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Contaminated Land Phase One Desk Study for Proposed Residential Dwelling at land adjacent to, 1 Saxwood Close, Rochdale, OL12 7QX.

Prepared for

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Summary

This report consists of a phase one contaminated land desk study produced in support of planning application for a residential property on land adjacent to 1 Saxwood Close, Rochdale, OL12 7QX.

Following the site walkover and review of the available information it has been concluded that no contamination exists which poses a significant risk of significant harm to the identified receptors either on site or in the immediate vicinity and the site is considered safe and suitable for the intended use.

The report further recommends that a watching brief is maintained throughout the construction of the new dwellings and any signs of potential contamination found are fully investigated, with appropriate remedial action taken as necessary.

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Introduction

Martin Environmental Solutions has been commissioned, to carry out a phase one contaminated land desk study report in relation to a proposed residential development land adjacent to 1 Saxwood Close, Rochdale, OL12 7QX.

Aims and Objectives of the report

The aims and objectives of this report are as follows:

- Assess the likelihood of contamination affecting the site,
- Identify any likely receptors to be affected by the potential contamination,
- Identify the pathways by which the receptors will be exposed to any potential contamination,
- Identify any areas where further investigation will be required.

Scope of works

This report has been written in line with the 'BS 10175: 2011 Investigation of potentially contaminated sites – Code of Practice' and 'The Model Procedures for the Management of Land Contamination, CLR11'.

The scope of this report covers the phase one desk study only. It will look at relevant information on: -

- the history of the site and surrounding area,
- the current use of the site and surrounding area,
- the geology and hydrogeology of the area,

A site walk-over survey has been undertaken in addition to consultations with the existing site owner, to identify any potential contamination issues.

Evaluation of the above information will be used to construct an initial conceptual model as appropriate, with the identification of any additional investigations that may be required.

The Site:

Site Address: land adjacent to 1 Saxwood Close, Rochdale, OL12 7QX.

Grid reference: 386934; 414317

An aerial photograph of the site is included in Figure 1.

Current Site use:

The site is currently a disused roughly rectangular are area covering approx. 0.05 ha. The site is currently an unused overgrown piece of land. Residential property surrounds the site to the east, south and north, with agricultural fields beyond.

Research

Details of Research

This report has been based on information gathered from a number of reputable sources, covering details:

- on the historic and current use of the site,
- any known waste disposal activities in the area,
- any regulated industrial activities within the vicinity of the site including recorded industrial accidents,
- on the geology, hydrogeology, hydrology of the area,
- identification of any environmentally sensitive sites,
- any natural hazards.

Principle sources of this information have been:

- environmental data from Groundsure Limited
- the Local Planning Authority,
- historic maps (Groundsure Ltd),
- site walk-over survey and discussion with the current owners.

Site History

Information on the historic uses of the site has been obtained from historic mapping information (Appendix 2), and environmental data from Groundsure Limited.

Mapping Year	Changes on Site	Changes off Site
1851	The site forms part of a larger field.	The area is predominantly agricultural with few properties with 500m of the site. Coal pits are shown 400m to the south. Various mills are identified to the east and west over 1Km away.
1890	No Change	A watercourse is shown running north to south 50m to the east of the site. Residential properties are identified 300m south. Martins Mill is identified 450m to the west and Bagslate Quarry 475m. A colliery is shown 500m south.
1909	No Change	The quarry is disused, an old shaft (coal) is shown 260m to the west Additional properties have been built.
1928-30	No Change	No significant changes, a few more properties have been built in the wider area.
1938	No Change	A tank is shown to the north of the site ~100m away. A school has been built adjacent to Martin's Mill in the west. NO other significant changes
1956-61	No Change	No Significant changes. A pond is shown 130m to the east
1968	No Change	Lots of residential development in the wider area (Norden and Caldershaw)
1975-79	No Change	Lots of development in the wider area. The nearby school has expanded with a new one next door.
1987	No Change	No Significant changes

1992-95	The surrounding housing estate has been built. The site is shown on aerial photographs (2000), as forming part of the construction site with a 'road/track' running through the north corner linking it to Fisherfield. Mapping identifies two residential buildings on the site.	The large housing estate has been built, including properties along Fisherfield which no longer exist.
2002	No Change	No significant changes – lots of development in the wider area. Aerial photographs from 2003 do no show any buildings on site.
2010-present	The building on site have been removed	The buildings along Fisherfield are no longer shown on the mapping.

The properties identified on Fisherfield and on site were constructed and shortly demolished due to subsidence issues. It is not considered that these relatively short lived properties would result in any contamination to the site.

Regulatory Information

Relevant information obtained from the Groundsure report (Appendix 1) is summarised below.

One permitted activity has been identified within 500m of the site as defined in the Environmental Permitting (England and Wales) Regulations 2016 or previous legislation. This is a service station on Edenfield Road, 325m south of the site.

six landfill records, and one waste treatment site has been identified, within 1.5Km of the site. The nearest site is 993m west and involves a historic refuse tip from the 1962 mapping, two other sites were identified from the same mapping data 1199m northwest and 1444m west. Licensed waste sites were identified 1134m waste accepting inert and industrial waste at Woodhouse Mill, 1139m southwest at Clay Lane Water treatment works and finally 1232m west at Dexine works. The waste treatment site is 1297m west at Tenter House Mill, Greenbooth Road.

Three discharge consents have been identified, the first two are revoked and historic involving miscellaneous discharges to surface water. The third is located 460m south of the site and is linked to sewage discharges from a water company.

Six pollution incidents have been recorded in the vicinity of the site. The nearest is 373m southeast of the site in March 2002 with a minor impact to water from 'contaminated water discharge'. 432m, 437m and 439m east of the site sewage material was 'discharged' in 2001, 2003 and 2002 respectfully all with a minor impact to water and land. A significant impact to water occurred in Jul 2013 from an oil spillage 463m east of the site (and downstream) and the final incident occurred in 2002 466m northeast with a minor water impact from an oil spillage.

Two current potential contaminative land uses within 250m of the site have been identified the first is a substation 124m north of the site and the second the previously identified petrol station 336m south on Edenfield Road.

The above sites are unlikely to impact on the development site.

A number of historical potentially contaminative land uses have been identified within 500m of the site from the purchased information; most of these have been identified from the historical mapping and those within 250m of the site include:

The unspecified tank to the north – between 81-100m away depending on what mapping year is being viewed.

Ground works to the northwest 163m away - linked to the playing fields at the school

The electricity substation to the north.

The above sites are unlikely to impact on the development site.

Geology and Hydrogeology

Information from the British Geology Survey 1:50,000 mapping identifies the bedrock in the area as Rough Rock, Sandstone, Great Arc Sandstone, Pennine Lower Coal Measures, mud, silt and sand stone, overlaid with Till, Devensian and Diamicton. The nearest available borehole records held by the British geological survey, identify sandy clay or peat over clay/silt.

The information obtained on the hydrogeology of the area identifies the site as having a Secondary A aquifer within the bedrock on-site capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers, with a secondary (undifferentiated) aquifer in the superficial layer.

Three surface & five groundwater abstraction licences have been identified, including 2 Potable water abstraction licenses. The nearest to the site is a ground water abstraction point 716m south of the site at Rochdale Golf Course. The next closest is a historical surface water abstraction point located 1266m east the rest are over 1.5Km away

The site is not located within a Source Protection zone.

The soil leaching potential of the ground on site has been identified as L, soils in which pollutants are unlikely to penetrate.

Hydrology

A number of watercourses have been identified. The nearest 28m to the east. This flows south and joins Caldershaw Brook, which passes 55m to the south of the site and continues east.

The site is located within an Environment Agency flood zone 2 & 3 floodplain with a medium risk from flooding.

While unlikely, any contamination on the site could impact on these watercourse and ground water is likely to migrate towards them/

Environmental Sensitivity

The site is within 2Km of a number of identified environmental sensitive areas, ancient woodlands. The nearest of which is 1244m northeast and is unlikely to be affected by the site or any contamination on it.
A local Nature reserve also exists at this location (1239m northeast).

The site lies within 244m of the Liverpool, Manchester and West York's Greenbelt.

The site is within an area of negligible/low risk of natural hazards. The site is not in a Radon affected area as less than 1% of properties are above the action level of 200 becquerels.

Mining has been identified within the larger area, with historic shafts being identified on the historical mapping. Given the surrounding properties it is unlikely that the site will be adverse impacted by mining.

Site Walkover

A site walkover was undertaken on the 19th October 2018, and confirmed much of what had already been identified from the purchased information. The photographs in Appendix 3 provide some indication of the current layout and condition of the site.

Residential properties surround the site on three sides, with the site fronting onto Shearing Avenue to the east with 1 Saxwood Close to the north. It is relatively flat and currently disused and overgrown.
Some inert materials – bricks, wood and an old trampoline are located in the southeast corner. A drainage manhole cover exists just inside the property boundary on the eastern site by the fence suggesting a drainage channel intersects the site.

During the walkover visit there was no sign of any contamination dead, distressed vegetation or bare ground.

It has been confirmed that the previous buildings on site were demolished due to structural problems with subsidence issues, including those along Fisherfield to the south. No remains of the former structures were identified at the time of the walkover, and it is understood that the construction of the new property will be via piling with a raft foundation.

Conclusions

Following a review of the information gathered on the history of the site and the surrounding area, and following the site walk-over survey there are no contaminants identified on or off site that are likely to present a significant possibility of significant harm to any identified receptor.

Receptors and Pathways

Potential receptors which may be affected by any unknown contamination on site will include:

- Construction workers who are likely to be affected by any potential contamination as they will initially be working in the ground and are likely to be the ones who unearth any potential contaminants.
- Future users of the site, including residents, staff and visitors to the site. For the purpose of evaluating any effects from any contamination found during any intrusive investigation future users/visitors to the site should be regarded as the 0-6-year-old female child.
- Any building on site e.g. foundations which may be attacked by any contaminants in the ground or services.
- The underlying groundwater which may be contaminated by migrating pollutants present on the site. There is also the potential for further pollution of the groundwater or the watercourse from disturbing any potential contaminants on site.

The pathways by which these receptors may be exposed to any unforeseen potential contamination will include:

Construction workers

- Inhalation, of gases or vapours released during ground work or fine particles.
- Ingestion of the contaminants, principally from cross contamination with contaminated soil and inadequate hand washing before smoking and eating.
- Absorption through the skin following contact with contaminated soil.

Future users and visitors

- Inhalations of gas/vapours or fibres, particularly if these are allowed to enter the new structures through the ground, and build up in an enclosed area.
- Ingestion of contaminants, through the ingestion of contaminated soil from the garden area via direct contact, e.g. playing in the garden.
- Absorption of contaminants from dermal contact with contaminated soil.

Buildings

Contaminants on site have the potential to affect the foundations to the new building or the services supplying it.

Watercourses

As discussed above, if they exist on site, there is a potential for any contaminants to migrate through the ground into the groundwater and aquifer or via run-off into the watercourse.

Conceptual Model

The table represents a basic conceptual model. It highlights the potential sources of pollutants identified from the gathered information, and potential pathways in which any contaminants could reach the identified receptors.

Pathway	Description	Identified sources	Receptor at risk	Likelihood
1	Run off and seepage into groundwater from any spillages	-	Watercourse/ Environment	V. Low
2	Migration of gases into the building.	-	Future users	V. Low
3	Inhalation of gases/ vapours outside	-	Construction workers/future users	V. Low
4	Inhalation of fine particles	-	Construction workers/future users	V. Low
5	Direct ingestion of contaminated soil	-	Construction workers/future users	V. Low
6	In-direct ingestion of contaminated soil	-	Future users	V. Low
7	Absorption via direct dermal contact with contaminated soil	-	Construction workers/future users	V. Low

Recommendations

As a result of the investigation into the historical use of the site and surrounding area no sources of contamination have been identified, which present a significant possibility of significant harm to the any of the identified receptors.

Based on the information available the site is likely to be suitable for the intended use.

It is further recommended that a watching brief is maintained throughout the construction of the new dwellings and any signs of potential contamination found are fully investigated, with appropriate remedial action taken as necessary and the local planning authority informed of the findings.

Figure 1 – Aerial Photograph



Figure 2 - Historic aerial photograph from 2000 & 2003



Appendix 1 – Groundsure Data

Appendix 3 – Site walkover Photographs

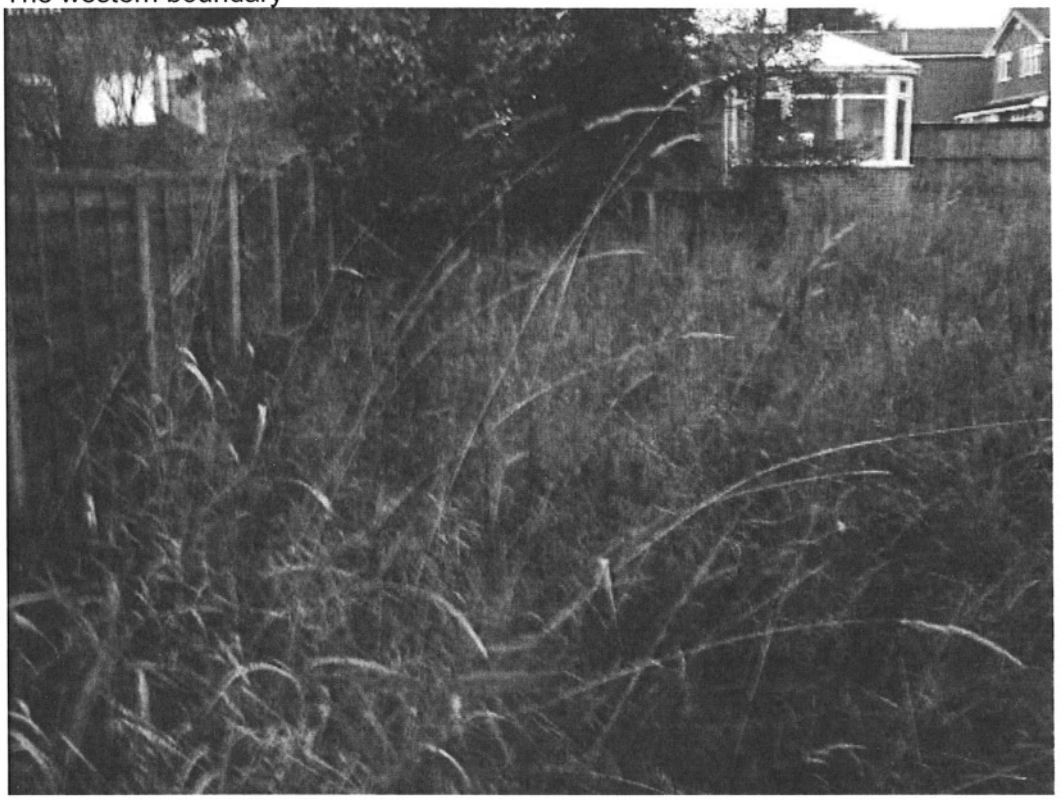
The south boundary looking west



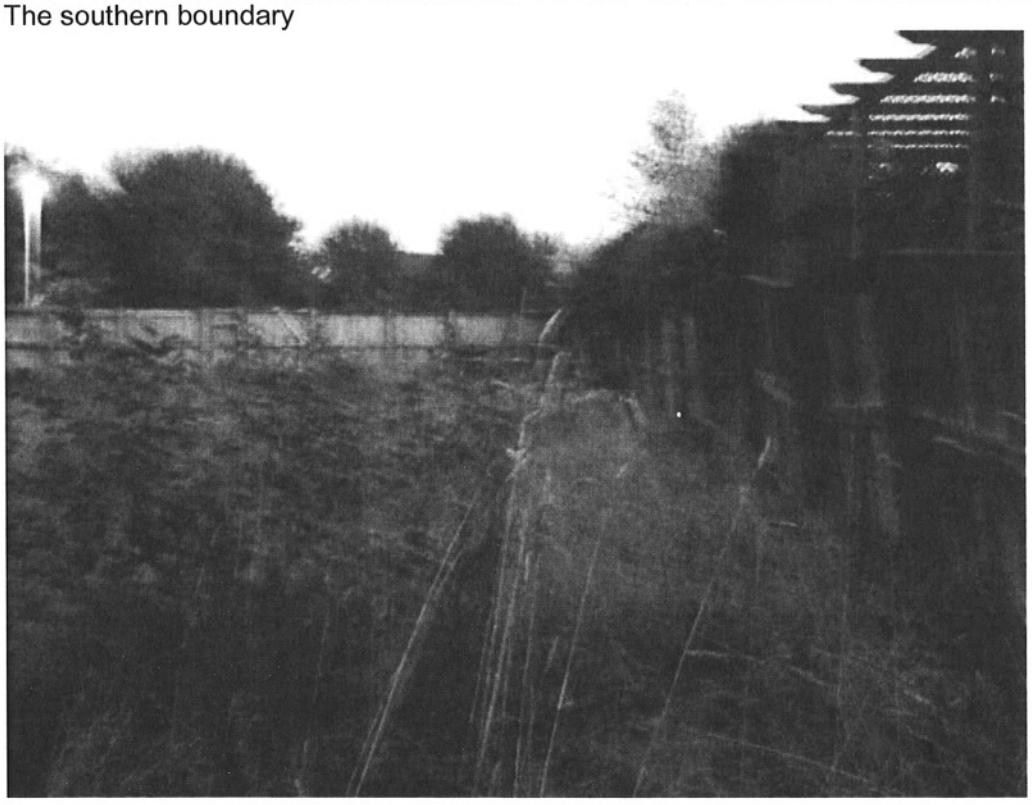
Northeast corner looking to the southwest



The western boundary



The southern boundary



Looking back across the northeast corner from the southeast

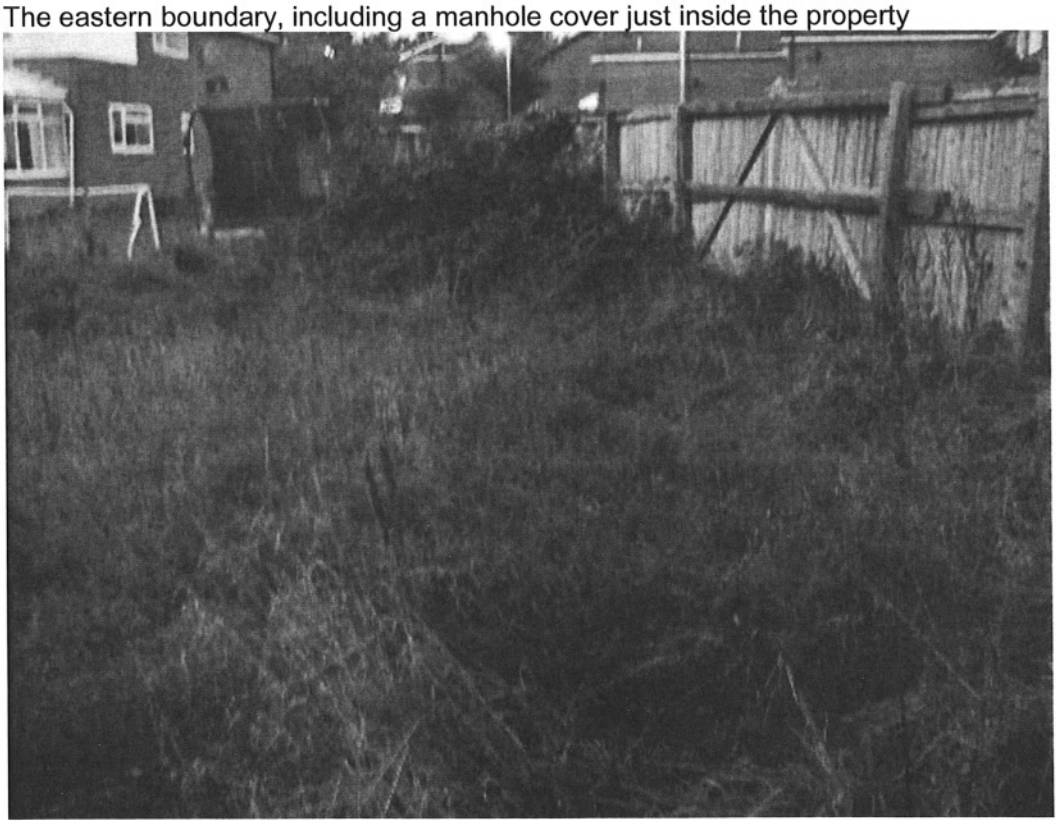


The wood and bricks by the southeast corner





The eastern boundary, including a manhole cover just inside the property





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Martin Environmental Solutions

19, Ord Avenue,
Blackpool, FY4 4DW

Groundsure Reference:	GS-5532943
Your Reference:	Khan
Report Date	15 Oct 2018
Report Delivery Method:	Email - pdf

Enviro Insight

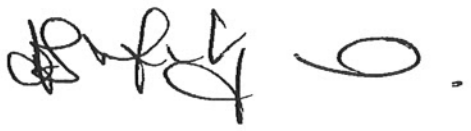
Address: 1, SAXWOOD CLOSE, ROCHDALE, OL12 7QX

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

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Enviro Insight

Address:	**1, SAXWOOD CLOSE, ROCHDALE, OL12 7QX**
Date:	**15 Oct 2018**
Reference:	**GS-5532943**
Client:	**Martin Environmental Solutions**

NW N NE



W E

SW S SE

Aerial Photograph Capture date:	26-Mar-2012
Grid Reference:	386934,414317
Site Size:	0.05ha

Report Reference: GS-5532943
Client Reference: Khan

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	8	64
1.2 Additional Information – Historical Tank Database	0	0	1	3
1.3 Additional Information – Historical Energy Features Database	0	0	1	26
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	16
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	6	61

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	1	1	1
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	6
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	3
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	1	2
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	1

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	1	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	1
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	2	13
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	8
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	5
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	1	#250GWV #	#500GWV #	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	2	22	36	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Medium
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Low

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	11
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	1
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	1	0	0	2

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	Identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Groundsure
LOCATION INTELLIGENCE

