River Stretch (Freshwater) Cause of Incident: Unauthorised Activity : Flytipping: MOU Response B Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A15NW (NE)	589	2	378400 412795
21	**Pollution Incidents to Controlled Waters** Property Type: No Premises Identified Location: Kirkless Industrial Estate Authority: Environment Agency, North West Region Pollutant: Inert : Concrete Note: Not Supplied Incident Date: 16th April 1999 Incident Reference: 1399 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Approximate location provided by supplier	A15NW (NE)	594	2	378400 412800
22	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Tottington Motor Company Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Colour Note: Black Bk; Colour Incident Date: 12th March 1997 Incident Reference: 97620424 Catchment Area: Irwell Receiving Water: Freshwater Stream/River Cause of Incident: Other Cause Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14SW (NW)	591	2	377600 412700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Black Brook; Oil Incident Date: 6th June 1996 Incident Reference: 96621221 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NE (N)	645	2	377800 412800
24	**Pollution Incidents to Controlled Waters** Property Type: Boats/Ships Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: No Pollution Seen Incident Date: 21st March 1994 Incident Reference: 94620537 Catchment Area: Irwell Receiving Water: Groundwater Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (NW)	724	2	377500 412800
25	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Tributary Kirklees Bk Incident Date: 25th October 1994 Incident Reference: 94622345 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Blocked Sewer Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A16NW (NE)	727	2	378800 412800
26	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Storm Sewage Note: Tributary River Irwell Incident Date: 24th July 1995 Incident Reference: 95611846 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Sewer Maintenance Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A5NW (W)	786	2	377000 411600
27	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: Whiteheads Lodge; No Pollution Found Incident Date: 9th March 1996 Incident Reference: 96620454 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NE (S)	846	2	377800 411000
28	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Natural Note: Kirk Lees Lodges; Algae Incident Date: 26th July 1996 Incident Reference: 96621657 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Algal Bloom Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (E)	867	2	379200 411800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: Kirklees Brook; None Pollution Found Incident Date: 24th January 1995 Incident Reference: 95620114 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (E)	868	2	379200 411795
29	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Other Note: Tributary Kirklees Bk Incident Date: 3rd April 1995 Incident Reference: 95620686 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Inadequate Construction Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (NW)	907	2	377500 413000
30	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: Lowercroft Lodges; No Pollution Found Incident Date: 10th June 1995 Incident Reference: 95621375 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A5NW (SW)	957	2	376900 411400
31	**Pollution Incidents to Controlled Waters** Property Type: Private Sewage (Non-PLC): Sewerage Systems Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Parkers Lodges Incident Date: 30th August 1995 Incident Reference: 95622215 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Blocked Sewer Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	982	2	377500 410895
32	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Greater Manchester Authority: Environment Agency, North West Region Pollutant: Unknown Note: No Pollution Found Incident Date: 11th January 1996 Incident Reference: 96620056 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (E)	988	2	379300 411700
33	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Natural Note: Parkers Lodge; Blue Green Algae Incident Date: 22nd August 1995 Incident Reference: 95622154 Catchment Area: Irwell Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A3NE (SE)	997	2	378500 410995

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: Kirklees Bk GQA Grade: River Quality B Reach: Qsl At Brookhouse Bridge To Olives Paper Estimated Distance (km): 3.8 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A15SE (NE)	343	2	378494 412558
	River Quality Name: Elton Bk GQA Grade: River Quality D Reach: Qsl At Dow Lane To Irwell Estimated Distance (km): 1.9 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A3NW (S)	879	2	378090 411007
34	**Substantiated Pollution Incident Register** Authority: Environment Agency - North West Region, South Area Incident Date: 28th August 2001 Incident Reference: 27167 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Oils And Fuel: Gas And Fuel Oils	A14SW (NW)	442	2	377449 412379
35	**Substantiated Pollution Incident Register** Authority: Environment Agency - North West Region, South Area Incident Date: 29th July 2001 Incident Reference: 20086 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Crude Sewage	A14NW (NW)	769	2	377597 412888
36	**Water Abstractions** Operator: Swish Products Limited Licence Number: 2569001004 Permit Version: Not Supplied Location: Reservoir Fed By Un-Named Tributary, Kirklees Brook, TOTTINGTON Authority: Environment Agency, North West Region Abstraction: Boiler Feed Abstraction Type: Not Supplied Source: River Daily Rate (m3): 5 Yearly Rate (m3): 1136 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11NW (NE)	31	2	378200 412200
37	**Water Abstractions** Operator: P R Heys Licence Number: 2569001057 Permit Version: 100 Location: Well At Bolholt Farm, Walshaw, Bury Authority: Environment Agency, North West Region Abstraction: General Agriculture; General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 2 Yearly Rate (m3): 832 Details: Bolholt Farm, Walshaw, Nr Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 10th February 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11SW (SE)	55	2	378200 411900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
38	**Water Abstractions** Operator: Dussek Campbell Ltd Licence Number: 2542 Permit Version: Not Supplied Location: Walshaw, BURY Authority: Environment Agency, North West Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Reservoir/Pond Daily Rate (m3): 580000 Yearly Rate (m3): 180000000 Details: Reservoir Fed By Walshaw Brook; Status: Revoked; Lapsed Or Cancelled Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A10SW (SW)	207	2	377600 411700
38	**Water Abstractions** Operator: Dussek Campbell Ltd Licence Number: 2569001206 Permit Version: Not Supplied Location: Reservoir Fed By Walshaw Brook, Walshaw, BURY Authority: Environment Agency, North West Region Abstraction: Cooling Abstraction Type: Not Supplied Source: River Daily Rate (m3): 2637 Yearly Rate (m3): 818280 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A10SW (SW)	210	2	377600 411695
39	**Water Abstractions** Operator: Activecraft Ltd Papermakers Licence Number: 2569001170 Permit Version: 100 Location: Kirklees Brk At Woolfold, Bury Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Premises,Woolfold Paper Mills,Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th June 1995 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A15SE (NE)	434	2	378700 412500
40	**Water Abstractions** Operator: Activecraft Ltd Papermakers Licence Number: 2569001017 Permit Version: 100 Location: Borehole At Premises, Olives Papermills, Bury Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 1591 Yearly Rate (m3): 154564 Details: Premises, Olives Paper Mills, Woolfold Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th June 1995 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12SW (E)	645	2	379000 412000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions				
41	Operator: Activecraft Ltd Papermakers Licence Number: 2569001170 Permit Version: 100 Location: Reservoir Fed By Kirkless Brook And Surface Drainage Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 3182 Yearly Rate (m3): 850102 Details: Premises,Woolfold Paper Mills,Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th June 1995 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12SW (E)	653	2	379000 411900
	Water Abstractions				
42	Operator: Whitefield Systems (Holdings) Ltd Licence Number: 2569001152 Permit Version: Not Supplied Location: Kirklees Brook, TOTTINGTONBURY, Lancashire Authority: Environment Agency, North West Region Abstraction: Manufacturing Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 3637 Yearly Rate (m3): 909200 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A19SW (N)	912	2	378200 413100
	Water Abstractions				
43	Operator: The Elton Cop Dyeing Co Ltd Licence Number: 2569001160 Permit Version: 100 Location: Reservoirs Fed By Elton Brk At Bury Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 3400 Yearly Rate (m3): 852000 Details: Premises At Walshaw Road, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th February 1975 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A2NW (SW)	977	2	377500 410900
	Water Abstractions				
44	Operator: The Elton Cop Dyeing Co Ltd Licence Number: 2569001160 Permit Version: 100 Location: Reservoirs Fed By Elton Brk At Bury $88 Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Premises At Walshaw Road, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th February 1975 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A3NE (SE)	992	2	378500 411000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Curtain Styling Ltd Licence Number: 2569001155 Permit Version: 100 Location: Reservoir Fed By Surface Drainage Atbury, (Known As Parkers Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Boiler Feed Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 20 Yearly Rate (m3): 8300 Details: Elton Vale Bleachworks At Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 3rd January 1975 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A3NE (SE)	1012	2	378600 411000
	Water Abstractions Operator: Curtain Styling Ltd Licence Number: 2569001155 Permit Version: 100 Location: Reservoir Fed By Surface Drainage Atbury, (Known As Parkers Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Elton Vale Bleachworks At Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 3rd January 1975 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A3NE (SE)	1012	2	378600 411000
	Water Abstractions Operator: The Elton Cop Dyeing Co Ltd Licence Number: 2569001160 Permit Version: 100 Location: Reservoirs Fed By Elton Brk At Bury [10 Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Premises At Walshaw Road, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th February 1975 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A4NW (SE)	1078	2	378800 411000
	Water Abstractions Operator: The Elton Cop Dyeing Co Ltd Licence Number: 2569001160 Permit Version: 100 Location: Reservoirs Fed By Elton Brk At Bury *27 Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Premises At Walshaw Road, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 25th February 1975 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A3NE (S)	1090	2	378500 410900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Activecraft Limited; Papermakers Licence Number: 2569001170 Permit Version: Not Supplied Location: Kirklees Brk And Reservoir Fed By Kirkle, Woolford Paper Mills Authority: Environment Agency, North West Region Abstraction: Manufacturing Abstraction Type: Not Supplied Source: River Daily Rate (m3): 0 Yearly Rate (m3): 0 Details: Licence Status : Current Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(E)	1246	2	379500 411495
	Water Abstractions Operator: Turnbull Prints Limited Licence Number: 2569001253/R02 Permit Version: 3 Location: Borehole At Edward Turnbull, Tottington, Bury Authority: Environment Agency, North West Region Abstraction: Textiles And Leather: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 16th December 2020 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	1345	2	377820 413500
	Water Abstractions Operator: Turnbull Prints Limited Licence Number: 25/69/001/253/R02 Permit Version: 1 Location: Borehole At Edward Turnbull, Tottington, Bury Authority: Environment Agency, North West Region Abstraction: Textiles And Leather: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	1345	2	377820 413500
	Water Abstractions Operator: Turnbull Prints Limited Licence Number: 2569001253r02 Permit Version: 1 Location: Borehole At Edward Turnbull, Tottington, Bury Authority: Environment Agency, North West Region Abstraction: Textiles And Leather: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	1345	2	377820 413500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Edward Turnbull Ltd Licence Number: 2569001253r1 Permit Version: 1 Location: Borehole At Edward Turnbull, Tottington, Bury Authority: Environment Agency, North West Region Abstraction: Textiles And Leather: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 27th February 2009 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	1345	2	377820 413500
	Water Abstractions Operator: Edward Turnbull Ltd Licence Number: 2569001253 Permit Version: 101 Location: Borehole At Stormer Hill, Tottington Authority: Environment Agency, North West Region Abstraction: Textiles And Leather: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Stormer Hill, Tottington Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 4th December 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	1345	2	377820 413500
	Water Abstractions Operator: Edward Turnbull & Co Ltd Licence Number: 2569001253 Permit Version: 100 Location: Borehole At Stormer Hill, Tottington Authority: Environment Agency, North West Region Abstraction: Textiles And Leather: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 364 Yearly Rate (m3): 100000 Details: Land At Stormer Hill, Tottington Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 5th October 1998 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NE (N)	1345	2	377820 413500
	Water Abstractions Operator: Joseph Scholes & Sons Ltd. Licence Number: 2569001010 Permit Version: Not Supplied Location: Tottington Near Bury, BURY Authority: Environment Agency, North West Region Abstraction: Boiler Feed & Manufacturing Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 136 Yearly Rate (m3): 4091 Details: Additional Purpose - Boiler Feed Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NE (N)	1345	2	377800 413500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Greenwood & Coope Limited Licence Number: 2569001009 Permit Version: 103 Location: Reservoir Fed By Unnamed Tributar Y Kirklees Brook Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Boiler Feed Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Tottington, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 2nd September 2016 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NW (N)	1351	2	377700 413500
	Water Abstractions Operator: Greenwood & Coope Limited Licence Number: 2569001009 Permit Version: 103 Location: Reservoir Fed By Unnamed Tributar Y Kirklees Brook Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Tottington, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 2nd September 2016 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NW (N)	1351	2	377700 413500
	Water Abstractions Operator: Mr Thomas Leo Murphy Licence Number: 2569001009 Permit Version: 102 Location: Reservoir Fed By Unnamed Tributar Y Kirklees Brook Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Tottington, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 7th December 2012 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NW (N)	1351	2	377700 413500
	Water Abstractions Operator: Mr Thomas Leo Murphy Licence Number: 2569001009 Permit Version: 102 Location: Reservoir Fed By Unnamed Tributar Y Kirklees Brook Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Boiler Feed Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Tottington, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 7th December 2012 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NW (N)	1351	2	377700 413500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Site Electrical Ltd Licence Number: 2569001009 Permit Version: 101 Location: Reservoir Fed By Unnamed Tributar Y Kirklees Brook Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Boiler Feed Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Tottington, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th October 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NW (N)	1351	2	377700 413500
	Water Abstractions Operator: Site Electrical Ltd Licence Number: 2569001009 Permit Version: 101 Location: Reservoir Fed By Unnamed Tributar Y Kirklees Brook Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Tottington, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 18th October 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NW (N)	1351	2	377700 413500
	Water Abstractions Operator: Site Electrical Ph Ltd Licence Number: 2569001009 Permit Version: 100 Location: Reservoir Fed By Unnamed Trib Of Kirklees Brk, Tottington Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Boiler Feed Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): 136 Yearly Rate (m3): 27276 Details: Premises At Tottington, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 8th November 1996 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A18NW (N)	1351	2	377700 413500
	Water Abstractions Operator: Site Electrical Ph Ltd Licence Number: 2569001009 Permit Version: 100 Location: Reservoir Fed By Unnamed Trib Of Kirklees Brk, Tottington Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Tottington, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 8th November 1996 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A18NW (N)	1351	2	377700 413500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Anthony Millward Rogers Licence Number: 2569001248 Permit Version: 100 Location: Borehole At Heights Barn, Four Lane Ends, Tottington Authority: Environment Agency, North West Region Abstraction: General Agriculture; General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 2 Yearly Rate (m3): 343 Details: Land & Premises At Heights Barn Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 8th September 1995 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(W)	1515	2	376260 412160
	Water Abstractions Operator: D F Marsden Licence Number: 2569001177 Permit Version: 100 Location: B/Hole , Old Holts Farmroading Brook Rd, Harwood, Bolton Authority: Environment Agency, North West Region Abstraction: General Agriculture; General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 5 Yearly Rate (m3): 1591 Details: Premises, Old Holts Farm, Harwood Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 24th February 1969 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(W)	1548	2	376200 411800
	Water Abstractions Operator: Canal And River Trust Licence Number: Nw/069/0001/016 Permit Version: 1 Location: River Irwell At Elton Reservoir Authority: Environment Agency, North West Region Abstraction: Navigation: General Use Relating To Secondary Category (Very Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 31st March 2021 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(NE)	1558	2	379677 413070
	Water Abstractions Operator: Peter & Janet Hoyle Licence Number: 2569001113 Permit Version: 101 Location: Well At Stormer Hill Closes Farm, Tottington, Nr Bury Authority: Environment Agency, North West Region Abstraction: General Agriculture; General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Stormer Hill Closes Farm, Tottington Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 3rd September 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(NW)	1609	2	376700 413300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr Hutchinson Licence Number: 2569001113 Permit Version: 100 Location: Well At Stormer Hill Closes Farm, Tottington, Nr Bury Authority: Environment Agency, North West Region Abstraction: General Agriculture; General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 5 Yearly Rate (m3): 1659 Details: Stormer Hill Closes Farm, Tottington Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th January 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(NW)	1609	2	376700 413300
	Water Abstractions Operator: Dorron Roller Ltd Licence Number: 2569001211 Permit Version: Not Supplied Location: Un-Named Tributary Of River Irwell, BURY Authority: Environment Agency, North West Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 145 Yearly Rate (m3): 45460 Details: Licence Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SE)	1718	2	379600 410800
	Water Abstractions Operator: Bury Council Licence Number: Nw/069/0001/007 Permit Version: 1 Location: River Irwell At Chamber Hall Weir Authority: Environment Agency, North West Region Abstraction: Production Of Energy: Hydroelectric Power Generation Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Chamber Hall Weir, Bury Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 10th June 2016 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(E)	1758	2	380014 411406
	Water Abstractions Operator: J Houghton Licence Number: 2569001019 Permit Version: 100 Location: Borehole At Isherwoods Farm, Walshaw Authority: Environment Agency, North West Region Abstraction: General Agriculture; General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 14 Yearly Rate (m3): 3410 Details: Isherwoods Farm, Walshaw Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 12th January 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(W)	1778	2	376100 412600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Cemex Uk Materials Ltd Licence Number: 2569001285r01 Permit Version: 2 Location: River Irwell At Rmc Northernt Bury Canal Wharf Authority: Environment Agency, North West Region Abstraction: Construction: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 21st December 2018 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SE)	1866	2	379706 410696
	Water Abstractions Operator: Cemex Uk Materials Ltd Licence Number: 2569001285r01 Permit Version: 1 Location: River Irwell At Rmc Northernt Bury Canal Wharf Authority: Environment Agency, North West Region Abstraction: Construction: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2015 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SE)	1866	2	379706 410696
	Water Abstractions Operator: Cemex Uk Materials Ltd Licence Number: 2569001285 Permit Version: 2 Location: River Irwell At Rmc Northernt Bury Canal Wharf Authority: Environment Agency, North West Region Abstraction: Construction: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Rmc Northern Bury Canal Wharf Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SE)	1866	2	379706 410696
	Water Abstractions Operator: Rmc Materials Ltd Licence Number: 2569001285 Permit Version: 1 Location: River Irwell At Rmc Northernt Bury Canal Wharf Authority: Environment Agency, North West Region Abstraction: Construction: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Rmc Northern Bury Canal Wharf Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 23rd March 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(SE)	1866	2	379706 410696

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: J R Crompton P.L.C. Licence Number: 2569001139 Permit Version: Not Supplied Location: Bury Authority: Environment Agency, North West Region Abstraction: Manufacturing Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 391 Yearly Rate (m3): 118196 Details: Borehole Near Premises Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SE)	1883	2	379200 410300
	Water Abstractions Operator: J R Crompton P.L.C. Licence Number: 2569001140 Permit Version: Not Supplied Location: Premises, BURY Authority: Environment Agency, North West Region Abstraction: Manufacturing Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 4787 Yearly Rate (m3): 1436536 Details: River Irwell Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SE)	1930	2	379700 410600
	Water Abstractions Operator: J R Crompton P.L.C. Licence Number: 2569001138 Permit Version: Not Supplied Location: Known As Deardens Lodge, BURY Authority: Environment Agency, North West Region Abstraction: Manufacturing Abstraction Type: Not Supplied Source: River Daily Rate (m3): 1091 Yearly Rate (m3): 136380 Details: Reservoir Fed By Surface Drainage Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(SE)	1930	2	379300 410300
	Water Abstractions Operator: R Fitton Licence Number: 2569001123 Permit Version: 100 Location: Well At Irwell View Farm, Walmesley,Bury, Lancashire Authority: Environment Agency, North West Region Abstraction: General Agriculture; General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 3 Yearly Rate (m3): 1214 Details: Irwell View Farm, Walmesley, Bury Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th January 1966 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(NE)	1938	2	380100 413100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Wilcox Drums Ltd Licence Number: 2569001014 Permit Version: 100 Location: Borehole At Premises, Bury Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: General Cooling (Existing Licences Only) (Low Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 114 Yearly Rate (m3): 27276 Details: Premises At Bury, Lancs Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(E)	1968	2	380300 411700
	Water Abstractions Operator: Wilcox Drums Ltd Licence Number: 2569001014 Permit Version: 100 Location: Borehole At Premises, Bury Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Process Water Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Premises At Bury, Lancs Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(E)	1968	2	380300 411700
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: <90% Superficial Thickness: 3-10m Superficial Recharge: Low	A10SE (W)	0	4	377905 412000
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: <90% Superficial Thickness: 3-10m Superficial Recharge: Low	A10SE (SW)	0	4	378000 412000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: Low	A10SE (S)	0	4	378060 412000
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: Low	A10SE (SW)	0	4	378006 412000
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: >90% Superficial Thickness: 3-10m Superficial Recharge: Low	A10NE (W)	0	4	377936 412050
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: >90% Superficial Thickness: 3-10m Superficial Recharge: Low	A10NE (W)	0	4	378000 412036

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: Low	A10NE (SE)	0	4	378061 412035
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Low Vulnerability Combined Vulnerability: Low Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Low Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: Low	A10NE (SW)	0	4	378060 412036
	Groundwater Vulnerability - Soluble Rock Risk None				
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A10NE (SW)	0	4	378060 412036
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A10NE (SE)	0	4	378061 412035
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A10NE (SW)	0	4	378060 412036
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
45	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 287.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A10SE (SW)	0	5	377918 411919
46	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 58.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10SE (SW)	0	5	377933 411964

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
47	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 72.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10NE (W)	0	5	377947 412040
48	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 150.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10NE (W)	0	5	377947 412040
49	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 855.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A11NW (NE)	0	5	378157 412182
50	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 77.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A10SE (SW)	1	5	377961 411903
51	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.3 Watercourse Level: Underground Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A10SE (SW)	29	5	377970 411875
52	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 24.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A11NW (NE)	31	5	378133 412186
53	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 132.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A10SE (SW)	36	5	377970 411869
54	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 37.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A11NW (N)	49	5	378096 412193
55	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 56.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A11NW (N)	57	5	378096 412193

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
56	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10NE (N)	78	5	378044 412211
57	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 223.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A10SW (SW)	79	5	377718 411773
58	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 25.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10SW (SW)	79	5	377718 411773
59	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 67.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10NE (N)	81	5	378035 412215
60	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 244.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10SW (SW)	85	5	377693 411780
61	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 250.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10SW (SW)	85	5	377693 411780
62	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10NE (NW)	86	5	377974 412243
63	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 135.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10NE (NW)	103	5	377946 412261
64	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 53.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 2	A11SW (S)	123	5	378096 411830

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
65	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 10.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 2	A11SW (S)	123	5	378106 411833
66	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 237.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A10SE (S)	148	5	378060 411791
67	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 105.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A11SW (SE)	183	5	378247 411776
68	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 123.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15SW (NE)	187	5	378286 412437
69	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 40.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10NE (NW)	189	5	377851 412345
70	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 57.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15SW (NE)	192	5	378389 412399
71	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 109.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10NE (NW)	207	5	377814 412362
72	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 101.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15SE (NE)	209	5	378446 412406
73	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 122.4 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15SE (NE)	264	5	378536 412420

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
74	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 178.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10SW (W)	279	5	377472 411898
75	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SE (NW)	280	5	377734 412418
76	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 118.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A10SW (SW)	281	5	377508 411697
77	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A7NW (SE)	288	5	378254 411671
78	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 181.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A10SW (W)	289	5	377458 411848
79	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 75.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A7NW (SE)	292	5	378259 411664
80	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 42.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (NW)	295	5	377721 412430
81	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A7NW (SE)	297	5	378332 411676
82	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 85.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A7NW (SE)	299	5	378333 411674

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
83	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 188.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (NW)	301	5	377687 412426
84	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (NW)	307	5	377687 412426
85	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 337.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A7NE (SE)	334	5	378407 411651
86	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 48.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A10SW (SW)	369	5	377405 411709
87	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15SE (NE)	369	5	378654 412455
88	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 81.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15SE (NE)	369	5	378687 412411
89	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 505.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15SE (NE)	381	5	378455 412611
90	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 246.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A15SE (NE)	383	5	378695 412425
91	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 22.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15SE (NE)	388	5	378716 412402

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
92	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 32.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 2	A15SE (NE)	388	5	378716 412402
93	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 118.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (NW)	392	5	377521 412396
94	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A9SE (SW)	406	5	377361 411722
95	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 315.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15SE (NE)	410	5	378738 412408
96	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 69.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A9SE (SW)	413	5	377352 411723
97	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 82.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	467	5	377292 411738
98	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 58.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A9SE (W)	467	5	377292 411738
99	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 154.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14SW (NW)	493	5	377402 412400
100	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 381.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6NE (SW)	494	5	377762 411351

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
101	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 119.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A9SE (W)	497	5	377254 411779
102	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.1 Watercourse Level: Underground Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A16SW (NE)	506	5	378846 412407
103	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 8.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	506	5	377262 412025
104	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9NE (W)	510	5	377261 412033
105	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 186.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A16SW (NE)	510	5	378850 412407
106	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 39.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15NE (NE)	513	5	378495 412707
107	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15NE (NE)	513	5	378485 412709
108	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15NE (NE)	513	5	378494 412707
109	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15SW (N)	516	5	378087 412674

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
110	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 123.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A15SW (N)	520	5	378077 412679
111	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 2	A15SW (N)	520	5	378089 412679
112	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A15SW (N)	520	5	378089 412679
113	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 2	A15SW (N)	523	5	378090 412682
114	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15SW (N)	524	5	378090 412683
115	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15SW (N)	524	5	378090 412683
116	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 81.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A15SW (N)	524	5	378094 412684
117	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 4.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A14SE (N)	525	5	377974 412684
118	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A14SE (N)	528	5	377971 412686

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
119	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 67.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 2	A15NW (N)	528	5	378266 412721
120	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 122.6 Watercourse Level: Underground Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A14SE (N)	530	5	377955 412688
121	**OS Water Network Lines** Watercourse Form: Transfer Watercourse Length: 127.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A15SW (N)	531	5	378173 412700
122	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 43.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A15NW (NE)	537	5	378362 412743
123	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (NE)	539	5	378364 412745
124	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A8NW (SE)	542	5	378741 411604
125	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	547	5	377210 411739
126	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.9 Watercourse Level: Underground Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A8NW (SE)	548	5	378750 411604
127	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 2	A15NW (N)	549	5	378316 412752

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
128	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	550	5	377207 411740
129	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 2	A15NW (NE)	550	5	378361 412757
130	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 119.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	551	5	377206 411739
131	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	551	5	377206 411739
132	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (NE)	551	5	378361 412757
133	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 39.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A8NW (SE)	553	5	378757 411604
134	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	559	5	378284 412757
135	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	560	5	378328 412764
136	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 185.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	562	5	377197 411732

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
137	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 144.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	562	5	377197 411732
138	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.9 Watercourse Level: Underground Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	563	5	378310 412765
139	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 176.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	563	5	378356 412769
140	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 128.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A12NW (E)	573	5	378951 412268
141	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A12NW (E)	573	5	378951 412268
142	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 63.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A9SE (W)	573	5	377175 411807
143	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 167.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A8NW (SE)	585	5	378796 411600
144	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 39.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A12NW (E)	594	5	378970 412281
145	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 80.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12SW (E)	605	5	378957 411991

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
146	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 15.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A12NW (E)	609	5	378982 412297
147	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 76.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A14NE (N)	609	5	377860 412765
148	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 43.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A9SE (W)	610	5	377137 411847
149	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 305.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A12SW (E)	620	5	378976 412006
150	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 31.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A12NW (E)	623	5	378997 412294
151	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 8.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (E)	623	5	378997 412294
152	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SE (NW)	627	5	377253 412399
153	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 7.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A12NW (E)	627	5	379004 412267
154	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 350.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A14NE (N)	628	5	377787 412782

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
155	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 241.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SE (NW)	629	5	377255 412407
156	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A12NW (E)	633	5	379011 412267
157	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 162.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A9SE (W)	634	5	377114 411882
158	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 45.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	634	5	377114 411882
159	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 6.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Goit Catchment Name: Mersey Primacy: 1	A12NW (E)	635	5	379012 412268
160	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 75.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (E)	641	5	379018 412271
161	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.9 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12SW (E)	648	5	378998 411923
162	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 458.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A16SW (NE)	657	5	378891 412622
163	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12SW (E)	660	5	379009 411913

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
164	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 112.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A9SE (W)	665	5	377088 411756
165	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 40.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A12SW (E)	669	5	379018 411915
166	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 111.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	671	5	378008 411220
167	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 40.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A16SW (E)	680	5	379024 412425
168	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12SW (E)	684	5	379030 411887
169	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 64.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (E)	686	5	379069 412149
170	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 15.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (E)	686	5	379066 412214
171	**OS Water Network Lines** Watercourse Form: Reservoir Watercourse Length: 152.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NW (E)	693	5	379070 412288
172	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NE (E)	697	5	379077 412225

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
173	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 320.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A12SW (E)	697	5	379042 411882
174	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12NE (E)	699	5	379079 412230
175	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 92.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A5NW (W)	731	5	377036 411675
176	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15NW (N)	737	5	378331 412943
177	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	737	5	378334 412942
178	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A15NW (N)	740	5	378335 412945
179	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 16.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	740	5	378335 412945
180	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 34.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A8NW (SE)	747	5	378949 411531
181	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 51.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	755	5	378325 412960

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
182	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	755	5	378325 412960
183	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 203.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	756	5	378333 412961
184	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 510.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A9SW (W)	766	5	376990 411974
185	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 37.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A7SW (S)	772	5	378088 411142
186	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 675.2 Watercourse Level: Underground Permanent: True Watercourse Name: Walshaw Brook Catchment Name: Mersey Primacy: 1	A8NW (SE)	780	5	378968 411502
187	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 60.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	804	5	378003 411078
188	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 50.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A7SW (S)	805	5	378087 411108
189	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 87.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A15NW (N)	805	5	378307 413008
190	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 84.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Elton Brook Catchment Name: Mersey Primacy: 1	A6SE (S)	830	5	378059 411069

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
191	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 558.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Elton Brook Catchment Name: Mersey Primacy: 1	A7SW (S)	841	5	378139 411080
192	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 377.9 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	843	5	377906 411015
193	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	843	5	377913 411015
194	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	844	5	377913 411015
195	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 84.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	844	5	377944 411016
196	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Elton Brook Catchment Name: Mersey Primacy: 1	A7SW (S)	849	5	378083 411059
197	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 16.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	858	5	378003 411021
198	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	858	5	378016 411021
199	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 52.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A14NW (NW)	860	5	377472 412936

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
200	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SW (W)	861	5	377020 412447
201	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	863	5	378034 411026
202	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 22.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SW (W)	867	5	377014 412446
203	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A6SE (S)	869	5	378037 411017
204	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 5.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (N)	877	5	378251 413074
205	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 16.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 2	A19SW (N)	877	5	378251 413074
206	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 184.4 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14NW (NW)	879	5	377417 412931
207	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A14NW (NW)	879	5	377417 412931
208	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 23.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (N)	880	5	378246 413076

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
209	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SW (W)	881	5	377004 412460
210	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 196.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SW (W)	881	5	377004 412460
211	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 304.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Black Brook Catchment Name: Mersey Primacy: 1	A14NW (NW)	884	5	377420 412939
212	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 36.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 2	A19SW (N)	893	5	378249 413090
213	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.5 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (N)	895	5	378225 413088
214	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 260.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SW (W)	896	5	376981 412441
215	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 243.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13SW (W)	897	5	376982 412448
216	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 103.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (N)	902	5	378140 413100
217	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 127.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13NE (NW)	923	5	377244 412868

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
218	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 117.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A12SE (E)	924	5	379231 411695
219	**OS Water Network Lines** Watercourse Form: Reservoir Watercourse Length: 328.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A2NW (SW)	926	5	377527 410940
220	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 189.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A19SW (N)	928	5	378254 413126
221	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 71.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A19SW (N)	939	5	378138 413113
222	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 229.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Kirklees Brook Catchment Name: Mersey Primacy: 1	A8NE (E)	974	5	379281 411687
223	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 144.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A3NE (S)	982	5	378487 411008
224	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13NE (NW)	989	5	377134 412857
225	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Elton Brook Catchment Name: Mersey Primacy: 1	A7SE (SE)	991	5	378619 411027
226	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 180.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A13NE (NW)	992	5	377128 412855

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
227	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Elton Brook Catchment Name: Mersey Primacy: 1	A7SE (SE)	993	5	378623 411025
228	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Mersey Primacy: 1	A7SE (SE)	997	5	378627 411023
229	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 212.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Elton Brook Catchment Name: Mersey Primacy: 1	A7SE (SE)	997	5	378627 411023

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
230	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Tottington, Greater Manchester Name: Bury Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15735 First Input Date: 31st December 1875 Last Input Date: 31st December 1977 Specified Waste Type: Deposited Waste included Industrial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: C121	A11NW (NE)	92	2	378354 412326
231	**Historical Landfill Sites** Licence Holder: Mancunian Waste Company Location: Walshaw Road, Bury Name: Bolholt Works Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15763 First Input Date: 31st December 1980 Last Input Date: 31st December 1984 Specified Waste Type: Deposited Waste included Inert and Industrial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4200/9219 BGS Ref: Not Supplied Other Ref: RD/LIC/186/79, C016	A11SW (SE)	248	2	378372 411731
232	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Walshaw, Greater Manchester Name: Newhive Works Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15762 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: C119	A10SW (SW)	278	2	377497 411724
233	**Historical Landfill Sites** Licence Holder: G and J Seddon Limited Location: Bury Name: Tottington Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15747 First Input Date: 1st March 1981 Last Input Date: 31st December 1986 Specified Waste Type: Deposited Waste included Inert Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4200/9226 BGS Ref: Not Supplied Other Ref: C055, RD/LIC/208/80	A12SW (E)	430	2	378782 411984
234	**Historical Landfill Sites** Licence Holder: Olives Paper Mill Company Limited Location: Tottington Road, Bury Name: Woolfold paper Mills Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15758 First Input Date: 31st December 1950 Last Input Date: 2nd April 1986 Specified Waste Type: Deposited Waste included Inert and Industrial Waste, and Liquid Sludge EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 4200/9206 BGS Ref: Not Supplied Other Ref: 0226, RD/LIC/080/77	A12SE (E)	930	2	379253 411750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
235	**Licensed Waste Management Facilities (Locations)** Licence Number: 53463 Location: 10 Spring Vale Street, Tottington, Bury, Lancashire, BL8 3LR Operator Name: Metcalfe Demolition & Skip Hire Ltd Operator Location: Not Supplied Authority: Environment Agency - North West Region, South Area Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Expired** Issued: 16th February 1999 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A14NW (NW)	844	2	377519 412940
	Local Authority Landfill Coverage Name: Bury Metropolitan Borough Council - Has not been able to supply Landfill data		0	6	378060 412036
236	**Potentially Infilled Land (Non-Water)** Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A11NW (NE)	0	-	378377 412174
237	**Potentially Infilled Land (Non-Water)** Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A11NW (NE)	0	-	378250 412132
238	**Potentially Infilled Land (Non-Water)** Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A15SW (N)	336	-	378139 412501
239	**Potentially Infilled Land (Non-Water)** Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A14SE (N)	395	-	377950 412553
240	**Potentially Infilled Land (Non-Water)** Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A7NW (S)	400	-	378070 411518
241	**Potentially Infilled Land (Non-Water)** Bearing Ref: NW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A13SE (NW)	660	-	377227 412422
242	**Potentially Infilled Land (Non-Water)** Bearing Ref: NW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A13SE (NW)	786	-	377171 412582
243	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1982	A8NE (SE)	925	-	379103 411441
244	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11NW (NE)	0	-	378280 412133
245	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11NW (E)	0	-	378316 412107
246	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11NW (NE)	22	-	378176 412196
247	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A11NW (NE)	36	-	378343 412233
248	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11NW (NE)	149	-	378227 412321

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
249	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A11NW (NE)	151	-	378240 412324
250	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A11SE (SE)	245	-	378447 411755
251	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11SW (SE)	255	-	378388 411729
252	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A15SW (N)	258	-	378143 412422
253	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A11SE (SE)	259	-	378415 411727
254	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A11SE (SE)	270	-	378479 411742
255	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7NW (SE)	305	-	378288 411660
256	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A11SE (E)	306	-	378651 411912
257	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7NW (SE)	327	-	378399 411657
258	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A15SW (NE)	351	-	378273 412541
259	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A14SW (NW)	361	-	377562 412396
260	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A6NE (S)	364	-	377982 411541
261	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15SE (NE)	388	-	378702 412423
262	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15SE (NE)	414	-	378471 412611
263	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A7NE (SE)	420	-	378622 411659
264	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15SE (NE)	433	-	378461 412642
265	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A12SW (E)	478	-	378782 411773
266	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A15SW (N)	497	-	378190 412682
267	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A16SW (E)	510	-	378864 412366
268	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A15NE (NE)	522	-	378405 412728
269	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15NW (NE)	549	-	378369 412758

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
270	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7NE (SE)	556	-	378473 411439
271	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A8NW (SE)	575	-	378807 411629
272	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A12NW (E)	579	-	378952 412297
273	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15NW (N)	589	-	378353 412795
274	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A12NW (E)	641	-	379020 412174
275	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SW (S)	660	-	378222 411295
276	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SW (S)	673	-	378149 411257
277	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A15NE (N)	676	-	378411 412885
278	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A13SE (NW)	683	-	377201 412421
279	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A6SW (SW)	716	-	377572 411151
280	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A7SE (SE)	728	-	378669 411326
281	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8NW (SE)	741	-	378940 411530
282	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A6SW (SW)	758	-	377580 411106
283	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A9NW (W)	761	-	377034 412146
284	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A6SW (SW)	781	-	377547 411091
285	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A6SW (SW)	796	-	377478 411096
286	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A15NE (N)	801	-	378427 413006
287	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A16SE (E)	803	-	379140 412469
288	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A6SW (SW)	813	-	377577 411051
289	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SE (SE)	820	-	378611 411203
290	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A5SE (SW)	837	-	377217 411198

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
291	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1911	A12SE (E)	857	-	379166 411713
292	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SE (S)	863	-	378437 411120
293	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A12SE (E)	885	-	379200 411727
294	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A14NW (NW)	915	-	377401 412963
295	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A7SW (S)	930	-	378284 411028
296	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8SW (SE)	949	-	378847 411171
297	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A19SE (NE)	954	-	378523 413150
298	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A12SE (E)	965	-	379321 411965
299	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8SW (SE)	966	-	378838 411146
300	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A19SE (NE)	976	-	378682 413135
301	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1850	A8SW (SE)	999	-	378994 411216
302	**Registered Landfill Sites** Licence Holder: Roberts Waste Co Licence Reference: 00186 Site Location: Bolholt Works, Walshaw Road, Bury, Lancashire Licence Easting: Not Supplied Licence Northing: Not Supplied Operator Location: 11 Whitelegge Street, BURY, Lancashire, BL8 1SW Authority: Environment Agency - North West Region, South Area Site Category: Landfill Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 17th January 1982 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Positioned by the supplier Boundary Accuracy: Good Authorised Waste: Construction And Demolition Wastes Ind. Non-Haz. Inert Waste Prohibited Waste: Animal And Food Wastes Biodegradable/Putrescible Waste Liquid/Slurry/Sludge Wastes Paper/Cardboard Waste	A11SE (SE)	280	2	378409 411701

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Landfill Sites				
303	Licence Holder: G & J Seddon Ltd Licence Reference: 00208 Site Location: Adj. To Brittania Papermill, Woolford, Bury, Lancashire, Bl8 13l Licence Easting: 378800 Licence Northing: 411980 Operator Location: Coronation Building Po Box 9, Little Hulton, Salford, Greater Manchester, M38 6fh Authority: Environment Agency - North West Region, South Area Site Category: Landfill Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 22nd September 1983 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste Construction And Demolition Wastes Prohibited Waste Liquid Wastes Sludge Wastes	A12SW (E)	448	2	378800 411980
	Registered Landfill Sites				
304	Licence Holder: Olives Paper Mill Co Ltd Licence Reference: 00080 Site Location: Woodfold Paper Mill, Tottington Road, BURY, Lancashire, BL8 1SL Licence Easting: Not Supplied Licence Northing: Not Supplied Operator Location: As Site Address Authority: Environment Agency - North West Region, South Area Site Category: Landfill - with lagoon Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: Waste produced/controlled by licence holder Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 6th November 1979 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Positioned by the supplier Boundary Accuracy: Good Authorised Waste Construction And Demolition Wastes Incinerator Residues Ind. Non-Haz. Waste Industrial Effluent Treatment Sludge	A12SE (E)	910	2	379235 411756
	Registered Waste Transfer Sites				
305	Licence Holder: Messrs Brooks (M, S & A) Licence Reference: 80055 Site Location: Spring Vale Street, Tottington, BURY, Lancashire, BL8 3LR Operator Location: As Site Address Authority: Environment Agency - North West Region, South Area Site Category: Transfer Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 16th February 1999 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste Commercial & Industrial Waste Ferrous Metals Household Waste - But Maximum Waste Permitted By Licence Non-Ferrous Metals Paper/Cardboard Uncontaminated Construction Waste Uncontaminated Soils & Subsoils Wood And Prohibited Waste Other Waste/Waste Not Otherwise Specified Putrescible Waste - Except Special Waste (As In Epa 1990:S62 Of 1996 Regs)	A14NW (NW)	799	2	377540 412900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Pennine Lower Coal Measures Formation And South Wales Lower Coal Measures Formation (Undifferentiated)	A10NE (SW)	0	1	378060 412036
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A11NW (NE)	0	1	378261 412187
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A10NE (SW)	0	1	378060 412036
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (NE)	0	1	378261 412187
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (NE)	0	1	378106 412064
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NE (SE)	0	1	378061 412035
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (NE)	0	1	378303 412150

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NE (W)	0	1	377936 412050
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 30 - 45 mg/kg	A10SE (SW)	0	1	378000 412000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (S)	0	1	378000 411849
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (W)	0	1	377905 412000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A11NW (NE)	13	1	378214 412225
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NW (NE)	32	1	378311 412221

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (W)	55	1	377742 412000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SE (SW)	75	1	377773 411769
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NE (N)	89	1	378020 412281
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A10NE (N)	108	1	377979 412265
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (E)	120	1	378500 412052
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (E)	149	1	378500 412036

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11SW (SE)	156	1	378242 411797
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (NE)	158	1	378500 412311
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 30 - 45 mg/kg	A11NE (NE)	195	1	378500 412360
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (W)	247	1	377500 412036
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10SW (W)	248	1	377500 411825
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	284	1	377717 412420

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	287	1	377757 411551
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (W)	293	1	377500 412083
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NW (SW)	299	1	377500 411677
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (N)	302	1	378054 412481
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A11SE (E)	325	1	378650 411851
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A14SE (NW)	328	1	377764 412477

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (N)	341	1	378000 412500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (SW)	342	1	377751 411500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 30 - 45 mg/kg	A14SE (N)	343	1	377882 412500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (S)	345	1	378000 411500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 30 - 45 mg/kg	A14SE (NW)	351	1	377762 412500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A10NW (NW)	354	1	377500 412282

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	374	1	378601 412513
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	384	1	377661 412500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	401	1	378500 412590
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6NE (S)	406	1	378060 411500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A15SE (NE)	412	1	378454 412618
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 30 - 45 mg/kg	A15SE (NE)	412	1	378500 412603

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	415	1	377500 412406
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (S)	435	1	378126 411500
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	440	1	377500 412446
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	450	1	378607 412607
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	460	1	378540 412655
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SE)	481	1	378395 411500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	485	1	377526 412533
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (E)	490	1	378782 411745
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SE (NE)	494	1	378500 412686
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 30 - 45 mg/kg	A14SE (N)	496	1	377967 412668
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (NW)	496	1	377744 412644
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SE (W)	502	1	377246 411884

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	507	1	377500 412540
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A14SE (N)	517	1	378000 412674
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NE (NE)	535	1	378468 412734
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A5NE (SW)	538	1	377257 411622
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6SW (SW)	550	1	377716 411296
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SE (W)	594	1	377168 411713

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (N)	608	1	378122 412775
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (NE)	609	1	378386 412815
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A5NE (SW)	623	1	377265 411450
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (NW)	626	1	377500 412687
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12NW (E)	627	1	379000 412302
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NE (NE)	627	1	378432 412832

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (E)	630	1	379000 412321
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12SW (E)	632	1	378984 411992
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (NW)	637	1	377250 412417
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NE (NE)	644	1	378469 412844
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (N)	653	1	378000 412811
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NE (NE)	655	1	378500 412851

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A5NE (SW)	682	1	377240 411389
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16SW (NE)	694	1	379000 412520
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 30 - 45 mg/kg	A15NE (NE)	699	1	378623 412862
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A6SE (S)	709	1	378000 411177
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (S)	718	1	378164 411214
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (E)	725	1	379064 411845

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SW (W)	747	1	377000 411906
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SW (W)	749	1	377000 411793
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SW (W)	749	1	377000 412000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: 1.8 - 2.2 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 600 - 1200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16NW (NE)	768	1	378841 412821
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (N)	793	1	378359 413000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (N)	794	1	378311 413000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NE (N)	794	1	378405 413000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 30 - 45 mg/kg	A15NW (N)	797	1	378248 413000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A5NW (SW)	798	1	377000 411564
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (N)	804	1	378060 413000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12SE (E)	810	1	379147 411823
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 30 - 45 mg/kg	A15NE (NE)	819	1	378586 413000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NW)	819	1	377545 412923
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A5NW (SW)	831	1	377000 411480
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (N)	841	1	378000 413000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NW)	842	1	377500 412930
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 30 - 45 mg/kg	A14NE (N)	844	1	377858 413000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12SE (E)	849	1	379164 411734

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A5SE (SW)	857	1	377108 411274
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A16NW (NE)	870	1	379000 412817
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NW)	873	1	377608 412999
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NW)	874	1	377607 413000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7SW (S)	874	1	378390 411100
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (NW)	899	1	377000 412500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (NW)	901	1	377000 412505
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NW)	902	1	377592 413025
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SW (W)	905	1	376853 412000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A5SW (SW)	914	1	377000 411319
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (E)	916	1	379252 411810
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 30 - 45 mg/kg	A8SW (SE)	935	1	379000 411307

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A16NE (NE)	946	1	379082 412842
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SW (N)	947	1	378173 413139
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A3NW (S)	953	1	378265 411000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 30 - 45 mg/kg	A19SW (N)	953	1	378270 413153
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 300 - 600 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12NE (E)	954	1	379332 412277
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A5SW (SW)	959	1	377000 411244

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 100 - 200 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	973	1	378000 413160
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: 200 - 300 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8SW (SE)	978	1	378762 411092
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	995	1	377000 412704
306	**BGS Recorded Mineral Sites** Site Name: Leemans Hill Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96452 Type: Opencast **Status:** **Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A11NW (NE)	0	1	378253 412143
307	**BGS Recorded Mineral Sites** Site Name: Copp Hill Sand Pit Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96453 Type: Opencast **Status:** **Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: Glaciofluvial Deposits, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A14SE (N)	411	1	377943 412569
308	**BGS Recorded Mineral Sites** Site Name: Brown Hill Brick Field Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96473 Type: Opencast **Status:** **Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A15SW (N)	458	1	378129 412622

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Recorded Mineral Sites				
309	Site Name: Jacksons Fold Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96454 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A13SE (NW)	628	1	377271 412441
	BGS Recorded Mineral Sites				
310	Site Name: Meadow Head Location: Tottington, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96451 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A13SE (NW)	797	1	377165 412593
	BGS Recorded Mineral Sites				
311	Site Name: Lower Bently Hall Location: Walshaw, Bury, Lancashire Source: British Geological Survey, National Geoscience Information Service Reference: 96456 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Carboniferous Geology: Pennine Lower Coal Measures Formation Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A5NW (SW)	843	1	376977 411501
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.	A10NE (SW)	0	7	378060 412036
	Mining Instability Mining Evidence: Inconclusive Coal Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A10NE (SW)	0	-	378060 412036
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A10NE (NW)	0	1	378048 412062
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A10NE (W)	0	1	378050 412036
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A10NE (W)	0	1	378050 412036
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A10NE (SW)	0	1	378060 412036

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
312	**Contemporary Trade Directory Entries** Name: Braketech Location: 167, Scobell Street, Tottington, Bury, BL8 3DE Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A10NE (N)	21	-	378063 412155
312	**Contemporary Trade Directory Entries** Name: Roach Packing Case & Timber Co Ltd Location: Scobell Street, Tottington, BURY, Lancashire, BL8 3DR Classification: Pallets, Crates & Packing Cases **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A11NW (N)	36	-	378070 412170
313	**Contemporary Trade Directory Entries** Name: Takbro Location: 57-59, Church Street, Walshaw, Bury, Lancashire, BL8 3BN Classification: Electronic Component Manufacturers & Distributors **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10NE (W)	25	-	377770 412069
313	**Contemporary Trade Directory Entries** Name: Brighter Blinds Ltd Location: 59, Church Street, Walshaw, Bury, Lancashire, BL8 3BN Classification: Blinds, Awnings & Canopies **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10NE (W)	25	-	377770 412069
314	**Contemporary Trade Directory Entries** Name: Paul Anthony Commercials Location: Bolholt Garage, Bury Road, Tottington, Bury, Lancashire, BL8 3DT Classification: Commercial Vehicle Dealers **Status:** **Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A11NW (NE)	52	-	378373 412258
315	**Contemporary Trade Directory Entries** Name: P & R Pristine Bakery Services Location: 5, Walshaw Lane, Bury, Lancashire, BL8 3TA Classification: Bakery Equipment Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10SE (SW)	56	-	377756 411789
316	**Contemporary Trade Directory Entries** Name: The Vacuum Pouch Company Location: Unit 1-2, Leigh Street, Walshaw, Bury, BL8 3AL Classification: Packaging Materials Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10SW (SW)	103	-	377679 411768
317	**Contemporary Trade Directory Entries** Name: Crystal Bevels Location: Bank House, 16-18, Bank Street, Walshaw, Bury, Lancashire, BL8 3AZ Classification: Stained Glass Designers & Producers **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A10SW (SW)	105	-	377659 411789
317	**Contemporary Trade Directory Entries** Name: The Vacuum Pouch Company Location: Unit 1-2, Leigh Street, Walshaw, Bury, BL8 3AL Classification: Packaging Materials Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10SW (SW)	109	-	377670 411768
317	**Contemporary Trade Directory Entries** Name: J T R Controls Ltd Location: 2, Bank Street, Walshaw, Bury, BL8 3AZ Classification: Precision Engineers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10SW (SW)	144	-	377626 411768
317	**Contemporary Trade Directory Entries** Name: Space Vac Ltd Location: Unit 1,2,Leigh St, Walshaw, Bury, Lancashire, BL8 3AL Classification: Packaging & Wrapping Equipment & Supplies **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A10SW (SW)	164	-	377636 411725
318	**Contemporary Trade Directory Entries** Name: Paul Anthony Commercials Location: Bolholt Garage, Bury Road, Tottington, BURY, Lancashire, BL8 3DT Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11NW (NE)	181	-	378233 412353

