



Phase I & II Geo-Environmental Assessment

ASDA Pilsworth
Pilsworth Road
Bury
BL9 8RS

Prepared for:

Euro Garages Limited
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ASDA PILSWORTH

NON-TECHNICAL CLIENT SUMMARY

This report presents the findings of a combined Phase I Desk Study and Phase II Intrusive Investigation undertaken to determine ground conditions, establish if there are any environmental risks associated with the site and its development and provide a geotechnical appraisal. Pertinent findings and conclusions may be summarised as follows:

- The site currently comprises the south east corner of the car park associated with the ASDA Pilsworth Superstore. The area is covered by hardstanding and includes light poles and trolley stores, the majority of which had been removed at the time of site works and proposed development for site is understood to be the construction of a drive thru restaurant with associated parking and soft landscaping.
- The site has been established to have a history of previous development, having been used as a 'work' before the existing superstore was built. With a quarry/landfill also being present to the east, a number of potential contamination risks have been identified.
- Intrusive site investigation consisted of three boreholes with ground conditions found to comprise made ground, over superficial glacial clays. Ground gas monitoring points were installed within two of the locations and a return gas monitoring programme was conducted. Groundwater was encountered at approximately 3.4m during site work, later measured to be between 3.4-3.9m.
- Following laboratory analysis of soils collected during site works, and the completion of a ground gas monitoring programme, no plausible contamination risk was identified that has the potential to pose a risk to site.

ENGINEERING SUMMARY

- The ground conditions are considered suitable for conventional foundations provided they extend to a minimum depth of 150mm in to undisturbed natural strata. The table below summarises the allowable bearing capacities calculated for site:

Foundation Depth (m)	Allowable Bearing Capacity* (kN/m ²)	
	Strip	Pad
0.9	75	90
1.5	90	110
2.0	100	125

- On the basis of the ground conditions encountered, the use of infiltration systems to dispose of surface water is not considered appropriate.

The above points represent a simplified summary of the findings of this assessment and must not form the basis for key decisions for the proposed development. A thorough review of the details is contained within the following report, or alternatively get in touch and we'll talk you through it.



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Where ground investigations have been conducted, these have been limited to the level of detail required for the site in order to achieve the objectives of the investigation.

The report has been written, reviewed and authorised by the persons listed above. It has also undergone EPS' quality management inspection. Should you require any further assistance regarding the information provided within the report, please do not hesitate to contact us.

The National Planning Policy Framework 2019 requires a competent person to prepare site investigation information, which is defined as a person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation. EPS considers that it fulfils these criteria and would welcome any request for staff CVs or case studies to demonstrate it.

As stated within DEFRA's Contaminated Land Statutory Guidance (2012), with any complex risk assessment it is possible that different suitably qualified people may reach slightly different conclusions when interpreting the same information. EPS recognises this and considers the conclusions presented within this report to be robust and appropriate but input from the Local Authority and their judgement in line with this guidance would still be welcomed.

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1 INTRODUCTION

In March 2023, Environmental Protection Strategies Ltd (EPS) was commissioned by Euro Garages to complete a Phase I and II Geo-Environmental Assessment Report at ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS ('the site'); see Figure 1.

The work was commissioned in order to provide information on the redevelopment of part of the car park at ASDA Pilsworth. Proposed development plans include the construction of a coffee shop drive thru.

This report presents the findings, conclusions, and recommendations of the Phase I Desk Study and subsequent Phase II Intrusive Investigation undertaken as instructed.

1.1 Objectives

The objectives of this investigation were as follows:

- a) Compile a Phase I Desk Study and Conceptual Site Model through a Preliminary Risk Assessment to evaluate the potential risks the site may pose to human and environmental receptors, both currently and in future.
- b) Investigate potential contaminant linkages identified in the CSM by means of investigating shallow soils and groundwater.
- c) Determine the potential risks posed by the site and make recommendations for further work that may be required, to ensure safe development in accordance the Environment Agency's *Land Contamination: Risk Management* guidance (LC:RM, 2020) and the *National Planning Policy Framework*.
- d) Collect information on ground conditions and strength in order to make appropriate recommendations for geotechnical design.

1.2 Scope of Work

To perform an exploratory assessment of the site in accordance with the principles and requirements of DEFRA's '*Contaminated Land Statutory Guidance*' (2012), BS10175 – '*Investigation of Potentially Contaminated Sites*', BS 5930:2015+A1:2020 '*Code of practice for ground investigations*' and BS EN 1997 '*Geotechnical Design*', the following tasks were undertaken:

Desk Study:

- Collection of site records.
- Study of existing geological, hydrogeological and historic maps of the area.
- Consultation of environmental databases, including records held by the local authority (where available).
- Review of proposed development plans.
- Development of a Conceptual Site Model (CSM) through a Preliminary Risk Assessment.

Intrusive Investigation:

- Site walkover, inspection of any visual evidence of contamination at the site, obtaining photographic records.

- Health and safety briefing / site supervision.
- Drilling of three window sample boreholes to a depth of 5.0m below ground level (bgl) using a track-mounted percussive rig.
- Continual logging of ground conditions including inspection of samples for visual and olfactory contamination, and laboratory analysis of selected representative samples.
- Installation of gas and groundwater monitoring standpipes at selected locations, with a return monitoring programme conducted.

Reporting:

- Data collection
- Interpretation of data including completion of Generic Quantitative Risk Assessment

The findings and conclusions of these investigations are presented in the following sections.

1.3 Limitations and Constraints

The purpose of this report is to present the findings of a soil sampling investigation conducted at the location(s) specified. When examining the data collected from the investigations made during the assessment, Environmental Protection Strategies Ltd (EPS) makes the following statements:

No investigation method is capable of completely identifying all ground conditions that might be present in the soil or groundwater under a site. Where outlined in our report, we have examined the ground beneath a site by constructing a number of boreholes and / or trial pits to recover soil and / or groundwater samples. The locations of these excavations and sampling points are considered to be representative of the condition of the whole site subsurface however, ground conditions are naturally variable and it may be possible that the conditions encountered may differ to those found during the investigation.

No visible evidence of Japanese Knotweed was identified during the site walkover. However, this plant can be difficult to identify in the early stages of growth and therefore it is not always possible to identify its' presence at certain times of the year. For this reason, EPS cannot confirm that Japanese Knotweed rhizomes do not exist and it is recommended that if it is suspected that this species, or other similarly invasive plants are present at the site, a specialist contractor should be commissioned to make a detailed assessment.

The investigation was carried out to assess the significance of contamination resulting from the use of the site as identified in this report. Unless EPS has otherwise indicated, no assessment of potential impact of any other previous uses has been made.

2 SITE CONTEXT

The following section provides a summary of the information collected in relation to the site location and history.

2.1 Site & Location Description

Detail	Description
Location	The site lies adjacent to the west of Junction 3 of the M66 and is situated approximately 2.5km south east of Bury town centre.
National Grid Reference	382030, 408930
Topographic Elevation	Ground levels are typically flat and lie at around approximately 100m Above Ordnance Datum (AOD)
Description of Site	The investigation covers the south east corner of the active car park associated with the larger ASDA superstore. At the time of site works (26/04/23), the site consisted of hardstanding, approximately half of which had been removed and stacked into an onsite stockpile. The area with removed hardstanding had been separated from the larger site by Heras fencing. Additionally onsite were several heavy plant vehicles and metal container site cabins. The wider car park area included recycling banks and light poles, which had been removed within the fenced area. An access road for the ASDA superstore borders the site to the south and east, with the active car park located to the north and west.
Surrounding Land Use	The site lies north of a small retail park on the outskirts of Bury, with the majority of the surrounding land dedicated to commercial usage. It should be noted that a landfill is located east on the other side of the M66.

A plan showing the site location is provided as Figure 1, the current site layout is detailed on Figure 2 and an aerial photograph is included as Figure 3. Selected site photographs are included as Appendix A, a proposed development plan is included as Appendix B and relevant extracts of a Landmark Envirocheck report are included as Appendices C - F.

2.2 Geo-Environmental Setting

Detail	Description
Geology	Geological mapping shows the site is directly underlain by Superficial Glacial Deposits overlying Pennine Lower Coal Measures Formation bedrock. There are several coal seams within the surrounding area, including one to the north of site, orientated approximately south east to north west. Information on the site's geological context is included as Appendix D.
British Geological Survey (BGS)	The BGS have recorded three mineral sites within 500m of the site. the nearest is located 300m south east and mined sand from Glaciofluvial Deposits through opencast methods.

Detail	Description	
British Geological Survey (BGS) (cont.)	BGS mapping records some faulting in the surrounding area, persisting to both the north and south of site and generally orientated south east to north west.	
	Historic borehole logs were reviewed for the area which recorded made ground to a maximum depth of 3.8m overlying alternating layers of brown gravelly sand and firm grey clay with occasional laminations. One borehole was formed to a depth of 10.50m and consisted of a dense sandy gravel from 9.30m to the base of the borehole. Both boreholes struck groundwater, at 4.10m rising to 1.20m in 20 minutes and 3.80m rising to 2.40m. A copy of these logs is included within Appendix D.	
Geological Hazards	Hazard	On Site Risk
	Non-Coal Mining Activities	No Hazard
	Collapsible Ground	Very Low
	Compressible Ground	No Hazard (Moderate 118m E)
	Ground Dissolution	No Hazard
	Running Sand	Very Low
	Landslide	Very Low / Low
	Shrinking / Swelling Clay	Low
Coal Mining	The Envirocheck Report suggests the site may be in an area affected by coal mining.	
	Upon consulting the Coal Authority website, the site does lie within a coal mining reporting area and several mine entrances are recorded within the surrounding area, although none appear to be on site.	
	The site does not lie within a development high risk area and no shallow mine workings are recorded on site, therefore risks associated with ground stability issues arising from historic coal mining on the site are likely to be low.	
	It is recommended a preliminary coal mining risk assessment is obtained from the Coal Authority to confirm the risk level at the site.	
Hydrogeology	Groundwater vulnerability maps for the area show that the underlying superficial and bedrock geology are classified as Secondary A Aquifers and that the site does not lie within a Source Protection Zone (SPZ) for local groundwater abstraction. Groundwater vulnerability maps are included as Appendix E.	
	The Envirocheck report lists four groundwater abstractions within 500m. The nearest is located approximately 280m east, dewatering at Pilsworth Landfill site.	
Hydrology	The nearest surface water feature is a river located approximately 260m north of the site. In total four discharge consents are found within 500m of the site. The closest is approximately 170m south east of the site where effluent was discharged into a freshwater river on 11 th April 2000.	

Detail	Description
Hydrology (Cont.)	Review of the EA Flood Zone Map for the area indicates that the site lies within Flood Zone 1, which is defined as the area with a low potential risk of flooding from fluvial or tidal sources. It should be noted that the EA maps do not take into account flooding from poor drainage or groundwater. A copy of the flood map for the site and surrounding area is also included within Appendix E.
Known Site Drainage & Utilities	Several utilities are known to persist onsite, including electric between the light poles. A water main is located to the west of site, extending beneath the ASDA car park.
Landfill & Waste	The BGS, Local Authority, and historical records detail the presence of six historic landfills within 1km of the site. The closest proximity of these is listed as a sand pit 305m to the south which accepted industrial, commercial and household waste between December 1987 and December 1989. Several areas of infilled land are recorded in the local area, the nearest of which is positioned roughly 305m south.
Radon	The Envirocheck indicates the site to lie in a location where the percentage of homes above the radon action level is less than 1%. It further reports that the site will not require radon protection measures in the construction of new buildings.

2.3 Industrial Land Use & Pollution

There are 11 sites licensed for industrial and commercial activity within the surrounding 500m, the details of the most pertinent are detailed below.

Land Use	Approximate Distance (Direction)	Status
Konica Photo Express (Photographic Processors)	105m (NW)	Inactive
Smart Alex (Dry Cleaners)	105m (NW)	Inactive
ASDA Pharmacy (Chemist and Pharmacist Suppliers)	105m (NW)	Inactive
ASDA Petrol (Petrol Filling Station)	120m (NW)	Active
Prime Technology Ltd (Computer Manufacturers)	140m (S)	Inactive
Viridor Waste Management Ltd (Waste Disposal Services)	160m (E)	Inactive
Excel Shipping Ltd (Freight Forwarders)	255m (NW)	Inactive

Two pollution incidents to controlled waters is reported within the local area at a distance of roughly 370m and 380m south west; whereby fire water was released into a freshwater stream in April 1998 and diesel fuels were released into a freshwater river in July 1999, respectively. The incidents were recorded as a 'Category 3' (minor) incident.

2.4 Sensitive Land Use

Two areas of adopted green belt are found within 500m of the site, the nearest of which is located approximately 90m east and has been an area of green belt since August 1997. A local nature reserve is also recorded approximately 360 south west of the site.

2.5 Site History

A summary of historical map data from 1854 to 2023 is provided below and copies of relevant historic maps and any others examined during the investigation are included in this report as Appendix F. A map detailing historic features in the area surrounding the site is displayed below.