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

Note: Maps

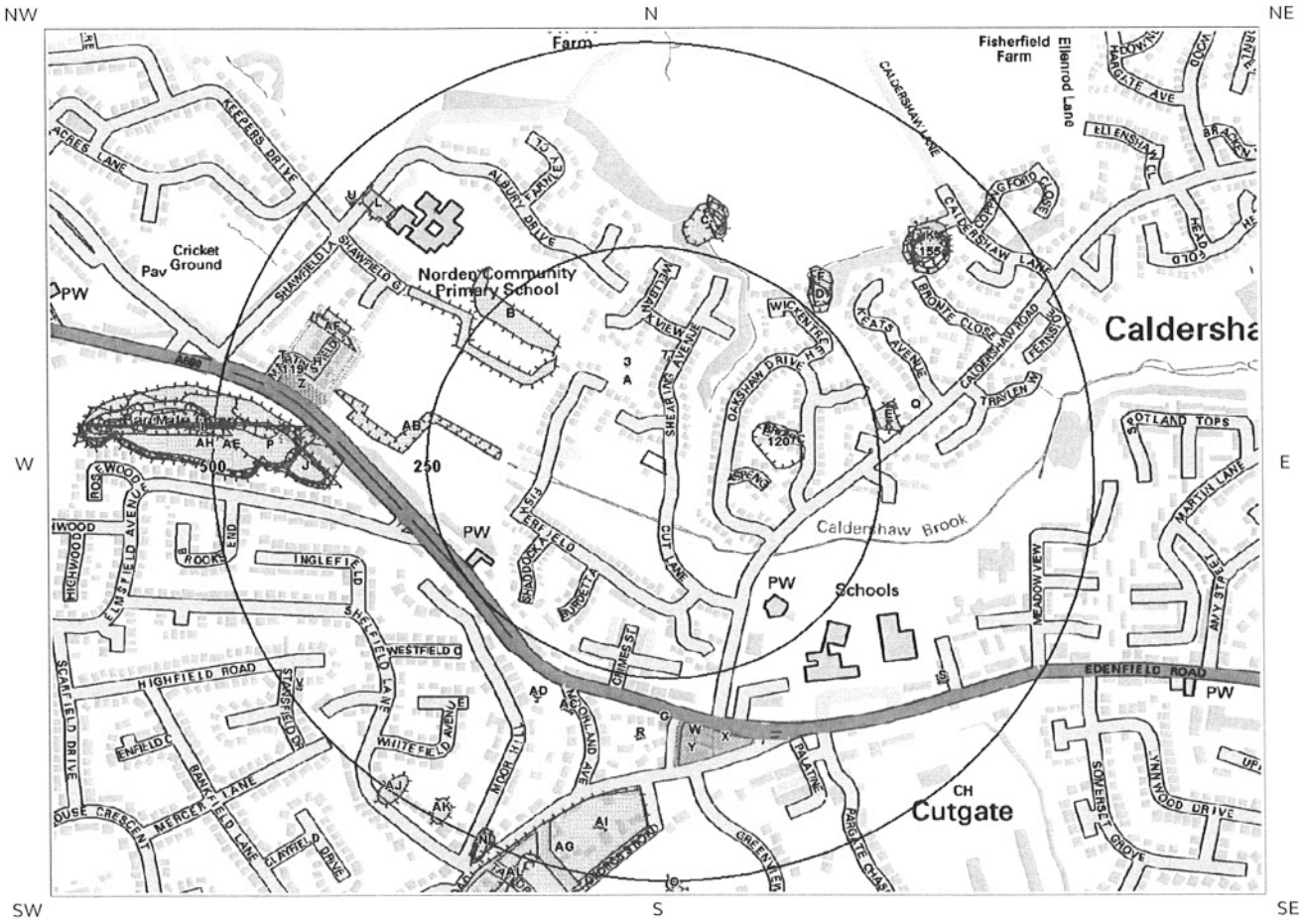
Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

Groundsure
LOCATION INTELLIGENCE

1. Historical Land Use



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Site Outline

250
500
Search Buffers (m)

Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Historical military sites

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 72

ID	Distance [m]	Direction	Use	Date
1A	82	N	Unspecified Tank	1928
2A	91	N	Unspecified Tank	1938
3	104	N	Unspecified Tank	1949
4AA	147	NW	Unspecified Ground Workings	1992
5AB	163	W	Unspecified Ground Workings	1992
6B	163	NW	Unspecified Ground Workings	1992
7B	163	NW	Unspecified Ground Workings	1987
8B	163	NW	Unspecified Ground Workings	1975
9E	251	E	Colliery	1851
10D	252	NE	Unspecified Pit	1928
11C	257	N	Unspecified Pit	1975
12C	257	N	Unspecified Pit	1987
13C	257	N	Unspecified Pit	1968
14C	257	N	Unspecified Pit	1992
15D	258	NE	Unspecified Pit	1938
16E	261	E	Unspecified Old Shaft	1928
17E	263	E	Unspecified Old Shaft	1938
18E	264	E	Unspecified Old Shaft	1909
19E	267	E	Unspecified Disused Shaft	1987
20E	267	E	Unspecified Disused Shaft	1968
21E	267	E	Unspecified Disused Shaft	1975
22F	267	NE	Unspecified Pit	1949
23F	267	NE	Unspecified Pit	1968
24E	268	E	Unspecified Old Shaft	1949
25C	272	N	Unspecified Ground Workings	1928
26C	277	N	Unspecified Pit	1938
27C	283	N	Unspecified Pit	1949
28G	295	S	Police Station	1987
29G	295	S	Police Station	1992
30AC	305	S	Coal Pits	1851

31AD	306	SW	Coal Pits	1851
32AE	346	W	Unspecified Quarry	1890
33H	348	W	Unspecified Mill	1938
34P	353	W	Sandstone Quarry	1851
35H	354	NW	Unspecified Mill	1928
36H	354	NW	Unspecified Mill	1909
37H	357	NW	Unspecified Mill	1949
38H	357	NW	Unspecified Mill	1987
39H	357	NW	Unspecified Mill	1968
40H	357	NW	Unspecified Mill	1975
41H	359	W	Unspecified Mill	1890
42I	365	W	Unspecified Disused Quarry	1992
43I	365	W	Unspecified Disused Quarry	1987
44J	369	W	Unspecified Quarry	1968
45J	369	W	Unspecified Quarry	1975
46H	371	W	Chimney	1968
47H	371	W	Chimney	1987
48H	371	W	Chimney	1975
49I	381	W	Unspecified Disused Quarry	1938
50I	381	W	Unspecified Disused Quarry	1928
51K	387	NE	Unspecified Pit	1992
52K	387	NE	Unspecified Pit	1975
53K	387	NE	Unspecified Pit	1968
54K	387	NE	Unspecified Pit	1987
55AG	389	S	Colliery	1890
56I	397	W	Unspecified Disused Quarry	1968
57I	397	W	Unspecified Disused Quarry	1975
58I	397	W	Unspecified Disused Quarry	1949
59AH	398	W	Unspecified Disused Quarry	1908
60L	411	NW	Colliery	1851
61L	424	NW	Water Engine	1851
62AI	434	S	Coal Pit	1851
63AJ	474	SW	Sandstone Quarries	1851
64AK	474	SW	Sandstone Quarries	1851
65M	478	W	Unspecified Ground Workings	1928
66M	480	W	Unspecified Ground Workings	1938
67M	482	W	Unspecified Ground Workings	1909
68N	484	SW	Refuse Heap	1890
69N	489	SW	Refuse Heap	1908

70AL	492	S	Refuse Heap	1908
71O	496	S	Unspecified Old Shaft	1890
72O	499	S	Coal Pit	1851

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 4

ID	Distance (m)	Direction	Use	Date
73A	90	N	Unspecified Tank	1929
74P	420	W	Unspecified Tank	1981
75P	428	W	Unspecified Tank	1988
76P	428	W	Unspecified Tank	1991

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 27

ID	Distance (m)	Direction	Use	Date
77	113	N	Electricity Substation	1996
78Q	297	E	Electricity Substation	1992
79Q	299	E	Electricity Substation	1994
80Q	299	E	Electricity Substation	1994
81Q	299	E	Electricity Substation	1995
82Q	299	E	Electricity Substation	1996
83Q	299	E	Electricity Substation	1993
84R	320	S	Electricity Substation	1973
85R	321	S	Electricity Substation	1992
86R	321	S	Electricity Substation	1992
87R	321	S	Electricity Substation	1987
88S	398	SE	Electricity Substation	1992
89S	398	SE	Electricity Substation	1994
90S	398	SE	Electricity Substation	1995
91S	398	SE	Electricity Substation	1996
92S	398	SE	Electricity Substation	1993
93S	398	SE	Electricity Substation	1994

94S	406	SE	Electricity Substation	1971
95T	434	W	Electricity Substation	1988
96T	434	W	Electricity Substation	1990
97T	434	W	Electricity Substation	1977
98U	457	NW	Electricity Substation	1975
99U	457	NW	Electricity Substation	1988
100V	481	SW	Electricity Substation	1977
101V	481	SW	Electricity Substation	1990
102V	481	SW	Electricity Substation	1988
103V	482	SW	Electricity Substation	1996

1.4 Additional Information - Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information - Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 16

ID	Distance (m)	Direction	Use	Date
104W	304	S	Garage	1987
105W	304	S	Garage	1973
106W	304	S	Garage	1992
107W	304	S	Garage	1992
108W	304	S	Garage	1992
109W	305	S	Garage	1992
110X	312	S	Garage	1960
111X	316	S	Garage	1992
112X	316	S	Garage	1973
113X	316	S	Garage	1959
114Y	322	S	Garage	1973
115Y	328	S	Garage	1987
116Z	375	W	Garage	1990
117Z	375	W	Garage	1988
118Z	383	W	Garage	1977
119	408	W	Garage	1996

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 67

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

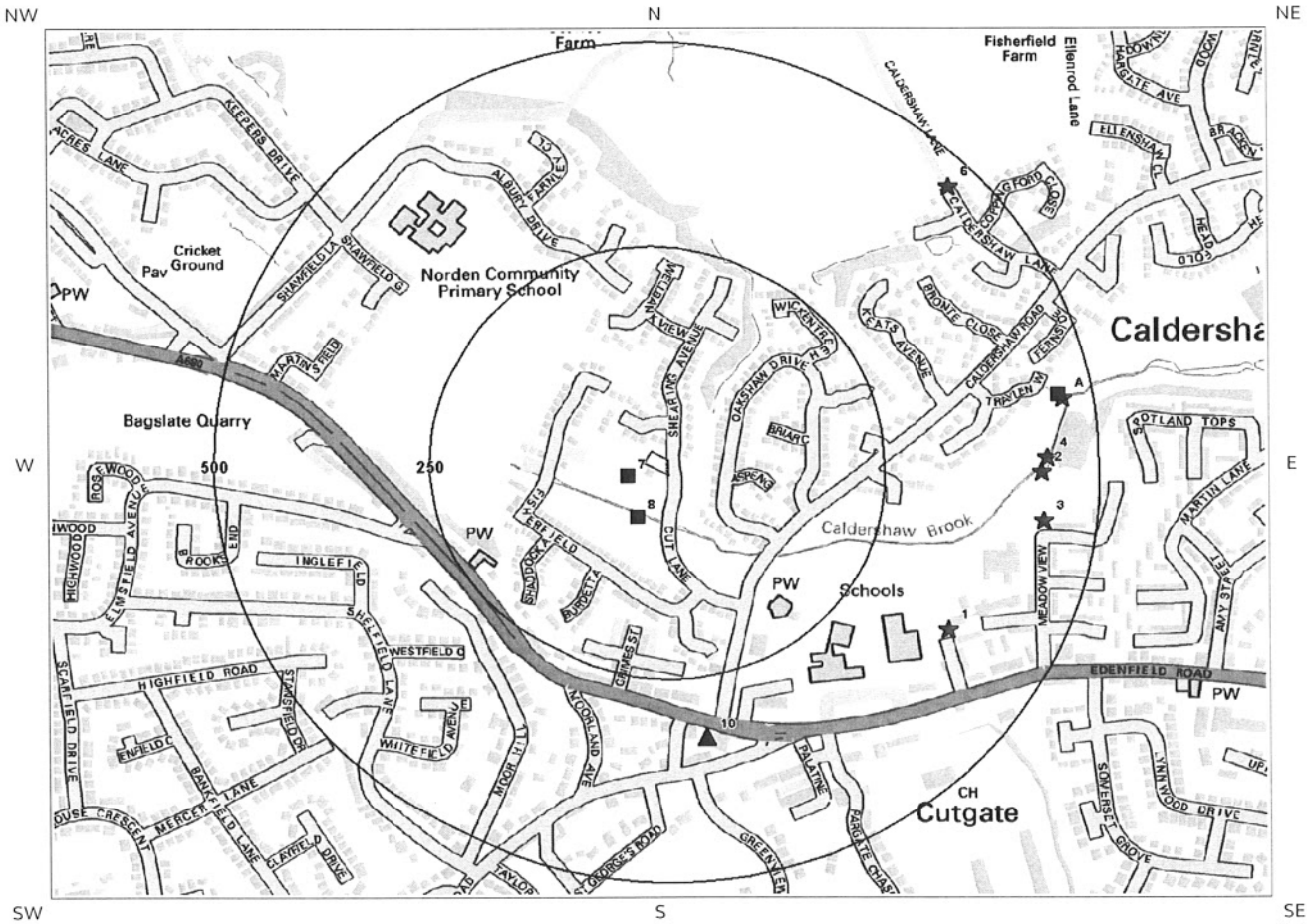
ID	Distance(m)	Direction	Use	Date
120	105	E	Pond	1968
121AA	147	NW	Unspecified Ground Workings	1992
122AB	163	W	Unspecified Ground Workings	1992
123B	163	NW	Unspecified Ground Workings	1992
124B	163	NW	Unspecified Ground Workings	1987
125B	163	NW	Unspecified Ground Workings	1975
126E	251	E	Colliery	1851
127D	252	NE	Unspecified Pit	1928
128C	257	N	Unspecified Pit	1992
129C	257	N	Unspecified Pit	1975
130C	257	N	Unspecified Pit	1987
131C	257	N	Unspecified Pit	1968
132D	258	NE	Unspecified Pit	1938
133E	261	E	Unspecified Old Shaft	1928
134E	263	E	Unspecified Old Shaft	1938
135E	264	E	Unspecified Old Shaft	1909
136E	267	E	Unspecified Disused Shaft	1968
137E	267	E	Unspecified Disused Shaft	1987
138E	267	E	Unspecified Disused Shaft	1975
139F	267	NE	Unspecified Pit	1968
140F	267	NE	Unspecified Pit	1949
141E	268	E	Unspecified Old Shaft	1949
142C	272	N	Unspecified Ground Workings	1928

143C	277	N	Unspecified Pit	1938
144C	283	N	Unspecified Pit	1949
145AC	305	S	Coal Pits	1851
146AD	306	SW	Coal Pits	1851
147AE	346	W	Unspecified Quarry	1890
148P	353	W	Sandstone Quarry	1851
149AF	359	W	Pond	1890
150I	365	W	Unspecified Disused Quarry	1987
151I	365	W	Unspecified Disused Quarry	1992
152J	369	W	Unspecified Quarry	1975
153J	369	W	Unspecified Quarry	1968
154K	374	NE	Pond	1890
155	374	NE	Pond	1928
156AF	376	NW	Pond	1968
157AF	376	NW	Pond	1975
158AF	376	NW	Pond	1987
159AF	376	NW	Pond	1992
160K	381	NE	Pond	1909
161AE	381	W	Unspecified Disused Quarry	1938
162AE	381	W	Unspecified Disused Quarry	1928
163K	381	NE	Pond	1851
164K	382	NE	Pond	1938
165K	387	NE	Pond	1949
166K	387	NE	Unspecified Pit	1968
167K	387	NE	Unspecified Pit	1992
168K	387	NE	Unspecified Pit	1987
169K	387	NE	Unspecified Pit	1975
170AG	389	S	Colliery	1890
171I	397	W	Unspecified Disused Quarry	1968
172I	397	W	Unspecified Disused Quarry	1975
173I	397	W	Unspecified Disused Quarry	1949
174AH	398	W	Unspecified Disused Quarry	1908
175L	411	NW	Colliery	1851
176AI	434	S	Coal Pit	1851
177AJ	474	SW	Sandstone Quarries	1851
178AK	474	SW	Sandstone Quarries	1851
179M	478	W	Unspecified Ground Workings	1928
180M	480	W	Unspecified Ground Workings	1938
181M	482	W	Unspecified Ground Workings	1909

182N	484	SW	Refuse Heap	1890
183N	489	SW	Refuse Heap	1908
184AL	492	S	Refuse Heap	1908
185O	496	S	Unspecified Old Shaft	1890
186O	499	S	Coal Pit	1851

Groundsure
LOCATION INTELLIGENCE

2. Environmental Permits, Incidents and Registers Map



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- Site Outline
- Search Buffers (m) — 250 — 500
- ★ Recorded Pollution Incident
- ◆ Dangerous Substances (List 1)
- ◇ Dangerous Substances (List 2)
- ◪ Water Industry Referrals
- ■ Licenced Discharge Consents
- □ Red List Discharge Consents
- ▼ RAS 3 & 4 Authorisations
- ▲ Part A(1) Authorised Processes and Historic IPC Authorisations
- ▲ Part A(2) and Part B Authorised Processes
- ⬡ COMAH / NIHHS Sites
- ⬟ Sites Determined as Contaminated Land
- ❁ Hazardous Substance Consents and Enforcements

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

1

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
10	325	S	386991 413977	Address: The Co-Operative Group, Woodyard Service Station, Edenfield Road, Rochdale, Lancashire, OL11 5XR Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

3

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
7	25	SW	386900 414300	Address: MCLEAN RES DEVELOPMENT SWO, CALDERSHAW, ROCHDALE, GREATER MANCHESTER Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991420 Permit Version: 1	Receiving Water: CALDERSHAW BROOK Status: REVOKED - UNSPECIFIED Issue date: Effective Date: 22-May-1989 Revocation Date: 01/07/1991
8	62	SW	386910 414250	Address: ROCHDALE MBC RES DEVELOPMENT SWO, CALDERSHAW, ROCHDALE, GREATER MANCHESTER Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016992066 Permit Version: 1	Receiving Water: CALDERSHAW BROOK Status: REVOKED - UNSPECIFIED Issue date: Effective Date: 11-Nov-1986 Revocation Date: 01/07/1991
9A	460	E	387400 414400	Address: CALDERSHAW RD PS, ROCHDALE, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: 016992462 Permit Version: 1	Receiving Water: TRIB CALDERSHAW BRK Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: Effective Date: 27-Apr-1992 Revocation Date:

ID	Distance (m)	Direction	NGR	Details	
5A	463	E	387404 414396	Incident Date: 16-Jul-2013 Incident Identification: 1134235 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
6	466	NE	387272 414654	Incident Date: 12-Mar-2002 Incident Identification: 63375 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 0

Database searched and no data found.

