



Hamson Barron Smith



HBS

Fletcher Fold, Bury Coal Mining Risk Assessment

On behalf of Bolton at Home

Report 23-12-115972/CMRA1

December 2023

Report Issue Record

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Client:	Bolton at Home
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Position	Senior Geo-Environmental Engineer	Technical Director

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Executive Summary

SITE INFORMATION	
Client	Bolton at Home.
Site	Fletcher Fold
Location	Fletcher Fold Road, Bury, BL9 9RX. NGR 380649, 408678.
Approximate area	0.9Ha.
Topography	Elevation circa 75m OD, however site slopes gently to the south.
Current land use	Derelict land, former school.
Proposed development	Residential development comprising four bungalows and a two storey apartment building.

SITE SETTING	
Geology	Superficial deposits of Glacial Till over Trencherbone Rock (sandstone). The Trencherbone Rock is a sandstone flag within the Pennine Lower Coal Measure Formation.
History	The site was developed at the time of the first mapping in 1893. The structures are likely to have comprised residential properties. In the 1950s the southern end and western edge of the site were marked as allotment gardens. The site was redeveloped in the 1980s as Fletcher Fold school. The school remained on site until recently when the school was closed and the buildings demolished.
Previous site investigations	A Phase 1 desk based Phase I Geo-Environmental Site Assessment was completed in November 2018 for the site by E3P, reference 12-827-R1. A Phase II Geo-Environmental Site Assessment was undertaken in February 2019 and updated in November 2019 (report ref 12-827-R2).
Coal	As the strata dips to the south / south west only the Trencherbone Mine seam is likely to be present beneath the site. The Trencherbone Mine has a thickness varying between 2.0m and 4.8m in the area and is known to have been worked via both surface and deep mining techniques.
Mine Gas Emission	The report indicated that the Coal Authority have no records of gas emission in the immediate vicinity of the site. However shallow coal seams are anticipated to be present beneath the site which have the potential to be a source of ground gas.
Mine Entries	There are no known mine entries within 100m of the site.
Coal Mining	There are no recorded of past underground mining beneath the site. However, although no known shallow mine workings are recorded by the Coal Authority beneath the site, there is the potential for unrecorded shallow mine workings to be present. The risk of shallow mining is considered to be low to moderate and consequently, specific mining ground investigation is deemed necessary for the proposed development.

1 Introduction

In October 2023, Hamson Barron Smith (HBS) was commissioned by Bolton at Home to undertake a Coal Mining Risk Assessment for the at Fletcher Fold, Fletcher Fold Road, Bury for the proposed redevelopment of the site.

The site comprises an area of brownfield land which was previous a school. The location of the site is shown on Figure 1. A site plan is included in Appendix A.

The site is being considered for residential redevelopment. A provisional development layout has been provided by Bolton at Home (reference Pozzoni drawing number 6017_SK010) and is presented in Appendix B.

1.1 Project Requirements

The objective of a Coal Mining Risk Assessment (CMRA) is to develop a conceptual understanding of the ground conditions and related risks and liabilities associated with the site with respect to mining.

The CMRA will undertake:

- A review of the geological setting, including mining risk.
- Review historical and recent land uses with respect to coal mining.

1.2 Information Sources

During the production of this report the following sources have been reviewed:

- A Geo Insight Report prepared by Groundsure (Report Number GS-CID-OQ1-JEW-1FF dated 9th November 2023).
- A GeoInsight radon report prepared by Groundsure (Report Number GS-M6D-3KL-NTM-UEK dated 9th November 2023).
- A Consultants Coal Mining Report prepared by The Coal Authority (Report Number 51003388461001 dated 9th November 2023).
- Historic Ordnance Survey maps.
- British Geological Survey maps.

- British Geological Survey borehole records.
- Environment Agency landfill records.
- Environment Agency groundwater data.

1.3 Previous Investigations

In addition, the following have also been reviewed.

- Phase 1 desk based Phase I Geo-Environmental Site Assessment was completed in November 2018 for the site by E3P, reference 12-827-R1.
- Phase II Geo-Environmental Site Assessment dated February 2019 and updated in November 2019 (report ref 12-827-R2).

These reports have been summarised in Section 5.

2 Site Location

Address: Fletcher Fold, Fletcher Fold Road, Bury.

Post Code: BL9 9RX.

National Grid Reference: 380649, 408678.

The site location is shown on Figure 1 and a more detailed plan on Figure 2.

Full details of the site's features and land use are presented in Section 3.

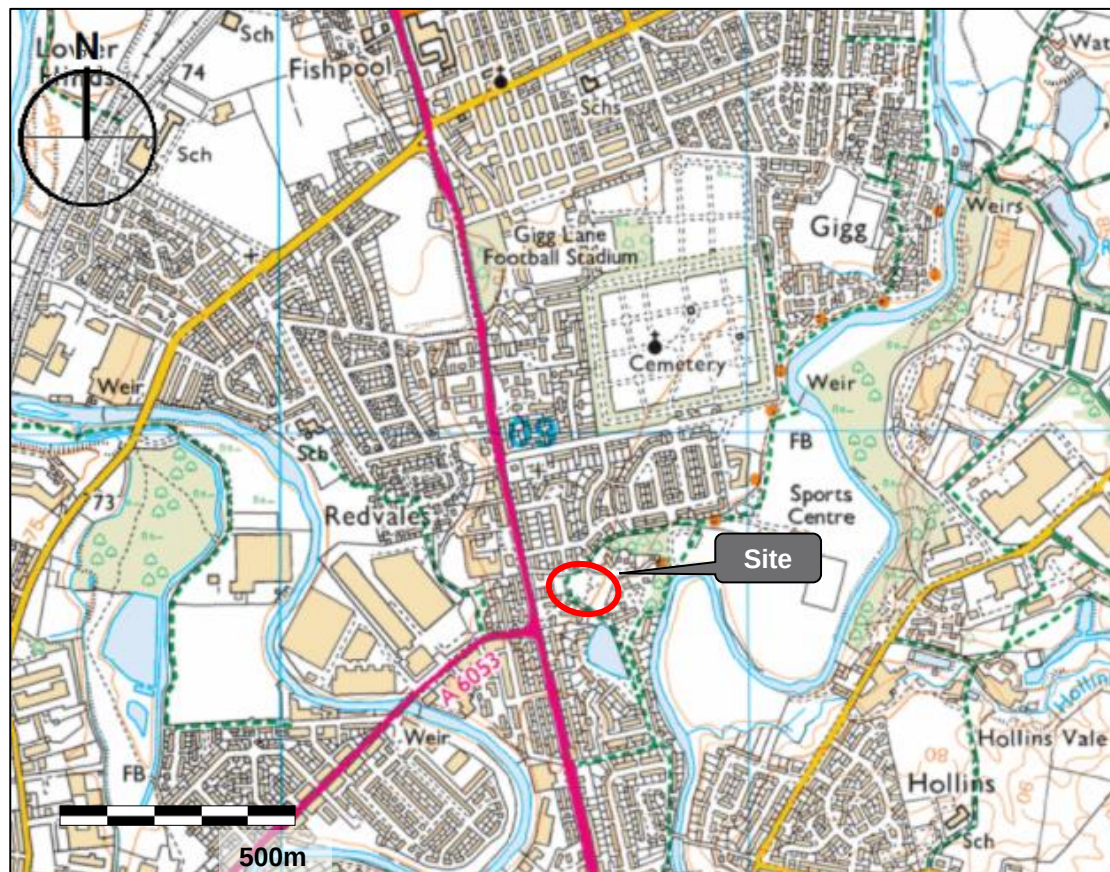


Figure 1 Site location plan

3 Site Description

The site consists of a parcel of brownfield land (former school) located off Fletcher Fold Road, approximately 1.8km south of Bury town centre. The site occupies an area of 0.9Ha and lies at an elevation of circa 75m OD with a slight fall in topography to the south.

Access to the site is gained off Fletcher Fold Road to the north.

The former school buildings were located on the northern edge of the site. These building have been demolished and the area reinstated with crushed gravel.

A former tarmac car park was present tin the north western corner of the site. The hardstanding has been removed from this area.

Soft landscaping comprising the former playing field is present on the southern portion of the site.

A small stockpile is present on the eastern edge of the site.

3.1 Adjacent land Use

The site is bounded on the majority of sides by residential premises. A large pond lies to the south.

Figure 2 shows the site setting.

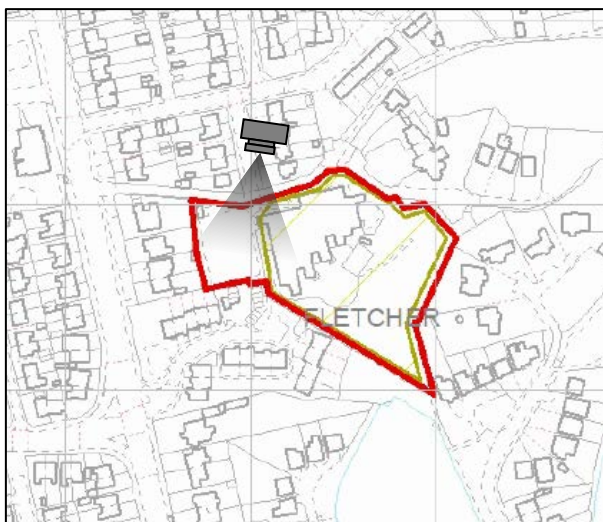


Figure 2 Site Setting

3.2 Photographs



Photograph 1 The main access into the site with former car park to the RHS, looking south.





Photograph 2 The site, looking southeast.



4 Geological and Mining Setting

4.1 Geology

A Groundsure Geo Insight report was obtained for the site to assessment the geological setting of the site. The report is presented in Appendix D.

The 1:10,000 scale British Geological Survey (BGS) geological mapping indicates that the majority of the site is underlain by superficial deposits comprising Glacial Till (Diamicton). River Terrace Deposits (sand and gravel) may also encroach onto the south eastern corner / edge of the site.

The superficial deposits are underlain by bedrock geology of Trencherbone Rock. The Trencherbone Rock is a sandstone flag within the Pennine Lower Coal Measure Formation. The BGS describe the Trencherbone Rock as a “*grey brown fine grained cross bedded sandstone with ironstone concentrations and numerous mudstone interbeds*”. The strata dips to the south / south west at approximately 10°.

In addition, Made Ground is recorded circa 10m south east of the site.

The area is highly faulted as shown on Figure 3 overleaf. Three main faults are present in the immediate vicinity of the site.

The first lies circa 230m south and trends east west to the south of the site before turning north west, it is downthrown to the south.

The second lies circa 235m north east and trends roughly north west to south east, it is downthrown to the east.

The third lies circa 260m south west and trends south west to north east, it is downthrown to the east.

4.2 Outcropping Coal

There are three coal seams outcropping in the immediate vicinity of the site and within the fault plain on which the site is located, see on Figure 3 overleaf.

The closest seam is shown circa 65m north east of the site; this seam is anticipated to comprise the Trencherbone Mine. A second seam lies circa 160m south west (possibly the Cannel Mine) and the third seam lies 190m south east; neither of these seams are named on the geological map.

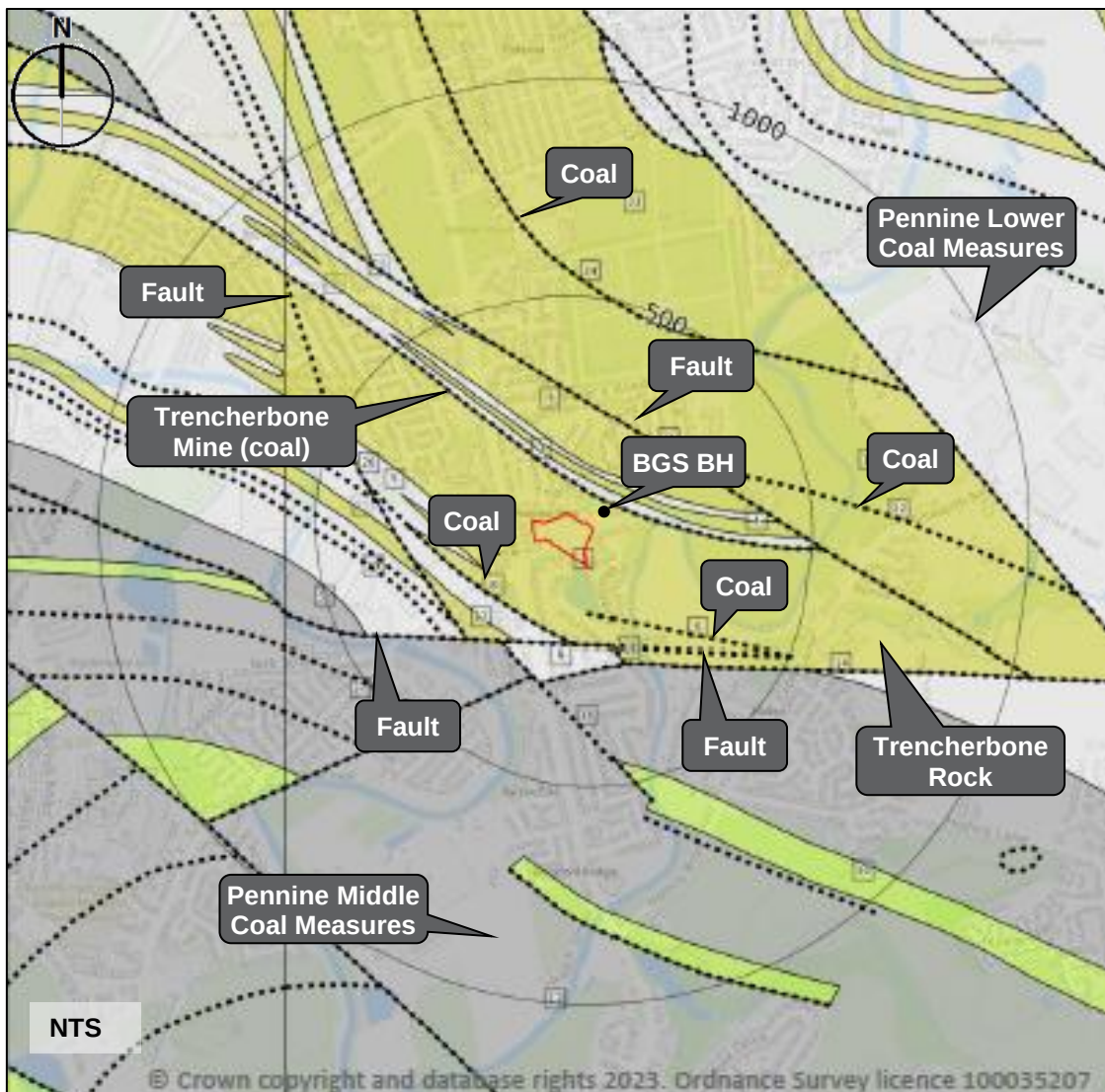


Figure 3 Bedrock Geology Extract from Groundsure report)

As the strata dips to the south / south west at approximately 10° only the Trencherbone Mine seam is likely to be present beneath the site. The Trencherbone Mine has a thickness varying between 2.0m and 4.8m in the area and is known to have been worked via both surface and deep mining techniques.

However, the geological memoir suggests there may be three unmapped coal seams between the Trencherbone seam and the Cannel Mine seam which could be present beneath the site (Peacock, Smithy and Little Black). The Sheet 85 exploratory note provides additional information on the coal seams in the wider area and this information is summarised in Table 1 below.

Table 1: Summary

Coal Seam	Thickness (m)	Type of Workings
Trencherbone	2.0 to 4.8	Deep Mined, surface mined (opencast)
Peacock	0.5 to 1.8	Not worked
Smithy	0.0 to 0.2	Not worked
Little Black	0.1 to 0.6	Surface mined (opencast)
Cannel	0.3 to 0.9	Deep Mined, surface mined (opencast)

The table confirms that the anticipated shallowest coal seam beneath the site is the Trencherbone. However some or all of the unmapped coal seams may be not present beneath the site itself due to local geological variation.

Therefore, shallow coal may be present beneath the site.

4.3 Historical borehole information

There are two BGS borehole records in the vicinity of the site. They are located circa 45m north east of the site (Ref SD80NW144 and SD80NW145). The approximate location of the boreholes is shown on Figure 3.

The boreholes proved the following sequence.

Ref SD80NW144 (Borehole 1)

- *Made Ground: Concrete to 0.30m bgl.*
- *Made Ground: very soft becoming firm grey sandy silty clay interbedded with loose becoming medium dense grey sand and gravel with brick fragments to 2.70m bgl.*
- *Soft to firm mottled red, orange brown and grey weakly laminated very silty clay with fine sand partings and organic flecks (Alluvium) to 3.00m bgl.*
- *Medium dense orange brown sand and gravel (Alluvium) to 3.55m bgl.*

- *Soft grey brown silty organic clay (Alluvium) to 3.80m bgl.*
- *Medium dense well graded orange brown angular to subrounded gravel in a fine to coarse silty sand matrix (Glacial Sand and Gravel) to 5.60m bgl.*
- *Stiff dark grey gravelly very silty clay with partings of grey fine silty sand (Glacial Till) to 6.70m bgl.*
- *Weak grey highly fissured sandstone / mudstone to 7.30m bgl.*
- *Weak to moderately weak weathered purple grey mudstone/ siltstone to 8.20m bgl.*

BGS Ref SD80NW145 (Borehole 2)

- *Made Ground: Soft to firm organic dark grey sandy very silty clay with gravel to 0.60m bgl.*
- *Loose orange brown clayey silty fine sand, becoming firm to stiff mottled orange brown and dark grey sandy very silty clay to 2.00m bgl.*
- *Medium dense orange brown sand and gravel to 4.00m bgl.*
- *Stiff brown sandy silty clay with some gravel to 5.30m bgl.*
- *Moderately weak weathered purple grey mudstone/ fine sandstone to 6.20m bgl.*

4.4 Land Use History

The historical land uses of the site and its surrounding area were established in the Phase I Desk Study undertaken by E3P.

Copies of the maps are included in Appendix C.

Table 2: Summary of Historical Maps

Date	On Site	Offsite
1893	The site is occupied by a number of unspecified structures and a well is identified in the central eastern sector of the site.	The surrounding land use is a mixture of agricultural land and residential dwellings. Derby works (building materials) and a timber yard lie 110m and 150m north west respectively. Two reservoirs are present the first lies c.10m south and the second lies 150m south. New Bridge Mills (Paper) lies 300m south west.

Date	On Site	Offsite
1910	No significant changes are evident.	Residential development has occurred c.70m north and c.100m south west including on the former timber yard. Derby works is now marked as a Tannery.
1930-1937	No significant changes are evident.	No significant changes are evident.
1957	The on site buildings are numbered indicating they are likely to be residential properties. The southern end and western edge of the site is marked as allotment gardens,	Residential development has occurred immediately north and west. The tannery is now marked as a rubber works.
1971-1975	No significant changes are evident.	No significant changes are evident.
1985	The properties are no longer present on site and the site has been redeveloped with Fletcher Fold School.	The reservoir c.150m south is no longer present and the surrounding area has been redeveloped with residential housing.
1992	No significant changes are evident.	No significant changes are evident.

4.4.1 Summary of Development History

On site

The site was developed at the time of the first mapping in 1893. The structures are likely to have comprised residential properties. In the 1950s the southern end and western edge of the site were marked as allotment gardens. The site was redeveloped in the 1980s as Fletcher Fold school. The school remained on site until recently when the school was closed and the buildings demolished.

Off Site

The surrounding land use was typically a mixture of undeveloped farmland and residential land uses becoming predominately residential properties.