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
318	**Contemporary Trade Directory Entries** Name: Boholt Garage Location: Bolholt Garage, Bury Road, Tottington, Bury, Lancashire, BL8 3DT Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A11NW (NE)	181	-	378233 412353
318	**Contemporary Trade Directory Entries** Name: Paul Anthony Commercials Ltd Location: The Garage, Bury Road, Tottington, Bury, Lancashire, BL8 3DT Classification: Commercial Vehicle Dealers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A11NW (NE)	181	-	378233 412353
319	**Contemporary Trade Directory Entries** Name: J Forrest & Son Location: Green St, Walshaw, Bury, Lancashire, BL8 3BJ Classification: Coal & Smokeless Fuel Merchants & Distributors **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A10SW (W)	185	-	377566 411896
320	**Contemporary Trade Directory Entries** Name: Caravan Services North West Location: 3, Acresbrook Walk, Tottington, Bury, BL8 3JR Classification: Caravans - Servicing & Repairs **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A10NW (NW)	201	-	377683 412292
321	**Contemporary Trade Directory Entries** Name: Mrs Mopp Location: 12, Chestnut Avenue, Tottington, Bury, Lancashire, BL8 3EE Classification: Cleaning Services - Domestic **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10NE (N)	202	-	378057 412336
322	**Contemporary Trade Directory Entries** Name: Forrest Fuels Location: Yard 2 Haworth Street, Walshaw, Bury, Lancashire, BL8 3BQ Classification: Coal & Smokeless Fuel Merchants & Distributors **Status:** **Active** Positional Accuracy: Manually positioned within the geographical locality	A10SW (W)	203	-	377545 411825
323	**Contemporary Trade Directory Entries** Name: Pristine Ironing Location: 11, Chestnut Avenue, Tottington, Bury, Lancashire, BL8 3EE Classification: Ironing & Home Laundry Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (N)	220	-	378095 412369
324	**Contemporary Trade Directory Entries** Name: Bury Paint Seal Protection Location: 39, HOLTHOUSE ROAD, TOTTINGTON, BL8 3JP Classification: Car Painters & Sprayers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A10NW (W)	221	-	377590 412146
325	**Contemporary Trade Directory Entries** Name: Technical Heating Solutions Ltd Location: 400, Tottington Road, Bury, Lancashire, BL8 1TU Classification: Under Floor Heating **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A11NE (E)	237	-	378611 412132
326	**Contemporary Trade Directory Entries** Name: Walshaw Preservation Location: 3, Prenton Way, Walshaw, Bury, Lancashire, BL8 3BZ Classification: Damp & Dry Rot Control **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10NW (W)	243	-	377588 412201
327	**Contemporary Trade Directory Entries** Name: Mirlo 2000 Location: 200, Bury Road, Tottington, Bury, Lancashire, BL8 3DX Classification: Dry Cleaners **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (N)	244	-	378171 412411
327	**Contemporary Trade Directory Entries** Name: Fridgeland Online Location: 200c, Bury Road, Tottington, Bury, Lancashire, BL8 3DX Classification: Refrigeration Equipment - Commercial **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (N)	246	-	378166 412413

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
328	**Contemporary Trade Directory Entries** Name: J & S Private & Commercial Cleaning Services Location: 31, Grassington Court, Walshaw, Bury, Lancashire, BL8 3AW Classification: Commercial Cleaning Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6NW (SW)	255	-	377574 411658
329	**Contemporary Trade Directory Entries** Name: Angels Cleaning & Ironing Services Ltd Location: 30, Holthouse Road, Tottington, Bury, Lancashire, BL8 3JP Classification: Cleaning Services - Domestic **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10NW (W)	259	-	377565 412186
329	**Contemporary Trade Directory Entries** Name: Malcolm Day Location: 31, Walshaw Walk, Tottington, Bury, Lancashire, BL8 3JS Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10NW (W)	295	-	377542 412226
330	**Contemporary Trade Directory Entries** Name: Hard Rock Location: Walshaw Road, Bury, Lancashire, BL8 1PU Classification: Stone Products - Manufacturers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11SE (SE)	267	-	378508 411764
331	**Contemporary Trade Directory Entries** Name: Bath Wizard Location: 1, Hawes Close, Bury, Lancashire, BL8 1UH Classification: Bath Resurfacing **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11NE (E)	273	-	378651 412247
331	**Contemporary Trade Directory Entries** Name: Bath Wizard Location: 1, Hawes Close, Bury, Lancashire, BL8 1UH Classification: Bath Resurfacing **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11NE (E)	273	-	378651 412247
332	**Contemporary Trade Directory Entries** Name: Tottington M O T Centre Location: 178, Bury Road, Tottington, Bury, Lancashire, BL8 3DX Classification: Mot Testing Centres **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A15SW (N)	286	-	378124 412447
333	**Contemporary Trade Directory Entries** Name: Capital Catering Uk Ltd Location: 2, Brownhills Close, Tottington, Bury, Lancashire, BL8 3LF Classification: Catering Equipment - Servicing & Repairs **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A15SW (NE)	289	-	378337 412492
333	**Contemporary Trade Directory Entries** Name: Capital Catering Uk Ltd Location: 2, BROWNHILLS CLOSE, TOTTINGTON, BL8 3LF Classification: Catering Equipment - Servicing & Repairs **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A15SW (NE)	291	-	378339 412494
334	**Contemporary Trade Directory Entries** Name: Beeches Transport Location: 16, Hawes Close, Bury, Lancashire, BL8 1UH Classification: Road Haulage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11NE (E)	319	-	378699 412221
335	**Contemporary Trade Directory Entries** Name: Eurospan Distribution Centre Ltd Location: Walshaw Road, Bury, Lancashire, BL8 1RP Classification: Distribution Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	332	-	378445 411662
335	**Contemporary Trade Directory Entries** Name: All White Linens Ltd Location: UNIT 3, BOLHOLT WORKS, WALSHAW ROAD, BURY, BL8 1DQ Classification: Clothing & Fabrics - Manufacturers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	358	-	378486 411649

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
336	**Contemporary Trade Directory Entries** Name: Energy Council Location: Viridor House, 3, Bolholt Terrace, Bury, Lancashire, BL8 1PP Classification: Energy Efficient Products and Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11SE (SE)	348	-	378574 411713
336	**Contemporary Trade Directory Entries** Name: Electronic Design Services Ltd Location: 1, Bolholt Terrace, Bury, Lancashire, BL8 1PP Classification: Printed Circuit Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11SE (SE)	348	-	378574 411713
337	**Contemporary Trade Directory Entries** Name: Main Waste Management Location: 23, Hawes Close, Bury, Lancashire, BL8 1UH Classification: Waste Disposal Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11NE (E)	354	-	378724 412292
338	**Contemporary Trade Directory Entries** Name: Salamander Industrie Produkte Location: 42, High Street, Bury, Lancashire, BL8 3AN Classification: Plastics - Extrusion **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A6NW (SW)	357	-	377598 411521
339	**Contemporary Trade Directory Entries** Name: Haworth & Mather Ltd Location: 98, Booth Way, Tottington, Bury, Lancashire, BL8 3JT Classification: Scrap Metal Merchants **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10NW (NW)	359	-	377497 412287
340	**Contemporary Trade Directory Entries** Name: Rayhome Location: Rayhome House, Walshaw Road, Bury, Lancashire, BL8 1PY Classification: Manufacturers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	367	-	378526 411658
341	**Contemporary Trade Directory Entries** Name: Henderson Irvine Fire Engineering Ltd Location: 211, Booth Street, Tottington, Bury, Lancashire, BL8 3JD Classification: Firefighting Equipment **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A14SE (NW)	382	-	377777 412533
342	**Contemporary Trade Directory Entries** Name: Forrest Location: 84, Booth Way, Tottington, Bury, Lancashire, BL8 3JW Classification: Coal & Smokeless Fuel Merchants & Distributors **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (NW)	383	-	377517 412374
343	**Contemporary Trade Directory Entries** Name: Brighter Blinds Ltd Location: Unit 1, Bolholt Works, Walshaw Road, Bury, Lancashire, BL8 1DQ Classification: Blinds, Awnings & Canopies **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	390	-	378576 411661
343	**Contemporary Trade Directory Entries** Name: Cleaner Blinds Location: Unit 3, Bolholt Works, Walshaw Road, Bury, Lancashire, BL8 1DQ Classification: Commercial Cleaning Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	390	-	378576 411661
343	**Contemporary Trade Directory Entries** Name: The Big Do Company Ltd Location: Unit 3, Bolholt Works, Walshaw Road, Bury, Lancashire, BL8 1DQ Classification: Clothing & Fabrics - Manufacturers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	390	-	378576 411661
343	**Contemporary Trade Directory Entries** Name: Hoselines & Industrial Supplies (North West) Ltd Location: Unit 4, Bolholt Works, Walshaw Road, Bury, Lancashire, BL8 1DQ Classification: Hose, Tubing & Fittings **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	390	-	378576 411661

Industrial Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
343	**Contemporary Trade Directory Entries** Name: Scottex Precision Textiles Ltd Location: Unit 1, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Filter Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	390	-	378576 411661
343	**Contemporary Trade Directory Entries** Name: V S F Location: Unit 18, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	390	-	378576 411661
343	**Contemporary Trade Directory Entries** Name: Shutter Maintenance Northern Ltd Location: Unit 8, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Roller Shutter Manufacturers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	422	-	378594 411635
343	**Contemporary Trade Directory Entries** Name: Merlin Sports & Leisure Wear Location: Unit 8, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Leisure & Sportswear Manufacturers & Wholesalers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	422	-	378594 411635
343	**Contemporary Trade Directory Entries** Name: Shutter Maintenance (Northern) Ltd Location: Unit 8, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Door Manufacturers - Industrial **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A7NE (SE)	422	-	378594 411635
343	**Contemporary Trade Directory Entries** Name: Printforce Location: Unit 9, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Printers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	422	-	378594 411635
344	**Contemporary Trade Directory Entries** Name: Black & White (Photography) Process & Printing Location: 217, Bury Road, Tottington, Bury, Lancashire, BL8 3DY Classification: Photographic Processors **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (N)	390	-	378050 412537
345	**Contemporary Trade Directory Entries** Name: M & I Uk Ltd Location: 52, Sheep Gate Drive, Tottington, Bury, Lancashire, BL8 3JZ Classification: Road Haulage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A10NW (W)	400	-	377439 412251
346	**Contemporary Trade Directory Entries** Name: Walshaw Motor Bodies Ltd Location: Unit to the Rear of Units 19 And 20, Bolholt Industrial Estate, Walshaw Road, Bury, BL8 1PL Classification: Car Body Repairs **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	406	-	378627 411682
346	**Contemporary Trade Directory Entries** Name: Lcp Location: Unit 9, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Printers **Status:** **Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A7NE (SE)	438	-	378621 411635
346	**Contemporary Trade Directory Entries** Name: G H Auto Location: Unit 16, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Car Body Repairs **Status:** **Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A7NE (SE)	438	-	378621 411635

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
347	**Contemporary Trade Directory Entries** Name: Kirk Commercials Location: Unit 14, Bolholt Industrial Park, Walshaw Road, Bury, Lancashire, BL8 1PL Classification: Commercial Vehicle Dealers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	444	-	378619 411626
348	**Contemporary Trade Directory Entries** Name: Sunnywood Halt Location: Sunnywood Garage, Bury Road, Tottington, Bury, Lancashire, BL8 3EU Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (N)	450	-	377981 412608
349	**Contemporary Trade Directory Entries** Name: Bcc Suzuki & Kia Location: Tottington Road, Bury, Lancashire, BL8 1TS Classification: Car Dealers **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A12SW (E)	488	-	378820 411840
350	**Contemporary Trade Directory Entries** Name: A & P Haworth Location: 12, Chiltern Drive, Bury, Lancashire, BL8 1QY Classification: Road Haulage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	491	-	378565 411538
351	**Contemporary Trade Directory Entries** Name: Walshaw Road Filling Station Location: Walshaw Road, Bury, Lancashire, BL8 1PY Classification: Petrol Filling Stations **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	495	-	378685 411615
351	**Contemporary Trade Directory Entries** Name: Walshaw Road Garage Location: Walshaw Road, Bury, Lancashire, BL8 1PY Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SE)	495	-	378685 411615
352	**Contemporary Trade Directory Entries** Name: R K Whitehurst Location: 11, Brammay Drive, Tottington, Bury, Lancashire, BL8 3HS Classification: Domestic Appliances - Servicing, Repairs & Parts **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (NW)	519	-	377494 412550
353	**Contemporary Trade Directory Entries** Name: Garratt Printing Location: 32, Elterwater Close, Bury, Lancashire, BL8 1UW Classification: Printers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	527	-	378785 411679
354	**Contemporary Trade Directory Entries** Name: Trippier Location: The Mill, Mill Lane, Bury, Lancashire, BL8 1TB Classification: Industrial Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (E)	532	-	378869 411853
354	**Contemporary Trade Directory Entries** Name: Filippini & Gray Location: Mill Lane, Bury, Lancashire, BL8 1TB Classification: Medical & Dental Laboratories **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (E)	555	-	378883 411819
355	**Contemporary Trade Directory Entries** Name: Garside Garage Location: Garside Hey Road, Bury, BL8 1HY Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A16SW (NE)	538	-	378806 412536
356	**Contemporary Trade Directory Entries** Name: A B Plumbing & Maintenance Location: 71, Sandybrook Close, Tottington, Bury, Lancashire, BL8 3LB Classification: Boilers - Servicing, Replacements & Repairs **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (NW)	539	-	377525 412599

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
357	**Contemporary Trade Directory Entries** Name: Iron Angel Location: 3, Wellbank Street, Tottington, Bury, Lancashire, BL8 3HX Classification: Ironing & Home Laundry Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NW)	579	-	377707 412722
358	**Contemporary Trade Directory Entries** Name: Chemical Express Ltd Location: 32, Meadow Way, Tottington, Bury, Lancashire, BL8 3HU Classification: Cleaning Materials & Equipment **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (NW)	605	-	377456 412630
359	**Contemporary Trade Directory Entries** Name: Serkota Supplies Location: 1, Green Street, Bury, Lancashire, BL8 1TF Classification: Leather Garments & Products **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (E)	617	-	378916 411730
360	**Contemporary Trade Directory Entries** Name: Chips Away Bury-Bolton Location: 19, Moorside Road, Tottington, Bury, Lancashire, BL8 3HW Classification: Car Body Repairs **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (NW)	636	-	377323 412538
361	**Contemporary Trade Directory Entries** Name: Byson Plastics Ltd Location: Goodlad St, Bury, Lancashire, BL8 1SX Classification: Plastics - Injection Moulding **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A8NW (SE)	641	-	378860 411590
361	**Contemporary Trade Directory Entries** Name: Sis Solutions Location: 5, St. James Avenue, BURY, Lancashire, BL8 1TD Classification: Distribution Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	678	-	378868 411541
362	**Contemporary Trade Directory Entries** Name: Fenster Trade Frames Ltd Location: Unit 1, Goodlad Street, Bury, BL8 1SX Classification: Window Frame Manufacturers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	652	-	378924 411667
362	**Contemporary Trade Directory Entries** Name: H E L Systems Ltd Location: Goodlad Street, BURY, Lancashire, BL8 1SX Classification: Machinery - Industrial & Commercial **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (E)	665	-	378945 411679
363	**Contemporary Trade Directory Entries** Name: Bury Independent Home Care Location: Hillside, Sunny Bower Street, Tottington, Bury, Lancashire, BL8 3HL Classification: Cleaning Services - Domestic **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (NW)	655	-	377420 412665
364	**Contemporary Trade Directory Entries** Name: Cohebe Ltd Location: Unit 1, Goodlad Street, Bury, BL8 1SX Classification: Cabinet Makers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	659	-	378888 411597
364	**Contemporary Trade Directory Entries** Name: Excel Furniture Location: Unit 1, Goodlad Street, Bury, BL8 1SX Classification: Kitchen Furniture Manufacturers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	659	-	378888 411597
364	**Contemporary Trade Directory Entries** Name: Nab Engineering Location: Unit 4 Back Byrom St, Bury, Lancashire, BL8 1TD Classification: Precision Engineers **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A8NW (SE)	667	-	378897 411596

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
364	**Contemporary Trade Directory Entries** Name: Hy-Jan Floor Care Location: Unit 4, Arran House, St. James Avenue, Bury, BL8 1TD Classification: Carpet, Curtain & Upholstery Cleaners **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	675	-	378894 411578
364	**Contemporary Trade Directory Entries** Name: A & J Oil Testing Location: Arran House,St. James Av, Bury, Lancashire, BL8 1TD Classification: Oil & Gas Exploration Supplies & Services **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A8NW (SE)	675	-	378894 411578
364	**Contemporary Trade Directory Entries** Name: Allsorts Upholstery Service Location: 1, Byrom Street, Bury, Lancashire, BL8 1SN Classification: Furniture - Repairing & Restoring **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	689	-	378921 411592
364	**Contemporary Trade Directory Entries** Name: A 1 Ironing Services Location: 30, Whitelegge Street, Bury, Lancashire, BL8 1SW Classification: Ironing & Home Laundry Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	692	-	378925 411591
364	**Contemporary Trade Directory Entries** Name: The Bury Car Centre Location: 26, Whitelegge Street, Bury, Lancashire, BL8 1SW Classification: Car Dealers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	695	-	378950 411627
364	**Contemporary Trade Directory Entries** Name: Probst (North West) Ltd Location: 26, Whitelegge Street, Bury, Lancashire, BL8 1SW Classification: Mechanical Handling Equipment **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	695	-	378950 411627
364	**Contemporary Trade Directory Entries** Name: Oakwood Motor Co Location: Tottinghamton Road, Bury, Lancashire, BL8 1SW Classification: Car Dealers - Used **Status:** **Inactive** Positional Accuracy: Manually positioned within the geographical locality	A8NW (SE)	714	-	378950 411591
364	**Contemporary Trade Directory Entries** Name: The Bury Car Centre Location: Tottington Road, Bury, Lancashire, BL8 1SW Classification: Car Dealers **Status:** **Inactive** Positional Accuracy: Manually positioned within the geographical locality	A8NW (SE)	714	-	378950 411591
364	**Contemporary Trade Directory Entries** Name: Paul Switzer Car Body Repaires Location: 11, Whitelegge Street, Bury, Lancashire, BL8 1SW Classification: Car Body Repairs **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	714	-	378950 411591
364	**Contemporary Trade Directory Entries** Name: Oakwood Motor Company Location: Tottington Road, Bury, Lancashire, BL8 1SW Classification: Car Dealers - Used **Status:** **Active** Positional Accuracy: Manually positioned within the geographical locality	A8NW (SE)	714	-	378950 411591
364	**Contemporary Trade Directory Entries** Name: Lancashire Masonry Products Location: 13, Whitelegge Street, Bury, Lancashire, BL8 1SW Classification: Builders' Merchants **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	714	-	378947 411587
364	**Contemporary Trade Directory Entries** Name: Fitzsimmons & Cotterell Location: Stewart Street, Bury, Lancashire, BL8 1SP Classification: Joinery Manufacturers **Status:** **Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A8NW (SE)	728	-	378954 411571

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
365	**Contemporary Trade Directory Entries** Name: Essar Fire Extinguishers Location: 76, Cotswold Crescent, Bury, BL8 1QP Classification: Firefighting Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7SE (SE)	674	-	378470 411318
366	**Contemporary Trade Directory Entries** Name: Milltek Engineering Location: 3, St. James Avenue, Bury, Lancashire, BL8 1TD Classification: Engineering Materials **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	677	-	378864 411537
366	**Contemporary Trade Directory Entries** Name: Spraytech Paintworks Location: 3, St. James Avenue, Bury, Lancashire, BL8 1TD Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	677	-	378864 411537
367	**Contemporary Trade Directory Entries** Name: Garside Garage Location: Garside Hey Rd, Bury, Lancashire, BL8 1HY Classification: Commercial Vehicle Breakdown & Recovery Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A16SW (NE)	678	-	378980 412524
368	**Contemporary Trade Directory Entries** Name: Wags Affordable Pet Foods Location: 254, Tottington Road, Bury, Lancashire, BL8 1SJ Classification: Pet Foods & Animal Feeds **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A12SW (E)	684	-	378994 411744
369	**Contemporary Trade Directory Entries** Name: Amy Mcpherson Publishing Ltd Location: Offices 2/4, Arran House, St. James Avenue, Bury, Lancashire, BL8 1TD Classification: Greeting Card Publishers & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A8NW (SE)	696	-	378889 411539
369	**Contemporary Trade Directory Entries** Name: Pro Paint Location: 8, St. James Avenue, Bury, Lancashire, BL8 1TD Classification: Car Body Repairs **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A8NW (SE)	712	-	378885 411508
369	**Contemporary Trade Directory Entries** Name: C H Motorbodies Location: Unit 4 Stewart Street, Bury, Lancashire, BL8 1SU Classification: Car Body Repairs **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A8NW (SE)	733	-	378917 411513
369	**Contemporary Trade Directory Entries** Name: Bury Motor Services Location: Stewart Street Garage, Stewart Street, Bury, BL8 1SU Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	736	-	378910 411501
370	**Contemporary Trade Directory Entries** Name: Shell Location: Market Street, Tottington, Bury, Lancashire, BL8 3LS Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (NW)	713	-	377610 412833
371	**Contemporary Trade Directory Entries** Name: Activecraft Ltd Location: Woolfold Paper Mill, Tottington Road, Bury, Lancashire, BL8 1SL Classification: Paper & Cardboard Products & Packaging - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (E)	723	-	379061 411837
372	**Contemporary Trade Directory Entries** Name: C L S Workwear Location: 71, Bankhouse Road, Bury, Lancashire, BL8 1DY Classification: Laundries & Launderettes **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (E)	735	-	379094 412007

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
373	**Contemporary Trade Directory Entries** Name: Mark Jones Engineering Ltd Location: 10 Lowercroft Mill,Lowercroft Rd, Bury, Lancashire, BL8 3PA Classification: Sheet Metal Work **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A6SW (SW)	739	-	377598 411122
373	**Contemporary Trade Directory Entries** Name: Chris Smith Location: Lowercroft Rd, Bury, Lancashire, BL8 3PA Classification: Commercial Vehicle Breakdown & Recovery Services **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A6SW (SW)	751	-	377598 411110
373	**Contemporary Trade Directory Entries** Name: Walshaw Fibres (Bury) Ltd Location: Unit 8,Lowercroft Mill,Lowercroft Rd, Bury, Lancashire, BL8 3PA Classification: Soft Furnishings - Manufacturers **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A6SW (SW)	767	-	377598 411093
374	**Contemporary Trade Directory Entries** Name: Gaffney Engineering Location: The Garage, Stewart Street, Bury, Lancashire, BL8 1SU Classification: Engineers - General **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (E)	758	-	379035 411650
375	**Contemporary Trade Directory Entries** Name: Mobiltune Location: 5, Bourton Close, Bury, Lancashire, BL8 1QU Classification: Car Engine Tuning & Diagnostic Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (SE)	768	-	378743 411320
376	**Contemporary Trade Directory Entries** Name: P A Heys Location: 9, Bowland Close, Bury, Lancashire, BL8 3DJ Classification: Dairies **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	790	-	377496 411096
377	**Contemporary Trade Directory Entries** Name: The Carpet Cleaning Copmany Location: 64, Kingsbury Close, Bury, Lancashire, BL8 1WB Classification: Carpet, Curtain & Upholstery Cleaners **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A15NE (N)	792	-	378431 412997
377	**Contemporary Trade Directory Entries** Name: Cd Clean Care Ltd Location: 64, Kingsbury Close, Bury, Lancashire, BL8 1WB Classification: Carpet, Curtain & Upholstery Cleaners **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A15NE (N)	792	-	378431 412997
378	**Contemporary Trade Directory Entries** Name: Mac Automotive Group Location: 22, Hayling Close, Bury, BL8 1GS Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A16SE (NE)	799	-	379119 412512
379	**Contemporary Trade Directory Entries** Name: Independent Windows Location: 5, Spring Vale Street, Tottington, Bury, Lancashire, BL8 3LR Classification: Printers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NW)	802	-	377555 412909
379	**Contemporary Trade Directory Entries** Name: Tottington Electrical Supplies Ltd Location: 2a, Spring Vale Street, Tottington, Bury, Lancashire, BL8 3LR Classification: Electrical Goods Sales, Manufacturers & Wholesalers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NW)	835	-	377537 412937
380	**Contemporary Trade Directory Entries** Name: Motortune Services Location: Unit 1 Woolfold Trading Estate,Alston St, Bury, Lancashire, BL8 1SB Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Manually positioned within the geographical locality	A8NW (SE)	805	-	379017 411526

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
380	**Contemporary Trade Directory Entries** Name: Finishing Aids & Tools Location: Unit 25, Woolfold Industrial Estate, Mitchell Street, Bury, Lancashire, BL8 1SF Classification: Abrasive Products - Manufacturers & Distributors **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	822	-	379050 411547
380	**Contemporary Trade Directory Entries** Name: Crossfield Excalibur Ltd Location: Unit 21, Woolfold Industrial Estate, Mitchell Street, Bury, Lancashire, BL8 1SF Classification: Machinery - Industrial & Commercial **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	822	-	379050 411547
380	**Contemporary Trade Directory Entries** Name: Crossfield Excalibur Ltd Location: Unit 21, Woolfold Industrial Estate, Mitchell Street, BURY, Lancashire, BL8 1SF Classification: Tool Design, Manufacturers & Makers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	822	-	379050 411547
380	**Contemporary Trade Directory Entries** Name: Westbury Auto Centre Location: Unit 2-3, Woolfold Industrial Estate, Mitchell Street, Bury, Lancashire, BL8 1SF Classification: Mot Testing Centres **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	822	-	379050 411547
380	**Contemporary Trade Directory Entries** Name: Falcon Precision Engineering Location: Unit 20a, Woolfold Trading Estate, Stewart Street, Bury, Lancashire, BL8 1SG Classification: Precision Engineers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	822	-	379050 411547
380	**Contemporary Trade Directory Entries** Name: S & J Irving Ltd Location: Unit 9/10, Woolfold Industrial Estate, Mitchell Street, Bury, Lancashire, BL8 1SF Classification: Air Compressors **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	822	-	379050 411547
380	**Contemporary Trade Directory Entries** Name: Excelsior Location: Woolfold Ind Est,Mitchell St, Bury, Lancashire, BL8 1SF Classification: Mould Manufacturers **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A8NE (SE)	828	-	379080 411585
381	**Contemporary Trade Directory Entries** Name: Elton Cop Dyeing Co Location: Walshaw Rd, Bury, Lancashire, BL8 1NQ Classification: Dyers **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A8NW (SE)	810	-	378927 411410
382	**Contemporary Trade Directory Entries** Name: Transport Training Services Location: 16, Whitburn Drive, Bury, Lancashire, BL8 1EH Classification: Fork Lift Trucks **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (E)	811	-	379179 412347
383	**Contemporary Trade Directory Entries** Name: Bury Scaffolding Services Location: 30, Mitchell Street, Bury, Lancashire, BL8 1SF Classification: Scaffolding & Work Platforms **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SE)	812	-	379074 411609
383	**Contemporary Trade Directory Entries** Name: Bricktec Location: Unit A Woolfold Industrial Estate, Mitchell Street, Bury, Lancashire, BL8 1SF Classification: Blast Cleaning **Status:** **Inactive** Positional Accuracy: Manually positioned within the geographical locality	A8NE (SE)	832	-	379090 411597

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
383	**Contemporary Trade Directory Entries** Name: Envirocare Location: The Yard,Woolfold Ind Est,Mitchell St, Bury, Lancashire, BL8 1SF Classification: Industrial Engineers **Status:** **Inactive** Positional Accuracy: Manually positioned within the geographical locality	A8NE (SE)	832	-	379090 411597
384	**Contemporary Trade Directory Entries** Name: Retro Control Location: Unit 13, Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Classification: Control Panels **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	821	-	377571 411044
384	**Contemporary Trade Directory Entries** Name: Jon-Son Motors Location: Unit 16, Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	821	-	377571 411044
384	**Contemporary Trade Directory Entries** Name: D P Motors Location: Unit 16, Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	821	-	377571 411044
384	**Contemporary Trade Directory Entries** Name: Multilink Engineering Ltd Location: Unit 17, Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Classification: Mechanical Engineers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	821	-	377571 411044
384	**Contemporary Trade Directory Entries** Name: D P Motors Location: Unit 16, Lowercroft Mill, Lowercroft Road, Bury, Lancashire, BL8 3PA Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	821	-	377571 411044
384	**Contemporary Trade Directory Entries** Name: Burton & Barlow Engineering Ltd Location: Unit 3/A, Lowercroft Business Park, Lowercroft Road, Bury, Lancashire, BL8 3PA Classification: Engineers - General **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	821	-	377571 411044
384	**Contemporary Trade Directory Entries** Name: Finesse Restoration Ltd Location: Unit 17, Lowercroft Mill, Lowercroft Road, Bury, Lancashire, BL8 3PA Classification: Carpet, Curtain & Upholstery Cleaners **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	821	-	377571 411044
384	**Contemporary Trade Directory Entries** Name: Aardvark Automotive Ltd Location: UNIT 1, LOWERCROFT MILL, LOWERCROFT ROAD, BURY, BL8 3PA Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A6SW (SW)	840	-	377553 411028
385	**Contemporary Trade Directory Entries** Name: Lowercroft Salvage Location: UNIT 2C, LOWERCROFT BUSINESS PARK, LOWERCROFT ROAD, BURY, BL8 3PA Classification: Scrap Metal Merchants **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (S)	827	-	377666 411023
385	**Contemporary Trade Directory Entries** Name: Finesse Chem-Dry Location: Unit 3,Lowercroft Business Park,Lowercroft Rd, Bury, Lancashire, BL8 3PA Classification: Carpet, Curtain & Upholstery Cleaners **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A6SW (S)	829	-	377669 411020

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
385	**Contemporary Trade Directory Entries** Name: Pacific Valve Location: Unit 2/B, Lowercroft Business Park, Lowercroft Road, Bury, Lancashire, BL8 3PA Classification: Valve Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A6SW (S)	829	-	377669 411020
385	**Contemporary Trade Directory Entries** Name: Air Plan Consultants Location: Unit 5, Lowercroft Mill, Lowercroft Road, BURY, Lancashire, BL8 3PA Classification: Dust Extraction Plant & Equipment Manufacturers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (S)	830	-	377669 411020
385	**Contemporary Trade Directory Entries** Name: Archlight Bending Ltd Location: Unit 1, Lowecroft Business Park, Lowercroft Road, Bury, Lancashire, BL8 3PA Classification: PVC-U Products - Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A6SW (S)	830	-	377669 411020
385	**Contemporary Trade Directory Entries** Name: Pacific Valve Co Ltd Location: Unit 3, Lowercroft Business Park, Lowercroft Road, Bury, BL8 3PA Classification: Valve Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A2NW (S)	858	-	377654 410993
385	**Contemporary Trade Directory Entries** Name: Glas Craft Location: Unit 5/B, Lowercroft Business Park, Lowercroft Road, Bury, Lancashire, BL8 3PA Classification: Glass Fibre Manufacturers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A2NW (S)	858	-	377654 410993
385	**Contemporary Trade Directory Entries** Name: A M F Recycled Auto Parts Location: Unit 4, Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Classification: Car Breakers & Dismantlers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A2NW (S)	858	-	377654 410993
385	**Contemporary Trade Directory Entries** Name: Atmospheric Control Engineers Ltd Location: Unit 3, Lowercroft Business Park, Lowercroft Road, Bury, BL8 3PA Classification: Ventilators & Ventilation Systems **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A2NW (S)	858	-	377654 410993
386	**Contemporary Trade Directory Entries** Name: Andrew Webron Ltd Location: Walshaw Road, Bury, Lancashire, BL8 1NG Classification: Textile Manufacturing **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (SE)	846	-	378890 411328
387	**Contemporary Trade Directory Entries** Name: Euro Packaging Plc Location: 80, Market Street, Tottington, Bury, Lancashire, BL8 3LJ Classification: Packaging Materials Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (NW)	852	-	377550 412959
388	**Contemporary Trade Directory Entries** Name: S & J Irving Compressors Ltd Location: 10, MITCHELL STREET, BURY, BL8 1SF Classification: Air Compressors **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8NE (SE)	859	-	379113 411582
388	**Contemporary Trade Directory Entries** Name: S J Irving Compressors Ltd Location: Alston St, Bury, Lancashire, BL8 1SB Classification: Air Compressors **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A8NE (SE)	882	-	379113 411534

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
389	**Contemporary Trade Directory Entries** Name: Ichthus Location: 2, Hebburn Drive, Bury, Lancashire, BL8 1ED Classification: Blinds, Awnings & Canopies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (E)	861	-	379241 412237
390	**Contemporary Trade Directory Entries** Name: P T C Enterprises Ltd Location: 4, Sandhurst Close, Bury, Lancashire, BL8 1PQ Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7SE (SE)	874	-	378689 411174
391	**Contemporary Trade Directory Entries** Name: Wrought-Iron Design Location: Unit 5 Lowercroft Mill,Lowercroft Rd, Walshaw, Bury, Lancashire, BL8 3PA Classification: Wrought Ironwork **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A2NW (SW)	940	-	377572 410922
392	**Contemporary Trade Directory Entries** Name: M J Howard Location: 7, Tamworth Drive, Bury, Lancashire, BL8 1DP Classification: Engineers - General **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (E)	955	-	379327 412068
393	**Contemporary Trade Directory Entries** Name: Ferriday Motor Bodies Location: South Royd Street, Tottington, Bury, BL8 3NA Classification: Car Body Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	955	-	377768 413108
394	**Contemporary Trade Directory Entries** Name: Diana'S Ironing Service Location: 35, David Street, Bury, BL8 1SA Classification: Ironing & Home Laundry Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (SE)	958	-	379155 411457
395	**Contemporary Trade Directory Entries** Name: Whitefield Fabrications Location: 32, Kirklees Street, Tottington, Bury, Lancashire, BL8 3NJ Classification: Sheet Metal Work **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	982	-	377676 413125
395	**Contemporary Trade Directory Entries** Name: Westgate Fabrications Location: 32, Kirklees Street, Tottington, Bury, Lancashire, BL8 3NJ Classification: Sheet Metal Work **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	982	-	377676 413125
395	**Contemporary Trade Directory Entries** Name: Johnson Brewing Design Location: 34, Kirklees Street, Tottington, Bury, Lancashire, BL8 3NJ Classification: Brewers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	993	-	377685 413138
395	**Contemporary Trade Directory Entries** Name: Johnson Brewing Location: 34, Kirklees Street, Tottington, Bury, Lancashire, BL8 3NJ Classification: Brewery Supplies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	993	-	377685 413138
395	**Contemporary Trade Directory Entries** Name: Blundell Air Conditioning Ltd Location: 34, Kirklees Street, Tottington, Bury, Lancashire, BL8 3NJ Classification: Air Conditioning Equipment & Systems **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	993	-	377685 413138
396	**Contemporary Trade Directory Entries** Name: Cooldelight Desserts Ltd Location: 39, Market Street, Tottington, Bury, Lancashire, BL8 4AA Classification: Ice Cream Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	987	-	377562 413105

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
397	**Contemporary Trade Directory Entries** Name: F P & B Smethurst Location: 146-148, Tottington Road, Bury, Lancashire, BL8 1RU Classification: Hardware **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (E)	988	-	379248 411563
397	**Contemporary Trade Directory Entries** Name: Camtia Location: 142, Tottington Road, Bury, Lancashire, BL8 1RU Classification: Photographic Processors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (E)	997	-	379255 411556
398	**Contemporary Trade Directory Entries** Name: B Ridley Location: 13, Purbeck Drive, Bury, Lancashire, BL8 1JG Classification: Machinery - Industrial & Commercial **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A16NE (NE)	994	-	379169 412811
399	**Fuel Station Entries** Name: Benimotor Services Location: Bury Road , Tottington , Bury, Greater Manchester, BL8 3EU Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Automatically positioned to the address	A14SE (N)	449	-	377980 412607
400	**Fuel Station Entries** Name: Walshaw Road Garage Location: 310, Walshaw Road , , Bury, Greater Manchester, BL8 1PY Brand: Unbranded Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Manually positioned to the address or location	A7NE (SE)	495	-	378684 411614
401	**Fuel Station Entries** Name: Gem Market Street Location: 106, Market Street , Tottington , Bury, Greater Manchester, BL8 3LS Brand: Shell Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A14NW (NW)	713	-	377610 412833
402	**Fuel Station Entries** Name: Brandlesholme Filling Sation Location: Brandlesholme Road , Brandlesholme , Bury, Greater Manchester, BL8 1JN Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Approximate location provided by supplier	A16SE (NE)	924	-	379162 412700
403	**Points of Interest - Commercial Services** Name: Braketech Location: 167 Scobell Street, Tottington, BL8 3DE Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A10NE (N)	21	8	378063 412155
404	**Points of Interest - Commercial Services** Name: Greenbrook Garage Location: Unit 4, Leigh Street, Walshaw, Bury, BL8 3AL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A10SW (SW)	148	8	377639 411744
405	**Points of Interest - Commercial Services** Name: Boholt Garage Location: Bolholt Garage, Bury Road, Tottington, Bury, BL8 3DT Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A11NW (NE)	181	8	378233 412353
405	**Points of Interest - Commercial Services** Name: Boholt Garage Location: Bury Road, Tottington, Bury, BL8 3DT Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A11NW (NE)	181	8	378233 412353

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
405	**Points of Interest - Commercial Services** Name: Tottington M O T Centre Location: Bury Road, Tottington, Bury, BL8 3DT Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A11NW (NE)	183	8	378231 412355
406	**Points of Interest - Commercial Services** Name: Bury Paint Seal Protection Location: 39 Holthouse Road, Tottington, BL8 3JP Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A10NW (W)	221	8	377590 412146
406	**Points of Interest - Commercial Services** Name: Motorscreen Vehicle Glass Replacements Location: 70 Neston Road, Walshaw, Bury, BL8 3DB Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A10NW (W)	223	8	377579 412120
406	**Points of Interest - Commercial Services** Name: Motorscreen Vehicle Glass Replacements Location: 70 Neston Road, Walshaw, Bury, BL8 3DB Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A10NW (W)	223	8	377579 412120
407	**Points of Interest - Commercial Services** Name: Beeches Transport Location: 16 Hawes Close, Bury, BL8 1UH Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A11NE (E)	319	8	378699 412221
408	**Points of Interest - Commercial Services** Name: Haworth & Mather Ltd Location: 98 Booth Way, Tottington, Bury, BL8 3JT Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A10NW (NW)	359	8	377497 412287
408	**Points of Interest - Commercial Services** Name: M & I UK Ltd Location: 52 Sheep Gate Drive, Tottington, Bury, BL8 3JZ Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A10NW (W)	400	8	377439 412251
409	**Points of Interest - Commercial Services** Name: Walshaw Motor Bodies Location: Bolholt Industrial Park, Walshaw Road, Bury, BL8 1PL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7NE (SE)	406	8	378626 411682
409	**Points of Interest - Commercial Services** Name: Walshaw Motor Bodies Ltd Location: Unit to the Rear of Units 19 and 20 Bolholt Industrial Estate, Walshaw Road, Bury, BL8 1PL Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7NE (SE)	407	8	378627 411681
410	**Points of Interest - Commercial Services** Name: A & P Haworth Ltd Location: 12 Chiltern Drive, Bury, BL8 1QY Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A7NE (SE)	491	8	378565 411538
410	**Points of Interest - Commercial Services** Name: A Haworth Location: 12 Chiltern Drive, Bury, BL8 1QY Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A7NE (SE)	491	8	378565 411538
411	**Points of Interest - Commercial Services** Name: Walshaw Road Garage Location: 310 Walshaw Road, Bury, BL8 1PY Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378684 411614

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
411	**Points of Interest - Commercial Services** Name: Walshaw Road Garage Location: Walshaw Road, Bury, BL8 1PY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378684 411614
411	**Points of Interest - Commercial Services** Name: Walshaw Road Garage Location: Walshaw Road, Bury, BL8 1PY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378685 411615
411	**Points of Interest - Commercial Services** Name: Walshaw Road Garage Location: Walshaw Road, Bury, BL8 1PY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378685 411615
411	**Points of Interest - Commercial Services** Name: Car Wash Location: 310 Walshaw Road, Bury, BL8 1PY Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378684 411614
412	**Points of Interest - Commercial Services** Name: Garside Garage Location: Garside Hey Road, Bury, BL8 1HY Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A16SW (NE)	537	8	378805 412536
413	**Points of Interest - Commercial Services** Name: The Prestige Valeting Co Location: 12 Slaidburn Drive, Bury, BL8 3DG Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A6SW (SW)	651	8	377464 411259
414	**Points of Interest - Commercial Services** Name: Spraytec Paintworks Location: 3 St. James Avenue, Bury, BL8 1TD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SE)	677	8	378864 411537
414	**Points of Interest - Commercial Services** Name: Spraytech Paintworks Location: 3 St James Avenue, Bury, BL8 1TD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SE)	677	8	378864 411537
415	**Points of Interest - Commercial Services** Name: Tottington Motor Co Ltd Location: Market Street, Tottington, Bury, BL8 3LS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	680	8	377628 412804
416	**Points of Interest - Commercial Services** Name: Paul Switzer Location: 11 Whitelegge Street, Bury, BL8 1SW Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SE)	714	8	378950 411591
416	**Points of Interest - Commercial Services** Name: Paul Switzer Car Body Repaires Location: Near 11, Whitelegge Street, Bury, BL8 1SW Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SE)	716	8	378958 411598
417	**Points of Interest - Commercial Services** Name: Bury Motor Services Location: The Garage, Stewart Street, Bury, BL8 1SU Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (E)	758	8	379035 411650

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
417	**Points of Interest - Commercial Services** Name: C H Motorbodies Location: Unit 4, Stewart Street, Bury, BL8 1SU Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (E)	763	8	379039 411648
417	**Points of Interest - Commercial Services** Name: Westbury Auto Centre Location: Units 1 to 3 Woolfold Industrial Estate, Mitchell Street, Bury, BL8 1SF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SE)	817	8	379057 411567
418	**Points of Interest - Commercial Services** Name: Bury Motor Services Location: Stewart Street, Bury, BL8 1SU Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SE)	771	8	378939 411480
419	**Points of Interest - Commercial Services** Name: Mac Automotive Group Location: 22 Hayling Close, Bury, BL8 1GS Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A16SE (NE)	799	8	379119 412512
420	**Points of Interest - Commercial Services** Name: The Village Garage Location: 13 Spring Vale Street, Tottington, Bury, BL8 3LR Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	804	8	377536 412904
420	**Points of Interest - Commercial Services** Name: Village Garage Location: 13 Spring Vale Street, Tottington, Bury, BL8 3LR Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	804	8	377536 412904
420	**Points of Interest - Commercial Services** Name: Motorscreen Location: 82 Market Street, Tottington, Bury, BL8 3LJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	839	8	377557 412949
420	**Points of Interest - Commercial Services** Name: Motorscreen Location: 82 Market Street, Tottington, Bury, BL8 3LJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	840	8	377557 412950
420	**Points of Interest - Commercial Services** Name: Motorscreen Ltd Location: 82 Market Street, Tottington, Bury, BL8 3LJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	840	8	377557 412950
420	**Points of Interest - Commercial Services** Name: Motorscreen Ltd Location: 82 Market Street, Tottington, BL8 3LJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	840	8	377557 412950
420	**Points of Interest - Commercial Services** Name: Motorscreen Vehicle Glass Replacements Location: 82 Market Street, Tottington, Bury, BL8 3LJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	840	8	377557 412950
420	**Points of Interest - Commercial Services** Name: Motorscreen Vehicle Glass Replacements Location: 82 Market Street, Tottington, Bury, BL8 3LJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	840	8	377557 412950

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
420	**Points of Interest - Commercial Services** Name: Motorscreen Windscreen Services Location: 82 Market Street, Tottington, Bury, BL8 3LJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A14NW (NW)	840	8	377557 412950
421	**Points of Interest - Commercial Services** Name: Jon-Son Motors Location: Unit 16 Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A6SW (SW)	821	8	377571 411044
421	**Points of Interest - Commercial Services** Name: Bur-Low Location: Unit 3 Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A6SW (SW)	821	8	377571 411044
421	**Points of Interest - Commercial Services** Name: Aardvark Automotive Ltd Location: Unit 1 Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A6SW (SW)	840	8	377553 411028
421	**Points of Interest - Commercial Services** Name: Jon-son Motors Location: Unit 16 Lowercroft Mill, Lowercroft Road, Bury, BL8 3PA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A6SW (SW)	840	8	377553 411028
422	**Points of Interest - Commercial Services** Name: Westbury Auto Centre Location: Unit 1/3 Woolfold Industrial Estate, Mitchell Street, Bury, BL8 1SF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NW (SE)	822	8	379050 411547
423	**Points of Interest - Commercial Services** Name: Lowercroft Salvage Location: Unit 2c Lowercroft Industrial Estate, Lowercroft Road, Bury, BL8 3PA Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A6SW (S)	827	8	377666 411023
424	**Points of Interest - Commercial Services** Name: A C Rosbottom Towbars Location: 34 Gisburn Drive, Bury, BL8 3DH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A5SE (SW)	854	8	377268 411138
424	**Points of Interest - Commercial Services** Name: Rosbottom a C Location: 34 Gisburn Drive, Bury, BL8 3DH Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A5SE (SW)	855	8	377268 411138
425	**Points of Interest - Commercial Services** Name: Warren Bowes Ltd Location: 5 Skipton Close, Bury, BL8 2JX Category: Recycling Services Class Code: Recycling, Reclamation and Disposal Positional Accuracy: Positioned to address or location	A2NW (S)	981	8	377689 410866
426	**Points of Interest - Commercial Services** Name: Westgate Fabrications Location: 32 Kirklees Street, Tottington, Bury, BL8 3NJ Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A18SW (N)	982	8	377676 413125
427	**Points of Interest - Commercial Services** Name: Star Autos Ltd Location: 7 Bramley Drive, Bury, BL8 1JL Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A16NE (NE)	987	8	379119 412861

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
428	**Points of Interest - Manufacturing and Production** Name: Copthorne Cattery Location: Church Street, Walshaw, Bury, BL8 3BP Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A10SE (W)	0	8	377898 412024
429	**Points of Interest - Manufacturing and Production** Name: Tank Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A10SE (SW)	42	8	377799 411825
430	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A11NW (NE)	46	8	378335 412242
430	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A11NW (NE)	47	8	378335 412243
431	**Points of Interest - Manufacturing and Production** Name: P J Bentley Location: Booth Street, Tottington, Bury, BL8 3JQ Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location	A10NE (NW)	178	8	377801 412331
432	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A10SW (SW)	206	8	377608 411694
432	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A10SW (SW)	206	8	377608 411694
433	**Points of Interest - Manufacturing and Production** Name: Hard Rock Location: Walshaw Road, Bury, BL8 1PU Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location	A11SE (SE)	267	8	378508 411764
434	**Points of Interest - Manufacturing and Production** Name: Tank Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A10SW (W)	281	8	377488 411990
435	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A7NE (SE)	340	8	378465 411660
435	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A7NE (SE)	340	8	378465 411660
435	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A7NE (SE)	348	8	378486 411660

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
435	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A7NE (SE)	348	8	378486 411660
436	**Points of Interest - Manufacturing and Production** Name: Bonholt Industrial Estate Location: BL8 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A7NE (SE)	420	8	378599 411641
436	**Points of Interest - Manufacturing and Production** Name: Bonholt Industrial Estate Location: BL8 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A7NE (SE)	428	8	378616 411644
437	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A12SW (E)	615	8	378915 411732
437	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A12SW (E)	615	8	378915 411732
437	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8NW (E)	659	8	378942 411686
437	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8NW (E)	659	8	378942 411686
438	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8NW (SE)	617	8	378785 411541
439	**Points of Interest - Manufacturing and Production** Name: Victoria Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A14NW (NW)	671	8	377724 412818
440	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8NW (SE)	676	8	378895 411577
440	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8NW (SE)	676	8	378895 411577
441	**Points of Interest - Manufacturing and Production** Name: Tank Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A9SE (W)	693	8	377064 411983

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
442	**Points of Interest - Manufacturing and Production** Name: Tank Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A9SE (W)	700	8	377061 411704
443	**Points of Interest - Manufacturing and Production** Name: Tank Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A5NE (SW)	726	8	377100 411515
443	**Points of Interest - Manufacturing and Production** Name: Tank Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A5NE (SW)	730	8	377096 411514
443	**Points of Interest - Manufacturing and Production** Name: Tanks Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A5NE (SW)	734	8	377091 411515
444	**Points of Interest - Manufacturing and Production** Name: Tank Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A7SW (S)	805	8	378315 411157
444	**Points of Interest - Manufacturing and Production** Name: Tank Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A7SW (S)	850	8	378327 411113
445	**Points of Interest - Manufacturing and Production** Name: First Choice Granite Ltd Location: Unit 8 Woolfold Industrial Estate, Mitchell Street, Bury, BL8 1SF Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location	A8NW (SE)	822	8	379050 411547
445	**Points of Interest - Manufacturing and Production** Name: Altowise Ltd Location: 8 Mitchell Street, Bury, BL8 1SF Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location	A8NE (SE)	863	8	379116 411579
446	**Points of Interest - Manufacturing and Production** Name: Business Park Location: BL8 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A6SW (S)	824	8	377652 411027
447	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A14NW (NW)	826	8	377541 412929
447	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A14NW (NW)	827	8	377541 412930
448	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8SW (SE)	924	8	379003 411325

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
448	**Points of Interest - Manufacturing and Production** Name: Tanks Location: BL8 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (SE)	964	8	378996 411263
449	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A8NE (E)	933	8	379215 411626
450	**Points of Interest - Manufacturing and Production** Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	968	8	377725 413118
450	**Points of Interest - Manufacturing and Production** Name: Works Location: BL8 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A18SW (N)	968	8	377725 413118
451	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A10NE (N)	87	8	378028 412220
451	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A10NE (N)	88	8	378026 412221
452	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A11SW (S)	152	8	378065 411790
452	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A11SW (S)	153	8	378070 411792
453	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NW (SE)	283	8	378253 411676
453	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NW (SE)	284	8	378257 411675
453	**Points of Interest - Public Infrastructure** Name: Refuse Tip Location: BL8 Category: Infrastructure and Facilities Class Code: Refuse Disposal Facilities Positional Accuracy: Positioned to an adjacent address or location	A7NW (SE)	289	8	378353 411688
453	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NW (SE)	294	8	378335 411679

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
453	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NW (SE)	296	8	378338 411678
454	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A10SW (SW)	318	8	377461 411707
454	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A10SW (SW)	318	8	377461 411707
454	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A10SW (SW)	329	8	377446 411713
454	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A10SW (SW)	334	8	377441 411712
454	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A10SW (SW)	339	8	377435 411713
455	**Points of Interest - Public Infrastructure** Name: Main Waste Management Location: 23 Hawes Close, Bury, BL8 1UH Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	A11NE (E)	354	8	378724 412292
455	**Points of Interest - Public Infrastructure** Name: Main Waste Management Location: 23 Hawes Close, Bury, BL8 1UH Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	A11NE (E)	354	8	378724 412292
456	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	367	8	378653 412453
456	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	396	8	378666 412481
456	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	399	8	378669 412482
456	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	406	8	378671 412490