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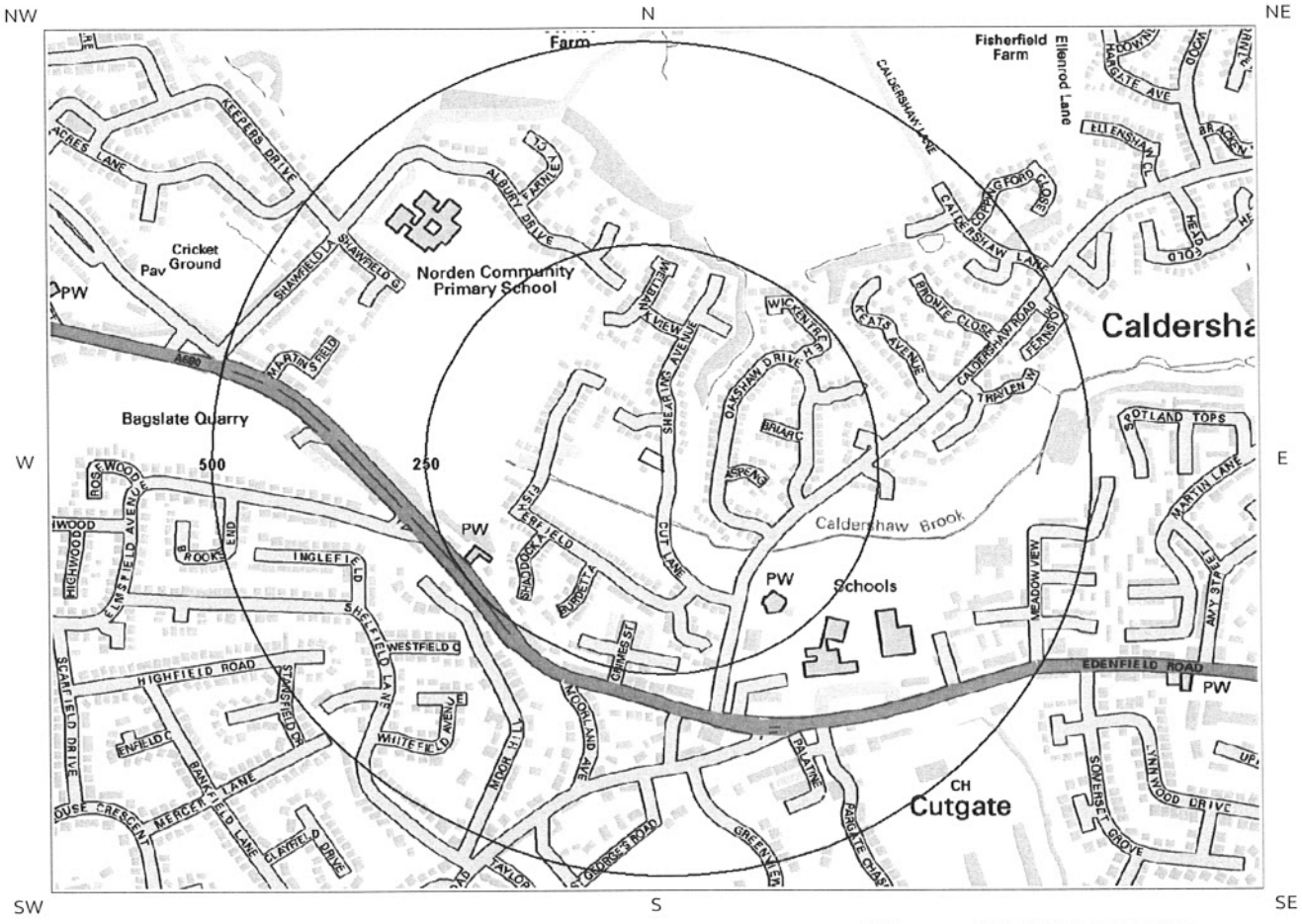
LOCATION INTELLIGENCE

3. Landfill and Other Waste Sites Map



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Site Outline

250 — 500 — Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

3

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1134	W		Site Address: Woodhouse Mill, Norden, Rochdale Waste Licence: Yes Site Reference: D030, RD/LIC/460/87 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 01-Jun-1987 Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Tack Lea Works Limited First Recorded: 31-Dec-1987 Last Recorded: 31-Dec-1991
Not shown	1139	SW		Site Address: Clay Lane Water treatment Works, Clay Lane, Norden, Rochdale Waste Licence: - Site Reference: RD/LIC/496/87 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	1232	W		Site Address: Dexine Works, Norden, Greater Manchester Waste Licence: - Site Reference: D081 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -

---

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

3

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	993	W	385877 414437	Refuse Tip	1962 mapping	Polygon
Not shown	1199	NE	387576 415367	Refuse Tip	1962 mapping	Polygon
Not shown	1444	W	385525 413930	Refuse Tip	1961 mapping	Polygon

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

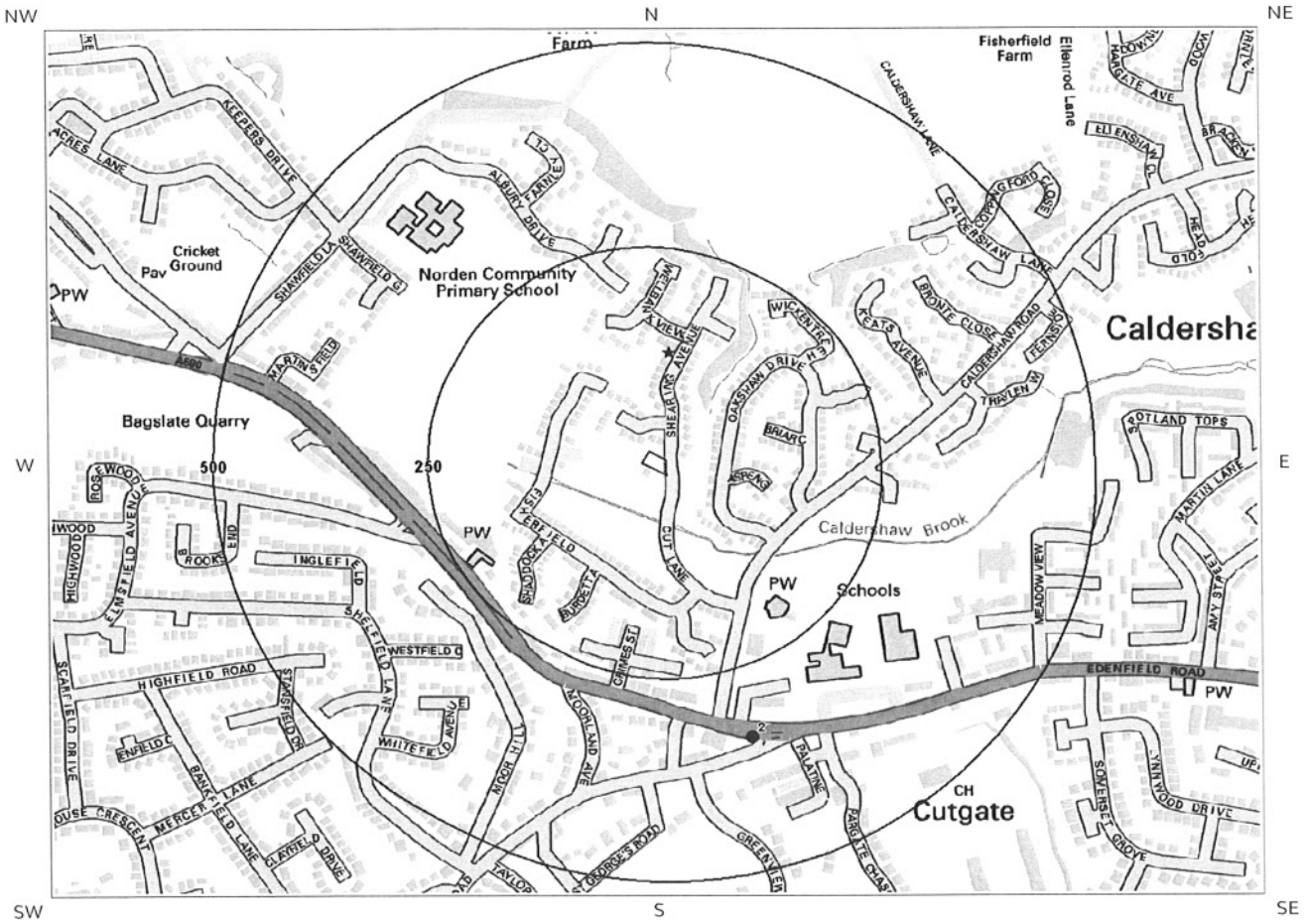
1

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1297	W	385684 414713	Site Address: Tenter House Mill, Unit 3, Greenbooth Road, Rochdale, Lancashire, OL12 7TD Type: Vehicle Depollution Facility <5000 tps Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WOR044 EPR reference: EA/EPR/NP3491EW/A001 Operator: Ali Amer Waste Management licence No: 102022	Issue Date: 09/06/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Rochdale Auto Parts Correspondence Address: -

Groundsure
LOCATION INTELLIGENCE

4. Current Land Use Map



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Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 1

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	124	N	Electricity Sub Station	386951 414452	OL12	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 1

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
2	336	S	387046 413979	TEXACO	Edenfield Road, Norden, Rochdale, Greater Manchester, OL11 5XR	Yes	Open

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

5.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

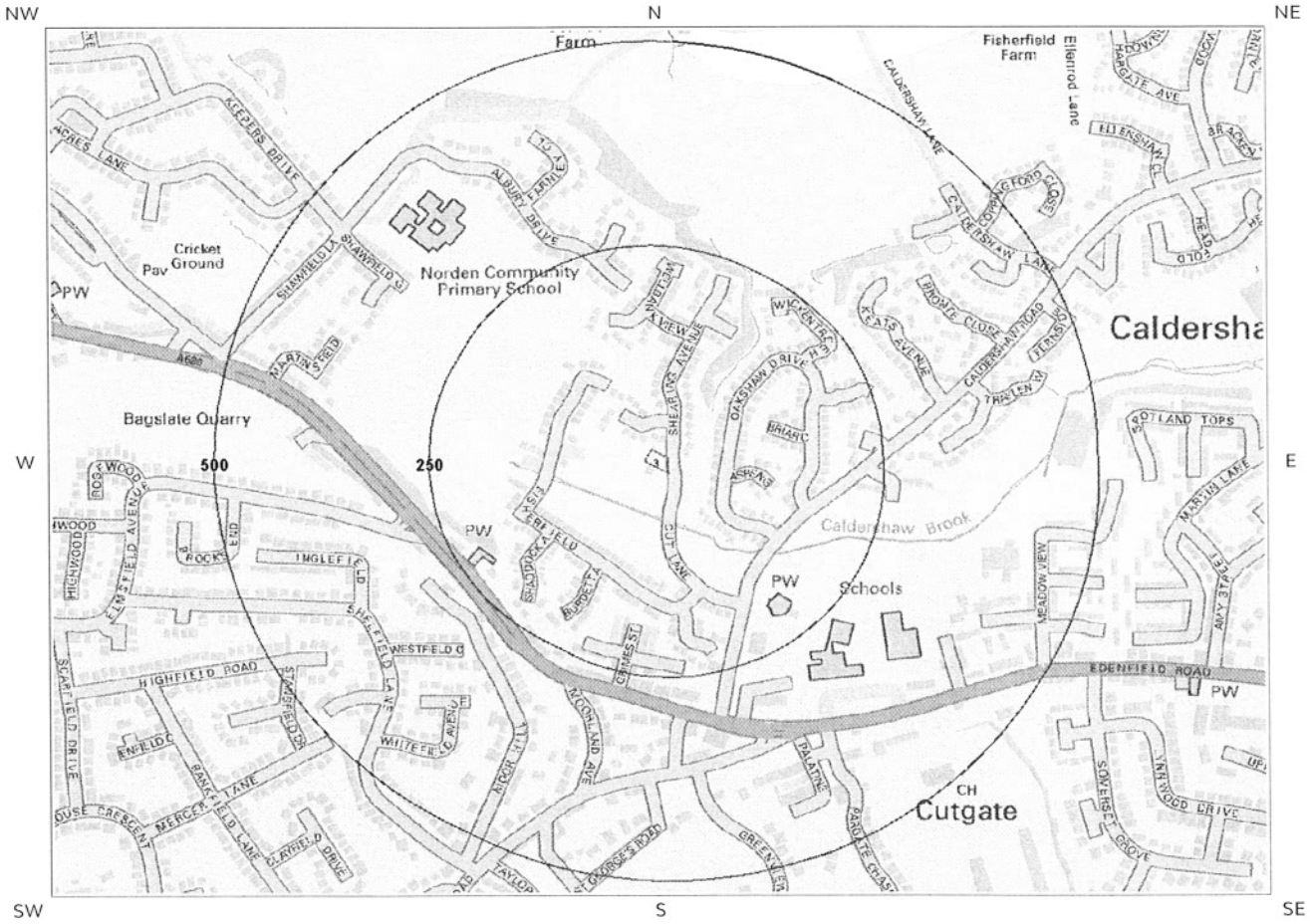
Lex Code	Description	Rock Type
RR-SDST	ROUGH ROCK	SANDSTONE
GAS-SDST	GREAT ARC SANDSTONE	SANDSTONE
PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

Groundsure
LOCATION INTELLIGENCE

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



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Site Outline

250 — 500 — Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

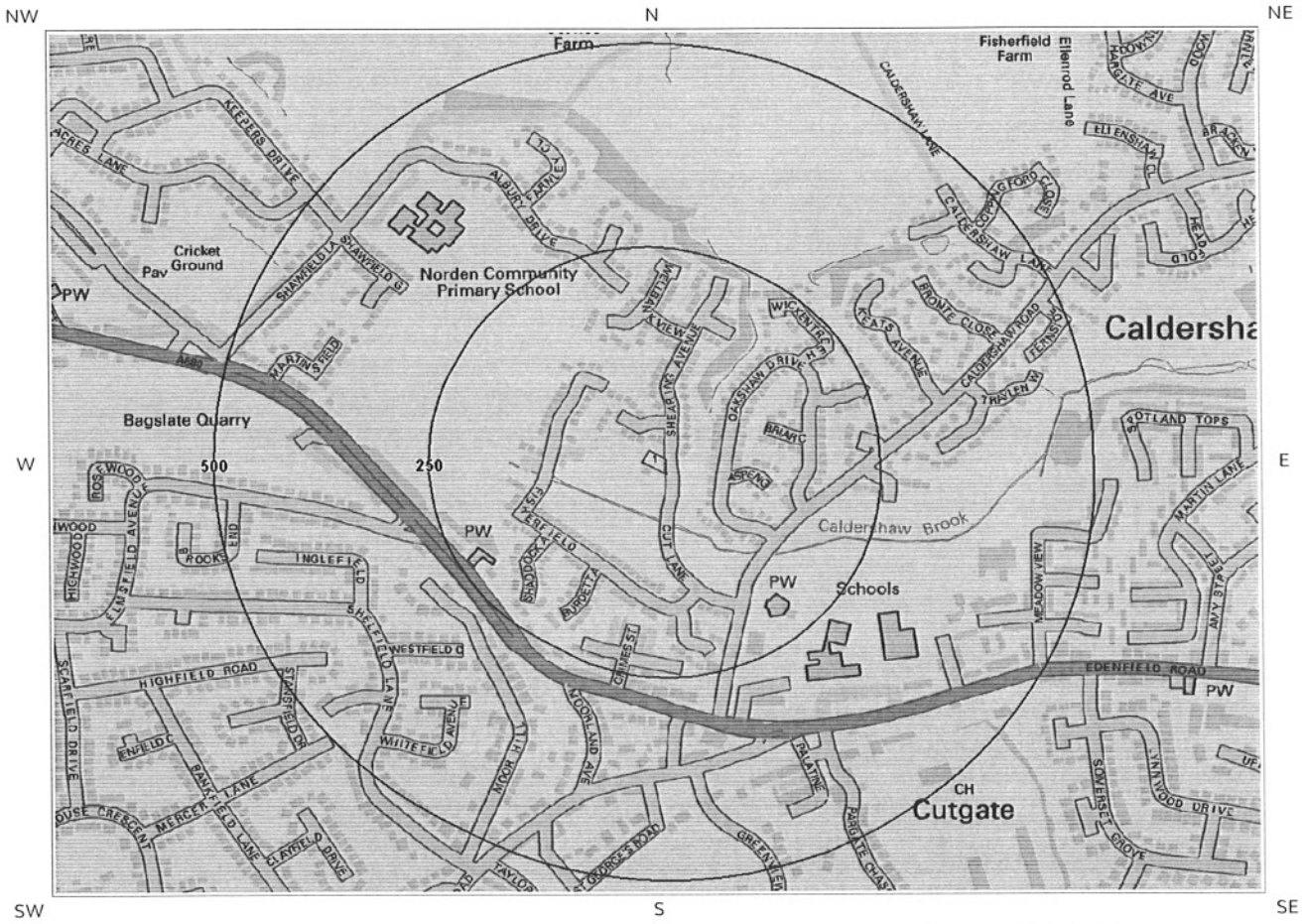
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Groundsure
LOCATION INTELLIGENCE

6b. Aquifer Within Bedrock Geology and Abstraction Licences



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Site Outline

250 / 500 Search Buffers (m)

Groundwater Abstraction Licence

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

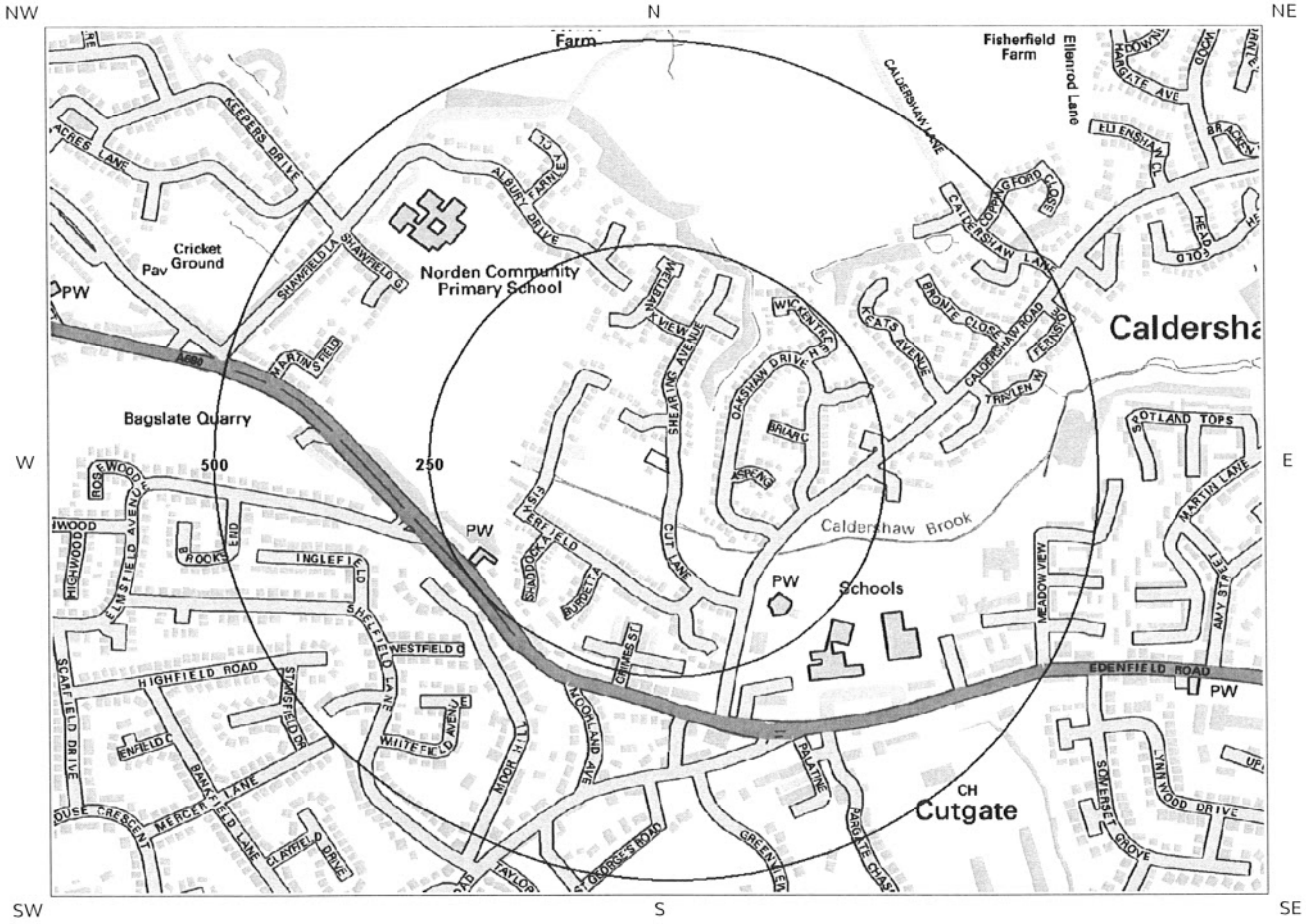
Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

Groundsure
LOCATION INTELLIGENCE

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



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Site Outline

250 — Search Buffers (m)
500

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2 - Outer Catchment

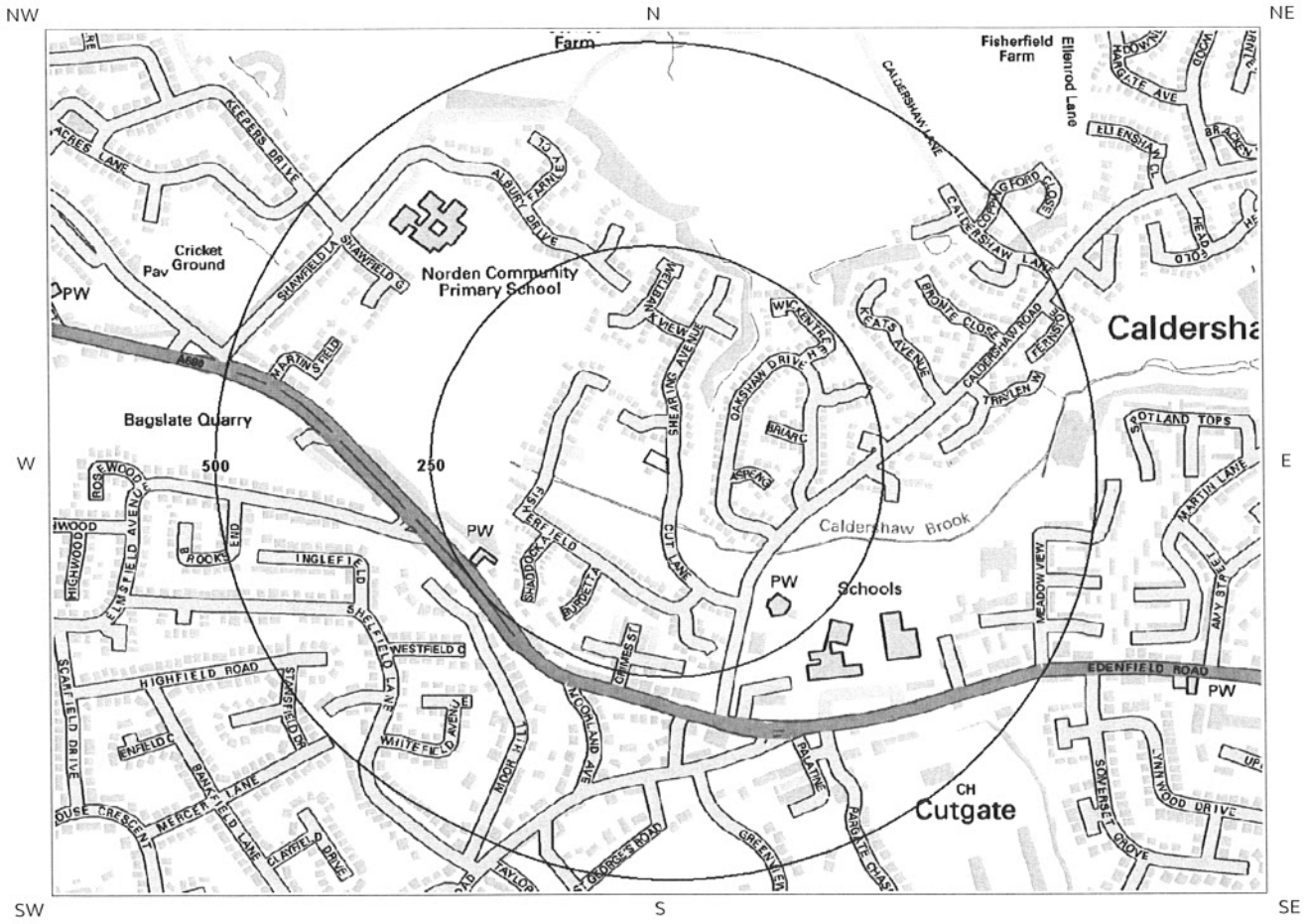
Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

Groundsure
LOCATION INTELLIGENCE

6d. Hydrogeology – Source Protection Zones within confined aquifer



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Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