- Earliest mapping from the 1850s shows the site to be undeveloped, while the surrounding land has multiple sand pits and a few 'Works' and 'Mills' and associated reservoirs. By 1968, a building named 'Works' is seen to be encroached onto the site boundary. At the same time as this, three additional 'Works' buildings are also seen to have been developed within 250m of the site.
- The current ASDA Superstore was erected in 1992. In the surrounding area to the east of the site is Pilsworth South quarry that was developed into a landfill around 2016. A further quarry that has presumably been infilled is also located north east of the site, mapped as 'Sand Quarry'.
- The site is currently part of the active car park associated with the ASDA Superstore.

3 PRELIMINARY RISK ASSESSMENT & CONCEPTUAL SITE MODEL

In accordance with the Environment Agency's Land Contamination: Risk Management, there are three stages to managing contaminated land (Risk Assessment/Remedial Options Appraisal/Remediation and Verification). This section outlines the first tier of Stage 1, the Preliminary Risk Assessment.

The following section provides a review of the contaminant linkages that may be active at the site, whereby EPS have examined the potential sources that may be present as a result of historic and / or current site activities and where potential interaction between these sources and the identified human / environmental receptors may occur.

3.1 Background

A Desk Study comprises the first stage of any geo-environmental assessment, the purpose of which is to determine what potentially contaminative activities may have occurred at the property or the surrounding area which may pose an environmental or geological risk to site users, the surrounding environment or proposed development, either at present or in the future.

The method used in this investigation to assess the environmental risk posed is based on the concept of 'contaminant linkage', which considers the following three factors:

Source	The location from which an environmentally hazardous / contaminative substance is, (or was,) derived.
Pathway	A route or mechanism via which a source could come into contact with a receptor to cause significant harm.
Receptor	An environmentally sensitive object or condition e.g. person, property, controlled water, or ecological system, which may be present now or in future.

If all three factors are identified, there is the potential for a 'contaminant linkage' to be active, which could result in significant harm being caused to the environment or human health.

3.2 Source Characterisation

The following potential contaminant sources have been identified at the site and in the surrounding area:

Potential Source	Source Description	Principal Contaminants of Concern
Current Site Use	In-fill material of unknown origin (Made Ground) material anticipated beneath existing hardstanding.	PAH, Metals, ACM
Current and Historic Surrounding Land Use	Several historic works within 150m of site. One of which slightly encroaches on the western boundary of site.	TPH, Metals, ACM
	Historic quarry, currently used for Landfill east of site.	Ground Gas (CO ₂ , CH ₄)

Notes:

PAH	Polycyclic Aromatic Hydrocarbons	ACM	Asbestos Containing Material
TPH	Total Petroleum Hydrocarbons	SVOC	Semi-Volatile Organic Compounds
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	CO ₂	Carbon Dioxide
CH ₄	Methane		

3.3 Potential Receptors

A framework for the assessment of risks arising from the presence of contamination in soils has been produced by the Environment Agency and the Department for the Environment, Food and Rural Affairs (DEFRA) and is presented with the report: *'Using Science to Create A Better Place: Updated Technical Background to the CLEA Model – Science Report SC050021/SR3'*. This guidance document defines a series of standard land-uses which have been further developed into six generic land uses in the Category 4 Screening Levels project for Land Affected by Contamination (DEFRA/Contaminated Land: Applications in Real Environments (CL:AIRE) Project Report SP1010, 2014) which form a basis for the development of the Conceptual Site Model.

Risks posed to controlled waters have been considered in line with the Environment Agency's *approach to groundwater protection* (v1.2, 2018) and associated position statements.

The proposed development plan includes the development of a coffee shop drive thru with associated access roads and soft landscaped areas. Therefore, the land use has been considered as 'Commercial'.

In view of the environmental setting, current and potential future land use of the site and surrounding sites, the potential receptors for any contaminant impact are discussed in the table below:

Receptor	Site Specific Description
Human	Future site users, site workers involved in the site redevelopment, and those working in the surrounding area have the potential to be at risk from exposure to potential contaminants of concern (CoCs).
Groundwater	The underlying geology comprises superficial Glacial Deposits and Pennine Lower Coal Measures bedrock both are classified by the EA as Secondary B Aquifers and the historic borehole log suggests that shallow groundwater is likely to be present. Whilst the site does not lie within a SPZ for nearby groundwater abstraction, the underlying geology is an important groundwater resource and therefore, groundwater should be considered as a potential receptor to site derived contaminants.
Surface Water	The nearest surface watercourse located approximately 260m north of the site. The primary concern for this site should be considered as the groundwater within the underlying geology, however, if significant impacts to groundwater were to be encountered, then further consideration should be given to the associated risk posed to nearby surface waters via lateral migration of contaminants in the subsurface.
Flora and Fauna	The proposed development includes the provision of soft landscaping. Some of the identified contaminants of concern are known to be phytotoxic and as such, the potential for this impact should be considered.
Buildings & Infrastructure	Subsurface structures are likely to be present at the site which may be adversely affected by the potential presence of the identified contaminants of concern. These include concrete used in building foundations, buried potable water supply pipes and other service lines and pipes.
Adjacent Land	Given the limited mobility of the site-derived contaminants of concern, adjacent properties are not considered to be at risk from potential contaminants.

3.4 Potential Pathways

Where contaminants may be present in soil, there are a number of potential pathways that enable human receptors to come into contact with or be exposed to them. The most direct pathways, considered under current UK legislation, can be summarised as follows:

- Direct ingestion of contaminated soil
- Ingestion of household dust
- Ingestion of contaminated vegetables
- Ingestion of soil attached to vegetables
- Dermal contact with contaminated soil
- Dermal contact with household dust
- Inhalation of fugitive soil dust
- Inhalation of fugitive household dust
- Inhalation of vapours outside
- Inhalation of vapours inside

Clearly, not all of these potential pathways apply for every standard land-use. For example, ingestion of contaminated vegetables will not apply to land uses other than residential with plant uptake and allotments.

However, in addition to direct exposure pathways, a number of physical transport mechanisms / pathways may also exist at a site that allow remote or less accessible contaminants in soil or groundwater to reach human or environmental receptors both at a site and beyond the site boundary. These include the transport mechanisms listed below.

- Downward and lateral movement of contaminants in soil either by gravity or through being 'leached' by percolating rainwater
- Lateral migration of contaminants dissolved in groundwater.
- Direct seepage or leaching of contaminants from soil into subsurface drains or supply pipework.
- Volatilisation of contaminants from groundwater or unsaturated soils into buildings or outdoor air.

Through examination of the standard land use and environmental setting at each site, the presence of pathways and transport mechanisms described above must be considered when assessing whether a contaminant linkage may plausibly be active, and therefore be included in the conceptual site model.

3.5 Summary of Contaminant Linkages

Considering the site use and environmental setting, and proposed land use, the following plausible contaminant linkages have been identified through this phase I assessment and require further investigation.

Source	Pathway	Receptor
Contaminated soil	Direct contact and inadvertent ingestion by eating or smoking with dirty hands	Construction workers during redevelopment & site users
	Inhalation of fugitive dusts	

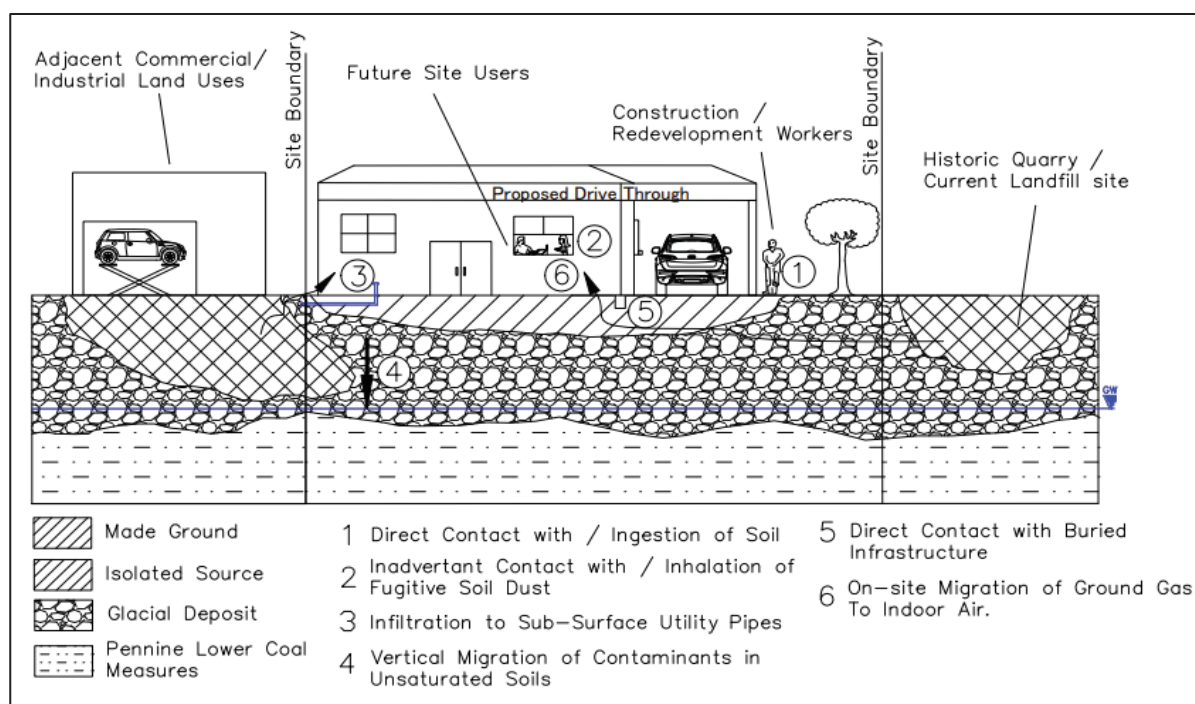
Source	Pathway	Receptor
Contaminated soil and/ or groundwater	Ingress / diffusion through permeable potable water supply pipes	Site users
	Direct contact	Buried infrastructure
	On-site migration of contaminants and volatilisation of organic compounds to indoor and outdoor air.	Site users
	Vertical migration of contaminants in unsaturated soils	Groundwater
	Onsite migration of ground gas to indoor and outdoor air	Site users

The following comments are made with respect to contaminant linkages which have been considered through development of the conceptual model, but have not been concluded as ‘plausible’ – i.e. through which a significant possibility of significant harm could occur to an identified receptor:

- PAHs and metals have been identified as contaminants of concern associated with the historic on-site infill, however these contaminants are considered to be relatively immobile in the environment by virtue of their very low solubility and volatility. On this basis, plausible pathways by which these potential contaminants could pose a significant risk to the underlying groundwater (or nearby surface watercourses) are not considered to be active.

The following diagram provides an illustration of the plausible contaminant linkages that may be active at the site and which may need further investigation or control to ensure safe development:

Illustrative Conceptual Site Model – ASDA Pilsworth



4 SUMMARY OF INTRUSIVE INVESTIGATIONS

Intrusive ground investigations were undertaken on 26th April 2023 in accordance with EPS standard operating procedures, copies of which will be made available on request. A summary of all site activities is presented in the following sections:

4.1 Exploratory Hole Locations

Exploratory hole locations were selected through consideration of the potential contaminant linkages identified through the Phase I Desk Study, the proposed development layout, the location of below ground utilities as well as operational and health & safety considerations.

Three window sample boreholes (WS01 – WS03) were formed at the site to a depth of 5.0m using a track-mounted percussive drilling rig. The overall objective in terms of exploratory hole locations was to provide an appropriate lateral and vertical coverage of the soils underlying the site in order to offer information relating to their quality and nature as well as provide information for geotechnical design.

Standpipes were installed in within positions WS02 and WS03 on a precautionary basis. Groundwater sampling pipes were installed using 50mm diameter uPVC well casing and fitted with a gas tap. Slotted casing (1mm slot) was installed at each location from the base of the borehole to approximately 1.0m below the surface. The installations were completed to ground surface using plain casing. A filter pack of 2-3mm of washed gravel extended from the base of the boreholes to approximately 0.1m above the slotted section with a bentonite seal to surface. All installations were finished with flush-mounted, bolt-down headworks.

A window sample borehole location plan is presented as Figure 4.

4.2 In-Situ Testing & Soil Sampling

Each location was logged for ground conditions encountered and inspected for any physical evidence of contamination, such as soil staining, odour and the presence of separate phase liquids on a precautionary basis. Window Sample Borehole logs are presented in Appendix G.

Standard or cone penetration tests (SPT / CPT) were carried out in all materials using an automatic trip hammer. The number of blows required to advance a standard split spoon, (or solid 60° nose cone for the CPT test) over the final 300mm of a 450mm total drive was recorded, and is shown on the borehole records at the penetration resistance (“N” value).

Where potentially volatile organic compounds are suspected, EPS carries a Photoionisation Detector (PID), which can be used to measure the relative concentrations of vapour associated with soil samples collected from different depths and locations at the site. In these circumstances, soil samples will be placed into plastic bags, sealed, shaken and then allowed to rest for a few minutes to allow time for volatile vapour to accumulate in the air trapped within the bag. The PID probe will then be used to pierce the bag and sample the air above the soil to measure the concentration of volatile compounds that have accumulated. PID readings are only used to provide EPS with a basic means to quantify areas of volatile organic compound in the field to help guide the investigation. As potentially volatile organic compounds, specifically including petroleum hydrocarbons, were identified in the conceptual site model, PID readings were collected during this intrusive

investigation. These readings are included within borehole logs presented as Appendix G and the results are discussed further in later sections.