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
456	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	416	8	378682 412493
456	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	419	8	378673 412507
456	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	420	8	378687 412494
457	**Points of Interest - Public Infrastructure** Name: Filter Bed Location: BL8 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A15SE (NE)	443	8	378487 412637
458	**Points of Interest - Public Infrastructure** Name: Walshaw Road Filling Station Location: Walshaw Road, Bury, BL8 1PY Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378685 411615
458	**Points of Interest - Public Infrastructure** Name: Walshaw Road Filling Station Location: Walshaw Road, Bury, BL8 1PY Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378685 411615
458	**Points of Interest - Public Infrastructure** Name: Walshaw Road Filling Station Location: Walshaw Road, Bury, BL8 1PY Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378685 411615
458	**Points of Interest - Public Infrastructure** Name: Walshaw Road Filling Station Location: Walshaw Road, Bury, BL8 1PY Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378685 411615
458	**Points of Interest - Public Infrastructure** Name: Walshaw Road Garage Location: 310 Walshaw Road, Bury, BL8 1PY Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A7NE (SE)	495	8	378684 411614
459	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SW (N)	528	8	378179 412698
459	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15SW (N)	530	8	378174 412699
460	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12NW (E)	535	8	378892 412362

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
460	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12NW (E)	539	8	378896 412363
460	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A16SW (NE)	544	8	378891 412395
460	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A16SW (NE)	549	8	378896 412397
461	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12NW (E)	629	8	379007 412265
461	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12NW (E)	631	8	379009 412263
461	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12NW (E)	660	8	379037 412277
462	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SW (E)	639	8	378989 411923
462	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SW (E)	643	8	378993 411922
462	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SW (E)	662	8	379012 411922
463	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15NW (N)	658	8	378386 412865
464	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12NW (E)	672	8	379049 412134
464	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12NW (E)	698	8	379076 412148

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
464	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12NE (E)	702	8	379080 412148
465	**Points of Interest - Public Infrastructure** Name: Shell Location: Shell, 106, Market Street, Tottington, BL8 3LS Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14NW (NW)	712	8	377609 412832
465	**Points of Interest - Public Infrastructure** Name: Gem Tottington Location: 106, Market Street, Tottington, Bury, BL8 3LS Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A14NW (NW)	713	8	377610 412833
466	**Points of Interest - Public Infrastructure** Name: William Roberts Haulage Ltd Location: 11 Whitelegge Street, Bury, BL8 1SW Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	A8NW (SE)	714	8	378950 411591
467	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A9SW (W)	765	8	376990 411972
467	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A9SW (W)	771	8	376985 411974
468	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15NE (N)	801	8	378424 413006
469	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15NW (N)	805	8	378303 413008
469	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15NW (N)	806	8	378307 413009
469	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15NW (N)	816	8	378305 413019
469	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A15NW (N)	817	8	378309 413020
469	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19SW (N)	894	8	378247 413090

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Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
469	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19SW (N)	894	8	378243 413090
470	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SE (E)	813	8	379141 411785
470	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A12SE (E)	813	8	379142 411786
471	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A2NE (S)	865	8	377989 411010
471	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A2NE (S)	865	8	377989 411010
472	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19SW (N)	919	8	378264 413118
472	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19SW (N)	919	8	378268 413119
473	**Points of Interest - Public Infrastructure** Name: Sluice Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A2NW (SW)	933	8	377529 410939
473	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A2NW (SW)	933	8	377526 410939
473	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A2NW (SW)	933	8	377524 410940
474	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13NE (NW)	951	8	377331 412965
474	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13NE (NW)	954	8	377329 412967

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
475	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A8NE (E)	980	8	379286 411683
475	**Points of Interest - Public Infrastructure** Name: Weir Location: BL8 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A8NE (E)	981	8	379287 411684
476	**Points of Interest - Recreational and Environmental** Name: Playground Location: Sycamore Road, BL8 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A10NE (NW)	144	8	377950 412302
477	**Points of Interest - Recreational and Environmental** Name: Playground Location: Booth Street, BL8 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14SE (NW)	484	8	377783 412637
477	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14SE (NW)	497	8	377776 412649
478	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A16SE (E)	823	8	379154 412488
479	**Points of Interest - Recreational and Environmental** Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14NW (NW)	842	8	377661 412980
479	**Points of Interest - Recreational and Environmental** Name: Playground Location: BL8 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14NW (N)	855	8	377665 412994
479	**Points of Interest - Recreational and Environmental** Name: Playground Location: Nr Old Towns Close, BL8 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A14NW (NW)	860	8	377657 412998
480	**Points of Interest - Recreational and Environmental** Name: Playground Location: Brandlesholme Road, BL8 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A16SE (NE)	938	8	379225 412616

Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
481	**Areas of Adopted Green Belt** Authority: Bury Metropolitan Borough Council Plan Name: Bury Unitary Development Plan **Status:** **Adopted** Plan Date: 29th August 1997	A10NE (SW)	0	6	378060 412036
482	**Areas of Adopted Green Belt** Authority: Bury Metropolitan Borough Council Plan Name: Bury Unitary Development Plan **Status:** **Adopted** Plan Date: 29th August 1997	A10SW (W)	260	6	377474 412016
483	**Local Nature Reserves** Name: Kirklees Valley Multiple Area: Y Area (m2): 364784.95 Source: Natural England Designation Date: Not Supplied	A15SE (NE)	274	10	378414 412518

Data Currency

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Environment Agency - Head Office	November 2023	Annually
Rossendale Borough Council - Environmental Health Department	October 2017	Annual Rolling Update
Rochdale Metropolitan Borough Council - Environmental Health Department	October 2017	Annually
Blackburn with Darwen Borough Council - Environmental Health Department	September 2017	Annual Rolling Update
Bolton Metropolitan Borough Council - Environmental Health Department	September 2017	Annual Rolling Update
Bury Metropolitan Borough Council - Environmental Health Department	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - North West Region	January 2024	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - North West Region	March 2013	
Integrated Pollution Controls		
Environment Agency - North West Region	January 2009	
Integrated Pollution Prevention And Control		
Environment Agency - North West Region	October 2023	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Blackburn with Darwen Borough Council - Environmental Health Department	February 2015	Variable
Bury Metropolitan Borough Council - Environmental Health Department	February 2015	Variable
Bolton Metropolitan Borough Council - Environmental Health Department	July 2014	Variable
Rochdale Metropolitan Borough Council - Environmental Health Department	July 2014	Variable
Rossendale Borough Council - Environmental Health Department	May 2016	Variable
Local Authority Pollution Prevention and Controls		
Blackburn with Darwen Borough Council - Environmental Health Department	February 2015	Not Applicable
Bury Metropolitan Borough Council - Environmental Health Department	February 2015	Not Applicable
Rochdale Metropolitan Borough Council - Environmental Health Department	July 2014	Annual Rolling Update
Bolton Metropolitan Borough Council - Environmental Health Department	July 2014	Not Applicable
Rossendale Borough Council - Environmental Health Department	May 2016	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Blackburn with Darwen Borough Council - Environmental Health Department	February 2015	Variable
Bury Metropolitan Borough Council - Environmental Health Department	February 2015	Variable
Bolton Metropolitan Borough Council - Environmental Health Department	July 2014	Variable
Rochdale Metropolitan Borough Council - Environmental Health Department	July 2014	Variable
Rossendale Borough Council - Environmental Health Department	May 2016	Variable
Nearest Surface Water Feature		
Ordnance Survey	February 2024	
Pollution Incidents to Controlled Waters		
Environment Agency - North West Region	January 2000	
Prosecutions Relating to Authorised Processes		
Environment Agency - North West Region	July 2015	
Prosecutions Relating to Controlled Waters		
Environment Agency - North West Region	March 2013	
Registered Radioactive Substances		
Environment Agency - North West Region	June 2016	As notified
Environment Agency - Head Office	May 2023	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	April 2012	
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	April 2012	

Agency & Hydrological	Version	Update Cycle
Substantiated Pollution Incident Register		
Environment Agency - North West Region - Central Area	January 2024	Quarterly
Environment Agency - North West Region - North Area	January 2024	Quarterly
Environment Agency - North West Region - South Area	January 2024	Quarterly
Water Abstractions		
Environment Agency - North West Region	October 2023	Quarterly
Water Industry Act Referrals		
Environment Agency - North West Region	October 2017	
Groundwater Vulnerability Map		
Environment Agency - Head Office	June 2018	As notified
Bedrock Aquifer Designations		
Environment Agency - Head Office	January 2018	As notified
Superficial Aquifer Designations		
Environment Agency - Head Office	January 2018	As notified
Source Protection Zones		
Environment Agency - Head Office	September 2022	Bi-Annually
Extreme Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	December 2023	Quarterly
Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	December 2023	Quarterly
Areas Benefiting from Flood Defences		
Environment Agency - Head Office	February 2023	Quarterly
Flood Water Storage Areas		
Environment Agency - Head Office	January 2024	Quarterly
Flood Defences		
Environment Agency - Head Office	August 2022	Quarterly
OS Water Network Lines		
Ordnance Survey	January 2024	Quarterly
Surface Water 1 in 30 year Flood Extent		
Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 100 year Flood Extent		
Environment Agency - Head Office	May 2018	Annually
Surface Water 1 in 1000 year Flood Extent		
Environment Agency - Head Office	May 2018	Annually
Surface Water Suitability		
Environment Agency - Head Office	February 2016	Annually
BGS Groundwater Flooding Susceptibility		
British Geological Survey - National Geoscience Information Service	May 2013	As notified

Data Currency

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites		
Environment Agency - Head Office	July 2023	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - North West Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - North West Region - Central Area	January 2024	Quarterly
Environment Agency - North West Region - North Area	January 2024	Quarterly
Environment Agency - North West Region - South Area	January 2024	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - North West Region - Central Area	January 2023	Quarterly
Environment Agency - North West Region - North Area	January 2023	Quarterly
Environment Agency - North West Region - South Area	January 2023	Quarterly
Local Authority Landfill Coverage		
Blackburn with Darwen Borough Council	February 2003	Not Applicable
Bolton Metropolitan Borough Council	February 2003	Not Applicable
Bury Metropolitan Borough Council	February 2003	Not Applicable
Lancashire County Council - Waste Management Group	February 2003	Not Applicable
Rochdale Metropolitan Borough Council - Environmental Health Department	February 2003	Not Applicable
Rossendale Borough Council - Environmental Health Department	February 2003	Not Applicable
Local Authority Recorded Landfill Sites		
Blackburn with Darwen Borough Council	October 2018	
Bolton Metropolitan Borough Council	October 2018	
Bury Metropolitan Borough Council	October 2018	
Lancashire County Council - Waste Management Group	October 2018	
Rochdale Metropolitan Borough Council - Environmental Health Department	October 2018	
Rossendale Borough Council - Environmental Health Department	October 2018	
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	
Registered Landfill Sites		
Environment Agency - North West Region - Central Area	March 2006	Not Applicable
Environment Agency - North West Region - North Area	March 2006	Not Applicable
Environment Agency - North West Region - South Area	March 2006	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - North West Region - Central Area	April 2018	
Environment Agency - North West Region - North Area	April 2018	
Environment Agency - North West Region - South Area	April 2018	
Registered Waste Treatment or Disposal Sites		
Environment Agency - North West Region - Central Area	June 2015	
Environment Agency - North West Region - North Area	June 2015	
Environment Agency - North West Region - South Area	June 2015	

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	January 2024	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
Lancashire County Council	April 2023	Variable
Blackburn with Darwen Borough Council	February 2016	Variable
Bolton Metropolitan Borough Council - Planning Department	February 2016	Variable
Bury Metropolitan Borough Council	February 2016	Variable
Rochdale Metropolitan Borough Council	May 2023	Variable
Rossendale Borough Council - Planning Department	May 2023	Variable
Planning Hazardous Substance Consents		
Blackburn with Darwen Borough Council	February 2016	Variable
Bolton Metropolitan Borough Council - Planning Department	February 2016	Variable
Bury Metropolitan Borough Council	February 2016	Variable
Lancashire County Council	February 2016	Variable
Rochdale Metropolitan Borough Council	February 2016	Variable
Rossendale Borough Council - Planning Department	February 2016	Variable

Data Currency

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	January 2024	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	February 2023	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	October 2023	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	October 2023	Annually

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	October 2023	Quarterly
Fuel Station Entries Catalist Ltd - Experian	February 2024	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Points of Interest - Commercial Services PointX	March 2024	Quarterly
Points of Interest - Education and Health PointX	March 2024	Quarterly
Points of Interest - Manufacturing and Production PointX	March 2024	Quarterly
Points of Interest - Public Infrastructure PointX	March 2024	Quarterly
Points of Interest - Recreational and Environmental PointX	March 2024	Quarterly
Underground Electrical Cables National Grid	February 2023	Bi-Annually

Data Currency

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural England	October 2023	Bi-Annually
Areas of Adopted Green Belt		
Blackburn with Darwen Borough Council	February 2024	Quarterly
Bolton Metropolitan Borough Council	February 2024	Quarterly
Bury Metropolitan Borough Council	February 2024	Quarterly
Rochdale Metropolitan Borough Council	February 2024	Quarterly
Rossendale Borough Council - Planning Department	February 2024	Quarterly
Areas of Unadopted Green Belt		
Blackburn with Darwen Borough Council	February 2024	Quarterly
Bolton Metropolitan Borough Council	February 2024	Quarterly
Bury Metropolitan Borough Council	February 2024	Quarterly
Rochdale Metropolitan Borough Council	February 2024	Quarterly
Rossendale Borough Council - Planning Department	February 2024	Quarterly
Areas of Outstanding Natural Beauty		
Natural England	November 2023	Bi-Annually
Environmentally Sensitive Areas		
Natural England	August 2023	
Forest Parks		
Forestry Commission	May 2023	Not Applicable
Local Nature Reserves		
Natural England	February 2024	Bi-Annually
Marine Nature Reserves		
Natural England	February 2024	Bi-Annually
National Nature Reserves		
Natural England	February 2024	Bi-Annually
National Parks		
Natural England	February 2018	Bi-Annually
Nitrate Sensitive Areas		
Natural England	April 2023	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	April 2016	
Environment Agency - Head Office	March 2023	Bi-Annually
Ramsar Sites		
Natural England	February 2024	Bi-Annually
Sites of Special Scientific Interest		
Natural England	November 2023	Bi-Annually
Special Areas of Conservation		
Natural England	October 2023	Bi-Annually
Special Protection Areas		
Natural England	October 2023	Bi-Annually

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Map data
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPA Scottish Environment Protection Agency
The Coal Authority	The Coal Authority
British Geological Survey	BGS 1835 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	CEH Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Natural Resources Wales	Cyfoeth Naturiol Cymru Natural Resources Wales
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Public Health England	Public Health England
Ove Arup	ARUP
Stantec UK Ltd	Stantec

Useful Contacts

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2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Bury Metropolitan Borough Council - Environmental Health Department** 3 Knowsley Place, Duke Street, Bury, Lancashire, BL9 0EJ	Telephone: 0161 253 5000 Fax: 0161 253 5563 Website: www.bury.gov.uk
4	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
5	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	**Bury Metropolitan Borough Council** Craig House, Bank Street, Bury, Lancashire, BL9 0DN	Telephone: 0161 253 5000 Fax: 0161 705 5290 Website: www.bury.gov.uk
7	**The Coal Authority - Property Searches** 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG	Telephone: 0345 762 6848 Fax: 01623 637 338 Email: groundstability@coal.gov.uk Website: www2.groundstability.com
8	**PointX** 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
9	**Bolton Metropolitan Borough Council** Town Hall, The Wellsprings, Bolton, Lancashire, BL1 1US	Telephone: 01204 522311 Fax: 01204 392808 Website: www.bolton.gov.uk
10	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.

Coal Mining Risk Assessment
Land off Scobell Street, Bury

Prepared for
Wain Estates (Land) Ltd

April 2024

10/2399/002 Rev. 00

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Building Appraisal I Building Services I Civil I Geo-Environmental I Pre-Planning I Structural

Document Control Sheet

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Client	Wain Estates (Land) Ltd Fontwell House Trident Business Park Birchwood Warrington WA3 6BX	
Document	Coal Mining Risk Assessment	
Project Name	Land off Scobell Street, Bury	
Reference	10/2399/002 Rev 00	
Date	April 2024	

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Document Origin

Revision	Date	Revision Description		Name
00	April 2024	Original	Prepared	Phil Hill Senior Geo-Environmental Consultant phil.hill@clancy.co.uk
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Drawings

Site Location Plan

Appendices

Appendix I	Drawings
Appendix II	Historical BGS Borehole Records
Appendix III	Consultants Coal Mining Report

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1.0 Introduction

1.1 Background

Clancy Consulting Ltd were appointed by Wain Estates (Land) Ltd to undertake a Coal Mining Risk Assessment (CMRA) for the site off Scobell Street, Bury. A site location plan is included in Appendix I.

The site is proposed to be developed for residential purposes, with associated infrastructure and landscaped areas and private gardens as part of the wider Walshaw Garden Neighbourhood development. At the time of writing, a copy of the Walshaw Garden Neighbourhood Development Framework has been made available to Clancy Consulting Ltd, though no specific proposed development plans have been provided.

Clancy Consulting Ltd has undertaken a Phase 1 Desk Study Report for the site, the findings of which are presented within the following document:

- 'Phase 1 Desk Study, Land Off Scobell Street, Bury' Report Ref 10/2399/001, dated April 2024.

1.2 Site Description & Setting

The site is located off Scobell Street, Tottington approximately 2.5 km north west of Bury town centre, at OS Reference 378060, 412040. The site is roughly rectangular in shape covering an area of approximately 11.75 hectares, with a cluster of buildings and access road associated with Copthorne Cattery in the west of the site. A small cluster of unspecified structures within a compound are also present in the north east of the site. With the exception of these structures, the site forms predominantly undeveloped open grassland with some areas of rougher vegetation, split into several sections by field boundaries, hedgerows and mature / semi mature trees. A small stream or drainage ditch runs from the north west of the site in a south easterly direction before entering "sinks" in the central western area, east of the Copthorne Cattery buildings. A spring is present to the south east of the Copthorne Cattery buildings along with another drainage ditch, leading southwards towards Walshaw Brook. A footpath leads from the central northern boundary of the site towards the middle of the site and to Copthorne Cattery, before leading south past the spring towards Walshaw Brook.

The site generally slopes from west (approximately 135m to 130m AOD) to the east and south east (approximately 120m AOD) with an approximate change in elevation of 10m to 15m. Steeper slopes are present around the north western boundary and west of the site, where the site dips towards the stream / drainage ditch. A small raised area is present in the centre of the site with an elevation of 126m AOD. Scobell Street is at a lower elevation to the site along the north eastern boundary.

The north of the site is bound by Scobell Street along with a central row of houses with further housing and a partially culverted stream beyond. The west of the site is bound by Church Street, Collins Street and Pleasant Street with associated houses to the west of Copthorne Cattery. Additional areas of open grassland, hedgerows and footpaths form the eastern and southern site boundaries with Walshaw Brook forming the south western boundary. A series of large ponds and fields is present to the south of the site with the majority of the surrounding area comprising predominantly residential buildings with associated infrastructure, and some light industrial and commercial buildings and open fields.

1.3 Site History, Geology & Ground Stability

The British Geological Survey (BGS) 1:50,000 Sheet 085 (Manchester) indicates both Glaciofluvial Deposits and Devensian Till to be present beneath the site. The Glaciofluvial Deposits are likely to comprise predominantly sand and gravel and are shown to be present in parts of the north, central west and south west of the site. The remainder of the site is underlain by Devensian Till comprising a mix of clay, silt, sand and gravel.

Bedrock comprises a mix of sandstone, siltstone, mudstone and coal of the Pennine Lower Coal Measures and across much of the west of the site, sandstone deposits of the Cannel Rock are present. A small section of sandstone of the Old Lawrence Rock is also present in the north east of the site. Two coal seams are indicated to sub-crop beneath the site.

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Fault lines trending north south or north west south east are present along the western boundary of the site, through the centre of the site and running through the north east of the site.

No BGS historic borehole records are available within the immediate vicinity of the site. Historic borehole records from the surrounding area indicate a variable depth of Made Ground, up to 5.80m bgl over natural strata comprising a mix of sand, gravel and locally silt underlain by sandy and gravelly clay with bands of sand and gravel. Bedrock is indicated to be present from approximately 20m to 30m bgl within the wider area.

Areas of worked ground are present in the north east of the site, in the location of the historic sand pit. It is likely that some Made Ground would be present in this location associated with any backfilling activities.

Two coal seams are indicated to sub-crop beneath the site. According to Coal Authority Records, the site is located within a Coal Mining Reporting Area with a Development High Risk Area present broadly trending east / west across the middle of the site. The Development High Risk Area in the west of the site is also indicated to be at risk from probable shallow coal mine working. A mine entry is indicated to be present in the south west of the site with a further mine entry immediately south of the site boundary. Given this, a Coal Mining Risk Assessment is required to further assess the risk posed by historic coal mining to the proposed development.

A BGS recorded mineral site is located in the north east of the site, associated with the historic ‘sand pit’ identified on historic mapping of the area. The record (Leemans Hill) is listed as open cast extraction of sandstone of the Pennine Lower Coal Measures Formation. The status is leased as ‘ceased’. Two other recorded mineral sites are located within 500m of the site. Copp Hill Sand Pit is located 411m to the north, extracting sand from the Glaciofluvial Sheet Deposits and Devensian Till. Brown Hill Brick Field is indicated to be present 458m to the north, extracting clay and shale from the Pennine Lower Coal Measures Formation. The status of both of these records is ‘ceased’. Both of these areas have since been developed over.

In addition to the above, a gravel pit was noted on historic mapping of the area 40m to the north of the site and a clay pit was noted approximately 345m to the south east. The sites were no longer labelled by 1910 and have since been developed over.

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2.0 Coal Mining Risk Assessment

According to Coal Authority Records, the site is located within a Coal Mining Reporting Area with a Development High Risk Area present broadly trending east / west across the central portion of the site. The Development High Risk Area in the west of the site is also indicated to be at risk from probable shallow coal mine workings. A mine entry is shown in the south west of the site with a further mine entry immediately south of the site boundary.

As a result of the above, a Coal Mining Risk Assessment has been undertaken to identify risks from potential historic underground coal mining in relation to the proposed development.

2.1 Sources of Information

The following sources of information have been used to prepare the Coal Mining Risk Assessment:

- Ordnance Survey (OS) maps dated between 1850 to 2024.
- British Geological Society (BGS) 1:50,000 scale geology map, Sheet 085 Manchester.
- British Geological Society (BGS) 1:10,560 scale geological map.
- Historical borehole records available for review on the BGS website.
- Coal Authority web-based interactive map viewer.
- Coal Authority Consultants Coal Mining Report, reference 51003413688001 dated 25th March 2024.

It should be noted that consultations with the Coal Authority were carried out which confirmed that there are no abandonment plans available for the site or available mine entry datasheets.

2.2 Identification & Assessment of Site-Specific Risks

2.2.1 *Historical Ordnance Survey Mapping*

No potential coal mining features were identified on site during a review of historical OS mapping dating from 1850 to 2024, however, a well was noted in the south west of the site (later denoted as a spring), with a second well on the north eastern boundary of the site. A small number of collieries and coal pits were however identified in the wider area more than 1km from the site, with a feature labelled on the 1893 map as an old shaft (Coal) present approximately 380m to the south of the site. On maps from 1931, this feature is annotated as a pump house and latterly housing.

2.2.2 *British Geological Society (BGS) Mapping*

The 1:50,000 British Geological Survey mapping for the area (Figures 1 and 2) indicates bedrock to comprise a mix of sandstone, siltstone, mudstone and coal of the Pennine Lower Coal Measures, and across much of the west of the site sandstone deposits of the Cannel Rock are indicated to be present. A small section of sandstone of the Old Lawrence Rock is also recorded in the north east. Two coal seams are indicated to sub-crop beneath the site, the Cannel Mine in the west of the site and an un-named seam in the east of the site. The un-named seam is likely to be the Half Yard seam, in accordance with the map legend. The seams are likely to be dipping towards the south east.

Fault lines trending north south or north west south east are indicated to be present along the western boundary of the site, through the center of the site and running through the north east of the site.

The 1:10,560 Lancashire 87 NE map of the area (Figure 3) indicates that a coal shaft is present adjacent to the south west boundary of the site (at an approximate elevation of 120m AOD). Map annotations indicate a depth of 20 yards (18.28m) to the top of the Cannel Mine coal seam in this location. A second borehole approximately 75m to the south east (at an approximate elevation of 123m AOD and in the approximate direction of dip) indicates the Cannel Mine seam to be present at 36 yards (32.9m). The distance between these two locations and the difference in depth to the top of the Cannel Mine seam indicates the seam to dip at an angle of approximately 9°.

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Based on this, the next coal seam underlying the Cannel Mine seam is likely to be present at depths in excess of 50m bgl.

Calculations, based on the available information, indicate that approximately 10m to 12m of superficial deposits are present beneath the site.

An excerpt from the BGS solid map and a vertical section are presented below:

Figure 1 – Excerpt from 1:50,000 Scale Geological Mapping

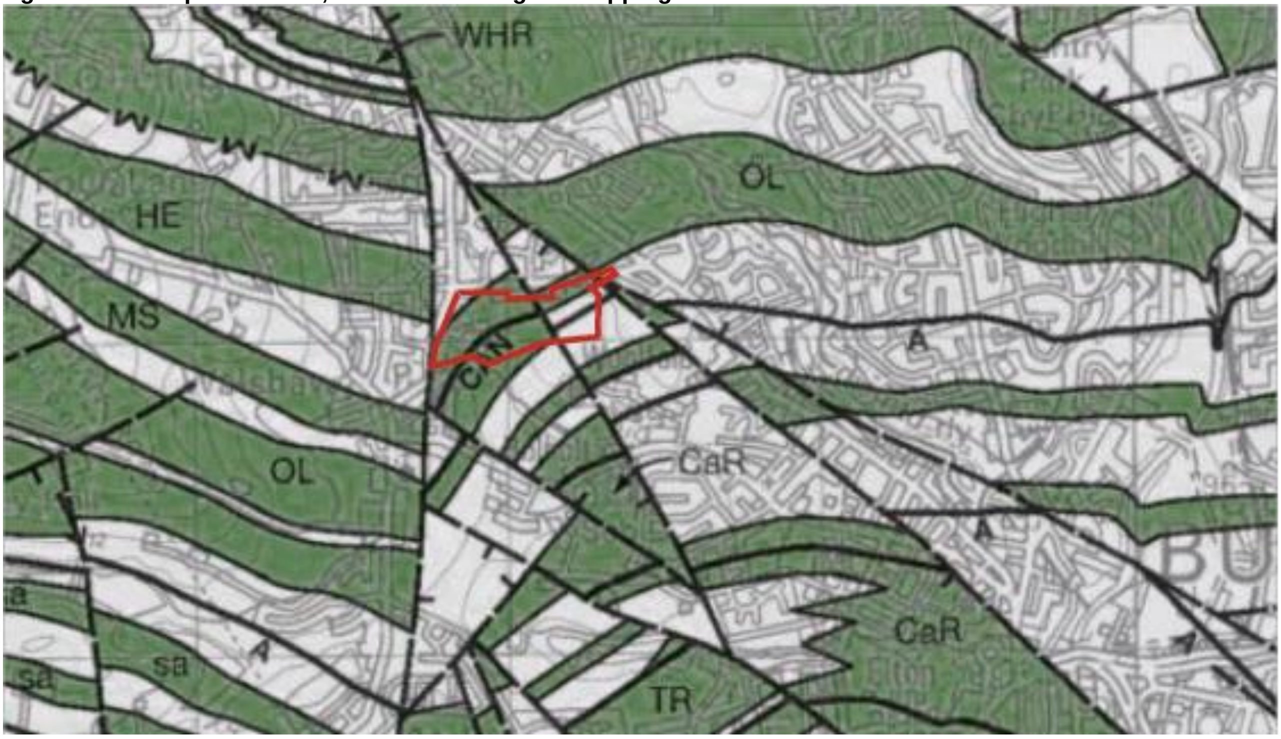

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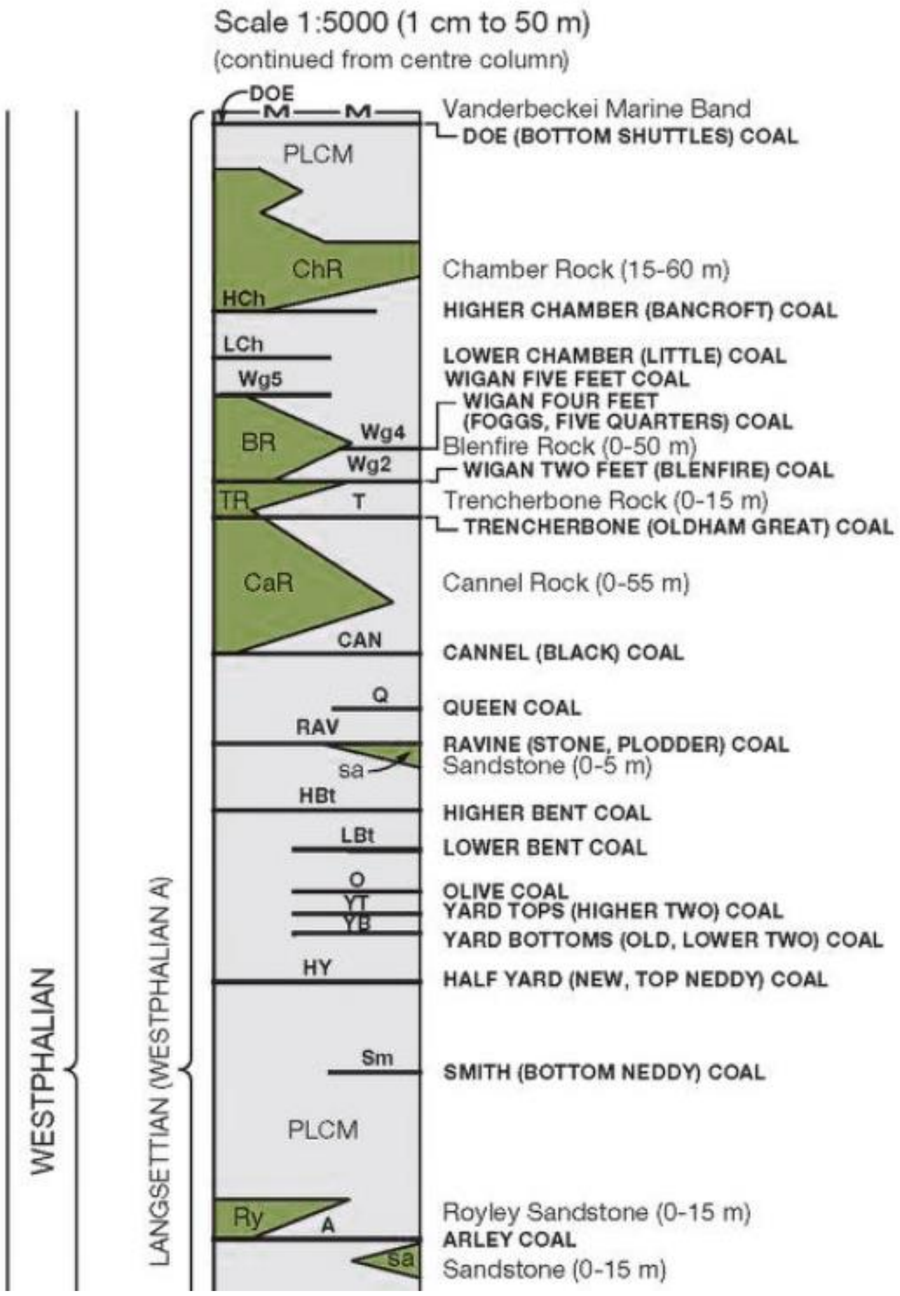
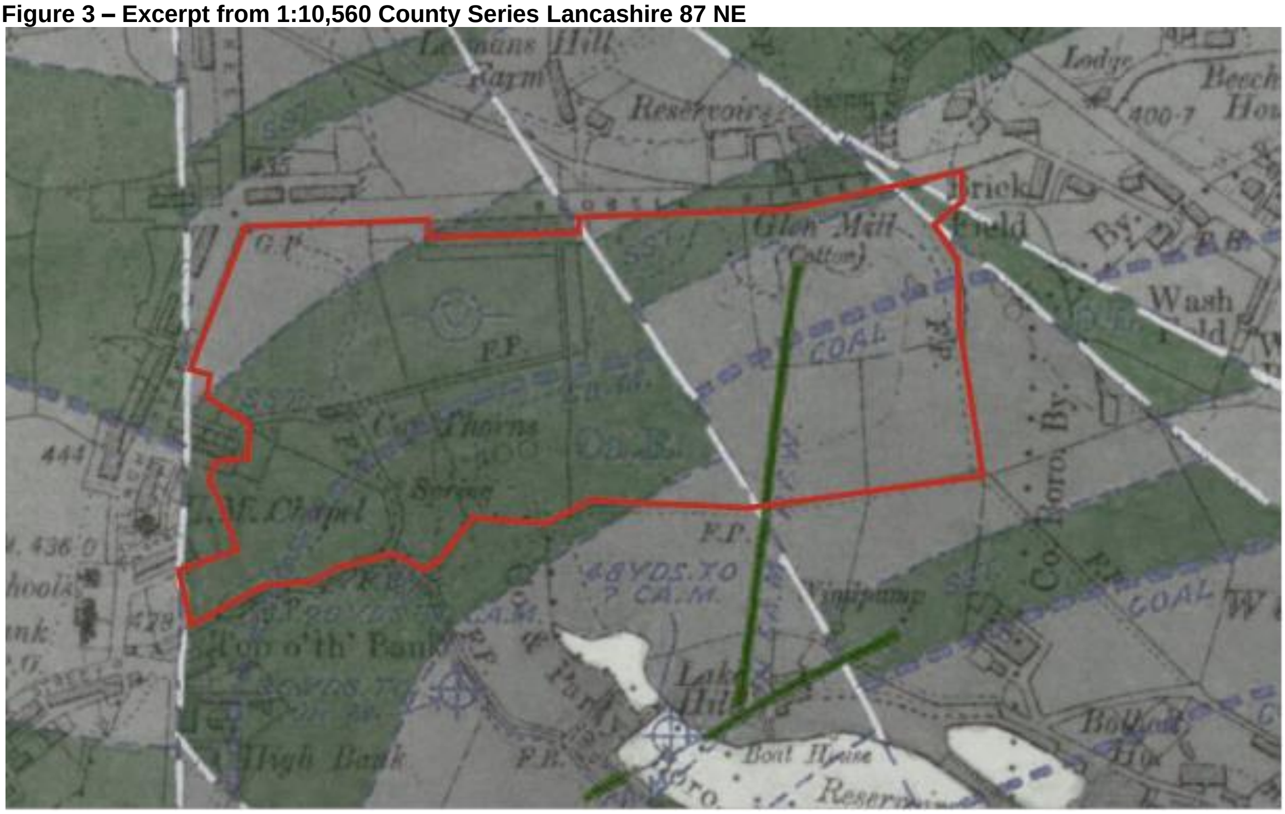
Figure 2 – Excerpt from a Vertical Section from 1:50,000 Scale Geological Mapping


Scale 1:5000 (1 cm to 50 m)
(continued from centre column)
DOE
M
M
Vanderbeckei Marine Band
DOE (BOTTOM SHUTTLES) COAL
PLCM
ChR
Chamber Rock (15-60 m)
HCh
HIGHER CHAMBER (BANCROFT) COAL
LCh
LOWER CHAMBER (LITTLE) COAL
Wg5
WIGAN FIVE FEET COAL
WIGAN FOUR FEET
(FOGGS, FIVE QUARTERS) COAL
BR
Wg4
Blenfire Rock (0-50 m)
Wg2
WIGAN TWO FEET (BLENFIRE) COAL
TR
T
Trencherbone Rock (0-15 m)
TRENCHERBONE (OLDHAM GREAT) COAL
CaR
Cannel Rock (0-55 m)
CAN
CANNEL (BLACK) COAL
Q
QUEEN COAL
RAV
RAVINE (STONE, PLODDER) COAL
sa
Sandstone (0-5 m)
HBt
HIGHER BENT COAL
LBt
LOWER BENT COAL
O
OLIVE COAL
YT
YARD TOPS (HIGHER TWO) COAL
YB
YARD BOTTOMS (OLD, LOWER TWO) COAL
HY
HALF YARD (NEW, TOP NEDDY) COAL
Sm
SMITH (BOTTOM NEDDY) COAL
PLCM
Ry
Royley Sandstone (0-15 m)
A
ARLEY COAL
sa
Sandstone (0-15 m)
WESTPHALIAN
LANGSETTIAN (WESTPHALIAN A)

.

Figure 3 – Excerpt from 1:10,560 County Series Lancashire 87 NE



2.2.3 *Historical Borehole Records*

Two publicly available BGS historical borehole records are available in the approximate location of the 'Old Shaft' identified from the historical maps 380m south of the site (borehole reference SD71SE13 and SD71SE14). The records indicate coal to be present at 126 feet (38m) from surface with a seam thickness of approximately 0.50m. A second seam is indicated at 333 feet (100m) bgl. It is however noteworthy that the location of the 'Old Shaft' and borehole is associated with a separate fault block to the blocks present beneath the site.

Two additional boreholes (SD71SE47 and SD71SE10) are located 750m and 950m south east of the site and are within the same fault block as the east of the subject site. Borehole SD71SE47 records one coal seam at a depth of 308 feet (approximately 94m bgl) though a second seam may have been present above this in a zone where circulation was lost but a 'mixture of shales and mudstones' was reported. Borehole SD71SE10 records three coal seams at depths ranging from 348 feet to 509 feet (approximately 106m to 155m bgl). The deepest seam is likely to be the Half Yard seam, which also sub-crops in the east of the subject site. The distance between these two locations and the difference in depth to the top of the Half Yard seam indicates the seam to dip at an angle of approximately 9° to 10°.

Copies of the historical borehole records are presented in Appendix II.

2.2.4 *Coal Authority Web Based Viewer*

The web-based Coal Authority interactive viewer indicates that the site is located within a Coal Authority Reporting Area, with an east / west trending area within the centre of the site recorded to be a **High Risk Development Area** (in the locations of the two sub-cropping coal seams), see Figure 4 below.

The site is also in an area where there are **probable shallow coal mine workings** in the location of the coal seam in the west of the site.

Coal outcrops are indicated to be present, in the area of the site designated a development high risk area.

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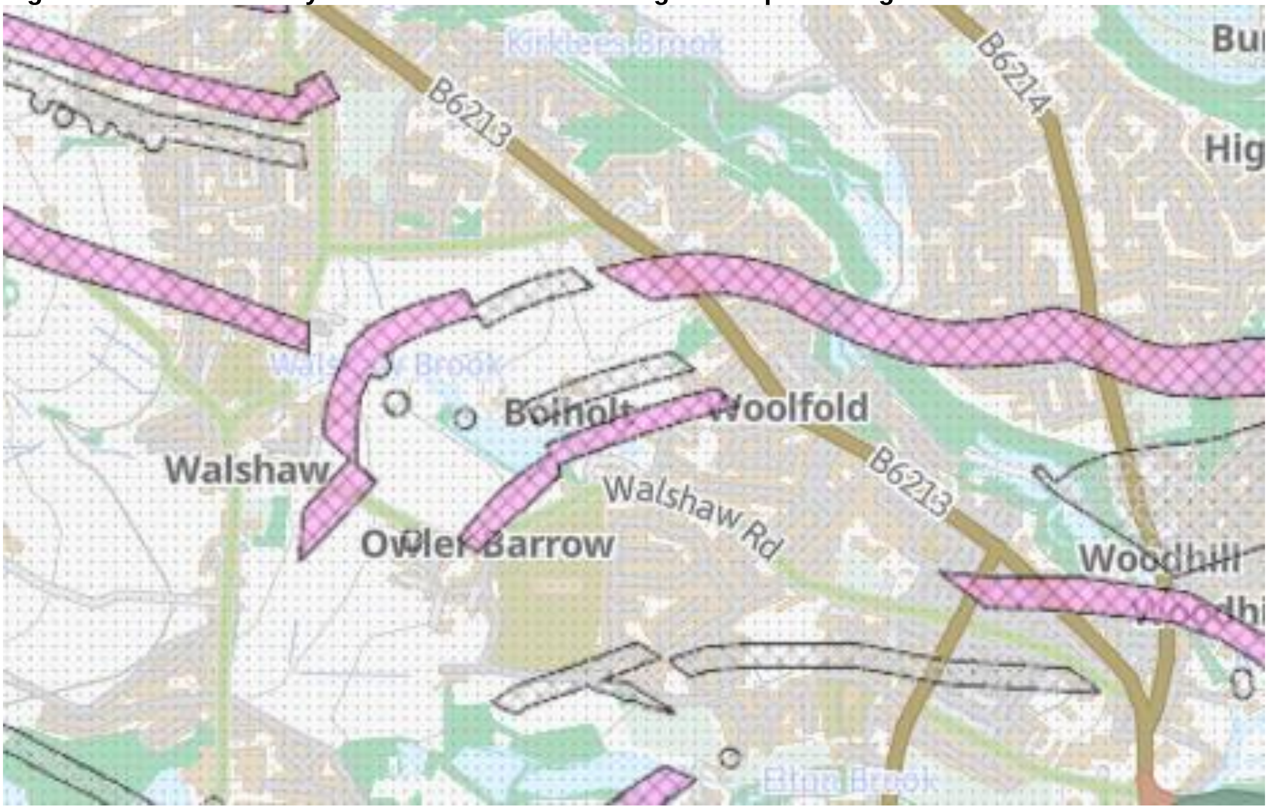
Two **mine entries** and associated potential zones of influence are recorded within or adjacent to the south west corner of the site.

Figure 4 – Coal Authority Interactive Viewer showing Development High Risk Area.



***Note**: Pink highlighted area relates to locations of probable shallow coal workings.*

2.2.5 *Coal Authority Consultants Coal Mining Report*

A Coal Authority Consultants Coal Mining Report has been procured and is presented in Appendix III.

The report indicates that no past mining has been recorded beneath the site but there are probable **unrecorded shallow workings** are present in the area.

Outcrops of a number of coal seams are present beneath or close to the site boundaries; these are summarised in Table 1.

Table 1 – Coal Seams

Seam Name	Mineral	Seam Workable	Distance to outcrop (m)	Direction to Outcrop	Bearing to Outcrop
Cannel	Coal	Yes	Within	N/A	24
Cannel	Coal	Yes	Within	N/A	59
Cannel	Coal	Yes	Within	N/A	253
Half Yard	Coal	Yes	Within	N/A	76
Upper Mountain	Coal	Yes	14.6	North-West	110

Three **mine entries** have been recorded within 100m from the site boundary, as per Table 2 below. It should be noted that the distances to the identified features recorded below are approximate and obtained via google maps.

.

Table 2 – Recorded Mine Entries

Entry Type	Reference	Approximate Distance to shaft (m)	Direction to shaft	Treatment Description
Shaft	377411-001	0	South	None Given
Shaft	377411-002	77	South	None Given
Shaft	377411-003	Within	N/A	None Given

The Coal Mining report indicated that mine abandonment plan 16820 was applicable to the site. Clancy Consulting Ltd instructed the Coal Authority to undertake further searches to assess whether the plans contained any information pertinent to the site.

The response from the Coal Authority is presented below:

- *Following on from your recent request to undertake an abandoned mines catalogue search at the above named site, we do not hold any records of underground mining beneath the provided search boundary. We also don't hold any records of opencast mining at the site's location. The presence of, and depth to, recorded seams beneath the site as well as the presence of opencast mining is specified within Section 1 of our mining report.*

- *There is one recorded mine entry within the search boundary (377411-003) and a second close to the southern boundary (377411-001).*

- *The location of 377411-001 is sourced from historical Ordinance Survey mapping of the area. Unfortunately, as we do not hold the intellectual property for this mapping series, we are unable to provide you with a copy. However, this may be able to be obtained directly from Ordinance Survey.*

- *The location of 377411-003 is sourced from historical British Coal records, which The Coal Authority does not hold copies of. As a result, we are also unable to provide you with any source information for this mine entry.*

The Coal Authority have confirmed that they have no records of any treatment having been undertaken at either of the above-mentioned mine entry locations.

Four faults, fissures or breaklines are recorded beneath the site. Two are located in the extreme east of the site, trending in a north west – south east direction. The third is located within the central section of the site, again trending in an approximate north west – south east direction. The fourth is located along the western boundary of the site, extending through the far south west of the site.

No recorded opencast mines are present within 500m of the site.

No Coal Authority managed tips are present within 500m of the site.

No coal mining subsidence notice has been issued within 50m from the site boundary since 1994.

No recorded issues related to mine gases or mine water treatment schemes have been made within 500m of the site.

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3.0 Discussion

The potential coal mining related risks are discussed below.

3.1 Recorded Workings

There are no records of workings having been undertaken at the site, however two coal seams (the Cannel Mine and Half Yard) are indicated to sub-crop beneath the site, and historical borehole records obtained from the BGS indicate that a coal seam (likely the Cannel Mine) is present relatively close (18m) to ground level immediately to the south of the site.

The risks from known underground workings is considered to be **Low**.

3.2 Recorded Mine Entries

Three recorded mineshafts are present locally to the site, with one located within the site boundary in the south west corner of the site, and a second one located within 20m of the site boundary (adjacent to part of the southwestern boundary of the site). No details are available as to whether treatment has been undertaken for these potential mine entries. Given the locations of these features, these, if present, may pose a risk to the proposed development.

As such, the risk to the proposed development from recorded mine entries is considered to be **Medium to High,** and investigations should be carried out to confirm the locations, extend and zone of influence of both mine shafts referenced 377411-003 in the south west of the site, and 377411-001 located along the south west boundary of the site.

3.3 Unrecorded Workings

The Coal Authority Consultants Coal Mining Report notes that probable unrecorded shallow workings (less than 30m deep) are present in the area, and the web-based viewer also indicates the same. The BGS maps record the Cannel Mine and Half Yard seams outcrop beneath the site with the coal seams dipping away towards the south east. Borehole records do not confirm the presence of additional seams within influencing depth.

The risks to the development relating to unrecorded workings is considered to be **High**.

Investigations should be undertaken to prove the location of the Cannel Mine and Half Yard coal seams and assess the potential for shallow mine workings and whether mining has been undertaken to the south of these seams. Boreholes should be drilled to intercept the seams with the boreholes extending with depth in a south easterly direction, following the dip of the seams to a minimum depth of 30m into the rock (~40m bgl) along the southern boundary of the site.

3.4 Migrating Mine Gases

The Coal Authority Consultants report indicates that there are no recorded issues relating to mine gases in the area. However, the potential presence of mine workings beneath the site could give rise to hazardous ground gases (mine gases). Should mine workings be encountered, a gas monitoring program should be undertaken to further assess the risk to the proposed development.

3.5 Recorded Surface Mining

There is no recorded surface mining, including unlicensed opencast mines on the site. The risk is therefore considered to be **Low**.

3.6 Unrecorded Surface Mining

The site is not located within an area where surface mining is considered to pose a risk to the development.

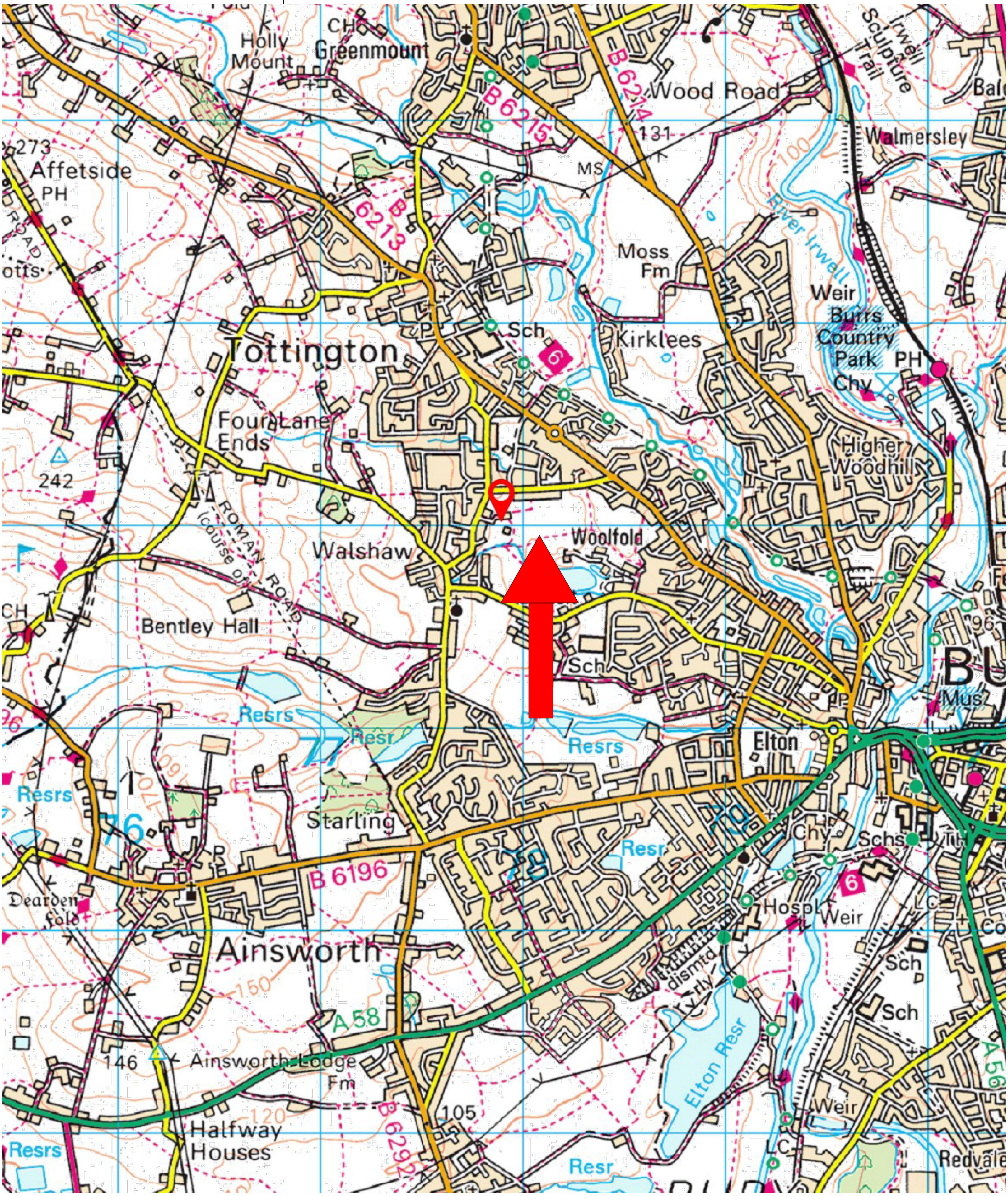
APPENDIX I

DRAWINGS

Client	Wain Estates (Land) Ltd
Project	Scobell Street, Bury
Title	Site Location Plan
Office	Manchester
Discipline	Geo

clancy consulting

www.clancy.co.uk


Holly Mount
CH
Greenmount
B 6215
B 6214
Wood Road
131
Irwell Sculpture Trail
Bal
Walmersley
273
Affetside
PH
MS
B 6213
River Irwell
ROAD
otts
Moss Fm
Weir
Burrs Country Park
Sch
Kirklees
Tottington
6
PH
Chy
Four Lane Ends
Higher Woodhill
242
ROMAN ROAD (course of)
Walshaw
Woolfold
CH
Bentley Hall
Sch
BU
Mus
Resrs
Resr
Resrs
Elton
Resrs
76
Starling
Chy
Schs
Resr
B 6196
6
Hospl
Weir
Dearden Fold
Ainsworth
Sch
dismtd rly
Sch
150
A 58
Elton Resr
A 56
146
Ainsworth Lodge Fm
105
Weir
120
Halfway Houses
B 6292
LC
Resrs
Resr
Redvale

REV	DATE	DESCRIPTION	BY	CHK.	APP.
Rev	Date	Description	By	Check	App.

