

LAND AT GLENAVON DRIVE, ROCHDALE

Phase 1 - Preliminary Risk Assessment



Prepared For

J NOON BUILDING CONTRACTORS LTD

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Project Quality Assurance Information Sheet

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REVISION STATUS / HISTORY

Rev	Date	Issue / Comment	Prepared	Checked

GENERAL REPORT LIMITATIONS

BEK Enviro Limited (BEK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and BEK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by BEK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of BEK and the party for whom it was prepared. Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

Unless explicitly agreed otherwise, in writing, this report has been prepared under BEK's limited standard Terms and Conditions as included within our proposal to the Client.

The report needs to be considered in the light of the BEK proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

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1. INTRODUCTION

1.1 Appointment

1.1.1 BEK Enviro (BEK) have been commissioned by J Noon Building Contractors Ltd to prepare a Preliminary Risk Assessment for an area of land currently located at Glenavon Drive, Rochdale (hereafter referred to as 'the site'). The assessment has been carried out to identify potential risks associated with contamination and ground gas with respect to the development of the site for residential use.

1.1.2 The site location and site layout are presented on BEK Drawing No 22127-1 and BEK Drawing No 22127-2, respectively. Copies of these drawings are presented in Appendix F.

1.2 Proposed Development

1.2.1 This report has been prepared to support a planning application for the 'erection of 4 no. dwellings (2 pairs of semi-detached houses)'.

1.2.2 The re-development proposals are shown on 'Proposed Soft Landscape Outline Plan' (Drawing No: R-0688-07, dated August 2021), a copy of which is presented in Appendix F.

1.3 Objective & Scope of Work

1.3.1 This report provides the details of the works undertaken by BEK to assess the potential risks from contamination considering the change of use to residential.

1.3.2 To achieve the objective BEK will undertake the following:

- Carry out a site inspection and take photographs
- Review the available relevant background information for the site, including:
 - Recent Ordnance Survey Map
 - BGS Web Page
 - Site Specific GroundSure Reports
 - Site Specific Historical Maps
 - Client provided drawings
 - UXO information
- Develop a preliminary conceptual site model in accordance with guidance to identify potentially significant pollutant linkages specific to the proposed development
- Establish areas of potential concern based on identified risks and/or potential risks
- Identify any actions required to assess or reduce the risks identified



1.4 Limitations

- 1.4.1 The conclusions and recommendations presented in this report are the result of our professional interpretation of the information currently available. BEK reserves the right to amend the conclusions and recommendations if further information becomes available.
- 1.4.2 However, it should be noted that much of the information has been derived from reports written by others and BEK takes no responsibility for the accuracy of that information. Notwithstanding the above, the reports reviewed have all been written by professional environmental consultants with a duty of care to provide relevant and accurate information.
- 1.4.3 This report does not include an invasive plant species assessment.

2. SITE DESCRIPTION

2.1 Site Location

- 2.1.1 The site is located to the west of Glenavon Drive approximately 4 km north of Rochdale town centre and some 20 km north-east of Bolton.
- 2.1.2 The National Grid Reference for the centre of the site is 388529, 415411. The site location is shown on BEK Drawing No 22127-2, a copy of which is presented in Appendix F.

2.2 Site Layout & Description

- 2.2.1 The site occupies an irregular shaped piece of land which covers an area of approximately 2,800 m² located to the south of Glenavon Drive. The site is accessed via a break in heras fencing in the north-east of the site, off Glenavon Drive. The site slopes steeply from the north to south before the topography rising again in the south. The lowest parts of the site are located in the centre.
- 2.2.2 During the site walkover the majority of the site was inaccessible due to the steep topography and dense vegetation, however sporadic fly-tipped general household waste was visible. A metal gas cannister was located in the north-east of the site and two manholes were visible on site near the access from Glenavon Drive.
- 2.2.3 The site is delineated by semi-mature trees and bushes along the north and eastern boundaries. The southern and western boundaries were unable to be delineated during the site walkover due to the dense vegetation.
- 2.2.4 A selection of photographs are presented in Appendix E.

2.3 Surrounding Land Use

- 2.3.1 The site is located within a suburban area of Rochdale with residential housing bordering the site in all directions.

3. SITE HISTORY

- 3.1 The history of the site has been established using historical OS maps supplied by Groundsure. A selection of the maps reviewed is presented in Appendix A.

1851

- 3.2 The 1851 maps show a sandstone quarry to be located in the northern central section of the site. The remainder of the site is vacant. Healey Cottage is situated some 90 m west of the site. A number of wells are situated within 250 m of the site, the closest of which is located some 100 m north. Beighton (large residential property) lies some 170 m south-west of the site and a Methodist Church some 230 m west. A pond is located 240 m west and Tenters (where cloth was stretched out to dry) is located some circa 240 m north-west of the site. A Vicarage is located approximately 250 m north.

1890 - 1910

- 3.3 The 1890 maps show an Old Quarry to occupy all of the site with the land in the south of the site being ponded with water. A Quarry is situated approximately 100 m west of the site with further quarries are located circa 90 m north of the site and 170 m south east on the 1910 map. A small refuse heap is situated 180 m south-east of the site (see Figure 1).

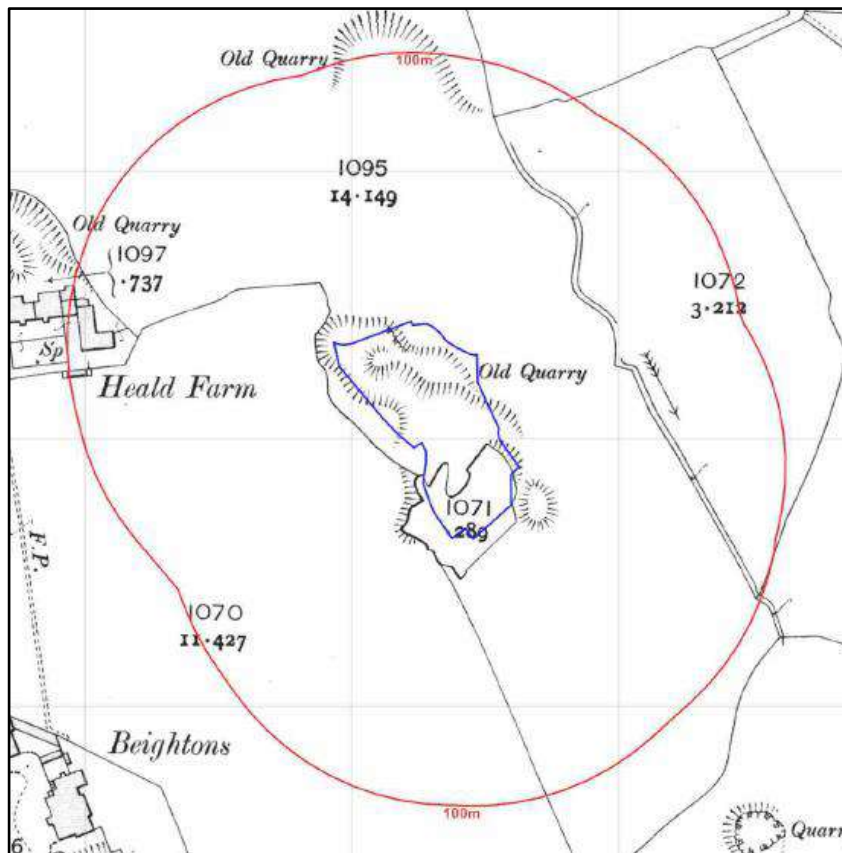


Figure 1: Extract from 1910 Map

1929

- 3.4 The 1929 maps show no significant changes to the site. A stream runs north to south approximately 50 m east of the site. Heald Farm has approximately doubled in size and is now situated 75 m west at its closest point. A spring lies 110 m north-east and a further quarry is present in this location.

1960

- 3.5 There are no significant changes to the site or the area surrounding the site.

1974

- 3.6 The 1974 maps show the site to be vacant with no evidence of surface ground workings/quarrying or pond shown on site (presumably infilled). Residential properties surround the site in all directions. A small area of open space is located some 50 m north. St. Wilfreds RC High School lies 120 m north-east of the site. Residential properties extend 110 m east, 110 m west, 250 m south and 250 m north of the site.

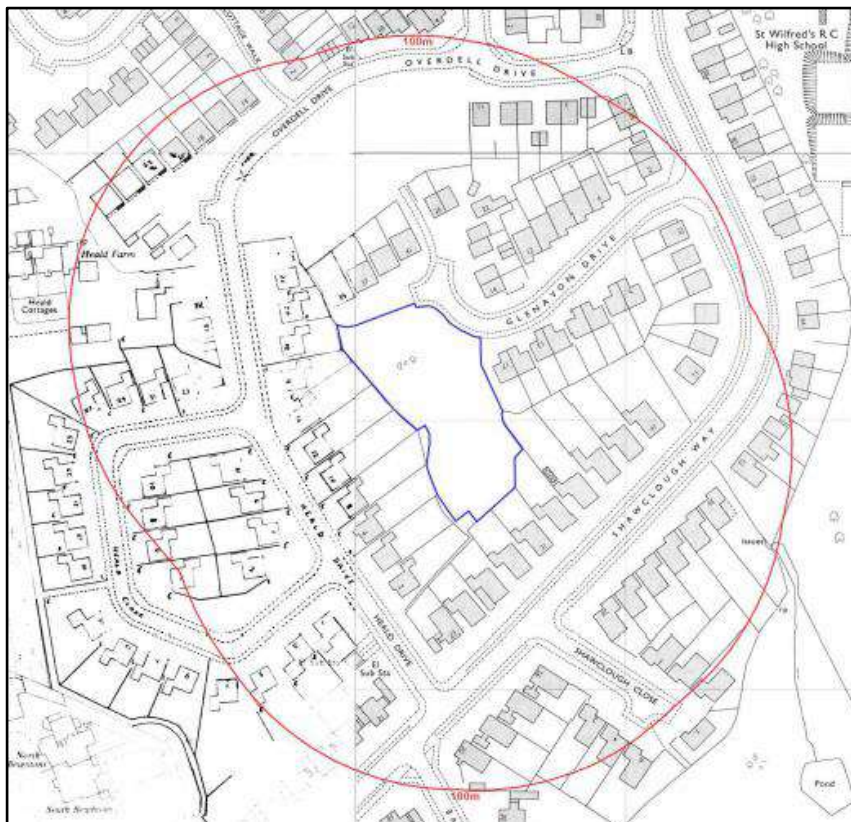


Figure 2: Extract from 1974 Map

1992 – 1993

- 3.7 There are no significant changes to the site. Further residential properties have been construction 110 m north-east and 110 m south-east of the site.

2001 – 2022

- 3.8 The 2001 to 2022 maps show no significant changes to the site or the areas surrounding the site. An aerial image of the site from 2019 is shown below.



Figure 3: Aerial Image from 2019 (extracted from Enviro & Geo Insight Report)

4. ENVIRONMENTAL SETTING

4.0.1 An Enviro & Geo Insight Report has been obtained from Groundsure and information provided in these reports has been used within this section. A copy of the report is presented in Appendix B.

4.1 Geology

4.1.1 The site geology is illustrated in the Enviro & Geo Insight Report which has sourced data from several sources including British Geological Society (BGS), BRITPITS database and the Coal Authority. A copy of the report is presented in Appendix B.

4.1.2 In addition, BEK has sought site investigation information from the BGS website. However, there were no exploratory locations available to view within 250 m of the site.

Made Ground

4.1.3 According to the Enviro & Geo Insight Report 'Infilled ground – Artificial deposit' overlies the full footprint of the site, extending north of the site. A further three areas of artificial deposits/made ground are located within 250 m of the site. These include 'Infilled Ground – Artificial Deposits' some 92 m north, 117 m west and 142 m south-east of the site. A summary of made ground located on/within 250 m of the site are shown on Figure 4.



Figure 4: Summary of Made Ground Deposits Located Within 250 m of the Site

Superficial Geology

- 4.1.4 The British Geological Survey map for the area indicates that the site is overlain by Devensian Till (Diamicton). This strata typically comprises 'sandy and silty, stony clay with non-persistent sand beds' and is relatively impermeable.

Bedrock

- 4.1.5 The bedrock geology beneath the site comprises Milnrow Sandstone which typically comprises 'sandstone'. This strata is part of the parent group 'Pennine Lower Coal Measures Formation' which typically comprises 'interbedded grey mudstone, siltstone and pale grey sandstone, commonly with mudstones containing marine fossils in the lower part, and more numerous and thicker coal seams in the upper part.'

Faults & Linear Features

- 4.1.6 There are no faults/linear features on site. A 'normal fault, inferred' lies some 107 m south-west of the site. A 'fossil horizon, marine band' is located approximately 219 m west of the site.

4.2 Mining & Ground Stability

- 4.2.1 The information provided by Groundsure indicates that the site is located within an area which may have been affected by coal mining. However further information from the Coal Authority Interactive Map indicates that the site is not located within a Development High Risk Area.
- 4.2.2 Based on the Coal Authority's guidance entitled 'Risk Based Approach to Development Management – Guidance for Developers' (2017) as the site is located within a Development Low Risk Area within the coalfield 'there is no need to submit any coal mining information with the planning application' and a 'Desk Based Coal Mining Risk Assessment is not required'.
- 4.2.3 Furthermore, the site is not likely to have been influenced by non-coal mining activities.
- 4.2.4 Notwithstanding, the BritPits database indicates that a surface mineral working known as Healey Cottage was present on site which was quarried for Sandstone. The surface working of the site (and areas 10 m north) for Sandstone has now ceased.
- 4.2.5 Moreover, historical OS maps show the presence of the quarry on site (with part being a pond) between 1850 and 1960. Further unspecified pits/quarry features were located 75 m north (between 1909 and 1967), 104 m west (between 1890 and 1928) and 133 m south-east (between 1909 and 1967). An unspecified/refuse heap was located 156 m south-east (between 1909 and 1949).

- 4.2.6 The Enviro & Geo Insight Report provides hazard ratings associated with ground subsidence at the site, as summarised below:

Shrink-Swell Clay:	Very Low
Landslides:	Low
Ground Dissolution of Soluble Rocks:	Negligible
Compressible Deposits:	Negligible
Collapsible Deposits:	Very Low
Running Sands:	Very Low

- 4.2.7 It can be seen from the above that the site is unlikely to be affected by natural ground instability.

- 4.2.8 However, when considering the low rating for landslides it is noted that 'slope instability problems may be present or anticipated' and that 'site investigation should consider specifically the slope stability of the site.'

4.3 Hydrogeology

- 4.3.1 The Boulder Clay underlying the site is classified as a 'Secondary Aquifer (undifferentiated)'. These formations are 'assigned where it is not possible to attribute either Category A or B to a rock type.'

- 4.3.2 The bedrock is classified as a 'Secondary A Aquifer'. These formations represent 'permeable layers capable of supported water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.'

- 4.3.3 The Enviro & Geo Insight Report indicates the site is not located within a groundwater Source Protection Zone and there are no groundwater abstraction licenses within 250 m of the site.

4.4 Hydrology

- 4.4.1 The Enviro & Geo Insight Report indicates that Shawclough Brook (inland river not influenced by normal tidal action on ground surface) is located some 200 m south-west of the site.

- 4.4.2 There are no licensed discharges consents on/within 250 m of the site and no surface water abstractions located within 250 m of the site.

- 4.4.3 The site is located within Flood Zone 1.

4.5 Contaminated Land & Landfill Activities

- 4.5.1 The information presented in the Enviro & Geo Insight Report indicates that there are no present/historic landfill sites or waste management facilities located within 250 m of the site.

- 4.5.2 No waste exemptions has been registered on or within 250 m of the site.
- 4.5.3 There are no current/historical petrol station located on/within 250 m of the site.
- 4.5.4 There are no NIHHS or COMAH sites located on/within 250 m of the site.
- 4.5.5 There are two EA recorded pollution incidents located within 250 m of the site. The closest refers to an incident involving 'Sewage Materials – Grey Water' some 200 m south of the site on 22nd July 2002. The incident has no impact on land or air and a minor impact on water. A further incident involving an unidentified pollutant took place some 224 m south of the site on 16th March 2022. The incident had no impact on land or air and a minor impact on water.
- 4.5.6 There are no Part A(1), Part B, Part A(2) or IPPC Authorised Activities located within 250 m of the site.
- 4.5.7 According to the Enviro & Geo Insight Report there are 5 potentially contaminative industrial sites located within 250 m of the site, the closest of which is an electricity substation located 69 m south-west of the site. These are unlikely to have impacted upon the site.
- 4.6 Sensitive Land Uses**
- 4.6.1 The site is not affected by any of the ecological systems identified as a statutory receptor in the DETR Circular 01/2006.
- 4.7 Radon**
- 4.7.1 Groundsure reports that 'less than 1% of properties are above the action trigger level' and that 'no radon protective measures are necessary in the construction of new dwellings or extensions'.
- 4.8 Unexploded Ordnance**
- 4.8.1 The regional unexploded bomb risk map from Zetica indicates that the site is in an area of LOW risk from Unexploded Ordnance (UXO) resulting from the Second World War and related issues are not considered further.

5. PREVIOUS SITE INVESTIGATION

5.0.1 Available environmental and previous site investigation data for the subject site has been summarised for the subject site by TJ Boot to support a ground stability assessment for the proposed development. The LPA have requested the assessment as the site is located above an historic quarry, and nearby dwellings are reported to have suffered subsidence historically.

5.0.2 The assessment of ground stability is provided within TJ Booth Associates Consulting Civil & Geotechnical Engineers 'Land at Glenavon Drive, Shawclough Rochdale - Ground Stability Assessment' (Reference: rep-tjba-JNOON-glenavon dr-ground stability assessment-310122.docx, dated 7th February 2022). A summary of information pertinent to the assessment herein is presented below. A copy of the report is presented in Appendix C.

5.1 **TJ Boot Associates Consulting Civil & Geotechnical Engineers 'Land at Glenavon Drive, Shawclough Rochdale - Ground Stability Assessment'**

Historical Information

5.1.1 The site was formerly a minor local quarry dating back to circa 1890 when it was noted as disused, and remained so until the current housing estate was erected circa 1970, when the site was infilled. A topographic survey circa 1991 shows a gentler slope than is observed in the present day and topographic map for 2018. It is understood that further periodic minor infilling between circa 1991 to 2008 had occurred at the site.