Some localised industry was noted including Derby Works (building materials, then a tannery and finally rubber works) located 110m north west, a timber yard located 150m north west, a paper Mill located 300m south west

No evidence of coal mining such as colliers or spoil heaps is recorded the immediate vicinity of the site.

5 Summary of Previous Work

Two phases of investigation have been undertaken for the site by E3P.

5.1 E3P Desk Study

In November 2018, a desk based Phase I Geo-Environmental Site Assessment was completed. The report was updated in November 2019 (report ref 12-827-R1).

Salient findings from this report are summarized below

- Published geology indicates that site is underlain by superficial deposits of Glacial Till over the Trencherbone Rock (sandstone). The Trencherbone rock is a sandstone flag of the Pennine Lower Coal Measures Formation.
- The report confirmed that the proposed development site is located within an area deemed to be a High Risk from historic mine workings therefore a detailed coal mining risk assessment would be required prior to any future development.
- The Environment Agency classified the Glacial Till as Non-productive and the Trencherbone Rock as a Secondary A Aquifer. The site does not lie within a Source Protection Zone.
- A lake (former reservoir) was located 10m south of the site.
- There are no landfill sites (current or historic) or waste treatment facilities within a 250m radius of the site.
- At the time of the first mapping in 1893 the site was occupied by a number of unspecified structures and a well was present in the eastern portion. By the late 1970s the structures had been demolished and Fletchers Fold School constructed. The main school building was located to the north of the site with playing field to the south.
- Given the historic usage of the site the report confirmed that Made Ground, including relict foundations, is likely to be present at the site.
- The report concluded that given the historical use of the site, there were unlikely to be any significant site wide sources of contamination present.

However, the underlying Made Ground could be a low-level source of Polycyclic Aromatic Hydrocarbon (PAH), hydrocarbon compounds, heavy metals and asbestos.

- In addition, it confirmed that the presence of Made Ground underlying the former structures may give rise to hazardous ground gas such as carbon dioxide and methane.

5.2 E3P Ground Investigation

Following this a Phase II Geo-Environmental Site Assessment was undertaken in February 2019 and updated in November 2019 (report ref 12-827-R2). This report is described in the introduction as a baseline Geo-Environmental Site Assessment to determine potential contaminated land liabilities. No geotechnical assessment of the site was undertaken.

Salient findings from these reports are summarised below.

- The investigations recorded Made Ground (sandy and/or clayey gravel) to a max depth of 0.9m. The Made Ground is underlain by sandy Gravel and or gravelly Sand over firm to stiff sandy Clay.
- No groundwater was recorded during investigation.
- The preliminary Tier I Human Health risk assessment identified the presence of heavy metals (lead and arsenic) and asbestos within the shallow Made Ground at the site.
- In addition, as part of the Verification of the demolition works E3P confirmed that visible asbestos (insulating board fragments) was discovered during the demolition works to the underside of the slab and attached to a redundant pipe. It is understood that the demolition contractor submitted two fragments of the asbestos for testing which confirmed the asbestos to be amosite. The appendix (VII) containing the results are not included within the report provided.
- E3P indicated that they believed that the visible asbestos fragments from within the Made Ground underlying the slab were handpicked and removed for off-site disposal during the demolition works.

6 Coal Mining Risk Assessment

The site lies in a Development High Risk Area as defined by the Coal Authority and in an area where shallow coal mining may have occurred.

6.1 Geology

As outlined in detailed in Section 4.1 geological mapping indicates the majority of the site to be underlain by superficial deposits comprising Glacial Till (Diamicton) over bedrock geology of Trencherbone Rock. The strata dips to the south / south west at approximately 10°.

In addition, Made Ground is recorded circa 10m south east of the site.

The area is highly faulted as shown on Figure 3. Three main faults are present in the immediate vicinity of the site. The first lies circa 230m south and trends east west to the south of the site before turning north west, downthrown to the south. The second lies circa 235m north east and trends roughly north west to south east, downthrown to the east. The third lies circa 260m south west and trends south west to north east,

6.2 Outcropping Coal

As outlined in detailed in Section 4.2 there are three coal seams outcropping in the immediate vicinity of the site and within the fault plain on which the site is located, see on Figure 3. In addition, there are potentially three unmarked coal seams which may be present, but which cannot be confirmed from the published mapping. However, while there may be unmarked seams beneath the site the geological explanatory note for Sheet 85 indicates that these seams are unlikely to have been worked.

As the strata dips to the south / south west, the Trencherbone Mine which lies circa 65m north east of the site is likely to be present beneath the site. The Trencherbone Mine has a thickness varying between 2.0m and 4.8m in the area and is known to have been worked via both surface and deep mining techniques.

Therefore, shallow coal which may have been work is potentially present beneath the site. Therefore, the risk from unknown shallow workings is moderate.

6.3 Historical borehole information

There are two BGS borehole records within the fault plain on which the site is located however they both lie to the north of the coal outcrop and therefore cannot confirm if coal will be present beneath the site.

The boreholes drilled as part of the E3P investigation were shallow, max depth 2.7m bgl, and did not prove the depth to or penetrate the bedrock.

6.4 Coal Authority Mining Report

A Consultants Coal Mining Report was obtained by HBS, this report confirmed:

- There are no recorded of past underground mining beneath the site.
- However, although no known shallow mine workings are recorded by the Coal Authority to relate to the site, the potential exists for unrecorded shallow mine workings to be present.
- There are no known mine entries within 100m of the site.
- 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.
- No mine gas emissions are recorded within 500m of the property.
- The property is not within the boundary of an opencast site from which coal has, is or is due to be removed by opencast methods.

The Coal Authority Report is presented in Appendix E.

6.5 Mine Gas emissions

The report indicated that the Coal Authority have no records of gas emission in the immediate vicinity of the site.

However, shallow coal seams are anticipated to be present beneath the site which have the potential to be a source of ground gas.

In addition, coal seams have been known to suffer from occurrences of spontaneous combustion and are consequently regarded as at 'high risk' of succumbing to spontaneous combustion when being entered, worked or disturbed. The Coal Authority have produced a list of seams for different areas of the UK. The Trencherbone coal seam is included on this list.

Therefore, there is a risk of ground gas at the site as a result of shallow coal.

7 Summary

Geological mapping indicated that the Trencherbone Mine seam outcrops on the fault plain that the site is located on. Shallow coal may therefore be present beneath the site. While the Coal Authority has no records of the seam being worked, there is the potential of unrecorded workings in the seam.

There are no recorded mine entries within 100m of the property.

There is a risk of ground gas at the site as a result of shallow coal.

The risk of shallow mining is considered to be low to moderate and consequently, specific mining ground investigation is deemed necessary for the proposed development.

8 Notes, Limitations and Uncertainties

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HBS disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

This report has been prepared by HBS with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the Client.

The report and /or opinion will be prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to us at the time of your enquiry. The recommendations should not be used for other schemes on or adjacent to the site without further reference to HBS. The assessment of the factual data will be provided to assist the client and his Engineer and/or advisors in the preparation of their designs.

It should be noted that the levels of risk identified in this report are perceived risks based on the information reviewed. No physical investigation or testing has been carried out; actual risks can only be assessed following a physical investigation of the site. Further work, including physical investigation, laboratory testing and ground gas monitoring may be required by the appropriate regulators to confirm actual conditions.

The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true representative data with respect to site conditions. Should additional information become available that may influence the opinions expressed in this report, HBS reserves the right to review such information and, if warranted, to alter the opinions accordingly.

The evaluation and conclusions do not preclude the existence of other site conditions and contamination, which could not reasonably have been revealed by the site

investigation works undertaken at the time of writing. This report should be used for information purposes only and should not be construed as a comprehensive characterisation of all site conditions or potential contaminants.

The economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical considerations hence its evaluation will be outside the scope of the report.

Appendix A

Site Plan



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2023. All Rights Reserved.

Project: Fletcher Fold

Client: Bolton at Home

Title: Site Plan

Drawing: 23-12-115972 / Plan

Date: 08 Dec 2023

Notes:

Key

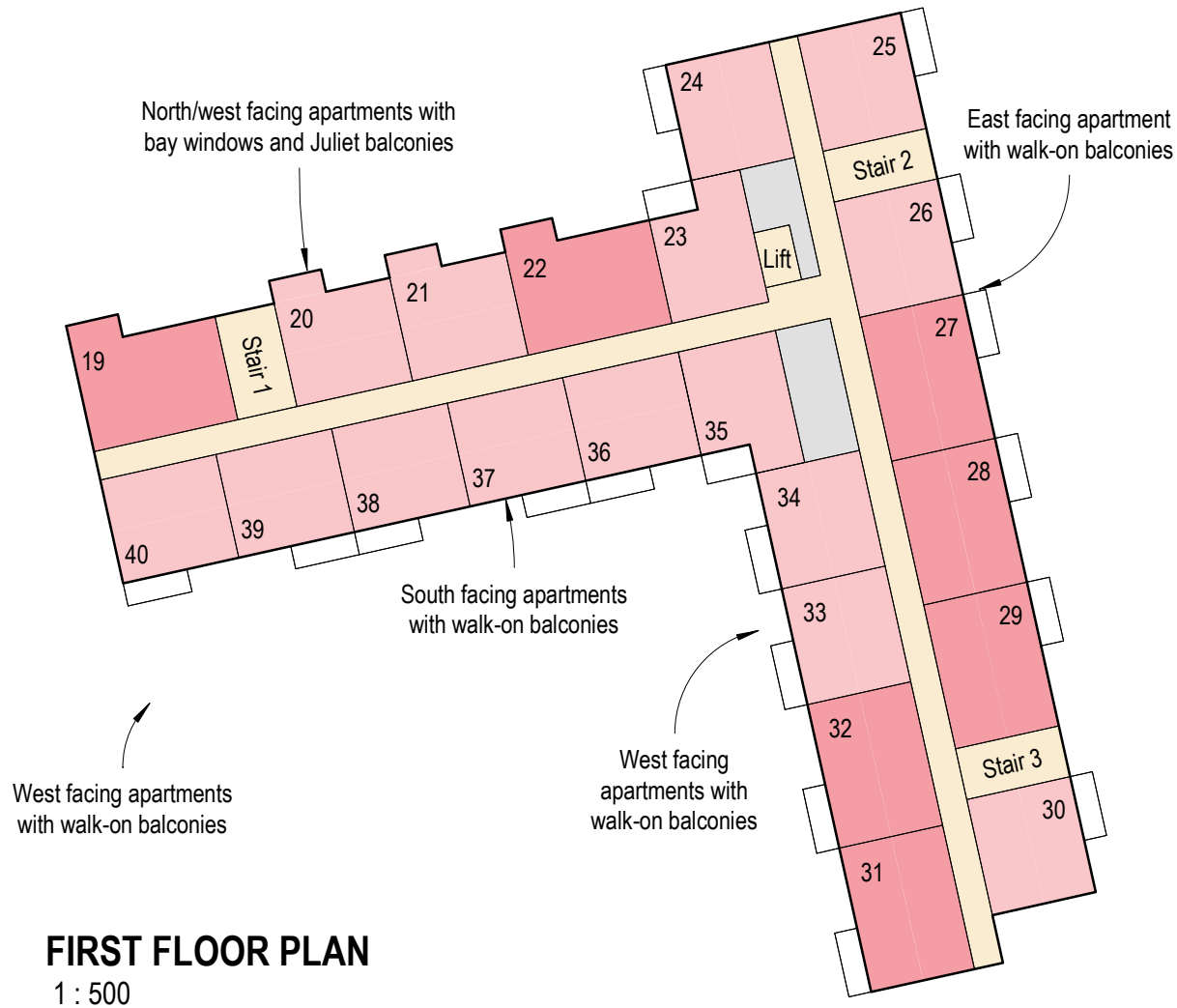
**Hamson
Barron
Smith**

Appendix B

Proposed Development Plan



PROPOSED SITE LAYOUT
1 : 500



FIRST FLOOR PLAN
1 : 500

SUMMARY: 40 apartments & 4 bungalows			
TYPE	PARKING	AREA	COUNT
1 bed/ 2 person independent living apartment	75%	50m ²	27
2 bed/ 3 person independent living apartment	75%	62m ²	13
2 bed/ 4 person bungalow	200%	70m ²	4
TOTAL			44

This layout is based on OS data only and without advice from the planning department.

A number of trees would need to be removed to achieve these numbers. Further information about the site will be required in order to firm up the numbers (topographical, ecological, arboricultural and site investigation phase 1 minimum).

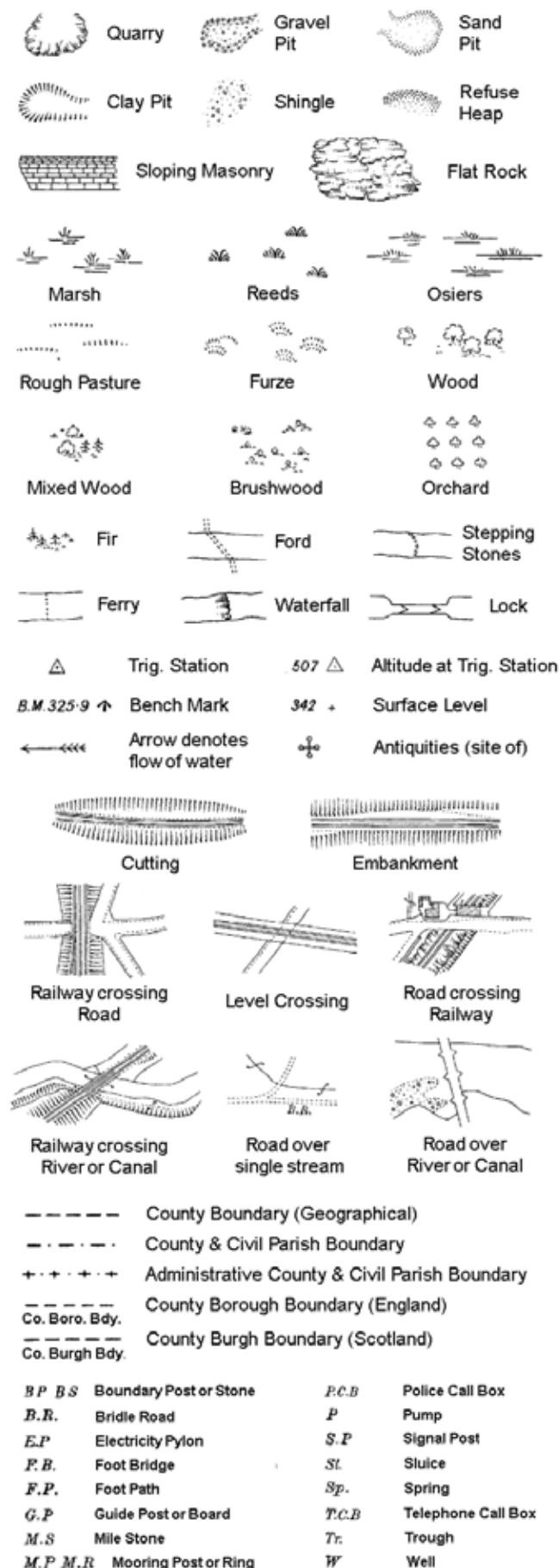
Parking provision for the extra care apartments will need to be justified and agreed with the Local Authority.

Appendix C

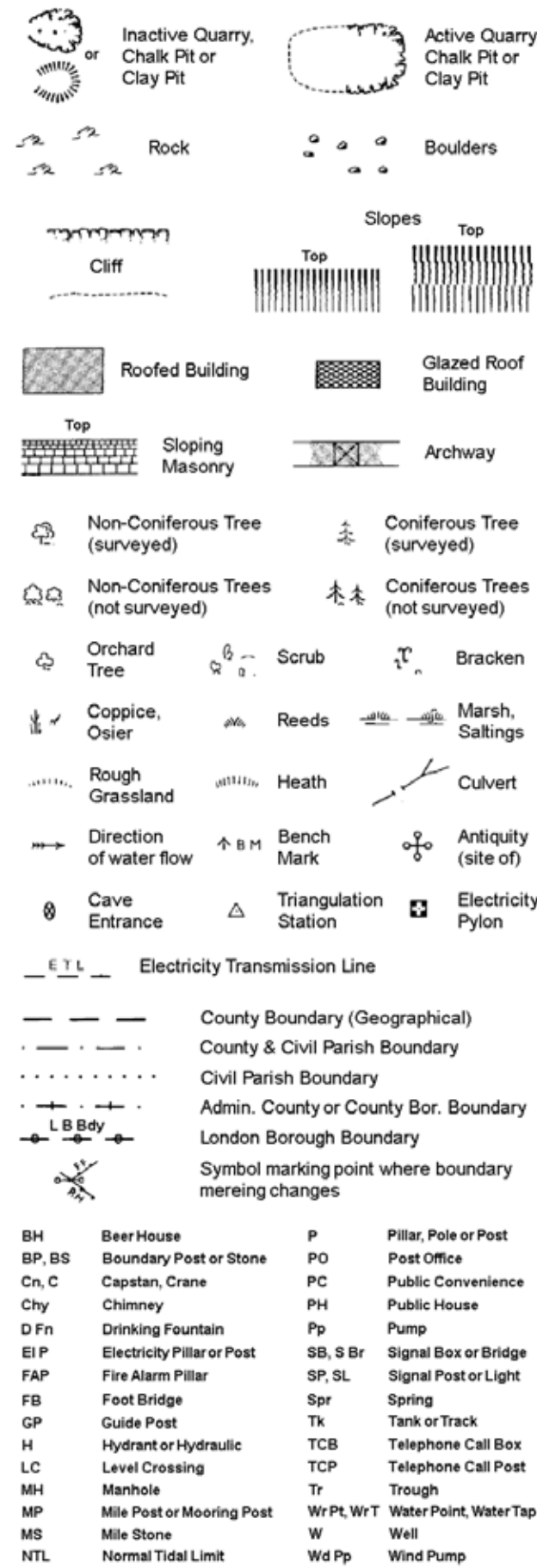
Historic Maps

Historical Mapping Legends

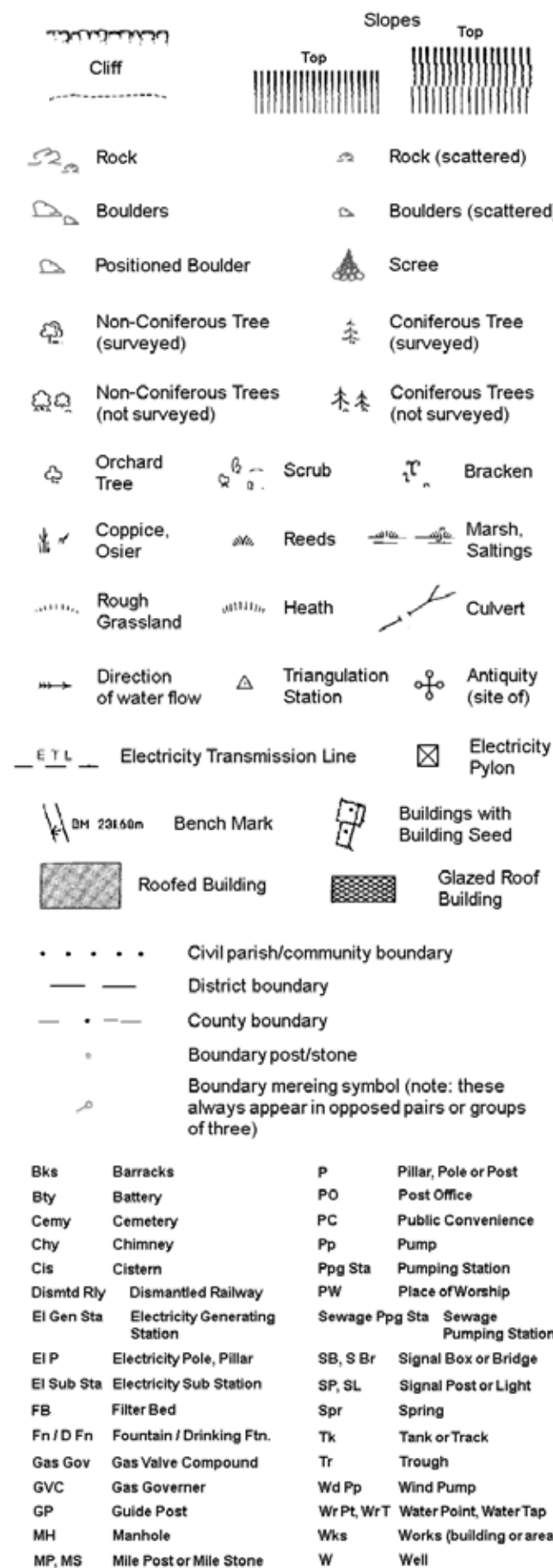
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