Drawn	PJH
Date	24/04/2024
Checked	DK
Scale @ A4	NTS
Approved	NR
Status	Live

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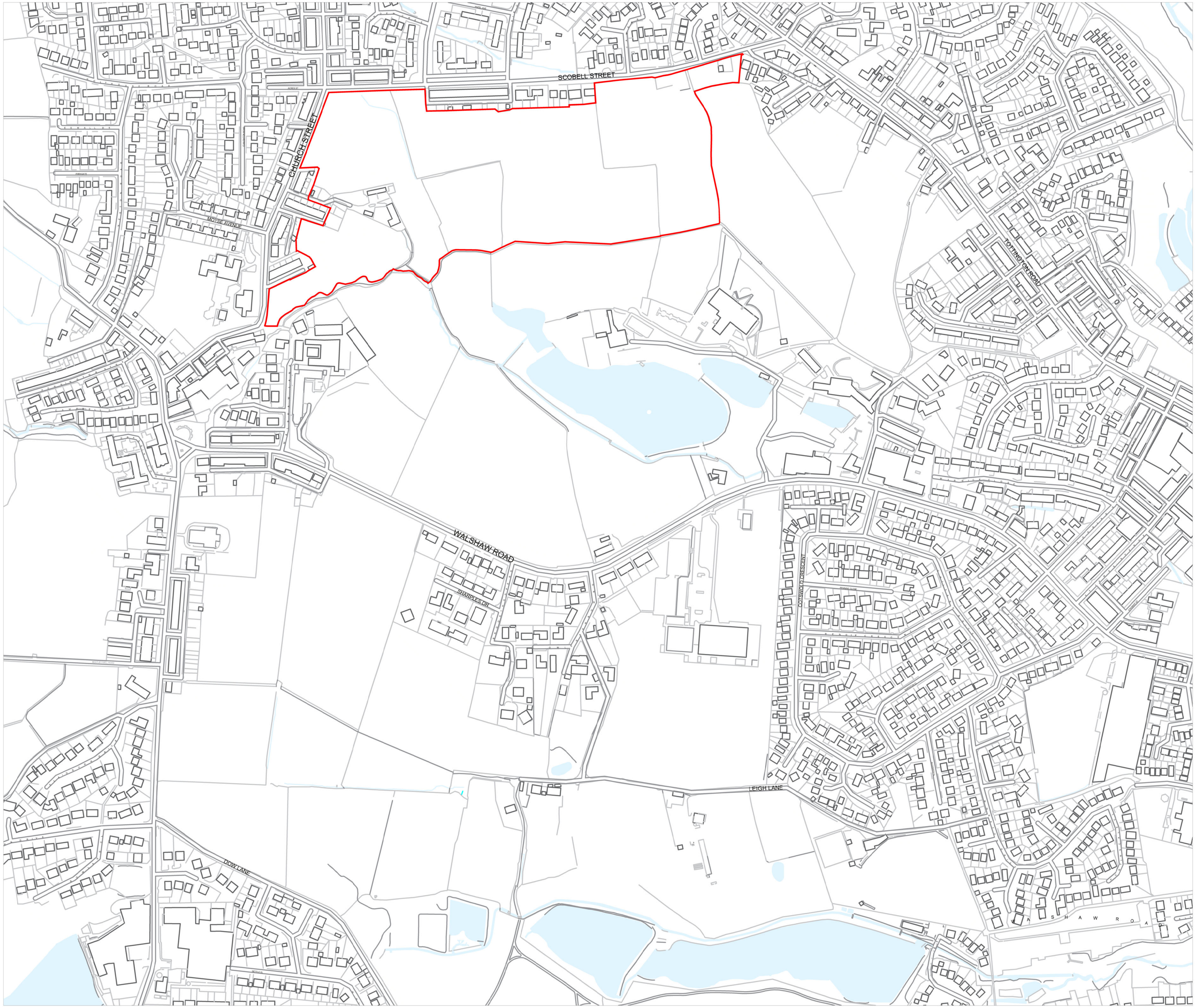
IT SHALL NOT BE USED WITHOUT PERMISSION BY ANYONE FOR ANY PURPOSE.
DO NOT SCALE THIS DRAWING ELECTRONICALLY OR MANUALLY.
WORK TO FIGURED DIMENSIONS ONLY.
ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
DO NOT TURN ON LAYERS THAT HAVE BEEN TURNED OFF.
DO NOT THAW LAYERS THAT HAVE BEEN FROZEN.

Job number	Drawing number	Revision
10/2399	001	-


SCOBELL STREET
CHURCH STREET
MOYSE AVENUE
TOTTINGTON ROAD
WALSHAW ROAD
SHARPLES DR
COTSWOLD CRESCENT
LEIGH LANE
DOW LANE
W A L S H A W R O A D

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J:\JOBS\30000 - 30999\30800 - 30899\30860 - Walshaw (Land At), Bury\A4 - Drawings & Registers\Masterplanning\30860-MR-M-03-Site Boundary_HIMOR.dwg - A3(1_5000@A3)

The scaling of this drawing cannot be assured

Revision	Date	Drn	Ckd
-	-	-	-

N

LEGEND

🟥 Site Boundary (c.11.7ha)

Project
Walshaw (Land at), Bury

Drawing Title
Site Boundary (HIMOR Controlled Lar

Date	Scale	Drawn by	Check by
03/12/19	1:5000@A3	SW	SW

Project No	Drawing No	Revision
30860	BW01	-

BARTON WILLMORE

Planning ● Master Planning & Urban Design ● Architecture ●
Landscape Planning & Design ● Environmental Planning ● Graphic
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APPENDIX II

HISTORICAL BGS BOREHOLE RECORDS

SD71SE10

L2

Mr [illegible] chemist [illegible] 18" (14.8.36)

(621) Wt. 5990—S.33 2000 6/22 Gp. 14 M.R.Co.Ltd.

SECTION OF new boring at Elton Cop Dyeworks George St, Elton, Bury

5057/25

Maps : One-inch N.S. 85 Six-inch 87 N.E. County Lancs.

Height above O.D. Latitude Longitude

Communicated by the firm Date of sinking 1919

Made by Dip of Strata

Water of good quality in plenty, nearly enough to supply the works.

5/87/87NE/1+2 (1)

	Thickness.			Depth from Surface.		
	Metres			Metres		
Gravel	35.05	115	—	35.05	115	—
Red sandstone	7.62	25	—	42.67	140	—
Red marl	9.15	30	—	51.82	170	—
Grey shale	6.09	20	—	57.91	190	—
Grey rock	5.49	18	—	63.40	208	—
Grey shale	15.24	50	—	78.64	258	—
Grey rock	4.57	15	—	83.21	273	—
Grey shale	1.52	5	—	84.73	278	—
Black shale	8.69	28	6	93.42	306	6
Grey shale	12.35	40	6	105.77	347	—
Fireclay	0.30	1	—	106.07	348	—
Coal	0.46	1	6	106.53	349	6
Grey rock	0.76	2	6	107.29	352	—
Grey shale	12.19	40	—	119.48	392	—
Black shale	1.22	4	—	120.70	396	—
Coal	0.46	1	6	121.16	397	6
Red rock	5.48	18	—	126.64	415	6
Grey shale	1.38	4	6	128.02	420	—
Red rock	1.82	6	—	129.84	426	—
Grey shale	6.10	20	—	135.94	446	—
Grey rock	0.61	2	—	136.55	448	—
Grey shale	16.15	53	—	152.70	501	—
Black shale	2.44	8	—	155.14	509	—
Coal	0.61	2	—	155.75	511	—
Black shale	3.36	11	—	159.11	522	—
Grey shale	6.70	22	—	165.81	544	—
Silician [sic] rock	6.71	22+		172.52	566	—

British Geological Survey
BGS ID: 22768 : BGS Reference: SD71SE10
British National Grid (27700) : 379016,411313

SD 71 SE
10

RECORD OF (WELL, SHAFT OR BORE)

1″ N.S.	85
1″ O.S.	2
Grid Ref.	

At Elton Cooperative Dyeworks, George Street, Elton,

Town or Village Bury County Lancs. Six-inch quarter sheet 87 NE

Exact site ……

…… in parish of …… (A rough sketch-map or a tracing from a map is very desirable)

Level of ground surface above sea-level (O.D.) …… ft. If well starts below ground surface, state how far …… ft.

Shaft …… ft., diameter …… ft. Bore …… ft. Diameter of bore : at top …… ins. ; at bottom …… ins.

Details of permanent lining tubes (internal diameters preferred) ……

Water struck at depths of (feet) ……

Rest-level of water below/above top of well …… feet. Suction at …… feet. Yield on …… hours'/days' test

…… gallons per …… (with pump of capacity …… g.p.h.) ; depressing water level to …… feet below top. Time of recovery …… hrs. Amount normally pumped daily …… g.p.h. for …… hours.

Quality (attach copy of analysis if available) ……

Sunk by …… for Mr. …… Date of well 1919

Information from Elton Cooperative Dyeworks.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS		DEPTH	
		Feet.	Inches.	Feet.	Inches.
	Gravel	115	-	115	-
	Red sandstone	25	-	140	-
	Red marl	30	-	170	-
	Grey shale	20	-	190	-
	Grey rock	18	-	208	-
	Grey shale	50	-	258	-
	Grey rock	15	-	273	-
	Grey shale	5	-	278	-
	Black shale	28	6	306	6
	Grey shale	40	6	347	-
	Fireclay	1	-	348	-
	Coal	1	6	349	6
	Grey rock	2	6	352	-
	Grey shale	40	-	392	-
	Black shale	4	-	396	-
	Coal	1	6	397	6
	Red rock	18	-	415	6
	Grey shale	4	6	420	-
	Red rock	6	-	426	-
	Grey shale	20	-	446	-
	Grey rock	2	-	448	-
	Grey shale	55	-	501	-
	Black shale	8	-	509	-
	Coal	2	-	511	-
	Black shale	11	-	522	-
	Grey shale	22	-	544	-
	Silician ( ) rock	22	-	566	-

For Survey use only

Date received	G.S.M. Office File No.	Site marked on 1″ map (use symbol)

GEOLOGICAL SURVEY AND MUSEUM.
SOUTH KENSINGTON.
LONDON. S.W.7.

(*11815) Wt.29051/O.369 10,000 9/39
A.& E.W.Ltd. Gp.686

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey
BGS ID: 22768 : BGS Reference: SD71SE10
British National Grid (27700) : 379016,411313

SD71SE/10 SD 7888 1135 SD71/17B

RECORD OF WELL (SHAFT OR BORE)

1" N.S. 85
1" O.S. 2
Grid Ref.

At Elton Cooperative Dyeworks, George Street, Elton,
Town or Village Bury County Lancs. Six-inch quarter sheet 87 NE
Exact site (A rough sketch-map or a tracing from a map is very desirable)
in parish of
Level of ground surface above sea-level (O.D.) ft. If well starts below ground surface, state how far ft.
Shaft ft., diameter ft. Bore ft. Diameter of bore: at top ins.; at bottom ins.
Details of permanent lining tubes (internal diameters preferred)
Water struck at depths of (feet)
Rest-level of water below/above top of well feet. Suction at feet. Yield on hours'/days' test
gallons per (with pump of capacity g.p.h.); depressing water level to feet below top. Time of recovery hrs. Amount normally pumped daily g.p.h. for hours.
Quality (attach copy of analysis if available)
Sunk by for Mr. Date of well 1919
Information from Elton Cooperative Dyeworks.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS Feet.	THICKNESS Inches.	DEPTH Feet.	DEPTH Inches.
	Gravel	115	-	115	-
	Red sandstone	25	-	140	-
	Red marl	30	-	170	-
	Grey shale	20	-	190	-
	Grey rock	18	-	208	-
	Grey shale	50	-	258	-
	Grey rock	15	-	273	-
	Grey shale	5	-	278	-
	Black shale	28	6	306	6
	Grey shale	40	6	347	-
	Fireclay	1	-	348	-
	Coal	1	6	349	6
	Grey rock	2	6	352	-
	Grey shale	40	-	392	-
	Black shale	4	-	396	-
	Coal	1	6	397	6
	Red rock	18	-	415	6
	Grey shale	4	6	420	-
	Red rock	6	-	426	-
	Grey shale	20	-	446	-
	Grey rock	2	-	448	-
	Grey shale	55	-	501	-
	Black shale	8	-	509	-
	Coal	2	-	511	-
	Black shale	11	-	522	-
	Grey shale	22	-	544	-
	Silician ( ) rock	22	-	566	-
	Water of good quality in plenty nearly enough to supply the works.				

GEOLOGICAL SURVEY AND MUSEUM.
SOUTH KENSINGTON.
LONDON. S.W.7.

For Survey use only

Date received	G.S.M. Office File No.	Site marked on 1" map (use symbol)

(*11815) Wt.29051/O.369 10,000 9/39
A.& E.W.Ltd. Gp.686

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey
BGS ID: 22771 : BGS Reference: SD71SE13
British National Grid (27700) : 377964,411488

SD71SE13 Sect. Memoir R.C.S. 5.58 (31)

Wt. 5990—S.33 2000 6/22 Gp.147 M.R.Co.Ltd.

SECTION OF Borehole on a level 7 yards from pit in ~~[illegible]~~ direction Alder (Owler) Barrow Pit, Elton near Bury.

Maps : One-inch 85 Six-inch 87 N.E.E County Lancs.

Height above O.D. Latitude Longitude

Communicated by Estate Office, Lord Derby's Estate, Bury Date of sinking —

Made ~~by~~ for W. F. Parks. Esq. Dip of Strata —

Underground borehole

	Thickness.			Depth from Surface.		
	Metres			Metres		
Sunk at depth of 243 ft. from actual surface. Sunk in shaft		243	—	74.07	243	—
Light coloured shale	0.91	3	—	74.98	246	-
Light coloured sandstone	2.44	8	—	77.42	254	-
Light brown sandstone	4.11	13	6	81.53	267	6
Blue shale	5.95	19	6	87.48	287	—
Black shale	0.30	1	—	87.78	288	—
Blue shale.	0.92	3	—	88.70	291	-
Light coloured sandstone.	0.35	1	2	89.05	292	2
Soft bed	0.05	-	2	89.10	292	4
Blue shale (water here)	0.71	2	4	89.81	294	8
Sandstone bands.	1.22	4	-	91.03	298	8
Light coloured sandstone.	1.22	4	—	92.25	302	8
Blue shale.	0.31	1	—	92.56	303	8
Brown sandstone.	0.51	1	8	93.07	305	4
Light coloured shale.	0.28	—	11	93.35	306	3
Light coloured sandstone	0.15	—	6	93.50	306	9
Blue shale & rock bands.	2.28	7	6	95.78	314	3
Red sandstone	1.32	4	4	97.10	318	7
Brown sandstone	0.51	1	8	97.61	320	3
Blue shale & sandstone	4.12	13	6	101.73	333	9
Black bass & Coal	0.05	—	2	101.78	333	11
Blue shale	5.79	19	—	107.57	352	11
Light coloured sandstone.	1.22	4	—	108.79	356	11
Blue shale	0.61	2	—	109.40	358	11
Black bass	1.83	6	-	111.23	364	11
Dark coloured shale.	0.76	2	6	111.99	367	5
Siliceous sandstone.	1.47	4	10	113.46	372	3
Blue shale	1.53	5	—	114.99	377	3
Red sandy shale.	1.32	4	4	116.31	381	7

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 22771 : BGS Reference: SD71SE13
British National Grid (27700) : 377964,411488

SD71SE13

32 2.

Wt. 5990—S.33 2000 6/22 Gp.147 M.R.Co.Ltd.

SECTION OF Borehole on a level drift from Alder Barrow Shaft, (Cont.)
Elton near Bury

Maps : One-inch.................. Six-inch 87 NE E S County Lancs.

Height above O.D.................. Latitude.................. Longitude..................

Communicated by.................. Date of sinking..................

Made by.................. Dip of Strata..................

	Thickness.			Depth from Surface.		
Red sandstone band.	0.20	-	8	116.51	382	3
Red sandy shale.	1.17	3	10	117.68	386	1
Brown sandstone	0.79	2	7	118.47	388	8
Brown shale.	0.30	1	—	118.77	389	8
Brown sandstone very hard.	0.64	2	1	119.41	391	9
Brown shale & rock bands.	1.24	4	1	120.65	395	10.
Blue shale	1.07	3	6	121.72	399	4.
Blue shale in layers.	5.64	18	6	127.36	417	10
Blue shale.	0.99	3	3	128.35	421	1
Light coloured sandstone.	0.30	1	—	128.65	422	1
Blue shale.	2.62	8	7	131.27	430	8
Light coloured sandstone.	0.20	—	8	131.47	431	4
Light coloured shale.	7.01	23	-	138.48	454	4.
Light coloured sandstone.	0.18	-	7	138.66	454	11
Black shale	1.83	6	-	140.49	460	11
Soft warren earth	0.30	1	—	140.79	461	11
Brown sandy shale.	2.69	8	10	143.48	470	9
Brown sandstone.	3.05	10	–	146.53	480	9
Brown sandstone very hard.	9.91	32	6	156.44	513	3
Dark brown sandstone very hard.	1.32	4	4	157.76	517	7
Red sandstone very hard.	1.45	4	9	159.21	522 ~~[illegible]~~	4 ~~4~~

(621) Wt. 599)—S.33 2000 6/22 Gp. 147 M.R.Co.Ltd.

SD71|34

Surf. drawn R.L.S.

SECTION OF Shaft of the boiler Barraston Pit near Walshaw Lane, Elton near Bury.

Maps: One-inch 85. Six-inch 87 N.E. E County Lancs.

Height above O.D. Latitude Longitude

Communicated by Date of sinking

Made ~~by~~ for W. F. Parks Esq. Dip of Strata

	Thickness.		Depth from Surface.	
Raised for Pit Brow	4	6	—	
Soil	1	—	1	—
Marl	13	6	14	6
Sand	1	8	16	2
Gravel	6	—	22	2
Loam & Sand	3	—	25	2
Sand	4	—	29	2
Gravel	5	—	34	2
Marl	2	—	36	2.
Loam & sand	7	—	43	2
Marl	8	—	51	2
Gravel	9	6	60	8
Metal & gravel	6	—	66	8
Red sandstone	3	—	69	8
Red shale	4	—	73	8
Grey sandstone band.	1	—	74	8.
Brown shale	12	6	87	2
Grey sandstone	2	8	89	10.
Brown shale	5	—	94	10
Red sandstone	2	8	97	6
Brown shale	4	2	101	8
Grey sandstone band	—	10	102	6
Brown shale	1	—	103	6
Grey sandstone	13	—	116	6
Brown sandy shale.	—	10.	117	4
Grey sandstone Band.	—	6	117	10.
Light coloured shale	1	2	119	—
Sandstone	1	—	120	—

British Geological Survey
BGS ID: 22771 : BGS Reference: SD71SE13
British National Grid (27700) : 377964,411488

SD 71|34 2

(621) Wt. 5990—S.33 2000 6/22 Gp. 147 M.R.Co.Ltd.

SECTION OF Alder Barrows Shaft (Gowler) at Elton near Bury (contd.)

Maps: One-inch .... Six-inch 87 N.E. .... County Lancs.
Height above O.D. .... Latitude .... Longitude ....
Communicated by .... Date of sinking ....
Made by .... Dip of Strata ....

SD 7

	Thickness.		Depth from Surface.	
Shale	2	6	122	6
Black shale	2	8	125	2
Coal	1	6	126	8
Hard Black band	-	2	126	10
Soft light coloured fireclay	-	10	127	8
Light coloured shale	6	—	133	8
Light coloured sandstone band	1	6	135	2
Light coloured shale	4	6	139	8
Light coloured sandy shale	6	—	145	8
Light coloured sandstone	7	2	152	10
Shale with sandstone bands.	3	—	155	10
Light coloured shale	3	—	158	10
Light coloured sandstone	8	6	167	4
Light coloured sandy shale	6	—	173	4
Light coloured shale	15	—	188	4
Warren earth	-	3	188	7
Blue shale	5	—	193	7
Warren earth	-	3	193	10
Black shale	10	—	203	10
Light coloured sandstone with fossils embedded.	8	4	212	2
Black band	-	6	212	8
Brass band	—	.4	213	—
Black band	-	6	213	6
Light coloured sandstone	2	-	215	6
Light coloured sandy shale	1	2	216	8
" " sandstone	2	4	219	-
" " sandy shale.	2	10	221	10
Blue shale.	8	4	230	2

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 22771 : BGS Reference: SD71SE13
British National Grid (27700) : 377964,411488

(621) Wt. 599)—S.33 2000 6/22 Gp. 147 M.R.Co.Ltd.

Sect. drawn R.L.

SD 71/34 S.58

SECTION OF Borehole on a level 7 yds from pit in ~~[illegible]~~ direction Alder (Owler) Barrow Pit, Elton near Bury.

Maps : One-inch 85 Six-inch 87 N.E. County Lancs.

Height above O.D. Latitude Longitude

Communicated by Estate Office, Lord Derby's Estate, Bury Date of sinking —

Made for W. F. Parks Esq. Dip of Strata —

SD

	Thickness.		Depth from Surface.	
Sunk at depth of 243 ft. from actual surface. Sunk in shaft	243	—	243	—
Light coloured shale	3	—	246	-
Light coloured sandstone	8	—	254	-
Light brown sandstone	13	6	267	6
Blue shale	19	6	287	—
Black shale	1	—	288	—
Blue shale.	3	—	291	—
Light coloured sandstone.	1	2	292	2
Soft bed	-	2	292	4
Blue shale (water here)	2	4	294	8
Sandstone bands.	4	-	298	8
Light coloured sandstone.	4	—	302	8
Blue shale.	1	-	303	8
Brown sandstone.	1	8	305	4
Light coloured shale.	-	11	306	3
Light coloured sandstone	—	6	306	9
Blue shale & rock bands.	7	6	314	3
Red sandstone	4	4	318	7
Brown sandstone	1	8	320	3
Blue shale & sandstone	13	6	333	9
Black bars & Coal	-	2.	333	11.
Blue shale	19	-	352	11
Light coloured sandstone.	4	-	356	11
Blue shale	2	-	358	11
Black bars	6	-	364	11
Dark coloured shale.	2	6	367	5
Siliceous sandstone.	4	10	372 ~~[illegible]~~	3
Blue shale	5	-	377	3
Red sandy shale.	4	4	381	7

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey
BGS ID: 22771 : BGS Reference: SD71SE13
British National Grid (27700) : 377964,411488

SD71/34₂.

(621) Wt. 5990—S.33 2000 6/22 Gp. 147 M.R.Co.Ltd.

SECTION OF Borehole on a level drift from Alder Bannan Shaft, (Cont.)
Elton near Bury

Maps: One-inch .... Six-inch 87 NE. E/S County Lancs.

Height above O.D. .... Latitude .... Longitude ....

Communicated by .... Date of sinking .... SD

Made by .... Dip of Strata ....

	Thickness.		Depth from Surface.	
Red sandstone band.	-	8	382	3
Red sandy shale.	3	10	386	1
Brown sandstone	2	7	388	8
Brown shale.	1	–	389	8
Brown sandstone very hard.	2	1	391	9
Brown shale & rock bands.	4	1	395	10.
Blue shale	3	6	399	4.
Blue shale in layers.	18	6	417	10
Blue shale.	3	3	421	1
Light coloured sandstone.	1	–	422	1
Blue shale.	8	7	430	8
Light coloured sandstone.	–	8	431	4
Light coloured shale.	23	-	454	4.
Light coloured sandstone.	-	7	454	11
Black shale	6	–	460	11
Soft warren earth	1	–	461	11
Brown sandy shale.	8	10	470	9
Brown sandstone.	10	–	480	9
Brown sandstone very hard.	32	6	513	3
Dark brown sandstone very hard.	4	4	517	7
Red sandstone very hard.	4	9	522 ~~779~~	4 ~~4~~

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey
BGS ID: 22771 : BGS Reference: SD71SE13
British National Grid (27700) : 377964,411488

SD 71/34 3.

(621) Wt. 5990—S.33 2000 6/22 Gp. 147 M.R.Co.Ltd.

SECTION OF Gowler Barrow Shaft at Elton near Bury, (Contd.)

Maps: One-inch Six-inch 87 N.E. S.E. County Lancs.
Height above O.D. Latitude Longitude
Communicated by Date of sinking
Made by Dip of Strata

S

	Thickness.		Depth from Surface.	
Dark coloured shale.	7	—	237	2
Black shale	4	4	241	6
Coal	1	6	243 ~~247~~	- ~~6~~
In the above coal a tunnel is driven 103 yards. through a fault with the intention of gaining the Hinds mine, on the north east side of the pit. but was unsuccessful.				
A borehole was bored on the level 77 yds from the pit. in 56 S.W. direction.				
Dark band.	-	3	243	3
Light coloured shale	13	6	256	9
Brown sandstone	6	—	262	9
At this point a fault crosses the pit & appears to be an up fault to the north east.				
Dark coloured Warren.	5	—	267	9
Blue shale	16	6	284	3
Dark shale	1	—	285	3
Coal	—	4	285	7
Dirt	—	4.	285	11
Coal	—	2	286	1
Dirt	—	3	286	4
Coal.	—	10	287	2
Dirt	—	1	287	3
Coal.	—	6	287	9
Black shale	—	7	288	4
Light coloured sandy shale.	10	—	298	4
Brown sandy shale.	6	6	304 ~~307~~	10 ~~4~~

British Geological Survey

BGS ID: 22772 : BGS Reference: SD71SE14
British National Grid (27700) : 378012,411525

SD71 SE

Sect. drawn up R.L.S.

33

Wt. 5990—S.33 2000 6/22 Gp. 147 M.R.Co.Ltd.

SECTION OF Shaft of the Fowler Barrow Pit near Walshaw Lane, Elton near Bury.

Maps : One-inch 85. Six-inch 87 N.E. County Lancs.

Height above O.D. Latitude Longitude

Communicated by Date of sinking

Made ~~by~~ for W. F. Parks Esq. Dip of Strata

Now S Smethhurst & Sons Ltd Walshaw Rd Bury SD 7802 1151

	Thickness.			Depth from Surface.		
	metres			metres		
Raised for Pit Brow	1·37	4	6		—	—
Soil		1	—	0·30	1	—
Marl		13	6	4·42	14	6
Sand		1	8	4·93	16	2
Gravel		6	—	6·76	22	2
Loam & Sand		3	—	7·67	25	2
Sand		4	—	8·89	29	2
Gravel		5	—	10·41	34	2
Marl		2	—	11·02	36	2.
Loam & sand		7	—	13·16	43	2
Marl		8	—	15·60	51	2
Gravel		9	6	18·49	60	8
Metal & gravel		6	—	20·32	66	8
Red sandstone		3	—	21·23	69	8
Red shale		4	—	22·45	73	8
Grey sandstone band.		1	—	22·76	74	8
Brown shale		12	6	26·57	87	2
Grey sandstone		2	8	27·15	89	10.
Brown shale		5	—	28·91	94	10
Red sandstone		2	8	29·72	97	6
Brown shale		4	2	30·99	101	8
Grey sandstone band		—	10	31·24	102	6
Brown shale		1	—	31·55	103	6
Grey sandstone		13	—	35·51	116	6
Brown sandy shale.		—	10.	35·76	117	4
Grey sandstone Band.		—	6	35·92	117	10.
Light coloured shale		1	2	36·27	119	—
Sandstone		1	—	36·58	120	—

Contact BGS: ngdc@bgs.ac.uk

2

(621) Wt. 5990—S.33 2000 6/22 Gp. 147 M.R.Co.Ltd.

SECTION OF Alder Barrow Shaft (Gwler) **at** Elton near Bury (contd.)

Maps : One-inch .... Six-inch 87 N.E^E .... County Lancs.

Height above O.D. .... Latitude .... Longitude ....

Communicated by .... Date of sinking ....

Made by .... Dip of Strata ....

	Thickness.			Depth from Surface.		
	(m)			(m)		
Shale	0.76	2	6	37.34	122	6
Black shale	0.81	2	8	38.15	125	2
Coal	0.46	1	6	38.61	126	8.
Hard Black band	0.05	–	2	38.66	126	10
Soft light coloured fireclay	[illegible]	–	10	38.91	127	8
Light coloured shale	1.83	6	–	40.74	133	8
Light coloured sandstone band	0.46	1	6	41.20	135	2
Light coloured shale	1.37	4	6	42.57	139	8
Light coloured sandy shale	1.83	6	–	44.40	145	8
Light coloured sandstone	2.18	7	2	46.58	152	10
Shale with sandstone bands.	0.92	3	–	47.50	155	10
Light coloured shale	0.91	3	–	48.41	158	10
Light coloured sandstone	2.59	8	6	51.00	167	4
Light coloured sandy shale	1.83	6	–	52.83	173	4
Light coloured shale	4.57	15	–	57.40	188	4
Warren earth	[illegible]	–	3	57.48	188	7
Blue shale	1.52	5	–	59.00	193	7
Warren earth	0.08	–	3	59.08	193	10
Black shale	3.05	10	–	62.13	203	10
Light coloured sandstone with fossils embedded.	2.54	8	4	64.67	212	2
Black band	0.15	–	6	64.82	212	8
Brass band	0.10	–	4	64.92	213	–
Black band	0.15	–	6	65.07	213	6
Light coloured sandstone	0.61	2	–	65.68	215	6
Light coloured sandy shale	0.36	1	2	66.04	216	8
" " sandstone	0.71	2	4	66.75	219	–
" " sandy shale.	0.86	2	10	67.61	221	10
Blue shale.	2.54	8	4	70.15	230	2

British Geological Survey
BGS ID: 22772 : BGS Reference: SD71SE14
British National Grid (27700) : 378012,411525

SD71SE14 C33 3.

(621) Wt. 5990—S.33 2000 6/22 Gp. 147 M.R.Co.Ltd.

SECTION OF Owler Barrow Shaft at Elton near Bury. (contd.)

Maps : One-inch ……… Six-inch 87 N.E. E ……… County Lancs.
Height above O.D. ……… Latitude ……… Longitude ………
Communicated by ……… Date of sinking ………
Made by ……… Dip of Strata ………

	Thickness.			Depth from Surface.		
Dark coloured shale.	2.14	7	–	72.29	237	2
Black shale	1.32	4	4	73.61	241	6
Coal	0.46	1	6	74.07	243 ~~247~~	– ~~6~~
In the above coal a tunnel is driven 103 yards. through a fault with the intention of gaining the Hinds Mine, on the north east side of the pit. It was unsuccessful.						
A borehole was bored on the level 77 yds from the pit. In 56 S.W. direction.						
Dark band.	0.07	–	3	74.14	243	3
Light coloured shale	4.12	13	6	78.26	256	9
Brown sandstone	1.83	6	–	80.09	262	9
At this point a fault crosses the pit & appears to be an up fault to the north east.						
Dark coloured Warren.	1.52	5	–	81.61	267	9
Blue shale	5.03	16	6	86.64	284	3
Dark shale	0.30	1	–	86.94	285	3
Coal	0.11	–	4	87.05	285	7
Dirt	0.10	–	4.	87.15	285	11
Coal	0.05	–	2	87.20	286	1
Dirt	0.07	–	3	87.27	286	4
Coal	0.26	–	10	87.53	287	2
Dirt	0.02	–	1	87.55	287	3
Coal.	0.16	–	6	87.71	287	9
Black shale	0.17	–	7	87.88	288	4
Light coloured sandy shale.	3.05	10	–	90.93	298	4
Brown sandy shale.	1.98	6	6	92.91	304 ~~307~~	10 ~~4~~

British Geological Survey
BGS ID: 22805 : BGS Reference: SD71SE47
British National Grid (27700) : 378950,411550

N. 13856

SD 71 SE/47

85/37

FORAKY LTD.
COLWICK, NOTTINGHAM,
NG4 2BB.

7895 / 1155

N.G.R. SD 790. 115.

CHART of Borehole at S. SMETHURST & SON.
MITCHELL ST.
BURY
LANCS.

Bored by B. BOOTH. Date Commenced 4th OCTOBER 1973

Water Levels: Standing 30 ft. Pumping 42.50 ft. Completed 6th NOV. 1973

Supply 1000 Galls per hour. Analysis if made

Lined with 10 ft. - ins. of 15 ins. Tubes ft. ~~above~~ ~~below~~ Surface

92 - 12

350 - 8 SLOTTED TOP 310' B.SUR.

MADE GROUND

Possibly drift with boulders

MIDDLE COAL MEASURES

Stratum BOREHOLE No.	Thickness FT	Thickness INS	Total FT	Total INS	T METRES	D METRES
MADE GROUND	5	-	5	-	1.52	1.52
SANDSTONE	3	5	8	5	1.04	2.55
" & HARD BANDS	11	7	20	-	3.52	6.09
RED MARL & SANDSTONE	10	-	30	-	3.04	9.14
SANDSTONE (Hard & Silty BANDS)	24	-	54	-	7.31	16.45
CLAY & ROCK BANDS	36	-	90	-	10.97	27.43
SANDSTONE	8	-	98	-	2.43	29.87
HARD RED MARL	32	-	130	-	9.75	39.62
SANDSTONE	26	-	156	-	7.92	47.54
LOST CIRCULATION & STRATA. A						
MIXTURE (SHALES & MUDSTONES)	135	-	291	-	41.14	88.69
MUDSTONE HARD	17	-	308	-	5.18	93.87
COAL	2	-	310	-	0.60	94.48
SEAT EARTH	2	-	312	-	0.60	95.09
MUDSTONE	18	-	330	-	5.48	100.58
" & IRONSTONE BANDS	30	-	360	-	9.14	109.73

Sited on Lancs 87 NE/E by O

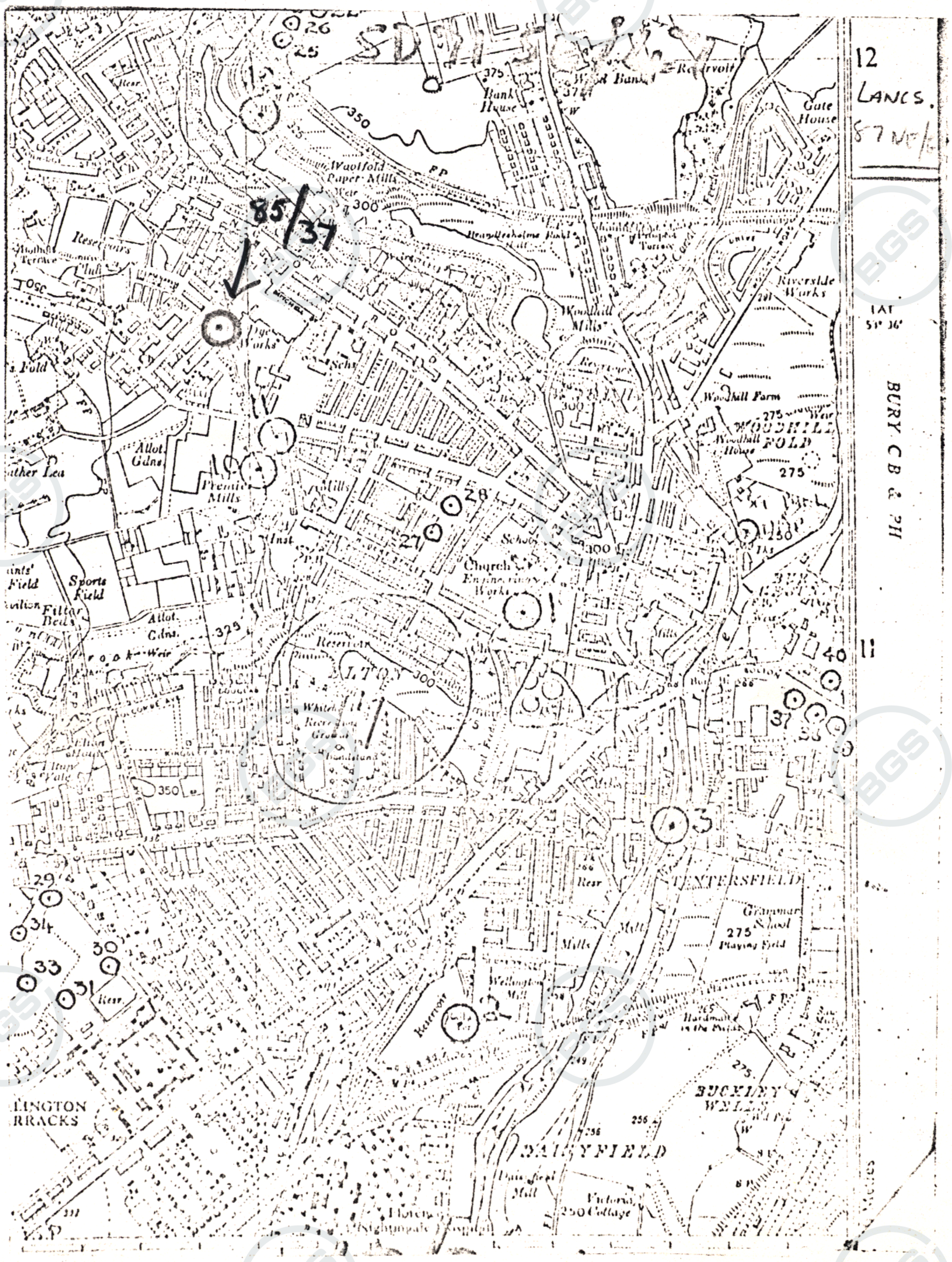
N.W.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey
BGS ID: 22805 : BGS Reference: SD71SE47
British National Grid (27700) : 378950,411550

85/37

Part SD 71 SE.47


85/37
26
25
375
Bank House
350
Woolfold Paper Mills
300
Reservoirs
Dye Works
Allot Gdns
Premier Mills
Sports Field
Filter Beds
28
27
Church
Engineering Works
Reservoir
Riverside Works
Woodhill Farm
WOODHILL FOLD
275
12
LANCS.
87 NE
BURY C B & M
40
37
3
TENTERSFIELD
Grammar School
Playing Field
BUCKLEY WELLS
29
34
30
33
31
DAISYFIELD
Victoria Cottage
ELTON BARRACKS
11

N. 13856

SD 71 SE/47

85/37

SD 71/50

FORAKY LTD.
COLWICK, NOTTINGHAM,
NG4 2BB.

SD 7894 / 1154
N.G.R. SD 790. 115.

CHART
of Borehole at S. SMETHURST & SON.
MITCHELL ST.
BURY
LANCS.

Bored by B. BOOTH Date Commenced 4th OCTOBER 1973

Water Levels: Standing 30 M. ft. Pumping 42.50 ft. Completed 6th NOV. 1973

Supply 10000 Galls per hour Analysis if made

Lined with 10 ft. - ins. of 15 ins. Tubes ft. ~~above~~ ~~below~~ Surface

92 - 12

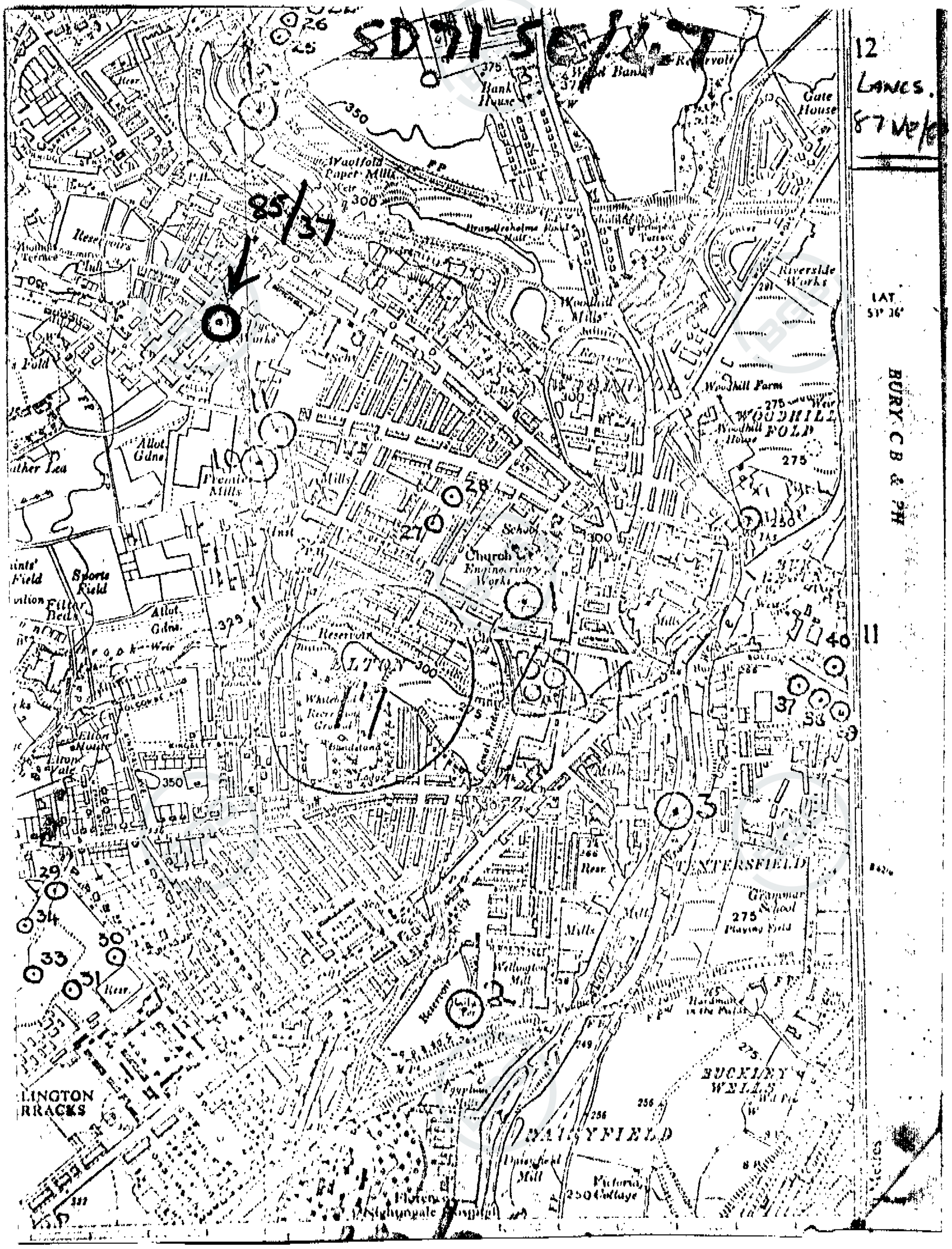
350 - 8 SLOTTED TOP 310' B.SUR. ft.

	Stratum BOREHOLE No.	Thickness		Total		T	D
		FT	INS	FT	INS	METRES	METRES.
Made ground	MADE GROUND	5	-	5	-	1·52	1·52
Possibly Drift with Boulders MIDDLE COAL MEASURES.	SANDSTONE	3	5	8	5	1·06	2·55
	" & HARD BANDS	11	7	20	-	3·52	6·09
	RED MARL & SANDSTONE	10	-	30	-	3·[illegible]	9·14
	SANDSTONE (Hard & Soft Bands)	24	-	54	-	7·31	16·45
	CLAY & ROCK BANDS	36	-	90	-	10·97	27·43
	SANDSTONE	8	-	98	-	2·43	29·87
	HARD RED MARL	32	-	130	-	9·75	39·62
	SANDSTONE	26	-	156	-	7·92	47·54
	LOST CIRCULATION & STRATA. A MIXTURE (SHALES & MUDSTONES)	135	-	291	-	41·14	88·69
	MUDSTONE HARD	17	-	308	-	5·18	93·87
	COAL	2	-	310	-	0·60	94·48
	SEAT EARTH	2	-	312	-	0·60	95·09
	MUDSTONE	18	-	330	-	5·48	100·58
	" & IRONSTONE BANDS	30	-	360	-	9·14	109·73

A.P
W.B.E.
4/74

Sited on Lancs 87 NE/E by ⊙

N.W.


SD71SE/47
85/37
12
LANCS.
87 NW/6
Wayfold Paper Mills
Bank House
Gate House
Riverside Works
Woodhill Mills
Woodhill Farm
WOODHILL FOLD
Reservoirs
Sports Field
Allot. Gdns
Premier Mills
School
Church
Engineering Works
Reservoir
LAT. 53° 36'
BURY C B & MB
TENTERSFIELD
Grammar School
Playing Field
BUCKLEY WELLS
DAISYFIELD
Daisyfield Mill
Victoria Cottage
Wellington Mill
LINGTON
RRACKS
26
25
28
27
29
30
31
33
34
37
38
40
3
2
1
11
350
300
275
250

APPENDIX III

CONSULTANTS COAL MINING REPORT

The Coal Authority

Summary of findings

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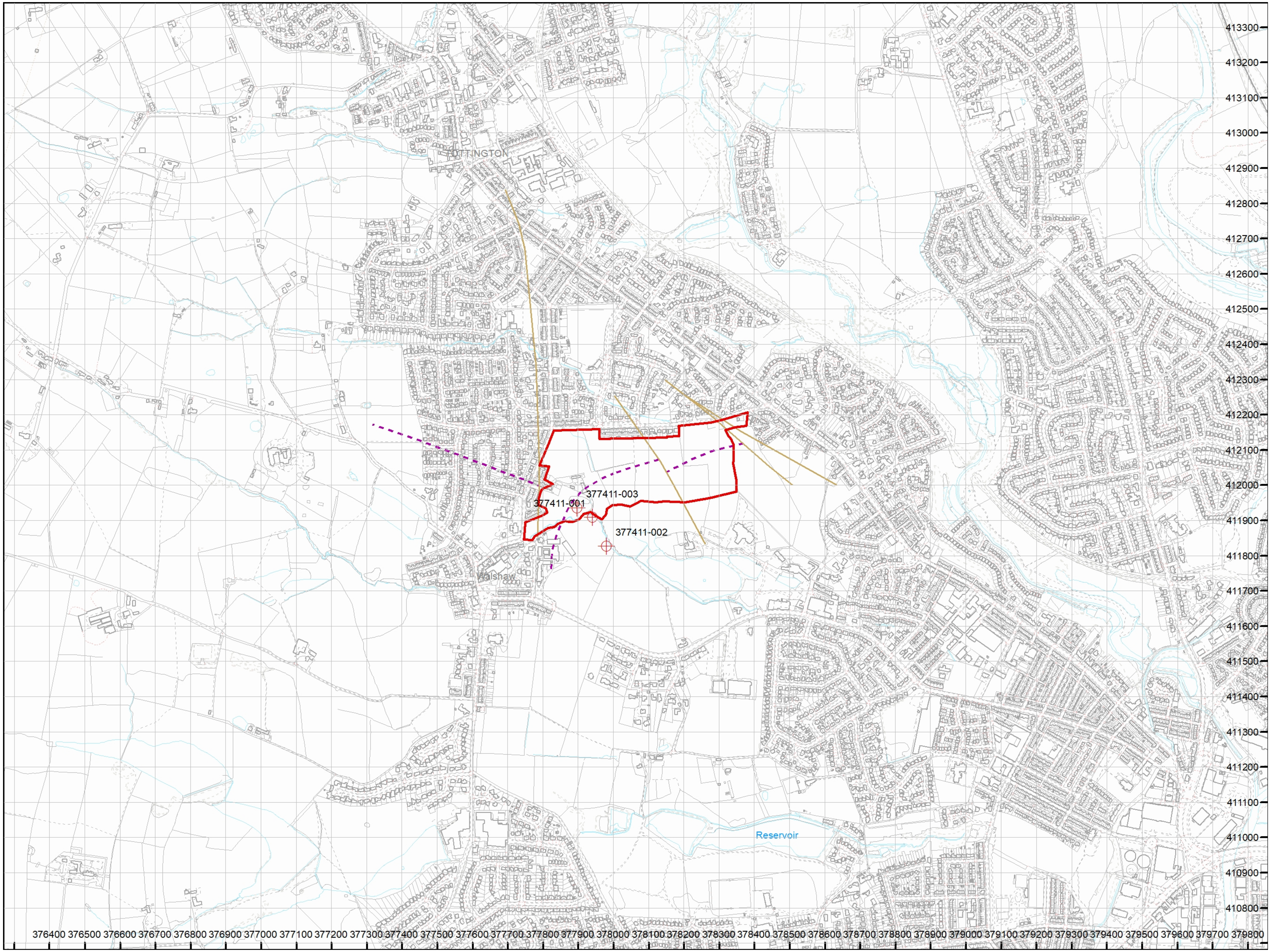
The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown	🟥
Disused mine shaft	⌖
Outcrop (Conjectured)	⋰
Geological faults	╱



OTTINGTON
377411-003
377411-001
377411-002
Walshaw
Reservoir
413300
413200
413100
413000
412900
412800
412700
412600
412500
412400
412300
412200
412100
412000
411900
411800
411700
411600
411500
411400
411300
411200
411100
411000
410900
410800
376400 376500 376600 376700 376800 376900 377000 377100 377200 377300 377400 377500 377600 377700 377800 377900 378000 378100 378200 378300 378400 378500 378600 378700 378800 378900 379000 379100 379200 379300 379400 379500 379600 379700 379800

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

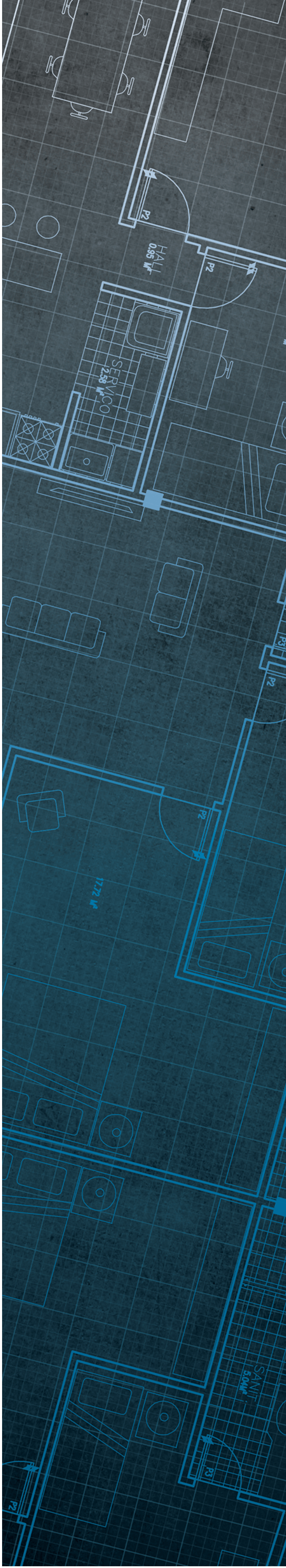
The Coal
Authority

Consultants

Coal Mining Report

149, Scobell Street
Tottington
Bury
Lancashire
BL8 3DE

Date of enquiry:	**25 March 2024**
Date enquiry received:	**25 March 2024**
Issue date:	**25 March 2024**
Our reference:	**51003413688001**
Your reference:	**340446971_1**



Consultants

Coal Mining Report

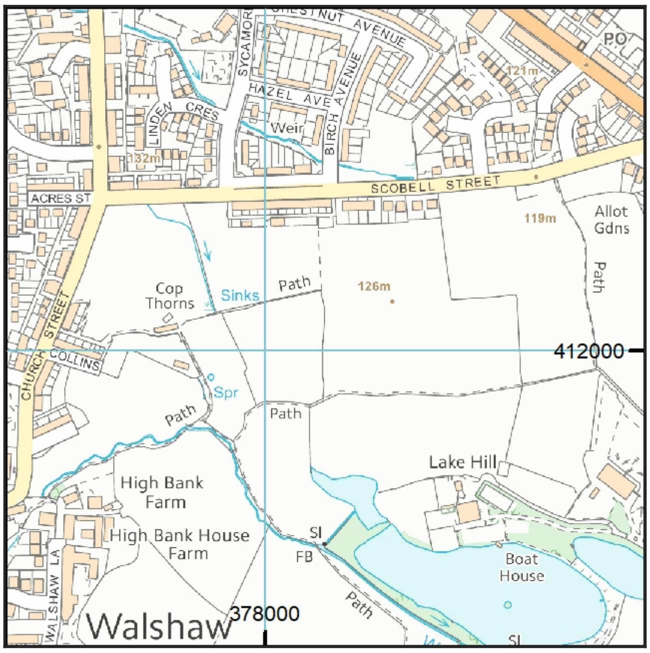
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

NLIS Hub

Enquiry address

149, Scobell Street
Tottington
Bury
Lancashire
BL8 3DE


SYCAMORE
CHESTNUT AVENUE
PO
121m
HAZEL AVE
BIRCH AVENUE
LINDEN CRES
Weir
132m
ACRES ST
SCOBELL STREET
119m
Allot Gdns
Path
Cop Thorns
Sinks
Path
126m
CHURCH STREET
COLLINS
412000
Spr
Path
Path
Lake Hill
High Bank Farm
High Bank House Farm
Sl
FB
Boat House
Path
WALSHAW LA
Walshaw
378000
Sl

Approximate position of property

Map data

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200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

No past mining recorded.