4.3 Laboratory Testing

Samples obtained for analysis of identified contaminants of concern were submitted to DETs testing lab, who hold appropriate UKAS / MCERT accreditation for the required testing. Samples were transported in laboratory supplied containers and delivered to the laboratory by approved courier.

Geotechnical testing was undertaken by TTL, Doncaster, a UKAS accredited laboratory. Copies of chain of custody documentation are held by EPS and will be made available on request.

A laboratory testing schedule is included as Table 1.

5 FINDINGS OF THE INVESTIGATION

This section of the report provides a summary of the findings of the various aspects of the ground investigation.

5.1 Ground Conditions

A total of three window sample boreholes were formed at the site and the ground conditions encountered, from surface level, were found to comprise:

- Made Ground
- Glacial Deposits

Site specific borehole logs are included as Appendix G and give descriptions and depths of strata encountered. A summary of the general strata encountered across the site is provided in the table below, with more detailed description given in the following sub sections.

Geological Strata	Maximum Depth to Base of Strata (m bgl)	Strata Thickness (m)
Made Ground	1.2m	0.5-1.2m
Glacial Deposits	>5.0m (not proven)	>3.8 - >4.5m (not proven)

5.1.1 Made Ground

An initial 10-15cm asphalt hardstanding was cored through at each of the three locations. Beneath this at all locations a grey/brown slightly sandy slightly clayey gravel subbase material was observed with tarmac and concrete fragments included. Some variation was observed noted beneath this subbase material. WS02 progressed directly into the natural superficial Glacial Deposits whilst both WS01 and WS03 had an additional thickness of made ground, observed to be black/brown sandy clayey gravel with significant red brick fragments included.

5.1.2 Glacial Deposits

In all locations beneath the made ground, soils interpreted as the mapped superficial Glacial Deposits were encountered. These were found to be soft to firm/firm, slightly sandy slightly gravelly clays. The gravels ranged from fine to coarse in size.

5.2 Groundwater

Groundwater was encountered during the works at approximately 3.4m within each borehole. WS02 was measured at the completion of site investigation works to be at 4.35m bgl. During the return monitoring programme, water levels were found to be between 3.34m and 3.89m.

5.3 Physical Evidence of Contamination

Despite the presence of a limited thickness of made ground, there was no palpable evidence of contamination, waste or putrefiable material encountered in any of the sampling locations during the investigation including any visual or olfactory evidence of hydrocarbon staining.

This was supported by headspace testing undertaken at regular intervals during the field works which did not identify any concentrations of organic vapours above instrument detection levels.

5.4 Laboratory Analysis – Soil

A laboratory analysis testing schedule is presented as Table 1 and all environmental sample results obtained from the laboratory are included as Appendix H. The key results of laboratory testing on environmental soil samples are summarised below.

Contaminant	No. of Samples	No of Detections	Range of Detections (mg/kg)		Highest Location & Depth (m bgl)
			Min	Max	
Arsenic	4	4	4.9	21	WS01 ES1 (0.7-0.9)
Cadmium	4	4	0.1	0.4	WS01 ES1 (0.7-0.9)
Chromium III	4	4	11	18	WS01 ES2 (2.1-2.3)
Chromium VI	3	0	-		-
Copper	4	4	19	67	WS01 ES1 (0.7-0.9)
Lead	4	4	11	100	WS01 ES1 (0.7-0.9)
Mercury	4	1	0.87		WS01 ES1 (0.7-0.9)
Nickel	4	4	16	26	WS01 ES2 (2.1-2.3)
Selenium	4	0	-		-
Zinc	4	4	40	63	WS03 ES2 (2.2-2.3)
Naphthalene	3	1	0.06		WS01 ES1 (0.7-0.9)
Benzo[a]pyrene	3	1	0.31		WS01 ES1 (0.7-0.9)
Dibenz(ah)anthracene	3	0	-		-
Phenols	2	1	0.5		WS01 ES2 (2.1-2.3)
Benzene	3	0	-		-
Toluene	3	1	0.05		WS03 ES2 (2.2-2.3)
Ethylbenzene	3	0	-		-
Xylene (Combined)	3	1	0.57		WS03 ES2 (2.2-2.3)
TPH CWG	5	1	13.33		WS01 ES1 (0.7-0.9)
Asbestos (%)	4	0	-		-

Notes: - Contaminant not found above laboratory detection limits PAH Polycyclic Aromatic Hydrocarbons
BTEX Benzene, Toluene, Ethylbenzene, Xylenes
TPH CWG Total Petroleum Hydrocarbons (Criteria Working Group)

5.5 Soil Gas and Organic Vapour Results

Ground gas and organic vapour monitoring has been conducted on 3 occasions following the initial intrusive investigation, on the 4th, 9th and 22nd May 2023.

Results of soil gas monitoring are summarised below and presented in full in Table 3, along with calculated gas screening values, set out in CIRIA guidance 'Assessing Risks Posed by Hazardous Ground Gases to Buildings'.

Borehole	Flow Range of Detections (l/hr)	CH ₄ Range of Detections (%v/v)	CO ₂ Range of Detections (%v/v)	O ₂ Range of Detections (%v/v)	Organic Vapour Range of Detections (ppmV)
WS02	<0.1	<0.1	0.2 – 0.6	16.1 – 17.7	0.3 – 1.7
WS03	<0.1	<0.1	<0.1 – 0.6	19.2 – 20.8	0.5 – 2.6
<i>Notes:</i> CH₄ Methane CO₂ Carbon Dioxide O₂ Oxygen					

Overall, there were no detections of methane (CH₄) and minimal detections of carbon dioxide (CO₂) measured across the three monitoring visits. With no flow rate of note being recorded, nor any significant CO₂ or CH₄ detections, the site is considered to be reflective of characteristic gas scenario (CS1) criteria. Volatile organic compounds (VOCs) were detected at low levels at all locations with a maximum of 2.6ppm recorded in WS03 at the east of site.

5.6 Waste Analysis

Waste classification (i.e. hazardous or non-hazardous) was undertaken on samples of both made ground and natural soils, which included total concentrations of metals and hydrocarbons, using computer software provided by HazWaste Online™. The results of the WAC analysis are included within Appendix H and the outputs from the software are included in a Waste Classification Report in Appendix I.

Waste Acceptance Criteria was subsequently undertaken on one sample of made ground and one sample of natural Glacial Deposits. These results, together with those of the waste classification above are summarised in the following table:

Strata	Typical Depth (m bgl) and Description	Is it Hazardous? (number of hazardous samples)	Waste Acceptance Criteria	Appropriate Landfill
Made Ground	0.0-1.2m- Brown clayey sandy gravel with brick fragments.	No (0 of 2)	Fails criteria for inert landfill	Non- Hazardous
Glacial Deposits	0.5->5.0m- Brown sandy gravelly clay. Gravels of mixed lithologies.	No (0 of 3)	Passed criteria for inert landfill	INERT

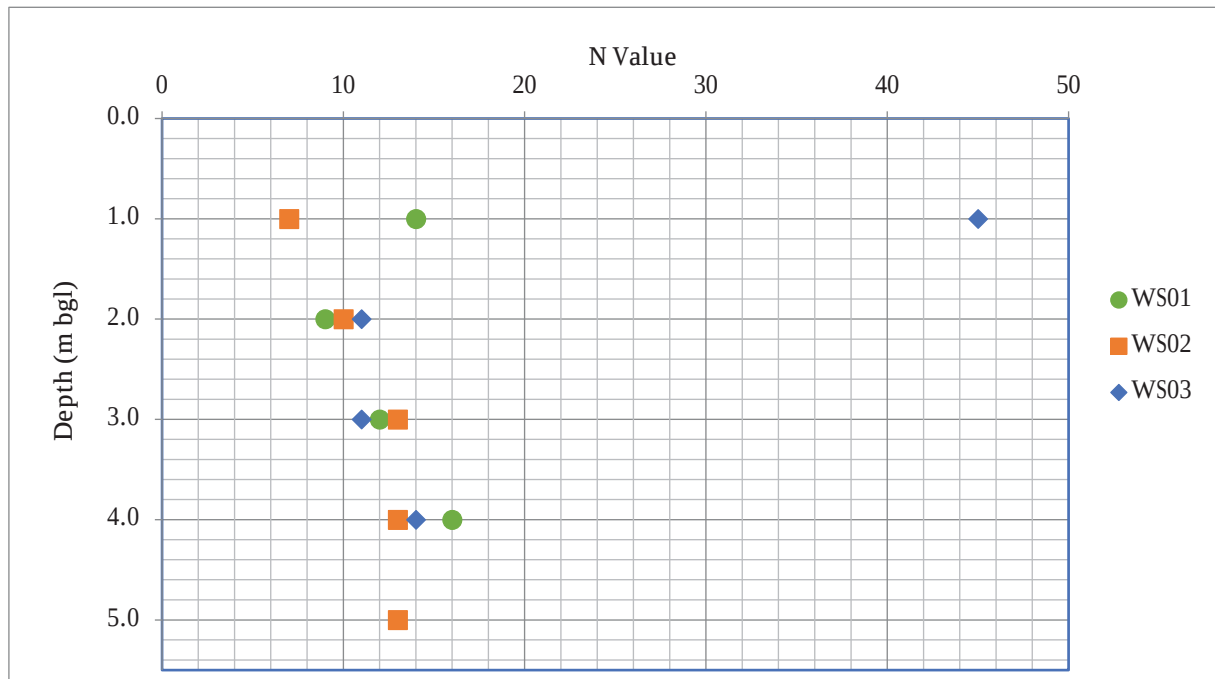
Based on the above the natural superficial glacial deposits can be classified as INERT for the purposes of off-site disposal, under the waste code 17 05 04. The made ground found across site has been classified as suitable for offsite disposal as NON-HAZARDOUS based on high total organic carbon within the sample submitted for WAC analysis. It should be noted that the final decision on waste acceptance criteria will lie with the chosen waste receiver.

For made ground present on a brownfield site such as this, although the soil sampling process did not identify potentially hazardous concentrations of Asbestos Containing Material (ACM) within the soil, it must be acknowledged that the material may exist within areas which were not sampled or accessible during the investigation. Any visually identifiable fragments of ACM can invalidate any non-hazardous waste classification, as such, the above waste classifications are made on the proviso that any visually identifiable fragments of ACM are removed from the material prior to its disposal off-site. The subsequent ACM must then be disposed of in accordance with the Control of Asbestos Regulations 2012.

5.7 Geotechnical Testing

5.7.1 In-Situ Geotechnical Testing

The results of in-situ geotechnical testing, as applicable to the superficial Glacial Deposits are summarised in the graph below.



5.7.2 Laboratory Geotechnical Testing

The results of geotechnical laboratory testing are summarised in the table below and all geotechnical sample results obtained from the laboratory are included as Appendix J. The key results of laboratory testing on geotechnical soil samples are summarised below.

Range of Parameters								
Strata	Moisture Content (%)		Plasticity Index (%)		Particle Size Distribution (%)			
	Min	Max	Min	Max	Clays	Silts	Sands	Gravels
Glacial Deposits	9.2	16	10 (9.7)	15 (12.9)	22	44	27	7

(-) Denotes modified plasticity index

Moisture contents and Atterberg Limit was established for three samples in accordance with BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4.

Particle Size Distribution testing was conducting in accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5.

Sulphate contents and pH values determinations were carried out by the analytical laboratory, the results of which are included in Appendix H and summarised in section 6.6.

A laboratory analysis testing schedule is presented as Table 1.

6 GEOTECHNICAL APPRAISAL

The ground conditions have been found to comprise a thickness made ground underlain by superficial Glacial Deposits and the development is understood to comprise a drive thru restaurant development.

6.1 Geotechnical Category

Geotechnical Category (BS EN 1997-1:2004)	Definition
GC1	Geotechnical Category 1 (GC1) should only include small and relatively simple structures for which it is possible to ensure that the fundamental requirements will be satisfied on the basis of experience and qualitative geotechnical investigations with negligible risk in terms of overall stability or ground movements and in ground conditions which are known.
GC2	Geotechnical Category 2 (GC2) should include conventional types of structure and foundation with no exceptional risk or difficult or loading conditions. Designs for structures in Geotechnical Category 2 should normally include quantitative geotechnical data and analysis.
GC3	Geotechnical Category 3 (GC3) should include structures or parts of structures, which fall outside the limits of Geotechnical Categories 1 and 2. This may include very large or unusual structures, structures involving abnormal risks, or unusual or exceptionally difficult ground or loading conditions, or structures in areas of probable site instability or persistent ground movements that require separate investigation or special measures.

The proposed development comprises a drive thru restaurant with associated parking and soft landscaping, and therefore the below assessment has been undertaken in accordance with Geotechnical Category 2 (GC2), including conventional types of structure and foundation with no exceptional risk or difficult ground or loading conditions, as defined by BS EN 1997-1:2004.

6.2 Structural Foundations

6.2.1 Spread Foundations

As detailed above, the development is understood to comprise the construction of a drive thru restaurant with associated parking and soft landscaping, with foundations being vertically loaded.

The foundation assessment has been undertaken in accordance with BS EN 1997-1:2004 to take in to account;

- Bearing Pressure (Ultimate Limit State)
- Settlement (Serviceability Limit State)

The ground conditions are considered suitable for the use of conventional spread foundations, either strip footings or pad foundations bearing on the underlying Glacial Deposits.