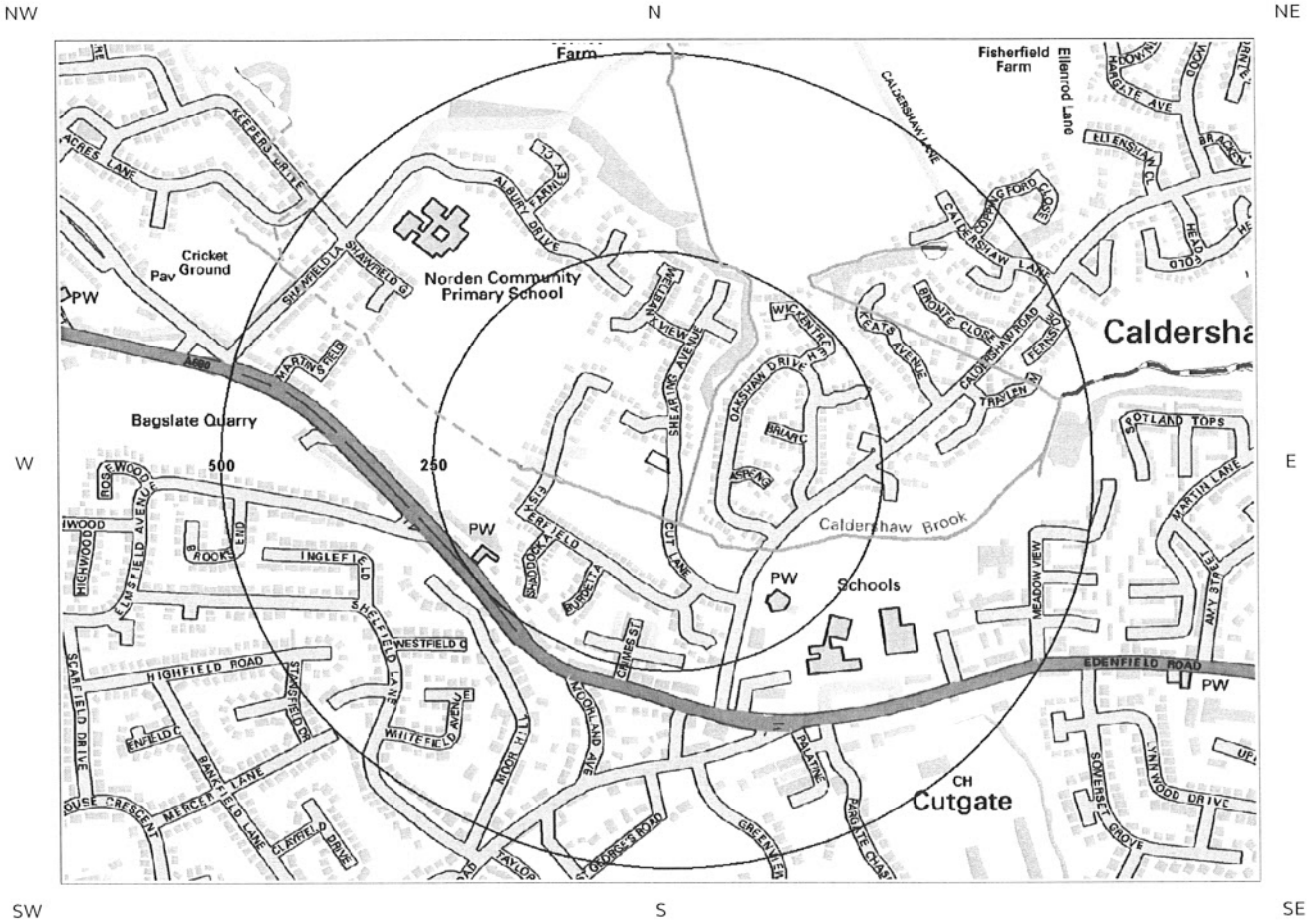
Potable Water Abstraction Licence

Site Outline

250 — 500 — Search Buffers (m)

Groundsure
LOCATION INTELLIGENCE

6e. Hydrology – Watercourse Network and River Quality



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Site Outline

250 — 500 — Search Buffers (m)

Tidal River
Inland River
Underground or Elevated Tidal River
Underground or Elevated Inland River
Foreshore
General Quality Assessment: Chemistry

Canal
Underground or Elevated Canal
Lock or Flight of Locks
Lake, Reservoir, or Marsh
Drain or Transfer
General Quality Assessment: Biology

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
3	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site — Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	716	S	386800 413600	Status: Active Licence No: 2569002140 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT ROCHDALE GOLF COURSE AT NORDEN, ROCHDALE Data Type: Point Name: ROCHDALE GOLF CLUB LTD	Annual Volume (m^3): 7272 Max Daily Volume (m^3): 120 Original Application No: - Original Start Date: 01/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/11/1997 Version End Date:
Not shown	716	S	386800 413600	Status: Historical Licence No: 2569002140 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "BOREHOLE AT ROCHDALE GOLF COURSE AT NORDEN, ROCHDALE" Data Type: Point Name: ROCHDALE GOLF CLUB LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/11/1997 Version End Date:
Not shown	1863	SW	385600 413000	Status: Historical Licence No: 2569002180 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT MOOR EDGE FARM, BAMFORD, ROCHDALE Data Type: Point Name: BLACKBOROUGH	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date:
Not shown	1863	SW	385600 413000	Status: Historical Licence No: 2569002183 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT MOOR EDGE FARM, BAMFORD, ROCHDALE" Data Type: Point Name: MILLS	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date:
Not shown	1863	SW	385600 413000	Status: Historical Licence No: 2569002180 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT MOOR EDGE FARM, BAMFORD, ROCHDALE" Data Type: Point Name: BLACKBOROUGH	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1863	SW	385600 413000	Status: Historical Licence No: 2569002183 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT MOOR EDGE FARM, BAMFORD, ROCHDALE Data Type: Point Name: MILLS	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date:
Not shown	1926	SE	388700 413500	Status: Historical Licence No: 2569002050 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, SPOTLAND, ROCHDALE Data Type: Point Name: ALEXANDER DREW LTD.	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2003 Version End Date:
Not shown	1926	SE	388700 413500	Status: Historical Licence No: 2569002050 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, SPOTLAND, ROCHDALE" Data Type: Point Name: ALEXANDER DREW & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 02/05/2000 Version End Date:
Not shown	1926	SE	388700 413500	Status: Historical Licence No: 2569002050 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES SPOTLAND ROCHDALE Data Type: Point Name: ALEXANDER DREW LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2100 Original Application No: - Original Start Date: 10/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2003 Version End Date:
Not shown	1934	N	387290 416230	Status: Historical Licence No: 2569002254 Details: General Farming & Domestic Direct Source: Ground Water - North West Region Point: BOREHOLE AT KNACKS FARM,LANEHEAD, ROCHDALE Data Type: Point Name: HUGHES	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 06/11/1992 Expiry Date: - Issue No: 100 Version Start Date: 06/11/1992 Version End Date:
Not shown	1934	N	387290 416230	Status: Historical Licence No: 2569002254 Details: General Farming & Domestic Direct Source: Ground Water - North West Region Point: "BOREHOLE AT KNACKS FARM,LANEHEAD, ROCHDALE" Data Type: Point Name: HUGHES	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 06/11/1992 Expiry Date: - Issue No: 100 Version Start Date: 06/11/1992 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not show n	1947	NW	385300 415400	Status: Historical Licence No: 2569002187 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE Data Type: Point Name: ALEXANDER DREW & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date:
Not show n	1947	NW	385300 415400	Status: Historical Licence No: 2569002187 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE Data Type: Point Name: ALEXANDER DREW & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date:
Not show n	1947	NW	385300 415400	Status: Historical Licence No: 2569002187 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE" Data Type: Point Name: ALEXANDER DREW & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date:
Not show n	1947	NW	385300 415400	Status: Historical Licence No: 2569002187 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE" Data Type: Point Name: ALEXANDER DREW & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1266	E	388200 414500	Status: Historical Licence No: 2569002018 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: LODGE FED BY R SPODDEN AT ROCHDALE Data Type: Point Name: FLEXITALLIC LTD	Annual Volume (m^3): 1500211.393 Max Daily Volume (m^3): 4546.095 Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 11/04/1997 Version End Date:
Not shown	1266	E	388200 414500	Status: Historical Licence No: 2569002018	Annual Volume (m^3): 1500211.393 Max Daily Volume (m^3): 4546.095

ID	Distance (m)	Direction	NGR	Details	
				Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: LODGE FED BY R SPODDEN AT ROCHDALE Data Type: Point Name: FLEXITALLIC LTD	Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 11/04/1997 Version End Date:
Not shown	1266	E	388200 414500	Status: Historical Licence No: 2569002018 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: LODGE FED BY R SPODDEN AT ROCHDALE Data Type: Point Name: FLEXITALLIC LTD	Annual Volume (m^3): 1500211.393 Max Daily Volume (m^3): 4546.095 Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 11/04/1997 Version End Date:
Not shown	1405	W	385600 414800	Status: Historical Licence No: 2569002221 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: NADEN BRK AT NORDERN, NR ROCHDALE Data Type: Point Name: TACKLEA WORKS LTD	Annual Volume (m^3): 150018 Max Daily Volume (m^3): 590.98 Application No: - Original Start Date: 04/11/1981 Expiry Date: - Issue No: 100 Version Start Date: 05/02/1988 Version End Date:
Not shown	1405	W	385600 414800	Status: Historical Licence No: 2569002221 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "NADEN BRK AT NORDERN, NR ROCHDALE" Data Type: Point Name: TACKLEA WORKS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 04/11/1981 Expiry Date: - Issue No: 100 Version Start Date: 05/02/1988 Version End Date:
Not shown	1844	NW	385300 415200	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE*31" Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 14/03/1990 Version End Date:
Not shown	1844	NW	385300 415200	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE*31 Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 14/03/1990 Version End Date:
Not shown	1844	NW	385300 415200	Status: Active Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE Data Type: Point Name: UNITED UTILITIES WATER LTD	Annual Volume (m^3): 9.092e+006 Max Daily Volume (m^3): 40914 Application No: - Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 14/03/1990 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — Identified

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1844	NW	385300 415200	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE*31" Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1844	NW	385300 415200	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE*31 Data Type: Point Name: UNITED UTILITIES WATER PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1844	NW	385300 415200	Status: Active Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE Data Type: Point Name: UNITED UTILITIES WATER LTD	Annual Volume (m^3): 9.092e+006 Max Daily Volume (m^3): 40914 Original Application No: - Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1947	NW	385300 415400	Status: Historical Licence No: 2569002187 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE Data Type: Point Name: ALEXANDER DREW & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1947	NW	385300 415400	Status: Historical Licence No: 2569002187 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE" Data Type: Point Name: ALEXANDER DREW & SONS LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site — None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site — Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
25	S	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site — Identified

6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1379	W	385550 414150	River Name: Oldhouse Bk Reach: Qsl At Ashworth Moor Resvr. To Naden Bk. End/Start of Stretch: End of Stretch NGR	B	B	B	C	C
Not shown	1463	NW	385600 414950	River Name: Naden Bk Reach: Qsl At Doctor Dam To Cheesden Bk. End/Start of Stretch: Start of Stretch NGR	B	B	B	C	C

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1379	W	385550 414150	River Name: Oldhouse Bk. Reach: Qsl At Ashworth Moor Resvr. To Naden Bk. End/Start of Stretch: End of Stretch NGR	B	A	A	A	A
Not shown	1442	W	385483 414180	River Name: Oldhouse Bk. Reach: Qsl At Ashworth Moor Resvr. To Naden Bk. End/Start of Stretch: Sample Point NGR	B	A	A	A	A
Not shown	1463	NW	385600 414950	River Name: Naden Bk. Reach: Qsl At Doctor Dam To Cheesden Bk. End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	28 E	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
20	28 E	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	55 S	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
21	55 S	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
3	57 S	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
22	57 S	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
4	60 S	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
23	60 S	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
5	62 S	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.2

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
24	62 S	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.2
6	64 S	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	64 S	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
7	77 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
26	77 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
8	109 W	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	109 W	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	121 W	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
28	121 W	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
10	141 SE	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	141 SE	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
11	155 SE	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
30	155	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
12	156 W	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
31	156 W	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
13	269 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	269 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
14	277 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
33	277 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	278 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	278 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
16	280 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
35	280 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
17	336 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
18	336 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
36	336 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
37	336 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
19	401 NE	Not specified	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.1
38	401 NE	Not specified	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.1
20	424 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
39	424 NE	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	436 E	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
Not shown	436 E	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
22	443 E	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
Not shown	443 E	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
23	447 E	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	447 E	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
24	453 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	453 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	469 E	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.8
Not shown	469 E	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.8
26	471 E	Caldershaw Brook	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.0
Not shown	471 E	Caldershaw Brook	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.0
27	488 NW	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
28	488 NW	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	488 NW	Caldershaw Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	488 NW	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	494 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
30	494 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	494	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	N			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	494 N	Not specified	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

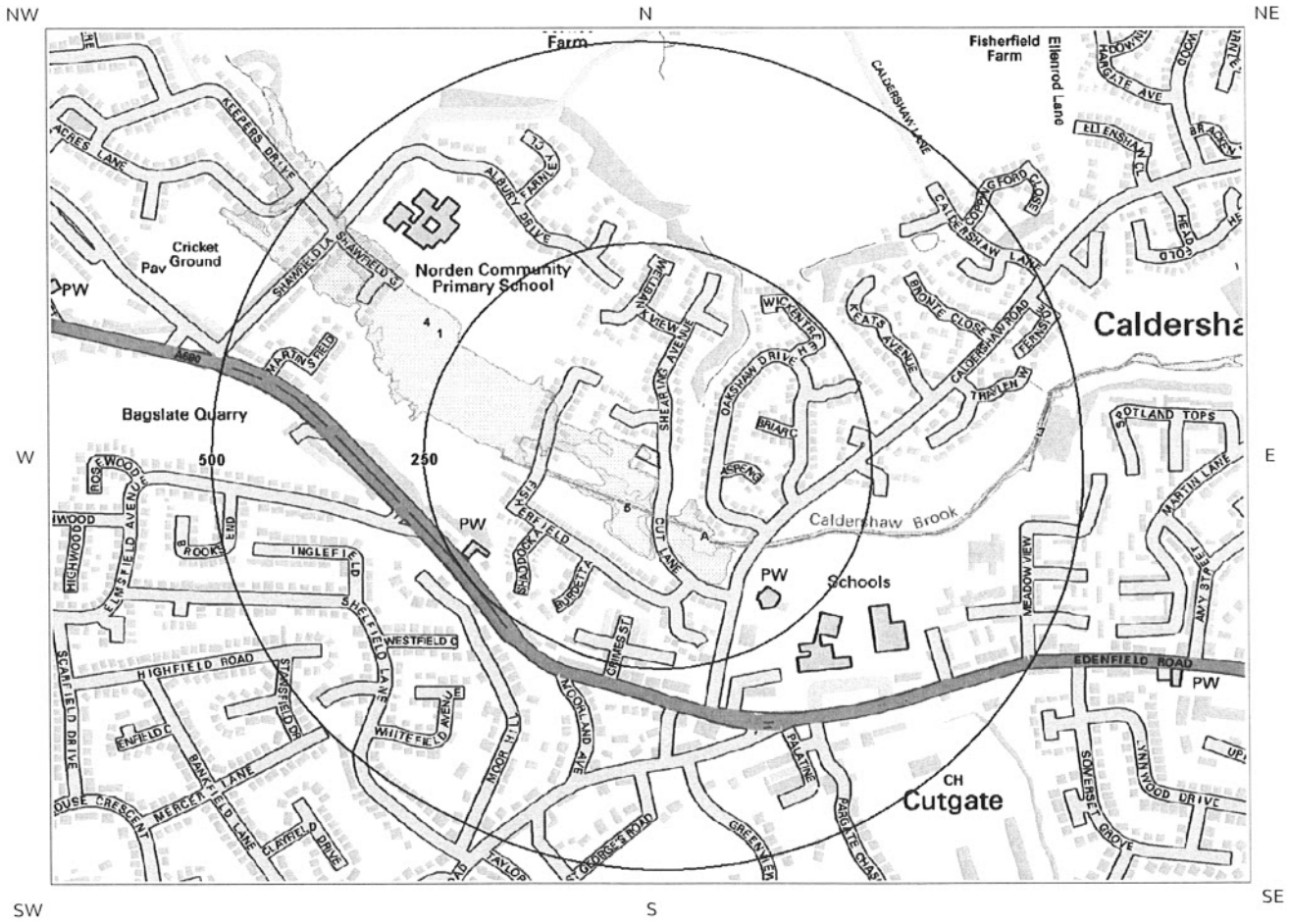
Surface water features within 250m of the study site — Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
54	S
60	S
77	NE
154	SE

Groundsure
LOCATION INTELLIGENCE

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



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Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

Zone 3 Floodplain

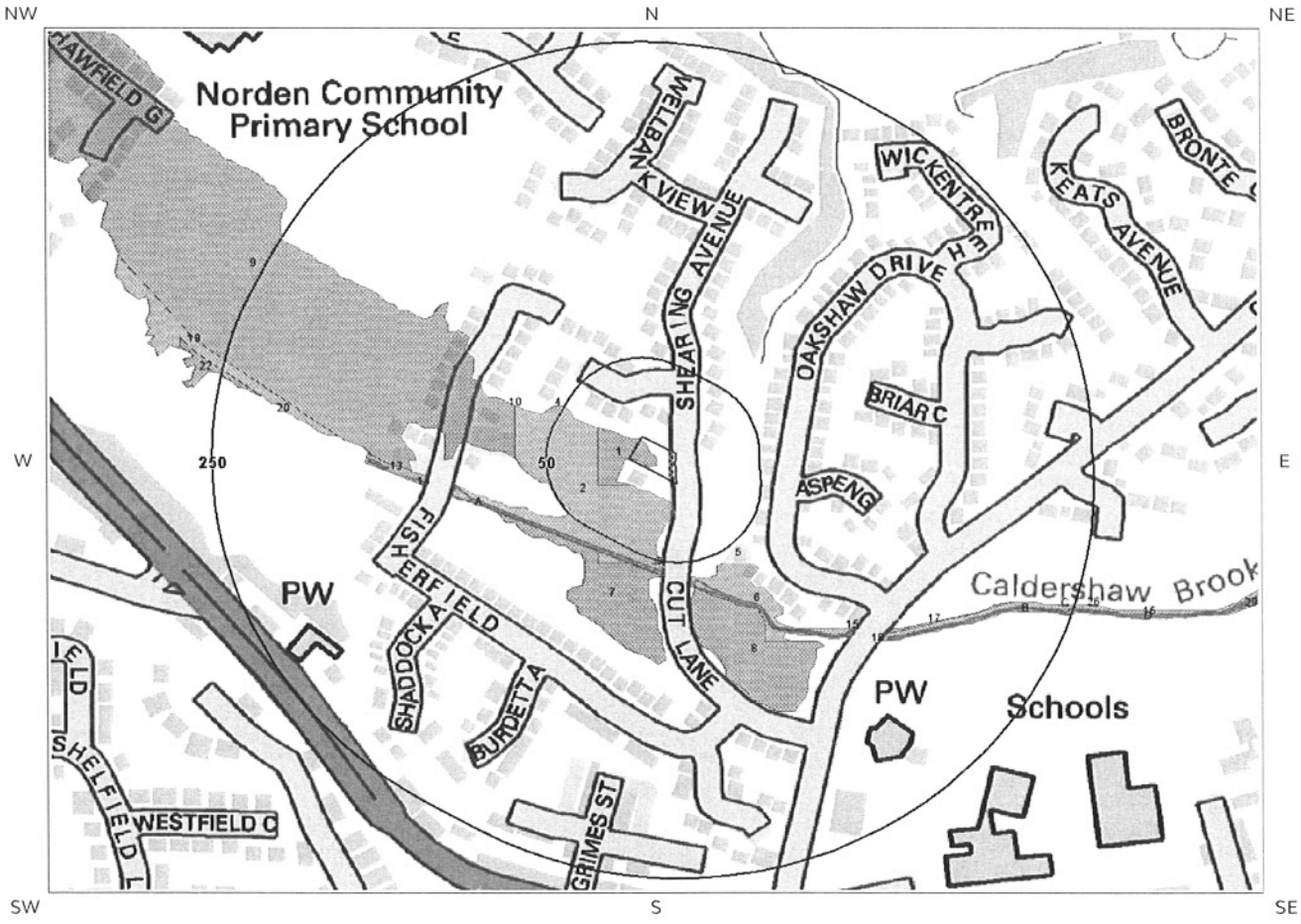
Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

Groundsure
LOCATION INTELLIGENCE

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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Site Outline

100 / 250 Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	0	On Site	15-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
2A	52	SE	15-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
3	155	SE	15-Oct-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — Identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1	0	On Site	15-Oct-2018	Zone 3 - (Fluvial Models)
2A	50	SW	15-Oct-2018	Zone 3 - (Fluvial Models)
3	59	S	15-Oct-2018	Zone 3 - (Fluvial Models)
	155	SE	15-Oct-2018	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite — Medium

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Medium (greater than 1 in 100 but less than 1 in 30) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1	0.0	On Site	Medium
2	12.0	SW	High

7.4 Flood Defences

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site — None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site — None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site — Identified

Clearwater Flooding or Superficial Deposits Flooding — Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