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	377411-001	377942 411908		Coal	
Shaft	377411-002	377982 411826		Coal	
Shaft	377411-003	377898 411935		Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

16820		

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
CANNEL	Coal	Yes	Within	N/A	24
CANNEL	Coal	Yes	Within	N/A	59
CANNEL	Coal	Yes	Within	N/A	253
HALF YARD	Coal	Yes	Within	N/A	76
UPPER MOUNTAIN	Coal	Yes	14.6	North-West	110

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Faults under or close to the property recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority’s Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current ‘Stop Notice’ deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

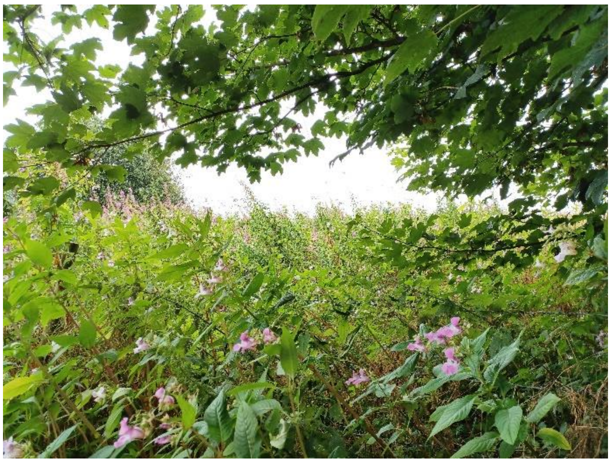
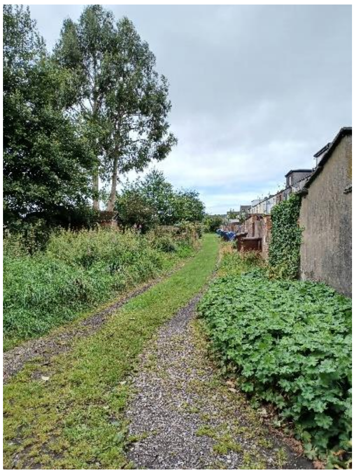
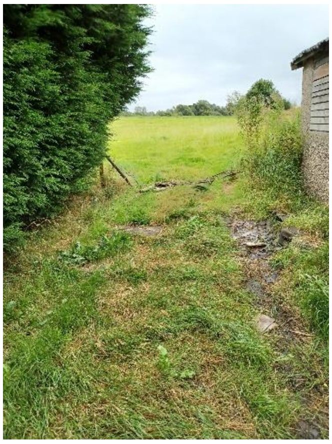
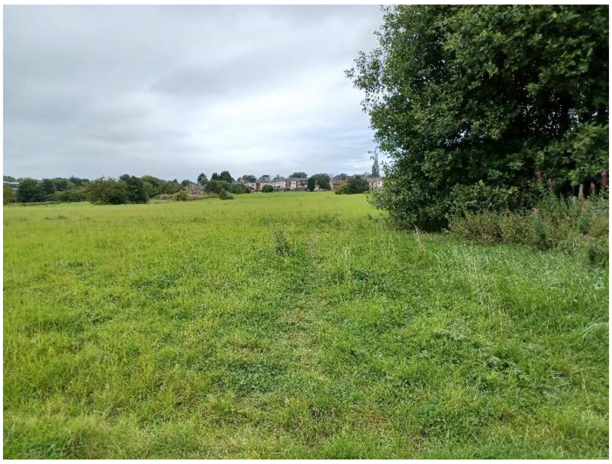
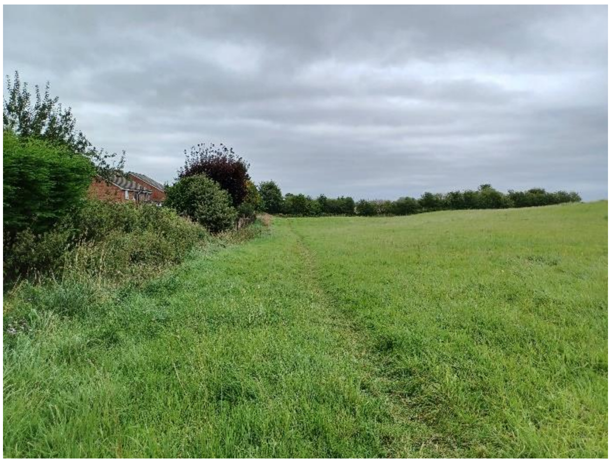
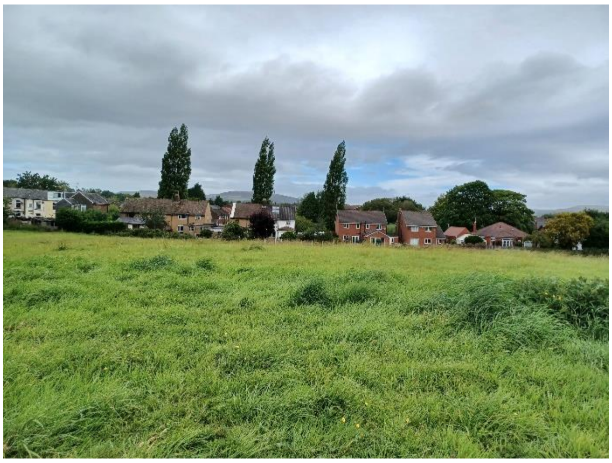
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

<table>
<tr><th colspan="2">R3351-Scobell Street – Site Walkover</th></tr>
<tr><td>1.

22.08.24 – Boundary from Scobell Street</td><td>2.

22.08.24 – View of land between Site and houses to the north (off-Scobell Street)</td></tr>
<tr><td>3.

22.08.24 – View of entrance to Site from Scobell Street</td><td>4.

22.08.24 – View looking west from entry point</td></tr>
<tr><td>5.

22.08.24 - View looking east from entry point</td><td>6.

22.08.24 – View north from centre of the Site</td></tr>
</table>

7.

22.08.24 – View west from centre of the Site

8.

22.08.24 – View south from centre of the Site

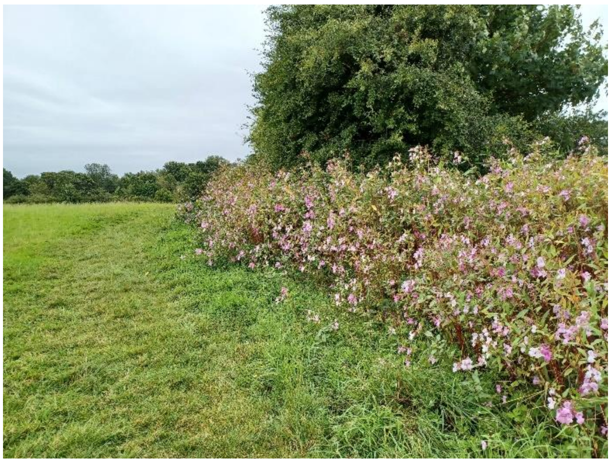
9.

22.08.24 – View east from centre of the Site

10.

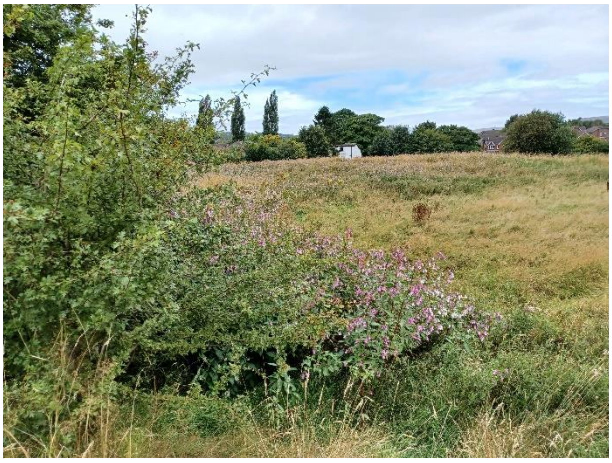
22.08.24 – View of neighbouring houses to the xxx

11.



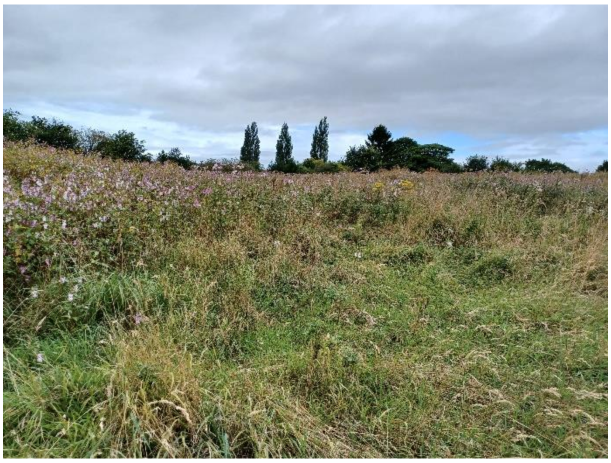
22.08.24 – Hedge line crossing the Site

12.



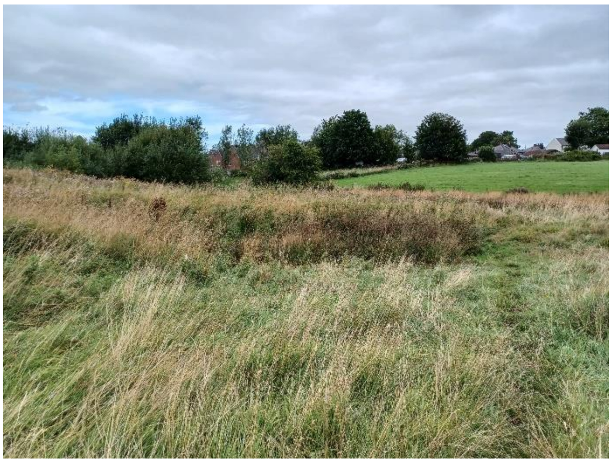
22.08.24 – View towards area of former sand quarry

13.



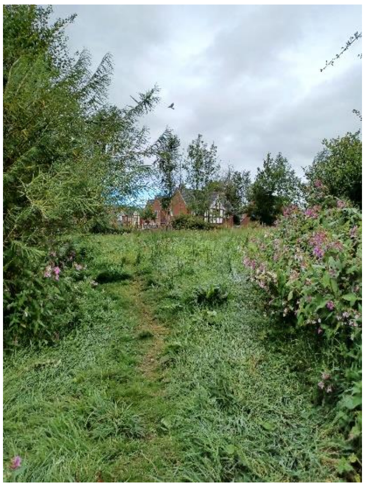
22.08.24 – Former quarry area

14.



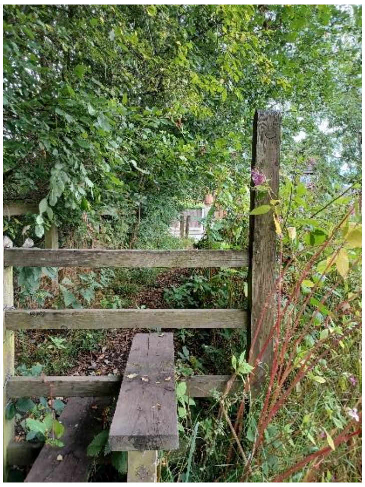
22.08.24 – Historical pond location within former quarry area

15.



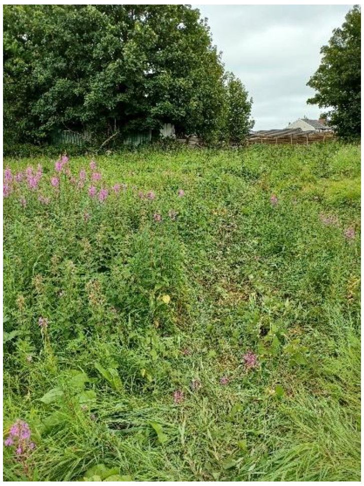
22.08.24 – Entry to northeast former allotment area

16.



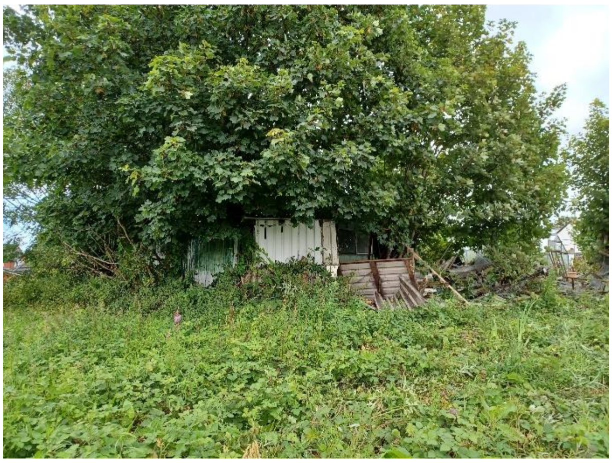
22.08.24 – Access point to former allotment area from Scobell Street

17.



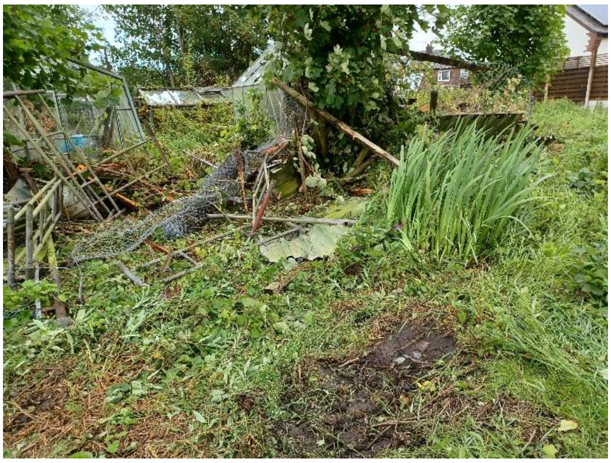
22.08.24 – View eastwards across former allotment area

18.



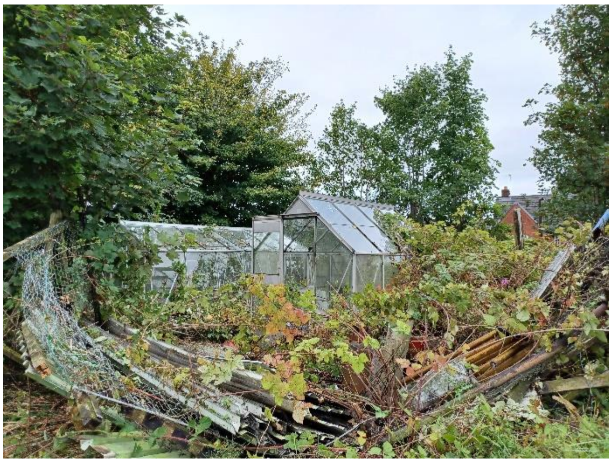
22.08.24 – Sheds associated with the former allotment area

19.



22.08.24 – Former allotment area

20.

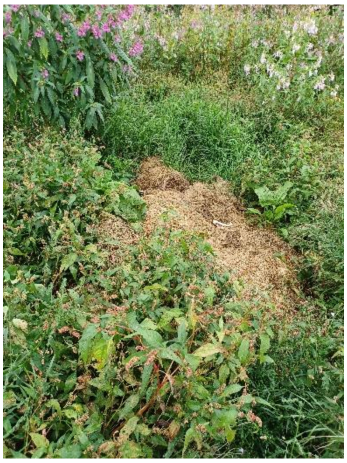


22.08.24 – Abandoned greenhouses in allotment area

21.

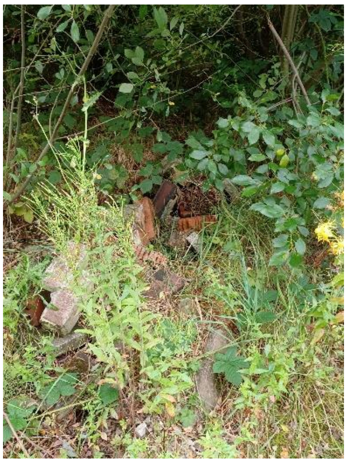
22.08.24 – Gated entrance to Scobell Street

22.



22.08.24 – Pile of hay and animal carcasses in northeast

23.



22.08.24 – Dumped bricks by gated entrance

24.

22.08.24 – View towards country club to the southeast

25.

22.08.24 – Stile entrance from the southeast

26.

22.08.24 – View west along southern boundary

27.

22.08.24 – Vegetated area near southern boundary

28.

22.08.24 – View west from southeast corner

29.

22.08.24 – View northwest from southern boundary

30.

22.08.24 – View following stream in the south

31.

22.08.24 – View east along stream path

32.

22.08.24 – Stream briefly culverted beneath field entryway (off-site)

33.

22.08.24 – heavily vegetated stream

34.

22.08.24 – Stream visible from off-site footbridge

35.

22.08.24 – View across area of historical mineshaft in the south of the Site

36.

22.08.24 – Area of historical mineshaft off south boundary (off-site)

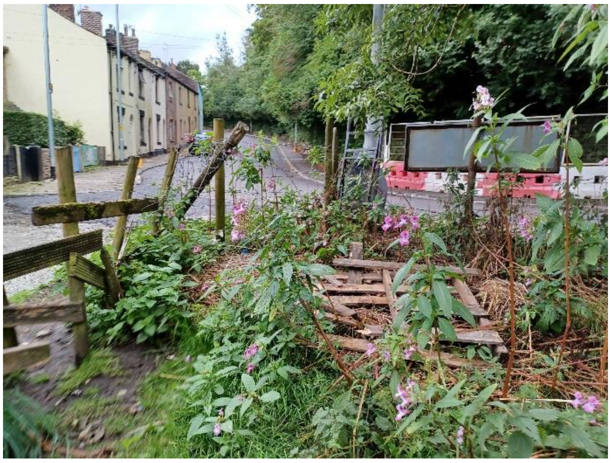
37.

22.08.24 - Area of historical mineshaft to the south (off-site)

38.

22.08.24 – Stile entering site from the southwest

39.



22.08.24 – Fly tipped materials in the southwest corner

40.

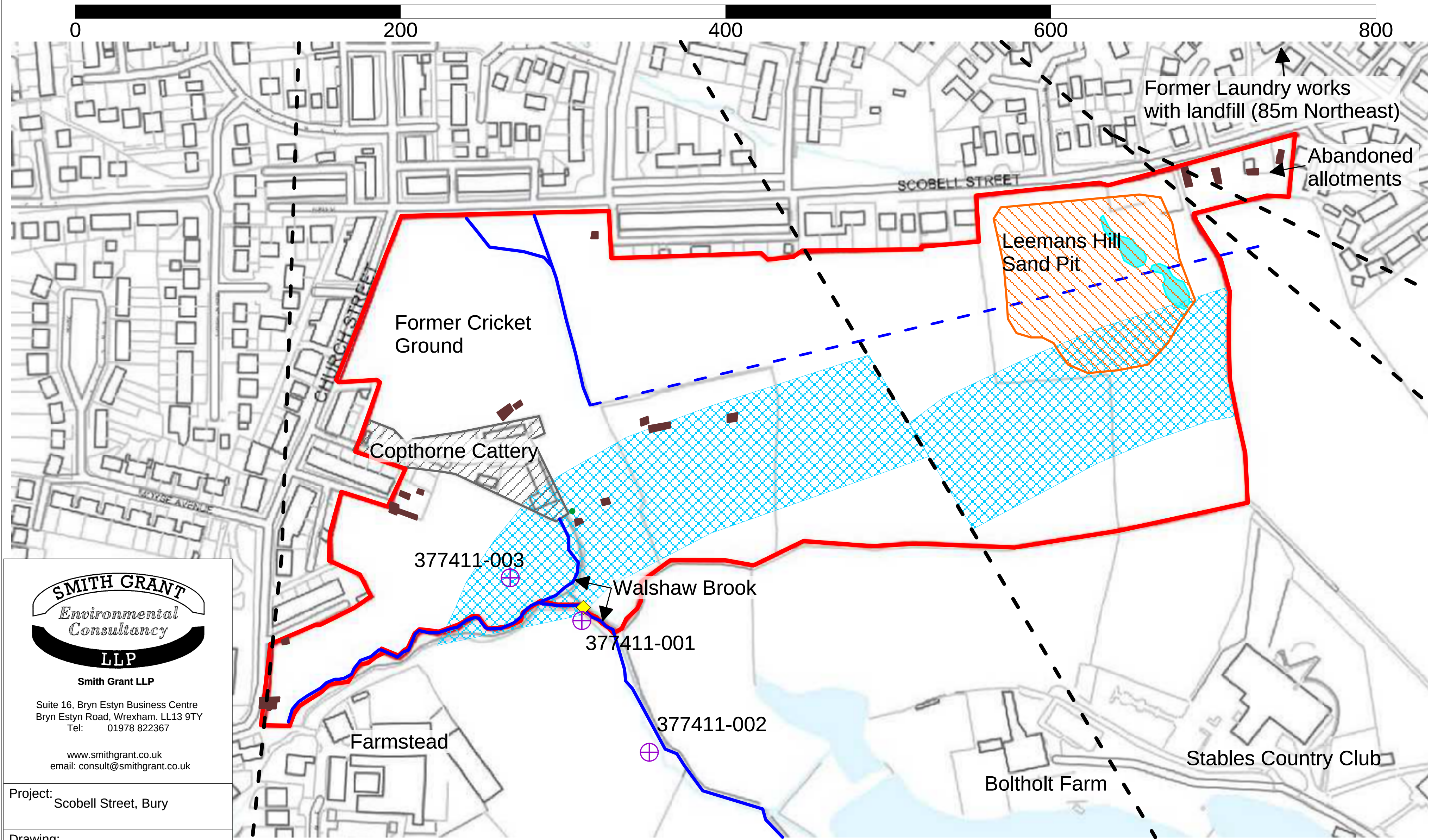
22.08.24 – View of western boundary onto Church Street

35.

22.08.24 – View northwest across former cricket ground area

35.

22.08.24 – View towards northwest corner


0
200
400
600
800
Former Laundry works
with landfill (85m Northeast)
Abandoned
allotments
SCOBELL STREET
Leemans Hill
Sand Pit
Former Cricket
Ground
CHURCH STREET
MOYSE AVENUE
Copthorne Cattery
377411-003
Walshaw Brook
377411-001
377411-002
Farmstead
Boltholt Farm
Stables Country Club

🟥 Site boundary

▨ Area to remain

■ Historical buildings

▨ Area of potential shallow mineworkings

— Surface watercourses

▨ Historical sand quarry

■ Historical ponds

- - Potentially culverted stream

- - Geological faults

● Spring/well

⊕ Historical mineshafts

◆ Surface water outfall point

SMITH GRANT
Environmental
Consultancy
LLP

Smith Grant LLP

Suite 16, Bryn Estyn Business Centre
Bryn Estyn Road, Wrexham. LL13 9TY
Tel: 01978 822367

www.smithgrant.co.uk
email: consult@smithgrant.co.uk

Project: Scobell Street, Bury	
Drawing: Site Features Plan	
Drawn by: MJ	Checked: LS
Date: 10.09.24	ES Chapter: 13
Job No: R3351	Drg No: D01

14 - Landscape and Visual Impact

Appendix A

Landscape and Visual Impact Assessment – Methodology and Assessment Criteria

Introduction

1.1 The methodology for the Landscape and Visual Impact Assessment undertaken for the proposed development is detailed in Chapter 7 of the Environmental Statement (ES). The following information is provided and should be read in conjunction with the overview methodology outlined in Chapter 7 of the ES.

1.2 As advised in the Guidelines for Landscape and Visual Impact Assessment (3rd Edition) (GLVIA3), the judgements made in respect of both landscape and visual effects are a combination of an assessment of the sensitivity of the receptor and the magnitude of the landscape or visual effect. The following details the definitions used in assessing sensitivity and magnitude for landscape and visual receptors.

1.3 Where it is determined that the assessment falls between or encompasses two of the defined criteria terms, then the judgement will be described as High/ Medium or Moderate/ Minor etc. This indicates that the assessment lies between the respective definitions or encompasses aspects of both.

Landscape

Landscape Sensitivity

1.4 Landscape receptors are assessed in terms of their ‘Landscape Sensitivity’. This combines judgements on the value to be attached to the landscape and the susceptibility to change of the landscape from the type of change or development proposed. The definition and criteria adopted for these contributory factors is detailed below.

1.5 There can be complex relationships between the value attached to landscape receptors and their susceptibility to change which can be especially important when considering change within or close to designated landscapes. For example an internationally, nationally or locally valued landscape does not automatically or by definition have a high susceptibility to all types of change. The type of change or development proposed may not compromise the specific basis for the value attached to the landscape.

Landscape Value

1.6 Value can apply to a landscape area as a whole, or to the individual elements, features and aesthetic or perceptual dimensions which contribute to the character of the landscape. The following criteria have been used to categorise landscape value. Where there is no clear existing evidence on landscape value, an assessment is made based on the criteria/ factors identified below (based on the guidance in the Landscape Institute Technical Guidance Note 02/21 “Assessing landscape value outside national designations”, GLVIA3 paragraph 5.28, Box 5.1, which provides more up to date guidance than Box 5.1 of GLVIA3).

- Natural Heritage
- Cultural Heritage
- Distinctiveness
- Recreational

- Landscape Condition
- Associations
- Perceptual (scenic)
- Perceptual (Wildness and tranquillity)
- Functional

Landscape Value	Definition
High	Landscape receptors of high importance based upon factors of natural and cultural heritage, condition, distinctiveness, recreational value, perceptual qualities quality, rarity, representativeness, conservation interest, recreational value, perceptual qualities and associations and functional aspects.
Medium	Landscape receptors of medium importance based upon factors of natural and cultural heritage, condition, distinctiveness, recreational value, perceptual qualities quality, rarity, representativeness, conservation interest, recreational value, perceptual qualities and associations and functional aspects.
Low	Landscape receptors of low importance based upon factors of natural and cultural heritage, condition, distinctiveness, recreational value, perceptual qualities quality, rarity, representativeness, conservation interest, recreational value, perceptual qualities and associations and functional aspects.

Landscape Susceptibility to Change

1.7 This means the ability of the landscape receptor (overall character type/ area or individual element/ feature) to accommodate the change (i.e. the proposed development without undue consequences for the maintenance of the baseline position and/ or the achievement of landscape planning policies and strategies. The definition and criteria for the assessment of Landscape Susceptibility to Change is as follows:

Landscape Susceptibility to Change	Definition
High	A highly distinctive and cohesive landscape receptor, with positive characteristics and features with no or very few detracting or intrusive elements. Landscape features intact and in very good condition and/ or rare. Limited capacity to accept the type of change/ development proposed.
Medium	Distinctive and more commonplace landscape receptor, with some positive characteristics/ features and some detracting or intrusive elements. Landscape features in moderate condition. Capacity to accept well planned and designed change/ development of the type proposed.
Low	Landscape receptor of mixed character with a lack of coherence and including detracting or intrusive elements. Landscape features that may be in poor or improving condition and few that could not be replaced. Greater capacity to accept the type of change/ development proposed.

Magnitude of Landscape Effects

1.8 The magnitude of landscape effects is the degree of change to the landscape receptor in terms of its size or scale of change, the geographical extent of the area influenced and its duration and reversibility. The table below sets out the categories and criteria adopted in respect of the separate considerations of Scale or Size of the Degree of Change and Reversibility. The geographical extent and duration of change are described where relevant in the assessment.

Scale or Size of the Degree of Landscape Change

Scale or Size of the Degree of Landscape Change	Definition
High	Total loss of or major alteration to key characteristics / features and the introduction of new elements totally uncharacteristic to the receiving landscape. Overall landscape receptor will be fundamentally changed.
Medium	Partial loss of or alteration to one or more key characteristics / features and the introduction of new elements that would be evident but not necessarily uncharacteristic to the receiving landscape. Overall landscape receptor will be obviously changed.
Low	Limited loss of, or alteration to one or more key characteristics/ features and the introduction of new elements evident and/ or characteristic to the receiving landscape. Overall landscape receptor will be perceptibly changed.
Negligible	Very minor alteration to one or more key characteristics/ features and the introduction of new elements characteristic to the receiving landscape. Overall landscape receptor will be minimally changed.
None	No loss or alteration to the key characteristics/ features, representing 'no change'.

Geographical Extent

Geographical extent	Definition
Extensive	Notable change to an extensive proportion of the geographic area.
Moderate	Notable change to part of the geographic area.
Minimal	Change over a limited part of the geographic area.
Negligible	Change over a very limited part of the geographical area.

Duration

Duration	Definition
Short term	The change will occur for up to 5 years.
Medium Term	The change will occur for between 5 and 10 years.
Long term	The change will occur for over 10 years

Reversibility

Reversibility	Definition
Irreversible	The development would be permanent and the assessment site could not be returned to its current/ former use.
Reversible	The development could be deconstructed/ demolished and the assessment site could be returned to broadly its current/ historic use (although that may be subject to qualification depending on the nature of the development).

Visual

Sensitivity of Visual Receptors

1.9 Visual sensitivity assesses each visual receptor in terms of their susceptibility to change in views and visual amenity and also the value attached to particular views. The definition and criteria adopted for these contributory factors is detailed below.

Visual Susceptibility to Change

1.10 The susceptibility of different visual receptors to changes in views and visual amenity is mainly a function of; firstly, the occupation or activity of people experiencing the view at particular locations; and secondly, the extent to which their attention or interest may therefore be focussed on the views and visual amenity they experience.

Visual Susceptibility to Change	Definition
High	Residents at home with primary views from ground floor/garden and upper floors. Public rights of way/ footways where attention is primarily focussed on the landscape and on particular views. Visitors to heritage assets or other attractions whose attention or interest is likely to be focussed on the landscape and/ or on particular views. Communities where views make an important contribution to the landscape setting enjoyed by residents. Travellers on recognised scenic routes.
Medium	Residents at home with secondary views (primarily from first floor level). Public rights of way/ footways where attention is not primarily focussed on the landscape and/ or particular views. Travellers on road, rail or other transport routes.
Low	Users of outdoor recreational facilities where the view is less important to the activities (e.g. sports pitches). Travellers on road, rail or other transport where views are primarily focussed on the transport route. People at their place of work where views of the landscape are not important to the quality of the working life.

Value of Views

1.11 The value attached to a view takes account of any recognition attached to a particular view and/ or any indicators of the value attached to views, for example through guidebooks or defined viewpoints or references in literature or art.

Value of Views	Definition
High	A unique or identified view (e.g. shown as such on Ordnance Survey map, guidebook or tourist map) or one noted in literature or art. A view where a heritage asset makes an important contribution to the view.
Medium	A typical and/ or representative view from a particular receptor.
Low	An undistinguished or unremarkable view from a particular receptor.

Magnitude of Visual Effects

1.12 Magnitude of Visual Effects evaluates each of the visual effects in terms of its size or scale, the geographical extent of the area influenced and its duration and reversibility. The table below sets out the categories and criteria adopted in respect of the Scale or Size (including the degree of contrast) of Visual Change. The distance and nature of the view and whether the view will be permanent or temporary are also detailed in the Visual Effects Table.

Scale or Size of the Degree of Visual Change	Definition
High	The proposal will result in a large and immediately apparent change in the view, being a dominant and new and/ or incongruous feature in the landscape.
Medium	The proposal will result in an obvious and recognisable change in the view and will be readily noticed by the viewer.
Low	The proposal will constitute a minor component of the wider view or a more recognisable component that reflects those apparent in the existing view. Awareness of the proposals will not have a marked effect on the overall nature of the view.
Negligible/ None	Only a very small part of the proposal will be discernible and it will have very little or no effect on the nature of the view.

Level of Effect

1.13 The final conclusions on effects, whether adverse or beneficial, are drawn from the separate judgements on the sensitivity of the receptors and the magnitude of the effects. This overall judgement is formed from a reasoned professional overview of the individual judgements against the assessment criteria.

1.14 GLVIA3 notes, at paragraphs 5.56 and 6.44, that there are no hard and fast rules with regard to the level of effects, therefore the following descriptive thresholds have been used for this assessment:

- Major
- Moderate
- Minor
- Negligible

1.15 Where it is determined that the assessment falls between or encompasses two of the defined criteria terms, then the judgement may be described as, for example, Major/ Moderate or Moderate/ Minor. This indicates that the effect is assessed to lie between the respective definitions or to encompass aspects of both.

Judging Overall Significance

1.16 A judgement is reached, based on the assessment, as to whether an effect is significant or not. Those degrees of effects that are considered to be *significant* by the assessor for *this* LVIA are judged to be effects that are either Major or Major/ Moderate.

1.17 GLVIA3 Statement of Clarification 1/13 (2013)[1] notes that:

"Concerning 'significance', it is for the assessor to define what the assessor considers significant…Depending on the means of judgment and terminology (which should be explicitly set out), effects of varying degrees of change (or levels of change), may be derived. The assessor should then establish (and it is for the assessor to decide and explain) the degree or level of change that is considered to be significant." (GLVIA3 Statement of Clarification, § 3.)

Significance of Landscape Effects

1.18 GLVIA3 states, at paragraph 5.56, that:

"There are no hard and fast rules about what makes a significant effect, and there cannot be a standard approach since circumstances vary with the location and context and with the type of proposal. At opposite ends of the spectrum it is reasonable to say that:

- *Major loss or irreversible negative effects, over an extensive area, on elements and/ or aesthetic and perceptual aspects that are key to the character of nationally valued landscapes are likely to be of the greatest significance;*
- *Reversible negative effects of short duration, over a restricted area, on elements and/ or aesthetic and perceptual aspects that contribute to but are not key characteristics of the character of landscapes of community value are likely to be of the least significance and may, depending on the circumstances, be judged as not significant;*
- *Where assessments of significance place landscape effects between these extremes, judgements must be made about whether or not they are significant, with full explanations of why these conclusions have been reached."* (GLVIA3 paragraph 5.56.)

Significance of Visual Effects

1.19 GLVIA3 states, at paragraph 6.44, that:

"There are no hard and fast rules about what makes a significant effect, and there cannot be a standard approach since circumstances vary with the location and context and with the type of proposal. In making a judgement about the significance of visual effects the following points should be noted:

- *Effects on people who are particularly sensitive to changes in views and visual amenity are more likely to be significant;*
- *Effects on people at recognised and important viewpoints or from recognised scenic routes are more likely to be significant;*

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[1] Landscape Institute and the Institute of Environmental Management (10th June 2013) GLVIA3 Statement of Clarification 1/13

- *Large-scale changes which introduce new, non-characteristic or discordant or intrusive elements into the view are more likely to be significant than small changes or changes involving features already present within the view.*" (GLVIA3 paragraph 6.44.)

APPENDIX B: LANDSCAPE EFFECTS TABLE (LET)

Landscape Receptor and Reference	Judged Sensitivity of Landscape			Judged Magnitude of Landscape Effect		Description/ Notes	Overall Effect at Construction Phase	Overall Effect Upon Completion	Overall Effect at 15 Years Post Completion	Is the Overall Effect Significant?
	Susceptibility to Change High Medium Low	Landscape Value High Medium Low	**Overall Sensitivity** **High** **Medium** **Low**	**Scale or Size of the Degree of Change including degree of contrast/ integration) at Stages of Project** **High** **Medium** **Low** **Negligible** **None**	**Where applicable, are the Effects Reversible?** **Yes** **No** **N/A**		Major Moderate Minor Negligible None Adverse Beneficial	Major Moderate Minor Negligible None Adverse Beneficial	Major Moderate Minor Negligible None Adverse Beneficial	Yes No
National Landscape Character										
Natural England, National Character Area Profile (NCA) 54 - Manchester Pennine Fringe.	Varies Low – High (no assessment is provided within the publication	Varies Low – High (no assessment is provided within the publication	Varies Low – High (no assessment is provided within the publication	Construction: Negligible Completion: Negligible Year 15: Negligible	N/A	The Site and the immediate surroundings fall within this NCA which wraps around Manchester from Bolton in the northwest to Marple in the southeast and therefore covers a very extensive landscape tract. Within the 'Key Characteristics' of the NCA it recognises 'almost half of this NCA is classed as urban' It also sets out 'Statements of Environmental Opportunity' (SEOs) which includes recommendations for improving hedgerows, encouraging the creations of SUDS and providing quality greenspace through well designed green infrastructure. The proposed development forms a minor component of this extensive NCA. It will extend the built form of Walshaw and will incorporate embedded green infrastructure with proposed mitigation planting and landscape and biodiversity enhancements.	Negligible	Negligible	Negligible	No
Landscape Character Assessment (LCA): County/District										

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Landscape Receptor and Reference	Judged Sensitivity of Landscape			Judged Magnitude of Landscape Effect		Description/ Notes	Overall Effect at Construction Phase	Overall Effect Upon Completion	Overall Effect at 15 Years Post Completion	Is the Overall Effect Significant?
	Susceptibility to Change High Medium Low	Landscape Value High Medium Low	**Overall Sensitivity** **High** **Medium** **Low**	**Scale or Size of the Degree of Change including degree of contrast/ integration) at Stages of Project** **High** **Medium** **Low** **Negligible** **None**	**Where applicable, are the Effects Reversible?** **Yes** **No** **N/A**		Major Moderate Minor Negligible None Adverse Beneficial	Major Moderate Minor Negligible None Adverse Beneficial	Major Moderate Minor Negligible None Adverse Beneficial	Yes No
Greater Manchester Landscape Character and Sensitivity Assessment: Landscape Type (LT) Urban Fringe Farmland	Medium	Medium	Medium (an assessment of ‘medium’ is provided in the LT with regards to landscape sensitivity)	Construction: Low Completion: Low Year 15: Low	N/A	The Site and the immediate surroundings fall within this Landscape Type which covers various areas across the districts of Manchester. The document assesses the sensitivity of the character areas based on various criteria. *‘Form, density and settling of existing settlement/ development’* and *‘Access and recreation’* are assessed as having a medium – high sensitivity rating. *‘Physical character (including topography and scale)’*, *‘Natural character’*, *‘Views and visual character including skylines’* and *Perceptual and experiential qualities* are assessed as having a medium sensitivity rating. *‘Historic landscape character’* is assessed as having a low – medium sensitivity rating. The Landscape Type provides an overall sensitivity rating of Medium for the development scenario 2-3 storey residential housing. The LT provides ‘Guidance and opportunities for future development and landscape management/enhancement’. The proposed development would provide opportunities for restoring hedgerow networks. SUDS would be provided within the southeast and southwest of The Site and Development would be located on relatively low flat land that would not affect the key views noted in the guidance.	Moderate/ Minor Adverse	Moderate/ Minor Adverse	Minor Adverse	No

APPENDIX B: LANDSCAPE EFFECTS TABLE (LET)

Landscape Receptor and Reference	Judged Sensitivity of Landscape			Judged Magnitude of Landscape Effect		Description/ Notes	Overall Effect at Construction Phase	Overall Effect Upon Completion	Overall Effect at 15 Years Post Completion	Is the Overall Effect Significant?
	Susceptibility to Change High Medium Low	Landscape Value High Medium Low	**Overall Sensitivity** **High** **Medium** **Low**	**Scale or Size of the Degree of Change including degree of contrast/ integration) at Stages of Project** **High** **Medium** **Low** **Negligible** **None**	**Where applicable, are the Effects Reversible?** **Yes** **No** **N/A**		Major Moderate Minor Negligible None Adverse Beneficial	Major Moderate Minor Negligible None Adverse Beneficial	Major Moderate Minor Negligible None Adverse Beneficial	Yes No
Bury Landscape Character Assessment (2009): Landscape Type (LT): Fringe Industrial Brook 1b Walshaw and Elton	Medium	Medium	Medium	Construction: Medium Completion: Medium/ Low Year 15: Low	N/A	The Site and land to the south and east fall within this Landscape Type. The LT provides general guiding principles for the area which include strengthening wildlife corridors and preventing boundary loss and fragmentation around urban fringes. The guiding principles also highlight the opportunity to 'repair and maintain hedges at Walshaw Brook' and 'promote the introduction of broad leaved woodland long Walshaw Brook' which runs through the site. Whilst the development would increase the built form at Walshaw, development follows the general field pattern and most vegetation could be retained and enhanced. The embedded green infrastructure runs alongside Walshaw Brook providing opportunities to repair and improve hedgerows and introduce woodland planting.	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse	No
Landscape Character: Site and Immediate Context										

APPENDIX B: LANDSCAPE EFFECTS TABLE (LET)

Landscape Receptor and Reference	Judged Sensitivity of Landscape			Judged Magnitude of Landscape Effect		Description/ Notes	Overall Effect at Construction Phase	Overall Effect Upon Completion	Overall Effect at 15 Years Post Completion	Is the Overall Effect Significant?
	Susceptibility to Change High Medium Low	Landscape Value High Medium Low	**Overall Sensitivity** **High** **Medium** **Low**	**Scale or Size of the Degree of Change including degree of contrast/ integration) at Stages of Project** **High** **Medium** **Low** **Negligible** **None**	**Where applicable, are the Effects Reversible?** **Yes** **No** **N/A**		Major Moderate Minor Negligible None Adverse Beneficial	Major Moderate Minor Negligible None Adverse Beneficial	Major Moderate Minor Negligible None Adverse Beneficial	Yes No
Site and Immediate Context	Medium	Medium	Medium	Construction: High Completion: Medium Year 15: Medium/Low	N/A	The site is made up of several irregular shaped field parcels which form a wider network of fields divided by fragmented hedgerows and lines of trees. Fields are primarily made up of neutral grassland with small areas of mixed scrub. A small area of woodland provides a buffer between an industrial area located to the south of the site. An access road enters The Site from Church Street and leads to Copthorne Cattery and other associated buildings. Several public footpaths cross The Site or pass along the boundaries and form part of the wider PRoW network. Two watercourses are present within the site. The proposed development is set up against the north boundary and will read as an extension to the Walshaw development to the north. A green corridor runs along the more sensitive part of the site at Walshaw Brook and provides a buffer to the existing PRoW. Most vegetation would be retained and development follows the existing field patterns. All public rights of way routes have been retained with some additional connecting routes provided through green spaces and along corridors. Attenuation basins give opportunity to provide additional wetland habitats within the site along with areas of meadow grassland and increased tree planting. There will inevitably be a change in land use from fields to development. However, as green infrastructure planting matures the proposed development will further assimilate into the landscape.	Major/ Moderate Adverse	Moderate Adverse	Moderate Minor Adverse	No (At construction - yes)

APPENDIX C: VISUAL EFFECTS TABLE (VET)