Allowable bearing capacities have been calculated for depths of up to 2.0m for the underlying natural soils and are provided in the table below:

Foundation Depth (m)	Allowable Bearing Capacity* (kN/m ²)	
	Strip	Pad
0.9	75	90
1.5	90	110
2.0	100	125

* BS EN 1997 (EC7) Geo Load Combination 2

The allowable bearing capacity is the permissible increase in vertical stress at the level of the underside of the foundation, above existing overburden pressure, which may be calculated on the basis of a soil density of 19kN/m³.

At the above bearing capacity, total settlements in soils are unlikely to exceed 25mm. Settlements in cohesive soils will comprise a relatively small proportion of immediate settlement and a larger portion of consolidation settlement which will take place over a long period of time.

A minimum foundation depth of 0.9m, below existing or proposed ground level is considered suitable for the site, subject to the following provisos: -

- Foundations should fully penetrate any made / disturbed ground and should extend a minimum of 150mm in to undisturbed natural strata. It is acknowledged that a notable thickness of made ground has been encountered throughout the ground investigation works which is likely to mean that foundations are likely to be locally deeper than the recommended minimum depth.
- If during site development works any 'soft-spots' are encountered then these areas will need to be excavated to their full extent, with foundations being founded at least 150mm into more competent underlying strata.
- The Glacial Deposits will be subject to volume change (subsidence and / or heave) due to the presence of trees / vegetation. Foundations will therefore need to take into account the presence of trees, including those adjacent to the site boundaries. Laboratory analysis has established that the natural soils of the superficial Glacial Deposits as having 'low volume change' potential.

It is recommended that all trees present locally, including those to be planted or recently removed, are given full consideration in the design process so that the impact of these may be taken in to account in foundation design.

Where foundations exceed 1.5m in depth due to the influence of trees / vegetation, full anti-heave precautions will need to be adopted.

6.3 Ground Floor Construction

Given that made ground is present across the site to depths of greater than 0.6m and the near surface soils being likely to be susceptible to volume change, suspended ground floor slabs would typically be recommended for the site, incorporating a sub-floor void suitable for a low volume change potential soil.

However, should it be required, ground bearing floor slabs could be adopted subject to removal of a suitable proportion of the made ground and/or Glacial Deposits and its replacement with an appropriately compacted granular fill. It is considered unlikely that the existing made ground or glacial deposits would be suitable for use as a structural fill material.

6.4 Pavement Design

Due to the presence of made ground across site, together with consideration of EPS' own experience of the soil layers encountered, a characteristic CBR design value of no more than 2% is considered appropriate for the Glacial Deposits. Specific CBR testing may allow this figure to be increased.

6.5 Drainage

Infiltration testing in the form of a falling head test was conducted within WS02. The water drained quickly through the made ground, within the first hour. However, upon reaching the natural clays of the Glacial Deposits found across site, drainage slowed significantly, moving only 14cm in 215 minutes.

Based on the results of the above drainage testing, and as made ground is not considered suitable for infiltration drainage, the soils beneath site are not considered suitable for soakaway drainage.

6.6 Groundworks

Whilst excavations in the natural clays may remain stable for short periods during construction the long-term stability of these and any excavations in made or disturbed ground should not be relied upon in unsupported excavations.

Heavy plant and stockpiles of materials should not be permitted close to the edges of unsupported excavations. Further reference may be made to CIRIA Report No. 97 '*Trenching Practice*' 1992.

On the basis of the findings of the ground investigation, significant quantities of groundwater are unlikely to be encountered within shallow excavations for foundations or drainage.

6.7 Concrete Grade

Sulphate contents and pH values determinations were carried out for the natural material by the analytical laboratory, the results of which are also included within Appendix H. Results for concrete grade are summarised within the following table:

Strata	Water Soluble Sulphate (mg/l SO ₄)		pH	
	Min	Max	Min	Max
Glacial Deposits	41	57	7.9	8.2

In accordance with Part 1 of the BRE Special Digest 1 '*Concrete in Aggressive Ground*' 2005, the mean of the highest two water soluble sulphate values has been used. This gives a Design Sulphate Class (DS) of DS-1 with an aggressive chemical environment for concrete (ACEC) of AC-1s.

7 ENVIRONMENTAL APPRAISAL

The following section outlines the approach applied to assessing the risks posed to human health and controlled waters, then identifies any sample results found by this investigation which warrant further consideration. In accordance with the Environment Agency's Land Contamination: Risk Management, this section represents the second tier of Stage 1, the Generic Quantitative Risk Assessment.

7.5 Human Health

7.5.1 Land Use Setting

It is understood that development comprises a drive thru restaurant with associated parking and soft landscaping. In order to screen laboratory data for concentrations of contaminants in soil with potential to cause harm to human health in these soft landscaped areas, relevant generic screening values most applicable to this land use have been utilised. A land use setting of commercial has been adopted as it is considered the most representative.

The technical framework used to derive DEFRA's Category 4 Screening Levels (Policy Companion Document '*SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*') outlines the relevant factors for determining land use selection in the application of the screening levels and the following key considerations have been taken into account.

7.5.2 Generic Screening – Soils

The technical framework used to derive the assessment criteria and the documents in which they are published are summarised as follows:

- *EA Science Reports* (SC050021/SR2, SC050021/SR3, and SC050021/SR7)
- *EA Soil Guideline Value Science Reports*
- *Suitable For Use Levels (S4ULs) for Human Health Risk Assessment* – LQM and CIEH (2015)
- *Soil Generic Assessment Criteria for Human Health Risk Assessment* - EIC / AGS / CL:AIRE (2010)

Category 4 Screening Levels (C4SLs) provide generic suitable for use screening values for common contaminants in a variety of land uses and are also utilised as appropriate generic screening criteria.

Where assessment of the risk to human health from asbestos in soil is concerned there is no nationally recognised suitable for use /generic screening value commonly referred to through the planning system. Due to this, it is necessary to take a more qualitative approach to the risks posed to future site users from asbestos on a site-specific basis.

7.5.3 Generic Screening – Groundwater

The technical framework used to derive the assessment criteria and the documents in which they are published are summarised as follows:

- *EA Science Reports* (SC050021/SR2, SC050021/SR3, and SC050021/SR7)

- *EA Soil Guideline Value Science Reports*
- *Suitable For Use Levels (S4ULs) for Human Health Risk Assessment* – LQM and CIEH (2015)
- *Soil Generic Assessment Criteria for Human Health Risk Assessment* - EIC / AGS / CL:AIRE (2010)
- *The VOCs Handbook. Investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination (C682)*, CIRIA, London 2009
- *Society of Brownfield Risk Assessment (SoBRA) 'Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater' - Version 1.0, February 2017*

SoBRA groundwater vapour GAC were derived for two types of land uses, namely generic residential and generic commercial land use. They are intended as a conservative screening tool in the assessment for long-term (chronic) risks to human health from inhalation of vapours arising from groundwater. For other land uses (public open space, and allotment), these typically do not include building and as such pathway of vapour intrusion is generally not recognised.

A summary of the screening criteria and the methodology used to derive them is included in Appendix K.

7.5.4 Assessment of Results- Human Health

The results of the screening process for on-site human receptors showed that generic screening criteria representative of risks to future site users were not exceeded for any contaminant at any location.

7.6 Controlled Waters

7.6.1 Generic Screening

In addition to screening the recorded concentrations of contaminants to pose risks to human health, EPS has also screened the results of soil analysis for potential to cause harm to water resources.

The criteria used for this process were derived by EPS using the following technical guidance

- *Environment Agency Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination.*

Primary Receptor Associated with Site	Basis of Tier 1 Criteria
Groundwater	UK Drinking Water Standards (UKDWS)
Surface Water	UK Environmental Quality Standards (EQS)

The site is underlain by superficial and bedrock aquifers designated as Secondary A, therefore having some resource potential. With the nearest surface water course being approximately 260m from site, groundwater has been considered the more sensitive receptor and thus adopted as the screening criteria.

7.6.2 Assessment of Results- Controlled Waters

The screening process has shown that screening criteria representative of suitability of soil concentrations as applicable to controlled waters have not been exceeded.

7.7 Ground Gas and Organic Vapour Monitoring

7.7.1 Generic Screening

An assessment of the risks posed by ground gas and organic vapour generation has been undertaken through consideration of a conservative maximum individual Gas Screening Value (GSV) or site characteristic hazardous gas flow rate, in accordance with the following guidance:

- CIRIA 665 – ‘Assessing Risks Posed by Hazardous Ground Gases to Buildings’.
- NHBC – ‘Guidance on Evaluation of Development Proposals on Sites Where Methane and Carbon Dioxide are Present’ (March 2007).
- British Standard BS8485:2015 – ‘Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.’

The gas screening values have initially been calculated as per the CIRIA 665 guidance ‘Assessing Risks Posed by Hazardous Ground Gases to Buildings’ however the gas screening values presented by EPS within this report have also been defined based on the BS 8485:2015 guidance ‘Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings’ which suggests that gas screening values should not only be based on measured data ‘*but ultimately derived using professional judgement*’.

7.7.2 Assessment of Ground Gas Results

Results of ground gas monitoring conducted over three visits in May 2023 identified no risk from ground gas onsite and ground gas protection measures are not considered necessary.

7.8 Conclusions and Recommendations

Laboratory analysis of shallow soils sampled from across the site has identified that the adopted screening criteria protective of future site users have not been exceeded by contaminants of concern.

Groundwater was encountered during site works and was measured during return monitoring to be between 3.34 – 3.89m of surface level and no evidence of hydrocarbon impacts was identified within the field or laboratory analysis. Given the absence of any evidence of contamination and the nature of the ground conditions encountered during the investigation it is not considered plausible that the site or proposed development poses any appreciable risk to controlled waters.

Ground gas protection measures are not considered necessary in the construction of new buildings.

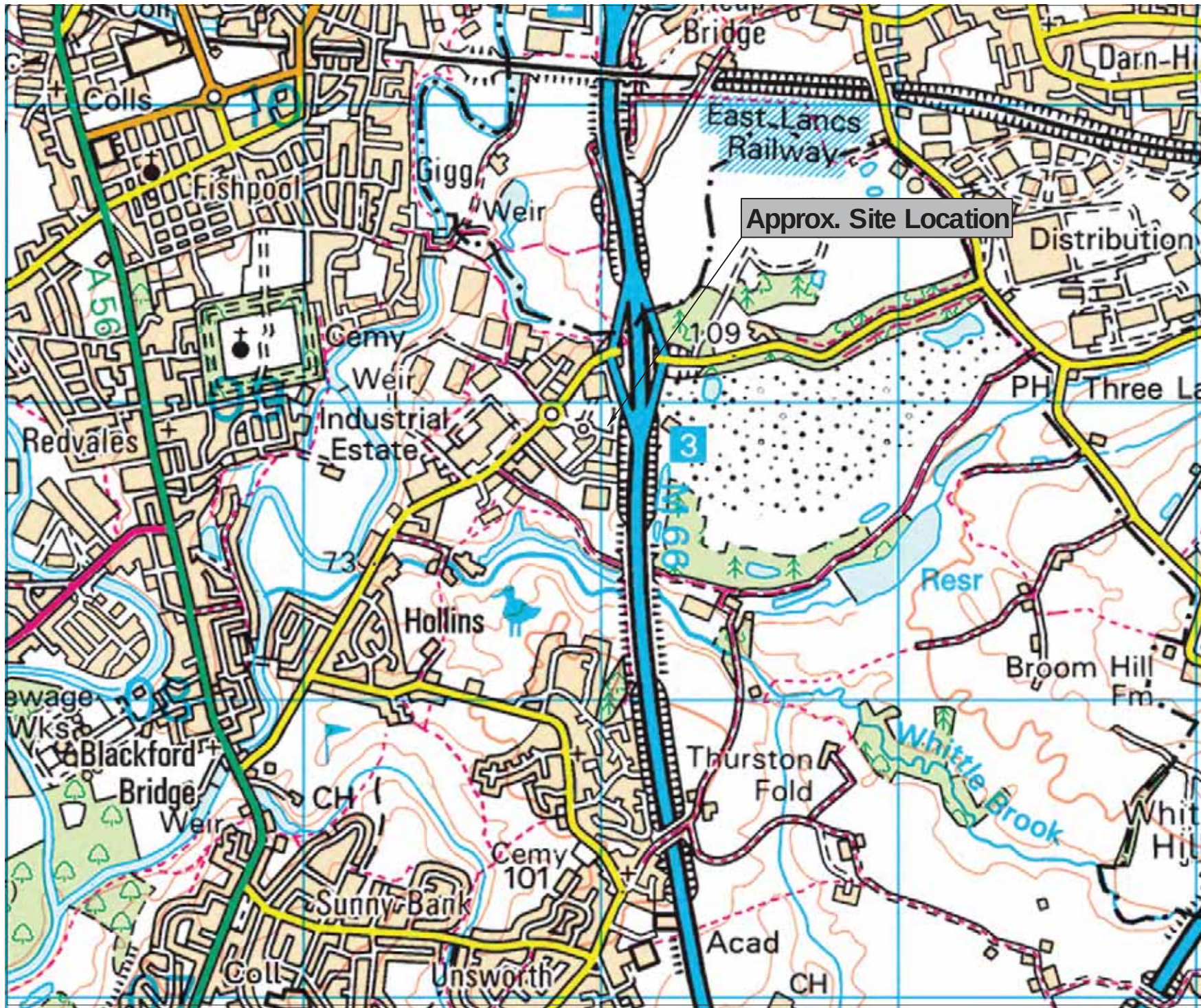
In the context of potentially unacceptable or acceptable risks as outlined within the Environment Agency’s *Land Contamination: Risk Management* guidance (LC:RM, 2020), no plausible risks were identified by this work.