7.8 Groundwater Flooding Confidence Areas

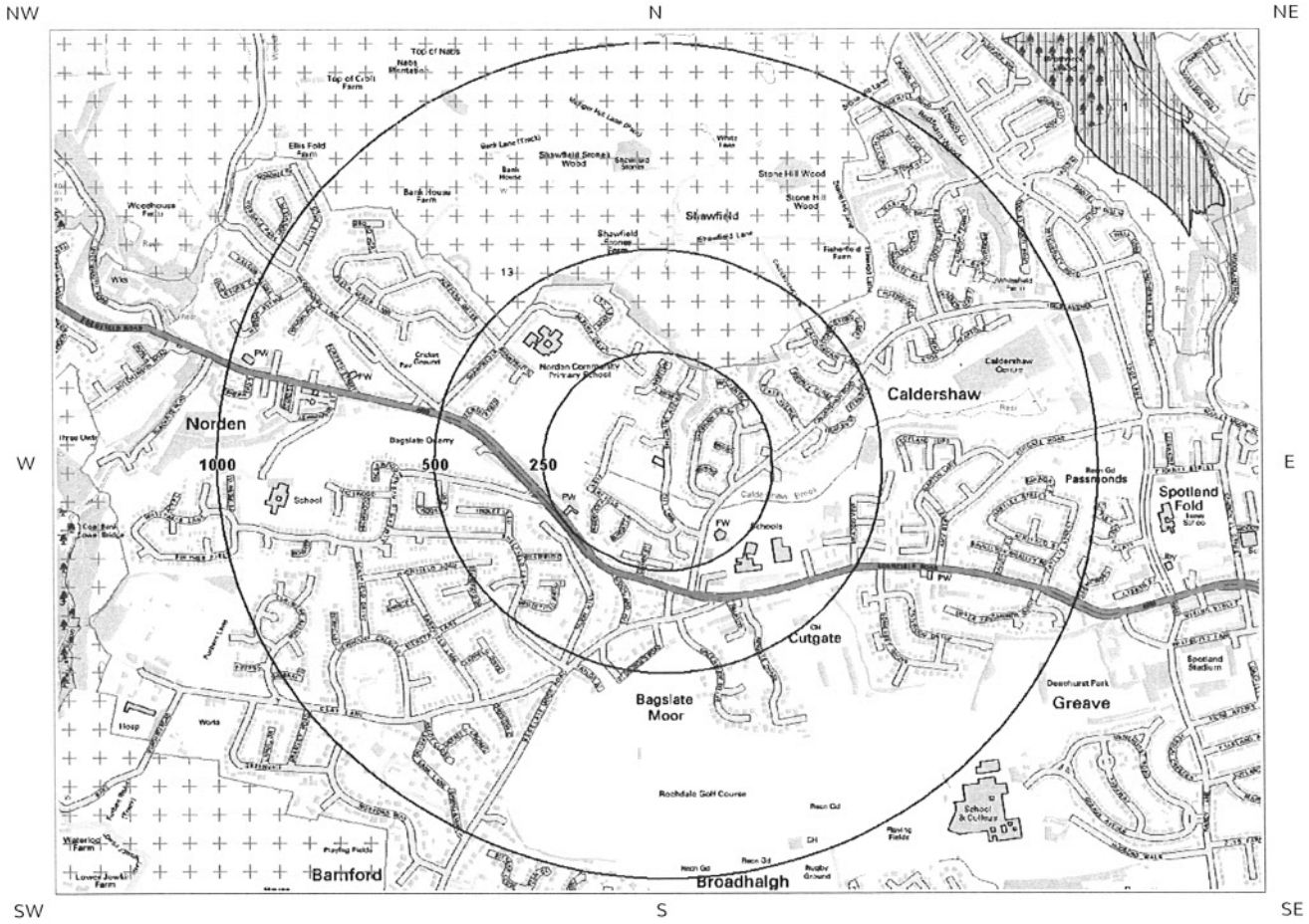
British Geological Survey confidence rating in this result — Low

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

Groundsure
LOCATION INTELLIGENCE

8. Designated Environmentally Sensitive Sites Map



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Site Outline

100 / 250 Search Buffers (m)

AONB

National Park

SSSI

Special Protection Areas

Nitrate Vulnerable Zones

Green Belt

Environmentally Sensitive Areas

Special Areas of Conservation

World Heritage Sites

Nitrate Sensitive Areas

Ancient Woodland

National Nature Reserve

Local Nature Reserves

Ramsar Sites

8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site	Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

11

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
2	1244	NE	UNKNOWN	Ancient and Semi-Natural Woodland
3	1329	W	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1445	NE	UNKNOWN	Ancient and Semi-Natural Woodland
5	1465	NW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1566	NE	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1594	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1598	N	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1801	SW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1844	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1894	SW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1916	W	UNKNOWN	Ancient and Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

1

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
1	1239	NE	Healey Dell	Natural England

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

3

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
13	234	N	Liverpool, Manchester and West Yorks Greenbelt	Rochdale
Not shown	1694	NE	Liverpool, Manchester and West Yorks Greenbelt	Rossendale District (B)
Not shown	1997	NE	Liverpool, Manchester and West Yorks Greenbelt	Rochdale

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9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell*[*] hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — Identified

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site — None identified
Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com

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Tel: 0115 936 3143.
Fax: 0115 936 3276.
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BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

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Tel: 01252 845444

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ENVIRONMENTAL
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Contaminated Land Phase One Desk Study for Proposed Residential Dwelling at land adjacent to, 1 Saxwood Close, Rochdale, OL12 7QX.

Prepared for

Mr H Khan
37 Sheriff Street
Rochdale
OL12 6QR

October 2018

Summary

This report consists of a phase one contaminated land desk study produced in support of planning application for a residential property on land adjacent to 1 Saxwood Close, Rochdale, OL12 7QX.

Following the site walkover and review of the available information it has been concluded that no contamination exists which poses a significant risk of significant harm to the identified receptors either on site or in the immediate vicinity and the site is considered safe and suitable for the intended use.

The report further recommends that a watching brief is maintained throughout the construction of the new dwellings and any signs of potential contamination found are fully investigated, with appropriate remedial action taken as necessary.

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Introduction

Martin Environmental Solutions has been commissioned, to carry out a phase one contaminated land desk study report in relation to a proposed residential development land adjacent to 1 Saxwood Close, Rochdale, OL12 7QX.

Aims and Objectives of the report

The aims and objectives of this report are as follows:

- Assess the likelihood of contamination affecting the site,
- Identify any likely receptors to be affected by the potential contamination,
- Identify the pathways by which the receptors will be exposed to any potential contamination,
- Identify any areas where further investigation will be required.

Scope of works

This report has been written in line with the 'BS 10175: 2011 Investigation of potentially contaminated sites – Code of Practice' and 'The Model Procedures for the Management of Land Contamination, CLR11'.

The scope of this report covers the phase one desk study only. It will look at relevant information on: -

- the history of the site and surrounding area,
- the current use of the site and surrounding area,
- the geology and hydrogeology of the area,

A site walk-over survey has been undertaken in addition to consultations with the existing site owner, to identify any potential contamination issues.

Evaluation of the above information will be used to construct an initial conceptual model as appropriate, with the identification of any additional investigations that may be required.

The Site:

Site Address: land adjacent to 1 Saxwood Close, Rochdale, OL12 7QX.

Grid reference: 386934; 414317

An aerial photograph of the site is included in Figure 1.

Current Site use:

The site is currently a disused roughly rectangular are area covering approx. 0.05 ha. The site is currently an unused overgrown piece of land. Residential property surrounds the site to the east, south and north, with agricultural fields beyond.

Research

Details of Research

This report has been based on information gathered from a number of reputable sources, covering details:

- on the historic and current use of the site,
- any known waste disposal activities in the area,
- any regulated industrial activities within the vicinity of the site including recorded industrial accidents,
- on the geology, hydrogeology, hydrology of the area,
- identification of any environmentally sensitive sites,
- any natural hazards.

Principle sources of this information have been:

- environmental data from Groundsure Limited
- the Local Planning Authority,
- historic maps (Groundsure Ltd),
- site walk-over survey and discussion with the current owners.

Site History

Information on the historic uses of the site has been obtained from historic mapping information (Appendix 2), and environmental data from Groundsure Limited.

Mapping Year	Changes on Site	Changes off Site
1851	The site forms part of a larger field.	The area is predominantly agricultural with few properties with 500m of the site. Coal pits are shown 400m to the south. Various mills are identified to the east and west over 1Km away.
1890	No Change	A watercourse is shown running north to south 50m to the east of the site. Residential properties are identified 300m south. Martins Mill is identified 450m to the west and Bagslate Quarry 475m. A colliery is shown 500m south.
1909	No Change	The quarry is disused, an old shaft (coal) is shown 260m to the west Additional properties have been built.
1928-30	No Change	No significant changes, a few more properties have been built in the wider area.
1938	No Change	A tank is shown to the north of the site ~100m away. A school has been built adjacent to Martin's Mill in the west. NO other significant changes
1956-61	No Change	No Significant changes. A pond is shown 130m to the east
1968	No Change	Lots of residential development in the wider area (Norden and Caldershaw)
1975-79	No Change	Lots of development in the wider area. The nearby school has expanded with a new one next door.
1987	No Change	No Significant changes

1992-95	The surrounding housing estate has been built. The site is shown on aerial photographs (2000), as forming part of the construction site with a 'road/track' running through the north corner linking it to Fisherfield. Mapping identifies two residential buildings on the site.	The large housing estate has been built, including properties along Fisherfield which no longer exist.
2002	No Change	No significant changes – lots of development in the wider area. Aerial photographs from 2003 do no show any buildings on site.
2010-present	The building on site have been removed	The buildings along Fisherfield are no longer shown on the mapping.

The properties identified on Fisherfield and on site were constructed and shortly demolished due to subsidence issues. It is not considered that these relatively short lived properties would result in any contamination to the site.

Regulatory Information

Relevant information obtained from the Groundsure report (Appendix 1) is summarised below.

One permitted activity has been identified within 500m of the site as defined in the Environmental Permitting (England and Wales) Regulations 2016 or previous legislation. This is a service station on Edenfield Road, 325m south of the site.

six landfill records, and one waste treatment site has been identified, within 1.5Km of the site. The nearest site is 993m west and involves a historic refuse tip from the 1962 mapping, two other sites were identified from the same mapping data 1199m northwest and 1444m west. Licensed waste sites were identified 1134m waste accepting inert and industrial waste at Woodhouse Mill, 1139m southwest at Clay Lane Water treatment works and finally 1232m west at Dexine works. The waste treatment site is 1297m west at Tenter House Mill, Greenbooth Road.

Three discharge consents have been identified, the first two are revoked and historic involving miscellaneous discharges to surface water. The third is located 460m south of the site and is linked to sewage discharges from a water company.

Six pollution incidents have been recorded in the vicinity of the site. The nearest is 373m southeast of the site in March 2002 with a minor impact to water from 'contaminated water discharge'. 432m, 437m and 439m east of the site sewage material was 'discharged' in 2001, 2003 and 2002 respectfully all with a minor impact to water and land. A significant impact to water occurred in Jul 2013 from an oil spillage 463m east of the site (and downstream) and the final incident occurred in 2002 466m northeast with a minor water impact from an oil spillage.

Two current potential contaminative land uses within 250m of the site have been identified the first is a substation 124m north of the site and the second the previously identified petrol station 336m south on Edenfield Road.

The above sites are unlikely to impact on the development site.

A number of historical potentially contaminative land uses have been identified within 500m of the site from the purchased information; most of these have been identified from the historical mapping and those within 250m of the site include:

The unspecified tank to the north – between 81-100m away depending on what mapping year is being viewed.

Ground works to the northwest 163m away - linked to the playing fields at the school

The electricity substation to the north.

The above sites are unlikely to impact on the development site.

Geology and Hydrogeology

Information from the British Geology Survey 1:50,000 mapping identifies the bedrock in the area as Rough Rock, Sandstone, Great Arc Sandstone, Pennine Lower Coal Measures, mud, silt and sand stone, overlaid with Till, Devensian and Diamicton. The nearest available borehole records held by the British geological survey, identify sandy clay or peat over clay/silt.

The information obtained on the hydrogeology of the area identifies the site as having a Secondary A aquifer within the bedrock on-site capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers, with a secondary (undifferentiated) aquifer in the superficial layer.

Three surface & five groundwater abstraction licences have been identified, including 2 Potable water abstraction licenses. The nearest to the site is a ground water abstraction point 716m south of the site at Rochdale Golf Course. The next closest is a historical surface water abstraction point located 1266m east the rest are over 1.5Km away

The site is not located within a Source Protection zone.

The soil leaching potential of the ground on site has been identified as L, soils in which pollutants are unlikely to penetrate.

Hydrology

A number of watercourses have been identified. The nearest 28m to the east. This flows south and joins Caldershaw Brook, which passes 55m to the south of the site and continues east.

The site is located within an Environment Agency flood zone 2 & 3 floodplain with a medium risk from flooding.

While unlikely, any contamination on the site could impact on these watercourse and ground water is likely to migrate towards them/

Environmental Sensitivity

The site is within 2Km of a number of identified environmental sensitive areas, ancient woodlands. The nearest of which is 1244m northeast and is unlikely to be affected by the site or any contamination on it.
A local Nature reserve also exists at this location (1239m northeast).

The site lies within 244m of the Liverpool, Manchester and West York's Greenbelt.

The site is within an area of negligible/low risk of natural hazards. The site is not in a Radon affected area as less than 1% of properties are above the action level of 200 becquerels.

Mining has been identified within the larger area, with historic shafts being identified on the historical mapping. Given the surrounding properties it is unlikely that the site will be adverse impacted by mining.

Site Walkover

A site walkover was undertaken on the 19th October 2018, and confirmed much of what had already been identified from the purchased information. The photographs in Appendix 3 provide some indication of the current layout and condition of the site.

Residential properties surround the site on three sides, with the site fronting onto Shearing Avenue to the east with 1 Saxwood Close to the north. It is relatively flat and currently disused and overgrown.
Some inert materials – bricks, wood and an old trampoline are located in the southeast corner. A drainage manhole cover exists just inside the property boundary on the eastern site by the fence suggesting a drainage channel intersects the site.

During the walkover visit there was no sign of any contamination dead, distressed vegetation or bare ground.

It has been confirmed that the previous buildings on site were demolished due to structural problems with subsidence issues, including those along Fisherfield to the south. No remains of the former structures were identified at the time of the walkover, and it is understood that the construction of the new property will be via piling with a raft foundation.

Conclusions

Following a review of the information gathered on the history of the site and the surrounding area, and following the site walk-over survey there are no contaminants identified on or off site that are likely to present a significant possibility of significant harm to any identified receptor.

Receptors and Pathways

Potential receptors which may be affected by any unknown contamination on site will include:

- Construction workers who are likely to be affected by any potential contamination as they will initially be working in the ground and are likely to be the ones who unearth any potential contaminants.
- Future users of the site, including residents, staff and visitors to the site. For the purpose of evaluating any effects from any contamination found during any intrusive investigation future users/visitors to the site should be regarded as the 0-6-year-old female child.
- Any building on site e.g. foundations which may be attacked by any contaminants in the ground or services.
- The underlying groundwater which may be contaminated by migrating pollutants present on the site. There is also the potential for further pollution of the groundwater or the watercourse from disturbing any potential contaminants on site.

The pathways by which these receptors may be exposed to any unforeseen potential contamination will include:

Construction workers

- Inhalation, of gases or vapours released during ground work or fine particles.
- Ingestion of the contaminants, principally from cross contamination with contaminated soil and inadequate hand washing before smoking and eating.
- Absorption through the skin following contact with contaminated soil.

Future users and visitors

- Inhalations of gas/vapours or fibres, particularly if these are allowed to enter the new structures through the ground, and build up in an enclosed area.
- Ingestion of contaminants, through the ingestion of contaminated soil from the garden area via direct contact, e.g. playing in the garden.
- Absorption of contaminants from dermal contact with contaminated soil.

Buildings

Contaminants on site have the potential to affect the foundations to the new building or the services supplying it.

Watercourses

As discussed above, if they exist on site, there is a potential for any contaminants to migrate through the ground into the groundwater and aquifer or via run-off into the watercourse.

Conceptual Model

The table represents a basic conceptual model. It highlights the potential sources of pollutants identified from the gathered information, and potential pathways in which any contaminants could reach the identified receptors.

Pathway	Description	Identified sources	Receptor at risk	Likelihood
1	Run off and seepage into groundwater from any spillages	-	Watercourse/ Environment	V. Low
2	Migration of gases into the building.	-	Future users	V. Low
3	Inhalation of gases/ vapours outside	-	Construction workers/future users	V. Low
4	Inhalation of fine particles	-	Construction workers/future users	V. Low
5	Direct ingestion of contaminated soil	-	Construction workers/future users	V. Low
6	In-direct ingestion of contaminated soil	-	Future users	V. Low
7	Absorption via direct dermal contact with contaminated soil	-	Construction workers/future users	V. Low

Recommendations

As a result of the investigation into the historical use of the site and surrounding area no sources of contamination have been identified, which present a significant possibility of significant harm to the any of the identified receptors.

Based on the information available the site is likely to be suitable for the intended use.

It is further recommended that a watching brief is maintained throughout the construction of the new dwellings and any signs of potential contamination found are fully investigated, with appropriate remedial action taken as necessary and the local planning authority informed of the findings.