Ref	Receptor Type, Location and photographs (including approx no. of dwellings where applicable)	Judged Sensitivity of Visual Receptor			Judged Magnitude of Visual Effects				Description/ Notes	Overall Effect at Construction Phase	Overall Effect Upon Completion	Overall Effect at 15 Years Post Completion	Is the Overall Effect Significant?
		Susceptibility to Change High Medium Low	Value High Medium Low	Overall Sensitivity High Medium Low	Distance from Site Boundary (or Built Development where stated) (approx. m/km)	Nature of View Full Partial Glimpse None	Is the View Temporary or permanent?	Size/Scale of Visual Effect (including degree of contrast/ integration) at Stages of Project High Medium Low Negligible/ None		Major Moderate Minor Negligible None Adverse or Beneficial	Major Moderate Minor Negligible None Adverse or Beneficial	Major Moderate Minor Negligible None Adverse or Beneficial	Yes No
A	Recreational users of PRoW crossing The Site (Ref: 91TOT & 92:TOT) (viewpoint 6A, 6B, 14A and 14B)	High	Medium	High	0m (within site boundary)	Full	Permanent	Construction: High/Medium Completion: Medium Year 15: Medium/ Low	Recreational users of the public rights of way crossing The Site currently experience open panoramic views across The Site. Some views feature housing adjacent to the site boundary to the north and west. The public right of way will remain on its current route. Footpath users would experience open views of construction activities and proposed development upon completion. Route is to be retained within green corridor through development parcels with green space retained along route of watercourse. At year 15 green infrastructure along some areas of the PRoW would have established and begin to soften views of proposed development. However, due to the location and proximity of the footpaths to development, proposed housing would still form a main component within the view.	Major/ Moderate Adverse	Moderate Adverse	Moderate/ Minor Adverse	No (At construction – yes)
B	Recreational users of PRoW along The Site boundaries south (within The Site) and east (outside of The Site Boundary) (Ref: 93:TOT and 94TOT) (viewpoint 8, 9, 10 and 13)	High	Medium	High	~0m-1m	Full/ Partial	Permanent	Construction: High/Medium Completion: Medium Year 15: Medium/Low	Recreational users of the PRoW along The Site boundaries to the south and east currently experience open panoramic views across the site. Some views already feature housing on the perimeters of the site. The public rights of way will remain on its current route. Footpath users would experience open views of construction activities and proposed development upon completion. Routes will be partially retained within green corridors with development set back. Along Footpath: 93TOT (along the southern boundary) tree planting will soften views of development. To the east, Footpath: 94TOT will pass by an area retained for green infrastructure with SUDS and past an area of development. The footpath enters The Site between two areas of proposed development for approximately 30m. At year 15 green infrastructure along some areas of the PRoW would have established and begin to soften views of proposed development. However, due to the location proximity of the footpaths to	Major/Moderate Adverse	Moderate Adverse	Moderate/Minor Adverse	No (At construction – yes)

									development, proposed housing would still form a main component within the view.				
C	Residents of properties facing onto the site (approx. 50no.) (viewpoint 1, 2, 3, 4, 5 and 15	High	Medium	High	10m	Full	Permanent	Construction: High/ Medium Completion: Medium Year 15: Medium/ Low	Residents at houses along Scobell Street and Church Street who face onto The Site currently experience open views across the site towards surrounding settlement, vegetation to the south and east and hills to the east in the distance, as shown in viewpoint 1, 2 and 3. Residents would have open views onto construction activities and proposed development upon completion from their ground floor and upper floor windows, and their front gardens. Housing will appear close within views and block longer distance views. Some residents would have views along the green corridor. At year 15 the green infrastructure within the northwest corner of the site would have established and begin to soften views of proposed development reducing effects slightly.	Major/ Moderate Adverse	Major/ Moderate Adverse	Moderate Adverse	No (yes at construction and year 1)
D	Residents at Scobell Street with properties backing onto the site (approx. 35) (viewpoint 14A, 14B and 15)	Medium/High	Medium	Medium/ High	15m	Full	Permanent	Construction: High/ Medium Completion: Medium Year 15: Medium	It was not possible to access properties to take photos. However, it is likely that residents currently experience some open views across the site from upper floor windows only. Construction activities would likely be introduced into the view and proposed development at year 1. However, outbuildings to the rear of properties and garden walls will screen views from ground floor windows and gardens. Trees along the northern site boundary will filter views for some residents from upper floor rear windows. At year 15 views for residents at these properties would be similar to views experienced at year 1.	Major/ Moderate Adverse	Moderate Adverse	Moderate Adverse	No (At construction – yes)
E	Residents at Copthorne Cattery (viewpoint 6A and 6B)	Medium/High	Medium	High	0m	Partial	Permanent	Construction: Medium Completion: Medium Year 15: Medium/ Low	It was not possible to access properties to take photos. However, it is likely that residents currently experience views across the site from the upper floor windows. From ground floor windows views are likely to be restricted by the vegetation surrounding the property within the site. Construction activities would likely be visible from the upper floor windows and may be visible from ground floor windows. Development will be introduced into the views although new housing will be set back beyond areas of greenspace with associated landscape proposals softening views once implemented. At year 15, the planting will be maturing to help soften views of proposed development.	Moderate Adverse	Moderate Adverse	Moderate/ Minor Adverse	No
F	Residents at Collins Street/ Pleasant Street (approx..30.) (viewpoint 4 and 5)	Medium/ High	Medium	High	~2m-60m	Partial	Permanent	Construction: Medium Completion: Medium/ Low Year 15: Low	Residents at Collins Street and Pleasant Street currently experience views into the southwest corner of the site in context with surrounding development at Walshaw. From the upper floor rear window view may extend further across the site. Residents would experience primary views of any construction activities happening in the southwest	Moderate Adverse	Moderate/ Minor Adverse	Minor Adverse	No

									corner of the site. Construction activities from rear windows and oblique views across the site are also likely. At year 1 residents primary views would be orientated towards an area of green infrastructure. Residents would likely experience views of proposed development from upper floor rear windows. Oblique views to development across the site would also be possible. Approximately 12no. residents at Collins Street will have a view of the proposed development within the northwest corner of the site from their rear gardens/ windows. This will be seen in context with surrounding properties at Walshaw. At year 15, additional planting will soften views of proposed development slightly.				
G	Residents at Walshaw (not directly adjacent to site)	Medium/ High	Medium	High	-	Glimpsed / None	Permanent	Construction: Low Completion: Low Year 15: Low/Negligible	Residents at Walshaw who are set back and not adjacent to the site generally have views onto other existing surrounding houses. Whilst it is possible that a small number of residents experience views of the site, especially from upper floor windows, The Site is generally blocked by the surrounding houses. At year 1 some residents may have partial/ glimpsed views of development. These would generally be seen in context with the existing development at Walshaw. At year 15, any views of development would be further softened by the proposed mitigation planting.	Minor Adverse	Minor Adverse	Minor Adverse/ Negligible	No
H	Road users along Scobell Street/ Church Street (viewpoint 1, 2, 3, 12 and 15)	Medium/	Medium	Medium	~1m	Full - Glimpse	Permanent	Construction: Medium Completion: Medium/Low Year 15: Low	As Road users travel along Scobell Street and Church Street, they currently experience a range of views including existing housing and vegetation along the site boundary. At the northwest corner of the site where both roads meet road users currently experience open views across the site. Construction activities would be visible in the view and proposed development would be introduced at year 1 although would be filtered by retained boundary vegetation. The roads run parallel to the site and road users' attention would be on focused on the road. Views would be transient in nature. At year 15, views will be further softened by the proposed mitigation planting.	Moderate/ Minor Adverse	Moderate/ Minor Adverse	Minor Adverse	No
I	Residents along Walshaw Road (approx. 6no) (viewpoint 16)	High	Medium	High	~400	Partial	Permanent	Construction: Medium/ Low Completion: Medium Low Year 15: Low	Residents long Walshaw Road currently experience views across pasture fields. The Site is partially visible between woodland and scattered scrub. Properties along Scobell Street can be seen along the northern site boundary. The hills to the north and Peel Monument form the backdrop within the view. Construction activities would be introduced into the view. At year 1 proposed housing would be introduced into the view bringing development closer to the receptor. However, views will be primarily of the green corridor with views of development on either side. Long distance views towards the hills and Peel Monument in the north	Moderate/ Adverse	Moderate/ Minor Adverse	Minor Adverse	No

									would still be visible above the proposed development. At year 15, views will be further softened by the proposed mitigation planting.				
J	Recreational users of PRoW to the south/ southeast of The Site (viewpoint 7, 10, 11)	High	Medium	High	0m-~150m	Full/ Partial	Permanent	Construction: Medium/ High Completion: Medium Year 15: Medium/ Low	Recreational users of PRoW to the south/ southeast of the site currently experience views across fields into The Site and vegetation along The Site boundaries. As the footpath approaches from the south, footpath users would start to experience open views of construction activities and proposed development from approximately 150m away. From the southeast development would be visible above the existing boundary vegetation. At year 15 proposed tree planting along the southern boundary would soften views from the south reducing effects slightly. From the southeast views of development would remain a dominant feature within the view.	Major/ Moderate Adverse	Moderate Adverse	Moderate/ Minor Adverse	Yes (upon completion) No (at year 15)
K	Residents at scattered farmsteads to the west/ northwest (viewpoint 19 and 20)	Medium	Medium	Medium/ High	-	Glimpsed	Permanent	Construction: Negligible Completion: Negligible Year 15: None	Construction activities may be visible as a small element within the view. At year 1 proposed housing may be possible to see. This would be viewed in context with surrounding development. At year 15, planting may be visible in the view. However, it will be barely perceptible and the development as a whole will form a barely perceptible addition to the existing settlement of Walshaw	Negligible	Negligible	None	No
L	Recreational users of PRoW to the west/ northwest (viewpoint 19 and 20)	High	Medium	High	-	Partial	Permanent	Construction: Negligible Completion: Negligible Year 15: None	Users of PRoW to the west/ northwest experience panoramic views across Bury. The site is visible as a very small element within the wider view and in context with surrounding development including Grade II Listed Walshaw Parish Church. Construction activities may be visible as a small element within the view. At year 1 proposed housing may be possible to see. This would be viewed in context with surrounding development. At year 15, planting may be visible in the view. However, it will be barely perceptible and the development as a whole will form a barely perceptible addition to the existing settlement of Walshaw.	Negligible	Negligible	None	No
M	Recreational users at Footpath: 32RAM/ Peel Monument (viewpoint 18)	High	Medium/ High	High	-	Glimpsed	Permanent	Construction: Negligible Completion: Negligible Year 15: None	Users of Footpath 32RAM at Peel Monument experience long distance panoramic views across Bury. The villages of Greenmount and Summerseat are visible along with other various settlements, woodland and field parcels across the landscape. High rise buildings at Manchester are visible within the backdrop. Construction activities may be visible as a small element within the view. At year 1 proposed housing	Negligible	Negligible	None	No

									may be possible to glimpse. This would be a very small element and viewed as a very small extension to existing development. At year 15, planting may be visible in the view. However, it will be barely perceptible and the development as a whole will form a barely perceptible addition to the existing settlement of Walshaw.				
N	Recreational users of PRoW to the east/ northeast (viewpoints 21 and 22)	High	Medium/ High	High	-	Glimpsed	Permanent	Construction: Negligible Completion: Negligible Year 15: None	Users of PRoW to the east/ northeast experience panoramic views across Bury. The site is visible as a very small element within the wider view and in context with surrounding development including Grade II Listed Walshaw Parish Church. Peel Monument is visible within the wider view. Construction activities may be visible as a small element within the view. At year 1 proposed housing may be possible to see. This would be viewed in context with surrounding development. At year 15, planting may be visible in the view. However, it will be barely perceptible and the development as a whole will form a barely perceptible addition to the existing settlement of Walshaw.	Negligible	Negligible	None	No
O	Residents at scattered farmsteads to the east/ northeast (viewpoints 21 and 22)	Medium	Medium/ High	High	-	Glimpsed	Permanent	Construction: Negligible Completion: Negligible Year 15: None	Residents at scattered farmsteads to the east experience panoramic views across Bury. The site is visible as a very small element within the wider view and in context with surrounding development including Grade II Listed Walshaw Parish Church. Peel Monument is visible within the wider views from here. Construction activities may be visible as a small element within the view. At year 1 proposed housing may be possible to see. This would be viewed in context with surrounding development. At year 15, planting may be visible in the view. However, it will be barely perceptible and the development as a whole will form a barely perceptible addition to the existing settlement of Walshaw.	Negligible	Negligible	None	No

15 - Archaeology and Cultural Heritage

Historic Environment Desk-based Assessment

Land to the south of Scobell Street, Bury

Wain Estates (Land) Ltd

June 2024 (Updated December 2024)

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Historic Environment Desk-based Assessment

Land to the south of Scobell Street, Bury

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Non-Technical Summary

Lanpro Services Limited was commissioned by Wain Estates (Land) Ltd to produce an historic environment desk-based assessment to inform a planning application for residential development on land to the south of Scobell Street, Bury (NGR SD 7806 1207). It sits within the northern extent of the Greater Manchester Places for Everyone (PfE) plan *Walshaw JPA9 Allocation* site and is located within the administrative boundary of Bury Council.

The assessment addresses the information requirements set out in the National Planning Policy Framework (NPPF) and provides the proportionate response sought by the NPPF. It draws together the available archaeological, historical, topographic and land-use information in order to clarify the heritage significance and archaeological potential of the study site.

The assessment has established that there are no designated heritage assets within the study site. However, a Grade II* listed building, Christ Church, sits within a graveyard to the south-west of the study site with commanding views across most of the landscape to the east of Walshaw. Recognised by its designated status, the church is of high significance derived from its architectural and aesthetic values, together with historical and communal interests in that it was intended as a memorial to a local industrialist, Jesse Haworth. The Haworth family was known for cotton spinning and fustian making and contributed to the welfare, and thus development, of the settlement of Walshaw. The family would also seem to be deeply rooted in the agricultural history of the surroundings, including an association with the surviving non-designated heritage asset within the study site at Cop Thorns. The setting of the church was chosen for its unencumbered and high position within the landscape providing a landmark overlooking its surroundings, adding importance to its function as a memorial. This wider setting contributes to its heritage values, and hence the PfE plan specifically references the requirement for development proposals to consider the setting of Christ Church and, respectively, its contribution to the character of the local area.

Views of the church dominating its surrounding landscape can be maintained within the study site with due consideration of the height of the proposed built form in order to maintain its prominence over the roofscape of the dwellings, rather than narrowing the views into ‘key views’ along the proposed road network. Due to the importance of the interrelationship within its environs, any impact on the setting of the Grade II* Christ Church by the proposed development is likely to affect its significance but this can be mitigated by appropriate design. Further consideration of the effects of the proposed development on the setting of the designated heritage asset of Christ Church will be needed once the final detailed layout is issued.

The study site lies in the north portion of the PfE JPA9 land allocation, surrounded by later 19th and 20th century development to the north and west. Nevertheless, it is considered to retain some local significance in this earlier 19th century historic rural landscape, comprising non-designated heritage assets such as field patterns associated with farmsteads (Cop Thorns), extractive industries (the sand quarry and brick making activities), fieldnames relating to past activities (Brick Yard), historic footpaths and administrative boundaries. These are assessed as being of local significance at most but collectively, together with the field boundaries, have an historic value that provides an understanding of how rural settlements like Walshaw developed and interacted with other surrounding settlements. There are a number of such features surviving within the study site and for the most part the masterplan layout has been designed to retain these.

The available archaeological evidence suggests that the potential for below-ground significant (i.e. non-agricultural) archaeological remains site-wide is generally low/nil for all archaeological periods. However, the difficulties in recognising and/or identifying prehistoric sites within the landscape have long been understood. A corpus of information has shown that the location of those known sites is influenced by higher topography, often overlooking watercourses, or on the better draining geology such as sands and gravels. Consequently, by taking these factors into account there are potential focal points wherein remains of prehistoric date may be located. These should be considered for further archaeological investigation and any information retrieved from these sites will inform further the regional research priorities regarding the density and distribution of prehistoric sites. Therefore, due to their evidential value, any remains of prehistoric date are likely to be considered to be of local/regional significance, depending upon their nature and state of preservation.

There is no evidence, however, to suggest that the study site contains, or has the potential to contain, any archaeological remains of sufficient importance to preclude or constrain development.

1 Introduction

1.1.1 This historic environment desk-based assessment of land to the south of Scobell Street, Bury (hereafter to referred as the 'study site') has been prepared by Lanpro Services Limited on behalf of Wain Estates (Land) Ltd. This assessment has been undertaken to inform a planning application for residential development. The study site lies within the northern extent of the Greater Manchester Places for Everyone plan *Walshaw JPA9 Allocation* and is located within the administrative boundary of Bury Council.

1.1.2 This document provides an assessment of the potential for the survival of archaeological remains within the study site and assesses the potential impacts that the proposed development could have on these and other heritage assets in the vicinity.

1.1.3 The assessment has been undertaken to meet the requirements of the National Planning Policy Framework's Section 16: 'Conserving and enhancing the historic environment' (MHCLG 2024) and is in line with the Chartered Institute for Archaeologists (CIfA) guidelines *Standard and guidance for historic environment desk-based assessment* (CIfA 2020).

2 Legislation, Policy and Guidance

2.1.1 In considering any planning application for development, the local planning authority will be guided by current legislation, the policy framework set by government planning policy, by current Local Plan policy and by other material considerations.

2.2 Current Legislation

2.2.1 The applicable legislative framework for this archaeological desk-based assessment relates to the Ancient Monuments and Archaeological Areas Act (AMAAA) 1979.

2.2.2 The applicable legislative framework is summarised as follows:

- Ancient Monuments and Archaeological Areas Act (AMAAA) 1979;
- Planning (Listed Buildings and Conservation Areas) (P(LBCA)) Act 1990.

2.2.3 The AMAAA largely concerns to Scheduled Monuments (SMs) and designated archaeological areas, detailing in particular what can and cannot be undertaken on archaeological grounds.

2.2.4 The Planning (Listed Buildings and Conservation Areas) Act 1990 (the 1990 Act) provides for the protection of listed buildings and conservation areas and is largely expressed in the planning process through policies in regional and local planning guidance, as outlined below. This act is the primary legislative instrument addressing the treatment of listed buildings and conservation areas through the planning process.

2.3 National Planning Policy Framework

2.3.1 Section 16 of the NPPF (MHCLG 2024), entitled 'Conserving and enhancing the historic environment' provides guidance for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets.

2.3.2 Overall, the objectives of Section 16 of the NPPF can be summarised as seeking the:

- Delivery of sustainable development
- Understanding the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment, and
- Conservation of England's heritage assets in a manner appropriate to their significance

2.3.3 Section 16 of the NPPF recognises that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. Paragraph 207 states that planning decisions should be based on the significance of the heritage asset (and any contribution made by its setting), and that the '*level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal upon their significance*'. This is supported by paragraph 208 which states that LPAs should take this into account when considering applications.

2.3.4 Paragraphs 212-214 consider the impact of development proposals upon the significance of designated heritage assets. Paragraph 212 states that where a development is proposed that would affect the significance of a designated heritage asset '*great weight should be given to the asset's conservation (and the more important the asset, the greater this weight should be)*'. Paragraph 208 emphasises that '*where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits*' of the scheme, bearing in mind the great weight highlighted in Paragraph 212.

2.3.5 Heritage Assets are defined in Annex 2 of the NPPF as: '*a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning* *decisions, because of its heritage interest. It includes designated heritage assets and assets identified by the local planning authority (including local listing)*'.

2.3.6 Annex 2 also defines 'Archaeological Interest' as a heritage asset which '*holds or potentially holds, evidence of past human activity worthy of expert investigation at some point*'. Heritage Assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.

2.3.7 A Designated Heritage Asset comprises a '*World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.*'

2.3.8 In short, government policy provides a framework which:

- Protects nationally important designated Heritage Assets (which include World Heritage Sites, Scheduled Ancient Monuments, Listed Buildings, Protected Wreck Sites, Registered Parks and Gardens, Registered Battlefields or Conservation Areas),
- Protects the settings of such designations,
- In appropriate circumstances seeks adequate information (from desk-based assessment and field evaluation where necessary) to enable informed decisions,
- Provides for the excavation and investigation of sites not significant enough to merit in situ preservation.

2.4 Planning Practice Guidance

2.4.1 The Planning Practice Guidance (MHCLG 2019) is a web-based resource which is to be used in conjunction with the NPPF. It is aimed at planning professionals and prescribes best practice within the planning sector. The relevant section is entitled 'Conserving and enhancing the historic environment'. The guidance given in this section sets out the best practice to applying government policy in the NPPF. It provides an interpretation for each of the interests assigned to heritage assets in understanding significance: archaeological, architectural and artistic, and historic (Paragraph: 006 Reference ID: 18a-006-20190723).

2.5 Local Planning Policy

2.5.1 The Places for Everyone (PfE) Joint Development Plan Document (DPD) was adopted on March 21st 2024, and provides details on the allocated sites for development with nine of the Greater Manchester authorities until 2039. The relevant policies relating to archaeology and heritage are:

- Policy JP-P1. Sustainable Places;
- Policy JP-P2: Heritage;
- Policy JP-P3: Cultural Facilities.

2.5.2 The study site sits within the north portion of the ***Policy JP Allocation 9: Walshaw* site**, wherein heritage considerations are accounted for as:

12. Take appropriate account of relevant heritage assets, and their setting, including the Christ Church Grade II Listed Building, in accordance with Policy JP-P2,*

2.5.3 Supported by the reasoned justification:

11.5.1 Christ Church in Walshaw is a Grade II Listed Building sitting adjacent to the allocation. Any development will, therefore, be required to respect the setting of the church and capitalise on* *opportunities to draw on the contribution that the church makes to the character of the area. The completion of a Heritage Impact Assessment will be required.*

2.5.4 In support of the PfE is the *Heritage Topic Pape*r prepared by BDP in 2020 initially for the draft Greater Manchester Spatial Framework, and identifies heritage issues to be addressed by PfE.

2.5.5 The Bury Unitary Development Plan (UDP) was adopted in 1997, although this will be replaced by the Bury Local Plan which is currently in preparation. The UDP provides the long term vision, objectives and policies that are intended to guide development until such time that the Local Plan is available. However, upon the adoption of PfE, some of these saved policies have since been superseded. The following saved policies are considered relevant to this assessment:

- EN3/1 – Impact of Development on Archaeological Sites
- EN3/2 – Development Affecting Archaeological Sites
- EN3/3 – Ancient Monuments
- EN3/3/3 – Bury Castle, Bury.

2.6 Professional Guidance

2.6.1 The CIfA *Standard and Guidance for Historic Environment Desk-based Assessment* (2020) provides guidelines and recommendations for best practice in undertaking archaeological desk-based research and assessment.

2.6.2 Guidance on the implementation and interpretation of historic environment policy has been provided by the Historic England publications *Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision Taking in the Historic Environment* (GPA2, 2015) and the *Historic Environment Good Practice Advice in Planning Note 3 (Second Edition): The Setting of Heritage Assets* (GPA3, 2017).

2.6.3 Historic England's GPA2 outlines a seven-stage process for the assembly and analysis of relevant information relating to heritage assets potentially affected by a proposed development:

- Understand the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment,
- Understand the significance of the affected assets,
- Understand the impact of the proposal on that significance,
- Avoid, minimise and mitigate impact in a way that meets the objectives of the NPPF,
- Look for opportunities to better reveal or enhance significance,
- Justify any harmful impacts in terms of the sustainable development objective of conserving significance and the need for change, and
- Offset negative impacts on aspects of significance by enhancing others through recording, disseminating and archiving archaeological and historical interest of the important elements of the heritage assets affected.

2.6.4 In order to understand the nature, extent and level of significance GPA2 advocates considering the four types of heritage value an asset may hold, as identified in *Conservation Principles* (English Heritage 2008): *aesthetic*, *communal*, *historic* and *evidential*. However, NPPF (2024) has since provided a definition of significance dependant on the following four interests: *archaeological*, *architectural and artistic,* or *historic*. The following assessment of significance results from a combination of any, some or all of these values and interests.

2.6.5 Historic England’s GPA3 recognises that whilst setting is not a heritage asset, elements of a setting ‘*may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral*’ (para. 4). Setting is described as being distinct to curtilage, character and context. This guidance also notes that the contribution of setting to the significance of a heritage asset is often expressed by reference to views, although the importance of setting lies in what it contributes to the significance of the heritage asset, and this can be influenced by a number of other factors.

2.6.6 The Historic England advice note, *Statement of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12* (HEAN 12, 2019), brings together all of the above guidance in an analysis of an appropriate approach for applicants for heritage and other consents in providing an understanding of the significance of heritage assets in line with NPPF. It emphasises the level of detail required in support of both planning and listed building consent applications, which should be no more than is necessary, i.e. proportionate to the significance of the heritage asset affected, to reach an informed decision.

3 Methodology

3.1 Information Sources

3.1.1 An historic environment assessment was undertaken by Lanpro in 2020 (Lanpro 2020) to inform the masterplan for the promotion of the site for the Greater Manchester Combined Authorities PfE DPD. This covered the whole of the allocation site for Policy JP9. The following document has been informed by the findings of the 2020 assessment and has been revised and updated accordingly.

3.1.2 A gazetteer of all records held on the Greater Manchester Historic Environment Record (HER) and the Historic England National Heritage List for England (NHLE) for within a 1km search area is provided in Appendix 1 and their locations illustrated on Figure 1.

3.1.3 The holdings of the Bury Archives and Lancashire Record Office, together with on-line repositories for historical maps, plans and relevant documentary sources were consulted in accordance with guidelines laid down by the CIfA (2020).

3.1.4 A range of published and unpublished material has been consulted, including the North West England Regional Research Framework (https://researchframeworks.org/nwrf/).

3.2 Assessment Criteria

Significance

3.2.1 NPPF defines significance as:

> *The value of a heritage asset to this and future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.*

3.2.2 Historic England's *Conservation Principles* (previously English Heritage, 2008) identified four high level values: evidential, historic, aesthetic and communal. NPPF (2024) defines significance in the planning context as resulting from the heritage interest of an asset determined by the following:

- Archaeological Interest: the potential of an asset to yield evidence of past human activity that could be revealed through future investigation. Archaeological interest includes above-ground structures, as well as earthworks and buried or submerged remains.
- Architectural and Artistic Interest: derives from a contemporary appreciation of an asset's aesthetics. Architectural interest is an interest in design, construction, craftsmanship and decoration of buildings and structures. Artistic interest can include the use, representation or influence of historic places or buildings in artwork. It can also include the skill and emotional impact of works of art that are part of heritage assets or assets in their own right.
- Historic Interest: the way in which an asset can illustrate the story of past events, people and aspects of life (illustrative value, or interest). It can be said to hold communal value when associated with the identity of a community.

3.2.3 These values or interests encompass the criteria that Historic England are obliged to consider when statutorily designating heritage assets.

3.2.4 There are no single defining criteria that dictates the overall asset significance; each asset has to be evaluated against the range of criteria listed above on a case-by-case basis. These values are not intended to be restrictive but are identified in order to help establish a method for thinking systematically and consistently about the heritage values that can be ascribed to a place and contribute to a heritage asset's significance.

3.2.5 Assessment of significance has been undertaken in accordance with the Historic England's *Statement of Heritage Significance. Analysing Significance in Heritage Assets* (2019).

3.2.6 The relative contribution of the heritage values to the significance of the heritage asset(s) are graded as either high, medium, low, neutral/negligible (informed by ICOMOS (2011) and Historic England guidance) and illustrated in Table 2, below.

Table 1: Significance of a heritage asset

Heritage significance	Description
Very High	World Heritage Sites (WHS)
High	Scheduled Monuments (SM), Grade I and II* Listed Buildings, Grade I and II* Registered Historic Parks and Gardens
Medium	Grade II Listed Buildings Grade II Registered Historic Parks and Gardens Conservation Areas
Low	Locally Listed Buildings Non-designated heritage assets
Negligible/nil	Heritage assets with very little or no surviving research value

Setting

3.2.7 The NPPF defines the setting of a heritage asset as:

> *The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.*

3.2.8 Historic England's GPA3, *The Setting of Heritage Assets* (2017), was used to inform the methodology for this assessment. The guidance recommends that a systematic and staged '5-step process' to assessment should be adopted, to which this HS has adopted steps i) to iv):

i. identify which heritage assets and their settings are affected,

ii. assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated,

iii. assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it,

iv. explore the way to maximise enhancement and avoid or minimise harm,

v. make and document the decision and monitor outcomes.

3.2.9 The production of this assessment has taken into account the physical and sensory surroundings of the asset, in order to understand the contribution 'setting' makes to the heritage significance of the asset(s). This has included topography and intervening development and vegetation. It also considers how the asset is currently experienced and understood through its setting, in particular views to and from the asset and the site, along with key views, and the extent to which setting may have already been compromised.

Definition of Harm

3.2.10 Current guidance by Historic England is that ‘change’ does not equate to ‘harm’. The NPPF and its accompanying PPG effectively distinguish between two degrees of harm to heritage assets – substantial and less than substantial (paragraphs 208 and 209).

3.2.11 In determining the effects of the proposed scheme this assessment is cognisant of case law. In particular, that for Flag Station, Mansel Lacy, Herefordshire [22/09/2015] Case Number EWHC 2688, wherein it emphasised the primacy of the 1990 Planning Act and the fact that it is up to the decision makers in the planning system to ‘*have special regard to the desirability of preserving the [listed] building or its setting*’. HH Judge David Cooke stated, in regards to an impact on the setting of a listed building, (Court of Appeal (PALMER and HEREFORDSHIRE COUNCIL & ANR) in 2016 (Case No: C1/2015/3383) para.34):

> *It is still plainly the case that it is for the decision taker to assess the nature and degree of harm caused, and in the case of harm to setting rather than directly to a listed building itself, the degree to which the impact on the setting affects the reasons why it is listed.*

3.2.12 The judgment was agreed by Lord Justice Lewison at the Court of Appeal, who stated that:

> *It is also clear as a matter both of law and planning policy that harm (if it exists) is to be measured against both the scale of the harm and the significance of the heritage asset. Although the statutory duty requires special regard to be paid to the desirability of not harming the setting of a listed building, that cannot mean that any harm, however minor, would necessarily require planning permission to be refused.*

4 Site Appraisal

4.1.1 The study site comprises agricultural land (pasture) measuring 11.7ha in extent and located c. 2km to the north-west of Bury town centre (NGR centred SD 7806 1207, Figures 1 and 2, Plates 1-13). It is bound on the north side by Scobell Street and the rear of properties fronting onto the south side of Scobell Street. To the west is Church Street with terraced properties along Collins Street and Pleasant Street bounding the south-west side. Walshaw Brook defines the western portion of the south boundary, with pasture bounding the south and east sides. The River Irwell runs just under c. 2km to the east of the study site.

4.1.2 The general topography of the study site is gently undulating at around 126m above Ordnance Datum (aOD).

4.1.3 The bedrock geology within the study site comprises alternating north-east/south-west aligned bands of Cannel Rock sandstone and mudstone, siltstone and sandstone of the Pennine Lower Coal Measure Formation. This is overlain by Diamicton Devensian Till over much of the site, with lenses of Devensian sand and gravel in the north, which joins with that surrounding Walshaw Brook (bgs.ac.uk). The overlying soils across the whole of the study site consist of slowly permeable seasonally wet acid loamy and clayey soils (landis.org.uk/soilscapes).

5 Archaeological and Historical Background

5.1 Introduction

5.1.1 This section reviews existing archaeological evidence for the study site and the archaeological and historical background of the surrounding area, based on a consideration of evidence in the Greater Manchester HER and the NHLE. The historical overview has also been informed by the historic environment assessment screening report for the study site (University of Salford 2019). It is not the purpose of this document to create a detailed archaeological or historical narrative of the area, but to provide an assessment of the study site's historical development and archaeological potential in accordance with the NPPF.

5.2 Designated Heritage Assets

5.2.1 The study site contains no designated heritage assets.

5.2.2 Within the surrounding study area there are 11 designated assets comprising listed buildings. All but one are Grade II, with Christ Church being Grade II* (NHLE ref. 1163417 (HER ref 9501)). The Grade II listed buildings are screened from the study site by existing development and have no historical or functional association with the study site that contributes to their significance. These will not be considered further in the assessment. However, the spire of the Grade II* Christ Church (NHLE ref. 1163417), which is situated less than 300m from the very south-west tip of the study site, can be seen across the study site and is potentially sensitive to any future development.

5.2.3 Further details of these designated heritage assets can be found in the gazetteer in Appendix 1 and are illustrated on Figure 1.

5.2.4 Other features of archaeological and heritage interest not recorded on the HER have been plotted on Figures 10-11.

5.3 Non-designated Heritage Assets

5.3.1 The Greater Manchester HER contains 107 records of archaeological sites, buildings and archaeological investigations within 1km of the boundary of the study site centre. Details of all HER records are listed in a gazetteer in Appendix 1 and are marked on Figure 1.

5.3.2 There is one archaeological asset recorded in the HER within the study site comprising an 18th century access road to Cop Thorns farmstead (HER 8748.1.0).

5.4 Previous Archaeological Investigations

5.4.1 There are four archaeological events recorded on the HER within the surrounding 1km search area relating to the 1995 Kirklees Feasibility Study desk-based assessment (EGM 1952), excavation and watching brief of the Kirklees Bleach Works in 2002 (EGM 3956 and 5642 respectively), and an evaluation at Meadowcroft Farm in 2019 (EGM 5257). Their locations are illustrated on Figure 1. None of these provide any additional understanding to the study site.

5.5 Historic Landscape Characterisation (HLC)

5.5.1 The HLC classifications show the study site to be mainly post-medieval and modern piecemeal enclosure (HGM 9017 and 9434), with 18th century farm complex (HGM 9452) relating to Cop Thorns Farm on the west side of the study site.

5.6 Prehistoric (c. 9500 BC – c. AD 43)

5.6.1 There are no recorded heritage assets of prehistoric date within the study site.

5.6.2 The nearest evidence for prehistoric activity is c. 300m to the south of the study site in the form of a Celtic stone head findspot (HER 344.1.0), with a second example known (HER 9049.1.0) c. 890m to the south of the study site. Although the prehistoric date of the Celtic heads has not been confirmed, it is possible that they are in fact 19th century in date. The Celtic head findspot within the study site was also recorded as being found within a garden. However, map analysis shows that its location is within a field, which suggests that the grid reference provided is incorrect. Therefore, it is unlikely that there is any significant associated prehistoric remains to be discovered within this location.

5.6.3 Much of the known evidence for prehistoric activity or settlement within the wider landscape tends to be focused on the River Irwell which is located c. 1.7km to the east of the study site. Identification of prehistoric settlement sites and activity in the region is often problematic, with most having been identified either by the presence of monuments or through excavation. Although topography, land use and regional variations in prehistoric culture and economies can also inhibit present-day detection of prehistoric sites.

5.6.4 In areas where arable land use is predominant, prehistoric activity can be detected from surface finds such as lithics identified during fieldwalking surveys. However, within the study site the current agricultural use is wholly pasture which precludes such opportunities for surface identification.

5.6.5 Therefore, other indicators are used to provide potential targets for investigating the potential for prehistoric activity or early settlement evidence, mainly based on areas of localised higher levels of topography, proximity to watercourses and geological factors such as areas of well-drained sands and gravels. Hearths have also been evidenced as providing a focus for remains of prehistoric date, which are identified through their thermoremanent magnetic properties using geophysical survey.

5.6.6 Based on the HER evidence alone there appears to be a low potential for evidence of prehistoric date across the study site. Should there be any focus for any evidence of prehistoric activity, it is considered to be confined to the area of sands and gravels, together with areas where topography and proximity to watercourses, known for attracting prehistoric activity, occur (Figure 11).

5.7 Roman Period (c. AD 43 - c. AD 410)

5.7.1 There is no evidence of Roman period activity within the study site, with the nearest known recorded asset being the Roman road between Manchester and Ribchester (HER 14.1.2) nearly 1km to the south-west of the study site. It was constructed in the 1st century AD and still survives as a substantial earthwork above Tottington. It is considered, therefore, that there is very low/nil potential for the discovery of any archaeological evidence dating to the Roman period within the study site.

5.8 Medieval (c. AD 410 - c. 1540) – Post-Medieval (c. 1540 - c. 1750) Periods

5.8.1 There are no known archaeological assets of medieval or post-medieval date within the study site recorded in the HER. However, the study site is situated between two settlements believed to be of medieval origin, Walshaw to the south-west (HER 3563.1.0) and Bolholt to the south-east (HER 9291.1.0). Further heritage assets of medieval date are recorded within the settlement of Walshaw consisting of the line of Booth Lane (HER 8746.1.0), a probable sunken lane near Walshaw Hall (HER 8747.1.0), and the probable site of a medieval pinfold for Affetside Common (HER 8752.1.0). To the west of Walshaw is the Manor House of Tottington (HER 101.1.0) and Tottington Watermills (HER 103.1.0). In the wider 1km search area, there is also recorded evidence of ridge and furrow (HER 2136.1.0). During the medieval and into the post-medieval period the study site would have, therefore, been situated within the agricultural hinterland between the settlements.

5.8.2 Based on the above evidence, the study site and much of the surrounding area are likely to have remained in primarily agricultural use throughout the medieval and post-medieval periods. Therefore, any possible buried archaeological features dating to these periods are likely to relate to agricultural activity, such as ploughing and field boundaries.

5.9 Industrial and Modern Periods (c. 1750 - present)

5.9.1 There is one archaeological asset of industrial date recorded by the HER within the study site: 18th century access road to Cop Thorns farmstead (HER 8748.1.0).

5.9.2 The large majority of the HER records for within the surrounding 1km search area are for the industrial and modern periods. These are characterised by heritage assets relating to buildings or monuments of a well-defined extent that are not considered to further the understanding of the study site's archaeological potential. The understanding of settlement, land-use and the utilisation of the landscape within the study site and its environs is enhanced by cartographic and documentary sources which can give additional detail to data contained within the HER and, notably, to the study site.

5.9.3 Yates' County Map of Lancashire, 1786 (surveyed 1770s, not illustrated) provides a general overview of the study site and its surroundings. The study site appears to be located within Elton and the nearest settlement is Walshaw Lane, presumably present-day Walshaw. Walshaw Brook is shown crossing the centre of the study site in an east/west direction.

5.9.4 The earliest detailed map available for the study site is the Tottington Lower End Tithe map (Figure 3). The study site consists of agricultural fields with Cop Thorn in the west. The majority of the plot names are indicative of the topographic location or its use or former feature: i.e. Hall Field (plot no 2378), Slatey Meadows (plot no 2379) and Brick Yard (plot no 2432). Other plot names appear to indicate the underlying geological or soil conditions: i.e. Sand Hill (plot no 2394). The latter is located within the glaciofluvial sands and gravels and described in the accompanying tithe apportionment as being 'part of sand hole' which is presumably a quarry.

5.9.5 On the north-west side of the study site, Cop Thorn farmstead is also detailed in the accompanying apportionment to the Tottington Lower End Tithe map as a distinct group of plots 2381-7 which include '*Cottage farm house barn cow house and lane*', an orchard, pasture and meadows. The access road for Cop Thorn is recorded on the HER (8748.1.0) but not the farmstead, although the farmstead correlates with the building shown in the north-west corner of the study site on Yates' 1786 map, surveyed in the 1770s.

5.9.6 The Tithe map also shows that the course of Walshaw Brook appears to have been re-routed since the issue of Yates' 1786 map into the reservoirs serving Bolholt Print Works (9291.1.0), thereby now only bounding the west portion of the southern boundary of the study site. The dotted line denoting the Parliamentary Boundary to the south of Cop Thorn correlates with the brook for a short stretch and then beyond before turning south and running through the reservoirs.

5.9.7 The Ordnance Survey map of 1851 (Figure 4) shows little change to the study site with the majority of the field boundaries unchanged since the Tithe map of 1838. The building relating to Cop Thorn (now '*Cop Thorns*') also appears unchanged. The access road for Cop Thorns recorded on the HER (8748.1.0) is clearly shown running from close to Top o' th' Bank (HER 9272.1.0) just south of the study site to Leemans Hill (HER 8725.2.0) to the north of the study site. Along the north side of the study site Brick Field, named Brick Yard in the Tottington Lower End Tithe details (plot 2432), is shown. To its west is a '*Sand Pit*' in the location of plot 2394 of the Tithe which was formerly described as '*Sand Hill*'.

5.9.8 The 1893 Ordnance Survey map (Figure 5) shows an increase in development in the immediate environs of the study site, with rows of terraced housing to the north and west, and the construction of Scobell Street along the north boundary. On the north side of Scobell Street are Glen Mill Cotton mill and reservoirs (HER 3810.01.0), with an already disused Leemans Hill Mill (HER 8725.1.0). A number of fields boundaries have been removed whilst other have been realigned within the study site, particularly on the east side to take into account the no longer extant Sand Pit.

5.9.9 The 1910 Ordnance Survey map (Figure 6) shows some further changes to the field boundaries within the study site with a number of additional buildings around Cop Thorn. To the north and west there has been additional residential development.

5.9.10 A number of changes are shown within the study site on the 1929-30 Ordnance Survey map (Figure 7). Several paddocks are shown to the east of Cop Thorns, with small buildings to the east of these. To the south-west of Cop Thorns are additional buildings at the end of Collins Street. A building is also shown in the very south-west tip of the study site, to the west of Walshaw Bank. A cricket ground is shown in the north-west of the site with a Pavilion to the immediate north of Cop Thorns. The relic earthworks of the sand pit or quarry shown on the Ordnance Survey map of 1851 (Figure 4) can be seen in the north-east of the study site.

5.9.11 The 1957-60 Ordnance Survey map (Figure 8) shows the building in the very south-west tip of the study site is no longer extant and the buildings around Cop Thorns have changed configuration and are positioned only to the south. The paddocks to the east of Cop Thorn are no longer extant and the Cricket Pavilion to its north is shown as '*Ruins*'. Additional housing has been constructed along the south side of Scobell Street adjacent to the north perimeter of the study site. Brick Field in the north-east corner of the study site is now marked as '*Allotment Gardens*' within which a ruin is noted. There have been some small changes to field boundaries.

5.9.12 There was little change within the study site during the latter half of the 20th century, with the exception of a small number of field boundaries having been removed.

5.9.13 Generally, based on the above evidence, the potential for significant (i.e. non-agricultural) evidence of industrial or modern origin across the study site is considered to be low/nil, although there are more localised areas relating to archaeological or heritage assets where the potential is increased. These will be discussed in turn below.

5.9.14 The LiDAR data (Figure 9) shows features relating to those identified in the map analysis, such as the sand quarry in the north, ponds and cricket pitch in the north-west. Present or former field boundaries are also evident in the LiDAR data, with some cultivation marks visible (abstracted onto Figure 10). Evidence of former field boundaries was observed during the site inspection in the form of earthworks (Figure 3), together with other historic landscape features (Figure 11).

5.9.15 The field systems evident on the LiDAR data and observed on the cartographic sources (Figures 3-9) mostly correlate with the HLC classifications for the study site which comprises post-medieval and modern piecemeal enclosure (HGM9017 and 9434).

6 Assessment of Significance

6.1.1 Paragraph 207 of the NPPF states that planning decisions should be based on the significance of the archaeological asset, and that the level of detail supplied by an applicant should be proportionate to the importance of the asset and should be no more than sufficient to review the potential impact of the proposal upon the significance of that asset.

6.1.2 It is recognised that not all parts of an archaeological asset will necessarily be of equal significance. In some cases, certain elements could accommodate change without affecting the significance of the asset. Change is only considered harmful if it erodes an asset's significance. Understanding the significance of any heritage assets affected and any contribution made by their setting (paragraph 207, NPPF 2024) is therefore fundamental to understanding the scope for and acceptability of change.

6.2 Designated Heritage Assets

6.2.1 The study site does not contain any designated heritage assets. There is one designated asset within the surrounding 1km study area that is considered potentially sensitive to the proposals, Grade II* Christ Church, which will be discussed further below.

Christ Church (NHLE 1163417)

6.2.2 Christ Church on High Street, Walshaw is a Grade II* listed building that was first listed on 29th January 1985 (Plates 15-16). The church is located c. 300m to the south-west of the study site. The list entry provides the following details:

> *1888, by Lawrence Booth. At right angles to road and sloping away from it. Gothic Revival. Stone Chancel, large nave, passage aisles, 2-bay, double-glazed transepts, over south-east of which rises tower with paved open windows in top stage and recessed spire. Interior has plain granite piers with shaft-rings. Paid for by Rev J G Haworth and Miss Nancy Haworth of cotton spinning and fustian making family: "Jesse Haworth Memorial Church" in prominent relief lettering on west front of landmark value.*

6.2.3 The church was built in one phase over a four year period. The Reverend John Gorrell Haworth of Higher Crumpsall and Miss Nancy Haworth of Walshaw funded the cost of the church in memory of the uncle to the Reverend, Jesse Haworth (1835-88). The Manchester Courier reported (28 June 1887, 3; manchestervistorianarchitects.org.uk) that Jesse Haworth "*closely identified with the industrial interest of that locality, and was instrumental in promoting the material well-being of its inhabitants…..the Earl of Derby, through his agent Mr Statter, has promised to give a suitable site of land for the church and the parsonage house.*" It also reports that Jesse Haworth had previously erected day and Sunday schools from designs by Lawrence Booth, which he has recently enlarged, demonstrating the existing connection with the Manchester architect of Christ Church.

6.2.4 The tithe apportionment details for Tottington Lower End, 1838, show the Haworth family to be foremost tenants of the Earl of Derby within the study site: James Haworth was the executor for the late William Gorrell, who shares a name with the Reverend J.G. Haworth, who owned Cop Thorn and the surrounding fields (plots 2381-7, Figure 3).

6.2.5 The church was built on the locally high ridge of land along High Street overlooking the landscape to the north-east, east, south-east and south (Plates 10 and 12). It sits on the west side of a graveyard, which surrounds it to the north, east and south, with the steeple on the south-east side. During the early years of the 20th century, the graveyard was expanded to the north and east to its current size, bound by a low stone wall and railing. By the end of the 1920s, the Vicarage had been constructed within the grounds and to the south-west of the church, which is still extant. The layout of the church and graveyard has changed little since.

6.2.6 The position of the church was deliberately chosen to the south of the settlement of Walshaw, which not only provided relatively unencumbered views of the church but also provided a central location within an area of expanding settlement. Height is provided by a spire atop a tower and on a prominent ridge making it a local landmark that Pevsner (1969, 101) deemed it to be so that it would be visible from the town below to the east, Woolfold. A Frances Frith photograph of the church (not reproduced here due to copyright issues) from shortly after it was completed showed it to be within open surroundings with commanding views across the landscape. Two clock faces adorn the east and south elevations of the tower suggesting that these were to be the principal elevations when viewed across the landscape.

6.2.7 The current immediate setting of the church is enclosed by mature trees and vegetation within the graveyard, above which the steeple rises. Intervening vegetation, built form and topography prevent most of the church other than the spire from being viewed from within the study site. Nonetheless, the commanding position of the spire make it a conspicuous landmark.

6.2.8 Christ Church is considered to be of high heritage significance, in accordance with paragraph 206 of the NPPF (2024) and recognised by its statutorily designated status as a Grade II* listed building. The principal heritage significance is derived from its architectural and aesthetic values, combined with the historical and communal interests associated with the local Haworth family, deeply rooted in the agricultural and industrial development of Walshaw. Furthermore, its setting within the graveyard and its landmark position overlooking the landscape to the south and east of Walshaw contributes to its significance, reminding onlookers of its purpose as a memorial to Jesse Haworth.

6.3 Non-designated Heritage Assets

6.3.1 Within or bounding the study site there are a number of non-designated heritage assets that are recorded in the HER or have been observed from sources such as mapping, LiDAR or on site observations. The locations of these heritage assets have been plotted on Figures 10 and 11 and comprise Cop Thorns, Brick Yard, Sand Hill and a number of historic landscape features.

Cop Thorns

6.3.2 The former farmstead at Cop Thorns (Plate 7) is not recorded in the HER, although its access road is (HER 8748.1.0). The details for the access road provided in the HER entry date it to the 18th century, having been recorded on Yates' map (not illustrated) surveyed in the 1770s. However, inspection of the map showed no evidence of the access road, but it does show a building in the location of Cop Thorns in the north-east corner of the study site. This suggests a possible date for the farmstead of at least 18th century.

6.3.3 The earliest available map to show Cop Thorns (as 'Cop Thorn') in more detail is the Tottington Lower End tithe map (Figure 3) when it would appear that the farmstead is well-established in the area; it is named on the map and provided with a sub-heading for the group of plots (2381-7) in the accompanying tithe apportionment comprising a '*Cottage farm house barn cow house and lane*', an orchard, pasture and meadows to its east and south. Only one long rectangular building is shown on the tithe map bounding the north side of plot 2580, which suggests that it included the farmhouse, barn and cow house.

6.3.4 Cop Thorns is unchanged on the Ordnance Survey map of 1851 (Figure 4), although the access road recorded in the HER running up to the farmstead from the south is now shown with a well on its east side. The 1893 Ordnance Survey map (Figure 5) shows the building in detail for the first time as either a three celled with an outshut or a four-celled structure (the westernmost appears to be a later addition) with two small outshuts on either end. The west half of the structure projects out from the east half on the north side, which was observed during the site inspection (Plate 7) and suggests that the two halves result from separate phases of construction. Inspection of the north elevation also showed quoins from the former eastern end of the structure prior to it being extended with the easternmost cell. The unchanging length of the structure on the historic maps suggests this was prior to the tithe map of 1838.

6.3.5 The main structure at Cop Thorns remains relatively unchanged through the 20th century, although it is represented as a three-celled structure on the Ordnance Survey map of 1957-60 (Figure 8), with numerous outbuildings added and removed within its surroundings. It is probable that the structure had become two dwellings. During the site inspection it was noted that Cop Thorns is still two dwellings, with the west dwelling appearing to be the original farmhouse, with the east dwelling having been converted from a barn; the south and east facing elevations have been rebuilt likely as a result of the conversion. No internal inspection was undertaken.

6.3.6 The non-designated heritage asset is of some local historical interest, particularly in relation to the Haworth family (see Christ Church, above) and representative of local post-medieval vernacular architecture (excluding the rebuilt elevations), albeit that it is no longer in use as a farmstead. As a surviving heritage asset from the 18th century rural landscape to the east of the settlement of Walshaw, it is still within much of its original agricultural setting which also includes the historic footpath network (Figure 11), although its present context is within much reduced grounds with access from Church Street to the west.

Brick Yard

6.3.7 The apportionment for the Tottington Lower End Tithe map of 1838 (Figure 3) describes plot 2432 on the north-east boundary of the study site as ‘*Brick Yard*’, which is later shown on the Ordnance Survey map of 1851 (Figure 4) as ’*Brick Field*’. This remains until the mid-20th century when it is shown as Allotment Gardens with greenhouses. During the site inspection the field is mostly overgrown rough grazing with a fenced allotment onto Scobell Street. No archaeological features were observed. Any below-ground remains would be of local significance for their evidential/archaeological value. The archaeological asset is not recorded in the HER (Figure 11).

Sandhill

6.3.8 Plot 2394 shown on the Tottington Lower End Tithe map of 1838 (Figure 3) on the north side of the study site is described in the accompanying apportionment as ‘*Sand Hill*’ being ‘*part of sand hole*’. The plot is located on the glaciofluvial sands and gravels which extend across the north and parts of the north-west of the study site (Figure 11). It is likely that these natural deposits were being quarried out from at least the early 19th century.

6.3.9 The 1851 Ordnance Survey map (Figure 4) shows a quarry on the east side of the plot labelled ‘*Sand Pit*’. However, there is no evidence thereafter until the 1929-30 map (Figure 7), which shows relic earthwork features and ponds suggesting that the quarry was disused from the late 19th century. During the site inspection, evidence of the quarry was observed from the lower topography and embankment around the south side (Plates 13-14).

6.3.10 The archaeological asset is not recorded in the HER. It is unlikely that there will be any below-ground archaeological remains relating to the quarrying activity and it is considered to be of low local historical interest.

Historic landscape features

6.3.11 The study site contains a number of historic landscape features not recorded on the HER. These were observed during the site inspection or from mapping evidence and LiDAR data (Figures 3-9) and plotted in Figures 10 and 11.

6.3.12 Features have been identified that relate to former field systems, with relic field boundaries observed in both the aerial photograph of the study site (Figure 2) and the LiDAR data (Figure

9). The existing field boundaries within and bounding the study site have been classified according to date and plotted in Figure 10. The earliest available map was the Tottington Lower End Tithe map of 1838 (Figure 3), which showed the field boundaries having originated from the late 18th or early 19th century (Figure 10). These relate to a large number of the present-day field boundaries within the study site, although many are so poorly preserved that they are only represented by modern post and wire fences or marked by a line of mature trees. The only field boundary of any potential importance, in accordance with the criteria of the 1997 Hedgerow Regulations, is a north/south hedgerow in the south-east of the study site; this is the most well-preserved on site and pre-dates 1850.

6.3.13 Further relic field boundaries removed prior to the tithe map can also be discerned on the aerial photograph (Figure 2) and the LiDAR data (Figure 9). It is likely that these also originate from the late medieval or early post-medieval periods. Whilst these features retain some historic interest they hold little, if any, evidential value or archaeological interest and are not readily visible on the ground. As such, the contribution that these features make to the understanding of the historic landscape is extremely limited.

6.3.14 A level and regular square-shaped feature within field on the north-west side of the study site, to the north of Cop Thorns, can be seen in the LiDAR data (Figure 9) and likely relates to the cricket ground identified on Ordnance Survey mapping (Figures 7-8). However, whilst it may be of local historical interest it is of very limited archaeological significance.

6.3.15 Combined, these historical landscape features have a group value in terms of the evidence base that informs understanding of the development of Walshaw and its rural agricultural surroundings. However, such landscapes are not rare in the region or district, they are not particularly well preserved and they do not display a wide range of features which could add to the understanding of their use and development. As a whole the historic landscape of the study site is considered to be of no more than local significance.

6.4 Potential Sub-surface Archaeological Remains

6.4.1 The potential for general prehistoric activity across the study site based on the HER evidence has been identified as low. That potential is considered to be largely limited to known topographic locations, geological conditions and sites in close proximity to watercourses that were favoured in the prehistoric period with the focus being on the sands and gravels across the north of the study site, together with localised areas of higher topography (Figure 11). Should such evidence be uncovered this would contribute to the understanding of the distribution and density of prehistoric activity within the region. Based on the evidential value, such remains would be considered to be of local to regional significance, depending upon their nature and state of preservation. However, there is no evidence to suggest that the study site has potential to contain remains of a significance that would necessitate their preservation in situ.

6.4.2 The assessment has identified a low/nil potential for any significant archaeological remains and finds for the Roman and medieval periods. With the exception of the individual archaeological and heritage assets discussed above there is a low/nil potential for any significant archaeological features of post-medieval through to modern date. Should any archaeological finds or features be discovered their significance will be vested in their evidential value and their potential to contribute to the understanding of the development of this area of Bury in terms of local research priorities. Any such remains are likely to be of local significance.

7 Impact Assessment

7.1 Proposed Development

7.1.1 Thes study site is proposed for residential development as part of the wider *Walshaw JPA9 Allocation* site. A road through the allocation site is proposed entering the north-west corner of the study site, running immediately to the east of Cop Thorns and exiting the study site to its south. The development will also look to retain greenways organised around the positions of the 19th century field boundaries.