Current Site & Topography

5.1.2 The site currently comprises a heavily vegetated vacant plot of land. To the north of the site, land elevation is nominally level with Glenavon Drive. From there the site slopes down and plateaus nominally 3 m below; and then falls via a slope (approximately 1:2) to a pond at the south side of the site where ground level is around 8 m lower than Glenavon Drive.

BGS Maps

5.1.3 The BGS Geology map of the area indicated the wider area to be underlain by Milnrow Sandstone which is generally made up of large beds of coarse grained sandstone locally.

Local Authority Subsidence Records

5.1.4 There are records of subsidence & structural remediation to the surrounding local properties within the informative notes on historic planning permissions for the application site. The accounts of subsidence remediation claims were attributed to local residents.

- 5.1.5 RMBC Building Control was contacted to obtain any pertinent information regarding the above claims, but no records were found for the properties local to the application Site.

Site Investigation Works - Mini Soils Surveys Ltd - 1991

- 5.1.5 Site investigations had previously been undertaken in January 1991 by Mini Soil Surveys Ltd and comprised 6 window sample boreholes (Boreholes No 1 to 6). The site investigation locations are provided in Figure 5 below.
- 5.1.6 The boreholes were undertaken before the further infilling of the site had occurred, and the original topography was reflected in the original borehole 'SI Plan'.
- 5.1.7 The boreholes recorded depths of between 4.3 and 10 m from ground level to refusal on competent bedrock. The ground conditions generally comprised 'clay fill' overlying 'sand & gravel' (often disturbed). Depths to bedrock are presented in Table 1 below. Depths to bedrock have been adjusted to account for the difference in levels due to later minor infilling which is reflected in the current topography survey and current site investigation plan.

Borehole No.	BH1	BH2	BH3	BH4	BH5	BH6
Current GL at BH Position	22.75	24.22	21.80	23.30	20.90	21.30
Depth to Bedrock	5.77	8.84	9.32	8.92	10.62	9.42
Bedrock level (m ASD)	16.98	15.38	12.48	14.38	10.28	11.88

Table 1: Depths to Bedrock (adjusted for minor infilling reported on current topography surveys)

- 5.1.8 Copies of the borehole records are presented in Appendix C.

Site Investigation Works - Tim James Booth Associates Trial Pit - 2008

- 5.1.9 Five Trial Holes (TH1 to TH5) were excavated on 7th April 2008. Trial Holes TH1 to TH3 were located around the upper part of the site. Weathered bedrock was encountered at approximately 3 m depth in TH1; it is noted from the positioning of TH1 and the Google earth/historic overlay, that this was outside of the original quarry area. Trial Hole TH2 and TH3 proved clay fill to approximately 3 m depth corroborating the borehole records.

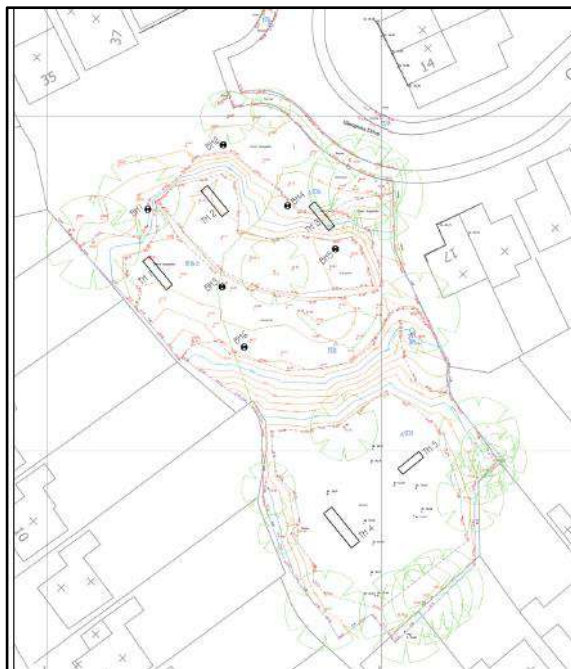


Figure 5: Previous Si Investigation Locations – Mini-Surveys Window Sample Borehole (19910 and Tim James Booth Associates Trial Pit (2008)

TJ Booth Associates - Foundation Recommendations

- 5.1.10 The Google Earth/historic overlay shows that the quarry face extends beneath No 35, 37 & 39, and records made ground beneath No 17 Glenavon Drive. It is expected that these properties would have specialist/deep foundations to account for the quarry proximity & mitigate the risk of differential settlement.
- 5.1.11 Regarding the proposed Application Site layout, the dwellings will comprise an upper floor nominally level with Glenavon Drive, and a lower ground floor level sunk into the site.
- 5.1.12 The proposed dwellings are located around Borehole No 1, 2, 3 & 4 (plots adjacent to No 35), and Borehole Nos 5 & 6 (plots adjacent to No 17). Assuming a lower ground floor of approximately 3 m below Glenavon drive (~21.30m aSD) ground level, the depth to competent sandstone bedrock is between 4.5 and 11 m.
- 5.1.13 Due to the above, a piled solution to the development foundations will be required, formed by end bearing piles, bearing on to the competent bedrock to avoid differential settlement. The slope to the south side of the site is generally made up of soft to firm & firm to stiff semi consolidated clays over sand & gravel and is approximately 1:2 gradient.
- 5.1.14 The proposed piles would be either augered or small diameter driven types in order to cause minimal vibration/disturbance outside of the site.

- 5.1.15 It is advised that base line records are taken of No 35, 37, 39 & 17 prior to piling commencing, to establish condition and provide a reference for later comparison if needed.
- 5.1.16 Detailed design of both retaining walls to the north side of the site with Glenavon Drive, and foundations will be produced as part of the Building Regulation requirements.
- 5.2 BEK Comments**
- 5.2.1 BEK has reviewed the available site investigation data to provide an initial assessment of the potential issues associated with contamination at land at Glenavon Drive, Rochdale.
- 5.2.2 Review of the available qualitative and quantitative information pertaining to ground conditions suggests the site was formerly a local quarry dating back to circa 1890 which has been infilled progressively since 1970.
- 5.2.3 Site Investigation records dating from 1991 suggest the probable presence of disturbed made ground extending up to 10 m on site (Borehole No 5). Further minor filling is also noted on site since 1991.
- 5.2.4 Given the significant thickness of made ground on site and the absence of any chemical information for the site, BEK recommends further site investigation works are carried out to support a full quantitative risk assessment to comply with current guidance.
- 5.2.5 Moreover, potential risks from ground gas are considered to be present based on the known ground conditions. A gas monitoring regime will be required to quantify the potential risks.

6. POTENTIAL POLLUTANT LINKAGES

6.1 General

6.1.1 This section identifies the potential contaminants of concern, sources, pathways and receptors that may be associated with the site based on its known history and the current condition and with respect to the re-development of the site for residential use (with homegrown produce).

6.1.2 This information is used to develop a conceptual model which is a qualitative description of potential sources of environmental pollutants, the pathways by which they are transported and the receptors:

- i) Potential sources of contamination: these include any actual or potentially contaminating materials and activities, located either on or in the vicinity of the site
- ii) Potential pathways for contamination migration: these comprise the routes or mechanisms by which contaminants may migrate from the source to the receptor including environmental migration pathways and human health exposure pathways
- iii) Potential receptors of contamination: these include future land users, ecological systems, water resources and property.

6.2 Potential Contaminants of Concern

6.2.1 Based on the available historical maps dating back from 1851, a sandstone quarry was located in the northern central section of the site with the remainder of the site being vacant. On maps dating from 1890 an Old Quarry was noted to occupy all of the site with the land in the south of the site being ponded with water. The site remained this way until 1974 when the site became vacant with no evidence of surface ground workings/quarrying being present on site.

6.2.2 Available site investigation information (for works carried out by Mini Soil Surveys in 1991 and TJ Booth Associates in 2008) suggest that material has been imported to partially/wholly infill the quarry prior to the development of the surrounding residential estate circa 1974. Available site investigation logs for works carried out in 1991 to support geotechnical assessment of the site suggest made ground extends up to 10 m. Further minor infilling has taken place at the site since 1991. It is noted that neither of the previous site investigations included the recovery of samples for chemical testing and no previous contamination assessment has been carried out at the site. The chemical nature and source of the made ground present on site is unknown and may represent a potential source of contamination.

- 6.2.3 The potential contaminants of concern associated with made ground and the key contaminative features identified during the site walkover are presented below:

Contaminants Associated with Made Ground	
Arsenic	Zinc
Cadmium	Sulphate
Chromium	Cyanide
Copper	Phenols
Lead	Polycyclic Aromatic Hydrocarbons (PAHs)
Mercury	Total Petroleum Hydrocarbons
Nickel	Asbestos
Selenium	pH

Table 2: Potential Contaminants of Concern

- 6.2.4 It should be noted that the above list represents a broad range of potential contaminants of concern. Additional contaminants of concern may be present if ground conditions differ from those anticipated.
- 6.2.5 Based on the available background information the site historically formed part of a quarry. Site investigation records suggest the site has been infilled to depths of up to 10 m. Moreover, a number of quarries/refuse heaps were historically situated within 250 m of the site. These include unspecified pits/quarry features located 75 m north (between 1909 and 1967), 104 m west (between 1890 and 1928) and 133 m south-east (between 1909 and 1967). An unspecified/refuse heap was located 156 m south-east (between 1909 and 1949). Risks from ground gas will need to be quantified in accordance with current guidance.

6.3 Potential Pathways

- 6.3.1 The pathways through which contaminants may reach receptors are in part dependent by the nature and behaviour of the contaminant and the intended end use of the site.
- 6.3.2 The following potential pathways have been identified with respect to the existing site condition, the environmental setting and the re-development of the site to residential with gardens; all of which are assessed in the conceptual model:
- Ingestion of contaminated soil/home grown vegetables
 - Inhalation of contaminative dust including asbestos fibres
 - Dermal contact
 - Indoor inhalation of ground gas/vapours
 - Dissolution or suspension (leaching) of contaminants into pore waters affecting plant growth

- Dissolution or suspension (leaching) of contaminants from site soils leading to lateral migration within perched waters to off-site receptors. Potential significant pathways include more permeable layers within the made ground/natural strata, underground services and piles/foundations.
- Dissolution or suspension (leaching) of contaminants from site soils leading to contamination of groundwater.
- Contamination affecting the integrity of service pipelines by direct contact
- Buildings affected by direct contact with elevated concentrations of sulphate and/or extreme pH

6.4 Receptors

6.4.1 Potential site-specific receptors that may be affected by contamination at the site are listed below:

Future Site Users

6.4.2 Future occupants of the site could be at risk from contamination present at the site.

6.4.3 Potential risks are associated with ingestion of soil, inhalation of contaminated dust (including asbestos) and dermal contact with contaminants of concern. These risks are all associated with the garden areas of the new development.

6.4.4 In addition, risks associated with indoor inhalation of ground gas/vapours need to be assessed.

Construction Workers

6.4.5 The primary risks to construction workers are associated with shallow excavations as asbestos could be present. Asbestos fibres (if present) can be released into the atmosphere during earthworks.

6.4.6 Standard personal protective equipment and site specific risk assessments and method statements should reduce risks associated with other contaminants of concern due to short exposure duration.

Off Site Receptors

6.4.7 Off site receptors include nearby home owners. Human health could be at risk if asbestos fibres are released during the development

Flora

- 6.4.8 Heavy metals can be phytotoxic and if present can represent a potential risk to flora in garden/landscaped areas.

Buildings & Services

- 6.4.9 Concrete used for the construction of buildings can be affected by high levels of sulphate and extreme pH.
- 6.4.10 The integrity of service pipes can be affected by concentrations of organic contamination.

Controlled Waters

- 6.4.11 There are no surface water features located on site. The Enviro & Geo Insight Report indicates that Shawclough Brook (inland river not influenced by normal tidal action on ground surface) is located some 200 m south-west of the site. This is too distant from the site to be considered a potential receptor.
- 6.4.12 The published superficial strata comprises of regionally continuous impermeable boulder clay which does not represent a potential receptor and would likely act as a barrier to the underlying Secondary A aquifer within the bedrock.
- 6.4.13 Notwithstanding, historical OS maps show the site has been extensively quarried which is likely to have removed much/all of the boulder clay from the site. Any made ground present on site (and potential contaminants present within the made ground) may be in hydraulic continuity with the bedrock Secondary A Aquifer.
- 6.4.14 The site is not located within a source protection zone and there are no groundwater abstractions within 250 m of the site.

6.5 Preliminary Conceptual Model

- 6.5.1 The identified potential sources of contaminants, pathways and receptors have been assessed to establish plausible pollutant linkages. All potentially significant pollutant linkages are detailed in Table B, in Appendix D.

6.6 Potentially Significant Pollutant Linkages

- 6.6.1 A number of possible 'significant pollutant linkages' have been identified associated with the site.
- 6.6.2 Potential risks relating to the potential harm to the health of humans and/or domestic pets both on and off site due to the potential for direct contact with contaminants in the made ground and the ingestion of contaminated soil/dust (**Link 1**).

- 6.6.3 There is also the possibility of windblown particulates being inhaled by people/animals both on site and off site ([Link 2](#)).
- 6.6.4 Home grown produce could be affected by ground contamination ([Link 3](#)) and human health could be at risk by the ingestion of home grown produce affected by contamination ([Link 4](#)).
- 6.6.5 Human health could be at risk by the inhalation of ground gases migrating into properties on site ([Link 5](#)) and/or volatile contamination migrating into properties on site ([Link 6](#)).
- 6.6.6 Property (including services, flora and fauna) could be affected by direct contact to high concentrations of contaminants ([Link 7](#)).
- 6.6.7 Dissolution or suspension (leaching) of contaminants from site soils leading to lateral migration within perched permeable layers within the made ground/natural strata, underground services and piles/foundations ([Link 8](#)).
- 6.6.8 Dissolution or suspension (leaching) of contaminants from site soils leading to impact on the underlying and the Secondary A Aquifer within the bedrock strata. Potential significant pathways include locations where historic quarrying have removed the superficial Boulder Clay on site ([Link 9](#)).
- 6.6.9 Site investigation is required to identify site specific conditions and assess the risks associated with each identified pollutant linkage.

7. RECOMMENDATIONS

7.1 Based on the findings of the risk assessment herein, the potential risks from contamination are considered to be medium. Available site investigation records suggest made ground is present to depths of 10 m which is associated with the infilling of the quarry on site. Based on the assessment herein, potential risks have been identified to human health, flora, property (including services) and controlled waters with respect to the change of use to residential. Risks from ground gas are also considered to be present.

7.2 Site investigation works will be required to characterise the shallow ground conditions and inform a quantitative risk assessment to fully assess the potential risks from contamination, assess re-use options for site won soils and inform the requirements for any remediation/mitigation works that may be required.

7.3 BEK recommends that the following works should be undertaken:

Site Investigation

7.4 The investigation should comprise the excavation of a series of trial holes &/or window sample boreholes to confirm ground conditions across the site. The exploratory locations will aim to prove nature and thickness of any made ground present across the site and to characterise the suitability of the soils for re-use and carry out in-situ strength testing (SPTs/shear vane) to inform foundations options.

7.5 Gas and groundwater monitoring probes should be installed within selected boreholes to allow gas monitoring to be carried out and to allow samples of perched groundwater to be recovered (if required).

7.6 The site investigation will be supervised by an experienced engineer who will be responsible for recording ground conditions encountered.

7.7 The engineer will recover representative samples for chemical and geotechnical testing. All samples will be collected in appropriate sampling vessels, stored in a precooled cool box (where necessary) and dispatched to the laboratory within 24 hours.

7.8 Note it would be prudent to carry out site investigation works on site following site clearance works to remove the dense vegetation on site. Moreover, the site investigation technique used will be strongly dependant on the topography of the site. At this stage, it is recommended that a review of the site is carried out by BEK and involved contractors (ie Borehole drillers) following clearance works to discuss and plan for the mitigation of site investigation access issues

Environmental Monitoring

- 7.9 To comply with current guidance, the gas monitoring probes should be monitored on six occasions over a three-month period. Monitoring should include carbon dioxide, methane, oxygen, flow rates and groundwater levels. Monitoring should be undertaken during periods of low or falling barometric pressure (where possible).

Laboratory Testing

- 7.10 Following a review of ground conditions encountered, a selection of samples will be tested for the contaminants of concern listed in Table 1 of this report. If visual or olfactory evidence of contamination is encountered (including any made ground) during the site investigation then it may be necessary to undertake additional testing.
- 7.11 Depending on ground conditions encountered, samples will also be submitted for geotechnical testing. If natural clay is encountered, this will include tests for Plasticity Index and natural Moisture Content.
- 7.12 All testing will be carried out by a UKAS accredited laboratory to MCERTS standard (where applicable).

Assessment

- 7.13 The investigation findings will be assessed as part of a quantitative risk assessment to amend the conceptual site model and identify any potential significant pollutant linkages. The assessment will be undertaken in accordance with current UK guidance and policy.
- 7.14 The site investigation data and laboratory test results will also be assessed as part of a geotechnical assessment to inform foundation design for the new build.

Reporting

- 7.15 The investigation findings should be assessed in accordance with current UK policy and guidance to identify any potential significant pollutant linkages and determine the requirements for mitigation and/or remediation.
- 7.16 The works undertaken will be detailed in a Site Investigation Contamination Assessment report along with full justifications for the assessment and the conclusions/recommendations.

Other Considerations

- 7.17 Prior to site clearance we recommend that an Invasive Plant Species Survey is carried out by a suitably qualified ecologist to ensure that the site is clear of Japanese Knotweed, Giant Hogweed and Himalayan Balsam.



GEO-ENVIRONMENTAL CONSULTING ENGINEERS

- 7.18 Issues associated with access will also need to be overcome. This is due to dense vegetation and uneven/steep areas of the site.
- 7.19 It may be necessary to carry out soakaway testing to facilitate a drainage assessment.
- 7.20 We would also recommend that consideration is given to the requirements of the water supply service provider and the completion of the UKWIR risk assessment for water pipe selection.