Figure 1 – Aerial Photograph



Figure 2 - Historic aerial photograph from 2000 & 2003



Appendix 1 – Groundsure Data

Appendix 2 – Historical Mapping

Appendix 3 – Site walkover Photographs

The south boundary looking west



Northeast corner looking to the southwest



The western boundary



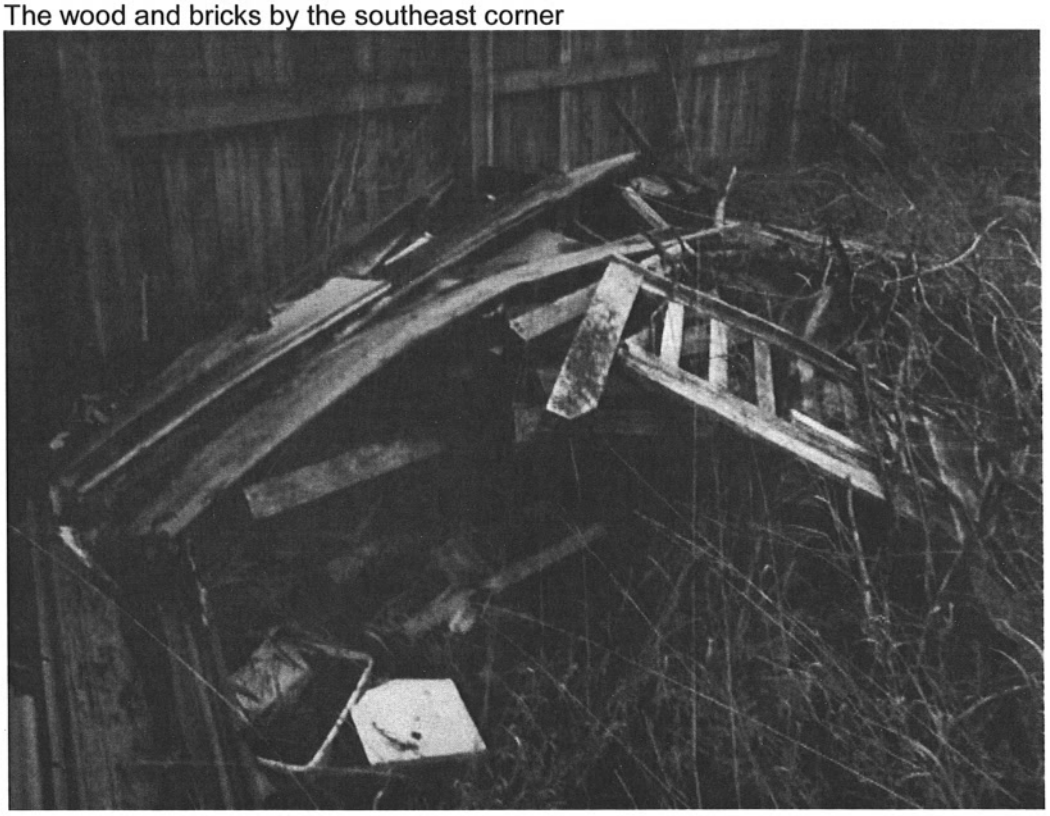
The southern boundary



Looking back across the northeast corner from the southeast

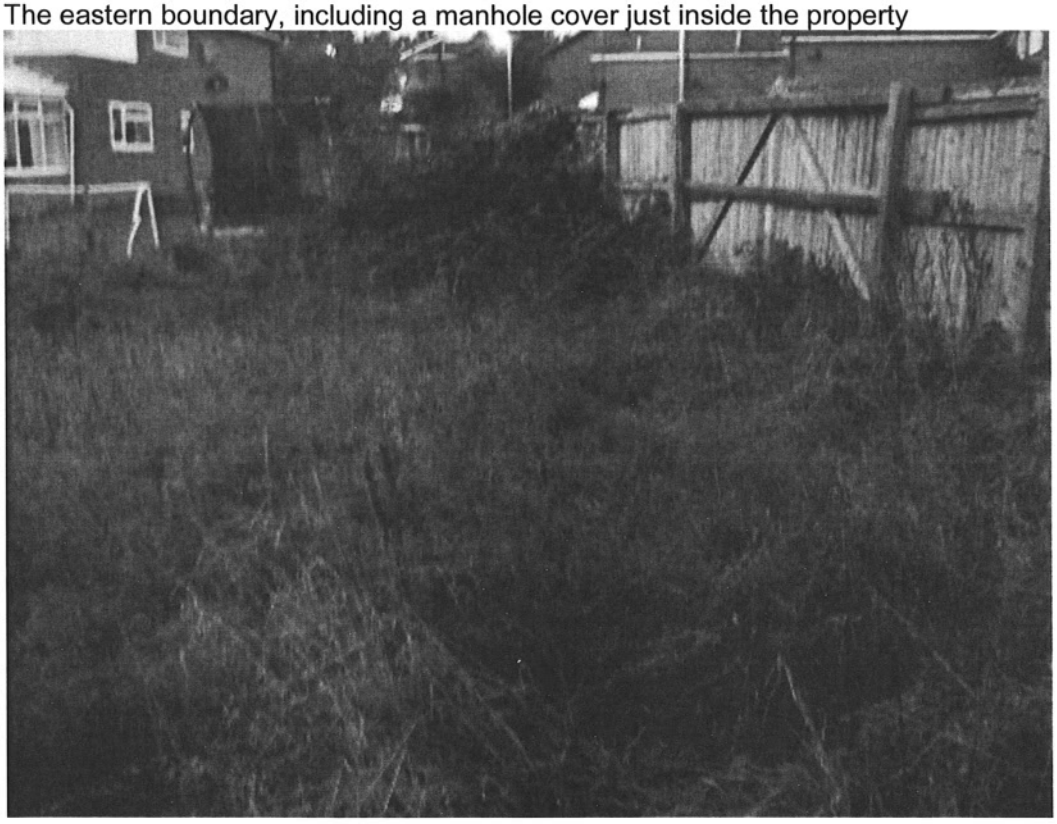


The wood and bricks by the southeast corner

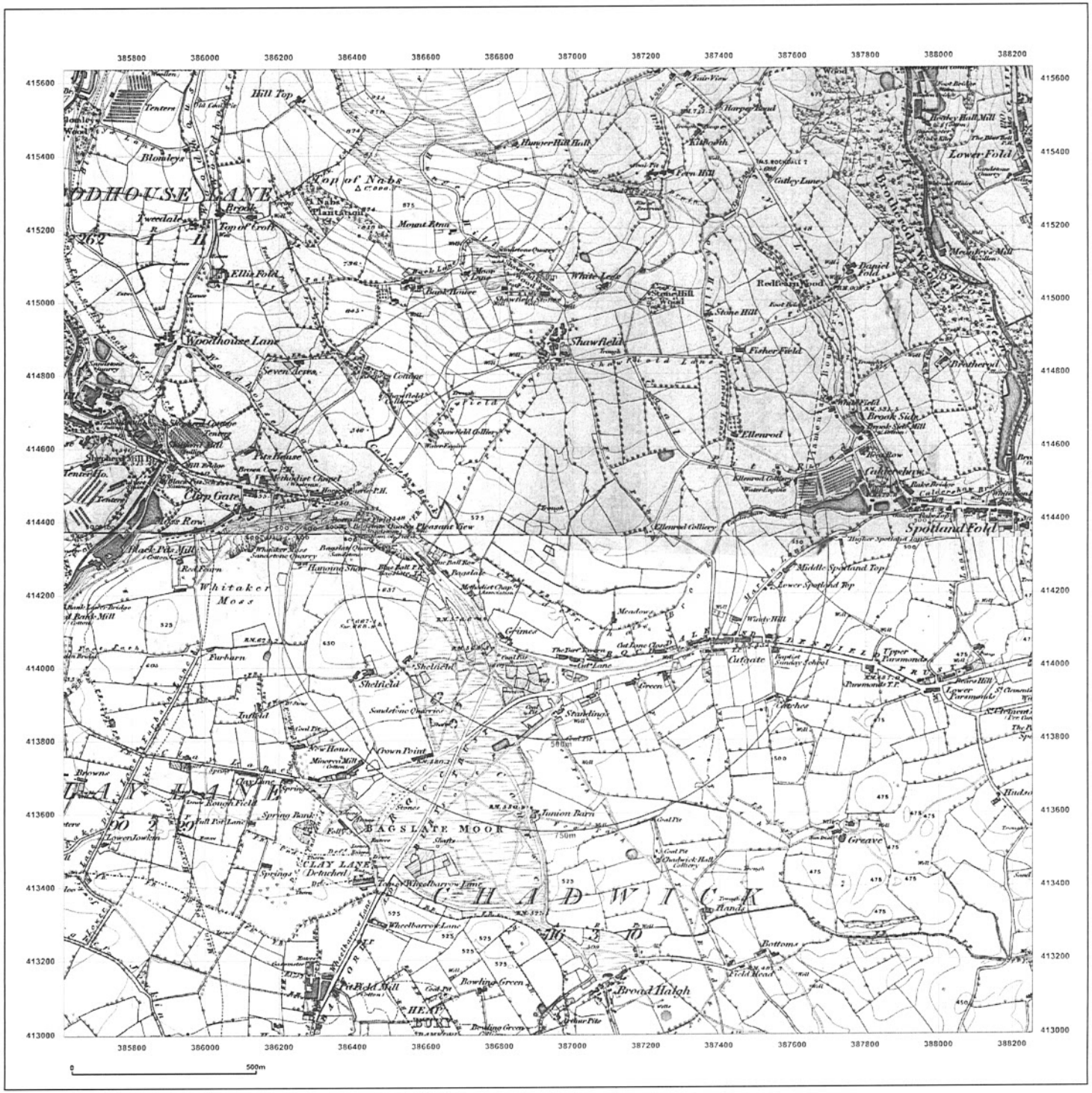




The eastern boundary, including a manhole cover just inside the property







Groundsure INSIGHTS

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ROCHDALE, OL12 7QX

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Report Ref:	GS-5532944
Grid Ref:	386934, 414315

Map Name:	County Series
Map date:	**1851**
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Printed at:	1:10,560

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Surveyed 1848
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A

Surveyed 1847
Revised N/A
Edition 1851
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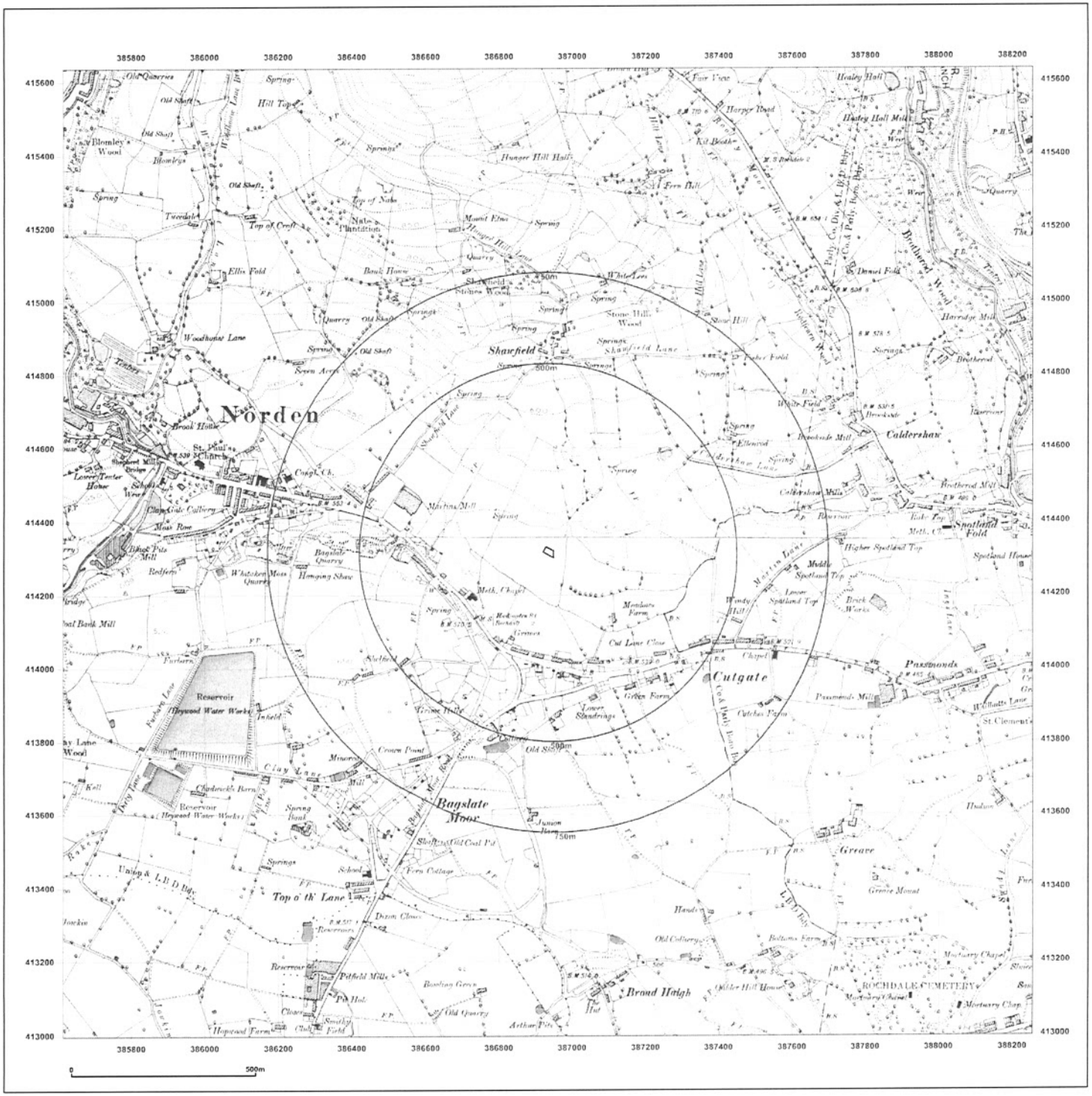

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ROCHDALE, OL12 7QX

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Map Name: County Series
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Surveyed 1890
Revised 1890
Edition N/A
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Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

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Surveyed 1848
Revised 1908
Edition N/A
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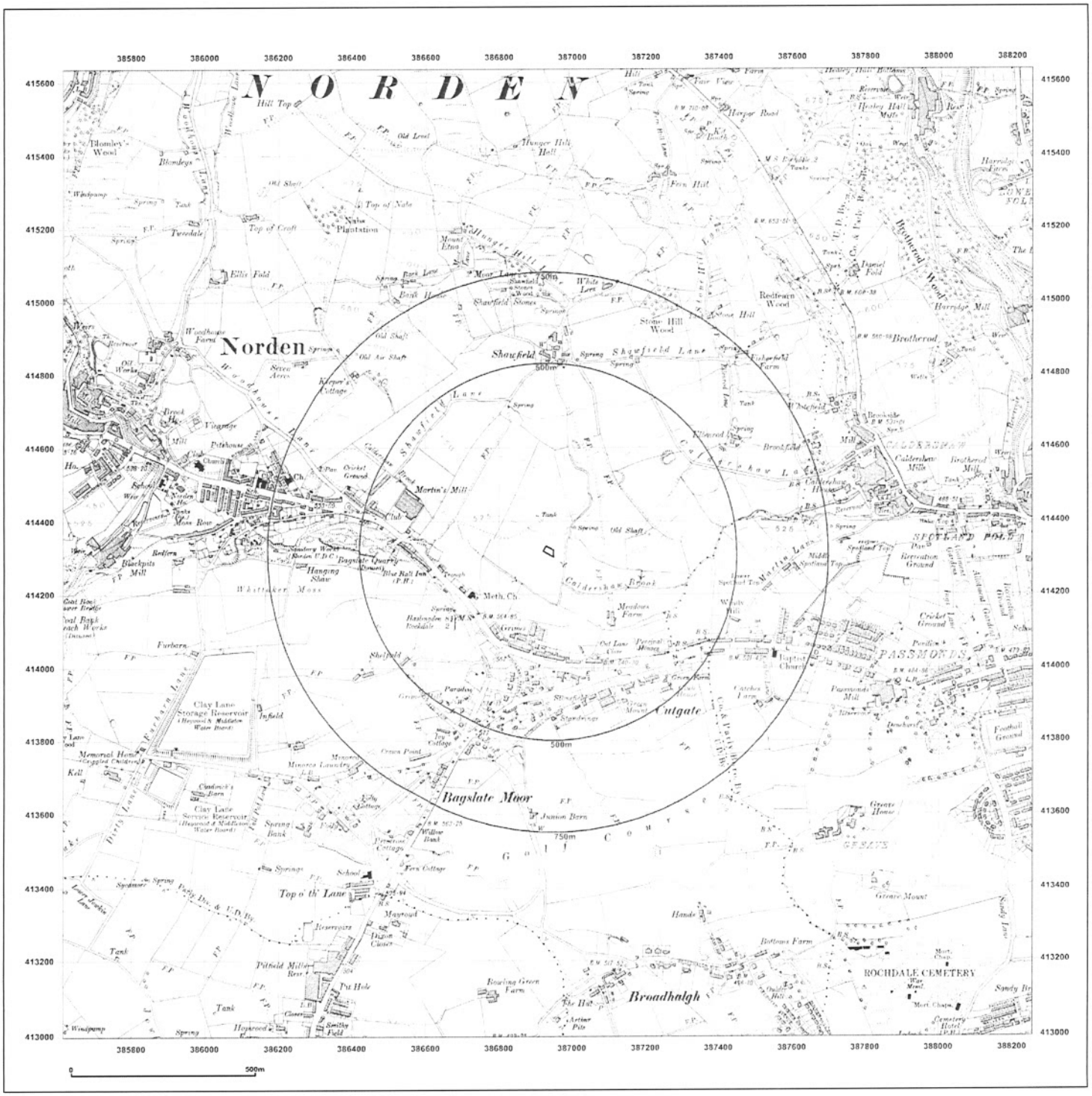

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Site Details:

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ROCHDALE, OL12 7QX

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Grid Ref: 386934, 414315

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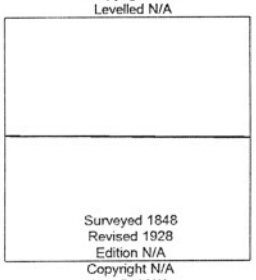
Surveyed 1848
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A



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Surveyed 1848
Revised 1938
Edition N/A
Copyright N/A
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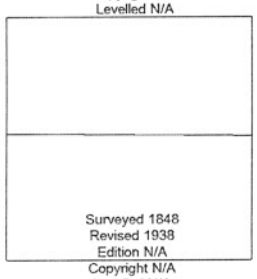

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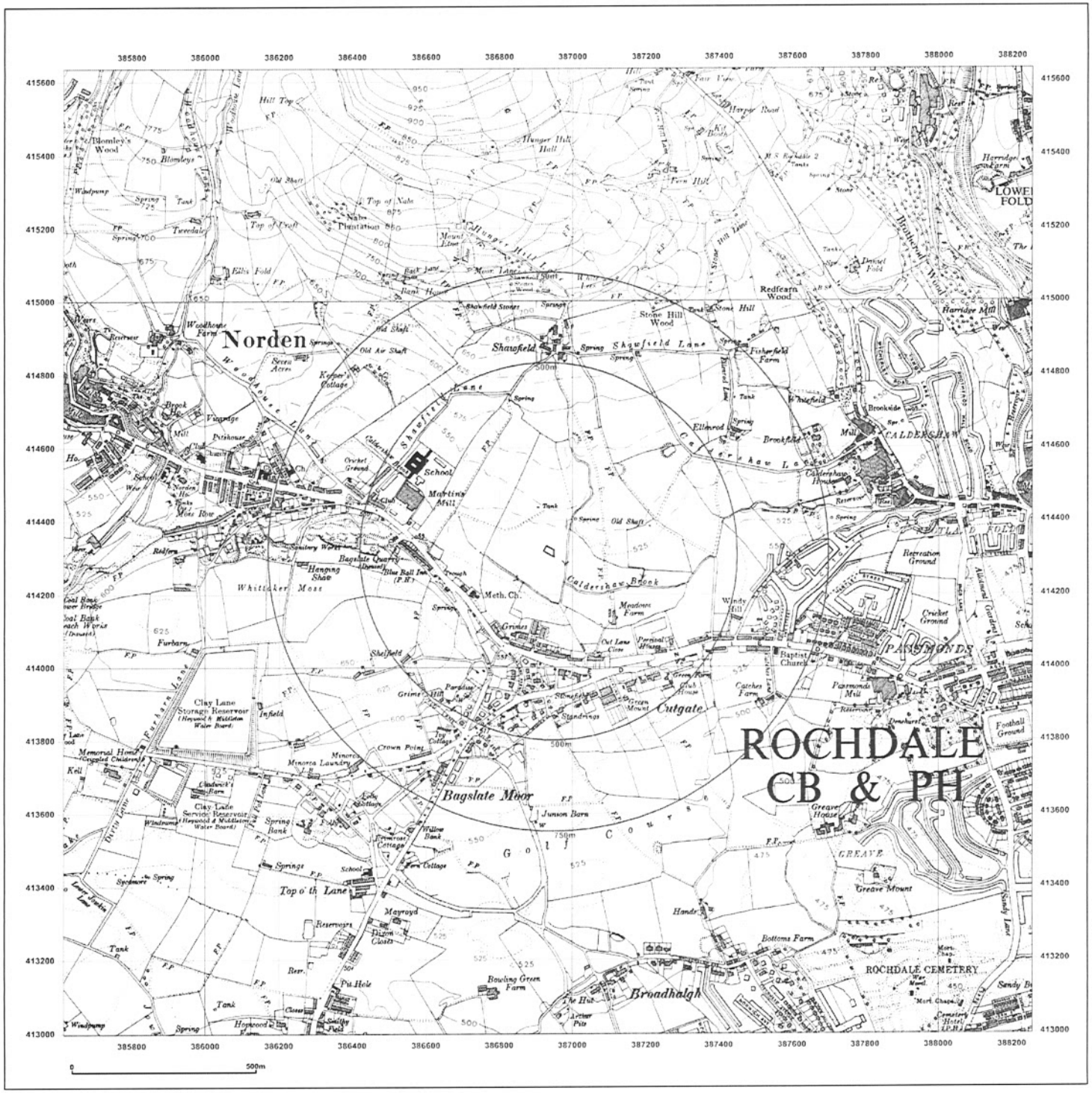

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Report Ref: GS-5532944
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Map Name: Provisional
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Printed at: 1:10,560

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Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
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Printed at: 1:10,000

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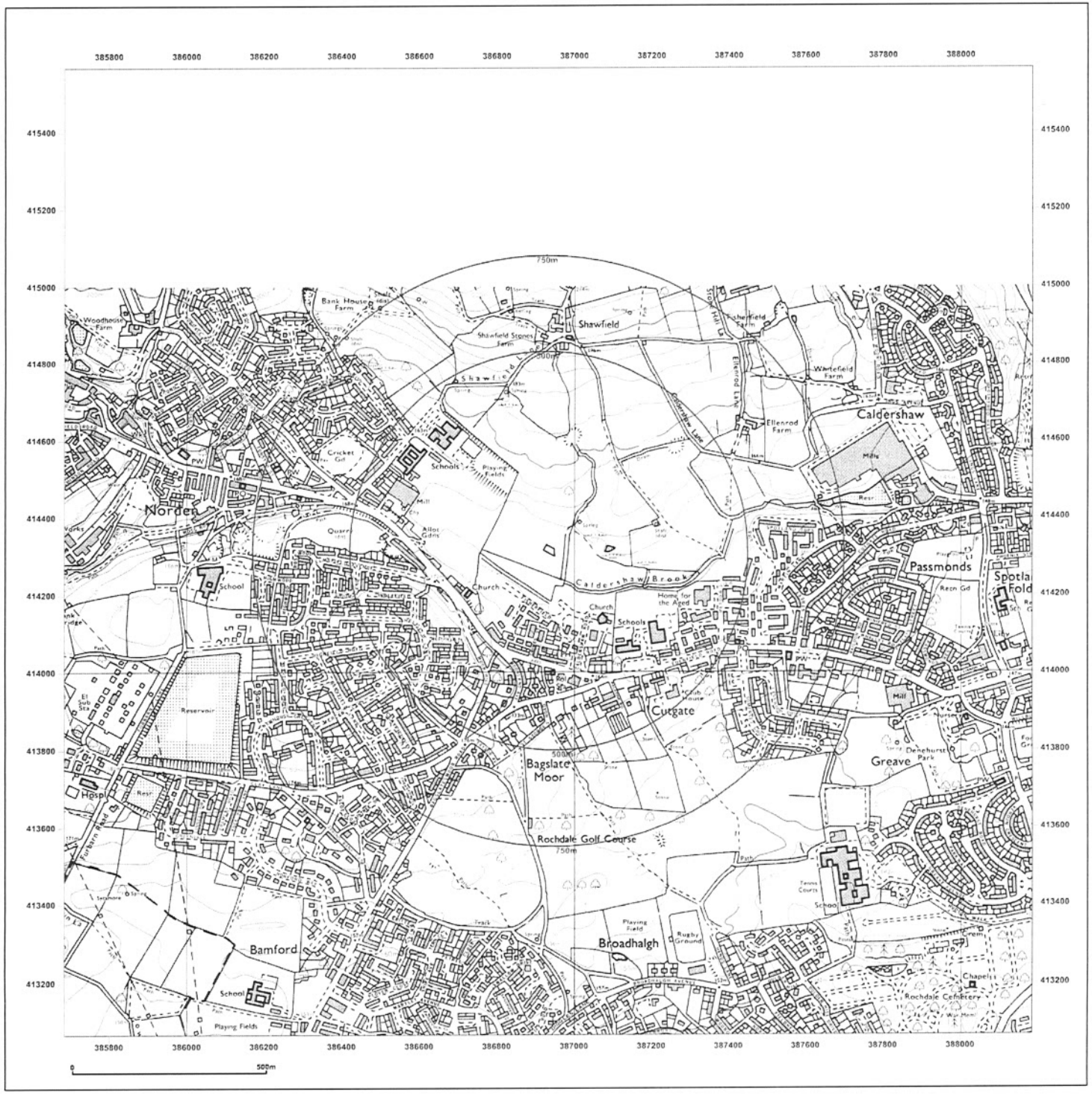