7.2 Previous Impacts

7.2.1 The vast majority of the study site has been in agricultural use which, where it has been cultivated in the past, is likely to have caused widespread but low-level truncation of any earlier archaeological deposits. More localised impacts will have occurred around the more recent developments within the study site, such as the sand quarry and cricket ground.

7.2.2 The Coal Authority has recorded three former mine shafts within the wider *Walshaw JPA9 Allocation* site, one of which falls within the southern part of the study site (Shaft 377411-003). As part of the current application, intrusive excavations were carried out to identify the locations of the shafts, with trial pits excavated within an areas of c. 10m radius from the assumed shaft location (EAL 2024). Eight trial pits, ranging in size between 1.5m x c.9.86m – 1.5m x 24.02m, were excavated around the location of the potential mine shaft within the study site (TT12-TT19). Due to the nature of the works, no detailed descriptions of the stratigraphy or soils were noted within the survey report, with the trial pits excavated to a depth sufficient to prove that natural, undisturbed ground was present, which varied between 0.7m – 1.5m BGL (generally averaging 1.20m BGL). No evidence for mine shafts or associated workings were observed during the mine survey operations.

7.3 Designated Heritage Assets

7.3.1 Local authorities have a duty under the 1990 Planning (Listed Buildings and Conservation Areas) Act (section 66[1]) to have special regard to the 'desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses'. The NPPF expects local authorities to have access to significance and impact assessments to inform these duties (paragraphs 207 and 208). Impact is assessed according to different levels, from neutral to beneficial with a range of degrees of harm, from slight to substantial. Where substantial harm will be caused, for example by the total demolition of a listed building, local authorities should normally refuse consent, unless the criteria set out in the NPPF are met (paragraph 214). For proposals where the harm is 'less than substantial', the Local Authority is expected to weigh the harm to significance against the public benefits of the scheme.

7.3.2 The proposed development will have no direct impact upon any designated heritage assets.

7.3.3 The significance of the Grade II* listed Christ Church is derived from its architectural and aesthetic values. Furthermore, it is also of local historical and communal interest due to its purpose as a memorial to Jesse Haworth, an industrialist from a local family of repute and importance both in terms of the agricultural and industrial development of Walshaw.

7.3.4 The church, set on the west side of its graveyard and north-east of the Vicarage, is positioned to the south-west of the study site. From this immediate setting, the architectural and aesthetic values can be mostly appreciated and understood. The wider setting of the late 19th century church has been shown to also contribute to its significance as it was intended to also be viewed as a memorial to someone who was deeply rooted in the agricultural and industrial surroundings of the town. Therefore, its position was deliberately prominent on the ridge with a tall spire that increased this prominence as a landmark within its surroundings dominating a built environment of mainly two-storey dwellings. The wider setting contributes to both its historical and communal interests, as well as it aesthetic values, and hence the PfE plan specifically references the requirement for development proposals to consider the setting of Christ Church and, respectively, its contribution to the character of the local area (paras 2.5.2-2.5.3, above).

7.3.5 Views of the church dominating its surrounding landscape can be maintained within the study site with consideration of the height of the proposed built form in order to maintain its prominence over the dwellings. This will allow views of the church over the roofscapes of the development rather than narrowing the views along the proposed road network. Due to the importance of the interrelationship within its environs, any impact on the setting of the Grade II* Christ Church by the proposed development is likely to affect its significance but this can be mitigated by design.

7.3.6 Further consideration of the effects of the proposed development on the setting of the designated heritage asset of Christ Church will be needed once the final detailed layout is issued.

7.4 Non-designated Heritage Assets

7.4.1 Through available sources, including HER data, HLC data, LiDAR data, mapping evidence and site inspection, a number of non-designated archaeological and heritage assets were identified (Figure 11). These have been assessed as being of local historical and/or archaeological significance at most.

Cop Thorns

7.4.2 Cop Thorns is no longer a working farmstead but survives as two dwellings, one of which is a cattery and has associated buildings to the south. Cop Thorns is set within its own gardens carved out of the formerly associated farmland. It still directly overlooks its semi-rural surroundings. Serving the wider allocation site, the proposed development will include a through road to its immediate east, running through the former cricket ground to the north and exiting the study site to the south of Cop Thorns. A small area of residential development is proposed to the north of Cop Thorns with the area to the immediate south remaining undeveloped. The remainder of the residential development will be separated from Cop Thorns by the presence of the road, which is proposed to be landscaped on both east and west sides.

7.4.3 Whilst development of the study site will remove the historic context in which the former farmstead is situated, the set back and areas of landscaping within its immediate surroundings will prevent it from being enveloped by the development and allow it to be appreciated as having been distinctly separate to and preceding the 19th and 20th century development along Church Street and Scobell Street.

Brick Yard and Sandhill

7.4.4 Both Brick Yard and Sand Hill were identified through field name evidence in the Tithe maps of 1838 and later identified on Ordnance Survey maps and are proposed for residential development. However, no evidence was observed during the map analysis for the origin of the Brick Yard, later Brick Field, which suggests that there is some potential for below-ground archaeological evidence. Sand Hill was observed to have been quarried out for the underlying sand and gravel deposits and it is likely that there is little archaeological evidence remaining associated with any such activity.

Historic Landscape Features

7.4.5 Numerous historic landscape features of low or local significance have been identified through various sources, including maps, site inspection, LiDAR data and aerial photography (Figure 11). Most of these features survive as earthworks or extant features, such as the field boundaries, with other evidence below-ground such as the cricket pavilion or earlier field boundaries. The proposals include the retention of most of the extant field boundaries, or the remnants of these, therefore preserving the historic field pattern of the early to late 19th century.

7.4.6 For those features that are preserved as below-ground remains (visible only in aerial photographs or the LiDAR data), these can be recorded as part of a site-wide archaeological investigation and thereby preserving their nature, extent and possibly date and function by record.

7.5 Potential Sub-surface Archaeological Remains

7.5.1 This assessment has considered the potential for any as yet to be discovered sub-surface archaeological evidence for the remaining archaeological periods and concludes that the study site generally has a low/nil potential.

7.5.2 The areas of well-drained sands and gravels on localised higher topography and overlooking a watercourse have been identified as being a focus for the discovery of prehistoric activity. Whilst any such remains are anticipated to be of local significance, well preserved prehistoric evidence could be considered of regional significance, but should not preclude or constrain development.

8 Conclusions

8.1.1 This historic environment desk-based assessment draws together the available archaeological, historical, topographic and land-use information in order to clarify the significance and archaeological potential of a site proposed for development on land to the south of Scobell Street, Bury as part of the wider *Walshaw JPA9 Allocation* site. This assessment addresses the information requirements set out in the NPPF and provides the proportionate response sought by the NPPF.

8.1.2 The assessment has established that there are no designated heritage assets within the study site. However, a Grade II* listed building, Christ Church, sits within a graveyard to the south-west of the study site with commanding views across most of the landscape to the east of Walshaw. Recognised by its designated status, the church is of high significance derived from its architectural and aesthetic values, together with historical and communal interests in that it was intended as a memorial to a local industrialist, Jesse Haworth. The Haworth family was known for cotton spinning and fustian making and contributed to the welfare, and thus development, of the settlement of Walshaw. The family would also seem to be deeply rooted in the agricultural history of the surroundings, including an association with the surviving non-designated heritage asset within the study site at Cop Thorns. The setting of the church was chosen for its unencumbered and high position within the landscape providing a landmark overlooking its surroundings, adding importance to its function as a memorial.

8.1.3 This wider setting contributes to its heritage values, and hence the PfE plan specifically references the requirement for development proposals to consider the setting of Christ Church and, respectively, its contribution to the character of the local area (paras 2.5.2-2.5.3, above).

8.1.4 Views of the church dominating its surrounding landscape can be maintained within the study site with consideration of the height of the proposed built form in order to maintain its prominence over the roofscapes of the dwellings, rather than narrowing the views into 'key views' along the proposed road network. Due to the importance of the interrelationship within its environs, any impact on the setting of the Grade II* Christ Church by the proposed development is likely to affect its significance but this can be mitigated by appropriate design. Further consideration of the effects of the proposed development on the setting of the designated heritage asset of Christ Church will be needed once the final detailed layout is issued.

8.1.5 The study site lies in the north portion of the PfE JPA9 land allocation, surrounded by later 19th and 20th century development to the north and west. Nevertheless, it is considered to retain some local significance in the earlier 19th century historic rural landscape, comprising non-designated heritage assets such as field patterns associated with farmsteads such as Cop Thorns, extractive industries (such as the sand quarry and brick making activities), fieldnames relating to past activities (such as Brick Yard), historic footpaths and administrative boundaries. These are assessed as being of local significance at most but collectively, along with the field boundaries, have an historic value that provides an understanding of how rural settlements like Walshaw developed and interacted with surrounding settlements. There are a number of such features currently surviving within the study site and for the most part the masterplan layout has been designed to retain these.

8.1.6 The available archaeological evidence suggests that the potential for below-ground significant (i.e. non-agricultural) archaeological remains site-wide is generally low/nil for all archaeological periods. However, the difficulties in recognising and/or identifying prehistoric sites within the landscape have long been understood. A corpus of information has shown that the location of those known sites is influenced by higher topography, often overlooking watercourses, or on the better draining geology such as sands and gravels. Consequently, by taking these factors into account there are potential focal points wherein remains of prehistoric date may be located.

These should be considered for further archaeological investigation and any information retrieved from these sites will inform further the regional research priorities regarding the density and distribution of prehistoric sites. Therefore, due to their evidential value, any remains of prehistoric date are likely to be considered to be of local/regional significance, depending upon their nature and state of preservation.

8.1.7 There is no evidence, however, to suggest that the study site contains, or has the potential to contain, any archaeological remains of sufficient importance to preclude or constrain development.

9 References

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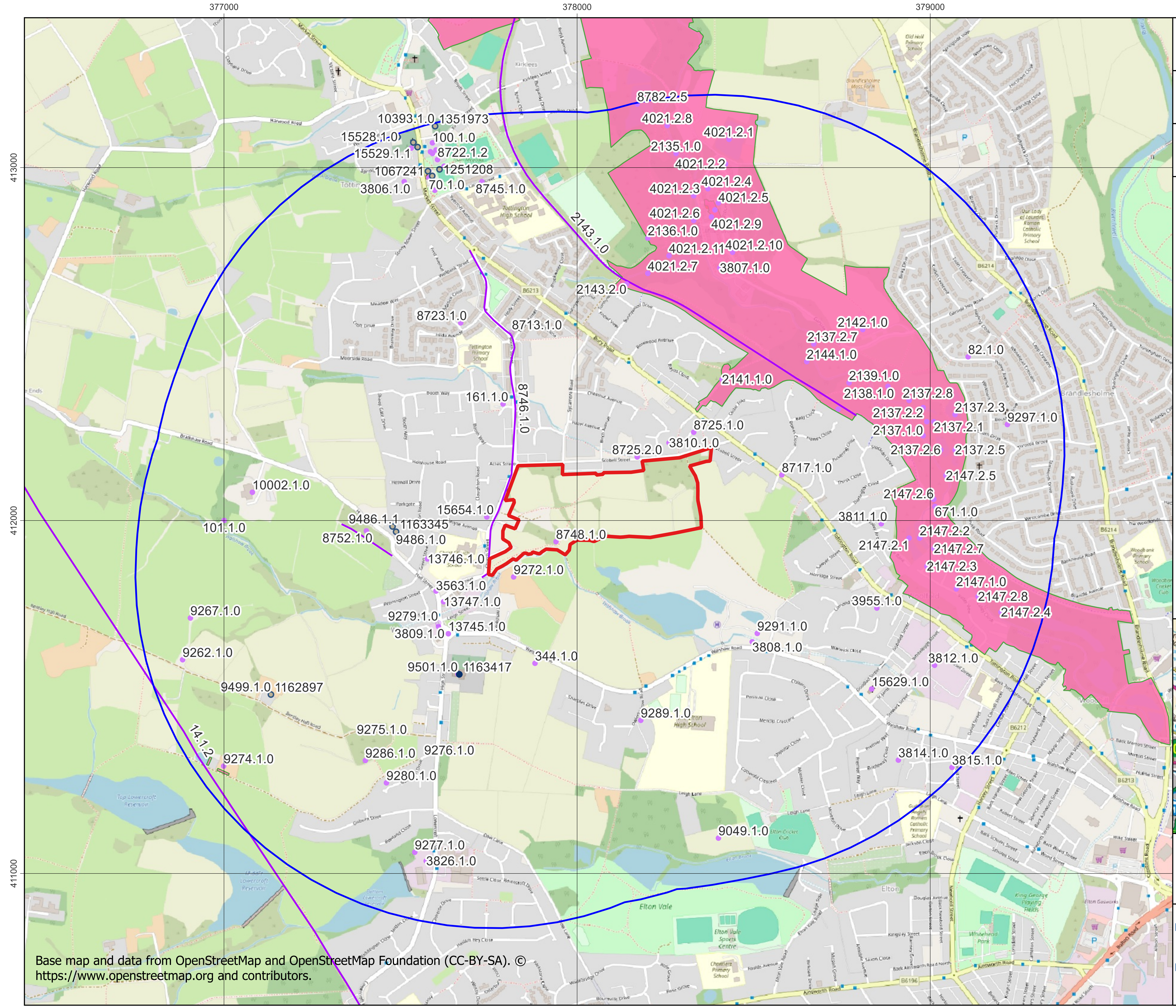
Figures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411000
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1351973
15528.1.0
100.1.0
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8722.1.2
1067241
1251208
70.1.0
3806.1.0
8745.1.0
4021.2.8
4021.2.1
2135.1.0
4021.2.2
4021.2.3
4021.2.4
4021.2.5
4021.2.6
4021.2.9
2136.1.0
4021.2.11
4021.2.10
4021.2.7
3807.1.0
2143.1.0
2143.2.0
8723.1.0
8713.1.0
2142.1.0
2137.2.7
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8752.1.0
9486.1.0
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2147.2.1
2147.2.7
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2147.2.3
9272.1.0
2147.1.0
3563.1.0
2147.2.8
13747.1.0
3955.1.0
9267.1.0
2147.2.4
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13745.1.0
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9262.1.0
344.1.0
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Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:

Figure 1. The study site and search area showing the location of NHLE and HER data

Legend:

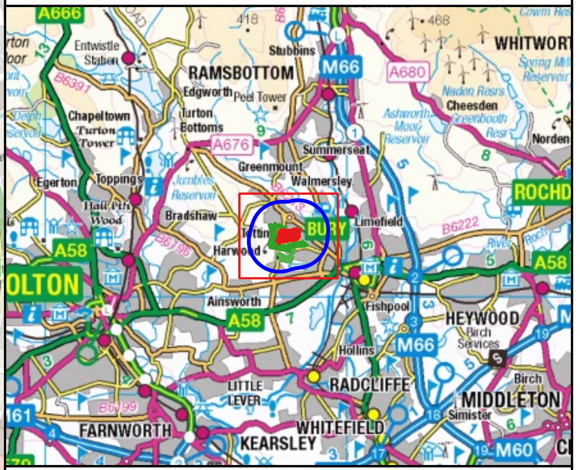
Boundaries

- 🟥 Study site
- 🟦 Search area
- ▨ GMHER Monument Polygon
- ● GMHER Monument Point
- — GMHER Monument Line
- ▨ GMHER Events Polygon
- ● GMHER Events Point

Listed Buildings

- ● Grade II
- ● Grade II*

Data: ©
Base Maps: © Crown copyright and database rights 2024. Ordnance Survey AC0000862729

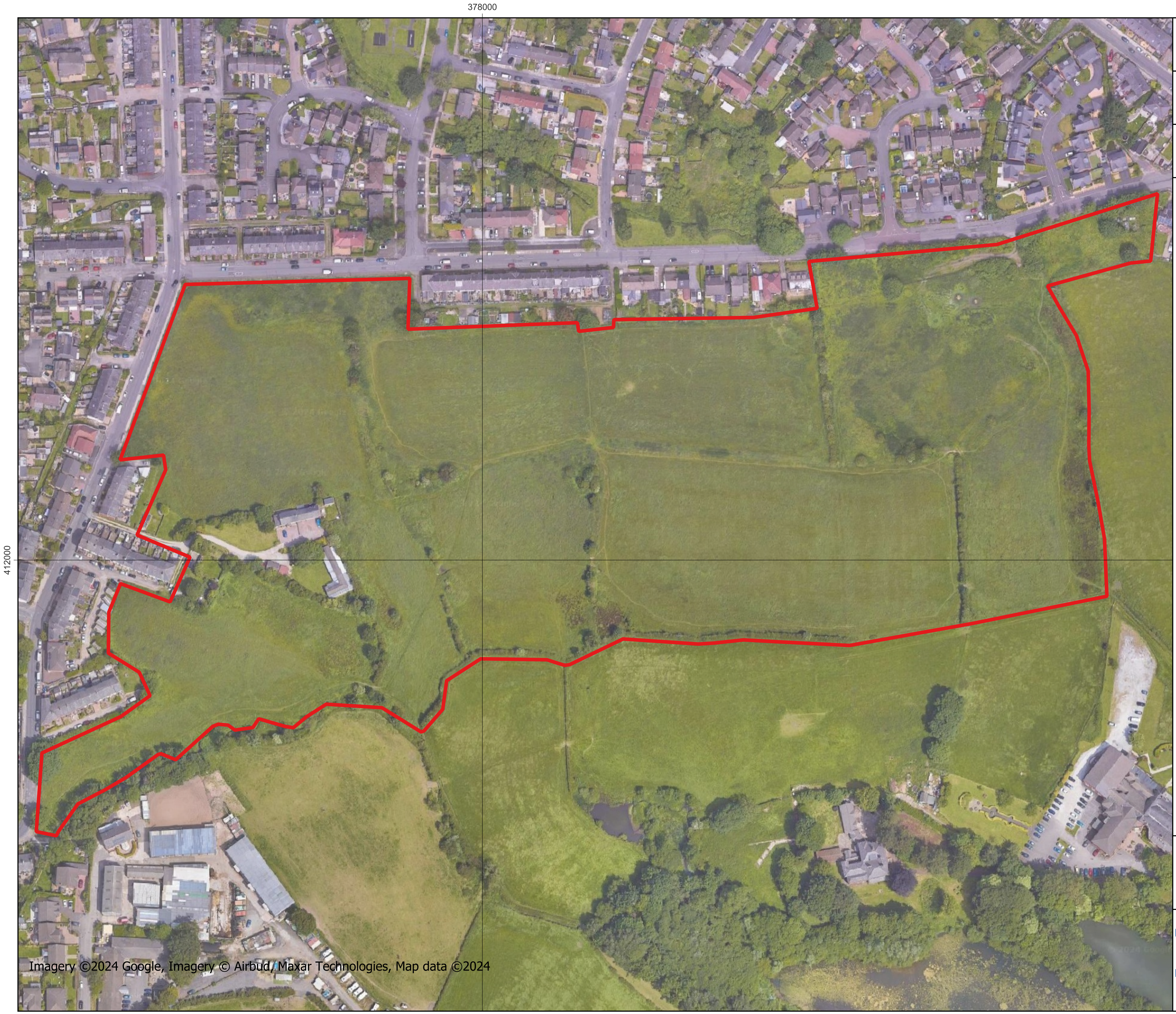

RAMSBOTTOM
M66
WHITWORTH
BURY
BOLTON
HEYWOOD
RADCLIFFE
MIDDLETON
FARNWORTH
WHITEFIELD
KEARSLEY
LITTLE LEVER
A58
M60
M66
A676

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:10000 @ A3

0
200
400
600 m
N

Lanpro


378000
412000
Imagery ©2024 Google, Imagery © Airbud, Maxar Technologies, Map data ©2024

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:

Figure 2. Aerial view of the study site

Legend:

🟥 Study site

🟦 Search area

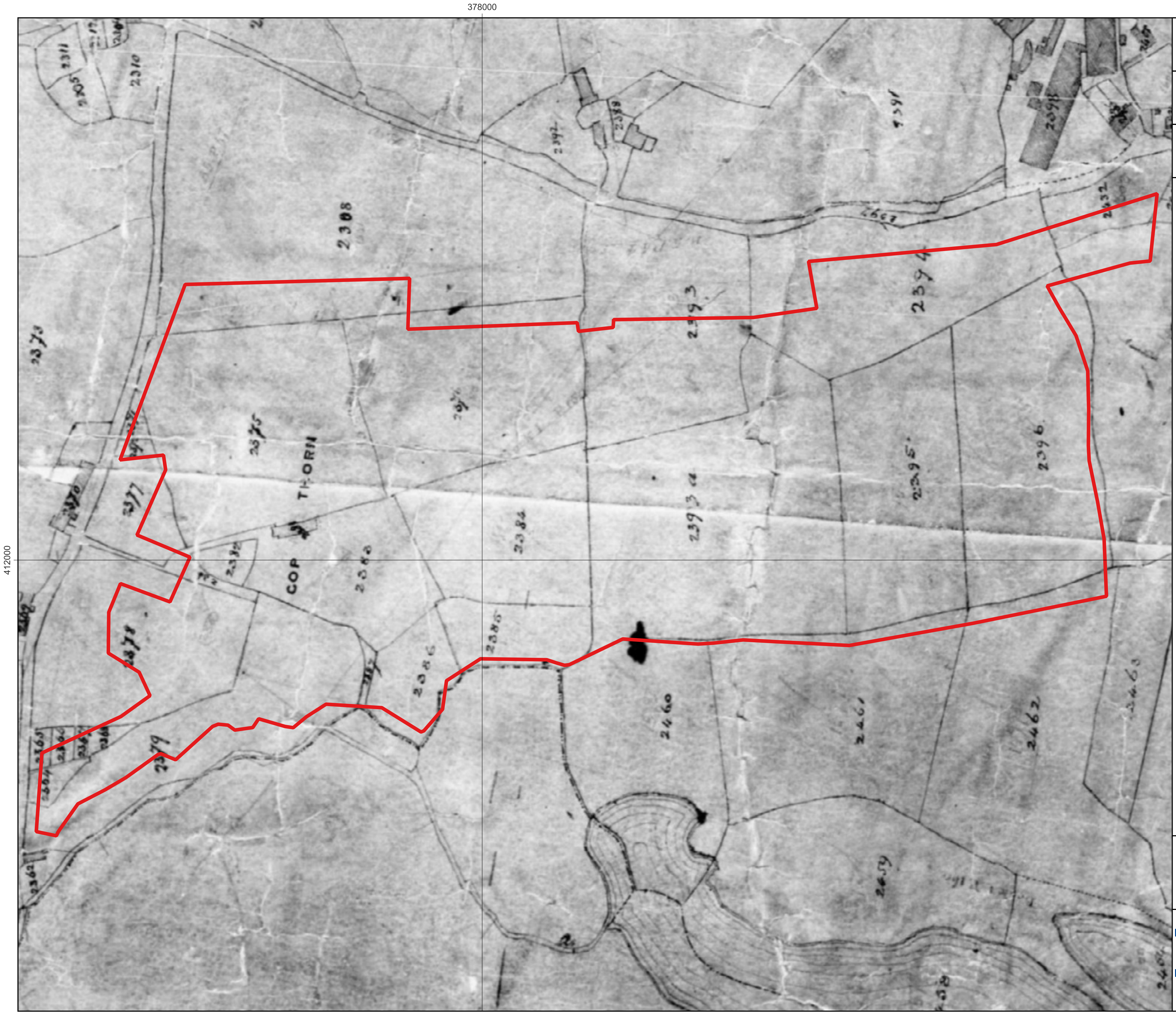
Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

N

Lanpro


378000
412000
2311
2305
2310
2308
2373
2375
COP THORN
2377
2378
2379
2382
2384
2385
2386
2391
2392
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2393a
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2395
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2398
2459
2460
2461
2462
2463
2362

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:
Figure 3. Extract from the Tottington Lower End Tithe map of 1838

Legend:

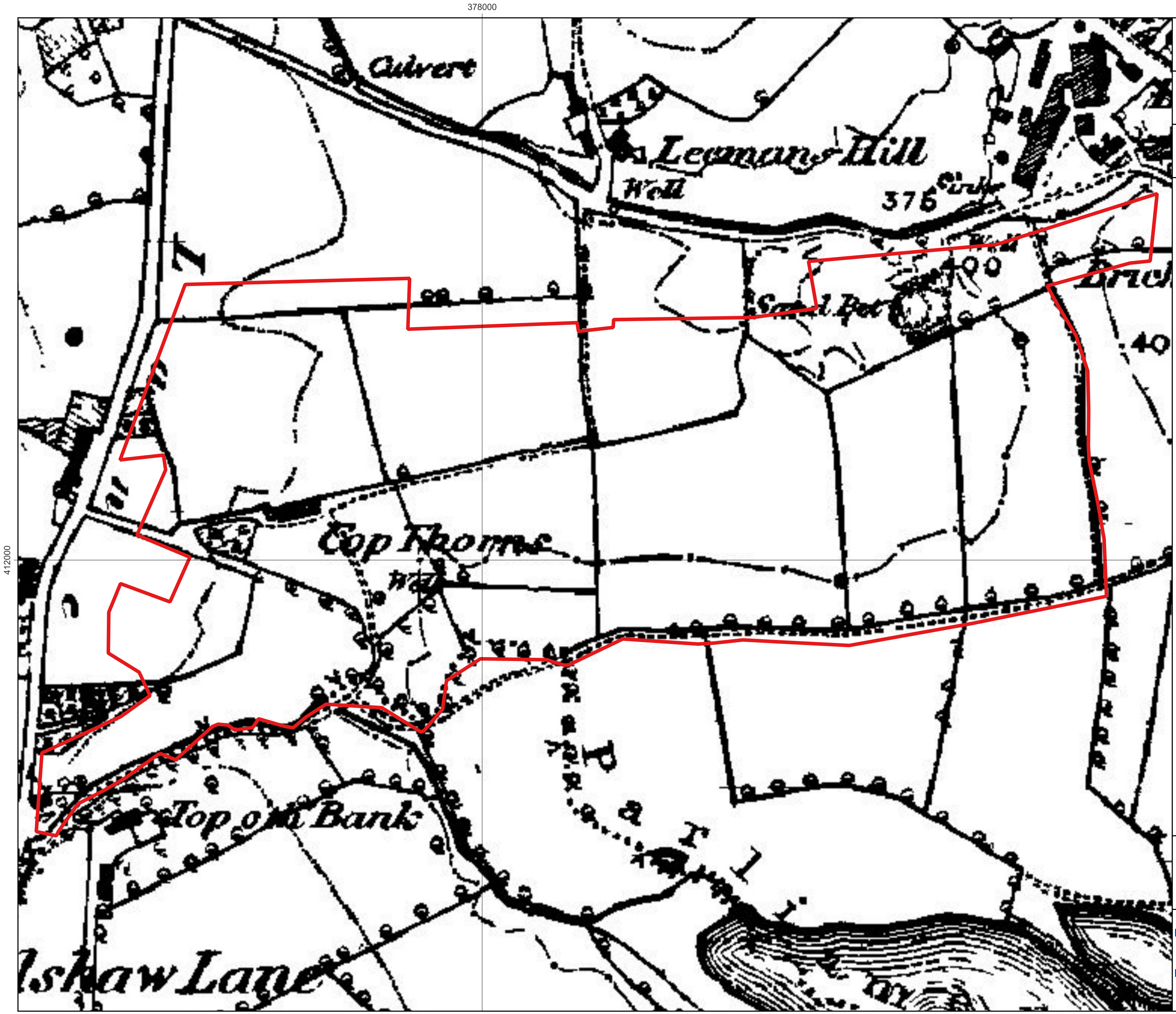
🟥 Study site

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

N


378000
412000
Culvert
Well
376
400
Sand Pit
Brick
40
Top Thorne
Well
Top o' th Bank
lshaw Lane

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:
Figure 4. Extract from the Ordnance Survey 6 inch map of 1851

Legend:

🟥 Study site

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

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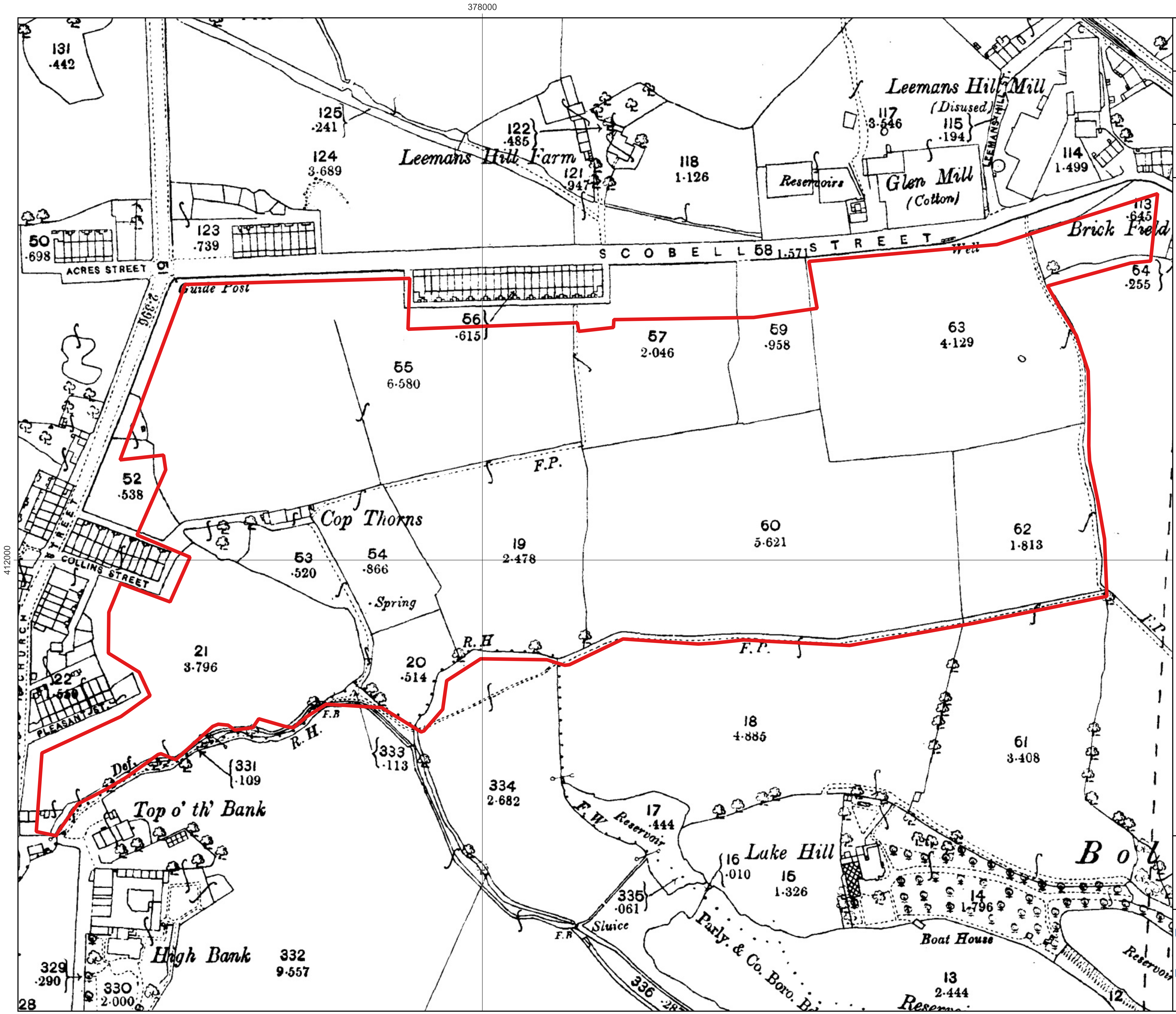
N


378000
412000
131 ·442
125 ·241
124 3·689
122 ·485
121 ·947
118 1·126
Leemans Hill Farm
Leemans Hill Mill (Disused)
117 3·546
115 ·194
LEEMANS HILL
114 1·499
Reservoirs
Glen Mill (Cotton)
113 ·645
Brick Field
50 ·698
ACRES STREET
123 ·739
S C O B E L L S T R E E T
58 1·571
Well
64 ·255
Guide Post
56 ·615
55 6·580
57 2·046
59 ·958
63 4·129
52 ·538
F.P.
Cop Thorns
60 5·621
62 1·813
COLLINS STREET
CHURCH STREET
53 ·520
54 ·866
19 2·478
Spring
21 3·796
20 ·514
R.H
122 ·530
PLEASANT ST.
F.B
R.H.
333 ·113
331 ·109
Def.
Top o' th' Bank
334 2·682
18 4·885
61 3·408
17 ·444
F.W. Reservoir
16 ·010
Lake Hill
15 1·326
14 1·796
Bo
335 ·061
Sluice
F.B
High Bank
332 9·557
329 ·290
330 2·000
28
Parly. & Co. Boro. B
Boat House
13 2·444
Reservoir
336
12

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:

Figure 5. Extract from the Ordnance Survey 25 inch map of 1893

Legend:

🟥 Study site

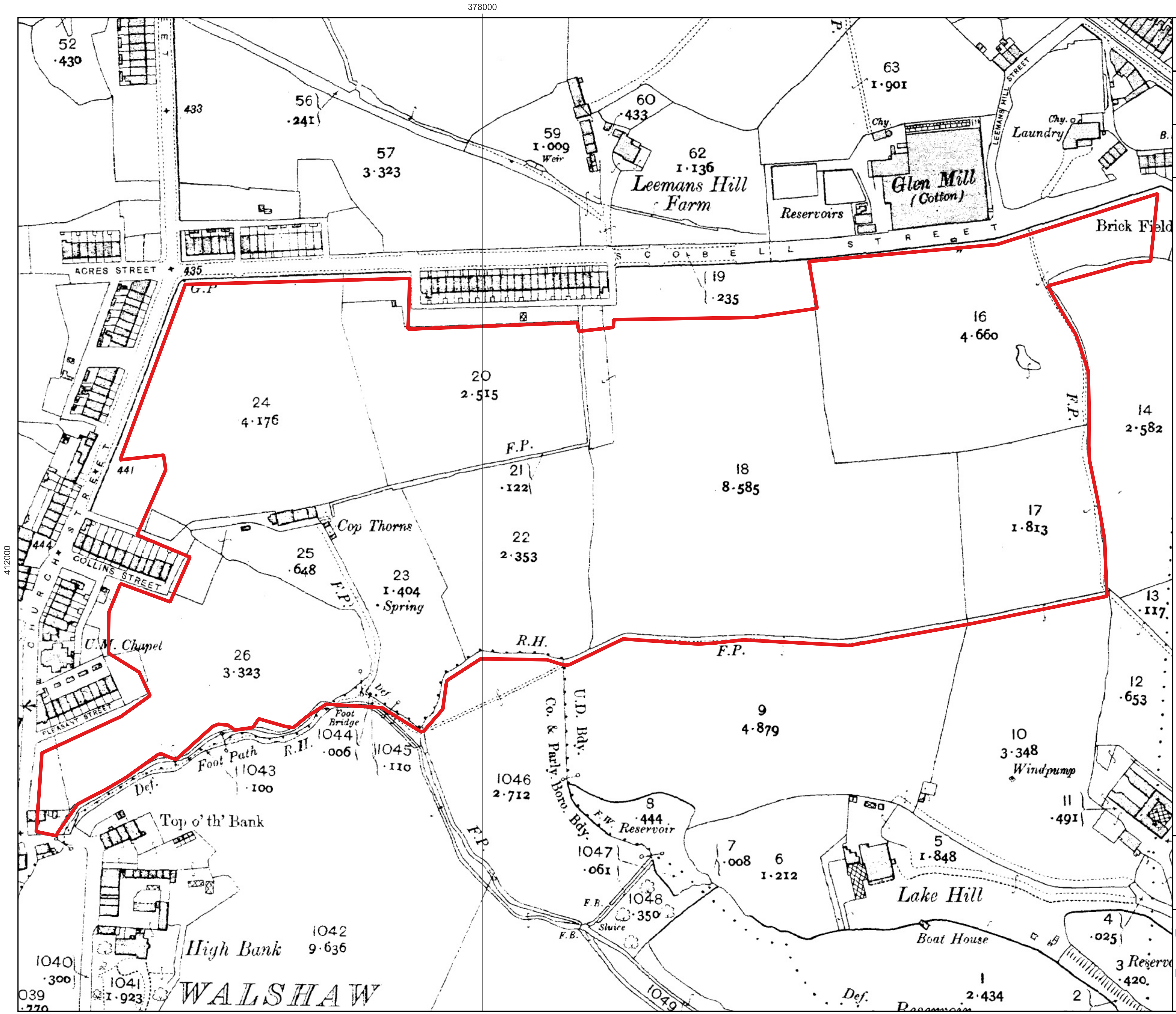
Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

N

Lanpro


378000
412000
52 ·430
56 ·241
433
57 3·323
59 1·009 Weir
60 ·433
62 1·136
Leemans Hill Farm
63 1·901
Chy.
Reservoirs
Glen Mill (Cotton)
Leemans Hill Street
Chy.
Laundry
Brick Field
ACRES STREET
435
SCOBELL STREET
G.P.
19 ·235
16 4·660
24 4·176
20 2·515
F.P.
21 ·122
18 8·585
14 2·582
441
17 1·813
Cop Thorns
22 2·353
25 ·648
23 1·404 Spring
444
COLLINS STREET
CHURCH STREET
U.M. Chapel
26 3·323
R.H.
F.P.
13 ·117
12 ·653
9 4·879
10 3·348 Windpump
PLEASANT STREET
Foot Bridge
1044 ·006
1045 ·110
Foot Path
R.H.
1043 ·100
Def.
1046 2·712
U.D. Bdy.
Co. & Parly. Boro. Bdy.
11 ·491
8 ·444
F.W. Reservoir
Top o' th' Bank
7 ·008
6 1·212
5 1·848
Lake Hill
1047 ·061
F.B.
1048 ·350
Sluice
F.B.
Boat House
4 ·025
3 Reservoir ·420
1042 9·636
High Bank
1040 ·300
1041 1·923
039 ·770
WALSHAW
1049
Def.
1 2·434
2

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:

Figure 6. Extract from the Ordnance Survey 25 inch map of 1910

Legend:

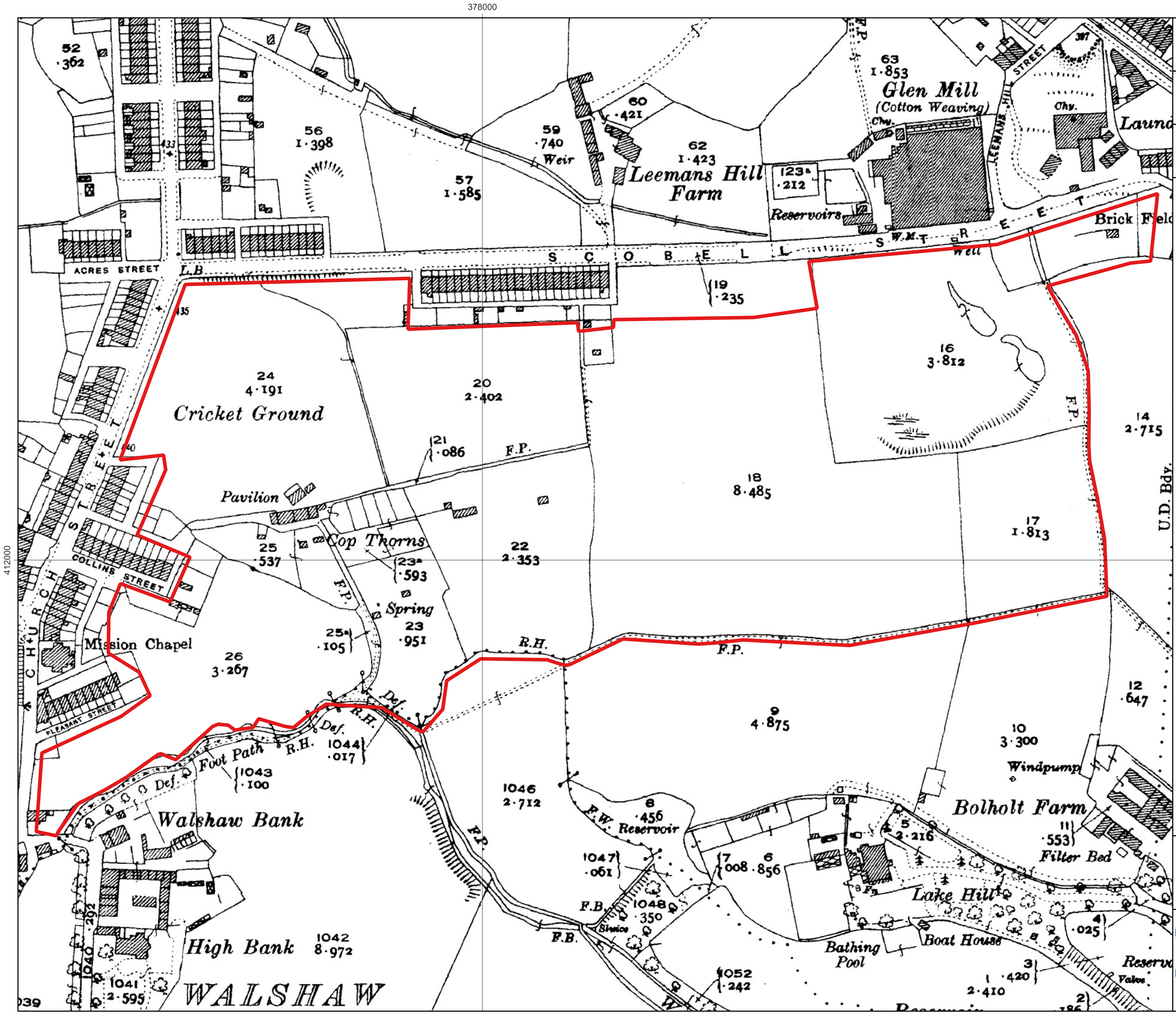
🟥 Study site

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

N


378000
412000
52 ·362
56 1·398
57 1·585
59 ·740
Weir
60 ·421
62 1·423
Leemans Hill Farm
63 1·853
Glen Mill
(Cotton Weaving)
Chy.
123a ·212
Reservoirs
Leemans Hill Street
Laund
Brick Field
W.M.
Well
Scobell Street
Acres Street
L.B.
433
435
440
19 ·235
24 4·191
Cricket Ground
20 2·402
21 ·086
F.P.
16 3·812
14 2·715
U.D. Bdy.
Pavilion
18 8·485
17 1·813
Cop Thorns
25 ·537
22 2·353
23a ·593
Spring
23 ·951
Church Street
Collins Street
Mission Chapel
26 3·267
25a ·105
R.H.
Def.
Pleasant Street
1044 ·017
1043 ·100
Foot Path
9 4·875
10 3·300
12 ·647
Windpump
Walshaw Bank
1046 2·712
8 ·456
F.W. Reservoir
Bolholt Farm
5 2·216
11 ·553
Filter Bed
1047 ·061
7 ·008
6 ·856
Lake Hill
F.B.
Sluice
1048 ·350
Bathing Pool
Boat House
4 ·025
High Bank
1042 8·972
292
1040
1041 2·595
1039
WALSHAW
1052 ·242
3 1·420
2·410
2 ·186
Reservoir
Valve

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:
Figure 7. Extract from the Ordnance Survey 25 inch map of 1929-30

Legend:

🟥 Study site

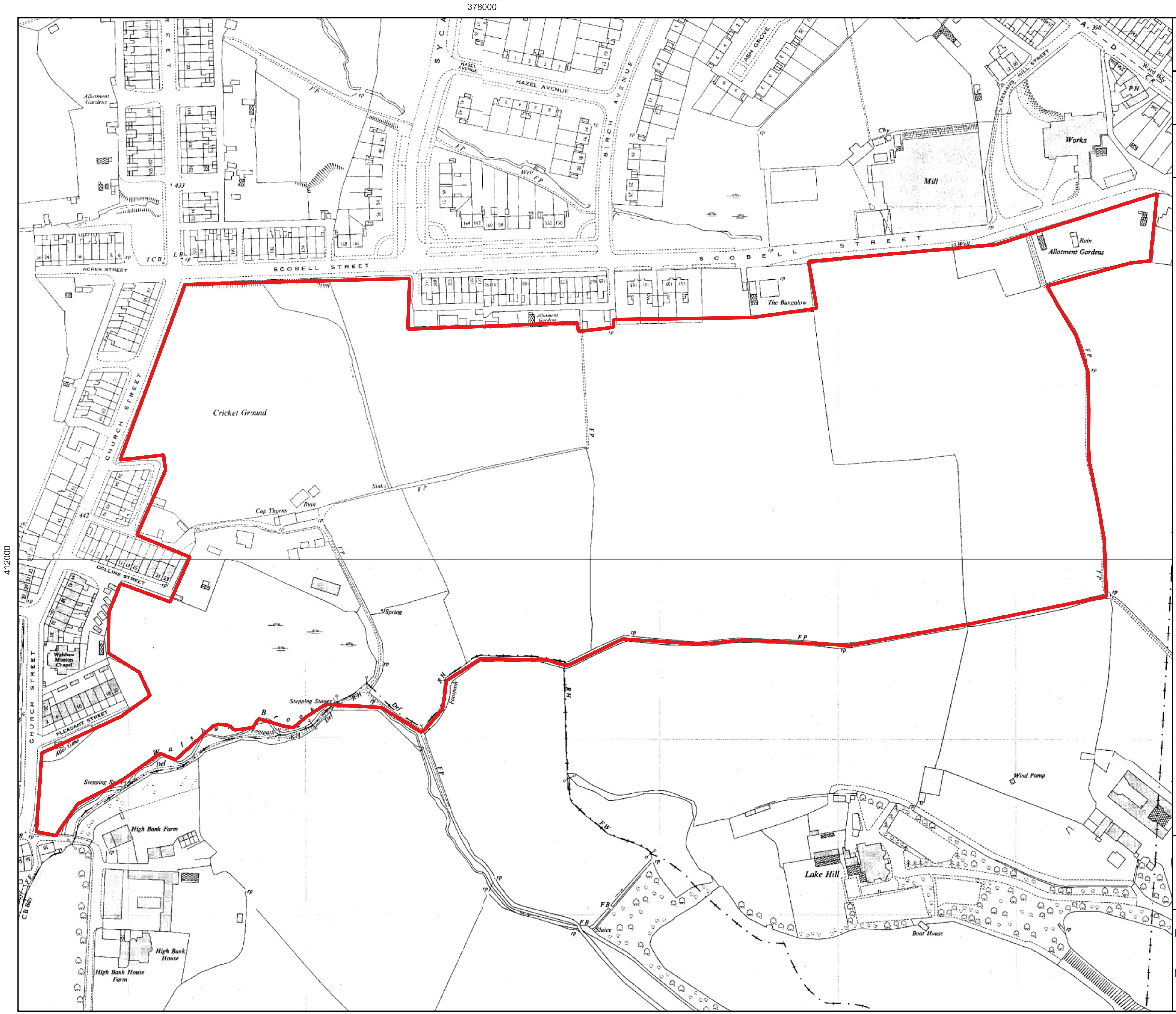
Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

N

Lanpro


378000
412000
Allotment Gardens
STREET
433
ACRES STREET
SCOBELL STREET
TCB
LB
HAZEL AVENUE
BIRCH AVENUE
ASH GROVE
LEEMANS HILL STREET
A 398
Ward Bdy
PH
Works
Chy
Mill
Weir
FP
Well
Ruin
Allotment Gardens
The Bungalow
Cricket Ground
CHURCH STREET
Sinks
Cop Thorns
Ruin
442
COLLINS STREET
Spring
Waldhaw Mission Chapel
PLEASANT STREET
Allot Gdns
Stepping Stones
Walshaw Brook
Footpath
Def
RH
FW
FB
Sluice
High Bank Farm
High Bank House
High Bank House Farm
CB Bdy
Lake Hill
Wind Pump
Boat House

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:
Figure 8. Extract from the Ordnance Survey 25 inch map of 1957-60

Legend:

🟥 Study site

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

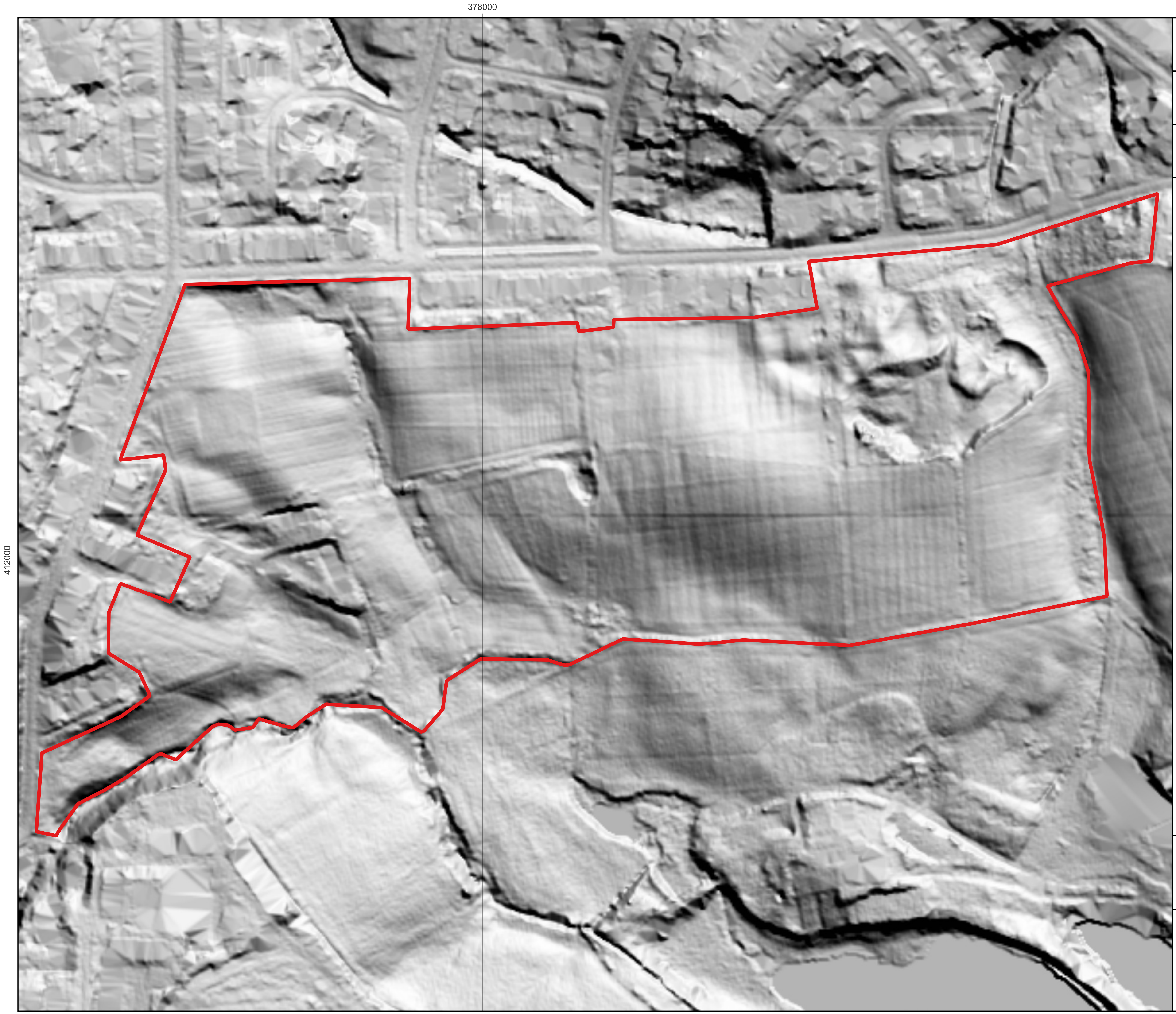
N

Lanpro

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:
Figure 9. Extract from the LiDAR data for the study site