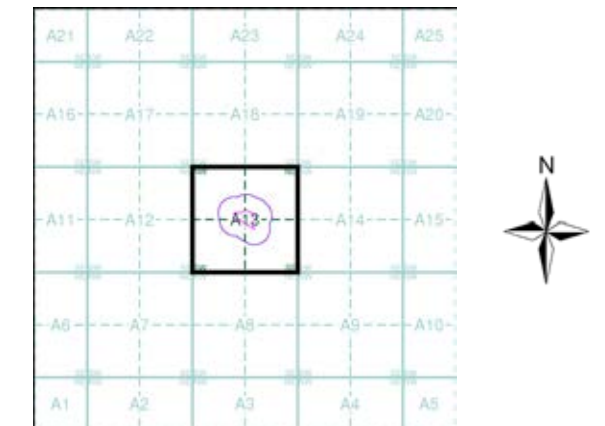
Large-Scale National Grid Data 1:2,500 and 1:1,250



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
Lancashire And Furness	1:2,500	1937	5
Ordnance Survey Plan	1:1,250	1957	6
Ordnance Survey Plan	1:1,250	1967 - 1975	7
Ordnance Survey Plan	1:1,250	1970 - 1989	8
Ordnance Survey Plan	1:2,500	1971	9
Additional SIMs	1:1,250	1977 - 1985	10
Ordnance Survey Plan	1:1,250	1982	11
Additional SIMs	1:1,250	1987	12
Large-Scale National Grid Data	1:1,250	1992	13
Large-Scale National Grid Data	1:1,250	1995	14
Historical Aerial Photography	1:2,500	2000	15

Historical Map - Segment A13



Order Details

Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

Millwood School, Fletcher Fold Road, BURY, BL9 9RX



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



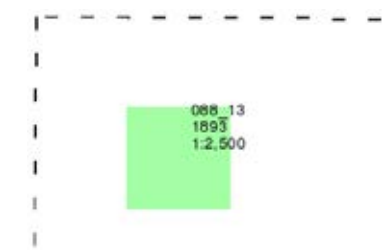
Lancashire And Furness

Published 1893

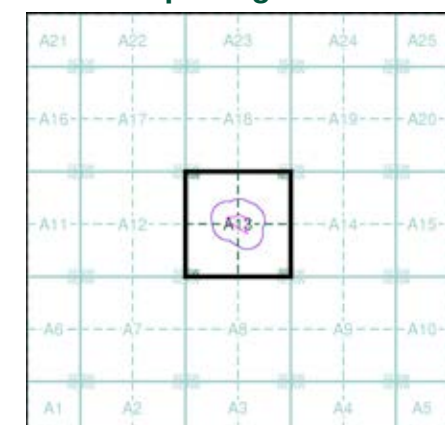
Source map scale - 1:2,500

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)



Historical Map - Segment A13



Order Details

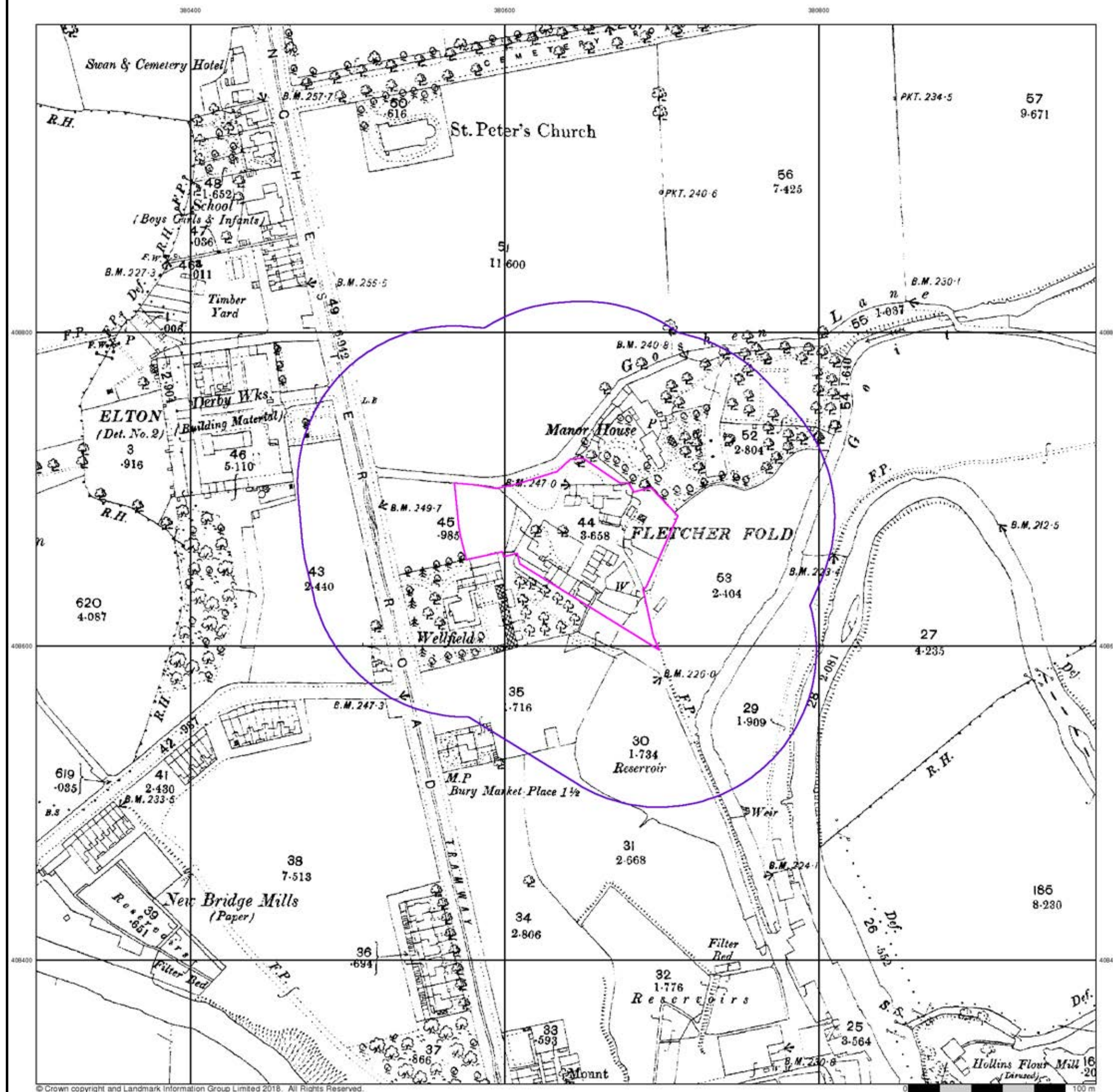
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

Millwood School, Fletcher Fold Road, BURY, BL9 9RX



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





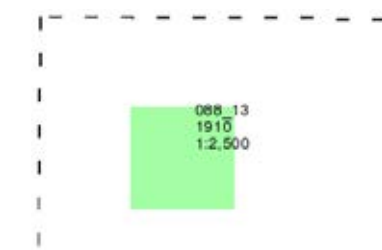
Lancashire And Furness

Published 1910

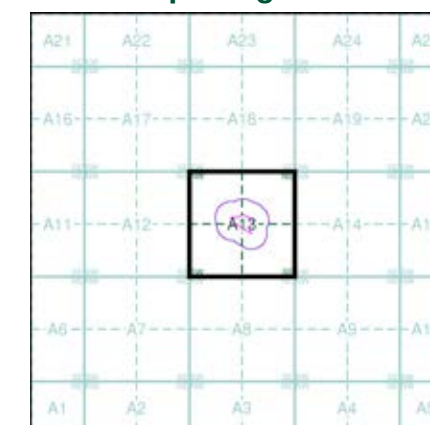
Source map scale - 1:2,500

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)



Historical Map - Segment A13



Order Details

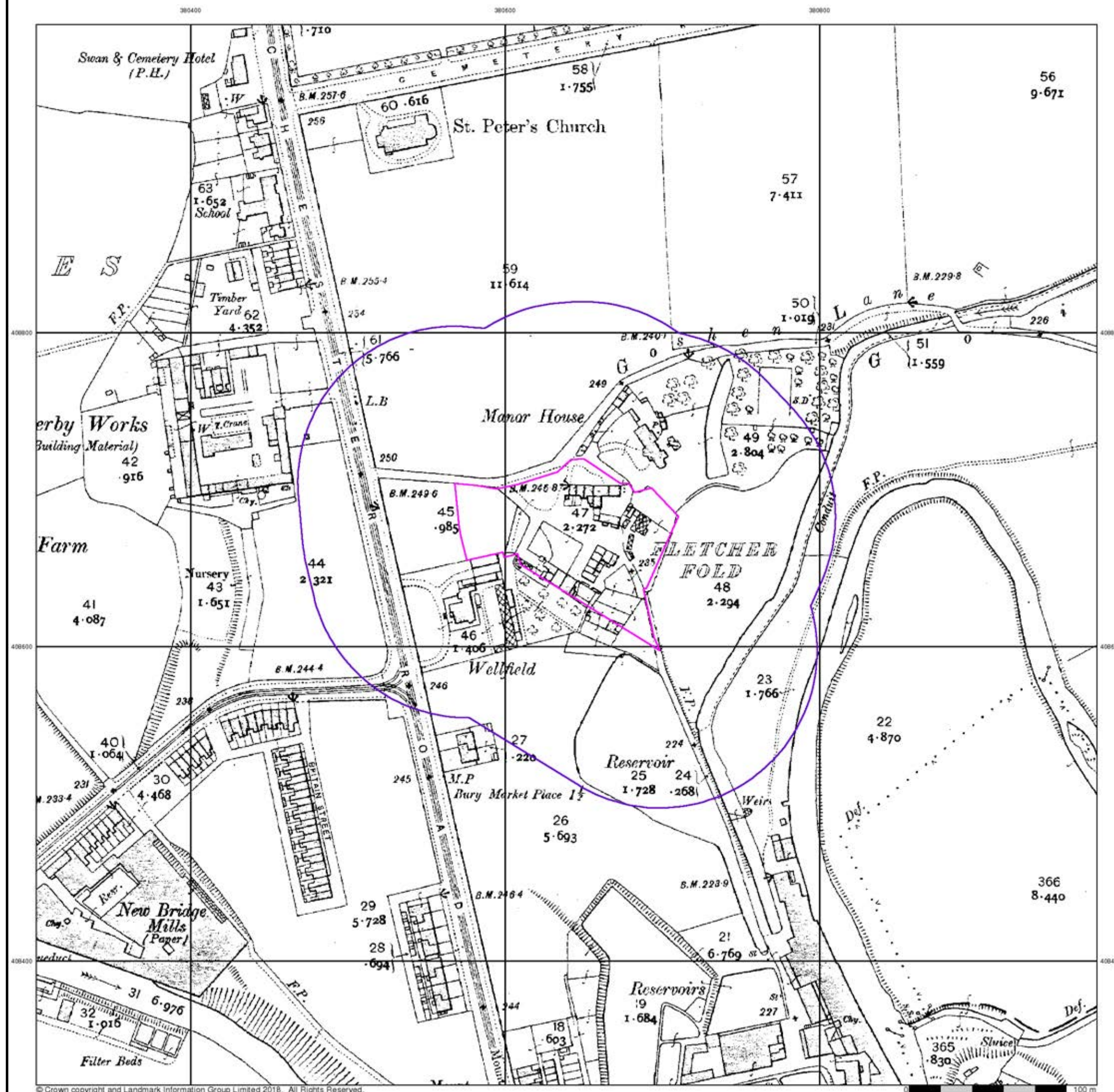
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

Millwood School, Fletcher Fold Road, BURY, BL9 9RX



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





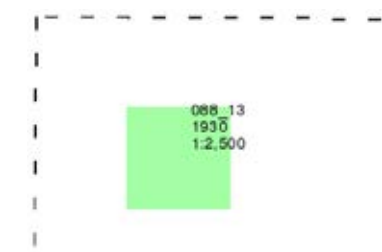
Lancashire And Furness

Published 1930

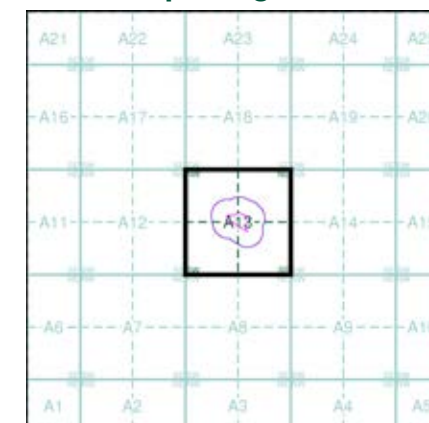
Source map scale - 1:2,500

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)



Historical Map - Segment A13



Order Details

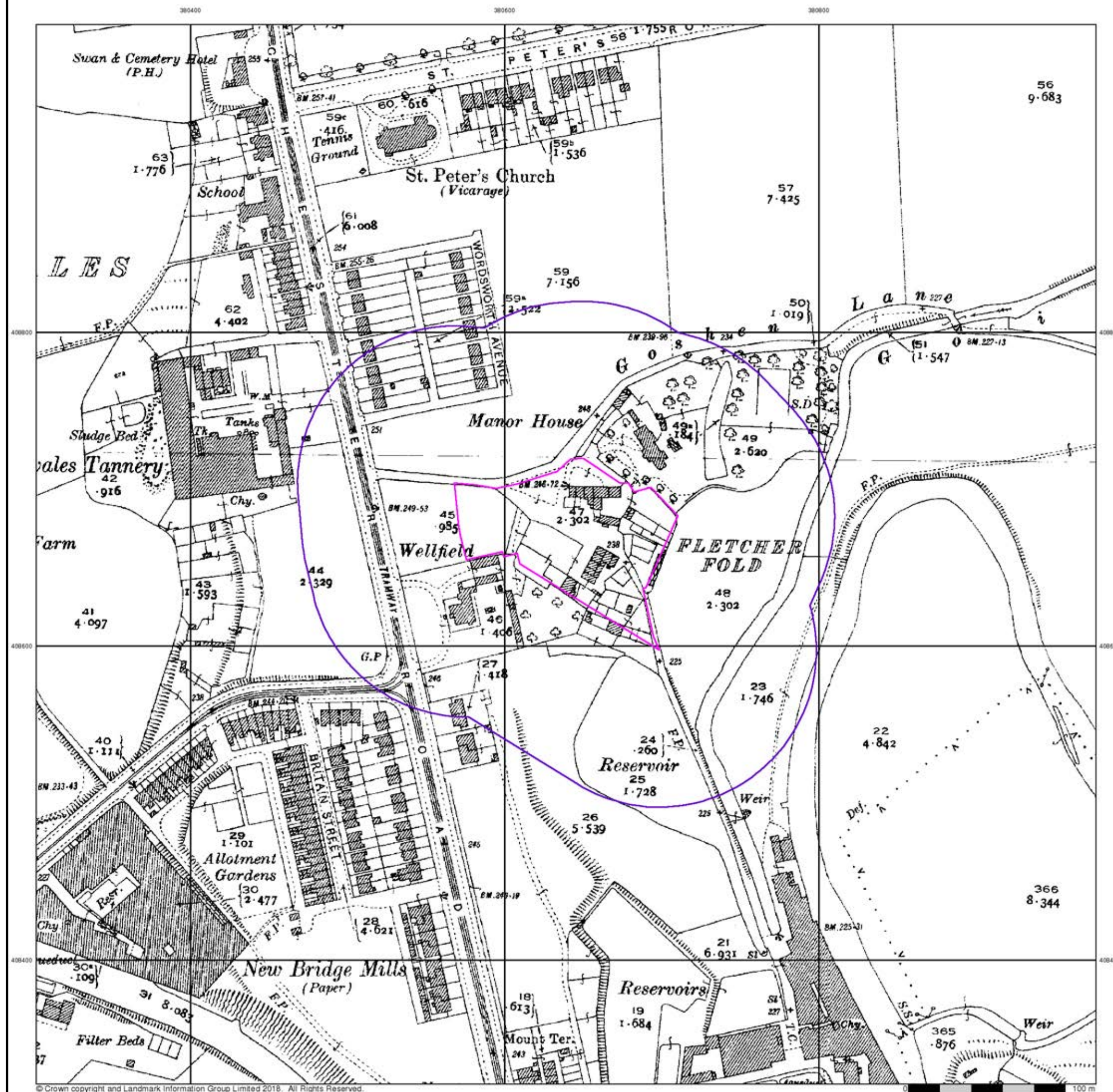
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

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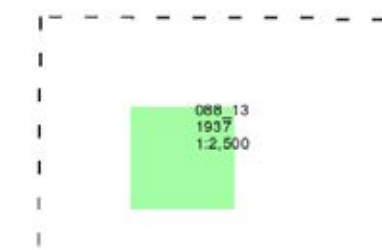
Lancashire And Furness

Published 1937

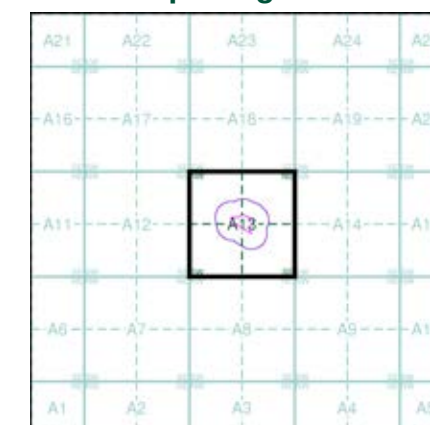
Source map scale - 1:2,500

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)