APPENDIX A

Historical OS Maps

Site Details:

STREET RECORD, GLENAVON
DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: County Series

Map date: 1890

Scale: 1:2,500

Printed at: 1:2,500



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

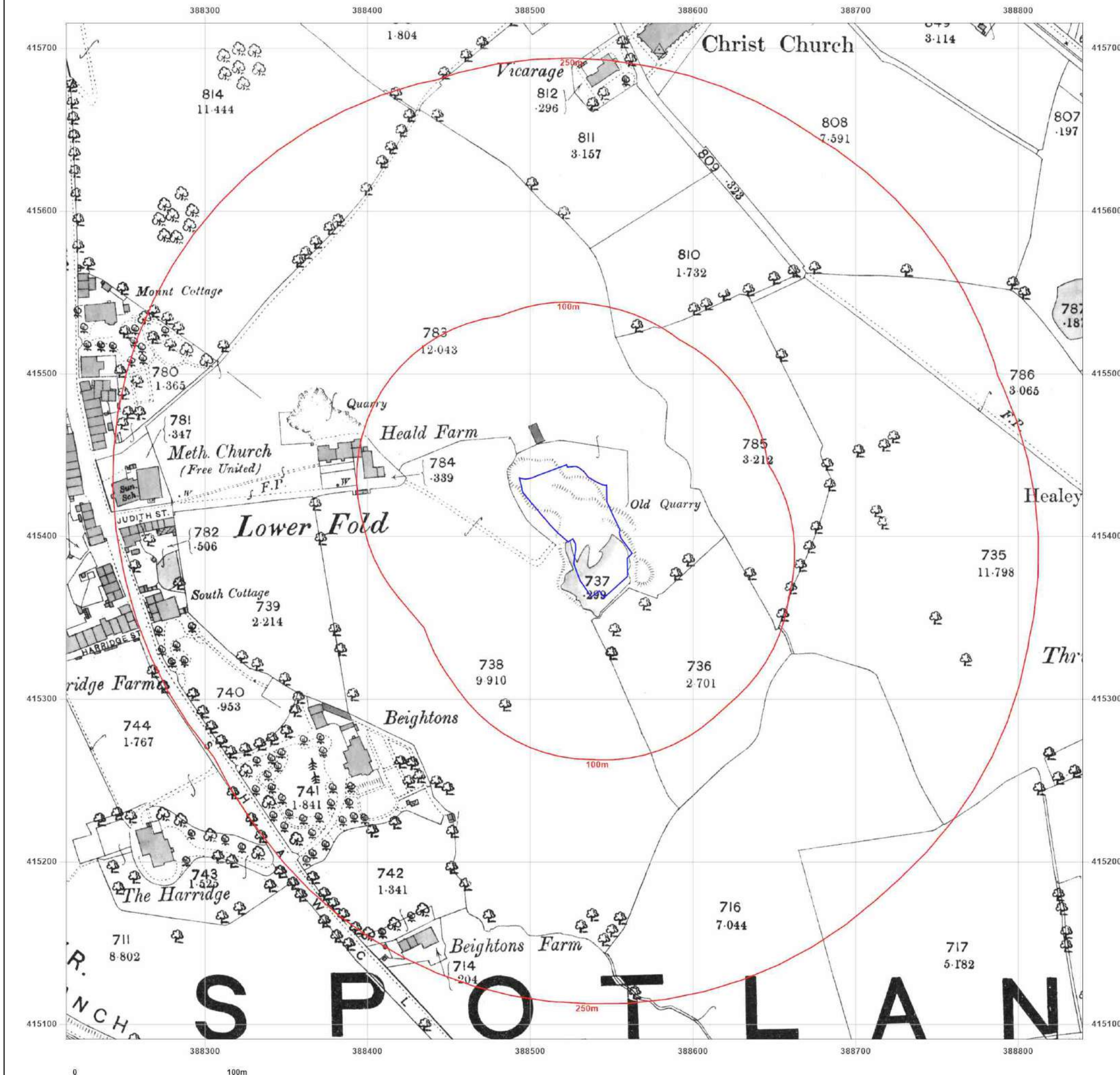


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Site Details:

STREET RECORD, GLENAVON
DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: County Series

Map date: 1910

Scale: 1:2,500

Printed at: 1:2,500



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

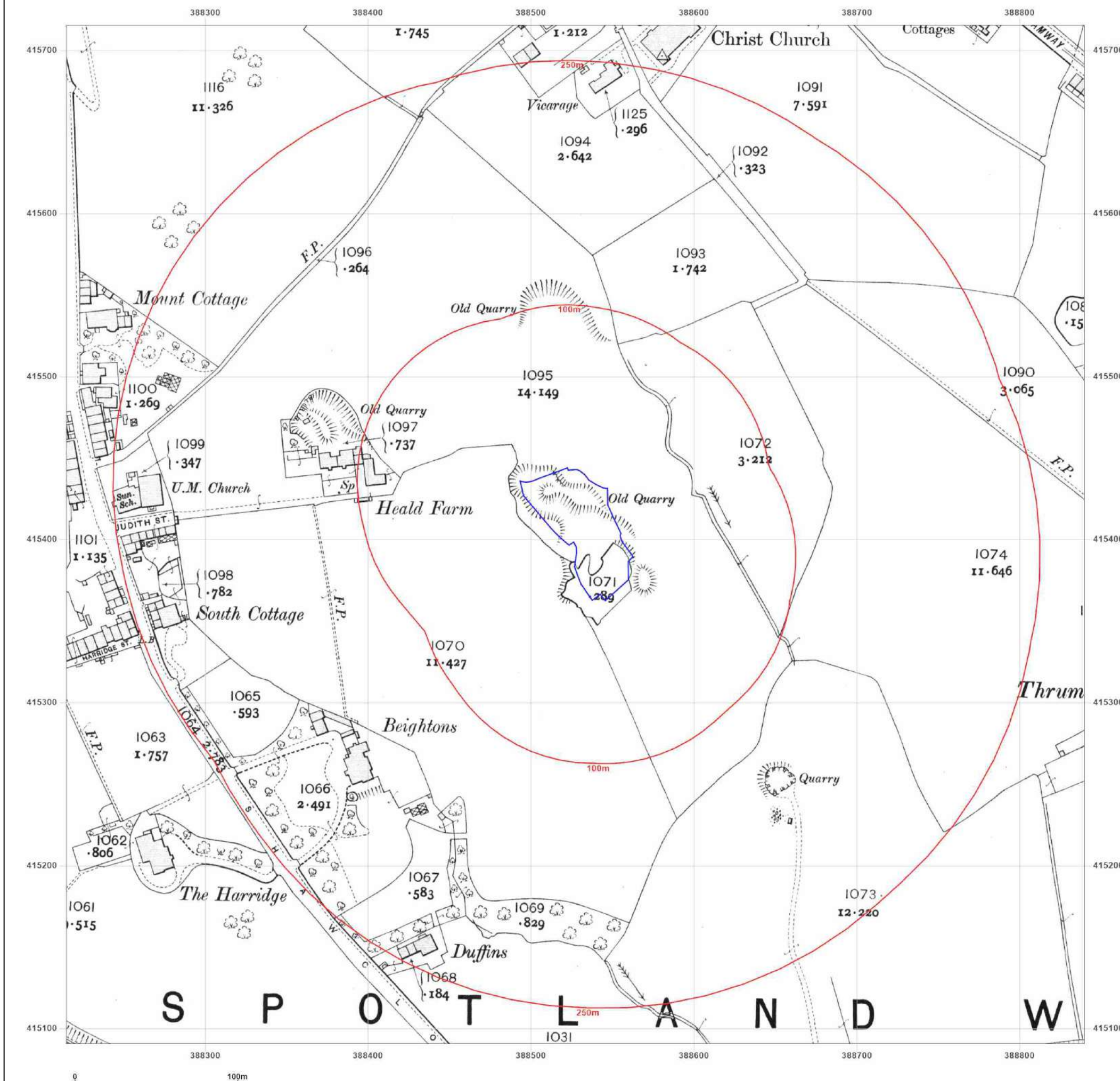


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Site Details:

STREET RECORD, GLENAVON
DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: County Series

Map date: 1929

Scale: 1:2,500

Printed at: 1:2,500



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

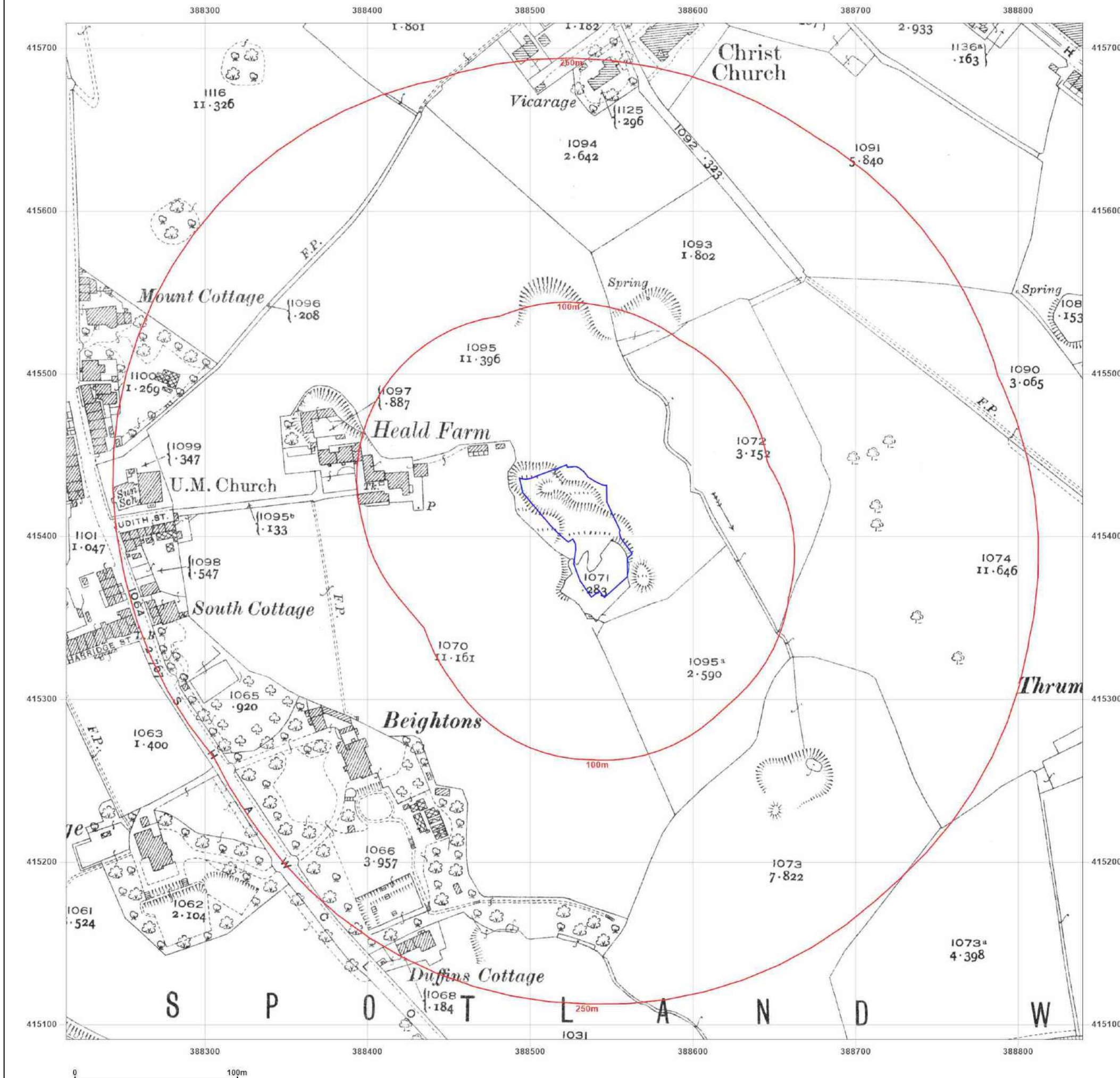


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Site Details:

STREET RECORD, GLENAVON
DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: National Grid

Map date: 1959

Scale: 1:1,250

Printed at: 1:2,000



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Revised 1958
Edition N/A
Copyright 1959
Levelled 1956

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1956

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1956

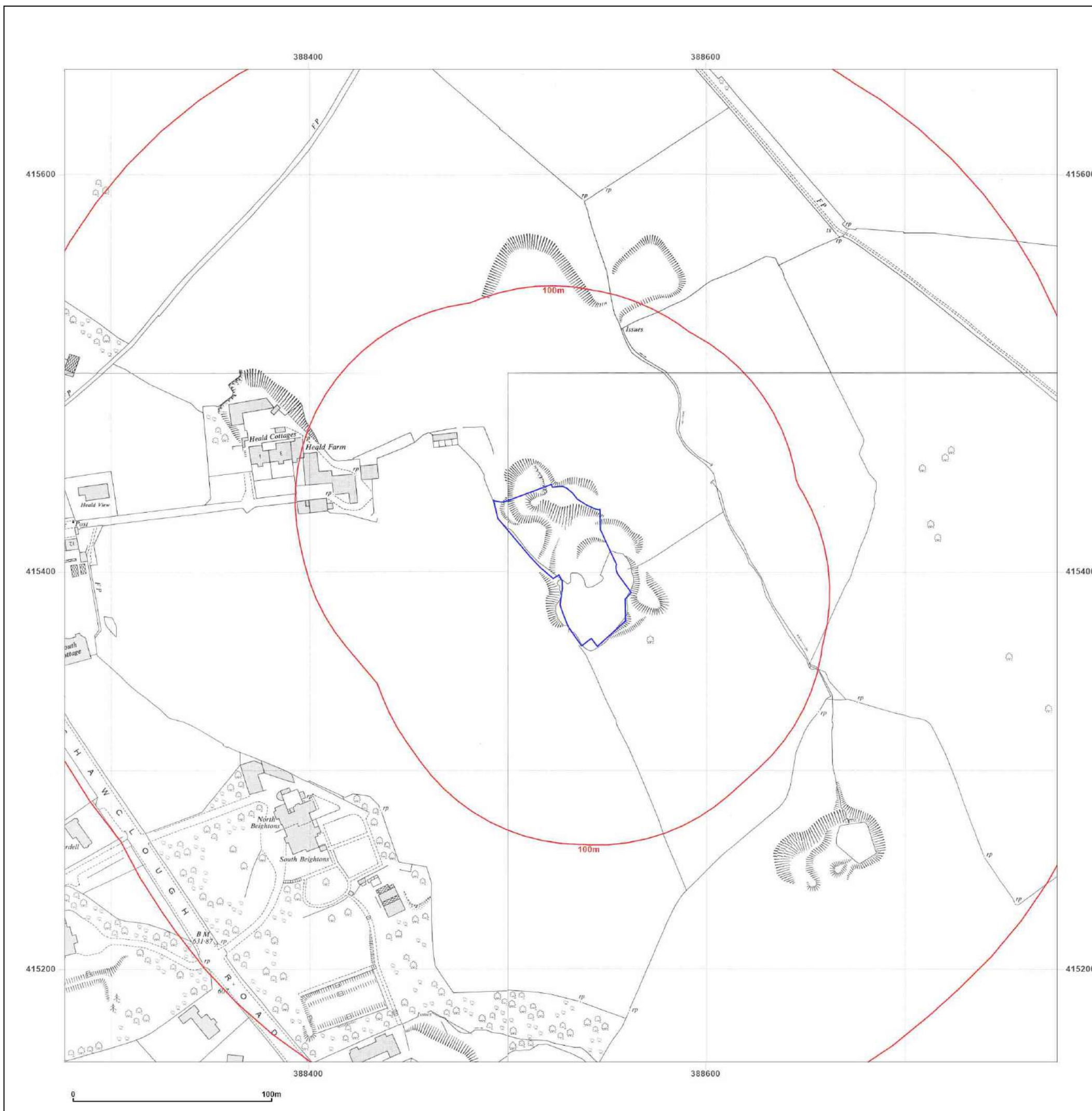


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Site Details:

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DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: National Grid

Map date: 1960

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1958
Revised 1958
Edition 1960
Copyright 1960
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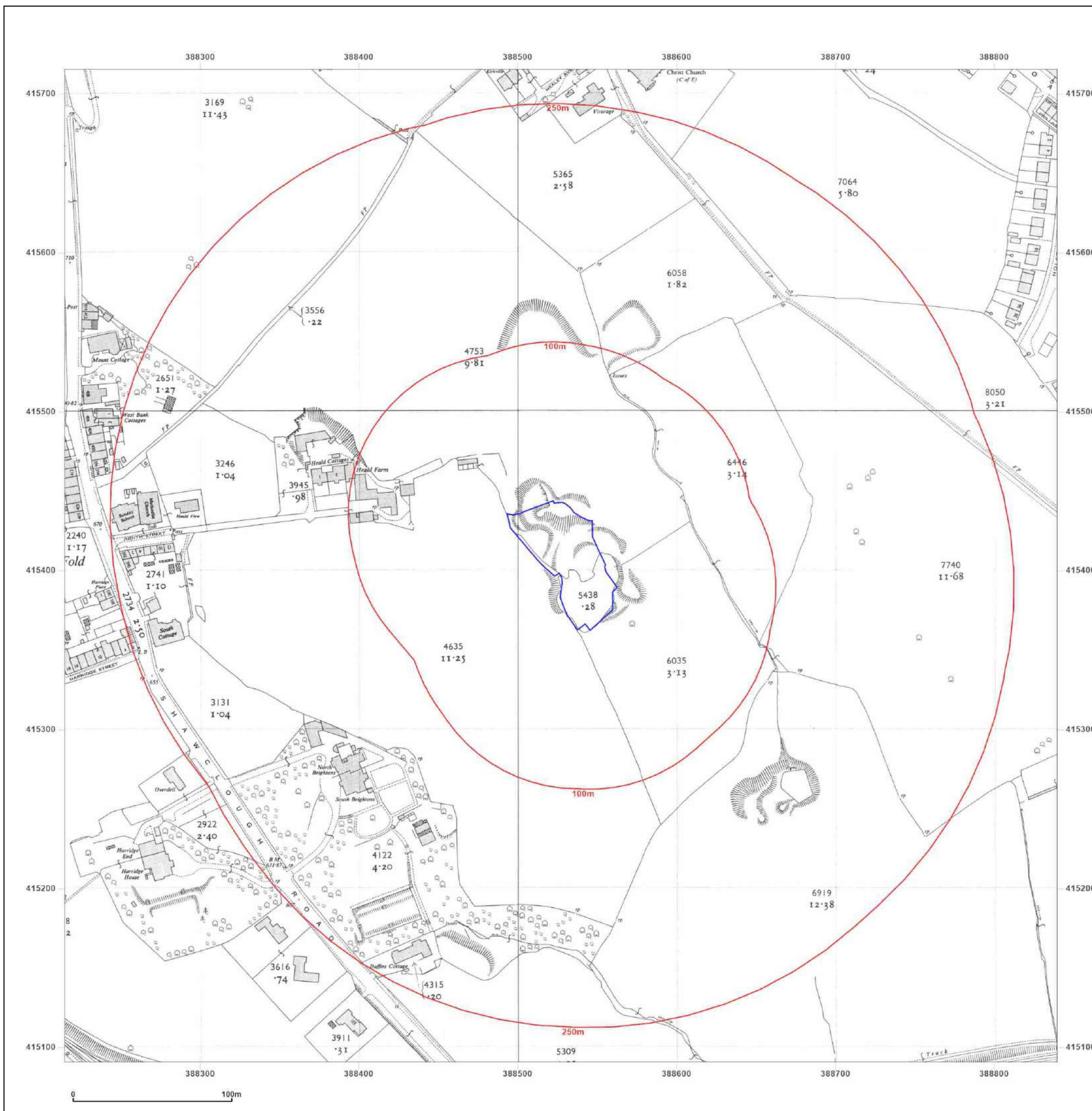