Precautionary measures are also recommended to ensure safe development, as follows:

- a) All construction workers operating at the site should be advised of the potential for contact with made ground material within shallow soils, particularly beneath the existing buildings and hardstanding. Appropriate health and safety precautions should be adopted during any excavation works to avoid exposure to infilled soils. Reference should be made to relevant health & safety guidance including the following CIRIA document: *R132 Guide to Safe Working on Contaminated Sites*.
- b) Although the findings of the investigation would suggest that significant quantities of asbestos are unlikely to be encountered, the possibility of discrete pockets of this material existing within the made ground remains. If any evidence of visually identifiable ACM is suspected and is to be disturbed during the site development it is recommended that all works are postponed until suitable assessment and control measures (including a Working Method Statement (WMS)) are created. This WMS should be in accordance with guidance from CIRIA as well as the CL:AIRE / Joint Industry Working Group industry guidance on Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials (2016).
- c) Should any palpable evidence of unexpected contamination be encountered during the redevelopment work, it should be reported to EPS so that an inspection can be made and appropriate sampling and assessment work carried out, a method statement for this is provided as Appendix L.

It is recommended that a copy of this report be provided to the Environmental Health Department of Bury Council so that the information may be incorporated into their land quality records and used to support the current planning application. This report should satisfy the pre-commencement requirements of the planning process relating to contamination.

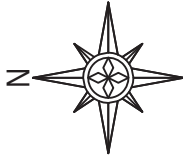
FIGURES



KEY:				
SITE BOUNDARY				



KEY:
SITE BOUNDARY



Rev	Date	Drawn	Description	Checked



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Site

ASDA Pilsworth, Bury

Client

Euro Garages Ltd

Title

Figure 2 - Current Site Plan

Drawn by	N/A	Drawn by	JP
Checked by	LA	Date	March 2023
Scale	(At Scale)	Drawing Reference	Fig2_Pilsworth
NTS			
Sheet No	UK23.6302b		Rev 01



KEY:
— SITE BOUNDARY



Rev	Date	Drawn	Description	CHK'D



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Site
ASDA Pilsworth, Bury

Client
Euro Garages Ltd

Title
Figure 3 - Aerial Photograph

Surveyed:	N/A	Drawn by:	JP
Checked by:	LA	Date:	March 2023

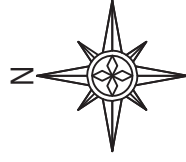
Scale	(A4 Sheet)	Drawing Reference
NTS		Fig3_Pilsworth

Job No	Rev
UK23.6302b	01



SITE BOUNDARY

EPS WINDOW SAMPLE BOREHOLE



Rev	Date	Drawn	Description	Child



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www.epstrategies.co.uk

Size

ASDA Pilsworth, Bury

11

Euro Garages Ltd

700 L

Figure 4 - Borehole Location

Surveyed:	N/A	Drawn by:	WT
Checked by:	LA	Date:	30/05/23
Scale	[A4 Sheet]	Drawing Reference	

Fig4_Pilsworth

UK23.6302b

TABLES



Table 1 – Laboratory Testing Schedule (Environmental)

Sample ID	Sample Depth (m bgl)	EPS Mini Suite	EPS Waste Suite	EPS TPH Suite	DETs Spectrum Suite	EPS Geotech Suite
WS01 ES1	0.7-0.9	-	X	-	-	-
WS01 ES2	2.1-2.3	-	-	-	X	-
WS01 ES3	3.1-3.3	-	-	-	-	X
WS02 ES1	0.2-0.4	-	-	X	-	-
WS02 ES2	3.4-3.7	-	X	-	-	-
WS02 ES3	0.6-0.7	-	-	-	-	X
WS03 ES1	0.9-1.0	-	-	-	-	X
WS03 ES2	2.2-2.3	X	-	-	-	-
WS03 ES3	2.9-3.0	-	-	-	-	X

Notes:

mbgl

X

-

EPS Mini Suite

EPS Waste Suite

meters below ground level

Sample Taken

Sample Not Analysed

Organic Matter, Cyanide, Metals, PAH's, Phenols, Asbestos

Waste Characterisation Suite

Table 2 – Laboratory Testing Schedule (Geotechnical)

Sample ID	Sample Depth (m bgl)	Moisture Content	Liquid / Plastic Limits	PSD by Hydrometer
WS01 B1	3.4-3.7	X		X
WS01 D1	1.2-1.4	X	X	
WS02 D1	2.5-2.6	X	X	
WS03 B1	1.4-1.7	X		
WS03 D1	1.9	X	X	

Notes:

mbgl

1

-

meters below ground level

Sample Taken

Sample Not Analysed

Table 3 – Soil Gas Monitoring Results

BH ID	Flow (l/hr)	CH ₄ (%v/v)		CO ₂ (%v/v)		O ₂ (%v/v)		VOC (ppmV)	Water Level (mbgl)	GSV CH ₄ (l/hr)	GSV CO ₂ (l/hr)
		Peak	Steady	Peak	Steady	Peak	Steady				
WS02	<0.1	<0.1	<0.1	0.4	0.2	19.4	17.7	1.7	3.40	<0.0001	0.0004
WS03	<0.1	<0.1	<0.1	0.4	0.3	19.6	19.6	0.5	3.87	<0.0001	0.0004

Readings collected at an atmospheric pressure of 1003mbar on the 4th May 2023

BH ID	Flow (l/hr)	CH ₄ (%v/v)		CO ₂ (%v/v)		O ₂ (%v/v)		VOC (ppmV)	Water Level (mbgl)	GSV CH ₄ (l/hr)	GSV CO ₂ (l/hr)
		Peak	Steady	Peak	Steady	Peak	Steady				
WS02	<0.1	<0.1	<0.1	0.4	0.4	19.2	17.1	0.3	3.34	<0.0001	0.0004
WS03	<0.1	<0.1	<0.1	0.2	0.0	20.8	20.8	0.5	3.88	<0.0001	0.0002

Readings collected at an atmospheric pressure of 996mbar on the 9th May 2023

BH ID	Flow (l/hr)	CH ₄ (%v/v)		CO ₂ (%v/v)		O ₂ (%v/v)		VOC (ppmV)	Water Level (mbgl)	GSV CH ₄ (l/hr)	GSV CO ₂ (l/hr)
		Peak	Steady	Peak	Steady	Peak	Steady				
WS02	<0.1	<0.1	<0.1	0.6	0.6	18.2	16.1	0.8	3.34	<0.0001	0.0006
WS03	<0.1	<0.1	<0.1	0.6	0.6	19.4	19.2	2.6	3.89	<0.0001	0.0006

Readings collected at an atmospheric pressure of 1012mbar on the 22nd May 2023

APPENDICES

APPENDIX A

Selected Site Photographs

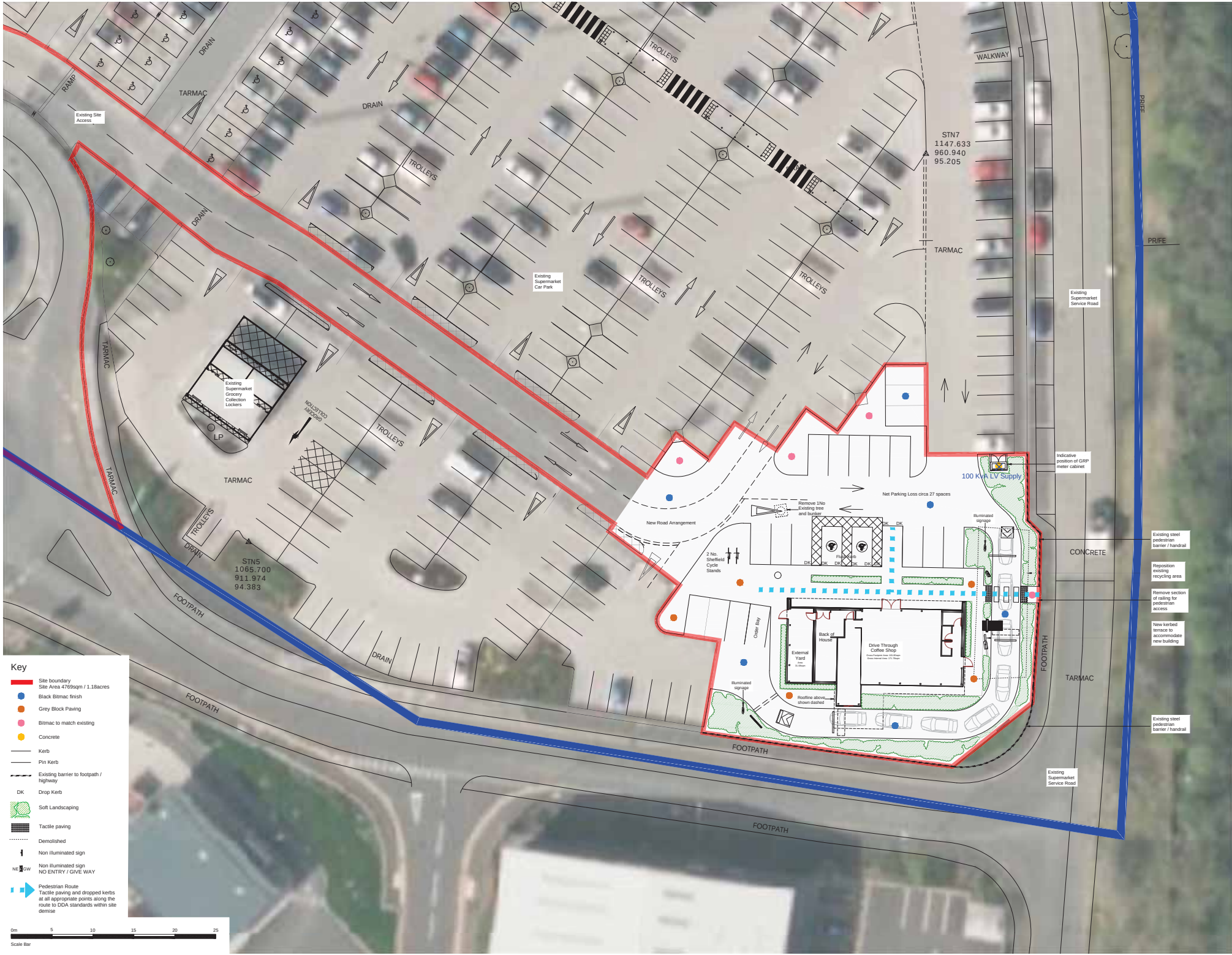


KEY:				
SITE BOUNDARY				
①		APPROXIMATE PHOTO LOCATIONS		
Rev	Date	Drawn	Description	CHK'd
The Geotechnical and Environmental Engineers www.epstrategies.co.uk				
Site ASDA Pilsworth, Bury				
Client Euro Garages Ltd				
Title App. A - Photo Locations				
Surveyed:	N/A	Drawn by:	WT	
Checked by:	LA	Date:	30/05/23	
Scale	(A4 Sheet)	Drawing Reference		
		AppA_Pilsworth		
Job No UK23.6302b				Rev

Photo 1: View facing west across site	Photo 2: Location of WS02
	
Photo 3: Location of WS03	Photo 4: Soils recovered from WS02
	
Photo 5: Soils recovered from WS03	Photo 6: View of Heras Fencing and stockpile of hardstanding
	

APPENDIX B

Proposed Development Plan



Key

- Site boundary
- Site Area 4769sqm / 1.18acres
- Black Bitmac finish
- Grey Block Paving
- Bitmac to match existing
- Concrete
- Kerb
- Pin Kerb
- Existing barrier to footpath / highway
- DK Drop Kerb
- Soft Landscaping
- Tactile paving
- Demolished
- Non illuminated sign
- Non illuminated sign
- NO ENTRY / GIVE WAY
- Pedestrian Route
- Tactile paving and dropped kerbs at all appropriate points along the route to DCA standards within site demise