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ROCHDALE, OL12 7QX

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Printed at: 1:10,000

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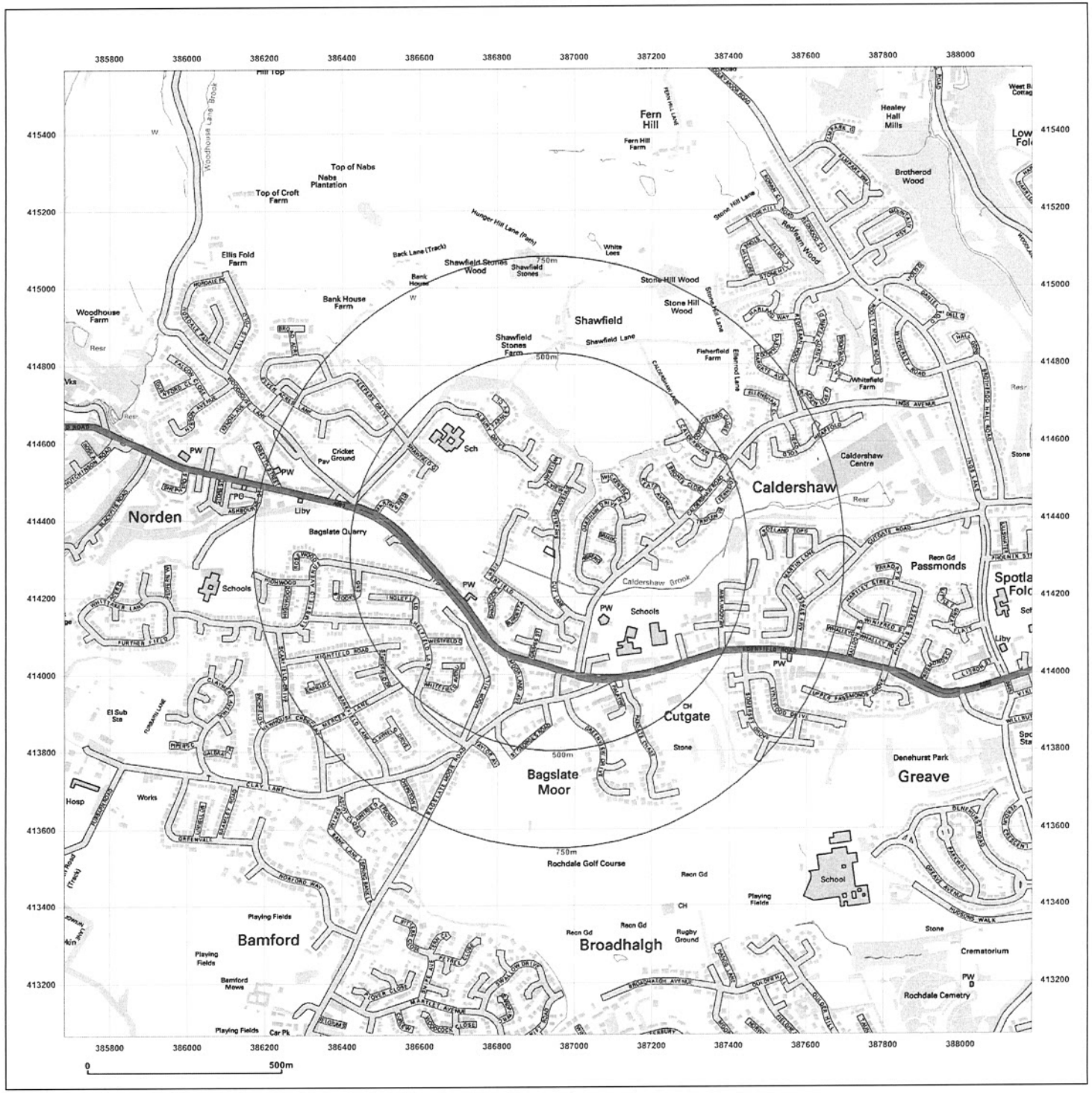

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ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: 2010
Scale: 1:10,000
Printed at: 1:10,000

N
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2010

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INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: 2014
Scale: 1:10,000
Printed at: 1:10,000

N
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2014

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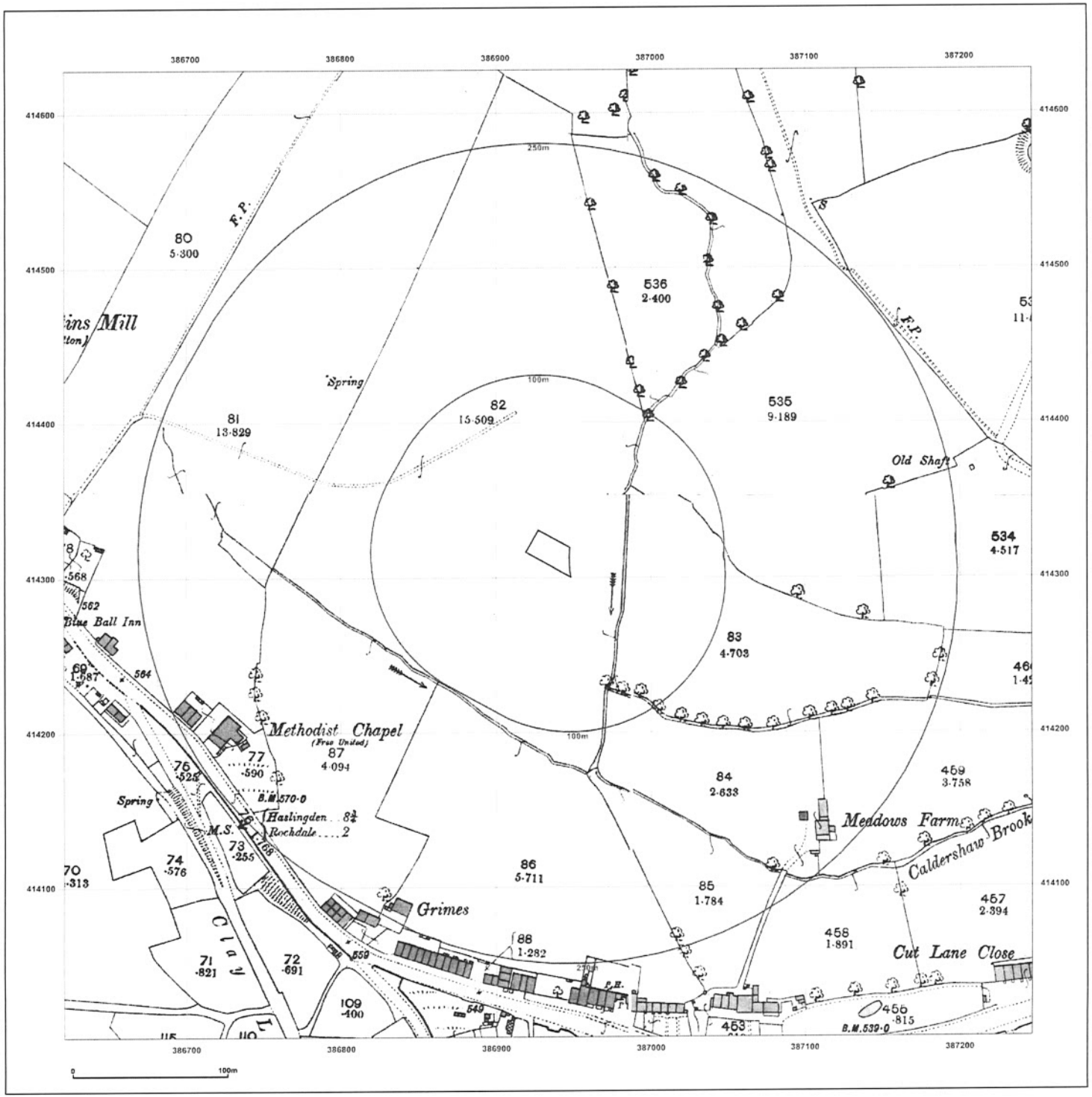

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: County Series
Map date: 1890
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1890
Revised 1890
Edition N/A
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Levelled N/A

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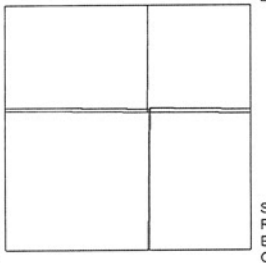
Revised 1890
Edition N/A
Copyright N/A
Levelled N/A



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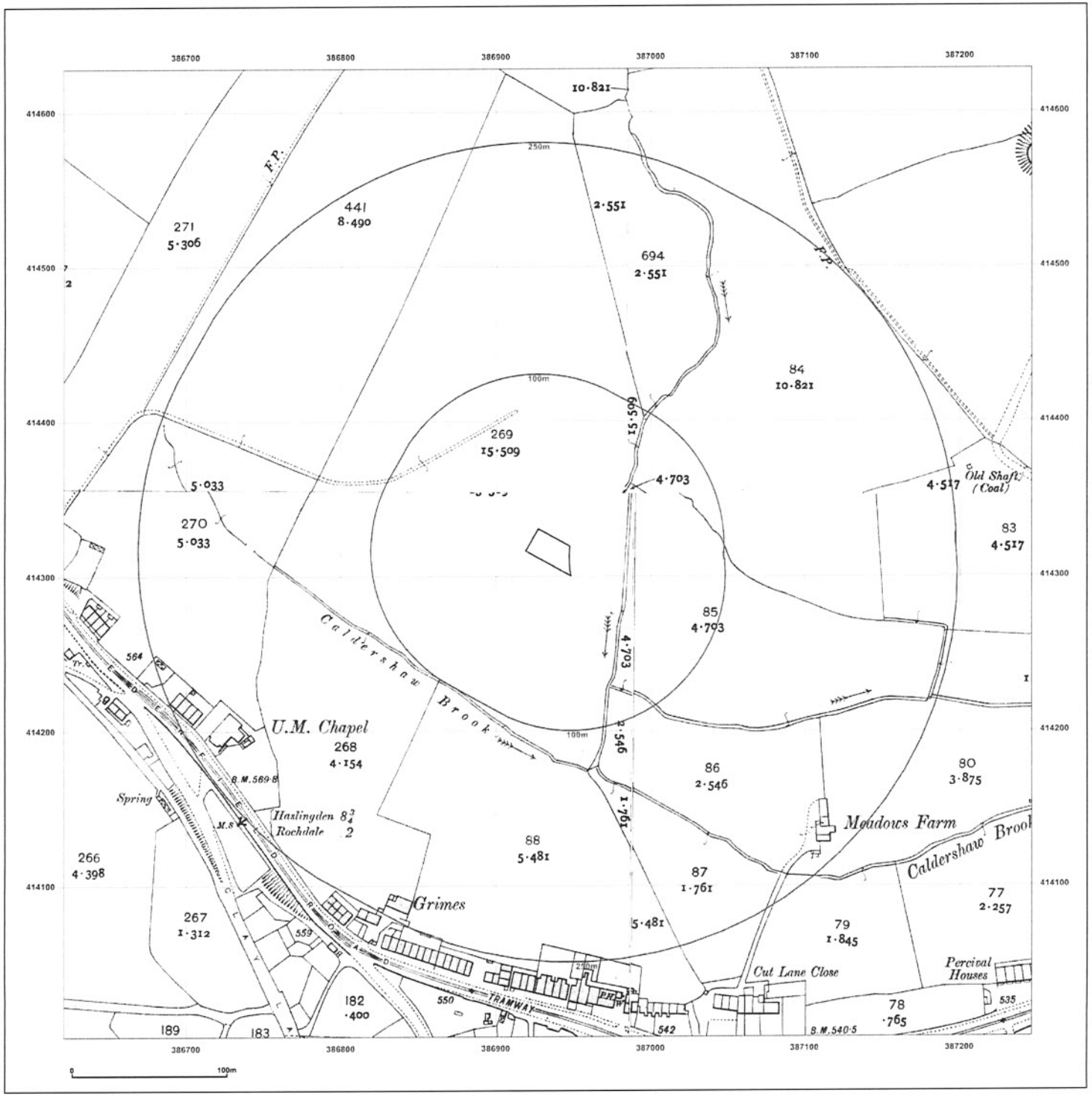

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: County Series
Map date: 1910
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1910
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

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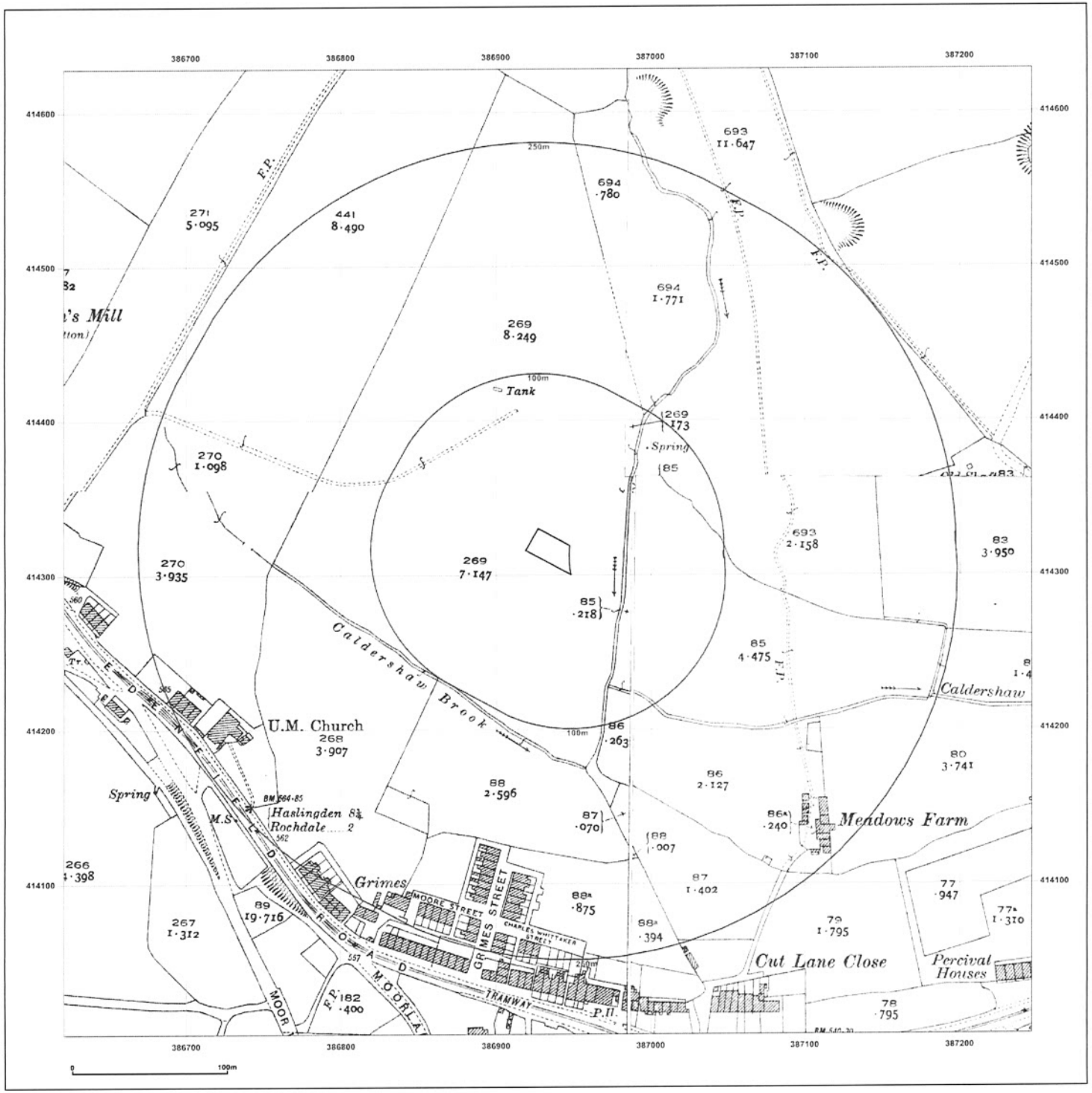

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: County Series
Map date: **1929-1930**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1929
Revised 1929
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1929
Revised 1929
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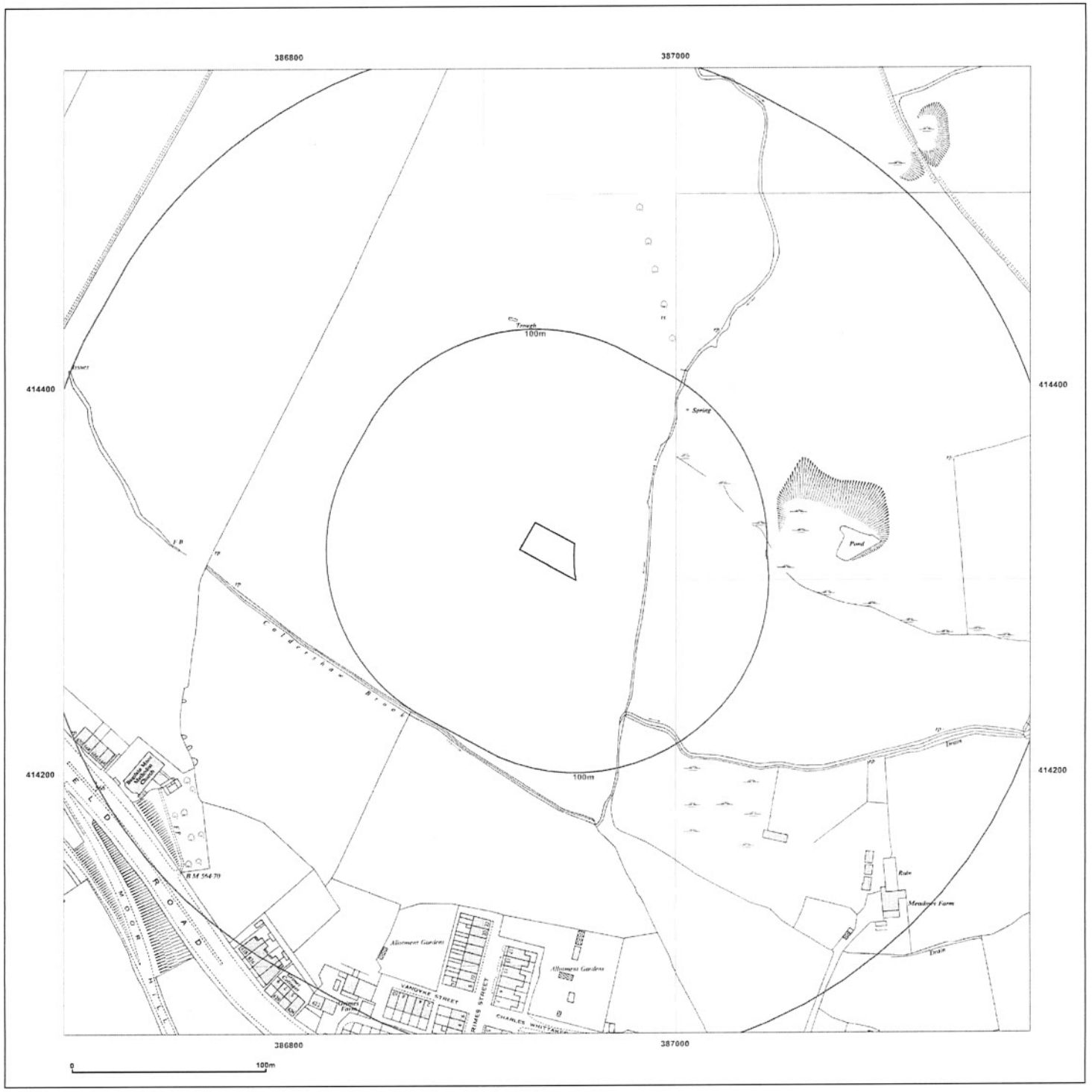

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1959**
Scale: 1:1,250
Printed at: 1:2,000

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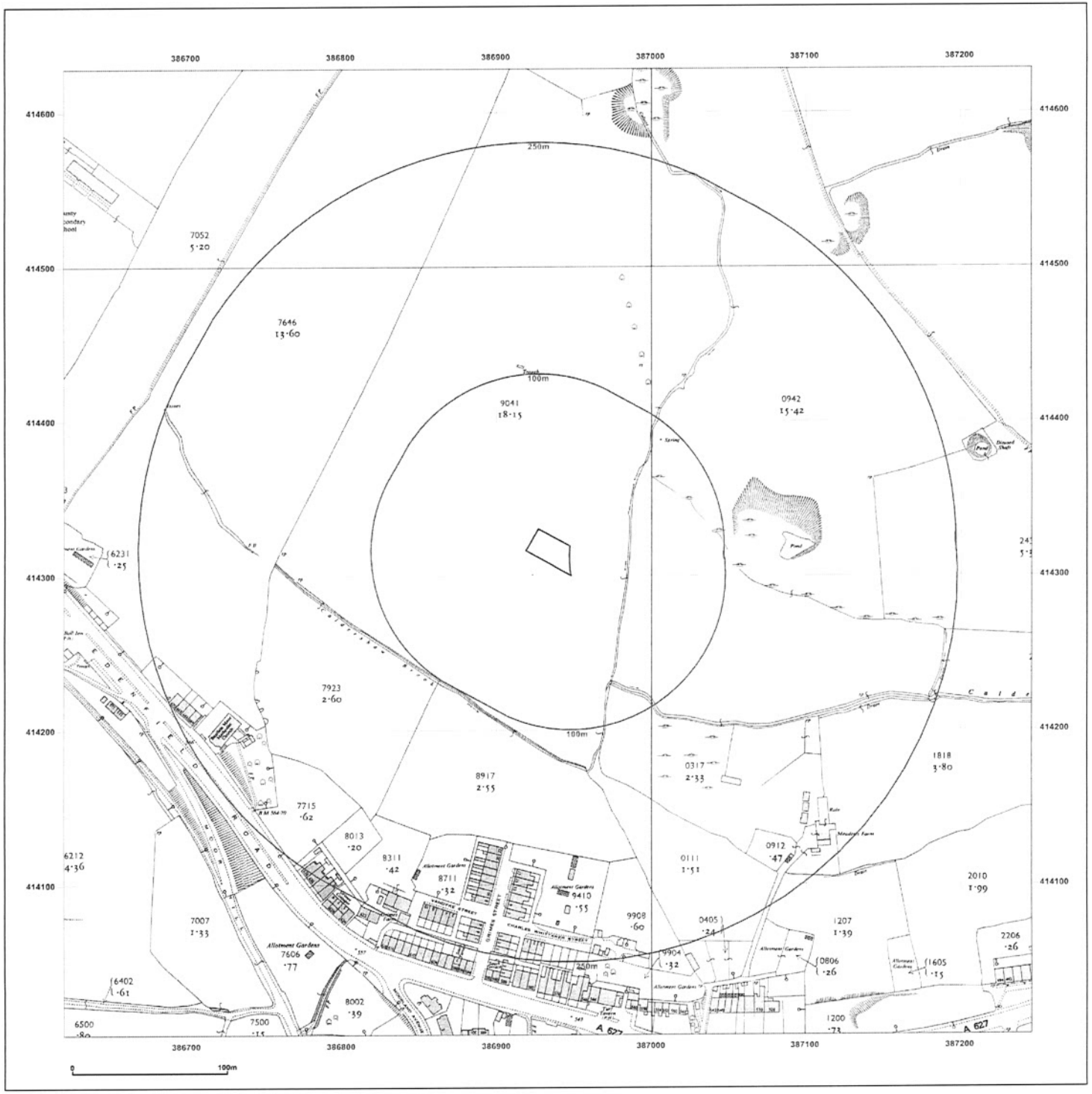

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: 1961
Scale: 1:2,500
Printed at: 1:2,500