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Site Details:

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DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: National Grid

Map date: 1970-1974

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
Edition N/A
Copyright 1974
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Revised 1970
Edition N/A
Copyright 1970
Levelled 1962

Surveyed 1958
Revised 1970
Edition N/A
Copyright 1970
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Revised 1970
Edition N/A
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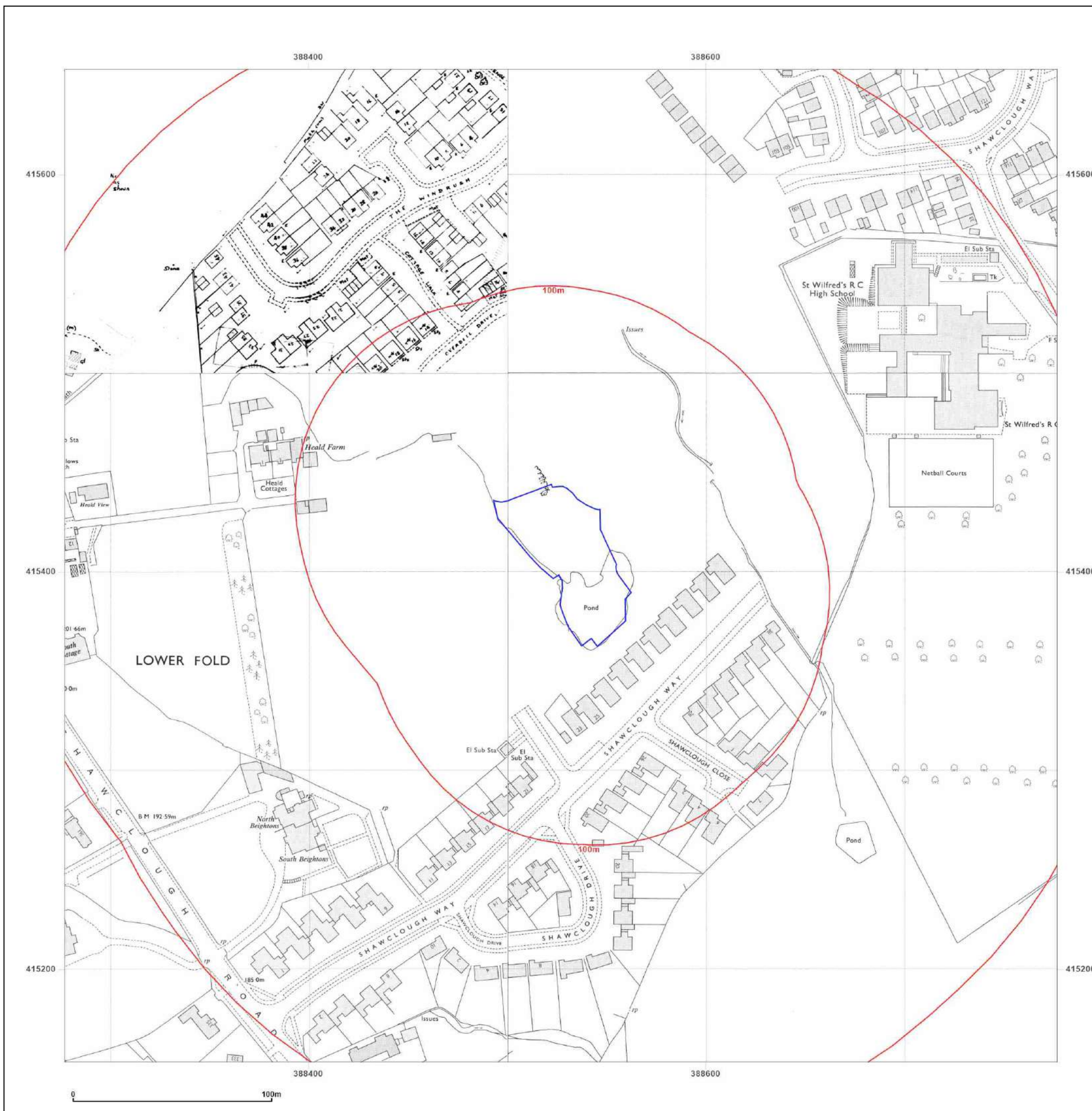


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Site Details:

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DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: National Grid

Map date: 1974

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
Copyright 1974
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Site Details:

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DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: National Grid

Map date: 1977-1981

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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Revised N/A
Edition N/A
Copyright 1977
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Site Details:

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DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: National Grid

Map date: 1992-1993

Scale: 1:1,250

Printed at: 1:2,000



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Revised 1992
Edition N/A
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Site Details:

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Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: National Grid

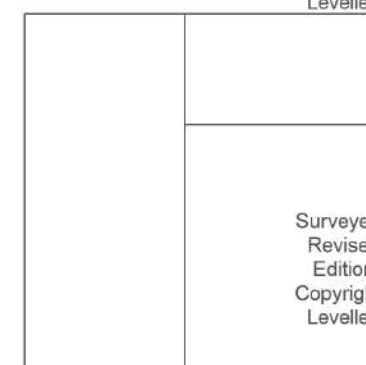
Map date: 1993

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: National Grid

Map date: 1993

Scale: 1:1,250

Printed at: 1:2,000



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Site Details:

STREET RECORD, GLENAVON
DRIVE, ROCHDALE, OL12 6DT

Client Ref: 7601-22127-J
Report Ref: GS-9108982
Grid Ref: 388527, 415403

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



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APPENDIX B

Enviro & GeoInsight Report

STREET RECORD, GLENAVON DRIVE, ROCHDALE, OL12 6DT

Order Details

Date: 07/10/2022
Your ref: 7601-22127-J
Our Ref: GS-9108983

Site Details

Location: 388529 415411
Area: 0.28 ha
Authority: [Rochdale Metropolitan Borough Council](#)



Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.12 groundsure.com/insightuserguide

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	<u>Historical industrial land uses</u>	8	1	14	97	-
18	1.2	<u>Historical tanks</u>	0	0	1	4	-
18	1.3	<u>Historical energy features</u>	0	0	9	5	-
19	1.4	Historical petrol stations	0	0	0	0	-
20	1.5	Historical garages	0	0	0	0	-
20	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
21	2.1	<u>Historical industrial land uses</u>	10	1	18	125	-
27	2.2	<u>Historical tanks</u>	0	0	2	5	-
28	2.3	<u>Historical energy features</u>	0	0	17	10	-
29	2.4	Historical petrol stations	0	0	0	0	-
29	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
30	3.1	Active or recent landfill	0	0	0	0	-
30	3.2	Historical landfill (BGS records)	0	0	0	0	-
31	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
31	3.4	<u>Historical landfill (EA/NRW records)</u>	0	0	0	1	-
31	3.5	Historical waste sites	0	0	0	0	-
31	3.6	Licensed waste sites	0	0	0	0	-
32	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
33	4.1	<u>Recent industrial land uses</u>	0	0	5	-	-
34	4.2	Current or recent petrol stations	0	0	0	0	-
34	4.3	Electricity cables	0	0	0	0	-
34	4.4	Gas pipelines	0	0	0	0	-
34	4.5	Sites determined as Contaminated Land	0	0	0	0	-



35	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35	4.8	Hazardous substance storage/usage	0	0	0	0	-
35	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
35	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
36	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
36	4.12	Radioactive Substance Authorisations	0	0	0	0	-
36	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
36	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
36	4.15	Pollutant release to public sewer	0	0	0	0	-
37	4.16	List 1 Dangerous Substances	0	0	0	0	-
37	4.17	List 2 Dangerous Substances	0	0	0	0	-
37	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	3	2	-
38	4.19	Pollution inventory substances	0	0	0	0	-
38	4.20	Pollution inventory waste transfers	0	0	0	0	-
38	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
39	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
41	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
43	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
44	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
44	5.5	Groundwater vulnerability- local information	None (within 0m)				
45	5.6	<u>Groundwater abstractions</u>	0	0	0	0	7
47	5.7	<u>Surface water abstractions</u>	0	0	0	0	18
52	5.8	<u>Potable abstractions</u>	0	0	0	0	11
55	5.9	Source Protection Zones	0	0	0	0	-
55	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
56	6.1	<u>Water Network (OS MasterMap)</u>	0	0	2	-	-



57	6.2	<u>Surface water features</u>	0	0	1	-	-
57	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
57	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
58	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
59	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
59	7.2	Historical Flood Events	0	0	0	-	-
59	7.3	Flood Defences	0	0	0	-	-
60	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
60	7.5	Flood Storage Areas	0	0	0	-	-
61	7.6	Flood Zone 2	None (within 50m)				
61	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
62	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
64	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
65	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
66	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
66	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
66	10.4	Special Protection Areas (SPA)	0	0	0	0	0
66	10.5	National Nature Reserves (NNR)	0	0	0	0	0
67	10.6	<u>Local Nature Reserves (LNR)</u>	0	0	0	1	0
67	10.7	<u>Designated Ancient Woodland</u>	0	0	0	0	4
67	10.8	Biosphere Reserves	0	0	0	0	0
68	10.9	Forest Parks	0	0	0	0	0
68	10.10	Marine Conservation Zones	0	0	0	0	0
68	10.11	<u>Green Belt</u>	0	0	0	4	1
68	10.12	Proposed Ramsar sites	0	0	0	0	0



69	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
69	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
69	10.15	Nitrate Sensitive Areas	0	0	0	0	0
69	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
70	<u>10.17</u>	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
71	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
72	11.1	World Heritage Sites	0	0	0	-	-
73	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
73	11.3	National Parks	0	0	0	-	-
73	<u>11.4</u>	<u>Listed Buildings</u>	0	0	1	-	-
74	11.5	Conservation Areas	0	0	0	-	-
74	11.6	Scheduled Ancient Monuments	0	0	0	-	-
74	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
75	<u>12.1</u>	<u>Agricultural Land Classification</u>	Urban (within 250m)				
76	12.2	Open Access Land	0	0	0	-	-
76	12.3	Tree Felling Licences	0	0	0	-	-
76	12.4	Environmental Stewardship Schemes	0	0	0	-	-
77	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
78	13.1	Priority Habitat Inventory	0	0	0	-	-
78	13.2	Habitat Networks	0	0	0	-	-
78	13.3	Open Mosaic Habitat	0	0	0	-	-
78	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
79	<u>14.1</u>	<u>10k Availability</u>	Identified (within 500m)				
80	<u>14.2</u>	<u>Artificial and made ground (10k)</u>	1	0	3	14	-
82	<u>14.3</u>	<u>Superficial geology (10k)</u>	1	0	0	3	-



83	14.4	<u>Landslip (10k)</u>	0	0	0	2	-
84	14.5	<u>Bedrock geology (10k)</u>	1	0	3	17	-
86	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	0	2	9	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
87	15.1	<u>50k Availability</u>	Identified (within 500m)				
88	15.2	Artificial and made ground (50k)	0	0	0	0	-
88	15.3	Artificial ground permeability (50k)	0	0	-	-	-
89	15.4	<u>Superficial geology (50k)</u>	1	0	0	2	-
90	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
90	15.6	<u>Landslip (50k)</u>	0	0	0	1	-
90	15.7	Landslip permeability (50k)	None (within 50m)				
91	15.8	<u>Bedrock geology (50k)</u>	1	0	3	13	-
92	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
93	15.10	<u>Bedrock faults and other linear features (50k)</u>	0	0	2	8	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
94	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
95	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
96	17.2	<u>Running sands</u>	Very low (within 50m)				
98	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
99	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
100	17.5	<u>Landslides</u>	Low (within 50m)				
102	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
104	18.1	Natural cavities	0	0	0	0	-
105	18.2	<u>BritPits</u>	1	0	0	3	-
106	18.3	<u>Surface ground workings</u>	15	1	17	-	-
107	18.4	<u>Underground workings</u>	0	0	0	4	28
108	18.5	Historical Mineral Planning Areas	0	0	0	0	-



<u>109</u>	<u>18.6</u>	<u>Non-coal mining</u>	0	0	0	0	1
109	18.7	Mining cavities	0	0	0	0	0
109	18.8	JPB mining areas	None (within 0m)				
<u>109</u>	<u>18.9</u>	<u>Coal mining</u>	Identified (within 0m)				
110	18.10	Brine areas	None (within 0m)				
110	18.11	Gypsum areas	None (within 0m)				
110	18.12	Tin mining	None (within 0m)				
110	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<u>111</u>	<u>19.1</u>	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<u>112</u>	<u>20.1</u>	<u>BGS Estimated Background Soil Chemistry</u>	2	0	-	-	-
112	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
112	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
113	21.1	Underground railways (London)	0	0	0	-	-
113	21.2	Underground railways (Non-London)	0	0	0	-	-
113	21.3	Railway tunnels	0	0	0	-	-
113	21.4	Historical railway and tunnel features	0	0	0	-	-
113	21.5	Royal Mail tunnels	0	0	0	-	-
114	21.6	Historical railways	0	0	0	-	-
114	21.7	Railways	0	0	0	-	-
114	21.8	Crossrail 1	0	0	0	0	-
114	21.9	Crossrail 2	0	0	0	0	-
114	21.10	HS2	0	0	0	0	-