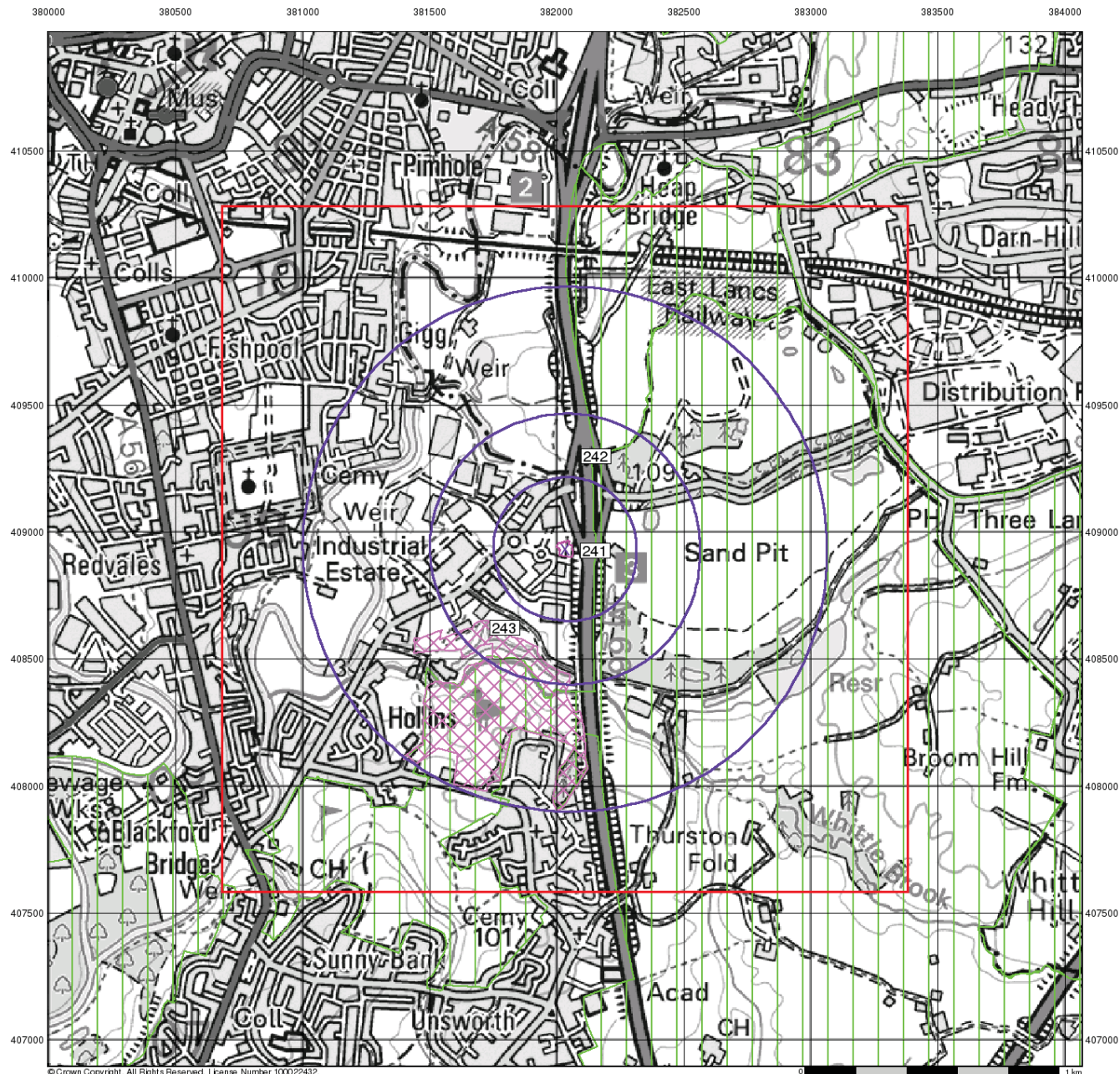
THIS DOCUMENT AND ALL INFORMATION CONTAINED HEREIN IS CONFIDENTIAL AND THE INTELLECTUAL PROPERTY OF ADS DESIGN. IT IS DISCLOSED IN CONFIDENCE ON TERMS THAT IT WILL NOT BE DISCLOSED TO ANY THIRD PARTY, USED, SOLD, LOANED, LICENSED OR REPRODUCED IN WHOLE OR IN PART IN ANY MANNER OR FORM FOR MANUFACTURING, TRADING OR FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN PERMISSION OF ADS DESIGN. © ADS DESIGN



REVISIONS	
CLIENT	EURO GARAGES LTD
PROJECT	ASDA PILSWORTH ROAD BURY, BL9 8RS
TITLE	PROPOSED SITE LAYOUT
DATE	07.09.22
SCALE	1:200 @ A1
JOB ID	1953
DWG	5

APPENDIX C

Surrounding Land Use



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Sensitive Land Uses

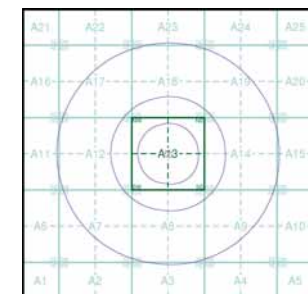
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- 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



Order Details

Order Number: 308052118_1_1
 Customer Ref: UK23.6302b
 National Grid Reference: 382030, 408930
 Slice: A
 Site Area (Ha): 0.29
 Search Buffer (m): 1000

Site Details

ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS

Landmark
 INFORMATION GROUP

Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Severall 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 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

- BOS Recorded Landfill Site (Location)
- BOS 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

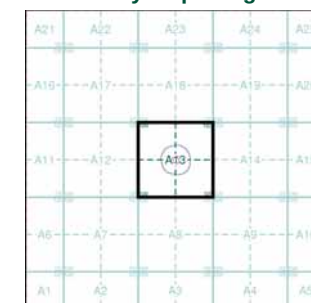
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement
- BOS Recorded Mineral Site

Geological

- BOS Recorded Mineral Site

Site Sensitivity Map - Segment A13

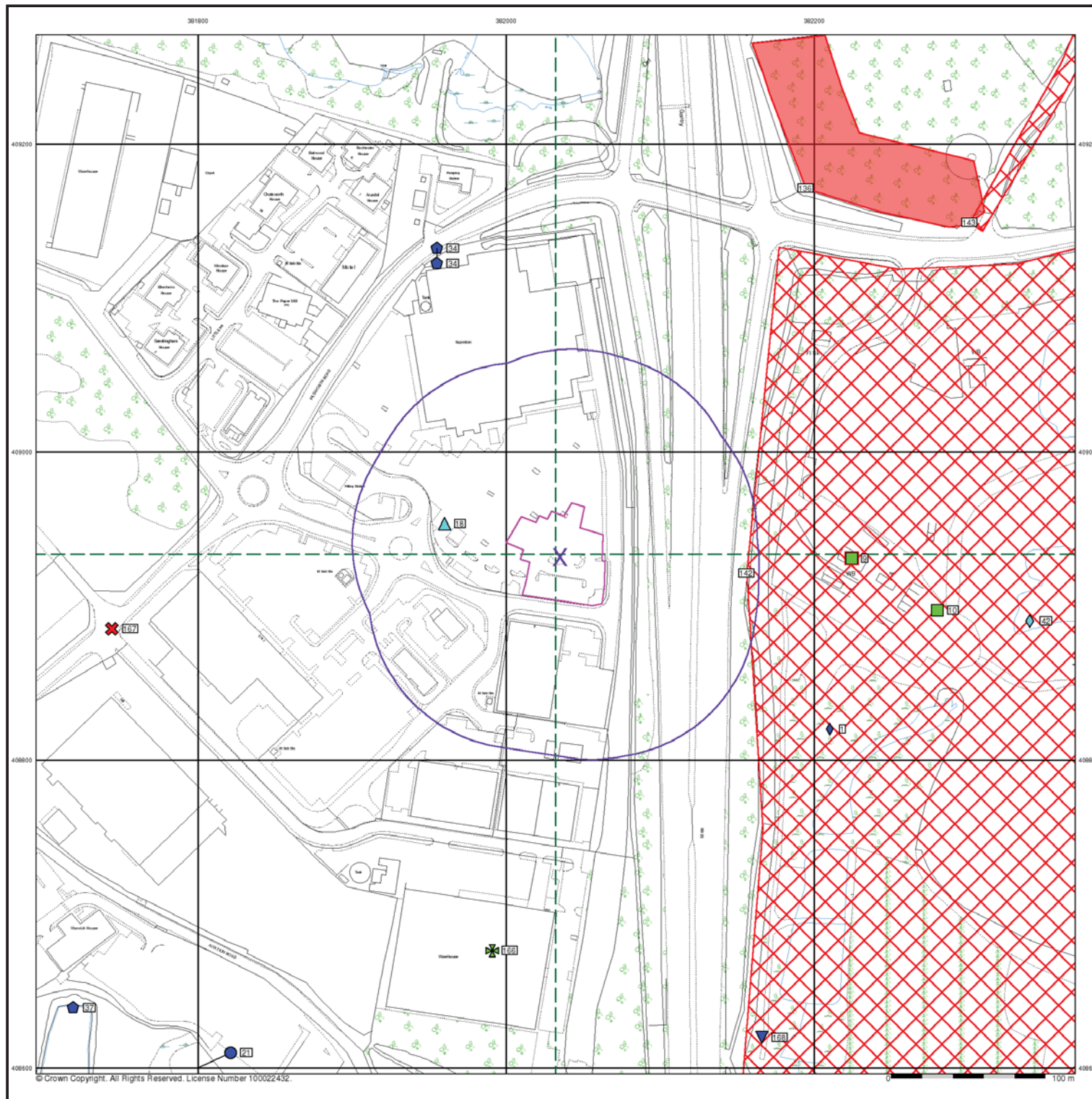


Order Details

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 Customer Ref: UK23.6302b
 National Grid Reference: 382030, 408930
 Slice: A
 Site Area (Ha): 0.29
 Plot Buffer (m): 100

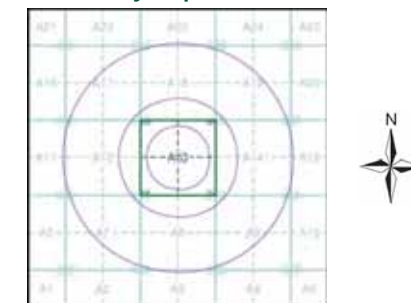
Site Details

ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS



- General**
- Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
 - 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 and 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
 - NIH#S Site
 - Planning Hazardous Substance Consent
 - Planning Hazardous Substance Enforcement
- Geological**
- BGS Recorded Mineral Site
- Waste**
- BOS Recorded Landfill Site (Location)
 - BOS 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 (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 Landfill Site (Location)
 - 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



Order Details

Order Number: 38052118_1_1
 Customer Ref: UK23.6302b
 National Grid Reference: 382030, 408930
 Slice: A
 Site Area (Ha): 0.29
 Search Buffer (m): 1000

Site Details

ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS



Industrial Land Use Map

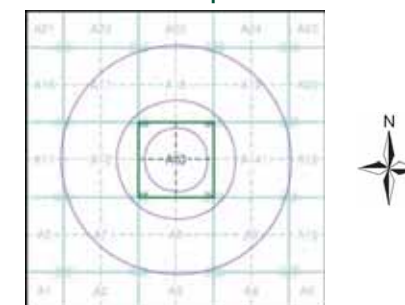
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- 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



Order Details

Order Number: 308052118_1_1
 Customer Ref: UK23.6302b
 National Grid Reference: 382030, 408930
 Slice: A
 Site Area (Ha): 0.29
 Search Buffer (m): 1000

Site Details

ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS



APPENDIX D

Geological Context

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WMGR	Infilled Ground	Artificial Deposit	Not Supplied - Holocene
	WGR	Worked Ground (Undivided)	Void	Not Supplied - Holocene
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Not Supplied - Quaternary

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	HMGDD	Hummocky (Moundy) Glacial Deposits, Devensian	Diamicton	Not Supplied - Devensian
	TILLD	Till, Devensian	Diamicton	Not Supplied - Devensian
	GFDUD	Glaciofluvial Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	GFICD	Glaciofluvial Ice Contact Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	GFSDD	Glaciofluvial Sheet Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	HEAD	Head	Clay, Silt, Sand and Gravel	Not Supplied - Quaternary
	RTD1	River Terrace Deposits, 1	Sand and Gravel	Not Supplied - Quaternary
	PEAT	Peat	Peat	Not Supplied - Quaternary
	RTD2	River Terrace Deposits, 2	Sand and Gravel	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	PMCM	Pennine Middle Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	PMCM	Pennine Middle Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	PR	Peel Hall Rock	Sandstone	Not Supplied - Westphalian

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	PLCM	Pennine Lower Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	DF	Darwen Flags	Sandstone	Not Supplied - Westphalian
	MLRS	Minrow Sandstone	Sandstone	Not Supplied - Westphalian
	HER	Helpet Edge Rock	Sandstone	Not Supplied - Westphalian
	TRBR	Trencherbone Rock	Sandstone	Not Supplied - Westphalian
	CAR	Cannel Rock (South Lancashire)	Sandstone	Not Supplied - Westphalian
	OL	Old Lawrence Rock	Sandstone	Not Supplied - Westphalian
	GAS	Great Arc Sandstone	Sandstone	Not Supplied - Westphalian
	PLCM	Pennine Lower Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	WH	Woodhead Hill Rock	Sandstone	Not Supplied - Westphalian
	ROSSE	Rossendale Formation	Mudstone and Siltstone	Not Supplied - Namurian
	RR	Rough Rock	Sandstone	Not Supplied - Namurian
		Rock Segments		
		Faults		

Geology 1:50,000 Maps

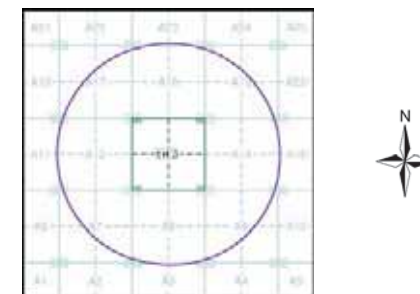
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published 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. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	1
Map Sheet No:	085
Map Name:	Manchester
Map Date:	2010
Bedrock Geology:	Available
Superficial Geology:	Not Available
Artificial Geology:	Not Available
Faults:	Not Supplied
Landslip:	Not Available
Rock Segments:	Not Supplied