Legend:

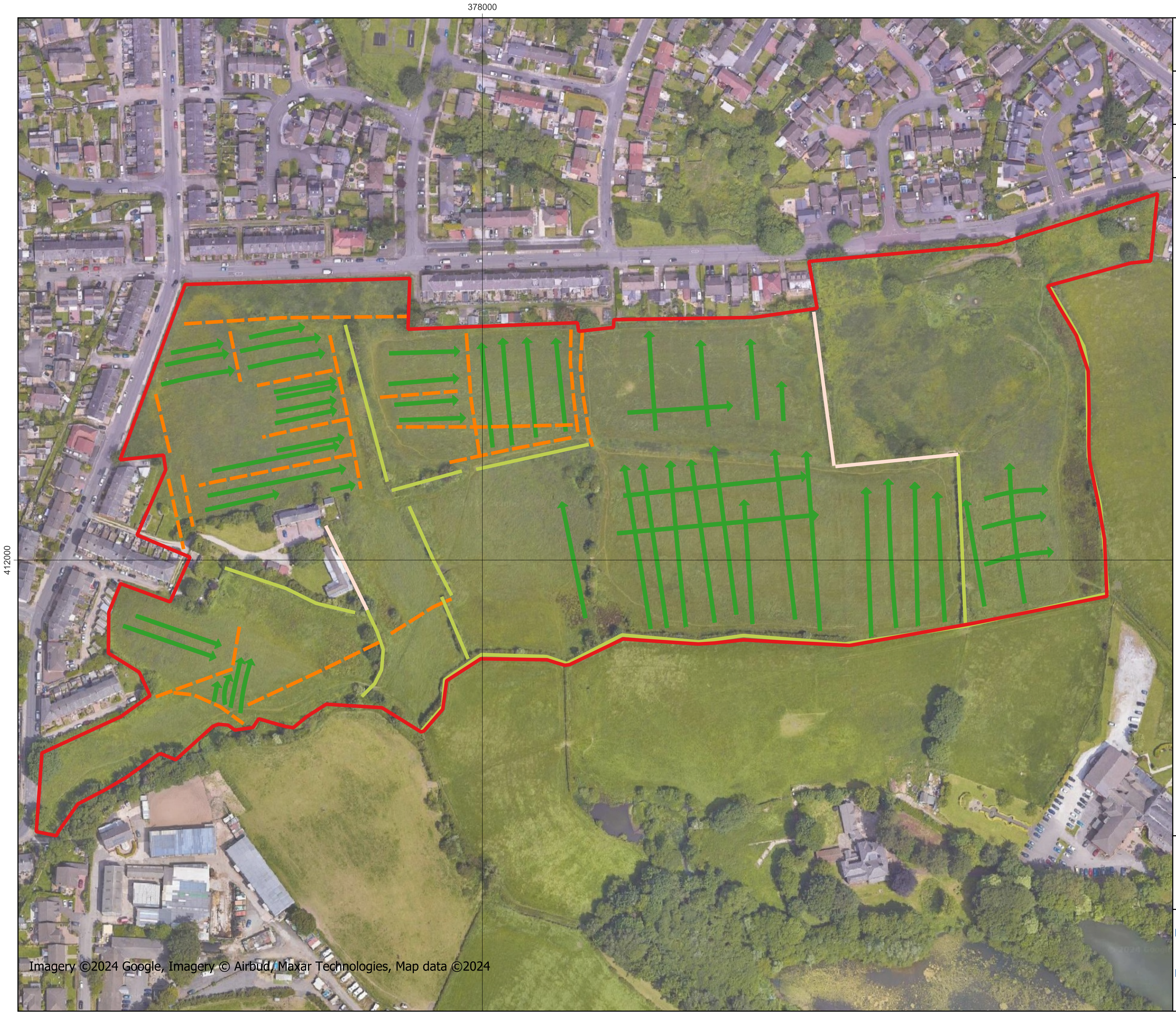
🟥 Study site

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

N



Imagery ©2024 Google, Imagery © Airbud, Maxar Technologies, Map data ©2024

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:
Figure 10. Classification of field boundaries within the study site

Legend:
- ▭ Study site
- — Late 19th century
- — Early 19th century
- → Cultivation marks
- - - Relic boundaries

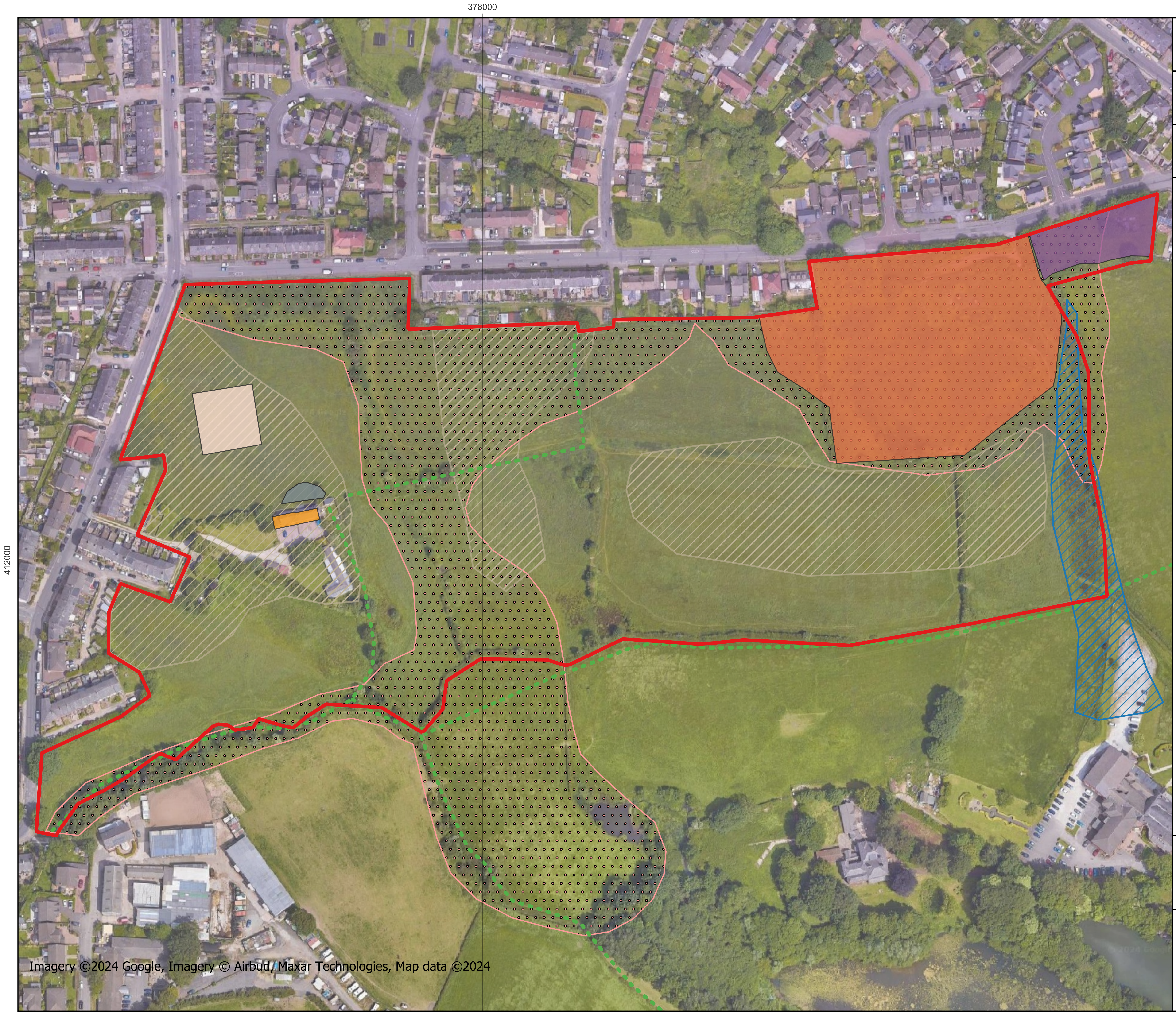
Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

N

Lanpro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Imagery ©2024 Google, Imagery © Airbud, Maxar Technologies, Map data ©2024

Land to the south of Scobell Street, Bury

Historic Environment Desk-based Assessment

Title:
Figure 11. Archaeological and Heritage Assets within the study site

Legend:

- ☐ Study site
- ⁘ Sands and gravels
- ▨ Higher topography
- ■ Brick field
- ■ Copthorne
- ■ Quarry/sand pit
- ■ Cricket pavilion remains
- ■ Cricket pavillion
- ▨ Probable palaeochannel
- ⋯ Historic footpath

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:2000 @ A3

0 25 50 75 m

N

Lanpro

Plates

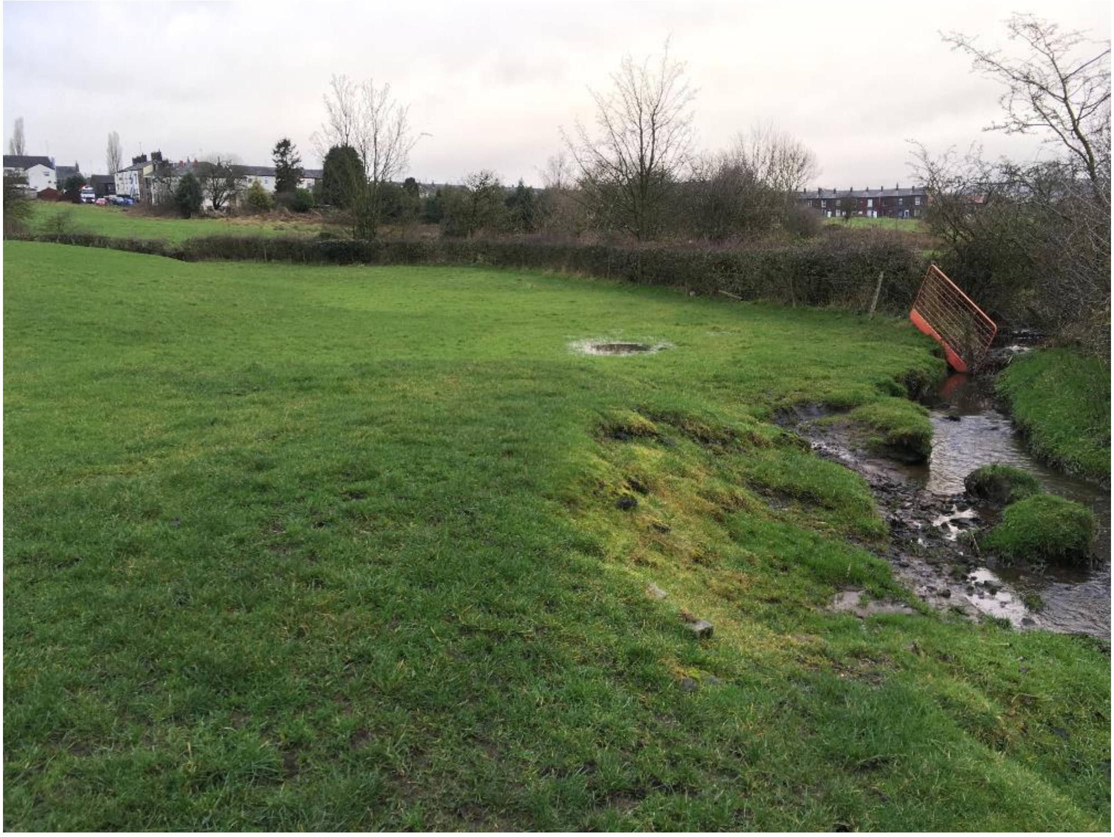

Plate 1. Looking west along the southern perimeter of the study site

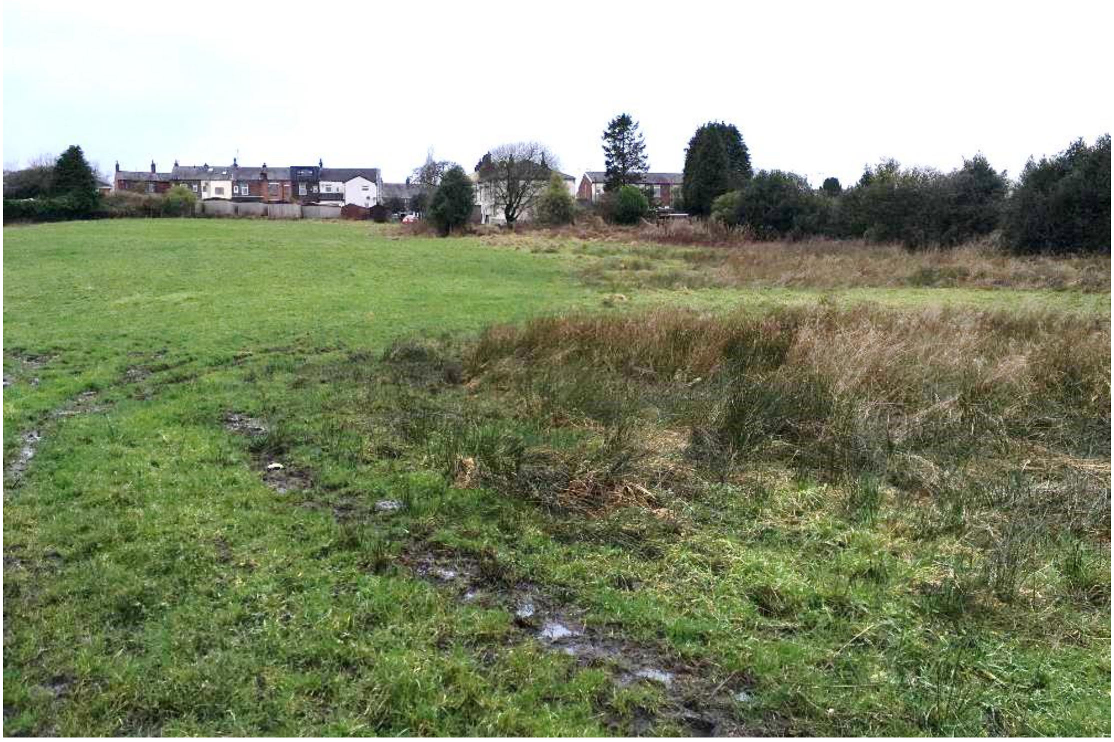

Plate 2. View towards the west boundary of the study site towards Church Street and Collins Street

Plate 3. South-west corner of the study site

Plate 4. View from east of Cop Thorns looking north-east across the study site

Plate 5. View from the north-west field looking eastwards across the study site

Plate 6. View south-eastwards towards the north-west corner of the study site (Cop Thorns on the right hand side)

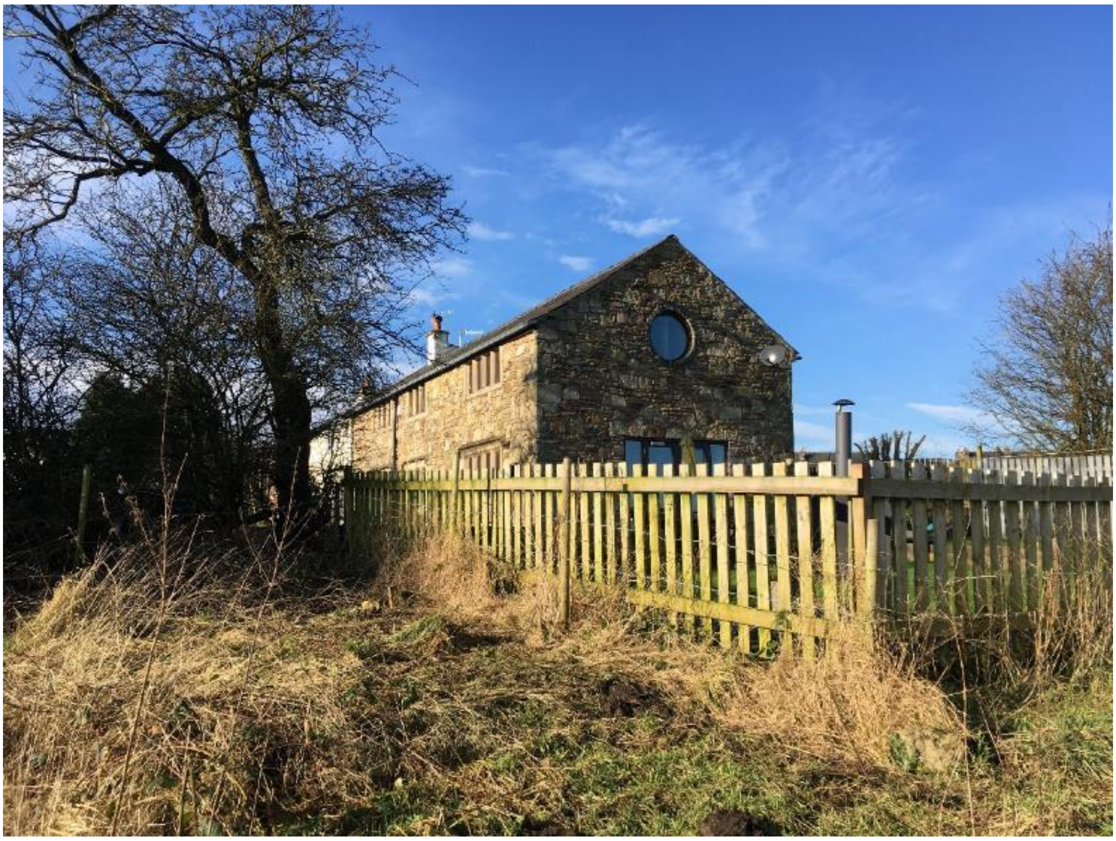

Plate 7. West facing view of Cop Thorns

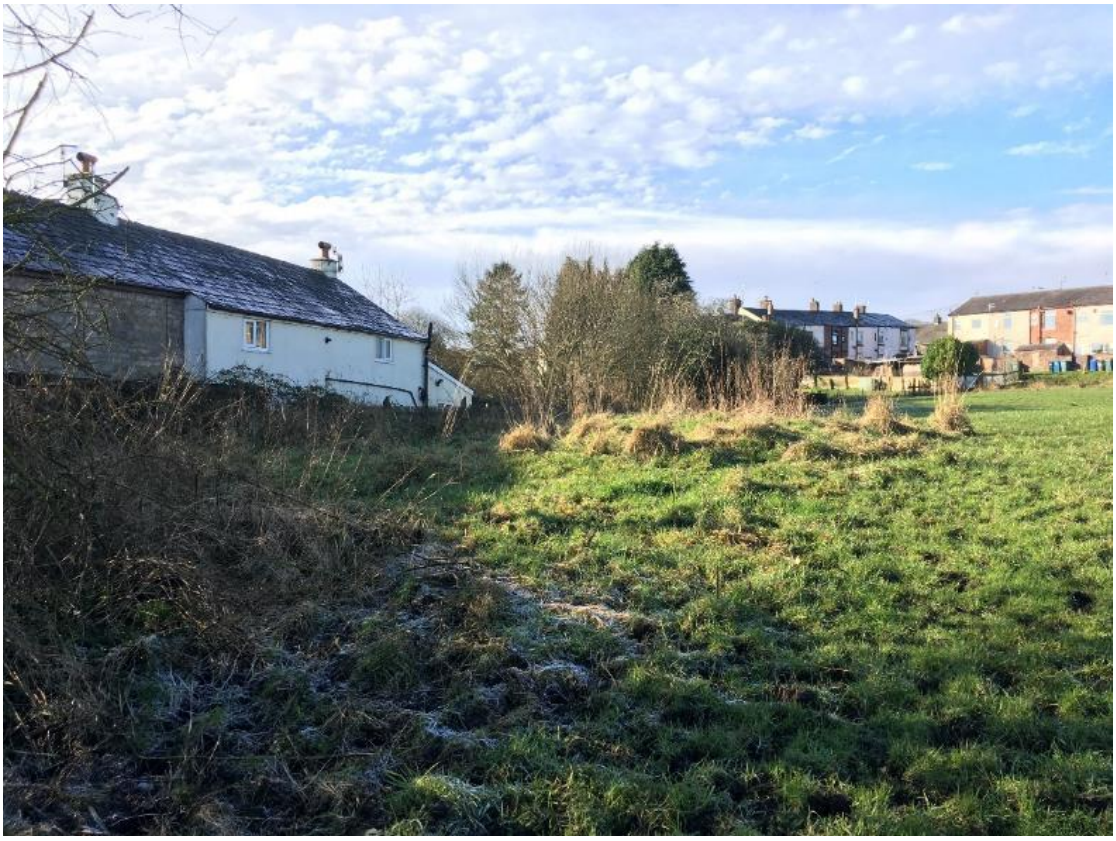

Plate 8. Evidence of the ‘ruins’ of the pavilion to the north of Cop Thorns

Plate 9. View across the area of the cricket pitch seen on the LiDAR data

Plate 10. View from the centre of the study site towards Christ Church

Plate 11. View westwards along the east end of the southern perimeter of the study site

Plate 12. View towards Christ Church from the east boundary of the study site

Plate 13. South-west facing view across the former quarry at Sand Hill

Plate 14. North-west facing view across the former quarry at Sand Hill

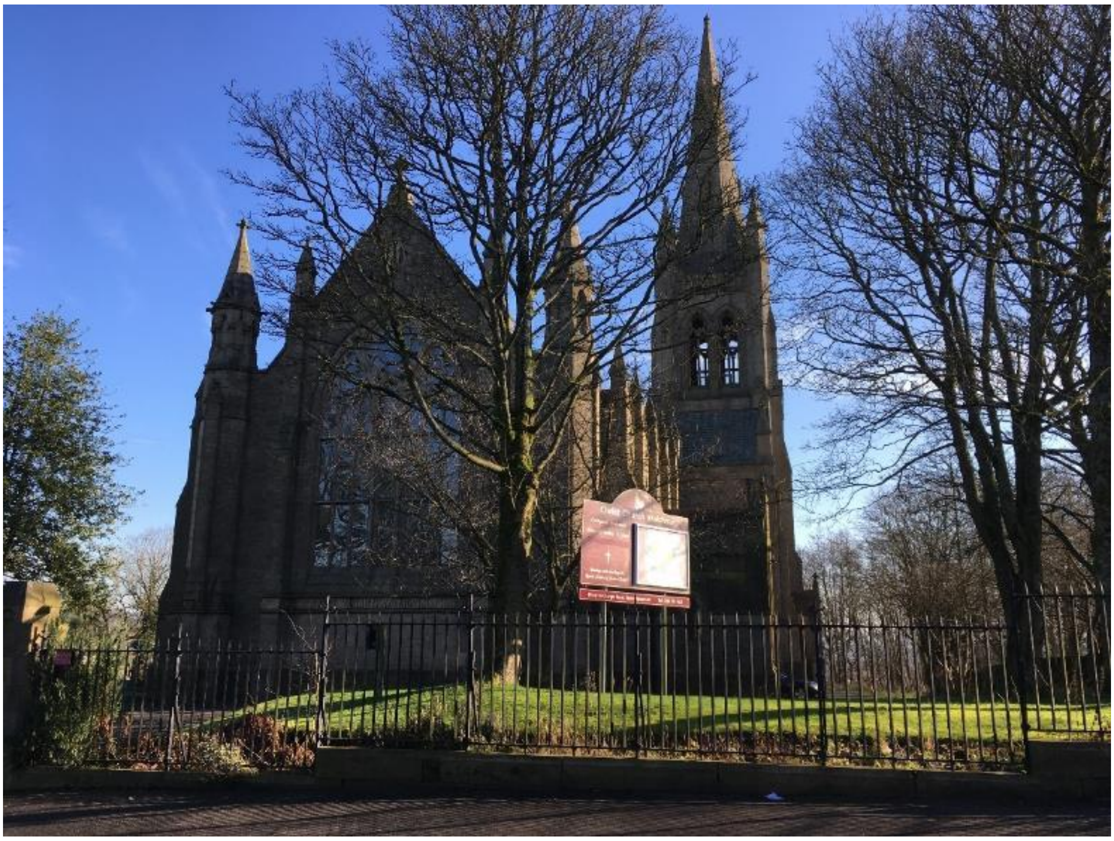

Plate 15. View of Christ Church from High Street

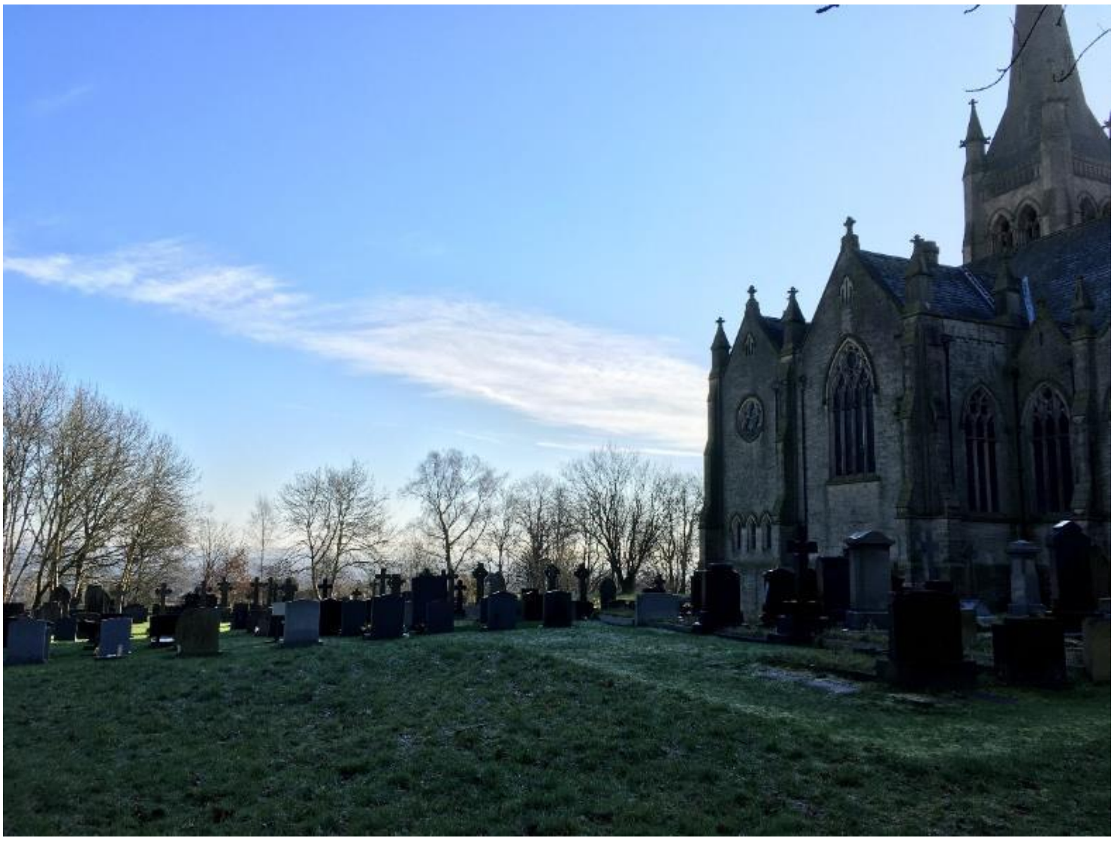

Plate 16. View facing east across the north side of the graveyard at Christ Church

Appendix 1 Gazetteer of heritage assets

The following table provides details of heritage assets recorded on the Greater Manchester HER within1km of the study site. These have been listed in order of their reference numbers, and their locations are marked on Figure 1.

Reference	Name	Description	NGR	Designation	Period
HER Monuments Records:					
14.1.2	Manchester to Ribchester Roman Road	Roman road	SD 7790 0970 (centred)		Roman
70.1.0	Tottington Hall	Tottington Hall is a substantial symmetrical, early C19, 5-bay, 2-storey detached house with hipped slate roof. Tooled stone in wide courses. Sash windows. 4-panel part-glazed door under fan with glazing bars and enclosed by plain half-columns and cornice hood. Sill bands.	SD 7757 1297	Grade II (1163648)	Early 19th century
70.1.1	Outbuilding to north of Tottington Hall	Altered early C19. Rubble, partly squared, partly coursed. 2 storeys. Gable ends probably original or early. West one has late C17 or early C18 3-light stone-mullioned window with drip-mould on ground floor; oval window, probably C18, with flat surround keyed on each axis above. East gable has oculus with bevelled surround, within square block, probably C18. Numerous sash windows in long sides probably constructed early C19, with C20 glazing in Georgian style.	SD 7757 1299	Grade II (1067241)	Late 17th or early 18th century
82.1.0	Perforated Mace Head	Bronze Age perforated mace-head was found in the garden of 70 Holme Avenue, Bury	SD 7910 1246		Bronze Age
100.1.0	School House (site of)	School house built by Thomas Nuttall in 1715 and enlarged in 1773. It was demolished in 1885	SD 7758 1306		18th century
101.1.0	Manor House of Tottington	A capital messuage of the Manor or fee of Tottington is mentioned by the Compoti of 1296 and 1305.	SD 769 119		Medieval
103.1.0	Tottington Watermills	They existed 1296–1609 (approx) and were probably used for industrial purposes.	SD 769 119		Medieval to early post-medieval
161.1.0	Booth Hall (site of)	16th century hall initially of wood and plaster owned by the Booth family and subsequently the Nutall family from 1796.	SD 7779 1233		16th century

		Demolished and built over during the 19th century with Booth Hall Farm			
344.1.0	Stone Head, Walshaw Road	Celtic stone head found in a garden. Potentially 19th c	SD 7788 1159		Iron Age/19th century
671.1.0	Woolford Viaduct (site of), Bury and Tottington District Railway	Five-arch viaduct, with arches and piers built to single-track width, carrying the Bury and Tottington District Railway [HER 2143.1.0] over Kirklees Brook. Now demolished	SD 7901 1203 (point)		19th-20th century
2135.1.0	Reservoir	Reservoir first shown on the 1889–90 map. Fed by a concrete aqueduct, shown on the 1908 map, leading from immediately above a weir [HER 4021.2.8] on Kirklees Brook. This aqueduct has sluices at either end; that at the northern end has an iron sluice gate still in position.	SD7828 1303		19th-20th century
2136.1.0	Ridge and furrow	Ridges c.3m wide, running approximately south-west to north-east,	SD 7820 1279		Medieval
2137.1.0	Throstle Grove Bleach Works (site of)	Probably in existence in 1818, when the mill's leat and an associated reservoir are shown on Greenwood's map, probably an example of a farming family supplementing their agricultural income	SD 7898 1223		19th century
2137.2.1	Reservoir for former Throstle Grove Bleach Works	Directly linked to Kirklees Brook above weir	SD 7901 1219		19th century
2137.2.2	Reservoir for former Throstle Grove Bleach Works	Originally two reservoirs but joined as single at end of 19th century	SD 7898 1232		19th century
2137.2.3	Reservoir for former Throstle Grove Bleach Works	Originally two reservoirs but joined as single at end of 19th century	SD 7907 1229		19th century
2137.2.4	Reservoir for former Throstle Grove Bleach Works	Silted up and overgrown, partly covered with trees. Banks survive as overgrown earthworks.	SD 7899 1228		19th century
2137.2.5	Reservoir for former Throstle Grove Bleach Works	Still water-filled. Remains of wooden sluice with part of winding mechanism at south end; sluice shown on the 1928 map	SD 7907 1219		19th century

2137.2.6	Reservoir for former Throstle Grove Bleach Works	Stone and concrete stepped overflow on the west side	SD 7902 1219		19th century
2137.2.7	Weir, Throstle Grove Bleach Works	Later date than reservoirs and leat, shown on 1844-47 map. Angled fall, c.4m high, built of large stone blocks.	SD 7867 1250		19th century
2137.2.8	Leat, Throstle Grove Bleach Works	Runs from weir (2137.2.7) to reservoir (2137.2.1)	SD 7894 1233		19th century
2138.1.0	Reservoir (former)	Shown on 1908 map. Earthwork on 1970 map	SD 7888 1237		20th century
2139.1.0	Ridge and furrow	Approximately 20 ridges, c.1.5–2.5m wide, c.0.25m high and up to c.20m long.	SD 7876 1239		Post-medieval
2141.1.0	Site of building or farmstead	Shown on Tottington tithe map 1838, now covered in debris	SD 7841 1240		19th century
2142.1.0	Garside Hey	Farm, Farmstead on Yates' map of 1775-80	SD 7880 1254		18th century
2143.1.0	Bury and Tottington District Railway	A single-track line, opened 1882 between Bury and Holcombe Brook, promoted by local factory owners and authorized by Act of Parliament in 1877. Taken over by the L & Y R, being indicated on the 1889–90 map as L & Y R Tottington Branch. Closed in 1963	SD 7828 1298		19th – 20th century
2143.2.0	Sunnywood Halt (site of)	Site of a railway halt on the Bury and Tottington District Railway, shown on the 1908 and 1928 OS maps. Included a platform with two wooden shelters on the south side of the line west of Sunnywood Lane.	SD 7814 1267		20th century
2143.3.0	Railway cutting and siding (site of)	Shown on the 1908 and 1928 OS maps as a single-track siding along the south of the main railway line of the Bury and Tottington District Railway [HER 2143.1.0], set in a cutting with the south side of the cutting revetted in stone	SD 7873 1231		20th century
2144.1.0	Revetment and reservoir (site of)	Massive slightly stepped revetment of stone, brick and concrete, some of this material probably representing repairs. Iron pipe protrudes from this revetment. Behind is a small rectangular reservoir	SD 7864 1244		Late 19th – early 20th century

2147.1.0	Woolfold Bleach Works/Paper Mill (site of)	Probably the site of the factory listed at Woolfold in the 1794 Tottington survey. Rectangular building, named 'Factory', shown at south-east corner of reservoir HER 2147.2.3 on the 1814 plan and referred to as 'Cotton Mill'. The 1838 tithe award and 1844–47 OS map show that site had become a bleach works, with the original mill having been rebuilt or expanded. By the 1850s the works had changed to paper making, with Woolfold Paper Mill reported in 1865 as being one of the four largest in the world	SD 7907 1180		18th- 20th century
2147.2.1	Former reservoir at site of Woolfold Bleach Works	Shown on the c.1838 Tottington tithe map and later maps. Probably formed from part of leat (HER 2147.2.6). Still waterfilled, although silted up towards north end.	SD 7894 1195		19th – 21st century
2147.2.2	Former reservoir at site of Woolfold Bleach Works	Shown on the 1889–90 map and later maps. Still water-filled.	SD 7897 1195		19th - 21st century
2147.2.3	Site of reservoir at Woolfold Bleach Works	Shown on the c.1838 Tottington tithe map; this map and the 1844–47 map show two smaller reservoirs to the SW not shown on later maps. The 1889–90 map (4) shows a reservoir to the west, not shown on later maps. The 1928 map shows a sluice at the SE corner. Now drained and laid with concrete.	SD 7899 1187		19th – 20th century
2147.2.4	Site of reservoir at Woolfold Bleach Works	Shown on the 1838 Elton tithe map	SD 7920 1173		19th- 20th century
2147.2.5	Weir associated with Woolfold Bleach Works	Shown here on the 1814 plan	SD 7904 1212		19th- 20th century
2147.2.6	Leat associated with Woolfold Bleach Works	Shown here on the 1814 plan	SD 7901 1205		19th- 20th century
2147.2.7	Weir associated with Woolfold Bleach Works	Shown on the 1889–90 OS map	SD 7901 1191		19th- 20th century
2147.2.8	Weir associated with Woolfold Bleach Works/Paper Mill	Shown on the 1908	SD 7913 1178		19th- 20th century
3563.1.0	Walshaw settlement	Yates shows a scatter of settlement from Four Lane Ends to the north-west, along Bradshaw Road and Bank Street. The settlement's growth was possibly influenced by the Roman road to the west, with Walshaw Hall, also named on Yates,	SD 7760 1180		Medieval – post-medieval

		representing an early settlement area. By 1850 the main concentration of settlement is along High Street			
3806.1.0	Spring Mill (site of)	Cotton Mill and cotton weaving mill. Demolished.	SD 7750 1296		20th century
3807.1.0	Yarn Dyeing Works (site of)	Extensive complex of modern brick and corrugated asbestos. The northern part of this site occupies the site of an earlier reservoir (HER 4021.2.6) and to the south of this a second reservoir, shown on the 1989 (2), 1908 and 1928 maps; the south part of the works occupies the site of a large structure, probably part of the Kirklees artificial silk works (HER 4021.1.0),	SD 7840 1271		
3808.1.0	Bolholt Print Works	Former bleach and print works, now partially used for commercial use and partially for dwellings. Printworks by 1825. Buildings recorded on the Tottington Lower End tithe (1838) as print and bleach works. Demolished parts of the site now landscaped	SD 7850 1166		19th - 21st century
3809.1.0	Victoria Mill	Remains of cotton mill complex first recorded on 1st ed. OS map	SD 7760 1170		19th – 20th century
3810.1.0	Glen Mill	Cotton mill complex first recorded on 1st ed. OS map	SD 7826 1222		19th - 20th century
3811.1.0	Site of Britannia Mill (later Olive Bank Mill)	Cotton mill complex first recorded on 1908 OS map	SD 7886 1199		19th - 20th century
3812.1.0	Woolfold Dye Works	Former dye works. Marked on the 1st edition OS map as a dye works, now part of the Woolfold Trading Estate and comprises several late C19 brick-built tall single-storey buildings	SD 7901 1159		19th – 21st century
3814.1.0	Site of Premier Mills	Remains of a woollen mill complex. First shown on the 1930 OS 25" map	SD 7891 1132		20th – 21st century
3815.1.0	Elton Fold Mill, later Elton Cop Dye Works (site of)	Site of a mill complex later used as a dye works. Mill symbol shown on the location on Greenwood's map and a building in the general location on Yates's map	SD 7906 1130		18th – 20th century
3826.1.0	Lower Croft Works (Lowecroft Mills)	Remains of textile mill complex. Marked on 1st ed OS map as "Lower Croft Mill"	SD 7757 1103		19th – 21st century
3955.1.0	Site of Woolfold Mill/Textile Dyeing Works	Site of textile mill/works. First shown on the 1st edition 6" OS map and annotated 'Wool Fold Mill'.	SD 7884 1175		19th - 20th century

4021.1.0	Kirklees Bleach Works (site of)	Probably site of factory established by 1803 and originally associated with Kirklees Print Works (8782.1.0). Shown on 1810 map., Mill closed in 1955	SD 7838 1288		19th - 20th century
4021.2.1	Reservoir, Kirklees Bleach Works site	Reservoir first shown on the 1927–28 map with sluice on the south. Still water-filled.	SD 7842 1307		20th century
4021.2.2	Reservoir (site of), Kirklees Bleach Works site	Reservoir first shown on the 1889–90 OS map. The 1908 map and later maps show a narrow water channel on the south-west linking the site with reservoir HER 4021.2.4. The 1927–28 map shows a sluice at the south-west corner of the reservoir, probably part of the same system. Infilled and overgrown with trees.	SD 7842 1300		20th century
4021.2.3	Reservoir (site of), Kirklees Bleach Works site	The c.1838 Tottington tithe map and the 1844–47 OS map show a narrow reservoir on this site linked by a channel to reservoir HER 4021.2.6. Infilled	SD 7833 1292		19th - 20th century
4021.2.4	Reservoir (site of), Kirklees Bleach Works site	Shown on the 1810 map being fed by leat 4021.2.8 leading off Kirklees Brook. Infilled	SD 7836 1293		19th - 20th century
4021.2.5	Reservoir (site of), Kirklees Bleach Works site	First shown on the 1844–47 OS map. Now overgrown earthwork	SD 7840 1289		20th century
4021.2.6	Reservoir (site of), Kirklees Bleach Works site	Reservoir shown on the 1810 map, fed by a watercourse from Black Brook. On the 1970 OS map the site is occupied by the Yarn Dyeing Works (3087.1.0)	SD 7833 1285		19th - 20th century
4021.2.7	Reservoir (site of), Kirklees Bleach Works site	First shown on the 1928 OS map, which shows it linked by a sluice at its west end to mill leat HER 4021.2.11	SD 7820 1270		20th century
4021.2.8	Weir and Leat, Kirklees Bleach Works site	Weir shown on the 1889–90 OS map and later maps. Present weir is built from stone and concrete. Leat shown on the 1810 and later maps. Carried water from above weir to reservoir HER 4021.2.4 at the Kirklees Bleach Works.	SD 7825 1311		19th - 20th century
4021.2.9	Weir, Kirklees Bleach Works site	First shown on the 1908 OS map. Angled fall, laid with large setts. A central concrete pillar, possibly support for piping or a footbridge	SD 7837 1285		20th century
4021.2.10	Filter beds (site of), Kirklees Bleach Works	Filter beds first shown on the 1908 map, now concreted over	SD 7843 1275		20th century
4021.2.11	Leat, Kirklees Bleach Works	Shown on the 1928 OS map, running along the north side of reservoir 4021.2.7 towards a large building probably associated with the Kirklees artificial silk works.	SD 7826 1275		20th century

8713.1.0	Site of building at Booth Lane	Farmstead shown on map of 1797	SD 7781 1253		Post-medieval
8717.1.0	Possible site of Greenhurst Moss	Probable site of Greenhurst Moss, listed as one of the commons of Tottington in the notes of the 17th century enclosure surveyor	SD 7857 1212		17th century
8722.1.0	MEL Company (site of)	Site of late 20th-century [presumably late C19] textile works	SD 7758 1303		19th - 20th century
8722.1.1	Main building at MEL Company (site of)	First shown on 1966 map	SD 7759 1304		20th century
8722.1.2	Warehouse building at MEL Company (site of)	First shown on 1908 OS map	SD 7760 1302		20th century
8722.1.3	Garage building at MEL Company (site of)	First shown on 1966 OS map	SD 7758 1304		20th century
8723.1.0	Factory, Hilda Avenue (site of)	L-shaped building shown on 1889–90 OS map, composed of 5 rectangular units	SD 7766 1256		19th - 20th century
8725.1.0	Site of Leemans Hill Mill	In 1794 a 'Bowkhouse' (a cloth bleaching house) is listed on the property of Leemans Hill, belonging to widow Baron and occupied by John Renshaw	SD 7833 1225		19th century
8725.2.0	Road through Leemans Hill area	Mentioned in 1525 court rolls as "public road to Tottington at Lemonds Hill". Mapped on Greenwood's e. 19th c map (incorrectly mapped on Yates 1786 map)	SD 7817 1218		16th - 19th century
8742.1.0	Commemorative stone east of Tottington Hall	Commemorative stone from endowed school recording endowment. Moved from school to park gardens. Removed from a school in Kirklees Street. Now suffering from exposure to the elements	SD 7762 1300	Grade II (1251208)	18th century
8745.1.0	Butts Lane (line of), now Laurel Street	Field access road, first shown on tithe map, surveyed c.1838 but likely 18th century or earlier	SD 7772 1296		18th century
8746.1.0	Line of Booth Lane	Maintenance mentioned in 1529–30 court rolls. Shown on Yates' map of 1786	Centred SD 7776 1230		Medieval to 19th century
8747.1.0	Probable sunken lane near Walshaw Hall	Earthwork continuing the alignment of Bradshaw Road southwards. Probably course of road before early 17th century enclosure of Affetside Common.	Centred SD 7740 1194		Medieval to 16th century
8748.1.0	Access road to Cop Thorns	Shown on Yates' map, surveyed c.1775–80 but not Fletcher's of 1797 or later maps	SD 7794 1194		18th century

8752.1.0	Pinfold Field (site of Pinfold)	Probably the site of the post-medieval and probably medieval pinfold for Affetside Common. Plot named ‘Pinfold’ in tithe apportionment of 1838	SD 7740 1197		Medieval – post-medieval
8782.2.5	Reservoir, Kirklees Print Works	Shown on the c.1838 Tottington tithe map. The 1960 map shows a sluice to the north, suggesting a link with reservoir HE|R 8782.2.4. Still water-filled.	SD 7816 1317		19th - 20th century
9049.1.0	Stone head, The Nurseries	Rough stone incorporating 3 crudely carved faces	SJ 6538 6622		Iron Age or 19th century
9262.1.0	Lower Bentley Hall (site of)	Site is shown as two large buildings on Bentley Hall Road. Buildings demolished and site is vacant.	SD 7688 1160		18th century
9267.1.0	Antony Fold (site of)	Shown as two structures in 1785 in the tenure of William Holme, comprising a house, outhousing, garden, croft and 11 closes	SD 7690 1172		18th century
9272.1.0	Top o' th' Bank (now High Bank Farm)	Farmstead, still in use. Shown as three buildings on the Earl of Derby's estate plan, named as Top o’th’ Bank on OS map of 1851. Shown as a complex of about six buildings named as "High Bank" on OS map of 1894	SD 7782 1184		18th – 21st century
9274.1.0	Meadow Croft	Farmstead, still in use. Appears as two buildings on the Earl of Derby's estate plan. The site of the farm cuts through the line of Watling Street Roman road. Trenched in 2019 but no associated finds	SD 76991130		18th century
9275.1.0	Site of Bradocks	Appears as one rectangular building on Earl of Derby’s estate plan of 1785 and tenanted by Grace Bradcdock. Still rectangular in plan and marked as "Knapps" on OS 2nd edition	SD 7744 1140		18th - 19th century
9276.1.0	Site of Yethard Fields	One rectangular building shown in strip field named as "Meadow" field on Earl of Derby’s estate plan of 1785. Shown as Yethards Field on the 1st edition OS map of 1851. Site of much smaller building on OS map of 1894. Replaced by a cricket ground and pavilion in early 20th century.	SD 7763 1134		18th - 19th century
9277.1.0	Lower Croft Reservoir	Shown as one small reservoir on Earl of Derby’s estate plan of 1785 as part of a bleaching works. Shown as two reservoirs, part of "Lower Croft Mill" complex on OS 1st ed.	SD 7754 1106		18th – 20th century
9279.1.0	Site of four buildings on Walshaw Lane	The Tithe Award for Elton 1838 shows four main buildings near the road junction but later built over by mill and housing	SD 7760 1170		Post-medieval - 18th century

9280.1.0	Site of Haslem Hey	Appears first on OS 1st ed as three buildings	SD 7746 1125		19th – 20th century
9286.1.0	Site of Smith’s Tenement	On Earl of Derby’s estate plan of 1785. Site of rectangular building on aerial photos, possible rubble remains, field boundaries. Square cropmark of original building visible.	SD 7740 1132		18th – 20th century
9289.1.0	Owlerbarrow Farm (previously Alderbarrow	Site of farmstead. Earl of Derby’s estate plan of 1785 shows one building. Building on current mapping is modern/ 20th century	SD 7818 1143		19th – 20th century
9291.1.0	Site of Bolholt	One large building with extension and two smaller outbuildings are shown on the Tithe Award for Elton 1838. Site occupied by "Bolholt Mills (Bleach and Print Works)" (see HER 3808.1.0) on OS 1st ed. Now occupied by modern works	SD 7851 1168		14th - 19th century
9297.1.0	Dunster’s/Dunsters Farm (site of)	Two buildings shown on the Earl of Derby's Estate Plan. Shown as a group of three buildings on the tithe award for Elton, named as "Dunster's. No longer extant	SD 7921 1227		18th century
9486.1.0	Lower Walshaw House	House dated to 1774	SD 7748 1196	Grade II (1163345)	18th – 21st century
9486.1.1	Former Coach House at Lower Walshaw House	Probably c.1774	SD 7747 1198	Grade II (1067286)	18th – 21st century
9499.1.0	High Crompton Farmhouse	Probably 17th century	SD 7713 1150	Grade II (1162897)	17th – 21st century
9501.10	Christ Church	1888, by Lawrence Booth. At right-angles to road and sloping away from it. Gothic Revival. Paid for by Rev J G Haworth and Miss Nancy Haworth of cotton-spinning and fustian-making family: "Jesse Haworth Memorial Church" in prominent relief lettering on west front of landmark value	SD 77662 11565	Grade II* (1163417)	19th – 21st century
10002.1.0	Walshaw Hall	Hall, now used as retirement home. Original Walshaw Hall built c.1740 by Thomas Baron and was demolished in 1844	SD 7707 1208		18th century
10393.1.0	St John’s Free Church	Non-conformist chapel	SD 7759 1311	Grade II (1351973)	19th – 21st century
13745.1.0	War Memorial, Walshaw Village	Depicted on the 1930 OS map, labelled as 'War Memorial', located within the village centre	SD 77635 11679		20th - 21st century

13746.1.0	Green Bank	Area shown as blank on Earl of Derby's estate plan of 1785 but marked as part of the Royal Manor. OS 1st ed shows buildings as 'Green Bank'	SD 77576 11891		18th - 21st century
13747.1.0	Former Walshaw Co-op	Commercial buildings, still in use	SD 77621 11770		19th century
15528.1.0	Wesleyan Day and Sunday School (former), Tottington	Dated 1868, early C20 internal alterations. By E Simpkin of Bury.	SD 7749 1308	Grade II (1351975)	19th century
15529.1.0	Tottington Methodist Church	1905. By Arthur Brocklebank of Waterfoot. Gothic and Art Nouveau style	SD 7753 1307	Grade II (1351974)	20th century
15529.1.1	Boundary wall to Spring Street Methodist Church	Boundary walling on south, east and north sides of the church, with gate piers, gates and railings	SD 7752 1305	Grade II (1351976)	20th century
15660.1.0	War Memorial, Tottington	War memorial. The memorial was erected by public subscription and unveiled on the 28th of August 1920. The memorial is in the form of a Celtic cross with four panels to the cross shaft, in which is a single flowerhead with leaves radiating	SD 77596 12935		20th century
15629.1.0	St James' Church	Church and parish rooms, still in use. Built 1930–31 by R.Martin.	SD 78834 11523		20th - 21st century
15654.1.0	35-39 Church Street, Walshaw	Row of cottages, still in use. Buildings shown on location from Yates' map of 1786 onwards	SD 77744 12010		18th - 21st century

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