Recent aerial photograph



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Capture Date: 23/05/2019

Site Area: 0.28ha



Recent site history - 2012 aerial photograph



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Capture Date: 26/03/2012

Site Area: 0.28ha



Recent site history - 2000 aerial photograph



Capture Date: 19/06/2000

Site Area: 0.28ha



Recent site history - 1999 aerial photograph

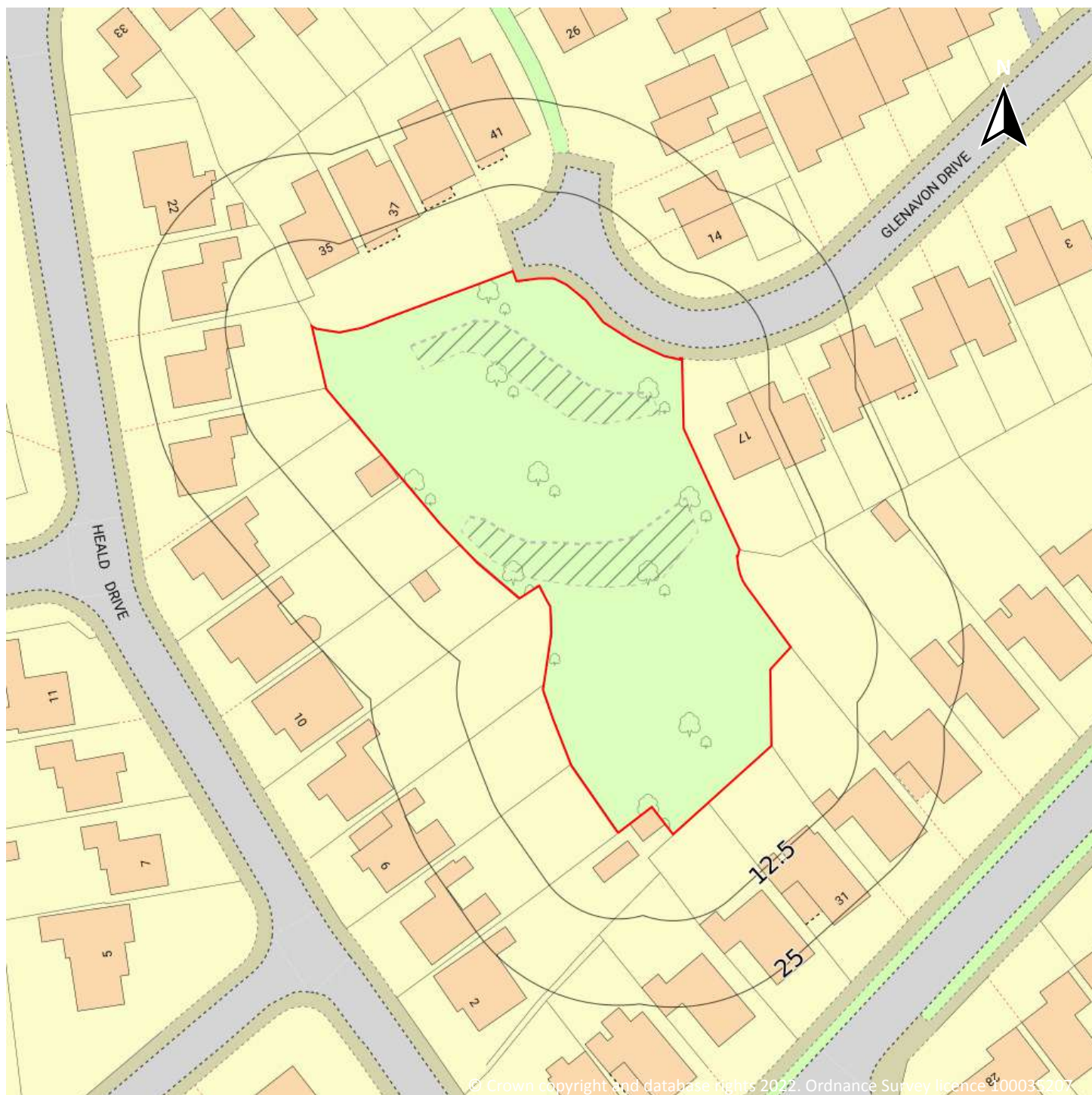


Capture Date: 10/09/1999

Site Area: 0.28ha



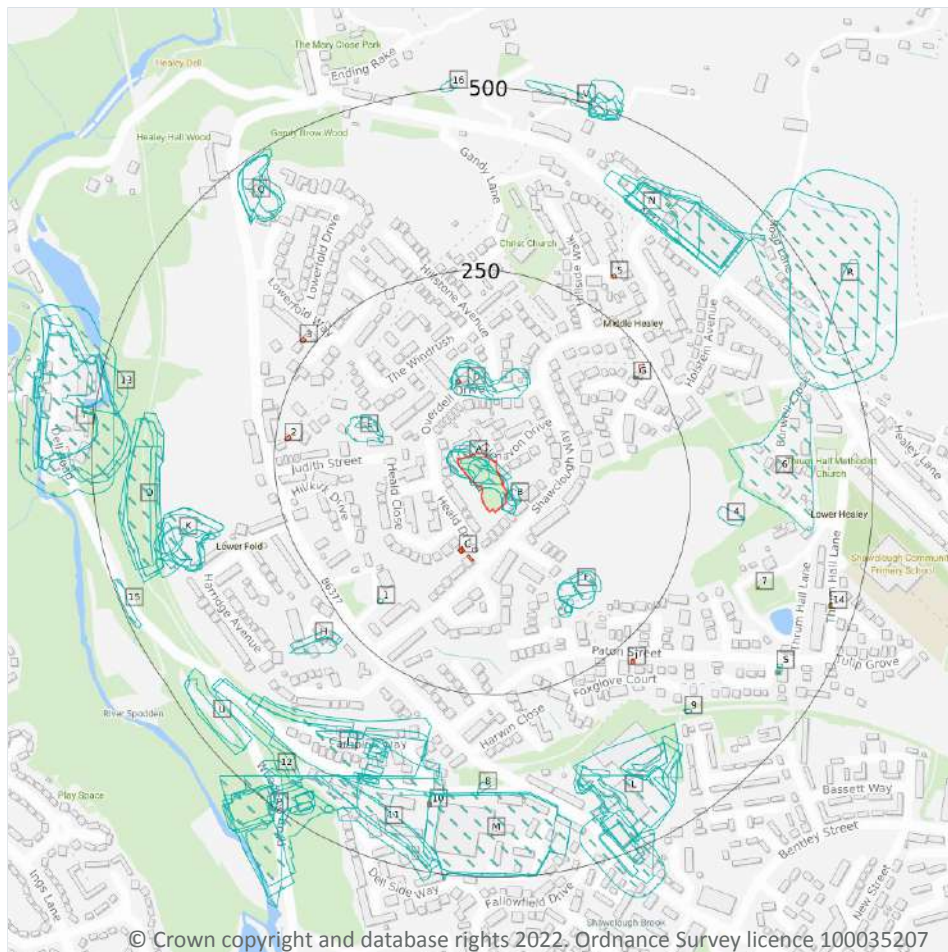
OS MasterMap site plan



Site Area: 0.28ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

1.1 Historical industrial land uses

Records within 500m

120

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Heap	1967	650771



ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Old Quarries	1909	658061
A	On site	Unspecified Quarry	1890	667803
A	On site	Unspecified Pit	1949	690666
A	On site	Sandstone Quarry	1851	687551
A	On site	Unspecified Ground Workings	1928 - 1938	696953
B	On site	Unspecified Heap	1949	725947
B	On site	Unspecified Heap	1909 - 1928	733468
B	3m E	Unspecified Heap	1967	763778
D	75m N	Unspecified Pits	1928 - 1938	710000
D	77m N	Unspecified Old Quarries	1909	658060
D	86m N	Unspecified Pit	1949	699722
D	90m N	Unspecified Pit	1967	746830
E	104m W	Unspecified Quarry	1890 - 1909	762921
E	106m W	Unspecified Pit	1928	690668
F	133m SE	Unspecified Pit	1967	743626
F	134m SE	Unspecified Quarry	1909	667797
F	135m SE	Unspecified Pit	1928 - 1938	783075
F	137m SE	Unspecified Pit	1949	696149
F	156m SE	Unspecified Heap	1938 - 1949	759990
F	156m SE	Refuse Heap	1909	677428
F	161m SE	Unspecified Heap	1928	760964
1	189m SW	Unspecified Tank	1928	674708
H	266m SW	Unspecified Ground Workings	1949	647785
H	278m SW	Unspecified Pit	1938	690667
4	288m E	Unspecified Heap	1909	650773
J	296m S	Railway Sidings	1967	784705
6	308m E	Nursery	1890 - 1909	772030
J	317m S	Railway Sidings	1949	714575



ID	Location	Land use	Dates present	Group ID
J	324m S	Railway Sidings	1928 - 1938	705044
K	332m W	Unspecified Quarry	1967	698799
K	332m W	Unspecified Quarry	1949	733267
K	340m W	Unspecified Quarry	1890 - 1909	697469
J	344m SW	Railway Building	1967	747828
J	346m SW	Goods Shed	1938 - 1949	782303
J	349m SW	Railway Sidings	1890 - 1909	702820
J	354m SW	Unspecified Heap	1890	650772
K	354m W	Unspecified Quarry	1928	747309
K	355m W	Unspecified Quarry	1938	752089
J	355m SW	Railway Building	1890	789605
J	356m SW	Goods Shed	1909 - 1928	760121
L	358m SE	Unspecified Works	1975 - 1987	770456
L	365m S	Unspecified Ground Workings	1890	755540
L	367m S	Unspecified Ground Workings	1928	742932
8	370m S	Unspecified Pit	1909 - 1928	774032
9	374m SE	Railway Building	1890	670135
L	379m S	Unspecified Works	1992	763232
J	380m S	Railway Station	1967	710177
L	383m SE	Unspecified Pit	1949	690671
M	384m S	Unspecified Works	1992	711278
L	386m SE	Unspecified Heap	1890	769395
L	386m SE	Unspecified Heap	1928 - 1938	694831
M	387m S	Unspecified Works	1987	717996
M	387m S	Unspecified Works	1975	720873
N	387m NE	Cotton Mill	1851	644271
J	388m S	Railway Station	1949	760619
L	389m SE	Unspecified Ground Workings	1909	648025



ID	Location	Land use	Dates present	Group ID
K	389m W	Unspecified Heap	1928	650763
L	389m S	Unspecified Ground Workings	1909	725253
N	389m NE	Unspecified Mill	1938	773151
N	390m NE	Unspecified Mill	1890 - 1909	718746
N	391m NE	Unspecified Mill	1928	742573
K	394m W	Sandstone Quarry	1851	687537
J	395m SW	Railway Station	1890	749502
J	397m SW	Railway Station	1909 - 1928	767516
J	397m S	Railway Station	1938	769903
N	399m NE	Unspecified Mill	1949	742107
N	400m NE	Unspecified Mill	1967 - 1979	750438
O	402m W	Cuttings	1949	775413
O	403m W	Cuttings	1967 - 1979	757393
P	404m SW	Unspecified Mill	1949	711101
L	410m SE	Unspecified Heap	1928	650759
O	410m W	Cuttings	1909 - 1938	723599
Q	414m NW	Unspecified Quarry	1928 - 1938	710908
Q	414m NW	Unspecified Quarry	1890	756069
11	414m SW	Railway Sidings	1968	731888
O	417m W	Cuttings	1890	758065
Q	417m NW	Unspecified Quarry	1909	722679
Q	421m NW	Unspecified Quarry	1949	758186
L	424m S	Unspecified Commercial/Industrial	1968	643257
R	427m E	Unspecified Disused Mine	1967 - 1979	759474
S	433m SE	Unspecified Tank	1949	674707
S	435m SE	Unspecified Tank	1928 - 1938	768482
L	437m S	Laundry	1909	644923
Q	439m NW	Unspecified Heaps	1967	679634



ID	Location	Land use	Dates present	Group ID
L	442m SE	Unspecified Works	1949	745170
P	443m SW	Unspecified Works	1968	678957
R	444m NE	Old Colliery	1938	733582
12	445m SW	Unspecified Ground Workings	1967	736697
T	447m W	Unspecified Mills	1909	784374
U	449m SW	Refuse Heap	1938 - 1949	718965
T	451m W	Cotton Mill	1851	644282
P	451m SW	Unspecified Mill	1928 - 1938	787474
P	452m SW	Unspecified Pit	1949	728925
P	453m SW	Unspecified Pit	1987 - 1992	714010
P	453m SW	Unspecified Pit	1968 - 1975	720696
L	456m S	Unspecified Works	1928	704769
T	456m W	Unspecified Mills	1979	740518
P	457m SW	Unspecified Disused Shaft	1975	664292
P	457m SW	Unspecified Tank	1987 - 1992	721506
P	458m SW	Unspecified Ground Workings	1890	722926
L	459m S	Unspecified Works	1938	731891
13	459m W	Unspecified Pit	1890	690669
U	460m SW	Refuse Heap	1928	698773
P	466m SW	Unspecified Pit	1938	788902
P	467m SW	Unspecified Pit	1909 - 1928	712553
T	469m W	Unspecified Works	1967	678956
R	476m E	Old Colliery	1909 - 1928	749000
P	479m SW	Unspecified Disused Mills	1909	692618
P	482m SW	Unspecified Mill	1890	779264
V	484m N	Sandstone Quarry	1851	687550
V	485m N	Unspecified Ground Workings	1890	647791
V	485m N	Unspecified Heaps	1938 - 1949	720966



ID	Location	Land use	Dates present	Group ID
15	486m SW	Unspecified Ground Workings	1928	647784
V	488m N	Unspecified Quarry	1909 - 1928	698804
V	489m N	Unspecified Heap	1928	650774
P	491m SW	Unspecified Ground Workings	1909	766391
T	491m W	Unspecified Mills	1938	733035
T	492m W	Unspecified Mills	1928	728899
16	496m N	Sandstone Quarry	1851	687538

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

5

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
G	221m NE	Unspecified Tank	1970 - 1974	93217
7	364m E	Unspecified Tank	1910	84189
N	423m NE	Unspecified Tank	1890 - 1929	95016
S	438m SE	Unspecified Tank	1929	84188
14	463m E	Unspecified Tank	1910	84190

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

14

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or



succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
C	60m SW	Electricity Substation	1981 - 1992	52816
C	61m SW	Electricity Substation	1970	54981
C	62m SW	Electricity Substation	1970 - 1974	57458
C	66m SW	Electricity Substation	1993	45484
D	98m N	Electricity Substation	1974 - 1992	54413
D	99m N	Electricity Substation	1979	53032
2	229m W	Electricity Substation	1970 - 1992	53457
G	230m NE	Electricity Substation	1993	56735
G	233m NE	Electricity Substation	1970 - 1974	55181
3	263m NW	Electricity Substation	1979 - 1992	50578
I	274m SE	Electricity Substation	1981 - 1987	46695
I	275m SE	Electricity Substation	1993	54691
5	298m NE	Electricity Substation	1970 - 1993	53589
10	405m S	Electricity Substation	1990 - 1993	53953

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



1.5 Historical garages

Records within 500m

0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

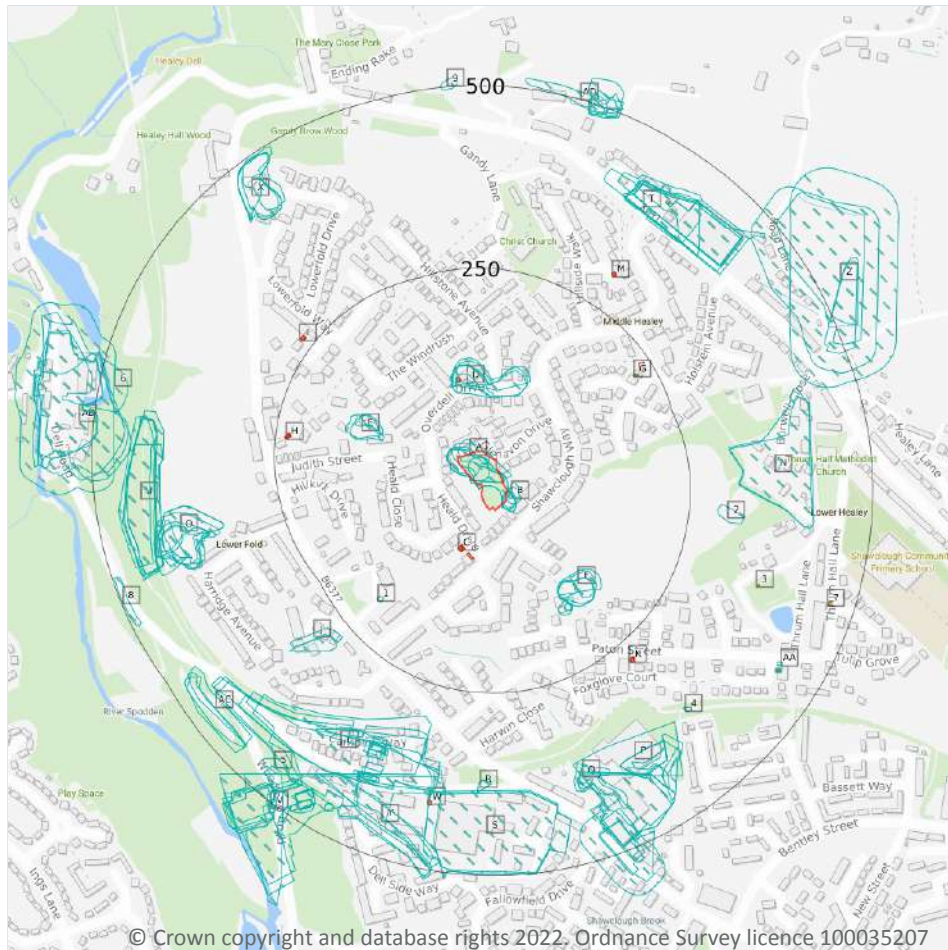
0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

2.1 Historical industrial land uses

Records within 500m

154

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Heap	1967	650771
A	On site	Sandstone Quarry	1851	687551
A	On site	Unspecified Old Quarries	1909	658061

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Quarry	1890	667803
A	On site	Unspecified Pit	1949	690666
A	On site	Unspecified Ground Workings	1938	696953
A	On site	Unspecified Ground Workings	1928	696953
B	On site	Unspecified Heap	1949	725947
B	On site	Unspecified Heap	1928	733468
B	On site	Unspecified Heap	1909	733468
B	3m E	Unspecified Heap	1967	763778
D	75m N	Unspecified Pits	1928	710000
D	77m N	Unspecified Pits	1938	710000
D	77m N	Unspecified Old Quarries	1909	658060
D	86m N	Unspecified Pit	1949	699722
D	90m N	Unspecified Pit	1967	746830
E	104m W	Unspecified Quarry	1909	762921
E	106m W	Unspecified Pit	1928	690668
E	109m W	Unspecified Quarry	1890	762921
F	133m SE	Unspecified Pit	1967	743626
F	134m SE	Unspecified Quarry	1909	667797
F	135m SE	Unspecified Pit	1938	783075
F	135m SE	Unspecified Pit	1928	783075
F	137m SE	Unspecified Pit	1949	696149
F	156m SE	Unspecified Heap	1949	759990
F	156m SE	Refuse Heap	1909	677428
F	161m SE	Unspecified Heap	1928	760964
F	161m SE	Unspecified Heap	1938	759990
1	189m SW	Unspecified Tank	1928	674708
J	266m SW	Unspecified Ground Workings	1949	647785
J	278m SW	Unspecified Pit	1938	690667



ID	Location	Land Use	Date	Group ID
2	288m E	Unspecified Heap	1909	650773
L	296m S	Railway Sidings	1967	784705
N	308m E	Nursery	1909	772030
N	308m E	Nursery	1890	772030
L	317m S	Railway Sidings	1949	714575
L	324m S	Railway Sidings	1928	705044
O	332m W	Unspecified Quarry	1967	698799
O	332m W	Unspecified Quarry	1949	733267
O	340m W	Unspecified Quarry	1909	697469
L	344m SW	Railway Building	1967	747828
L	346m SW	Goods Shed	1949	782303
L	346m S	Railway Sidings	1938	705044
L	349m SW	Railway Sidings	1890	702820
L	354m SW	Unspecified Heap	1890	650772
O	354m W	Unspecified Quarry	1928	747309
O	354m W	Unspecified Quarry	1890	697469
L	354m SW	Railway Sidings	1909	702820
O	355m W	Unspecified Quarry	1938	752089
L	355m SW	Railway Building	1890	789605
L	356m SW	Goods Shed	1928	760121
L	356m SW	Goods Shed	1909	760121
L	357m SW	Goods Shed	1938	782303
P	358m SE	Unspecified Works	1979	770456
Q	365m S	Unspecified Ground Workings	1890	755540
Q	367m S	Unspecified Ground Workings	1928	742932
R	370m S	Unspecified Pit	1928	774032
R	370m S	Unspecified Pit	1909	774032
4	374m SE	Railway Building	1890	670135



ID	Location	Land Use	Date	Group ID
Q	376m S	Unspecified Works	1987	770456
Q	376m S	Unspecified Works	1975	770456
Q	379m S	Unspecified Works	1992	763232
L	380m S	Railway Station	1967	710177
P	383m SE	Unspecified Pit	1949	690671
S	384m S	Unspecified Works	1992	711278
P	386m SE	Unspecified Heap	1938	694831
P	386m SE	Unspecified Heap	1928	694831
P	386m SE	Unspecified Heap	1890	769395
S	387m S	Unspecified Works	1987	717996
S	387m S	Unspecified Works	1975	720873
T	387m NE	Cotton Mill	1851	644271
L	388m S	Railway Station	1949	760619
P	389m SE	Unspecified Ground Workings	1909	648025
O	389m W	Unspecified Heap	1928	650763
Q	389m S	Unspecified Ground Workings	1909	725253
T	389m NE	Unspecified Mill	1938	773151
T	390m NE	Unspecified Mill	1909	718746
T	391m NE	Unspecified Mill	1890	718746
T	391m NE	Unspecified Mill	1928	742573
O	394m W	Sandstone Quarry	1851	687537
L	395m SW	Railway Station	1890	749502
L	397m SW	Railway Station	1928	767516
L	397m SW	Railway Station	1909	767516
L	397m S	Railway Station	1938	769903
T	399m NE	Unspecified Mill	1949	742107
T	400m NE	Unspecified Mill	1967	750438
T	400m NE	Unspecified Mill	1979	750438