Historical Map - Segment A13



Order Details

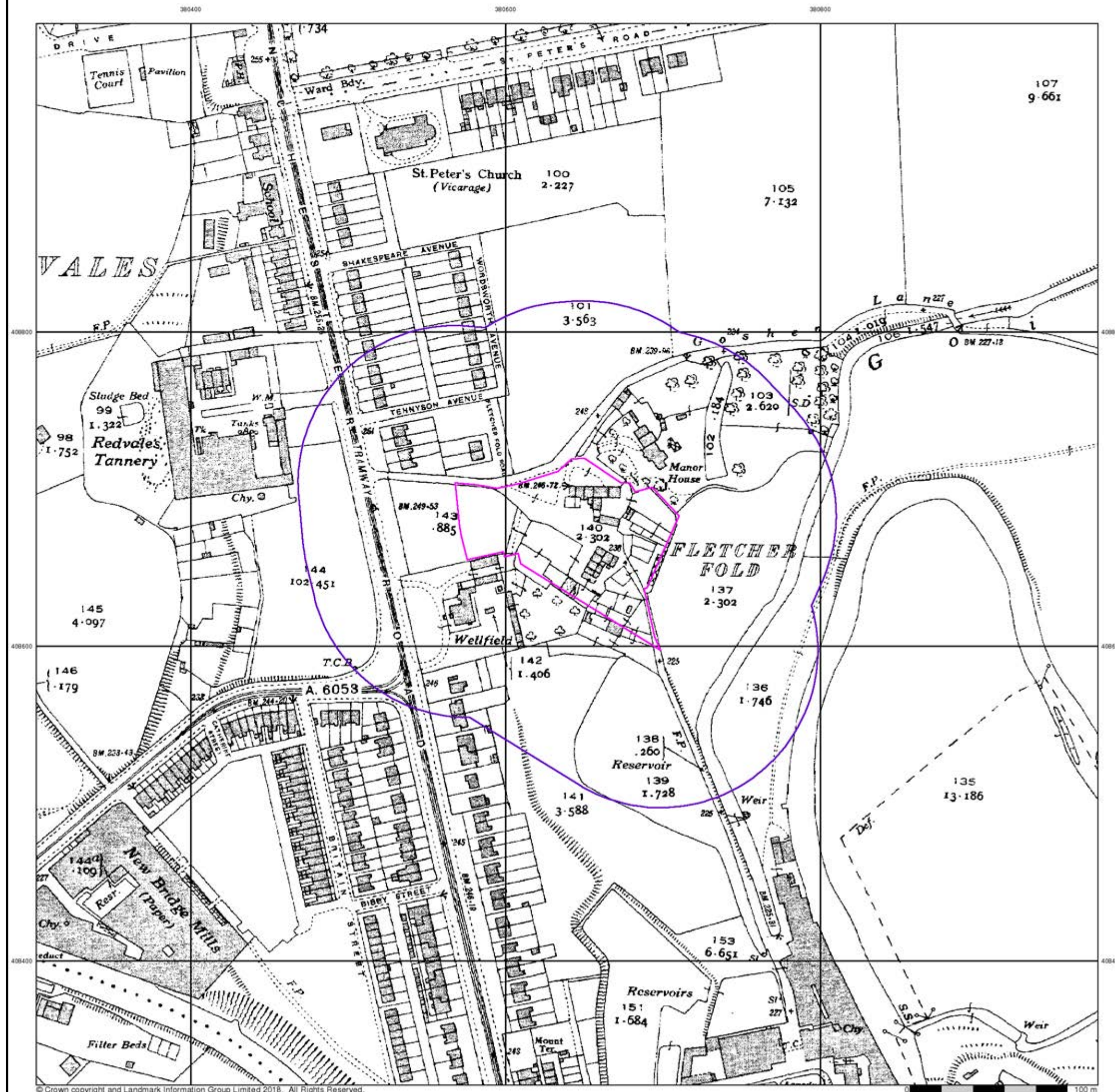
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

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Landmark
INFORMATION GROUP

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Ordnance Survey Plan

Published 1957

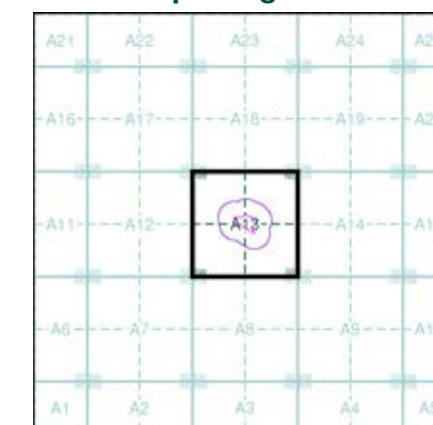
Source map scale - 1:1,250

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)

SD8008NW 1957 1:1,250	SD8008NE 1957 1:1,250
SD8008SW 1957 1:1,250	SD8008SE 1957 1:1,250

Historical Map - Segment A13



Order Details

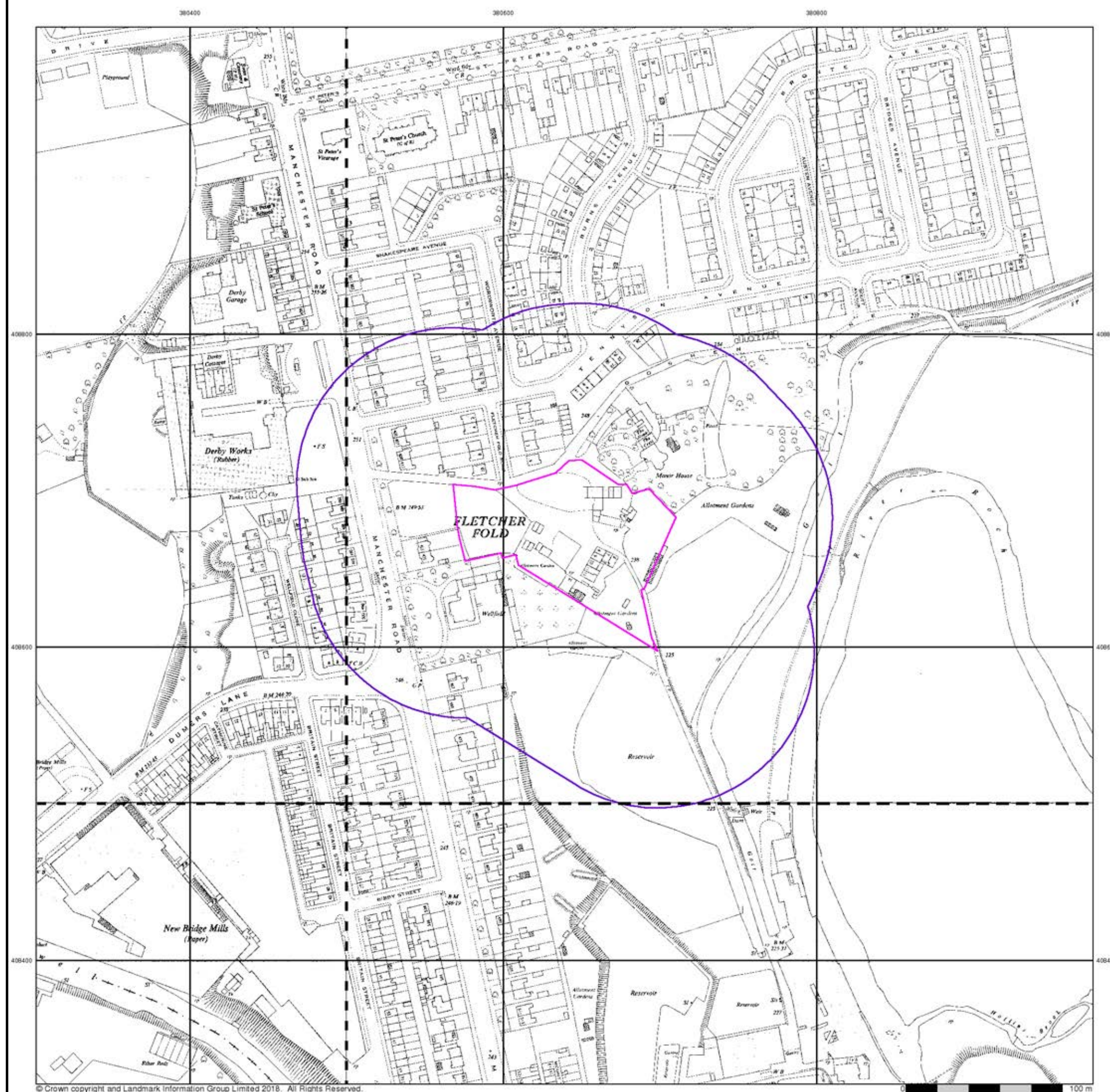
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

Millwood School, Fletcher Fold Road, BURY, BL9 9RX



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Ordnance Survey Plan

Published 1967 - 1975

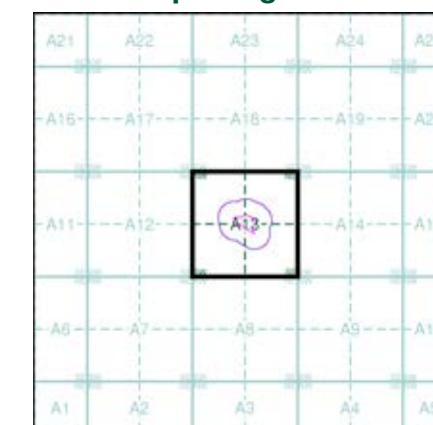
Source map scale - 1:1,250

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)

SD8008NW 1970 1:1,250	SD8008NE 1975 1:1,250
SD8008SW 1970 1:1,250	SD8008SE 1967 1:1,250

Historical Map - Segment A13



Order Details

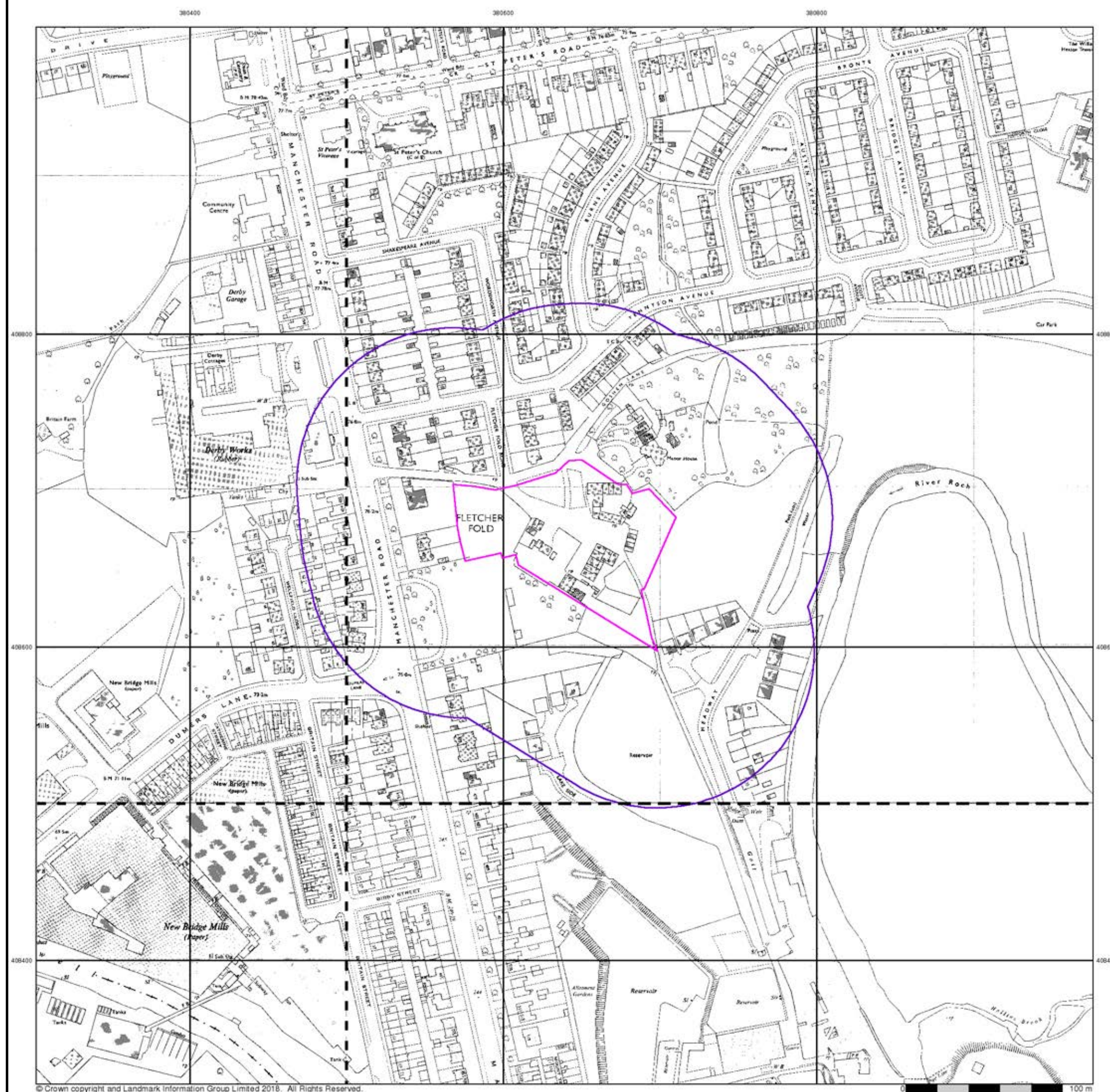
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

Millwood School, Fletcher Fold Road, BURY, BL9 9RX



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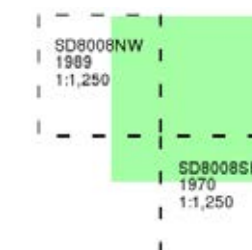
Ordnance Survey Plan

Published 1970 - 1989

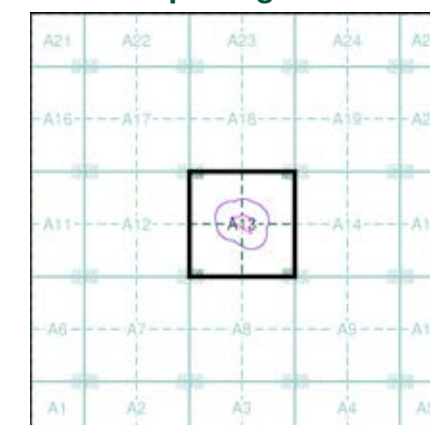
Source map scale - 1:1,250

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)



Historical Map - Segment A13



Order Details

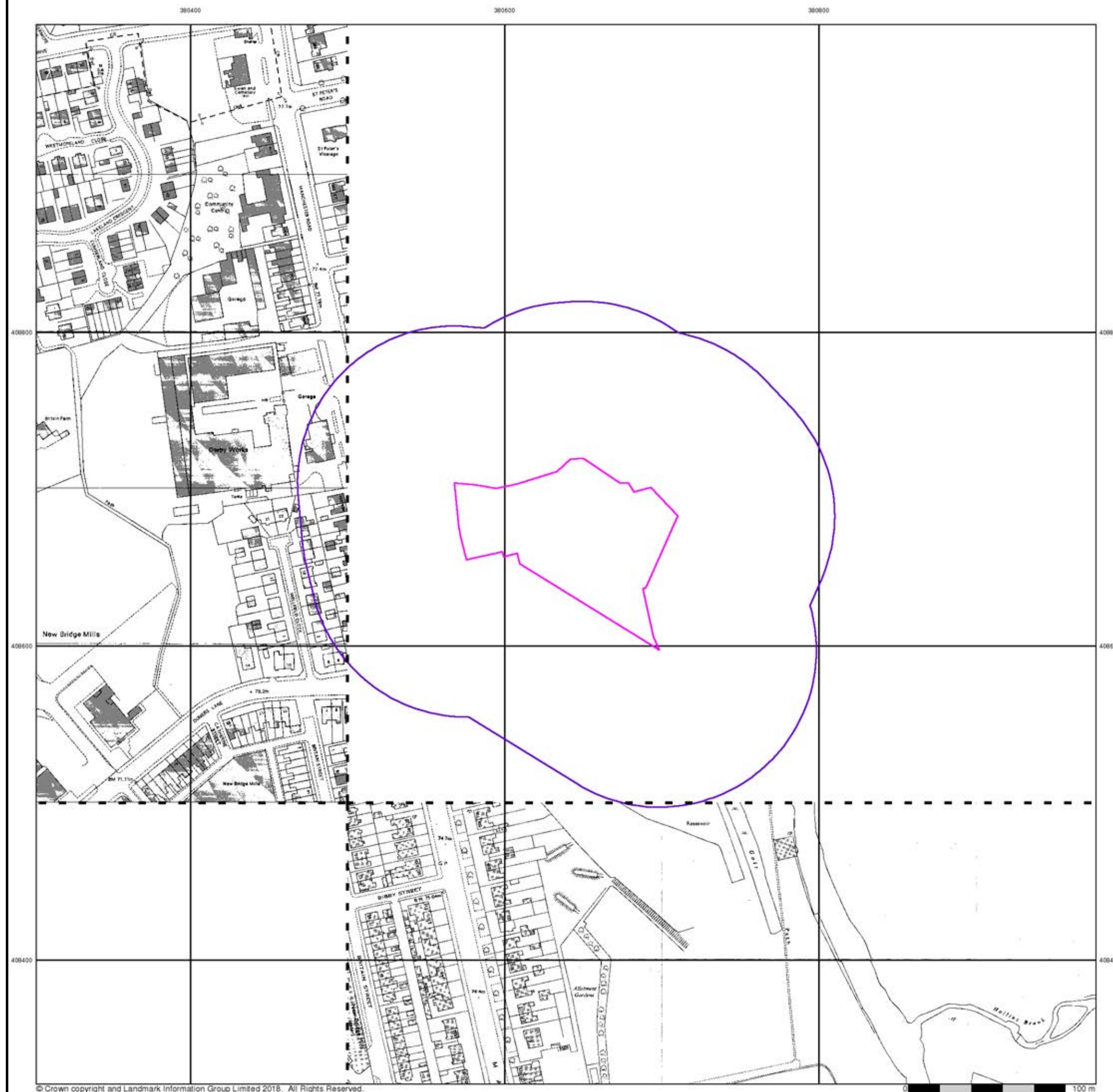
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

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Landmark
INFORMATION GROUP

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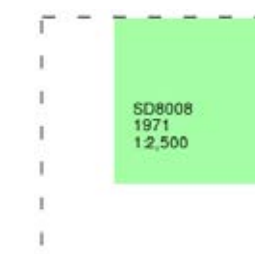
Ordnance Survey Plan

Published 1971

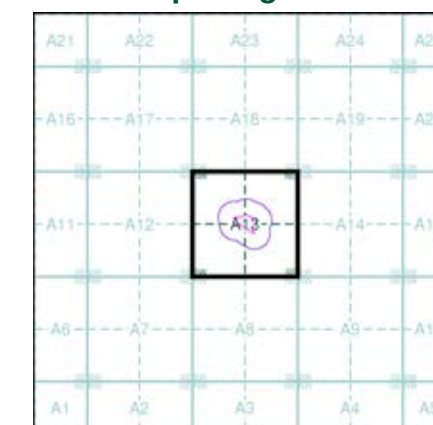
Source map scale - 1:2,500

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)



Historical Map - Segment A13



Order Details

Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

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Additional SIMs

Published 1977 - 1985

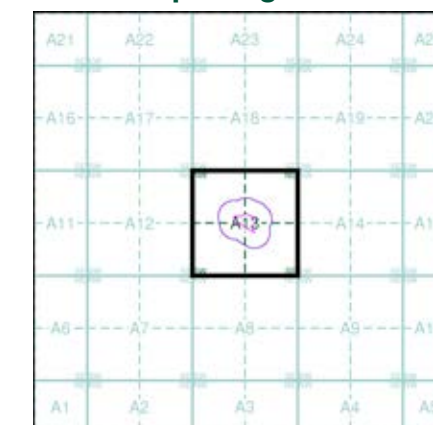
Source map scale - 1:1,250

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)