Geology 1:50,000 Maps - Slice A

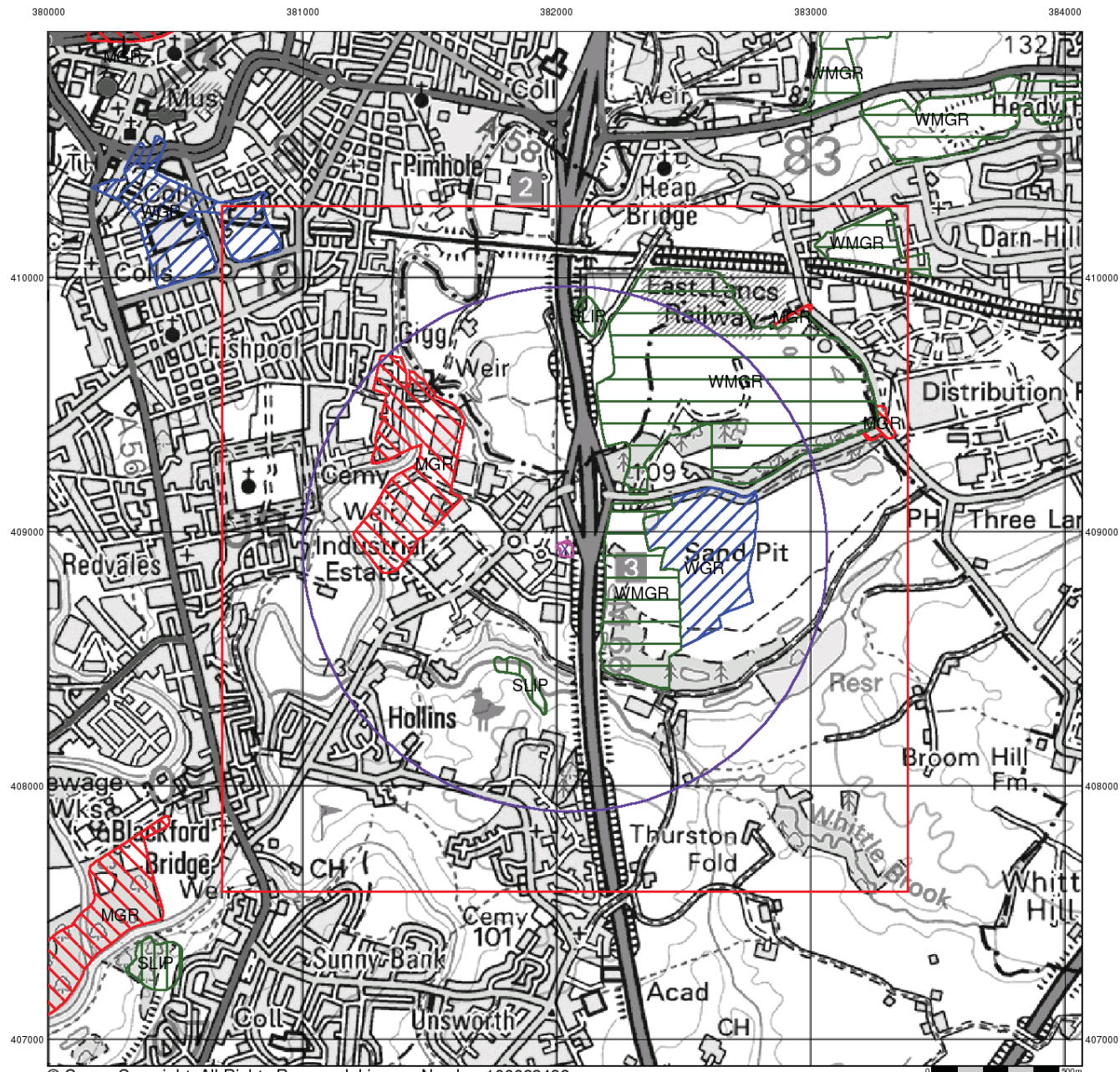


Order Details:

Order Number:	308052118_1_1
Customer Reference:	UK23.6302b
National Grid Reference:	382030, 408930
Slice:	A
Site Area (Ha):	0.29
Search Buffer (m):	1000

Site Details:

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Artificial Ground and Landslip

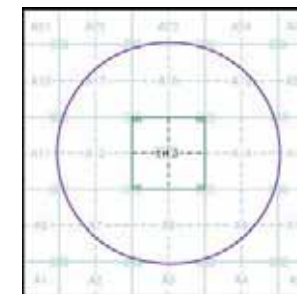
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions 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



Order Details:

Order Number: 308052118_1_1
Customer Reference: UK23.6302b
National Grid Reference: 382030, 408930
Slice: A
Site Area (Ha): 0.29
Search Buffer (m): 1000

Site Details:

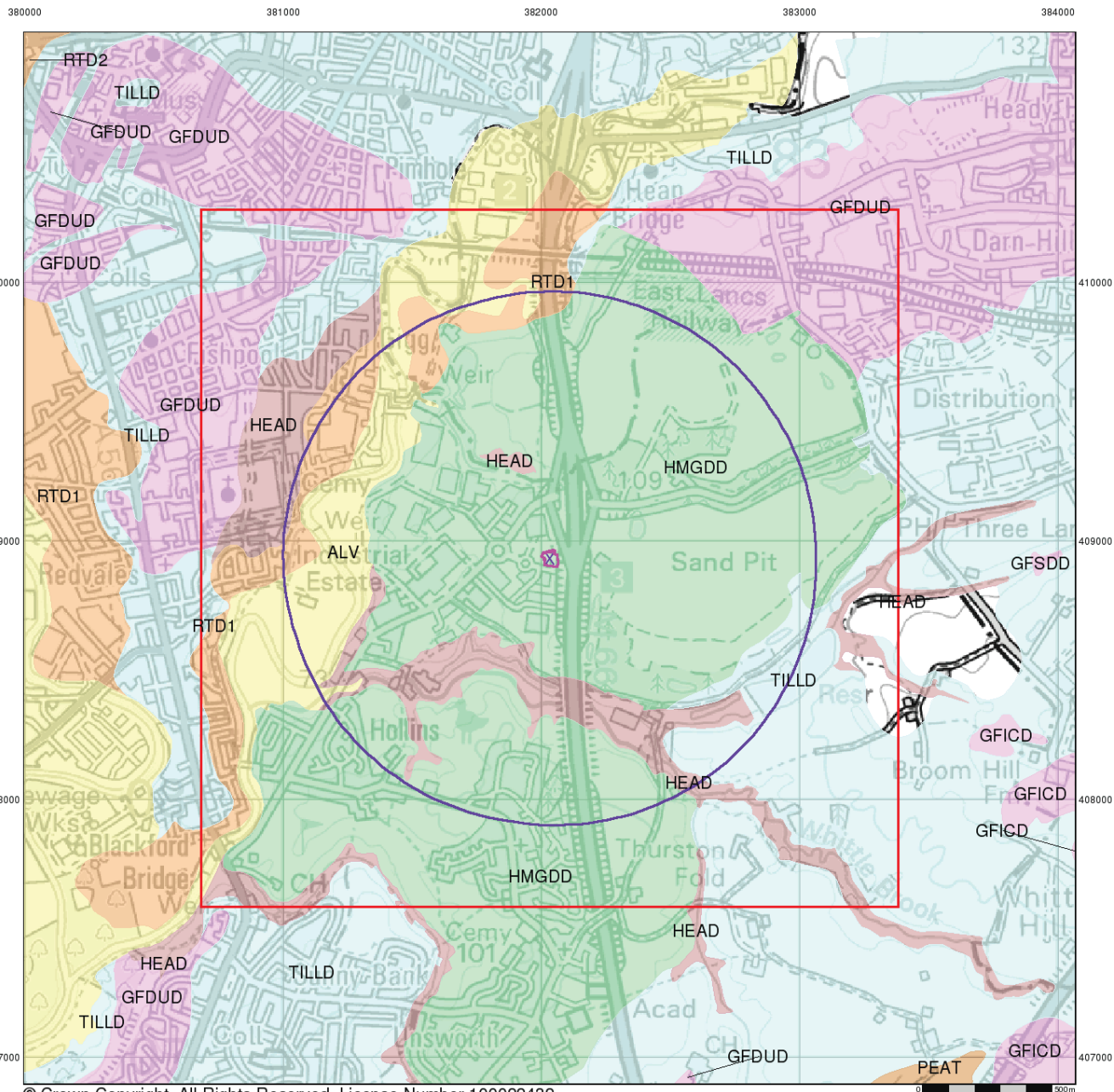
ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS

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v15.0 03-Mar-2023

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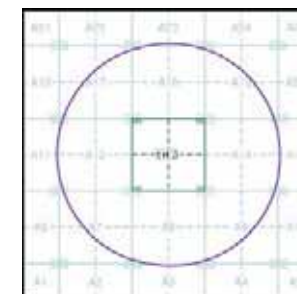
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, 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



Order Details:

Order Number: 308052118_1_1
Customer Reference: UK23.6302b
National Grid Reference: 382030, 408930
Slice: A
Site Area (Ha): 0.29
Search Buffer (m): 1000

Site Details:

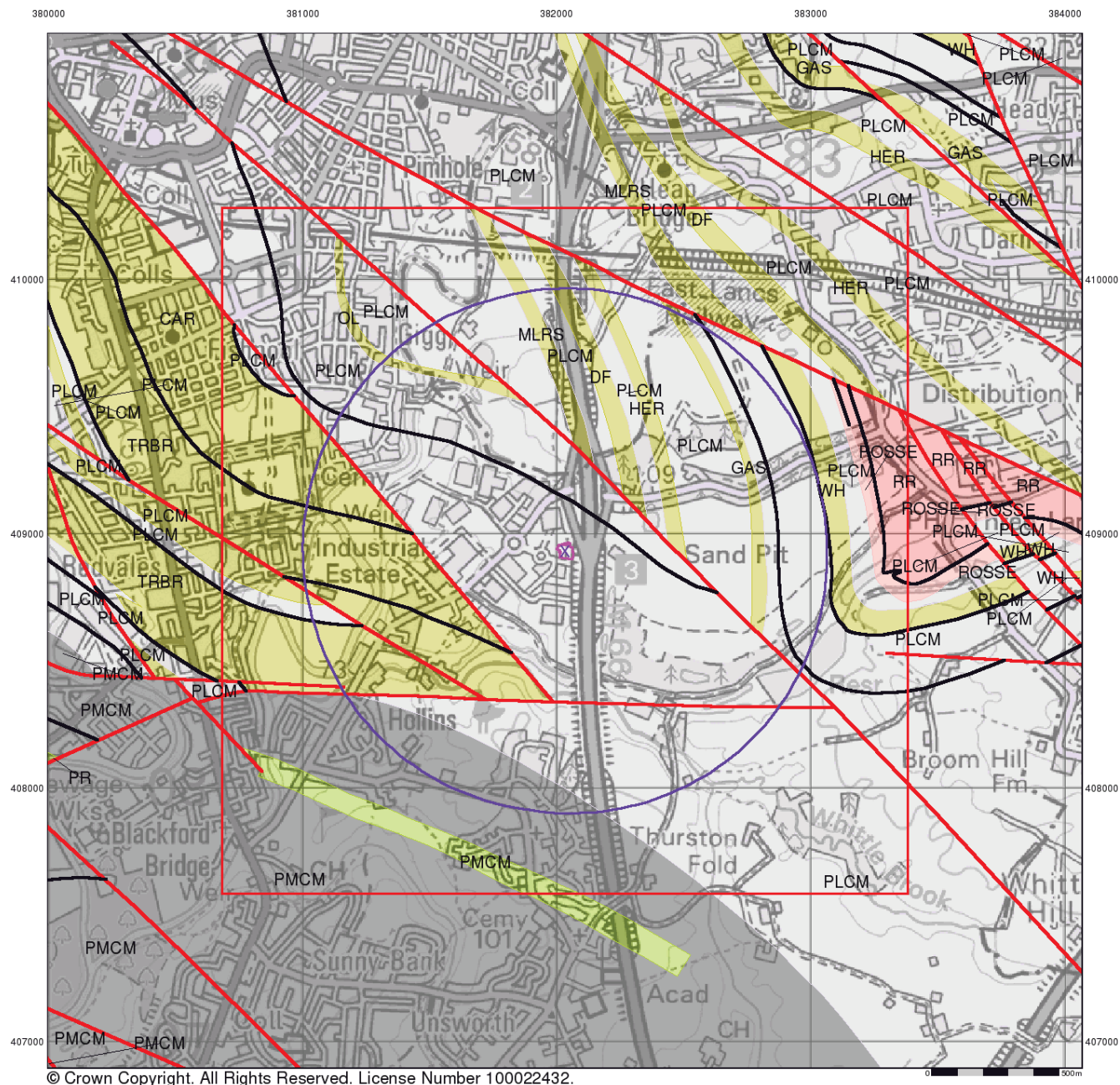
ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS

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Bedrock and Faults

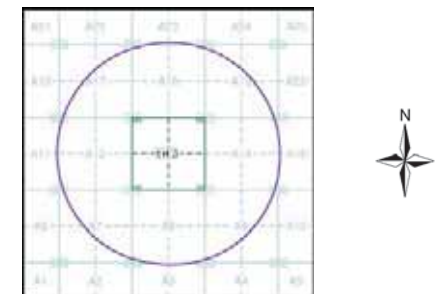
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