ID	Location	Land Use	Date	Group ID
U	402m W	Cuttings	1949	775413
U	403m W	Cuttings	1967	757393
U	403m W	Cuttings	1979	757393
V	404m SW	Unspecified Mill	1949	711101
P	410m SE	Unspecified Heap	1928	650759
U	410m W	Cuttings	1909	723599
U	412m W	Cuttings	1928	723599
U	412m W	Cuttings	1938	723599
X	414m NW	Unspecified Quarry	1938	710908
X	414m NW	Unspecified Quarry	1928	710908
X	414m NW	Unspecified Quarry	1890	756069
Y	414m SW	Railway Sidings	1968	731888
Y	416m SW	Railway Sidings	1949	714575
U	417m W	Cuttings	1890	758065
X	417m NW	Unspecified Quarry	1909	722679
X	421m NW	Unspecified Quarry	1949	758186
Q	424m S	Unspecified Commercial/Industrial	1968	643257
Z	427m E	Unspecified Disused Mine	1967	759474
AA	433m SE	Unspecified Tank	1949	674707
AA	435m SE	Unspecified Tank	1928	768482
AA	436m SE	Unspecified Tank	1938	768482
Q	437m S	Laundry	1909	644923
X	439m NW	Unspecified Heaps	1967	679634
Q	442m SE	Unspecified Works	1949	745170
V	443m SW	Unspecified Works	1968	678957
Z	444m NE	Old Colliery	1938	733582
5	445m SW	Unspecified Ground Workings	1967	736697
AB	447m W	Unspecified Mills	1909	784374

ID	Location	Land Use	Date	Group ID
AC	449m SW	Refuse Heap	1949	718965
AB	451m W	Cotton Mill	1851	644282
V	451m SW	Unspecified Mill	1928	787474
V	452m SW	Unspecified Pit	1949	728925
V	453m SW	Unspecified Pit	1992	714010
V	453m SW	Unspecified Pit	1987	714010
V	453m SW	Unspecified Pit	1975	720696
V	453m SW	Unspecified Pit	1968	720696
AC	455m SW	Refuse Heap	1938	718965
Q	456m S	Unspecified Works	1928	704769
AB	456m W	Unspecified Mills	1979	740518
V	457m SW	Unspecified Tank	1992	721506
V	457m SW	Unspecified Tank	1987	721506
V	457m SW	Unspecified Disused Shaft	1975	664292
V	457m SW	Unspecified Mill	1938	787474
V	458m SW	Unspecified Ground Workings	1890	722926
Q	459m S	Unspecified Works	1938	731891
6	459m W	Unspecified Pit	1890	690669
AC	460m SW	Refuse Heap	1928	698773
V	466m SW	Unspecified Pit	1938	788902
V	467m SW	Unspecified Pit	1928	712553
V	467m SW	Unspecified Pit	1909	712553
AB	469m W	Unspecified Works	1967	678956
Z	476m E	Old Colliery	1909	749000
V	479m SW	Unspecified Disused Mills	1909	692618
V	482m SW	Unspecified Mill	1890	779264
Z	483m NE	Unspecified Disused Mine	1979	759474
AD	484m N	Sandstone Quarry	1851	687550



ID	Location	Land Use	Date	Group ID
AD	485m N	Unspecified Ground Workings	1890	647791
AD	485m N	Unspecified Heaps	1938	720966
8	486m SW	Unspecified Ground Workings	1928	647784
AD	488m N	Unspecified Quarry	1909	698804
AD	489m N	Unspecified Heap	1928	650774
V	491m SW	Unspecified Ground Workings	1909	766391
AB	491m W	Unspecified Mills	1938	733035
AB	492m W	Unspecified Mills	1928	728899
9	496m N	Sandstone Quarry	1851	687538
AD	498m N	Unspecified Heaps	1949	720966
Z	500m NE	Old Colliery	1928	749000

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

7

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
G	221m NE	Unspecified Tank	1974	93217
G	221m NE	Unspecified Tank	1970	93217
3	364m E	Unspecified Tank	1910	84189
T	423m NE	Unspecified Tank	1890	95016
T	423m NE	Unspecified Tank	1929	95016
AA	438m SE	Unspecified Tank	1929	84188
7	463m E	Unspecified Tank	1910	84190

This data is sourced from Ordnance Survey / Groundsure.



2.3 Historical energy features

Records within 500m

27

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
C	60m SW	Electricity Substation	1988	52816
C	60m SW	Electricity Substation	1992	52816
C	61m SW	Electricity Substation	1970	54981
C	61m SW	Electricity Substation	1981	52816
C	62m SW	Electricity Substation	1987	52816
C	62m SW	Electricity Substation	1970	57458
C	62m SW	Electricity Substation	1974	57458
C	66m SW	Electricity Substation	1993	45484
D	98m N	Electricity Substation	1974	54413
D	98m N	Electricity Substation	1992	54413
D	99m N	Electricity Substation	1979	53032
H	229m W	Electricity Substation	1992	53457
H	229m W	Electricity Substation	1970	53457
G	230m NE	Electricity Substation	1993	56735
H	230m W	Electricity Substation	1988	53457
G	233m NE	Electricity Substation	1974	55181
G	233m NE	Electricity Substation	1970	55181
I	263m NW	Electricity Substation	1992	50578
I	264m NW	Electricity Substation	1979	50578
K	274m SE	Electricity Substation	1981	46695
K	275m SE	Electricity Substation	1993	54691
K	275m SE	Electricity Substation	1987	46695
M	298m NE	Electricity Substation	1993	53589



ID	Location	Land Use	Date	Group ID
M	298m NE	Electricity Substation	1974	53589
M	298m NE	Electricity Substation	1970	53589
W	405m S	Electricity Substation	1993	53953
W	406m S	Electricity Substation	1990	53953

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Historical landfill (EA/NRW)

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m

0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m

1

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 30**

ID	Location	Details		
1	418m NE	Site Address: Healey Mill, Off Whitworth Road, Rochdale, Greater Manchester Licence Holder Address: Fieldhouse Industrial Estate, Rochdale	Waste Licence: Yes Site Reference: D054, RD/LIC/355/84 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 01/10/1984 Licence Surrender: 14/01/1987	Operator: - Licence Holder: John Bright and Brothers Limited First Recorded 01/03/1985 Last Recorded: 31/12/1985

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m

0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m

0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

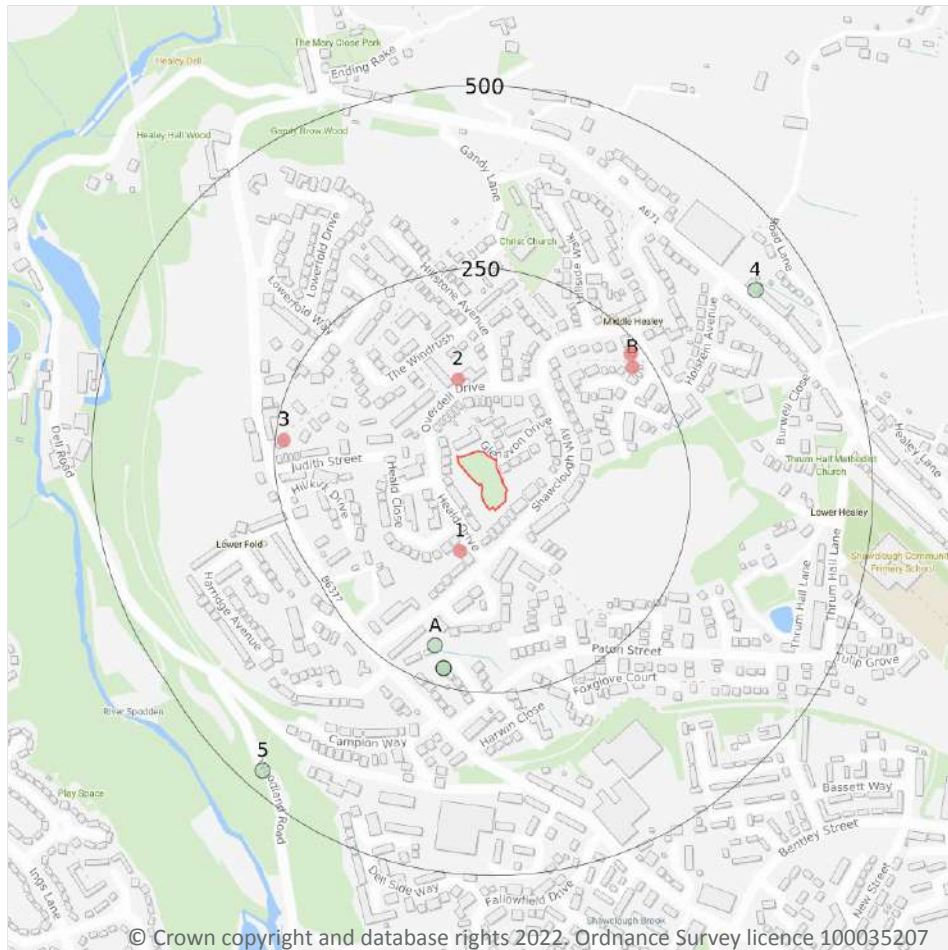
Records within 500m	0
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Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

5

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 33**

ID	Location	Company	Address	Activity	Category
1	69m SW	Electricity Sub Station	Greater Manchester, OL12	Electrical Features	Infrastructure and Facilities
2	102m N	Electricity Sub Station	Greater Manchester, OL12	Electrical Features	Infrastructure and Facilities
B	225m NE	Electricity Sub Station	Greater Manchester, OL12	Electrical Features	Infrastructure and Facilities



ID	Location	Company	Address	Activity	Category
B	234m NE	Restore a Floor	33, Holstein Avenue, Rochdale, Greater Manchester, OL12 6DL	Construction Completion Services	Construction Services
3	238m W	Electricity Sub Station	Greater Manchester, OL12	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m **0**

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m **0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m **0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m **0**

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m**0**

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m**0**

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m**0**

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m**0**

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.



4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m**0**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m**0**

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m**0**

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m**0**

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m**0**

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m

0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m

0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m

5

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 33**

ID	Location	Details	
A	200m S	Incident Date: 22/07/2002 Incident Identification: 93422 Pollutant: Sewage Materials Pollutant Description: Grey Water	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
A	224m S	Incident Date: 16/03/2002 Incident Identification: 66163 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
A	224m S	Incident Date: 16/03/2002 Incident Identification: 66163 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4	423m NE	Incident Date: 31/05/2001 Incident Identification: 7135 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

ID	Location	Details	
5	473m SW	Incident Date: 14/02/2005 Incident Identification: 293395 Pollutant: Specific Waste Materials Pollutant Description: Asbestos	Water Impact: Category 4 (No Impact) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0
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The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

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

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

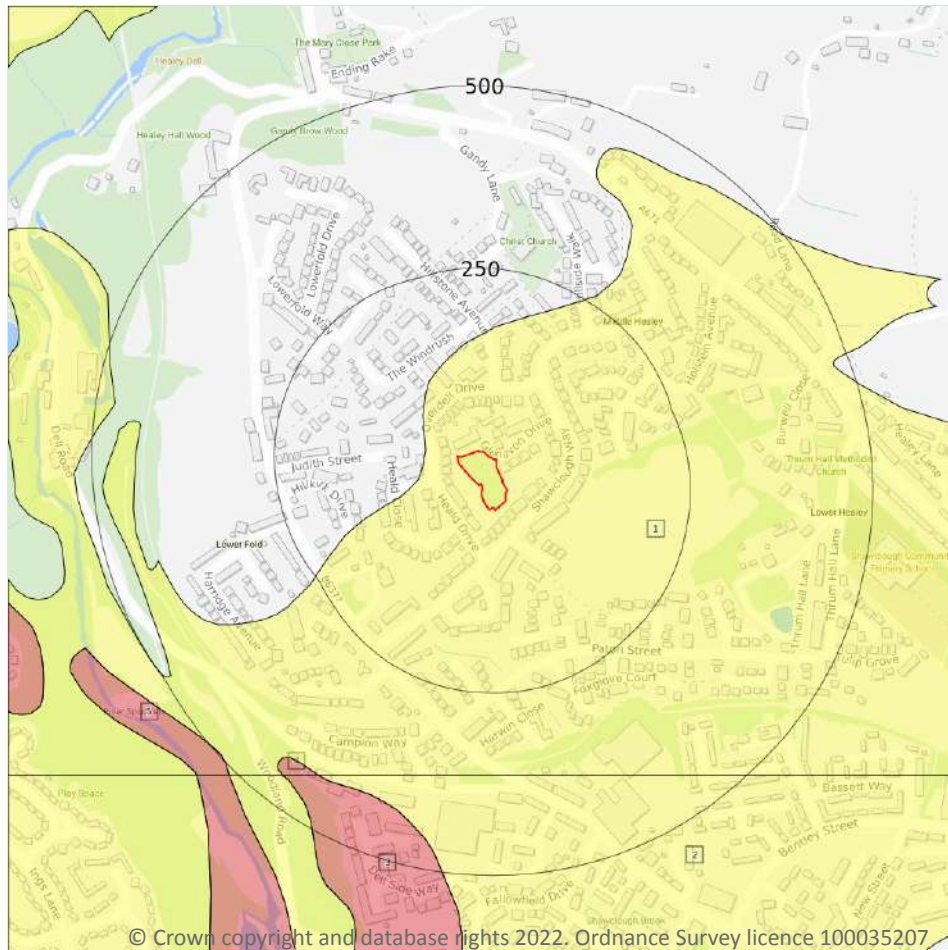
4.21 Pollution inventory radioactive waste

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

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



- Site Outline**
- Search buffers in metres (m)**
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

5

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 39**

ID	Location	Designation	Description
1	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
2	363m S	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

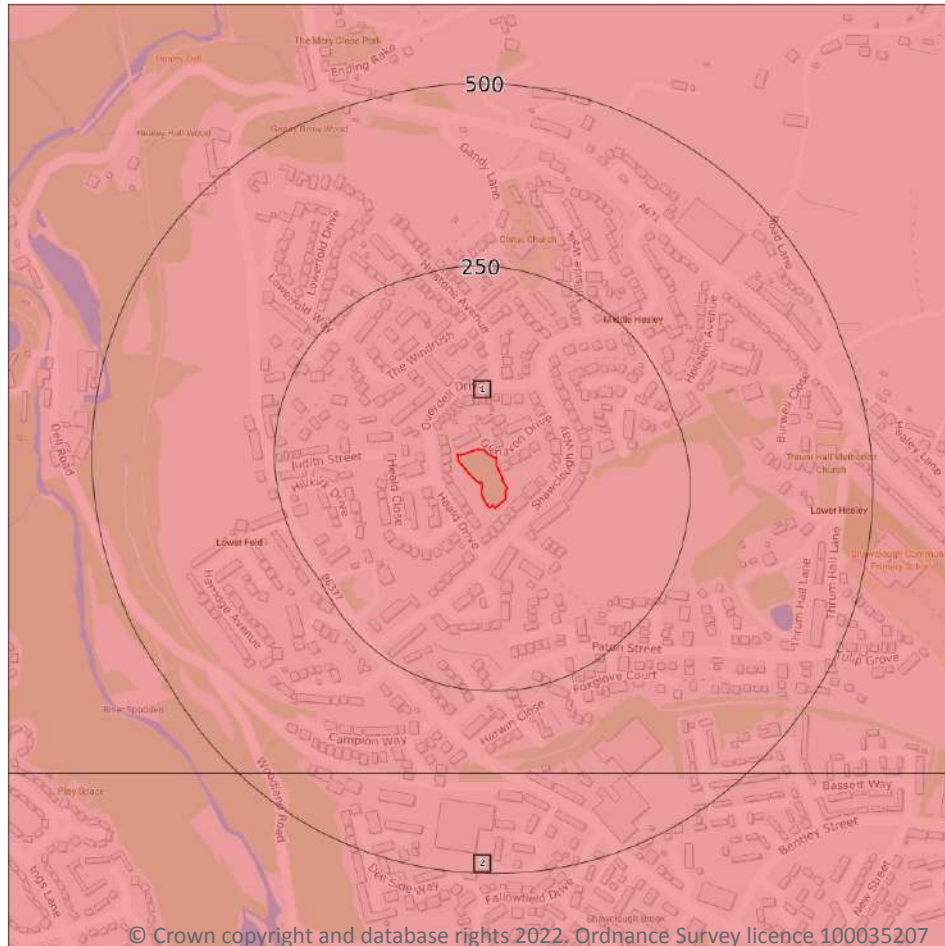


ID	Location	Designation	Description
3	422m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	432m SW	Secondary 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
5	497m SW	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