SD8008NW 1984 1:1,250	SD8008NE 1985 1:1,250
SD8008SE 1977 1:1,250	

Historical Map - Segment A13



Order Details

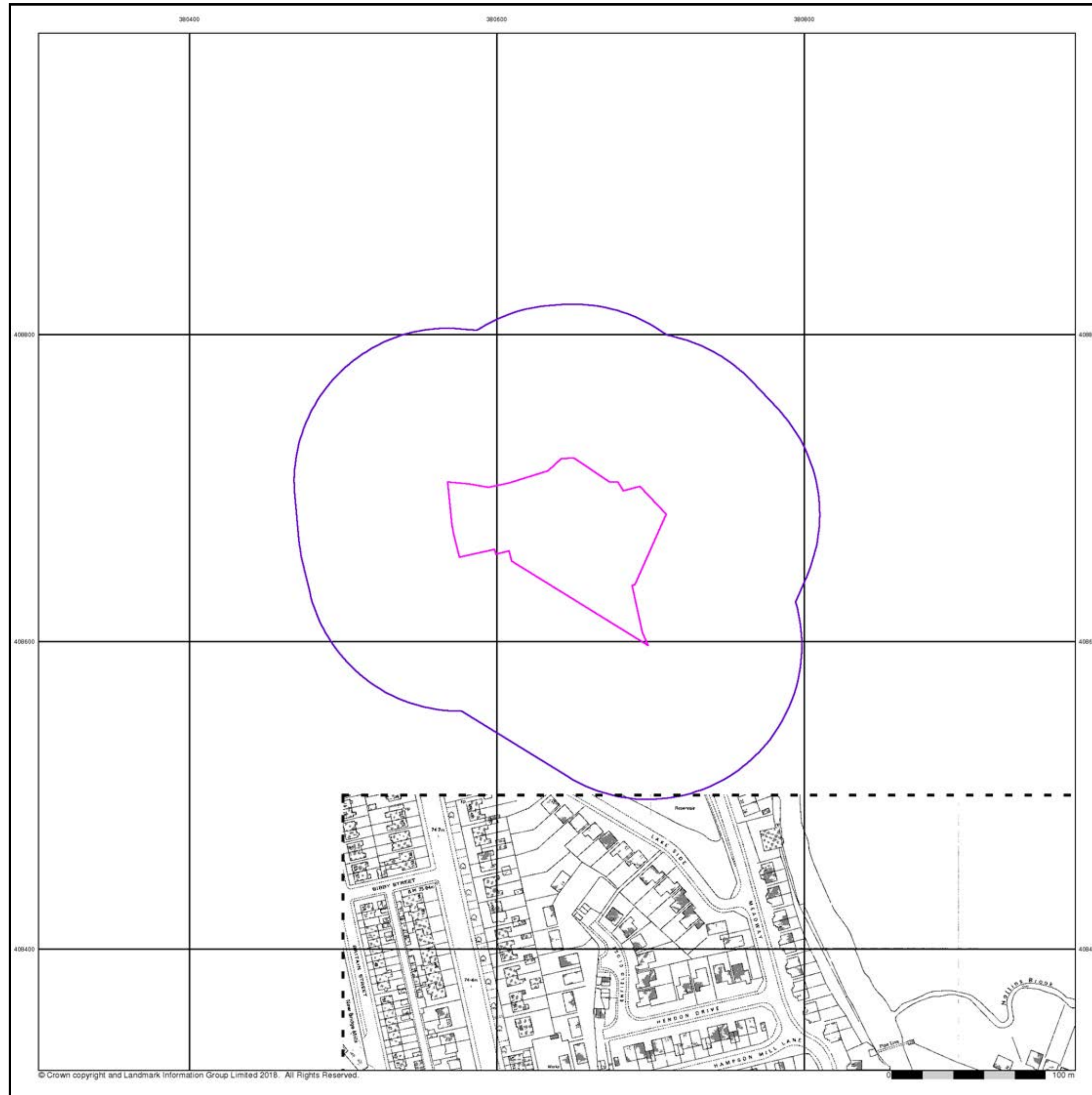
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
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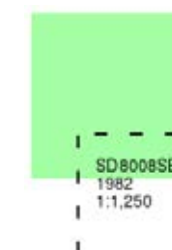
Ordnance Survey Plan

Published 1982

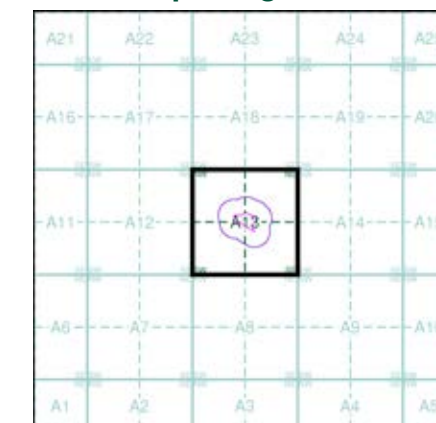
Source map scale - 1:1,250

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)



Historical Map - Segment A13



Order Details

Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

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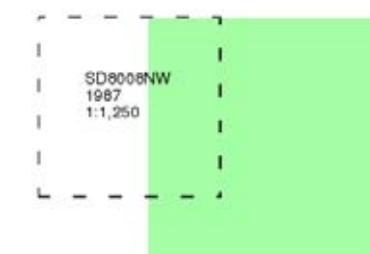
Additional SIMs

Published 1987

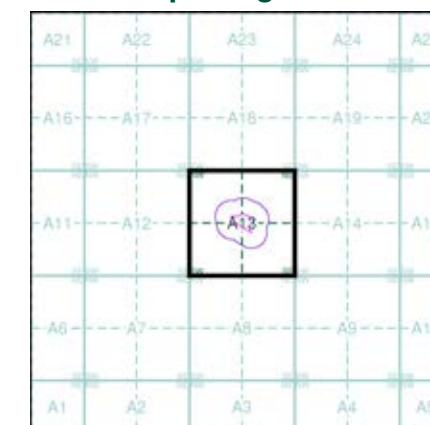
Source map scale - 1:1,250

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)



Historical Map - Segment A13



Order Details

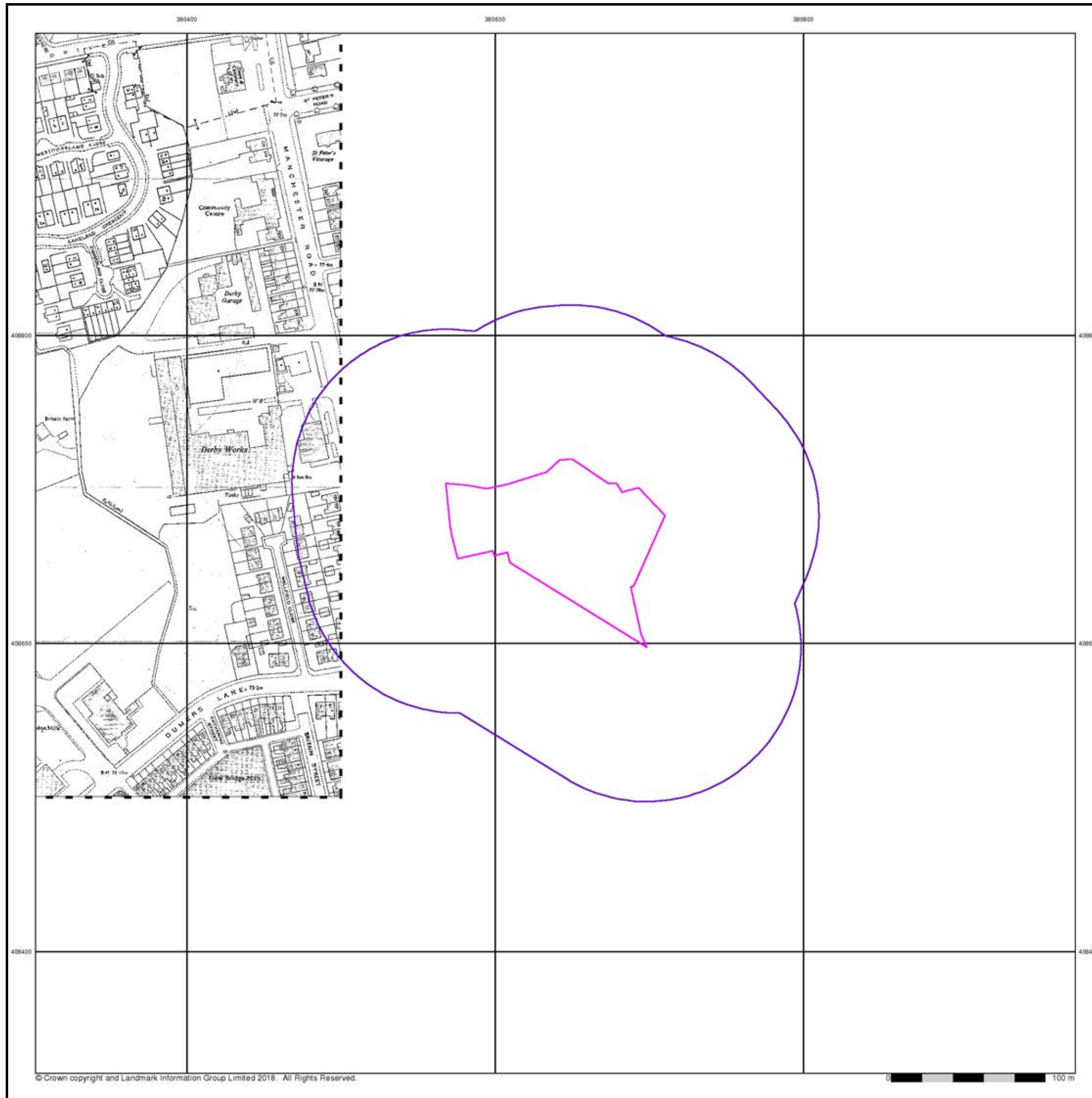
Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

Millwood School, Fletcher Fold Road, BURY, BL9 9RX



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Large-Scale National Grid Data

Published 1992

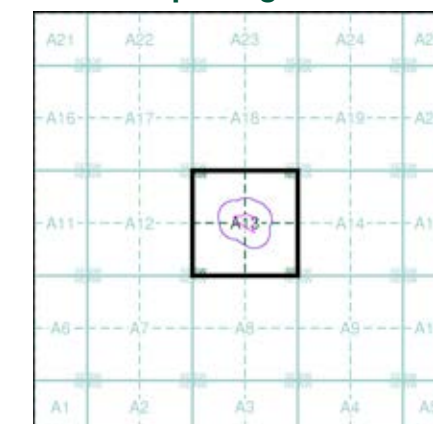
Source map scale - 1:1,250

'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)

SD8008NW 1992 1:1,250	SD8008NE 1992 1:1,250
SD8008SW 1992 1:1,250	SD8008SE 1992 1:1,250

Historical Map - Segment A13



Order Details

Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

Millwood School, Fletcher Fold Road, BURY, BL9 9RX

Landmark
INFORMATION GROUP

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



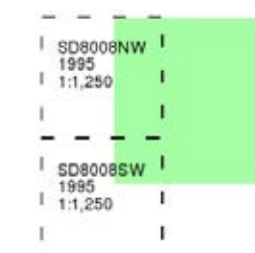
Large-Scale National Grid Data

Published 1995

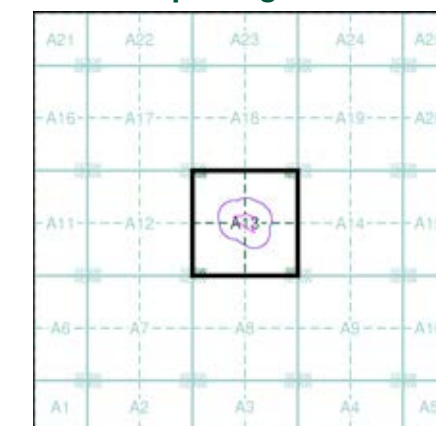
Source map scale - 1:1,250

'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)



Historical Map - Segment A13



Order Details

Order Number: 185589546_1_1
Customer Ref: 12-827
National Grid Reference: 380640, 408660
Slice: A
Site Area (Ha): 0.91
Search Buffer (m): 100

Site Details

Millwood School, Fletcher Fold Road, BURY, BL9 9RX



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

Appendix D

Groundsure Geo-Insight Report

FLETCHER FOLD, BURY, BL9 9RX**Order Details**

Date: 09/11/2023
Your ref: Fletcher_Fold_PO23006184
Our Ref: GS-CID-OQ1-JEW-1FF

Site Details

Location: 380648 408677
Area: 0.89 ha
Authority: [Bury Metropolitan Borough Council](#) ↗



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Summary of findings[p. 2 >](#) **Aerial image**[p. 5 >](#)**OS MasterMap site plan**[p. 9 >](#) groundsure.com/insightuserguide ↗

Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Summary of findings

Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
10 >	1.1 >	10k Availability >	Identified (within 500m)				
11 >	1.2 >	Artificial and made ground (10k) >	0	1	0	4	-
13 >	1.3 >	Superficial geology (10k) >	2	1	3	3	-
14	1.4	Landslip (10k)	0	0	0	0	-
15 >	1.5 >	Bedrock geology (10k) >	1	0	9	7	-
16 >	1.6 >	Bedrock faults and other linear features (10k) >	0	0	8	9	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
18 >	2.1 >	50k Availability >	Identified (within 500m)				
19	2.2	Artificial and made ground (50k)	0	0	0	0	-
19	2.3	Artificial ground permeability (50k)	0	0	-	-	-
20 >	2.4 >	Superficial geology (50k) >	2	1	3	2	-
21 >	2.5 >	Superficial permeability (50k) >	Identified (within 50m)				
21	2.6	Landslip (50k)	0	0	0	0	-
22	2.7	Landslip permeability (50k)	None (within 50m)				
23 >	2.8 >	Bedrock geology (50k) >	1	0	8	5	-
24 >	2.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
25 >	2.10 >	Bedrock faults and other linear features (50k) >	0	0	8	6	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
26 >	3.1 >	BGS Boreholes >	0	2	4	-	-
Page	Section	Natural ground subsidence >					
28 >	4.1 >	Shrink swell clays >	Very low (within 50m)				
29 >	4.2 >	Running sands >	Low (within 50m)				
31 >	4.3 >	Compressible deposits >	Moderate (within 50m)				
33 >	4.4 >	Collapsible deposits >	Very low (within 50m)				
34 >	4.5 >	Landslides >	Very low (within 50m)				
35 >	4.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				



Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
37	5.1	BritPits	0	0	0	0	-
38 >	5.2 >	Surface ground workings >	1	17	7	-	-
39	5.3	Underground workings	0	0	0	0	0
39	5.4	Underground mining extents	0	0	0	0	-
39	5.5	Historical Mineral Planning Areas	0	0	0	0	-
39	5.6	Non-coal mining	0	0	0	0	0
40	5.7	JPB mining areas	None (within 0m)				
40	5.8	The Coal Authority non-coal mining	0	0	0	0	-
40	5.9	Researched mining	0	0	0	0	-
40	5.10	Mining record office plans	0	0	0	0	-
41	5.11	BGS mine plans	0	0	0	0	-
41 >	5.12 >	Coal mining >	Identified (within 0m)				
41	5.13	Brine areas	None (within 0m)				
41	5.14	Gypsum areas	None (within 0m)				
41	5.15	Tin mining	None (within 0m)				
42	5.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
43	6.1	Natural cavities	0	0	0	0	-
43	6.2	Mining cavities	0	0	0	0	0
43	6.3	Reported recent incidents	0	0	0	0	-
43	6.4	Historical incidents	0	0	0	0	-
44	6.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
45 >	7.1 >	Radon >	Between 1% and 3% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
47 >	8.1 >	BGS Estimated Background Soil Chemistry >	1	2	-	-	-
47	8.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
47	8.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-



Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
48	9.1	Underground railways (London)	0	0	0	-	-
48	9.2	Underground railways (Non-London)	0	0	0	-	-
48	9.3	Railway tunnels	0	0	0	-	-
48	9.4	Historical railway and tunnel features	0	0	0	-	-
48	9.5	Royal Mail tunnels	0	0	0	-	-
49	9.6	Historical railways	0	0	0	-	-
49	9.7	Railways	0	0	0	-	-
49	9.8	Crossrail 1	0	0	0	0	-
49	9.9	Crossrail 2	0	0	0	0	-
49	9.10	HS2	0	0	0	0	-



Recent aerial photograph

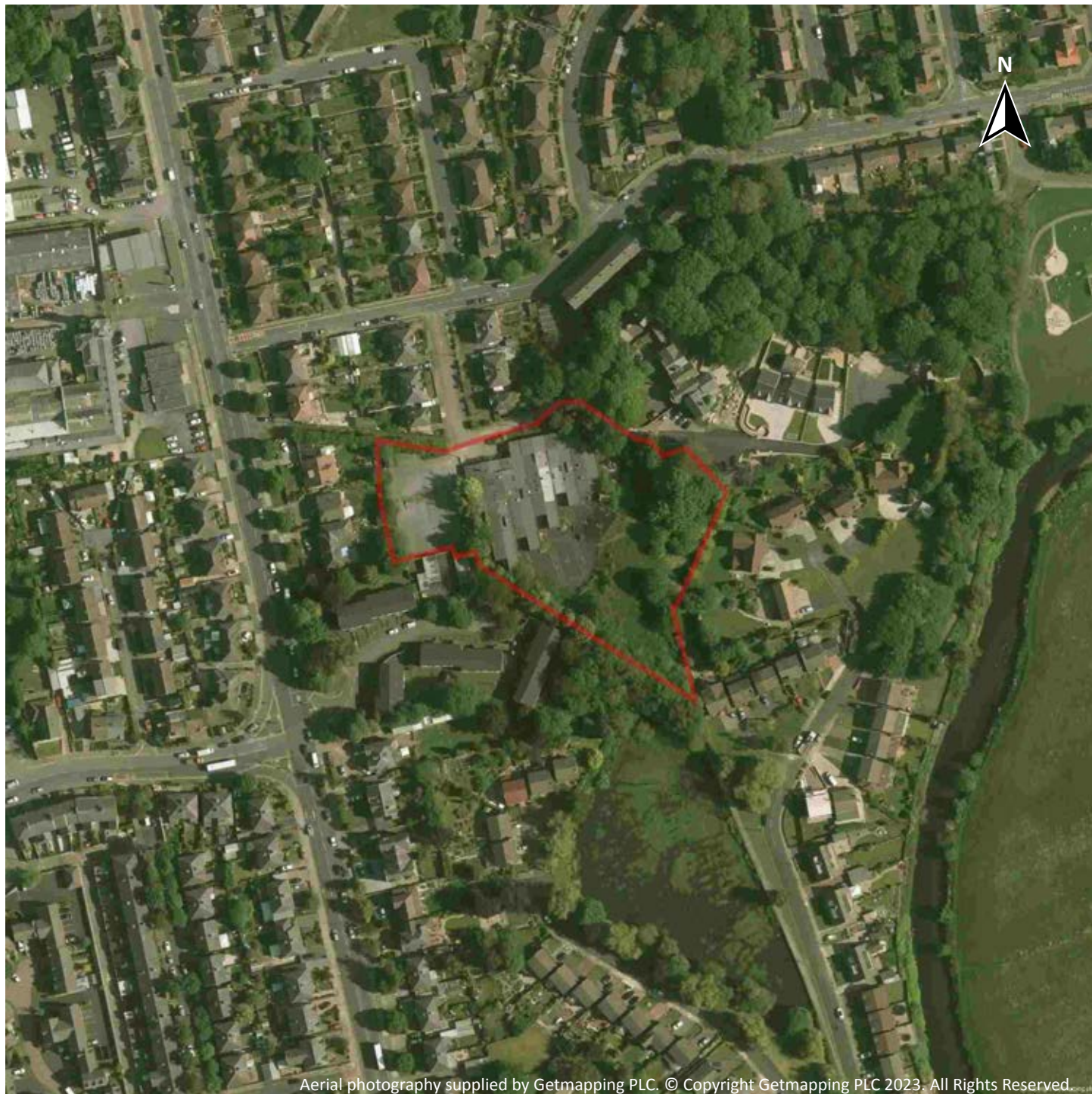


Capture Date: 23/05/2019

Site Area: 0.89ha



Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 0.89ha



Recent site history - 2011 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2023. All Rights Reserved.