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 (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



Order Details:

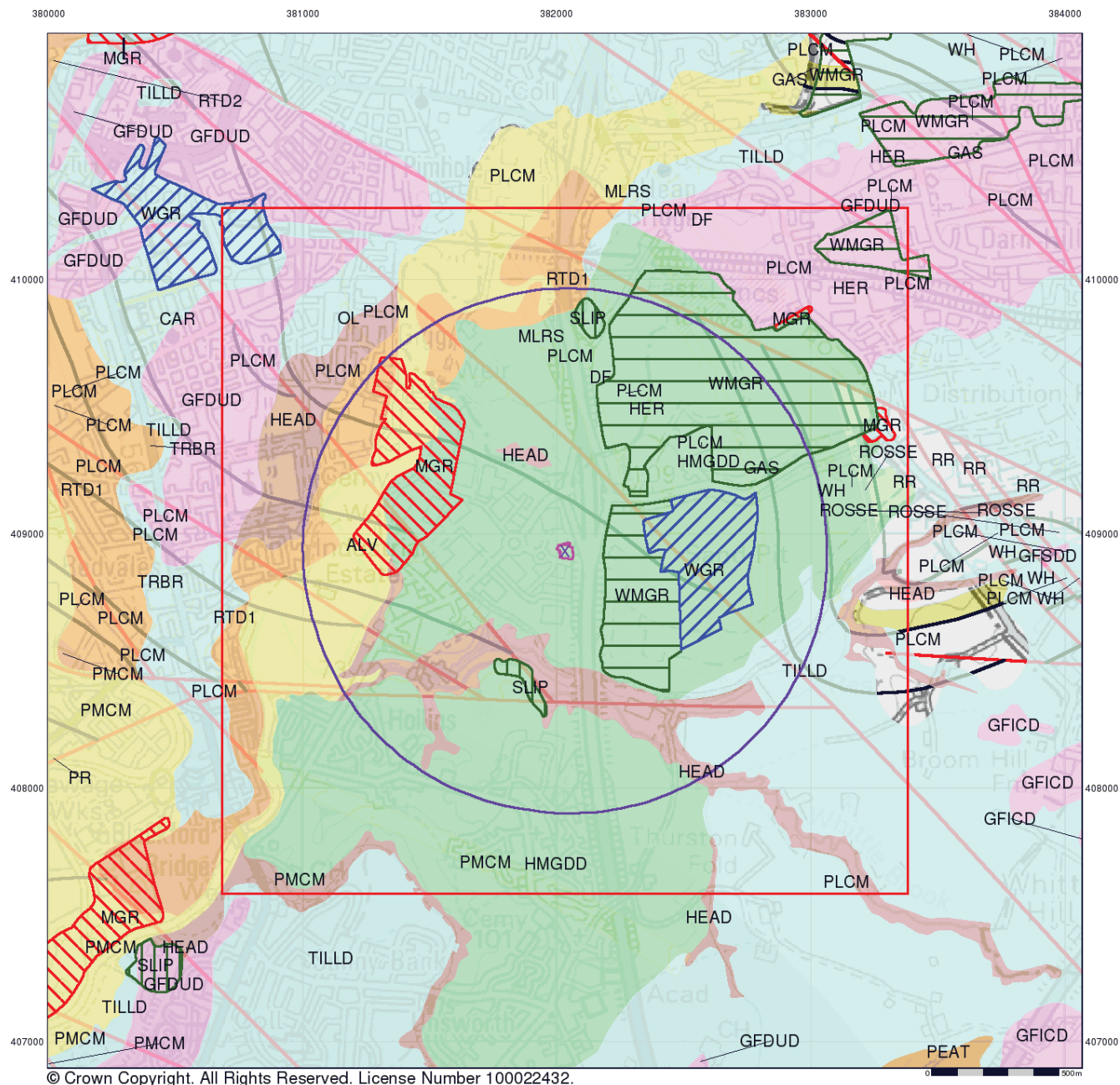
Order Number: 308052118 1_1
Customer Reference: UK23.6302b
National Grid Reference: 382030, 408930
Slice: A
Site Area (Ha): 0.29
Search Buffer (m): 1000

Site Details:

ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS

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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.

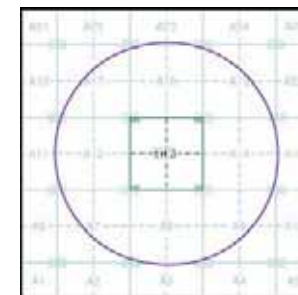
Additional Information

More information on 1:50,000 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



Order Details:

Order Number: 308052118_1_1
Customer Reference: UK23.63025
National Grid Reference: 382030, 408930
Slice: A
Site Area (Ha): 0.29
Search Buffer (m): 1000

Site Details:

ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Norwest Holst Soil Engineering Ltd.

Borehole No.
13

Contract No. F4767
Location Pilsworth - Bury
Client Metropolitan Borough of Bury SDSOW 223
Method of Boring Permeation
Diameter of Borehole 150mm
Sheet 1 of 2
Chainage 87.1
Ground Level 87.1 m A.O.D.
Date 15/11/80
885 0866

BOREHOLE LOG

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Borehole	Sampling and Coring	"N"/ R.O.D.S.	Daily Progress
PADEGROUND : tarmac, hardcore		0.40	86.7		0.50	14	
PADEGROUND : Soft, grey sandy clay with gravel and brick		3.00	84.1		1.50	10	
PADEGROUND : Soft grey sandy gravelly clay		1.80	83.3		2.50	10	
Medium dense grey SAND with some gravel		5.40	81.7		3.50	18	
Firm stiff grey silty CLAY with occasional laminations and silt partings becoming clayey sand from 8.90m					4.00	23	
					5.00		
					6.50		
					7.50		
Dense clayey GRAVEL		8.90			8.50		
		9.30	77.8				
Dense sandy GRAVEL		8.90	77.2		8.50	90	

Type of Sample

☒ S.P.T. ☒ Undisturbed
☒ C.P.T. ☒ Vane
☒ Jer ☒ Water
☒ Bulk ☒ Piezometer

Remarks (Observations of Ground Water etc.)

Water struck at 3.80m
 Rose to 2.40m
 Struck again at 9.50m rose to 7.70m fast inflow.

Norwest Holst Soil Engineering Ltd.

Borehole No.
14

Contract No. F4262
Location Elmsbridge - RUG
Client Metropolitan Borough of Bury
Method of Boring Percussion
Diameter of Borehole 150mm

BOREHOLE LOG

CDSD NW 224

Sheet 1 of 1

Chainage

Ground Level 82.2 m.A.S.D.

Date 10/11/80

8190 0861

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N" / R.O.D. (m)	Depth
MADEGROUND : brick, ash and clay		0.60	86.5		0.50	38	
Soft grey silty CLAY with some sand		1.40	85.9		1.00		
Medium dense yellow brown medium SAND					1.50	24	
		3.30	84.0		2.50	22	
Firm grey brown very silty sandy CLAY with occasional laminations		4.10	83.2		3.50		
Medium dense brown gravelly SAND & SILT		5.00	82.3		4.20	24	
Firm brown sandy CLAY		5.30	82.0		5.00		
Brown SAND		5.50	81.8		5.50		
Firm grey silty CLAY with some gravel and occasional laminations		5.90	81.4		5.90		
Stiff grey laminated silty CLAY with silt partings		7.00	80.3		7.00	50 ft no penetration	
Stiff grey very sandy gravelly CLAY with cobbles and sand bands		8.30	79.0		7.70		
					8.30	50 ft no penetration	

Type of Sample

☒ S.P.T. ☒ Undisturbed
☒ C.P.T. ☒ Vane
☒ Jar ☒ Water
☒ Bulk ☒ Piezometer

Remarks (Observations of Ground Water etc.)

Water seepage 1.50m
 Rose to 1.20m in 20 mins.
 Struck at 4.10m rose to 3.60m. Casing 4.0m
 Seepage 5.30m - no rise in 20 mins. Casing 5.0m.
 Piezometer installed 5.5m top seal 4.0m

APPENDIX E

Groundwater Vulnerability and Flood Maps

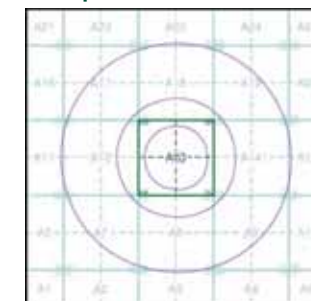
General

- Specified Site
- Specified Buffer(s)
- 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

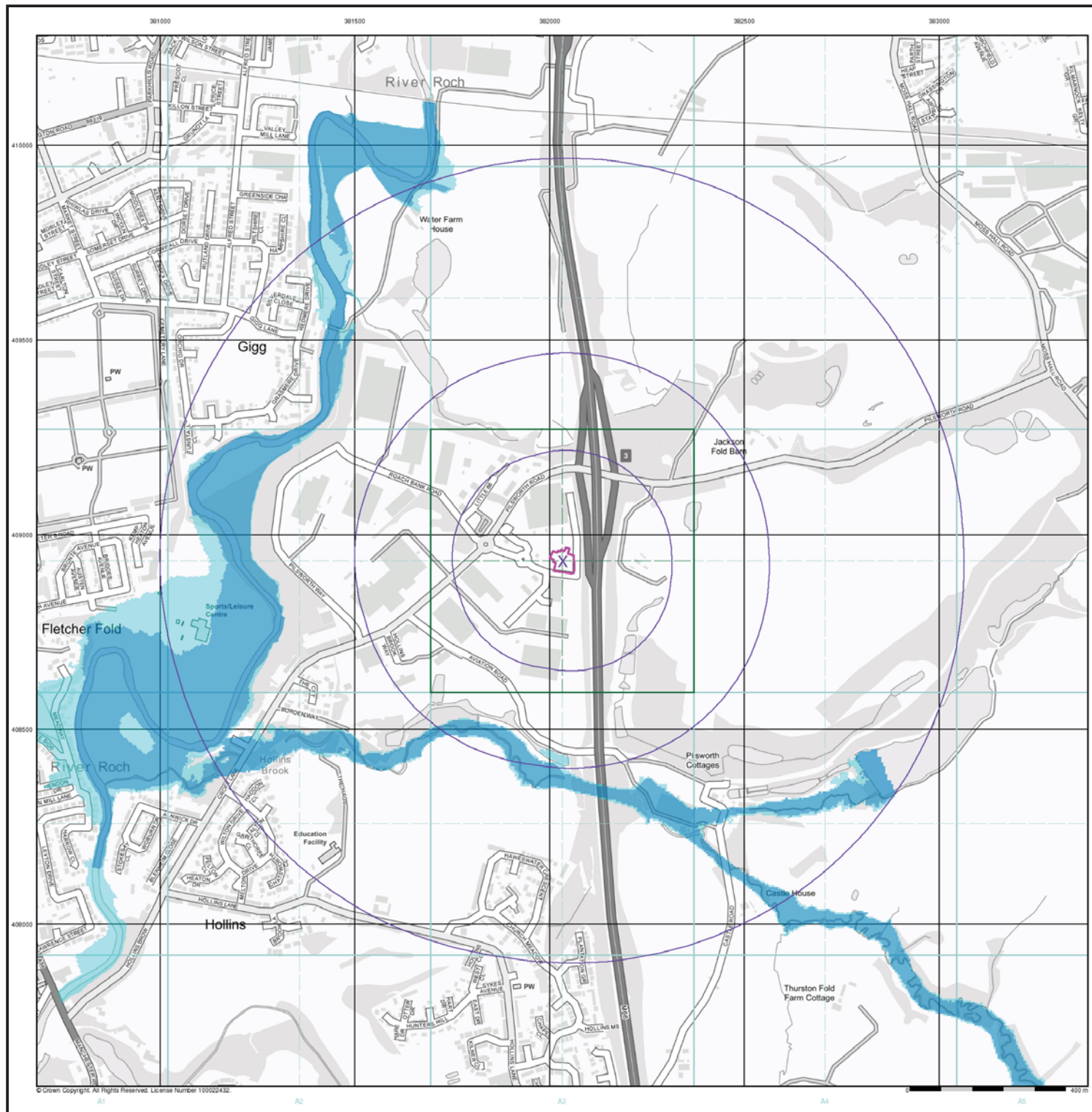


Order Details

Order Number: 308052118_1_1
 Customer Ref: UK23.6302b
 National Grid Reference: 382030, 408930
 Slice: A
 Site Area (Ha): 0.29
 Search Buffer (m): 1000

Site Details

ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS



General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Risk of Flooding from Surface Water

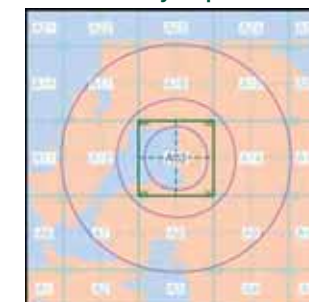
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

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



Order Details

Order Number: 308052118_1_1
 Customer Ref: UK23.6302b
 National Grid Reference: 382030, 408930
 Slice: A
 Site Area (Ha): 0.29
 Search Buffer (m): 1000

Site Details

ASDA Pilsworth, Pilsworth Road, Bury, BL9 8RS