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

2

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 41**

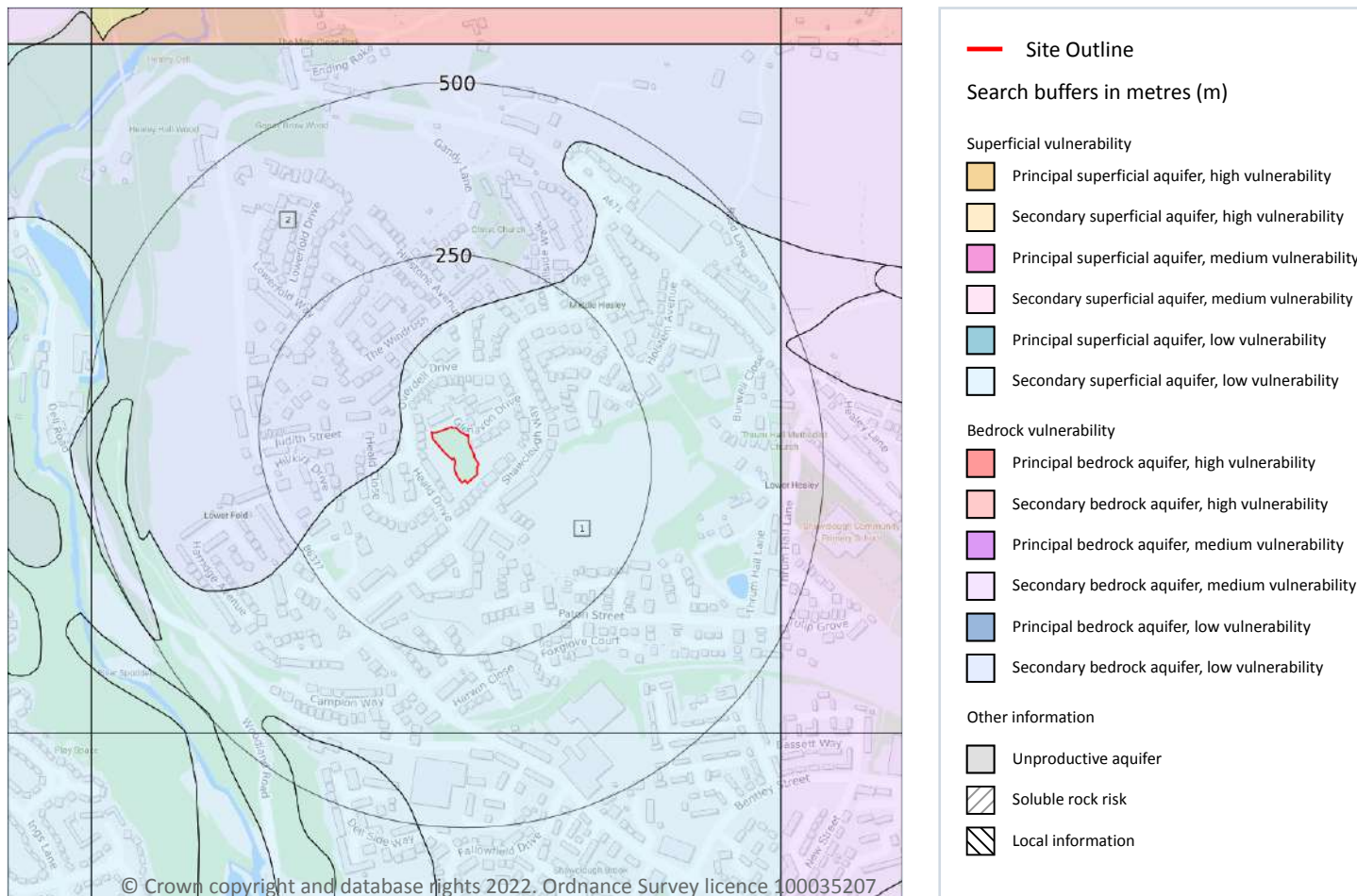
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	363m S	Secondary 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



This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 43**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
2	43m W	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site

0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site

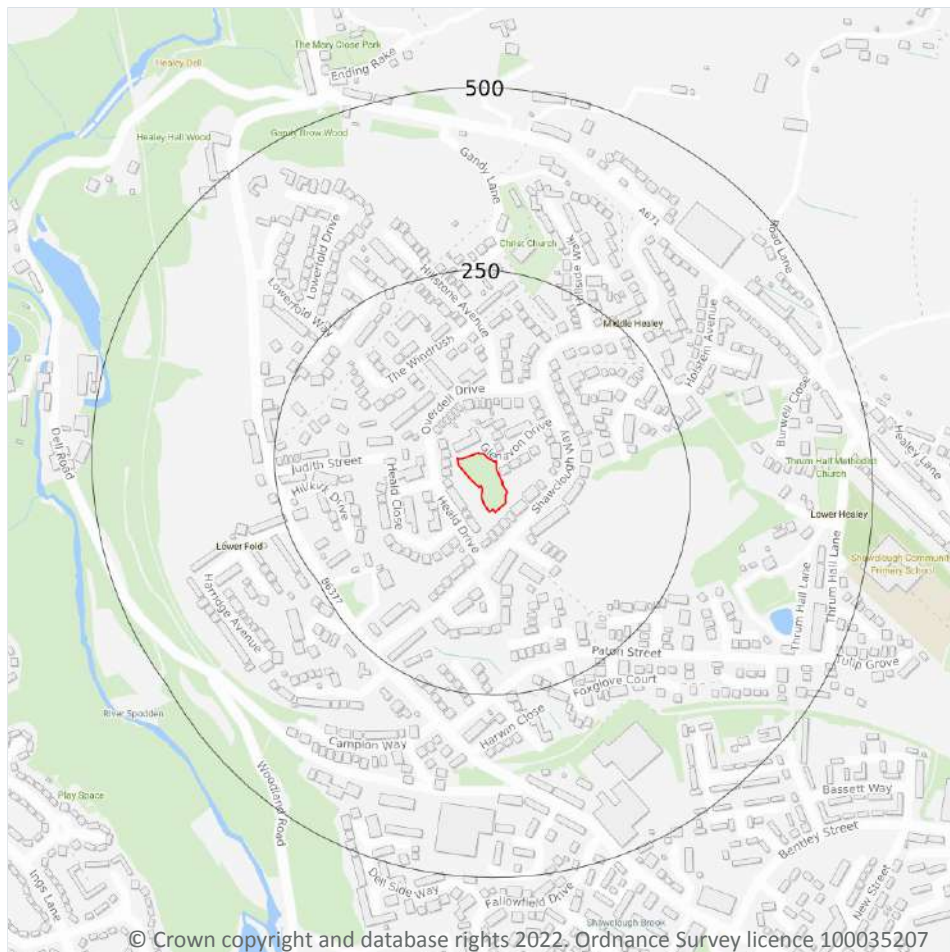
0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.



Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)
- 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
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

7

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 45**

ID	Location	Details	
-	1441m NW	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 Easting: 387290 Northing: 416230	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: -
-	1441m NW	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 Easting: 387290 Northing: 416230	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: -
-	1869m S	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 Easting: 388700 Northing: 413500	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: -
-	1869m S	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. Easting: 388700 Northing: 413500	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: -



ID	Location	Details	
-	1869m S	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 Easting: 388700 Northing: 413500	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: -
-	1889m NE	Status: Historical Licence No: 2569002155 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT MOORSIDE FARM, WARDLE, ROCHDALE, LANCASHIRE" Data Type: Point Name: ROWLEY Easting: 389600 Northing: 417000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date: -
-	1889m NE	Status: Historical Licence No: 2569002155 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT MOORSIDE FARM, WARDLE, ROCHDALE, LANCASHIRE Data Type: Point Name: ROWLEY Easting: 389600 Northing: 417000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m

18

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 45**



ID	Location	Details	
-	926m S	Status: Historical Licence No: 2569002018 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 Easting: 388200 Northing: 414500	Annual Volume (m ³): 1500211.393 Max Daily Volume (m ³): 4546.095 Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 11/04/1997 Version End Date: -
-	926m S	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 Easting: 388200 Northing: 414500	Annual Volume (m ³): 1500211.393 Max Daily Volume (m ³): 4546.095 Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 11/04/1997 Version End Date: -
-	926m S	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 Easting: 388200 Northing: 414500	Annual Volume (m ³): 1500211.393 Max Daily Volume (m ³): 4546.095 Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 11/04/1997 Version End Date: -
-	1277m SE	Status: Historical Licence No: 2569002268 Details: Non-Evaporative Cooling Direct Source: "Surface, Non-Tidal - North West Region" Point: "FOXHOLES BROOK AT FIELDHOUSE INDUSTRIAL ESTATE, ROCHDALE" Data Type: Point Name: RIVERSIDE TRADING LTD Easting: 389700 Northing: 414800	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 10/11/1998 Version End Date: -

ID	Location	Details	
-	1277m SE	Status: Historical Licence No: 2569002268 Details: Non-Evaporative Cooling Direct Source: Surface, Non-Tidal - North West Region Point: FOXHOLES BROOK AT FIELDHOUSE INDUSTRIAL ESTATE, ROCHDALE Data Type: Point Name: RIVERSIDE TRADING LTD Easting: 389700 Northing: 414800	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 10/11/1998 Version End Date: -
-	1303m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY*30" Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 389600 Northing: 416200	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: 22/03/1966 Version End Date: -
-	1303m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY*30 Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 389600 Northing: 416200	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: 22/03/1966 Version End Date: -
-	1303m NE	Status: Active Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY Data Type: Point Name: United Utilities Water Ltd Easting: 389600 Northing: 416200	Annual Volume (m ³): 5,909,800 Max Daily Volume (m ³): 5,909,800 Original Application No: 1592 Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/03/1966 Version End Date: -



ID	Location	Details	
-	1365m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY107 Data Type: Point Name: NORTH WEST WATER LTD Easting: 389600 Northing: 416300	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: 22/03/1966 Version End Date: -
-	1365m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY\$107" Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 389600 Northing: 416300	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: 22/03/1966 Version End Date: -
-	1365m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY\$107 Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 389600 Northing: 416300	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: 22/03/1966 Version End Date: -
-	1365m NE	Status: Active Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY Data Type: Point Name: United Utilities Water Ltd Easting: 389600 Northing: 416300	Annual Volume (m ³): 5,909,800 Max Daily Volume (m ³): 5,909,800 Original Application No: 1592 Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/03/1966 Version End Date: -



ID	Location	Details	
-	1637m E	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY[12]" Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 390200 Northing: 415400	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: 22/03/1966 Version End Date: -
-	1637m E	Status: Active Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY[12] Data Type: Point Name: United Utilities Water Ltd Easting: 390200 Northing: 415400	Annual Volume (m ³): 5,909,800 Max Daily Volume (m ³): 5,909,800 Original Application No: 1592 Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/03/1966 Version End Date: -
-	1800m NW	Status: Historical Licence No: 2569002127 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: SPRING MILL RESERVOIR AND COWM RESERVOIR AT WHITWORTH Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 387600 Northing: 417000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 24/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1969 Version End Date: -
-	1800m NW	Status: Active Licence No: 2569002127 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: SPRING MILL RESERVOIR AND COWM RESERVOIR AT WHITWORTH Data Type: Point Name: United Utilities Water Ltd Easting: 387600 Northing: 417000	Annual Volume (m ³): 4,318,700 Max Daily Volume (m ³): 4,318,700 Original Application No: 1781 Original Start Date: 24/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1969 Version End Date: -

ID	Location	Details	
-	1959m N	Status: Historical Licence No: 2569002066 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: R SPODDEN AT WHITWORTH, LANCS Data Type: Point Name: GUARDIAN CONTRACTS LTD Easting: 388400 Northing: 417400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 03/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 19/10/2000 Version End Date: -
-	1959m N	Status: Historical Licence No: 2569002066 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "R SPODDEN AT WHITWORTH, LANCS" Data Type: Point Name: GUARDIAN CONTRACTS LTD Easting: 388400 Northing: 417400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 03/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 19/10/2000 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m

11

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 45**

ID	Location	Details	
-	1303m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY*30" Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 389600 Northing: 416200	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: 22/03/1966 Version End Date: -



ID	Location	Details	
-	1303m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY*30 Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 389600 Northing: 416200	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: 22/03/1966 Version End Date: -
-	1303m NE	Status: Active Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY Data Type: Point Name: United Utilities Water Ltd Easting: 389600 Northing: 416200	Annual Volume (m ³): 5,909,800 Max Daily Volume (m ³): 5,909,800 Original Application No: 1592 Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/03/1966 Version End Date: -
-	1365m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY107 Data Type: Point Name: NORTH WEST WATER LTD Easting: 389600 Northing: 416300	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: 22/03/1966 Version End Date: -
-	1365m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY\$107" Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 389600 Northing: 416300	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: 22/03/1966 Version End Date: -



ID	Location	Details	
-	1365m NE	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY\$107 Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 389600 Northing: 416300	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: 22/03/1966 Version End Date: -
-	1365m NE	Status: Active Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY Data Type: Point Name: United Utilities Water Ltd Easting: 389600 Northing: 416300	Annual Volume (m ³): 5,909,800 Max Daily Volume (m ³): 5,909,800 Original Application No: 1592 Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/03/1966 Version End Date: -
-	1637m E	Status: Historical Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY[12]" Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 390200 Northing: 415400	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: 22/03/1966 Version End Date: -
-	1637m E	Status: Active Licence No: 2569002193 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: WATERGROVE, BROWN HOUSE WHAM, HAMER PASTURE AND BUCKLEY[12] Data Type: Point Name: United Utilities Water Ltd Easting: 390200 Northing: 415400	Annual Volume (m ³): 5,909,800 Max Daily Volume (m ³): 5,909,800 Original Application No: 1592 Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/03/1966 Version End Date: -



ID	Location	Details	
-	1800m NW	Status: Historical Licence No: 2569002127 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: SPRING MILL RESERVOIR AND COWM RESERVOIR AT WHITWORTH Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 387600 Northing: 417000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 24/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1969 Version End Date: -
-	1800m NW	Status: Active Licence No: 2569002127 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: SPRING MILL RESERVOIR AND COWM RESERVOIR AT WHITWORTH Data Type: Point Name: United Utilities Water Ltd Easting: 387600 Northing: 417000	Annual Volume (m ³): 4,318,700 Max Daily Volume (m ³): 4,318,700 Original Application No: 1781 Original Start Date: 24/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1969 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0
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Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0
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Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ... WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

2

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 56**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	199m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Shawclough Brook

ID	Location	Type of water feature	Ground level	Permanence	Name
B	247m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	Shawclough Brook

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	1
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Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 56**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1
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The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 56**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	On site	River	Spodden	GB112069064730	Roch Irk Medlock	Irwell

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1
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Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.



Features are displayed on the Hydrology map on **page 56**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	530m W	River	Spodden	<u>GB112069064730</u>	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site

1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 56**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	On site	Northern Manchester Carboniferous Aquifers	<u>GB41202G101800</u>	Poor	Poor	Good	2019

This data is sourced from the Environment Agency and Natural Resources Wales.



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m**0**

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0
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Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

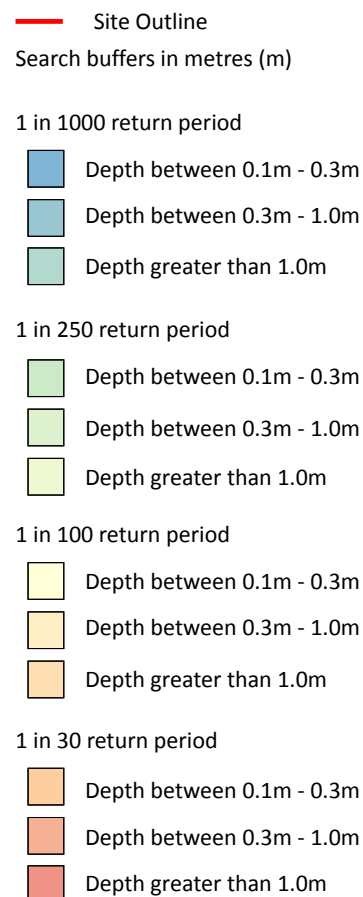
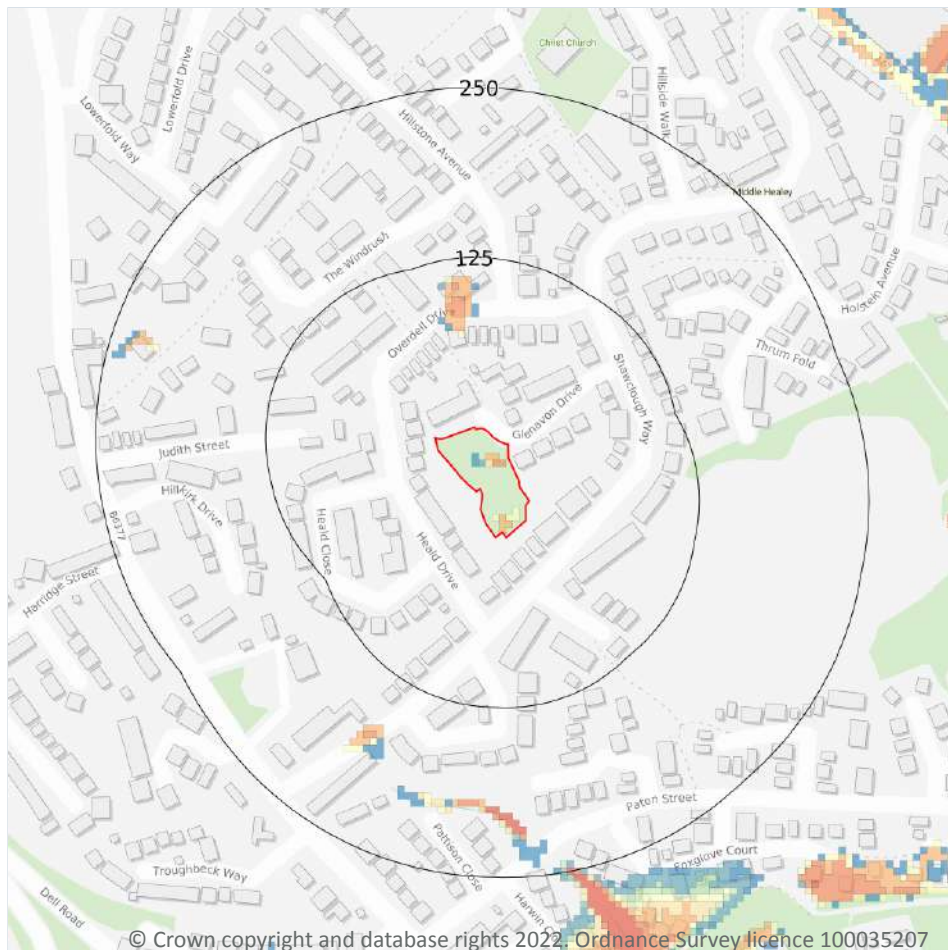
Records within 50m	0
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Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

1 in 30 year, 0.3m - 1.0m

Highest risk within 50m

1 in 30 year, 0.3m - 1.0m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 62**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