Capture Date: 01/05/2011

Site Area: 0.89ha



Recent site history - 2000 aerial photograph



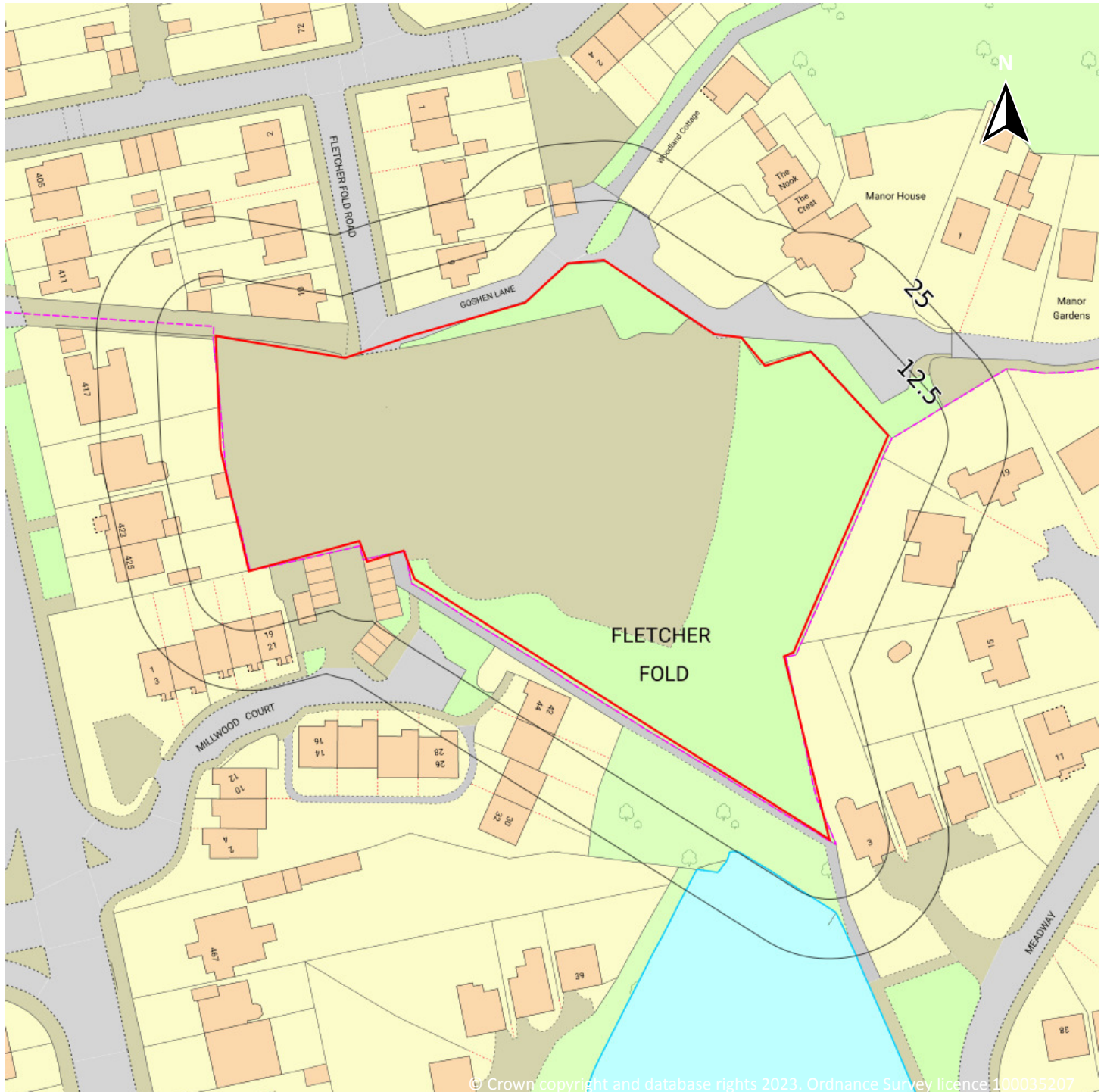
Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2023. All Rights Reserved.

Capture Date: 27/06/2000

Site Area: 0.89ha



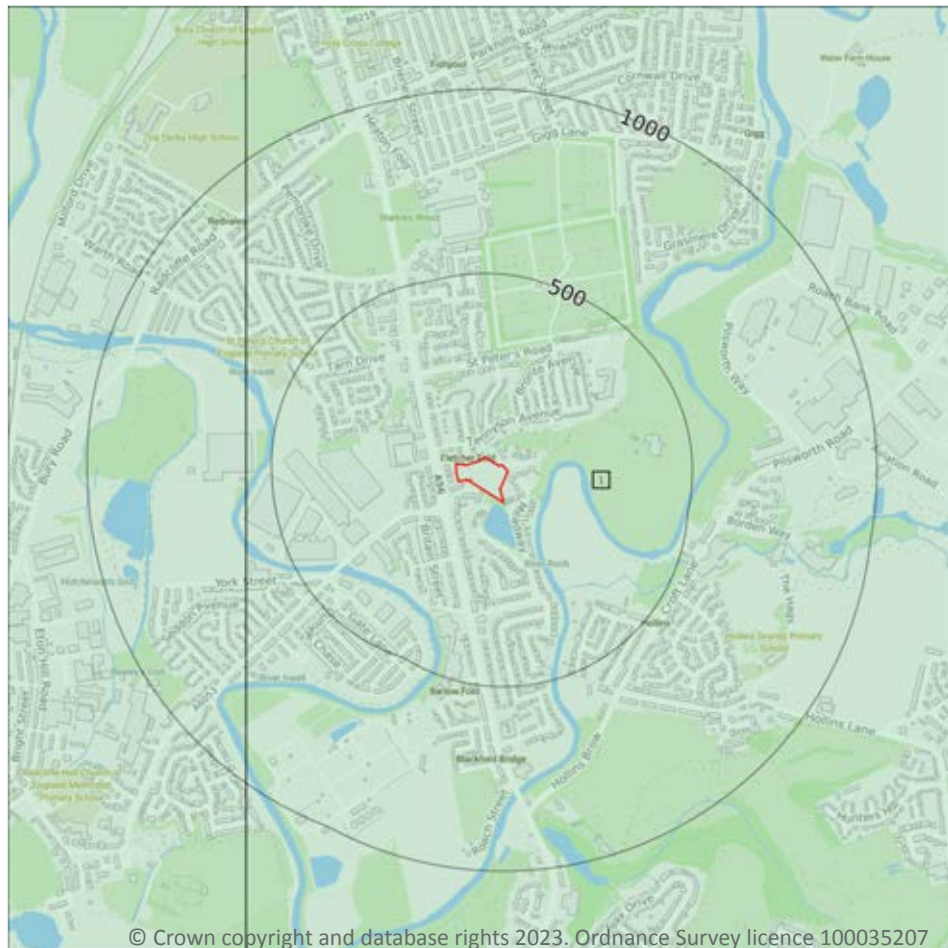
OS MasterMap site plan



Site Area: 0.89ha



1 Geology 1:10,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Full coverage
 - Partial coverage
 - No coverage

1.1 10k Availability

Records within 500m

1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

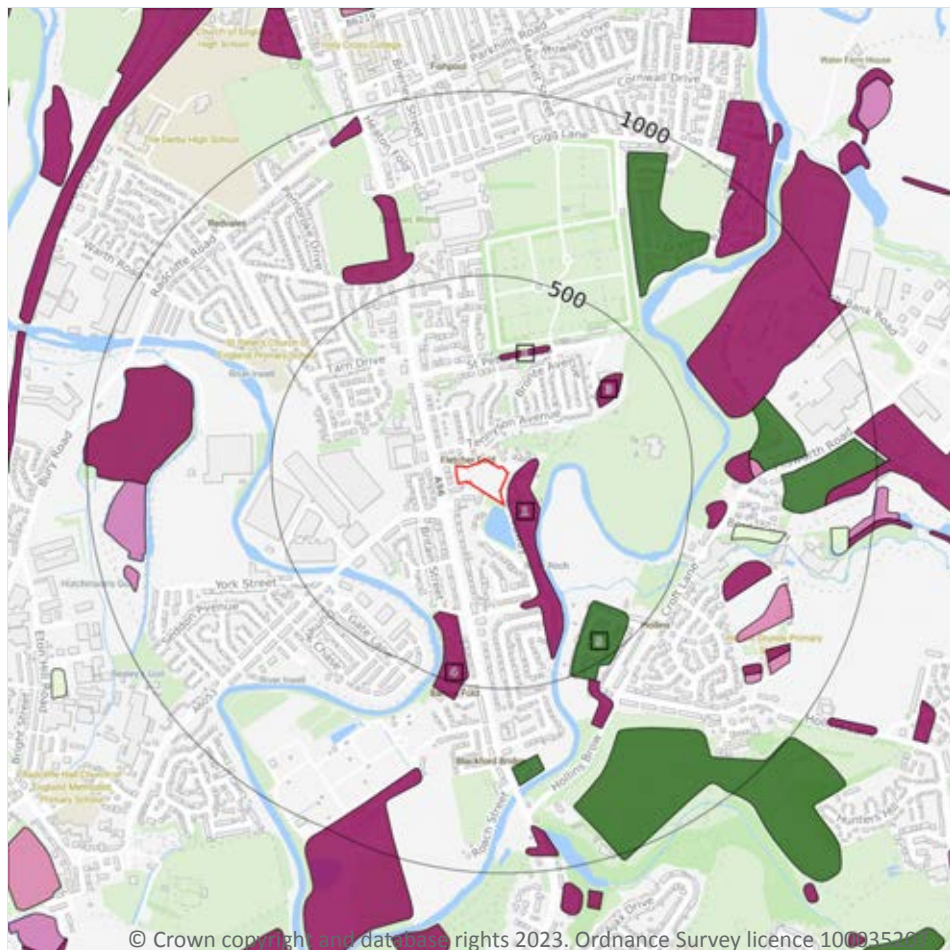
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 10](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	SD80NW

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground



- Site Outline**
- Search buffers in metres (m)**
- Reclaimed ground
 - Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

1.2 Artificial and made ground (10k)

Records within 500m

5

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on [page 11](#) >

ID	Location	LEX Code	Description	Rock description
1	12m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	274m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	305m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	328m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

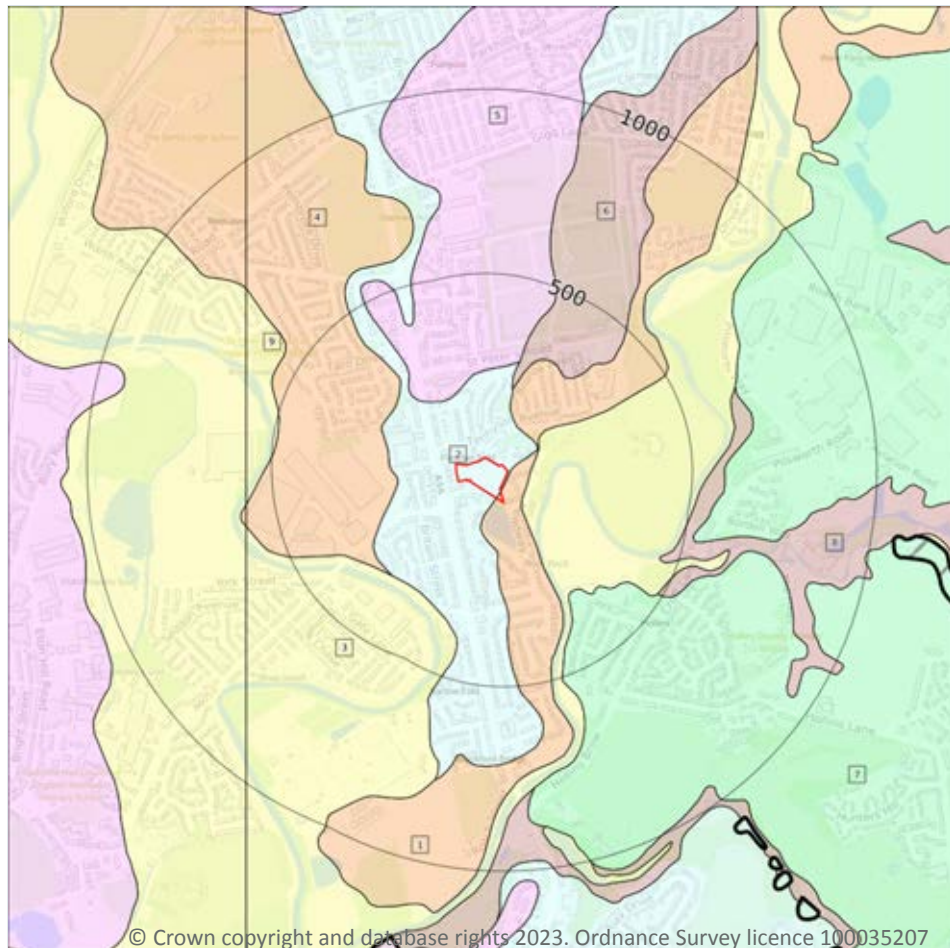


ID	Location	LEX Code	Description	Rock description
5	358m SE	LSGR-ARTDP	Landscaped Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



— Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

1.3 Superficial geology (10k)

Records within 500m

9

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 13](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
2	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
3	49m SE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel



ID	Location	LEX Code	Description	Rock description
4	160m W	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
5	172m NW	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
6	198m N	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
7	304m SE	HMGDD-DMTN	Hummocky (moundy) Glacial Deposits, Devensian - Diamicton	Diamicton
8	450m SE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
9	489m W	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

This data is sourced from the British Geological Survey.

1.4 Landslip (10k)

Records within 500m

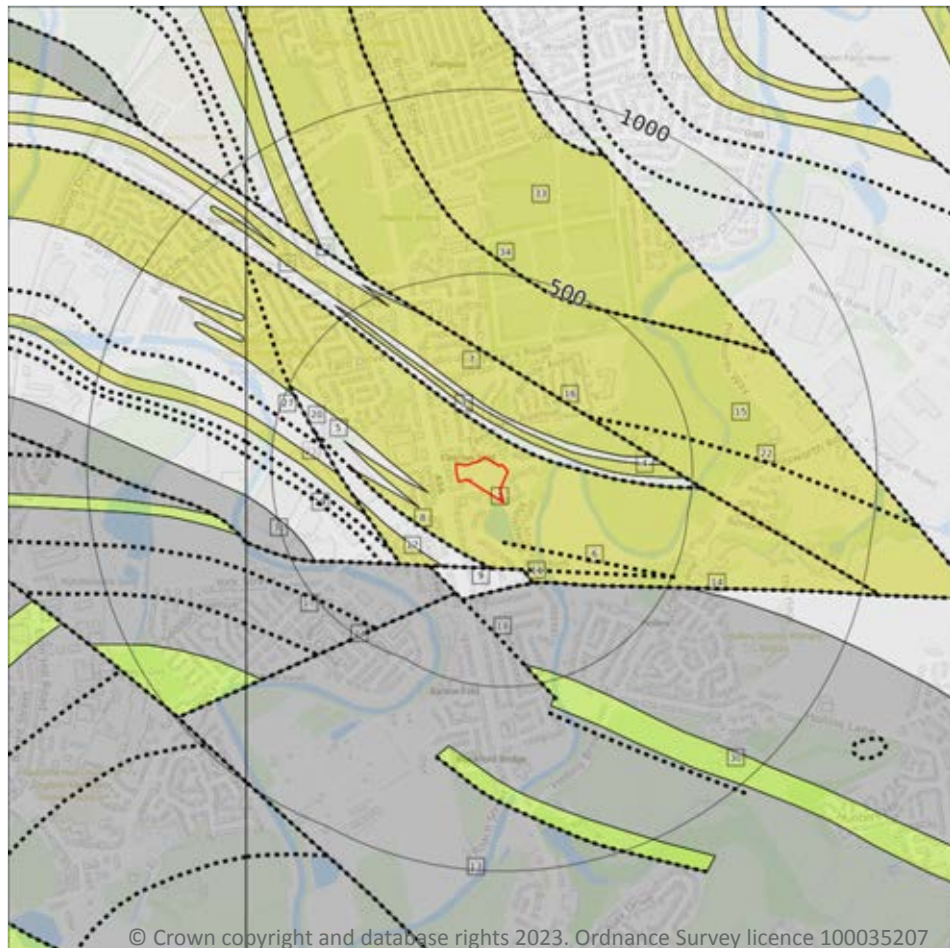
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- Bedrock faults and other linear features (10k)
- Bedrock geology (10k)
Please see table for more details.

1.5 Bedrock geology (10k)

Records within 500m

17

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 15 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	TRBR-SDST	Trencherbone Rock - Sandstone	Langsettian Sub-age
2	63m NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
4	88m NE	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age



ID	Location	LEX Code	Description	Rock age
5	89m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
7	122m NE	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
9	180m S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
12	213m SW	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
13	229m S	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
15	234m NE	TRBR-SDST	Trencherbone Rock - Sandstone	Langsettian Sub-age
17	241m SW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
19	257m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
23	265m W	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
27	317m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
29	409m N	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
30	443m S	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
31	444m SW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
33	477m N	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age

This data is sourced from the British Geological Survey.

1.6 Bedrock faults and other linear features (10k)

Records within 500m

17

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 15](#) >

ID	Location	Category	Description
3	63m NE	ROCK	Coal seam, inferred coincident with bedrock geology boundary

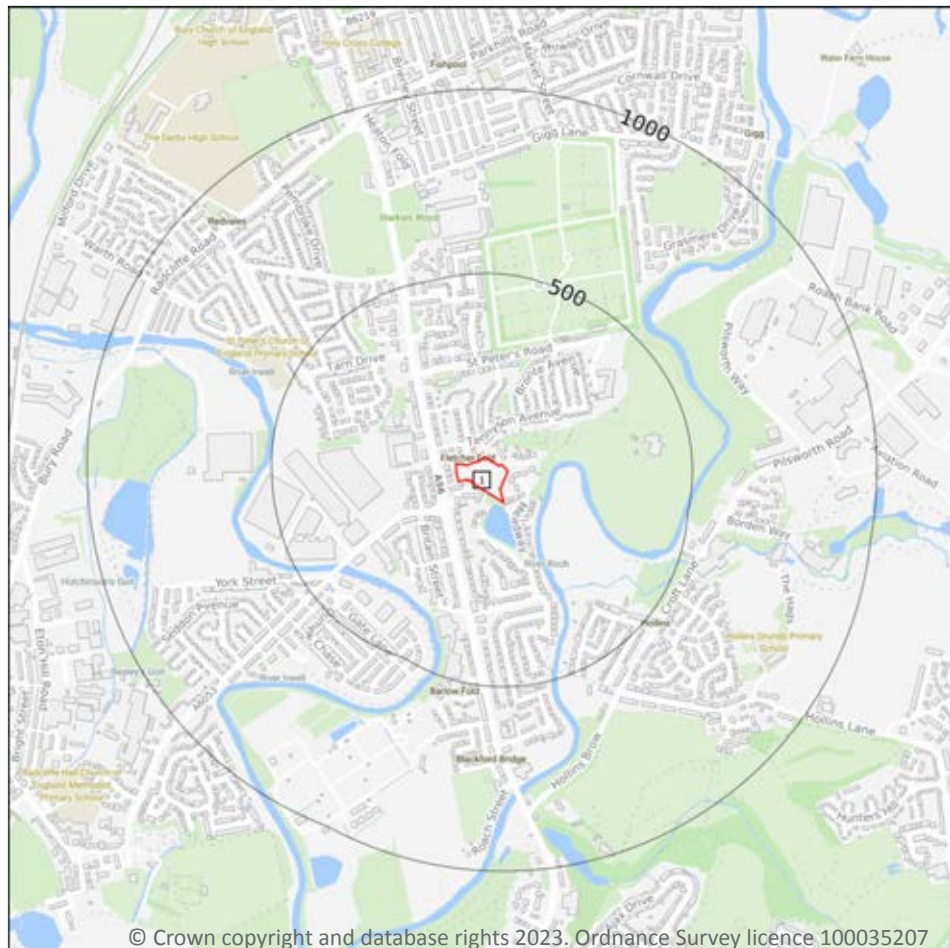


ID	Location	Category	Description
6	108m S	FAULT	Normal fault, inferred; crossmarks on downthrow side
8	158m SW	ROCK	Coal seam, inferred coincident with bedrock geology boundary
10	180m S	FAULT	Normal fault, inferred; crossmarks on downthrow side
11	190m SE	ROCK	Coal seam, inferred coincident with bedrock geology boundary
14	229m S	FAULT	Normal fault, inferred; crossmarks on downthrow side
16	234m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
18	241m SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
20	257m SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
21	262m SW	ROCK	Coal seam, inferred
22	264m NE	ROCK	Coal seam, inferred
24	278m S	FAULT	Normal fault, inferred; crossmarks on downthrow side
25	286m W	ROCK	Coal seam, inferred
26	302m SW	ROCK	Coal seam, inferred
28	362m W	ROCK	Coal seam, inferred
32	457m SW	ROCK	Coal seam, inferred
34	477m N	ROCK	Coal seam, inferred coincident with bedrock geology boundary

This data is sourced from the British Geological Survey.