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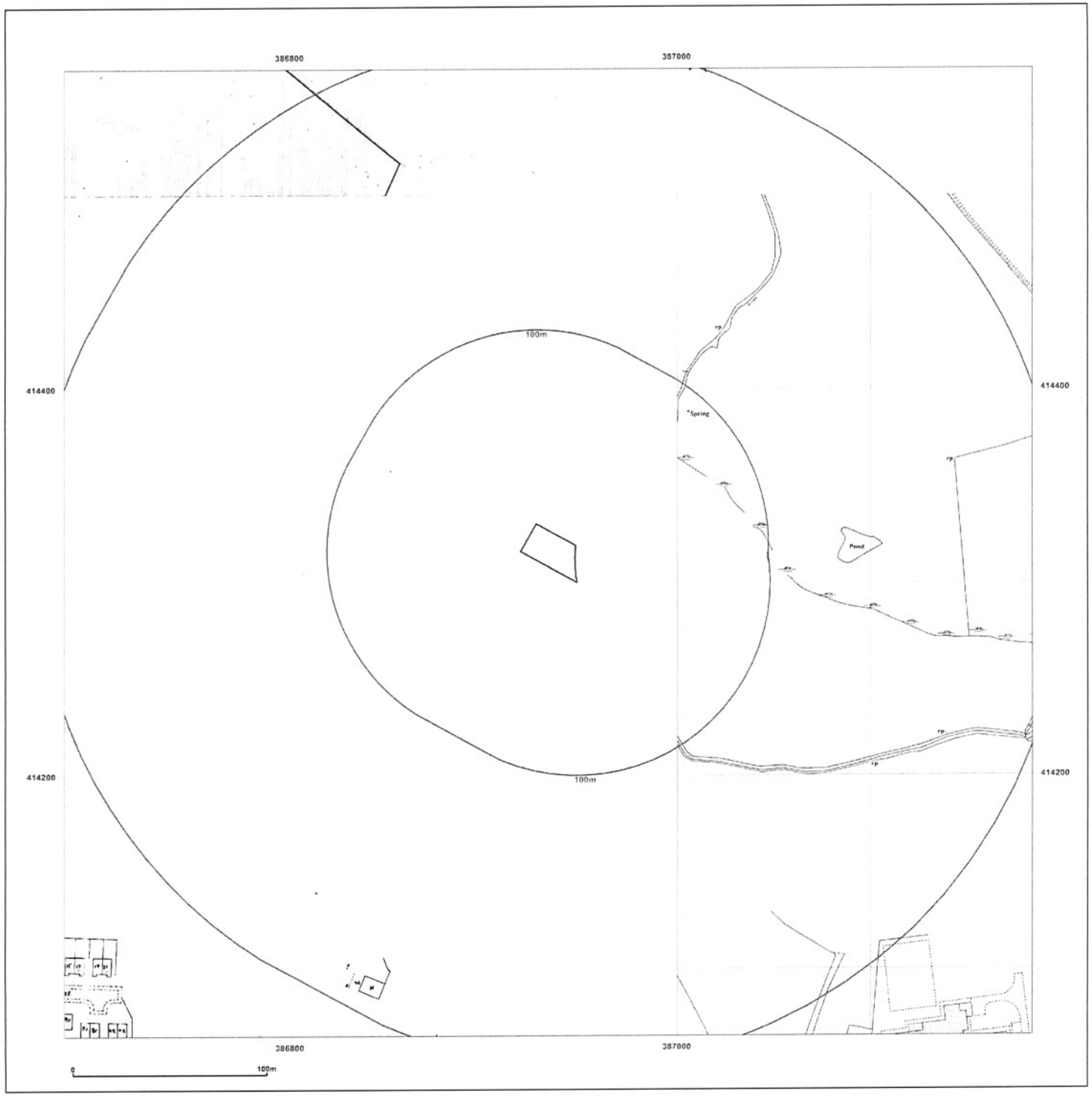

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1971-1975**
Scale: 1:1,250
Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
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Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1975
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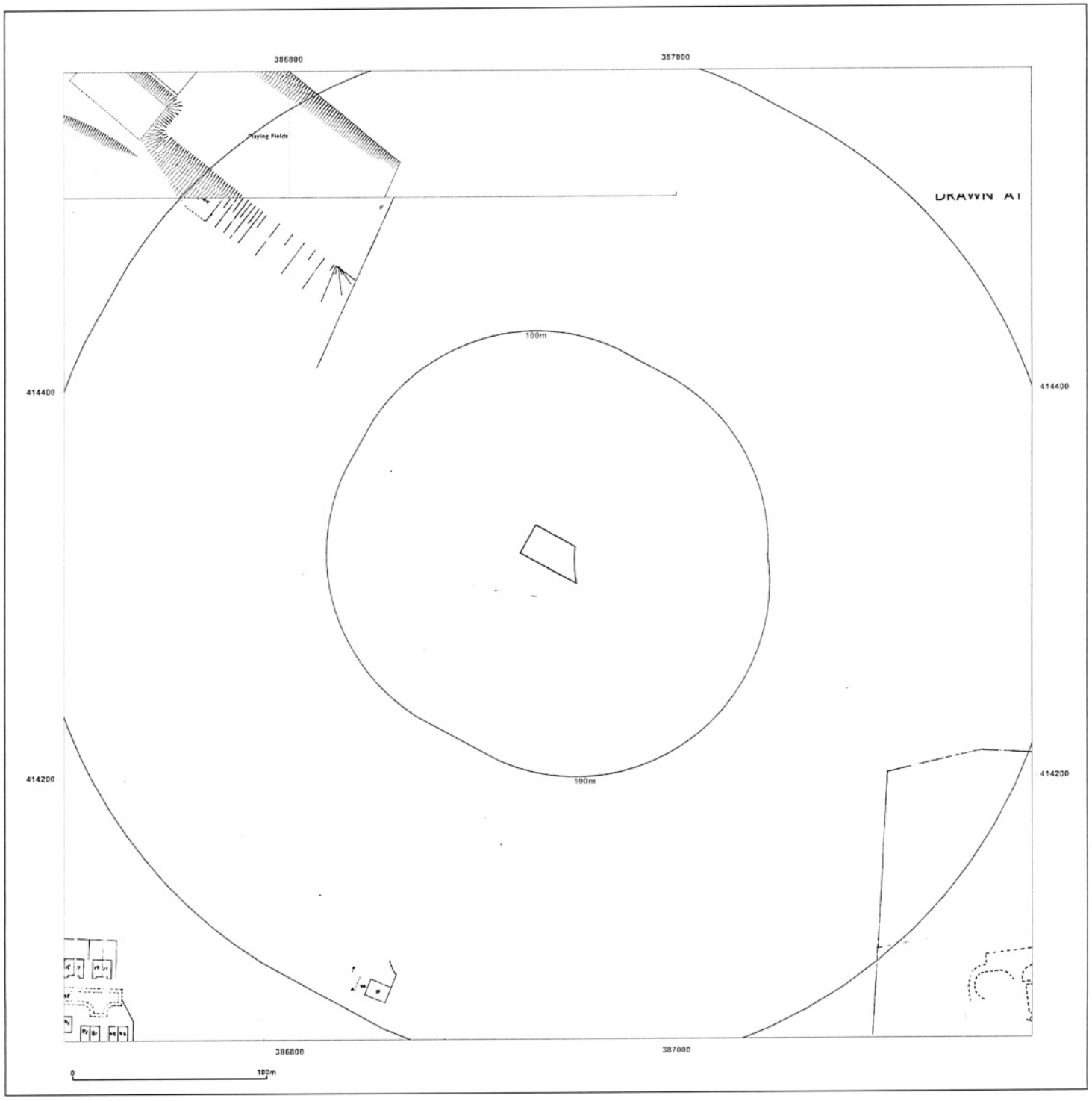

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1975**
Scale: 1:1,250
Printed at: 1:2,000

N
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Copyright 1975
Levelled 1962

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Revised N/A
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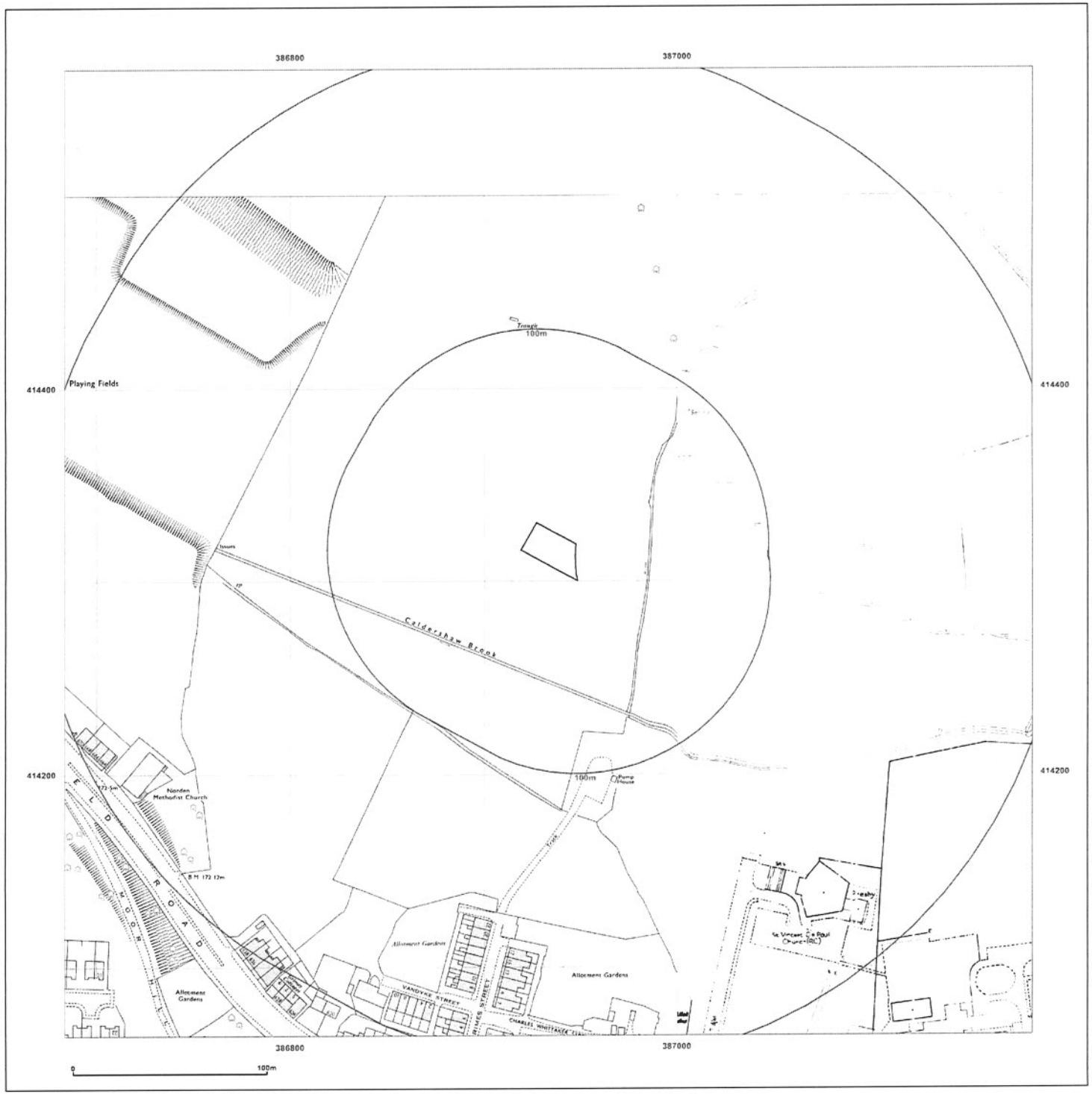

Groundsure INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1977-1978**
Scale: 1:1,250
Printed at: 1:2,000

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Site Details:

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ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1988-1992**
Scale: 1:1,250
Printed at: 1:2,000

N
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Site Details:

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ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1990-1992**
Scale: 1:1,250
Printed at: 1:2,000

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Levelled N/A

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INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1992-1993**
Scale: 1:1,250
Printed at: 1:2,000

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Edition N/A
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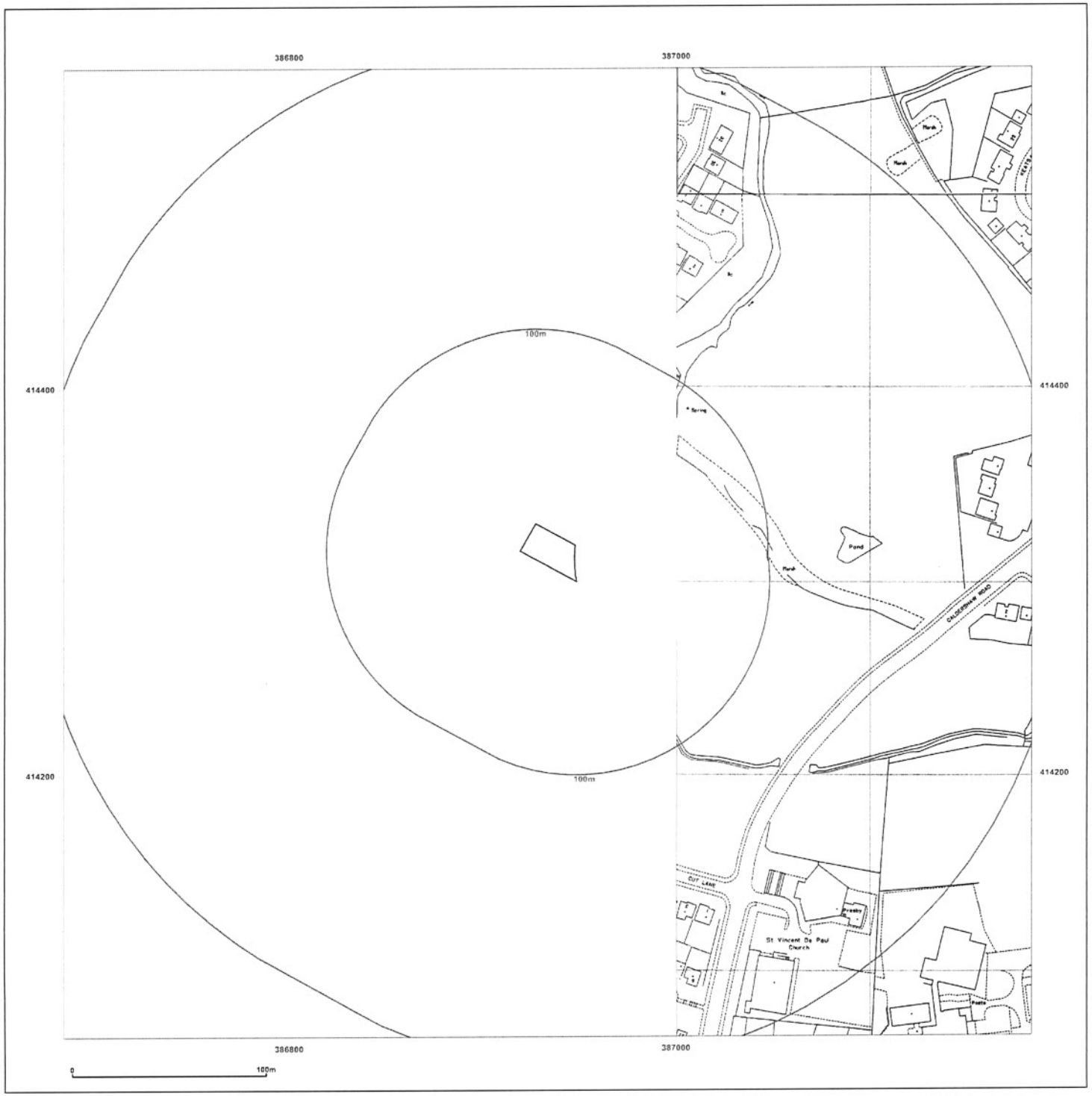

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1993**
Scale: 1:1,250
Printed at: 1:2,000

N
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Revised N/A
Edition N/A
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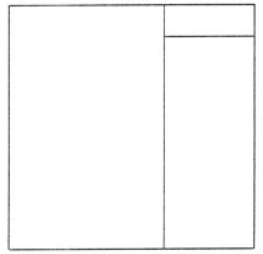

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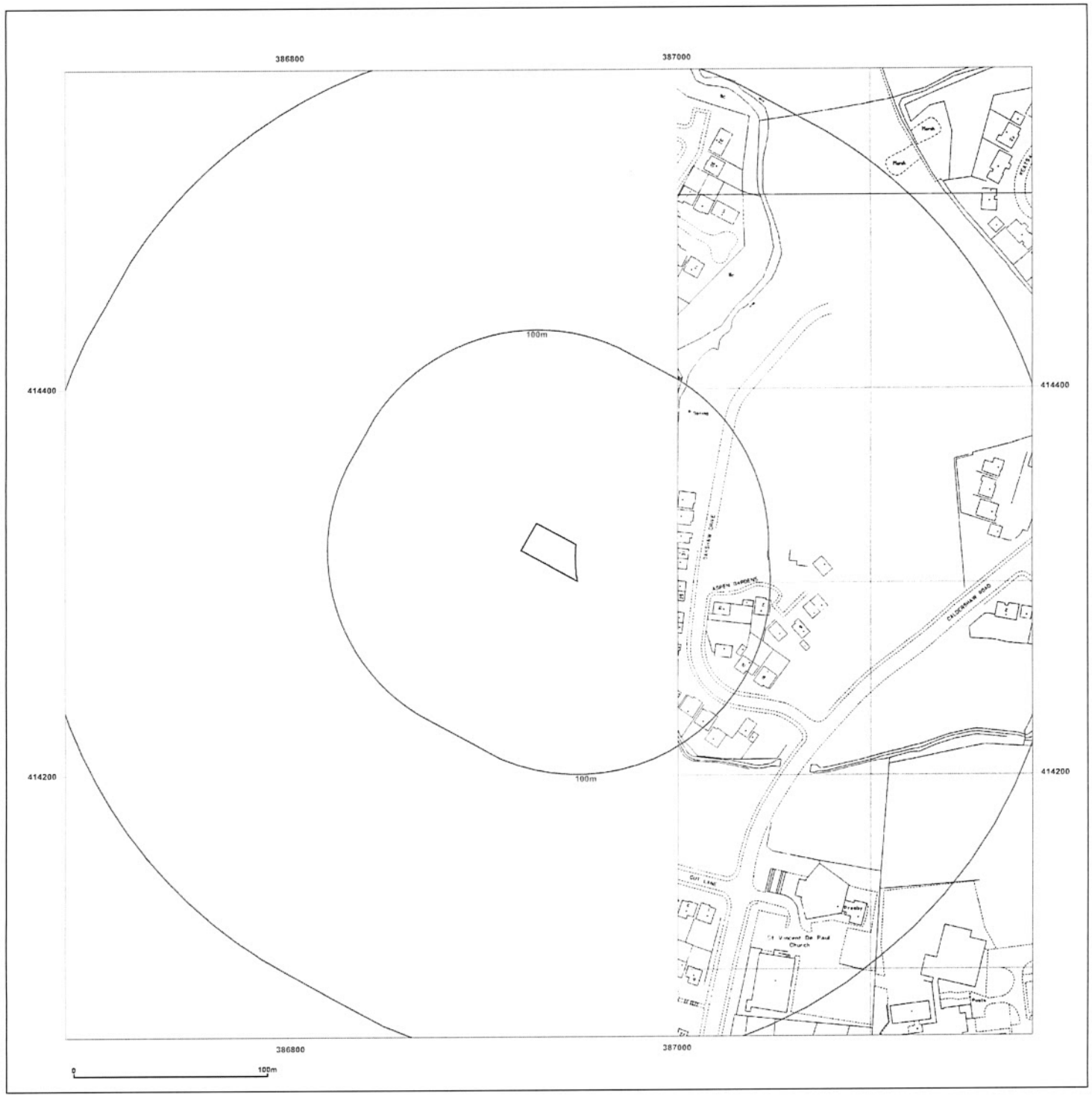

Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1994**
Scale: 1:1,250
Printed at: 1:2,000

N
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Surveyed 1994
Revised N/A
Edition N/A
Copyright 1994
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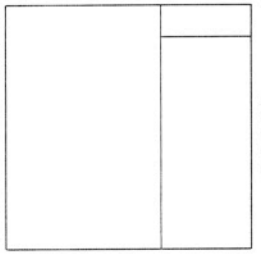

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Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1994**
Scale: 1:1,250
Printed at: 1:2,000

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Revised 1994
Edition N/A
Copyright N/A
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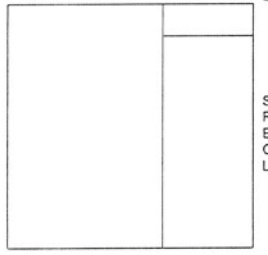

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Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1994**
Scale: 1:1,250
Printed at: 1:2,000

N
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Surveyed 1994
Revised 1994
Edition N/A
Copyright N/A
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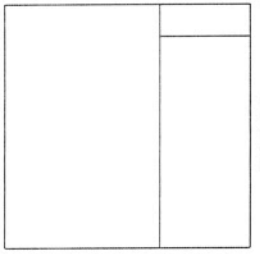

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Groundsure
INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1994**
Scale: 1:1,250
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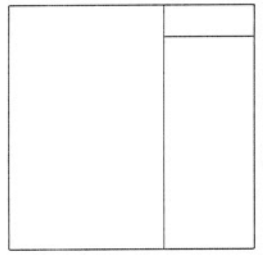

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INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1995**
Scale: 1:1,250
Printed at: 1:2,000

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INSIGHTS

Site Details:

1, SAXWOOD CLOSE,
ROCHDALE, OL12 7QX

Client Ref: Khan
Report Ref: GS-5532944
Grid Ref: 386934, 414315

Map Name: National Grid
Map date: **1995**
Scale: 1:1,250
Printed at: 1:2,000

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Edition N/A
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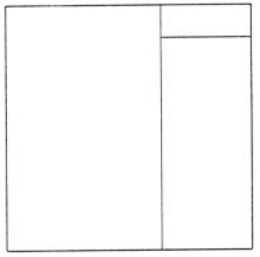

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