2 Geology 1:50,000 scale - Availability



— Site Outline

Search buffers in metres (m)

□ Geological map tile

2.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on [page 18](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	No coverage	EW085_manchester_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground

2.2 Artificial and made ground (50k)

Records within 500m

0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

2.3 Artificial ground permeability (50k)

Records within 50m

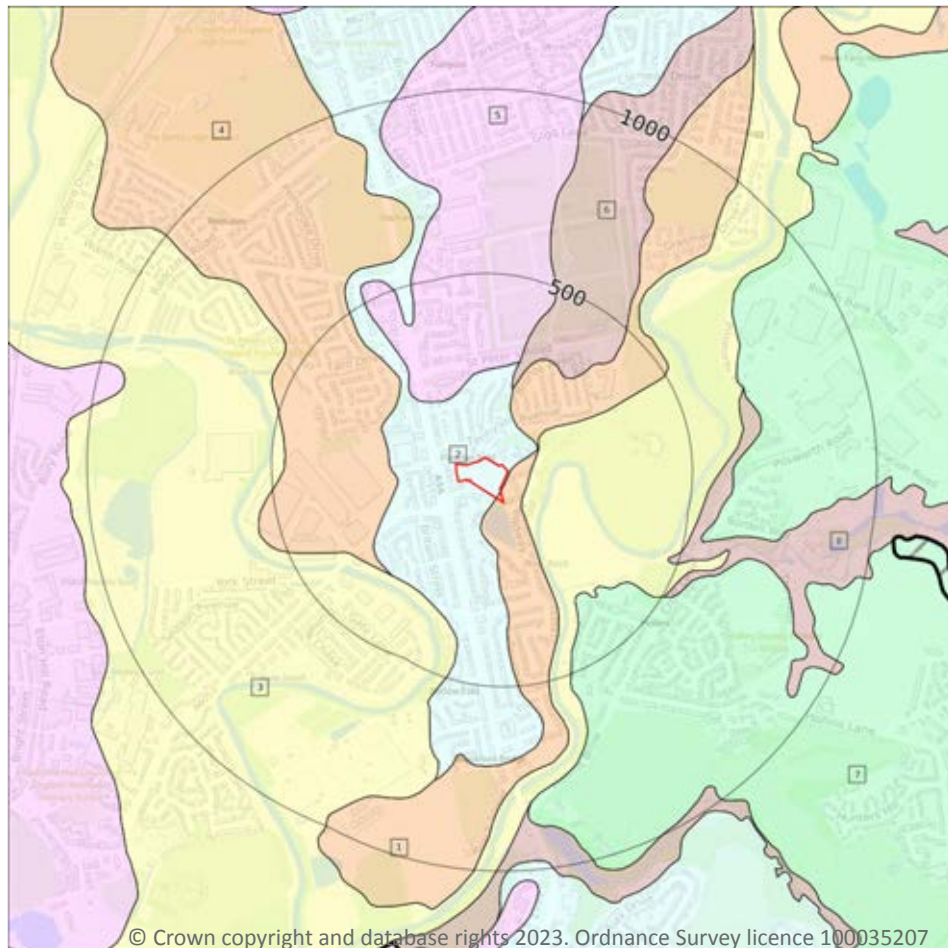
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

2.4 Superficial geology (50k)

Records within 500m

8

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 20](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
2	On site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	49m SE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL



ID	Location	LEX Code	Description	Rock description
4	160m W	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
5	172m NW	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
6	199m N	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
7	321m SE	HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN	DIAMICTON
8	473m SE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

2.5 Superficial permeability (50k)

Records within 50m	3
---------------------------	----------

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Intergranular	Very High	High
On site	Mixed	High	Low
49m SE	Intergranular	High	Very Low

This data is sourced from the British Geological Survey.

2.6 Landslip (50k)

Records within 500m	0
----------------------------	----------

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



2.7 Landslip permeability (50k)

Records within 50m

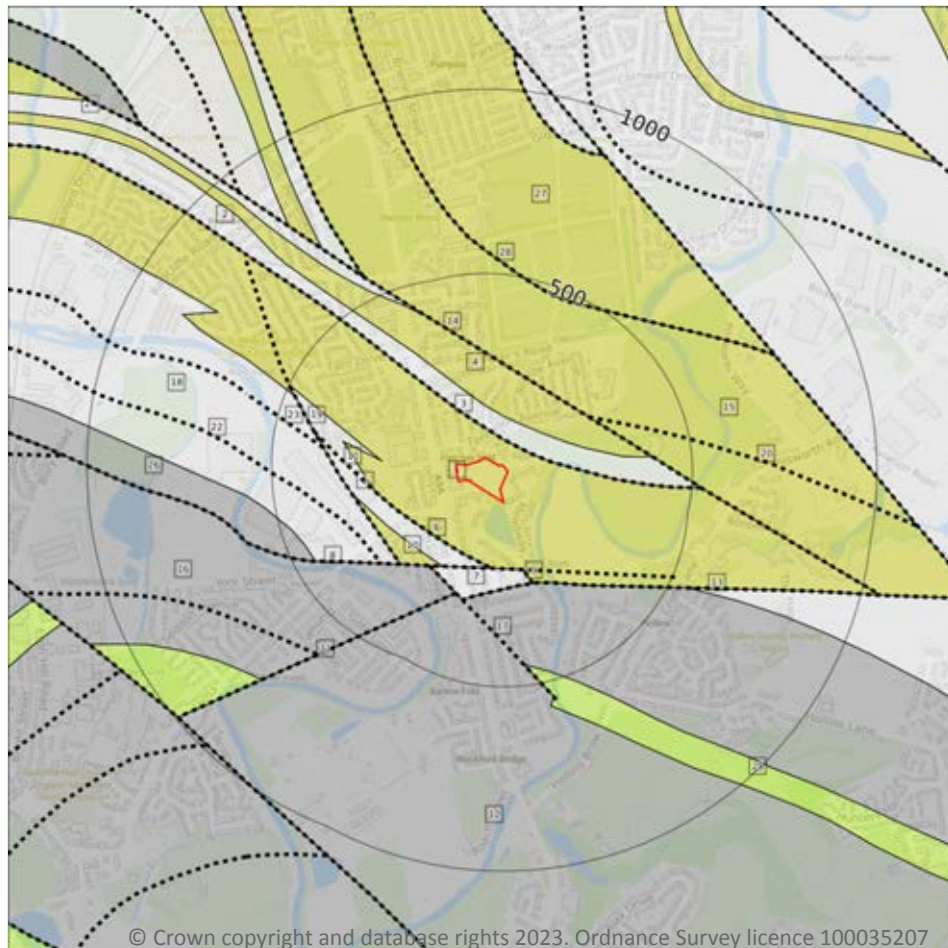
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

2.8 Bedrock geology (50k)

Records within 500m

14

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 23 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	TRBR-SDST	TRENCHBONE ROCK - SANDSTONE	WESTPHALIAN
2	63m NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
4	122m NE	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN



ID	Location	LEX Code	Description	Rock age
5	158m SW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
7	180m S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10	213m SW	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
12	229m S	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	235m NE	TRBR-SDST	TRENCHERBONE ROCK - SANDSTONE	WESTPHALIAN
16	241m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
18	257m SW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
24	409m N	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
25	443m S	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
26	444m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
27	477m N	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

2.9 Bedrock permeability (50k)

Records within 50m	1
---------------------------	----------

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	High	Moderate

This data is sourced from the British Geological Survey.



2.10 Bedrock faults and other linear features (50k)

Records within 500m

14

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

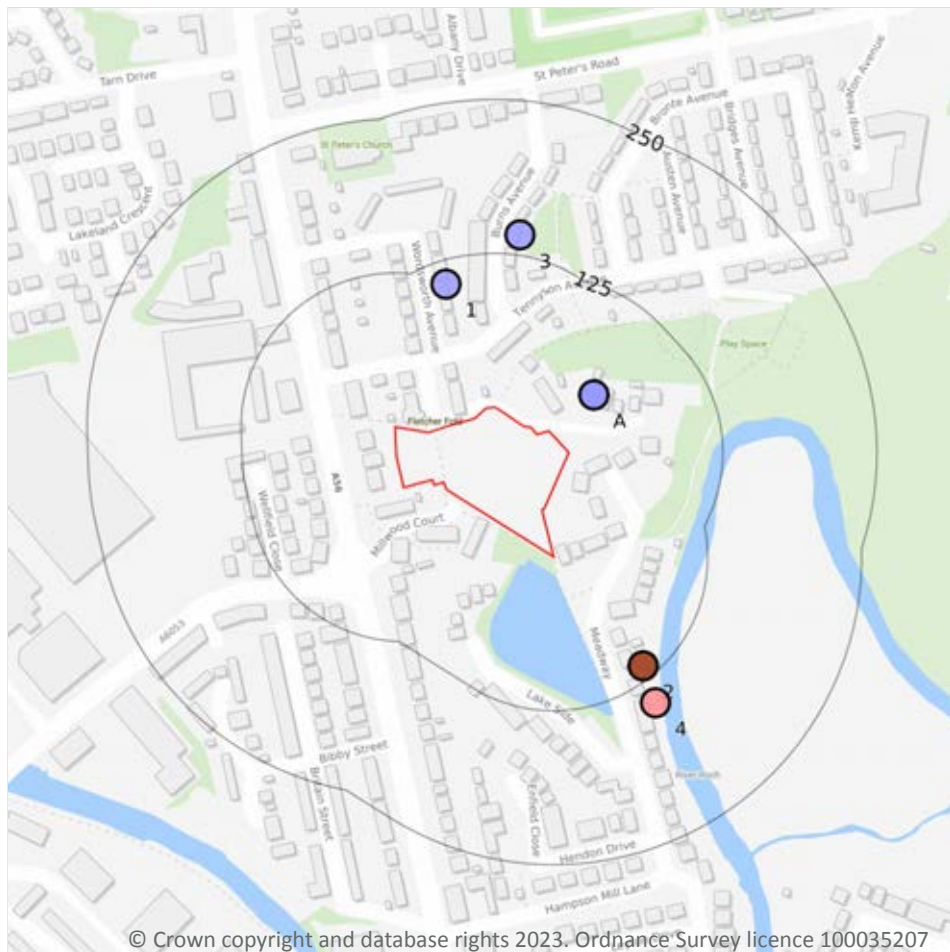
Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 23 >](#)

ID	Location	Category	Description
3	63m NE	ROCK	Coal seam, inferred
6	158m SW	ROCK	Coal seam, inferred
8	180m S	FAULT	Fault, inferred
9	190m SE	ROCK	Coal seam, inferred
11	227m W	ROCK	Coal seam, inferred
13	229m S	FAULT	Fault, inferred
14	234m NE	FAULT	Fault, inferred
17	241m SW	FAULT	Fault, inferred
19	257m SW	FAULT	Fault, inferred
20	264m NE	ROCK	Coal seam, inferred
21	277m S	FAULT	Fault, inferred
22	302m SW	ROCK	Coal seam, inferred
23	362m W	ROCK	Coal seam, inferred
28	477m N	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.



3 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

3.1 BGS Boreholes

Records within 250m

6

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on [page 26 >](#)

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	47m NE	380730 408730	MEADWAY, BURY. 1	8.2	N	27342 ↗
A	47m NE	380730 408730	MEADWAY, BURY. 2	6.2	N	27343 ↗
1	106m N	380610 408820	GOSHEN HOUSING. 56	7.32	N	27216 ↗

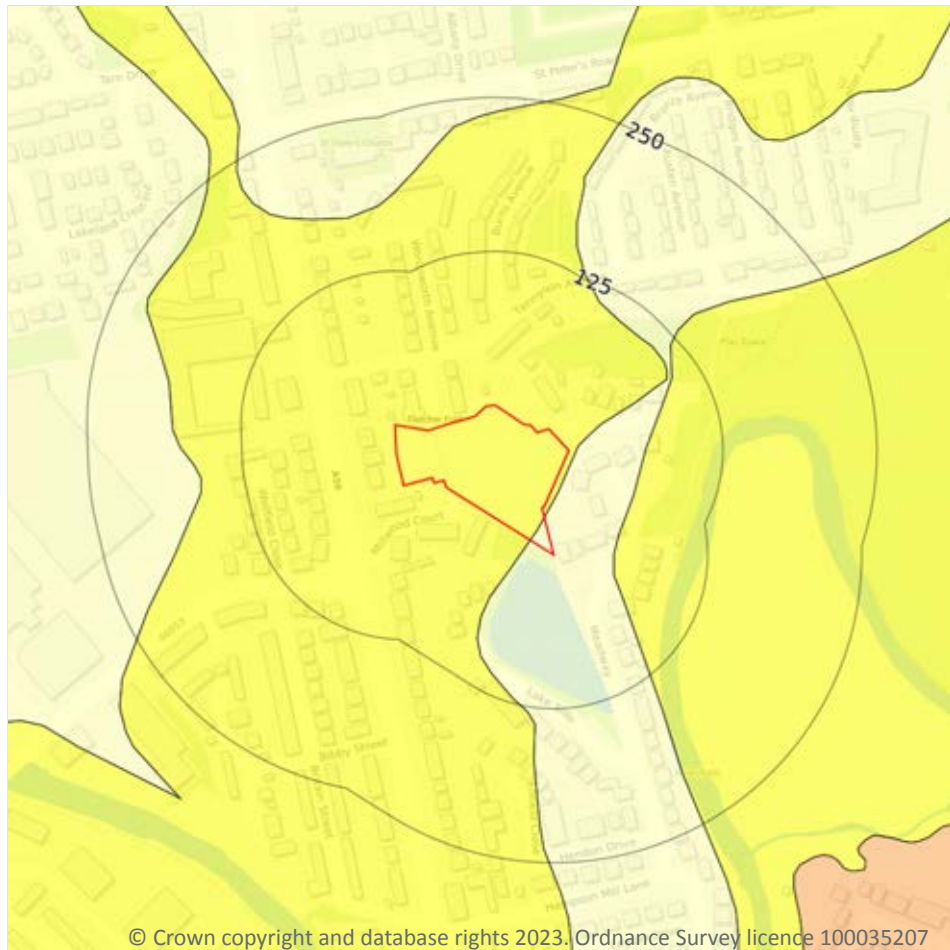


ID	Location	Grid reference	Name	Length	Confidential	Web link
2	115m SE	380770 408510	BIBBY & BARRON LTD	-1.0	N	27568 ↗
3	142m N	380670 408860	GOSHEN HOUSING. 70	7.29	N	27217 ↗
4	145m SE	380780 408480	HAMPSON MILLS BURY	101.8	N	27195 ↗

This data is sourced from the British Geological Survey.



4 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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4.1 Shrink swell clays

Records within 50m

2

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

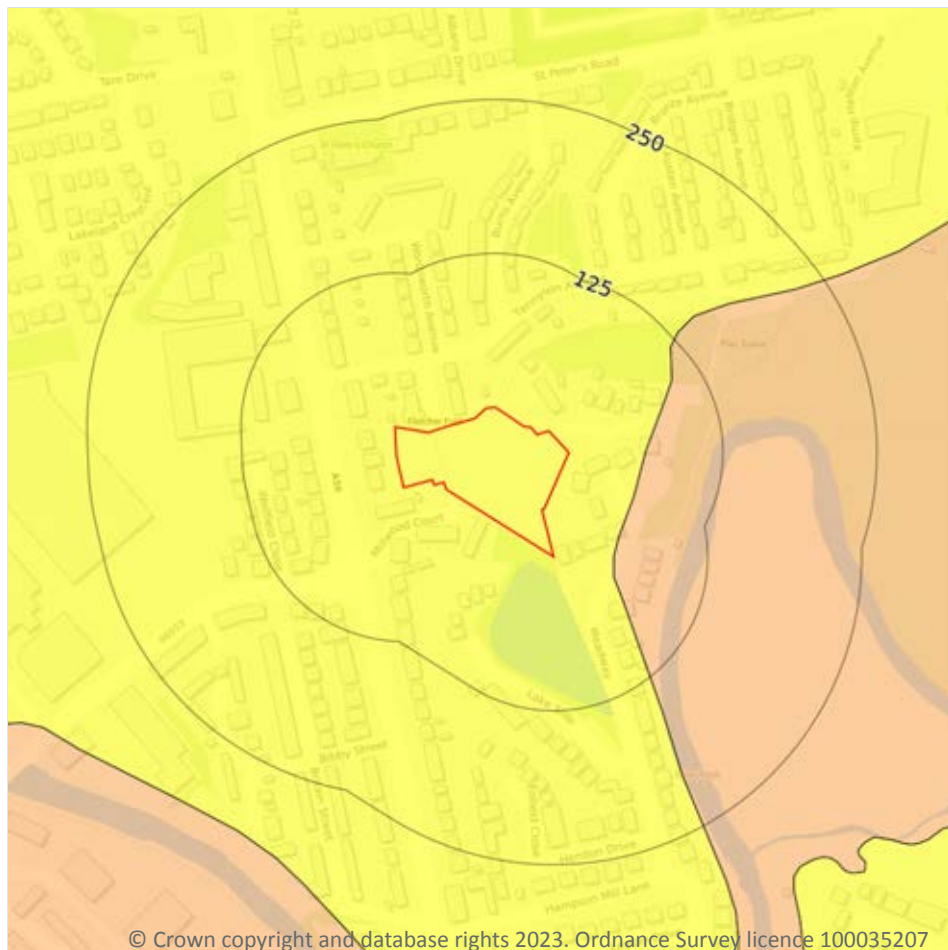
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 28 >](#)

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.
On site	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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4.2 Running sands

Records within 50m

2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on [page 29 >](#)

Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

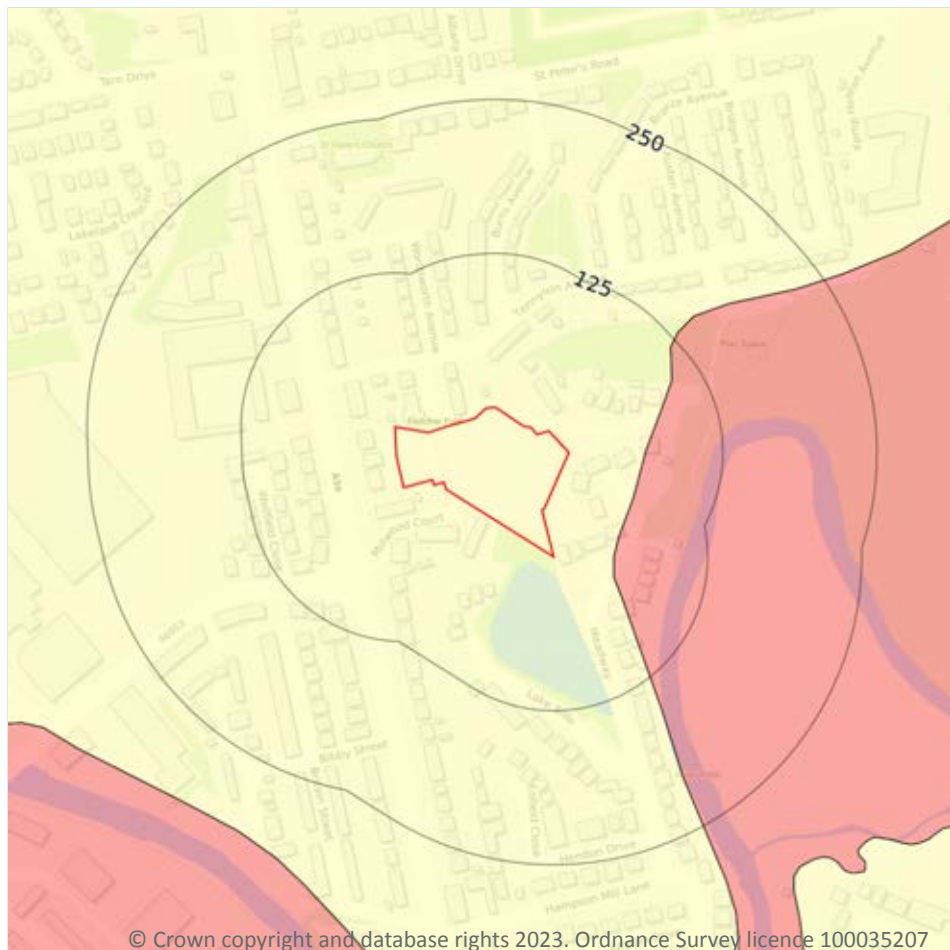


Location	Hazard rating	Details
49m SE	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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4.3 Compressible deposits

Records within 50m

2

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 31](#) >

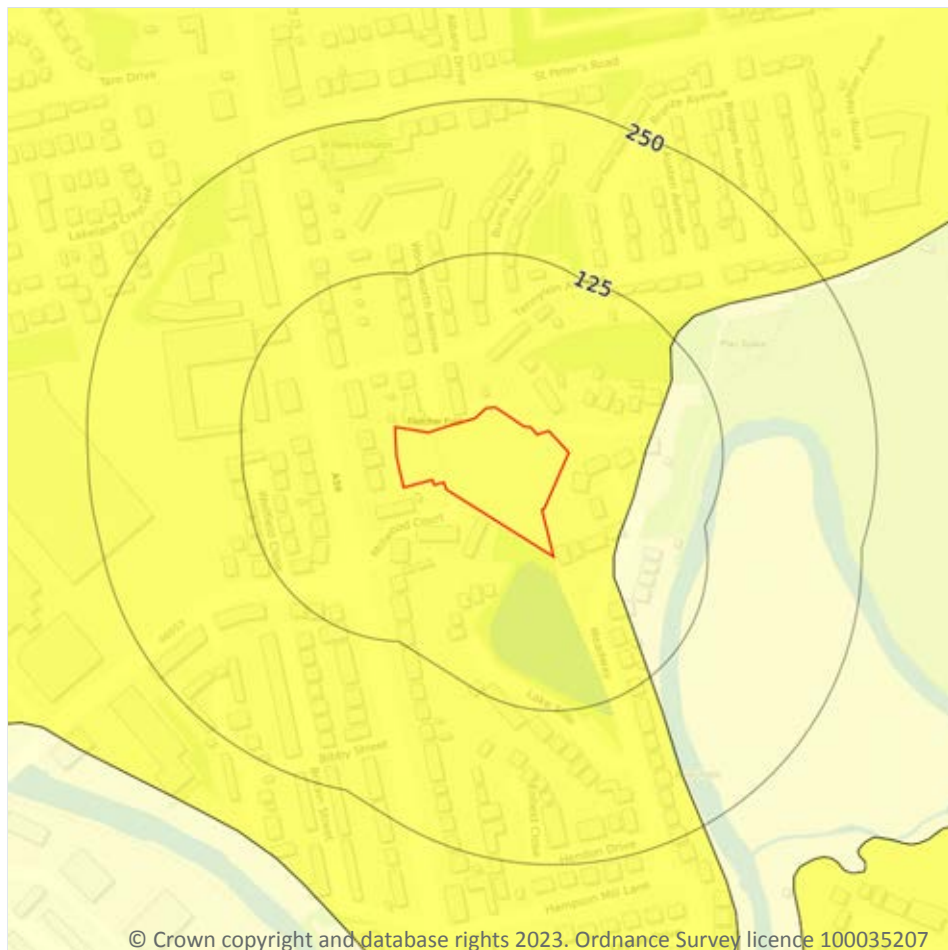
Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.
49m SE	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.



This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

4.4 Collapsible deposits

Records within 50m

2

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

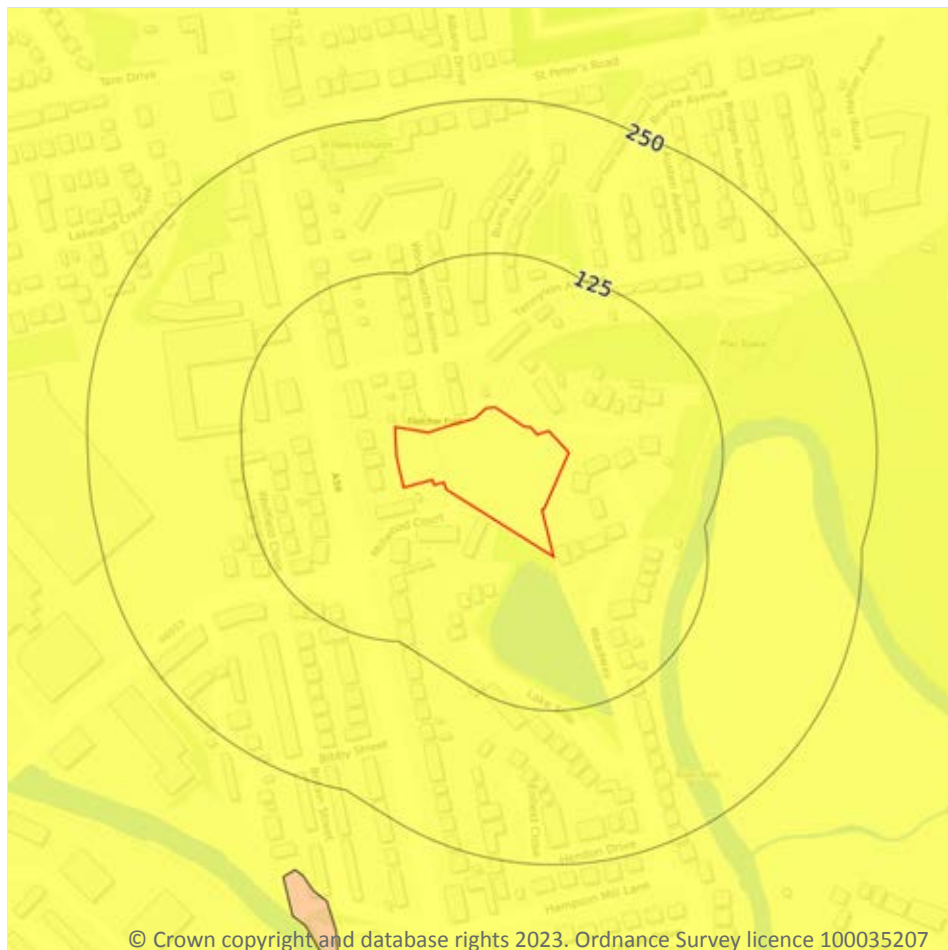
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 33 >](#)

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
49m SE	Negligible	Deposits with potential to collapse when loaded and saturated are believed not to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

4.5 Landslides

Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on [page 34](#) >

Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

4.6 Ground dissolution of soluble rocks

Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 35](#)

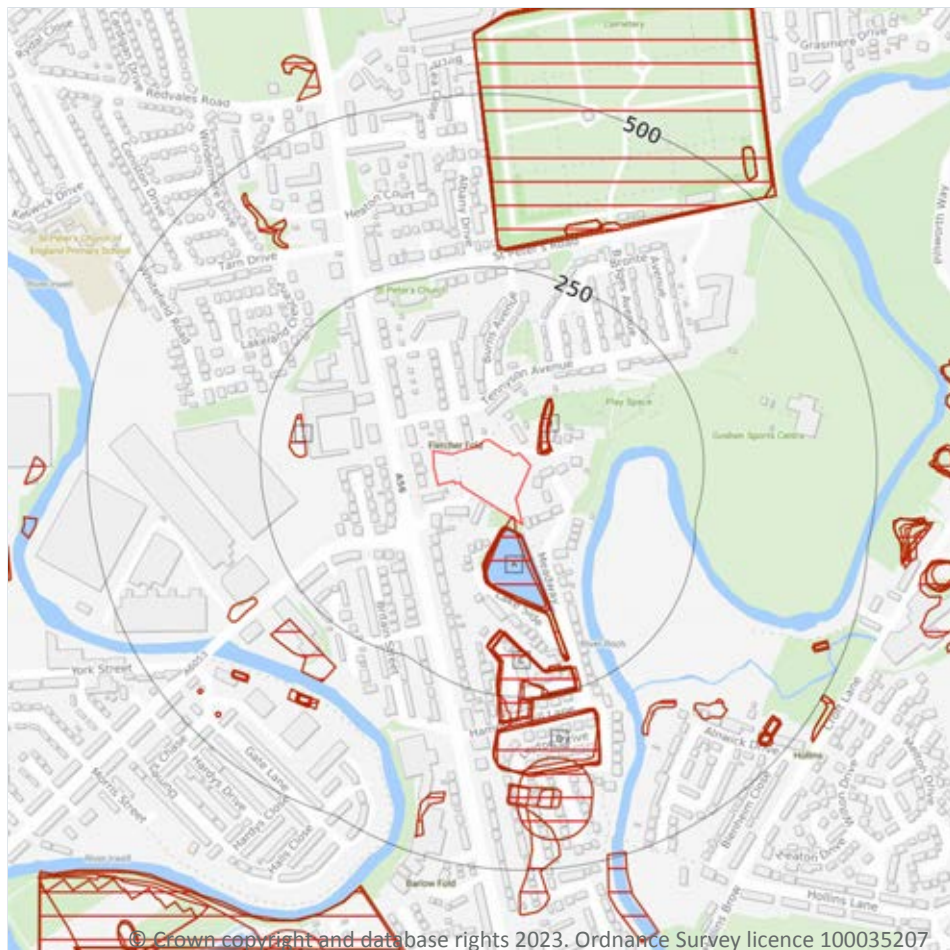
Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.



This data is sourced from the British Geological Survey.



5 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- ▭ Surface ground workings
- ▭ Underground workings
- ▭ Underground mining extents
- ▭ Historical mineral planning areas
- ▭ TCA non-coal mining
- Non Coal Mining
- ▭ Sporadic underground mining of restricted extent possible
- ▭ Localised small scale underground mining possible
- ▭ Small scale mining possible
- ▭ Underground mining known or likely within or in close proximity
- ▭ Underground mining known within or in very close proximity

5.1 BritPits

Records within 500m

0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.



5.2 Surface ground workings

Records within 250m

25

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on [page 37](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Ponds	1851	1:10560
A	15m SE	Pond	1965	1:10560
A	15m SE	Reservoir	1955	1:10560
A	15m SE	Reservoir	1981	1:10000
A	15m SE	Reservoir	1974	1:10000
A	16m SE	Reservoir	1938	1:10560
A	16m SE	Reservoir	1891	1:10560
A	16m SE	Reservoir	1928	1:10560
A	16m SE	Reservoir	1908	1:10560
B	20m E	Pond	1851	1:10560
B	23m E	Pond	1938	1:10560
B	23m E	Pond	1891	1:10560
B	23m E	Pond	1928	1:10560
B	23m E	Pond	1908	1:10560
B	26m NE	Pond	1981	1:10000
B	26m NE	Pond	1974	1:10000
B	26m NE	Pond	1965	1:10560
B	26m NE	Pond	1955	1:10560
C	156m S	Reservoirs	1955	1:10560
D	157m S	Reservoirs	1891	1:10560
C	159m S	Reservoirs	1938	1:10560
C	159m S	Reservoirs	1928	1:10560
C	159m S	Reservoirs	1908	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
C	162m S	Ponds	1965	1:10560
1	184m W	Refuse Heap	1928	1:10560

This data is sourced from Ordnance Survey/Groundsure.

5.3 Underground workings

Records within 1000m

0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This data is sourced from Ordnance Survey/Groundsure.

5.4 Underground mining extents

Records within 500m

0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

5.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

5.6 Non-coal mining

Records within 1000m

0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.



5.7 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

5.8 The Coal Authority non-coal mining

Records within 500m

0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

5.9 Researched mining

Records within 500m

0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

5.10 Mining record office plans

Records within 500m

0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.



5.11 BGS mine plans

Records within 500m	0
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This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

5.12 Coal mining

Records on site	1
-----------------	---

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.

This data is sourced from the Coal Authority.

5.13 Brine areas

Records on site	0
-----------------	---

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

5.14 Gypsum areas

Records on site	0
-----------------	---

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

5.15 Tin mining

Records on site	0
-----------------	---

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.



5.16 Clay mining

Records on site	0
-----------------	---

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).



6 Ground cavities and sinkholes

6.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

6.2 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

6.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

6.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.



This data is sourced from Groundsure.

6.5 National karst database

Records within 500m

0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

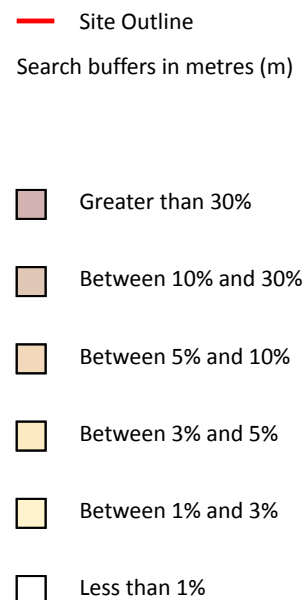
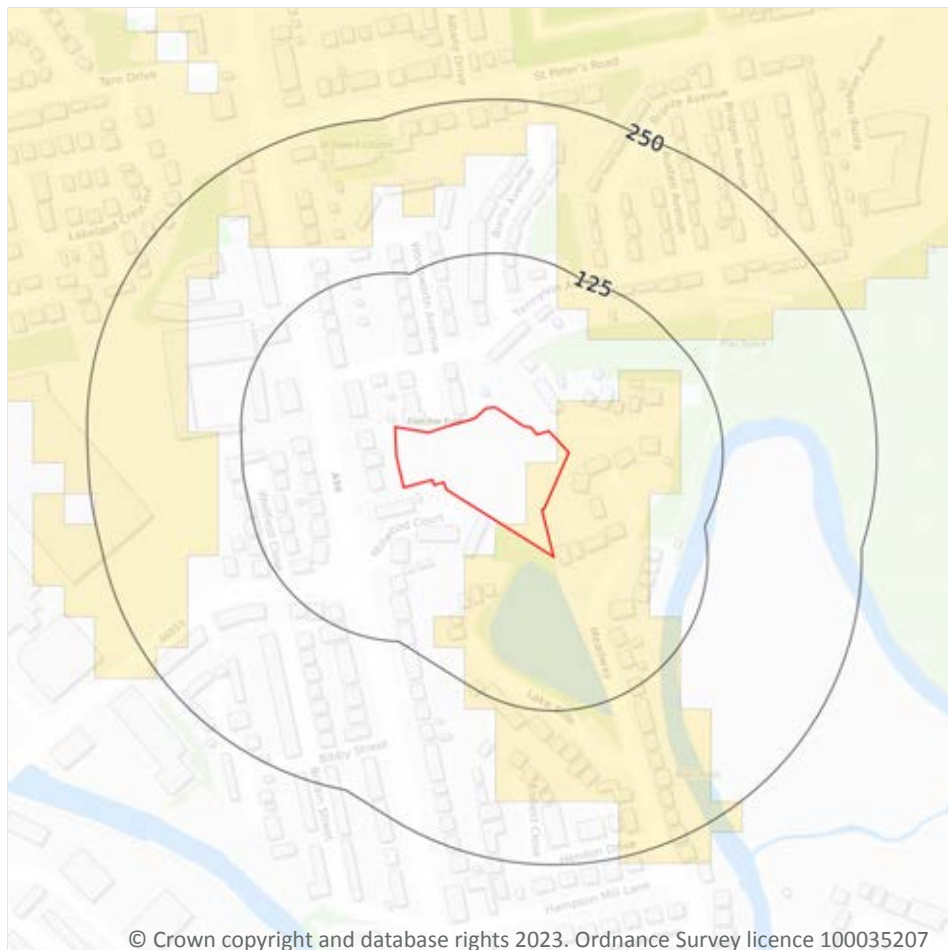
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.



7 Radon



7.1 Radon

Records on site

2

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on [page 45 >](#)

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 1% and 3%	None



Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None

This data is sourced from the British Geological Survey and UK Health Security Agency.



8 Soil chemistry

8.1 BGS Estimated Background Soil Chemistry

Records within 50m

3

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
30m SE	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
35m SE	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

8.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.

8.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



9 Railway infrastructure and projects

9.1 Underground railways (London)

Records within 250m

0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

9.2 Underground railways (Non-London)

Records within 250m

0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

9.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

9.4 Historical railway and tunnel features

Records within 250m

0

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

9.5 Royal Mail tunnels

Records within 250m

0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.



This data is sourced from Groundsure/the Postal Museum.

9.6 Historical railways

Records within 250m

0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

9.7 Railways

Records within 250m

0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

9.8 Crossrail 1

Records within 500m

0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

9.9 Crossrail 2

Records within 500m

0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

9.10 HS2

Records within 500m

0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference> ↗.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-april-2023/> ↗.



Appendix E

Coal Authority Report



The Coal
Authority

Consultants Coal Mining Report

Fletcher Fold, Bury, BL9 9rx
Greater Manchester

Date of enquiry:	9 November 2023
Date enquiry received:	9 November 2023
Issue date:	9 November 2023

Our reference:	51003388461001
Your reference:	GS-G53-6DK-PYZ-OMZ



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

GROUNDSURE LIMITED

Enquiry address

Fletcher Fold, Bury, BL9 9rx
Greater Manchester

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 @coalauthority

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 /thecoalauthority

 /thecoalauthority



Approximate position of property



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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

None recorded within 100 metres of the enquiry boundary.

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

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines 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

Distance to site investigation (m)	Direction
Within	N/A

See Section 4 for further information.

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.

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

The following potential risks have been identified and as part of your risk assessment should be investigated further.

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.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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.

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 

Site investigations 

How to contact us
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+44 (0)1623 637 000 (International)
www.groundstability.com