— Site Outline
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

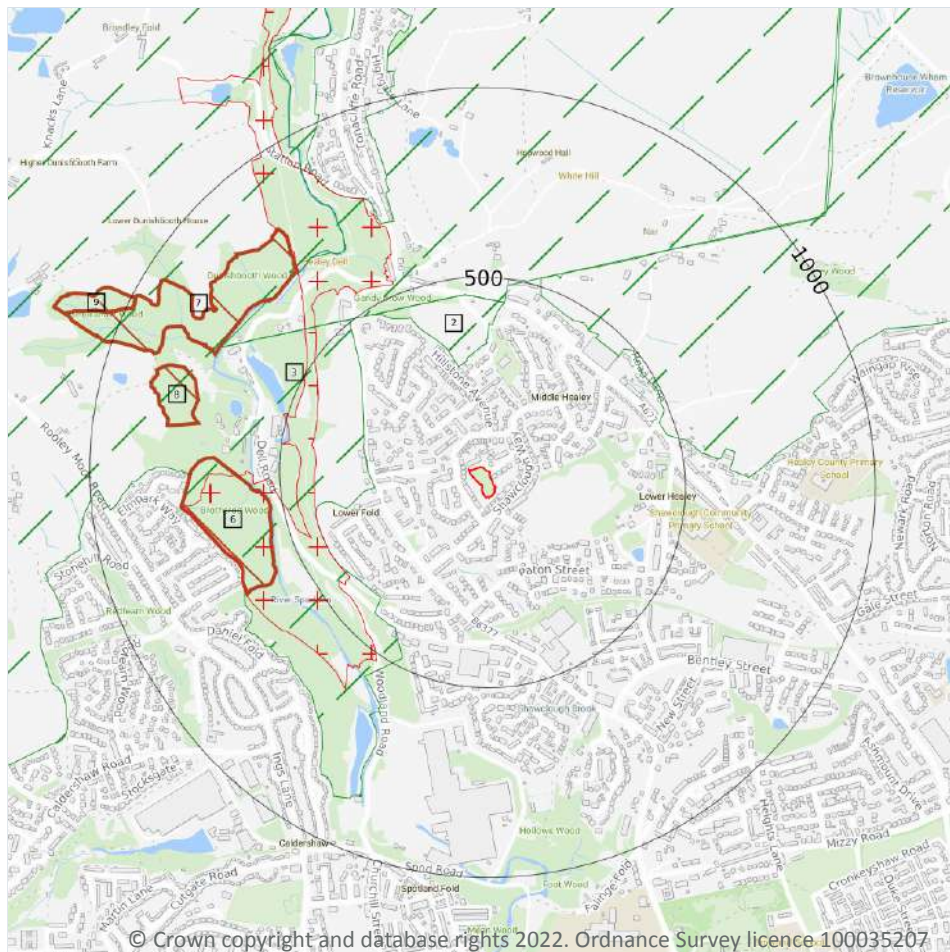
Low

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 64**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- + Local Nature Reserves (LNR)
- ▨ Designated Ancient Woodland
- ▨ Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m**0**

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m

1

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 65**

ID	Location	Name	Data source
3	404m W	Healey Dell	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

4

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 65**

ID	Location	Name	Woodland Type
6	532m W	Unknown	Ancient & Semi-Natural Woodland
7	684m NW	Unknown	Ancient & Semi-Natural Woodland
8	724m W	Unknown	Ancient & Semi-Natural Woodland
9	983m NW	Unknown	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m

5

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 65**

ID	Location	Name	Local Authority name
1	254m W	Merseyside and Greater Manchester	Rochdale
2	269m N	Merseyside and Greater Manchester	Rochdale
4	438m N	Merseyside and Greater Manchester	Rossendale
5	450m NE	Merseyside and Greater Manchester	Rochdale
-	1630m NW	Merseyside and Greater Manchester	Rossendale

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.



10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m**0**

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m**0**

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m**0**

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

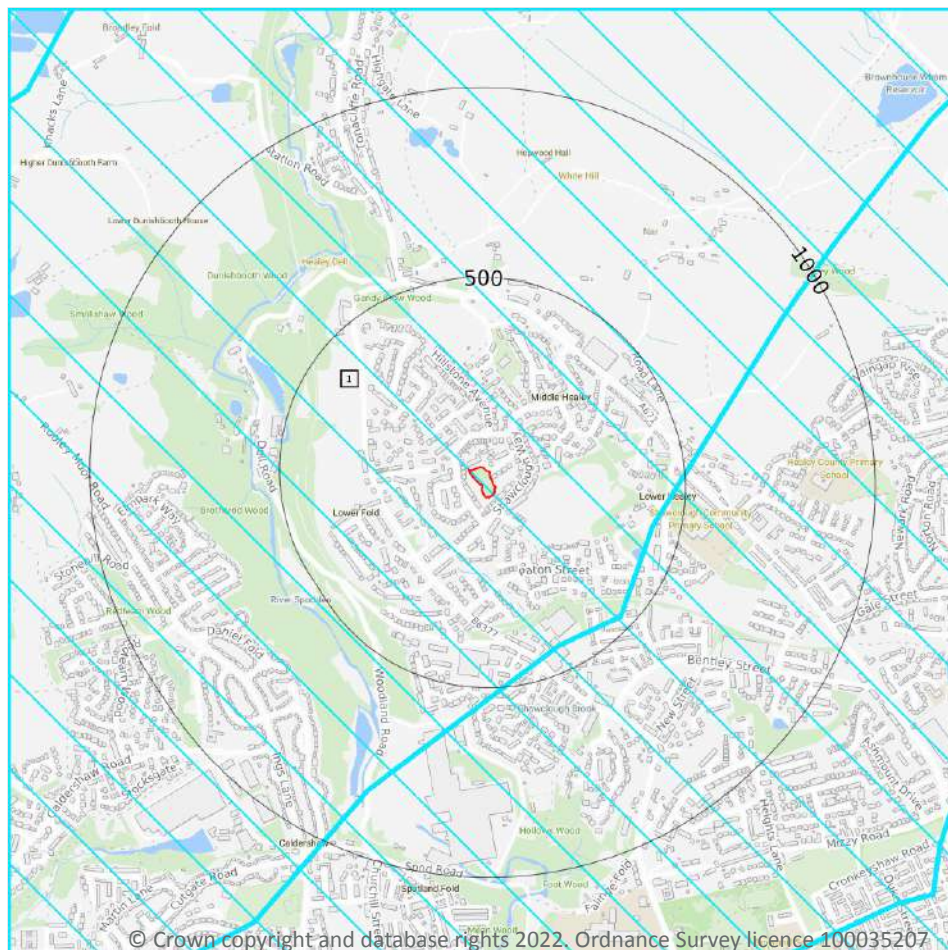
Records within 2000m**0**

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.



SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 70**

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Any industrial/agricultural development that could cause air pollution (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t). Combustion - General combustion processes >50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

This data is sourced from Natural England.

10.18 SSSI Units

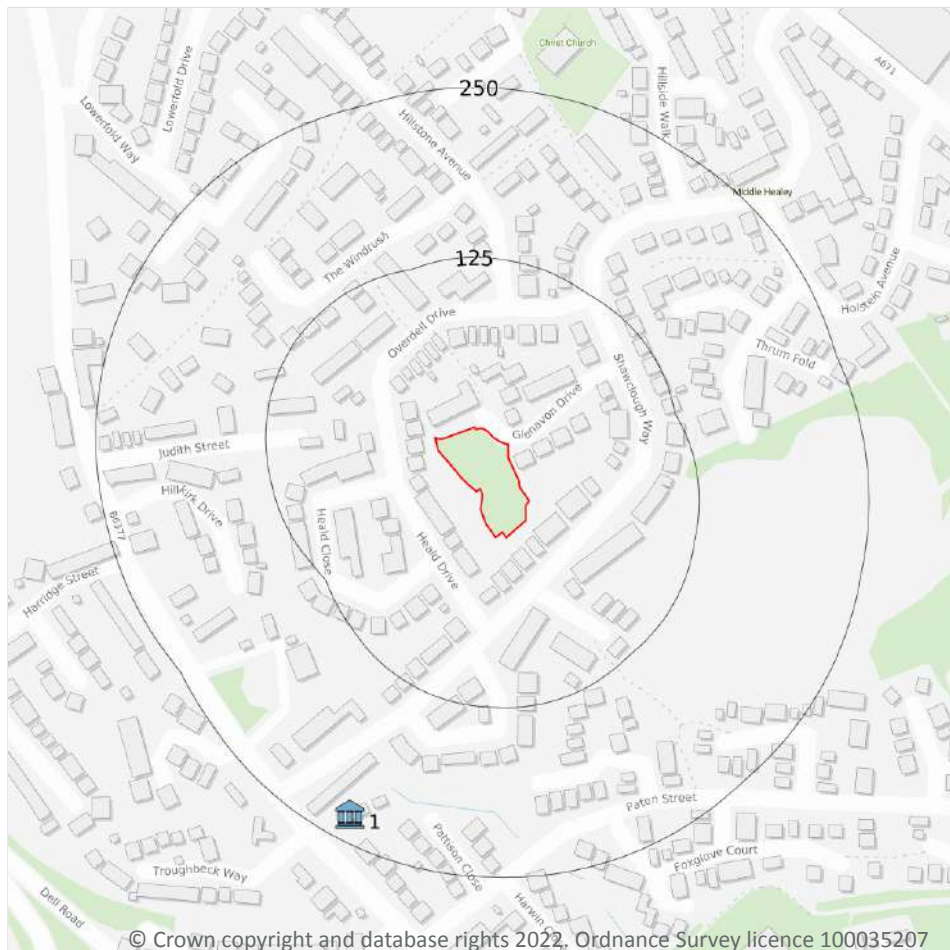
Records within 2000m	0
-----------------------------	----------

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

1

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 72**

ID	Location	Name	Grade	Reference Number	Listed date
1	230m SW	Duffins Cottage, Healey, Rochdale, OL12	II	1084250	12/02/1985

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



11.5 Conservation Areas

Records within 250m

0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

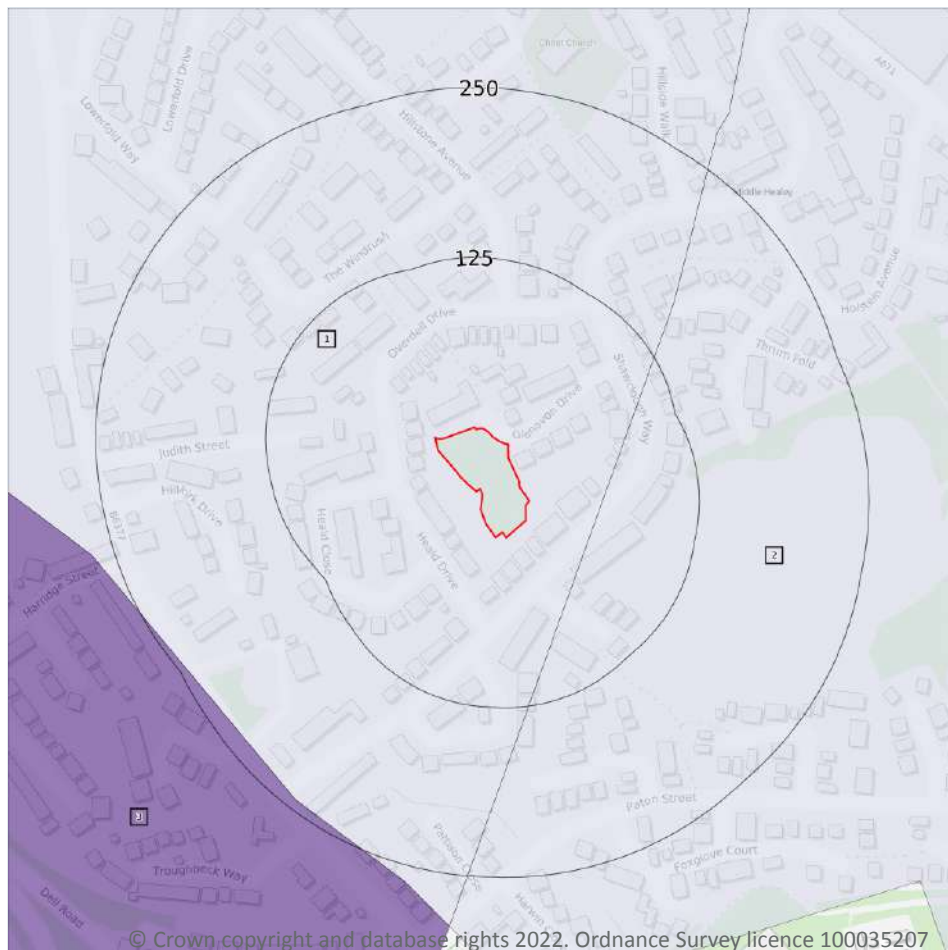
0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

3

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 75**

ID	Location	Classification	Description
1	On site	Grade 4	Poor quality agricultural land. Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

ID	Location	Classification	Description
2	48m E	Grade 4	Poor quality agricultural land. Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.
3	237m SW	Urban	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m

0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m

0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m

0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.



13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m

0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

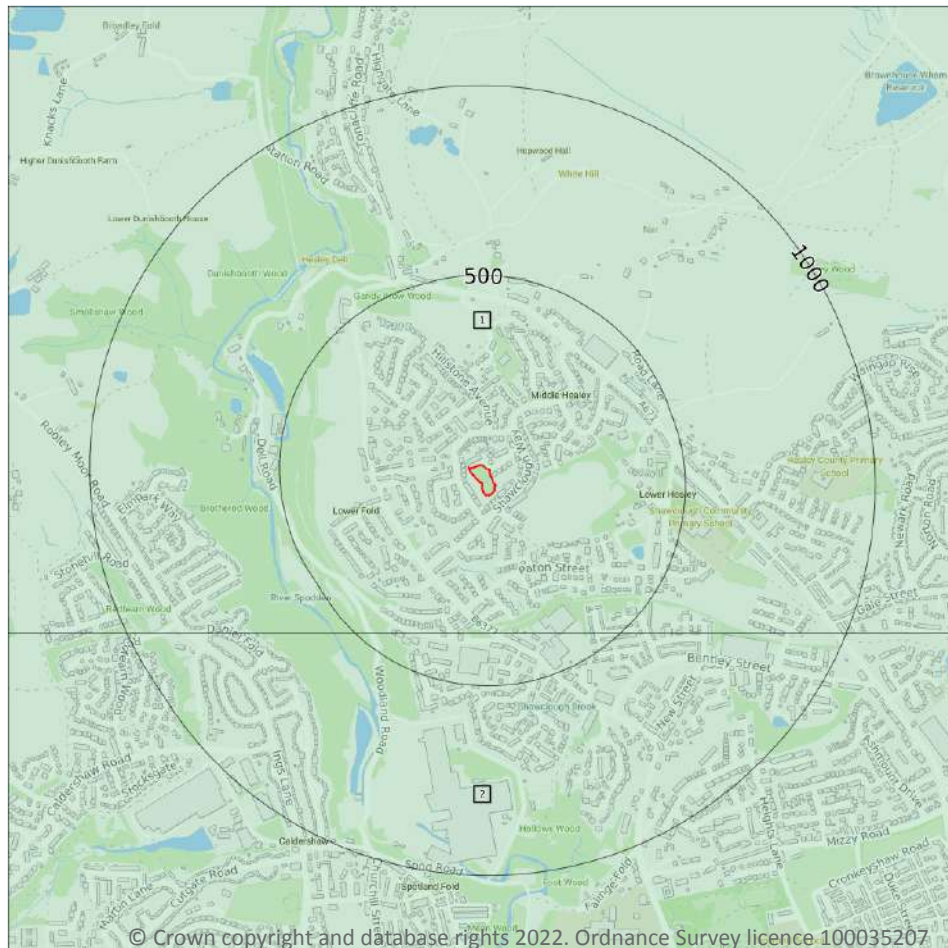
0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

2

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

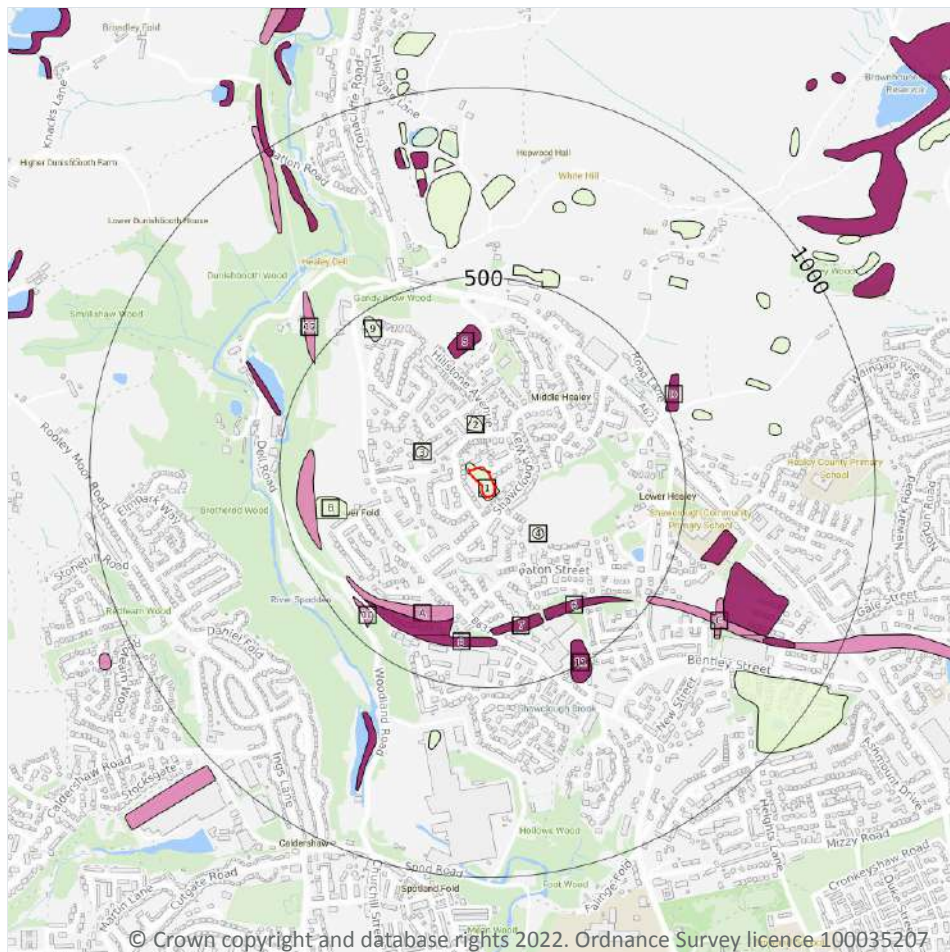
Features are displayed on the Geology 1:10,000 scale - Availability map on **page 79**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	SD81NE
2	363m S	Full	Full	Full	Full	SD81SE

This data is sourced from the British Geological Survey.



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



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

14.2 Artificial and made ground (10k)

Records within 500m

18

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

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 80**

ID	Location	LEX Code	Description	Rock description
1	On site	WMGR-ARTDP	Infilled Ground	Artificial Deposit
2	92m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	117m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	142m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit

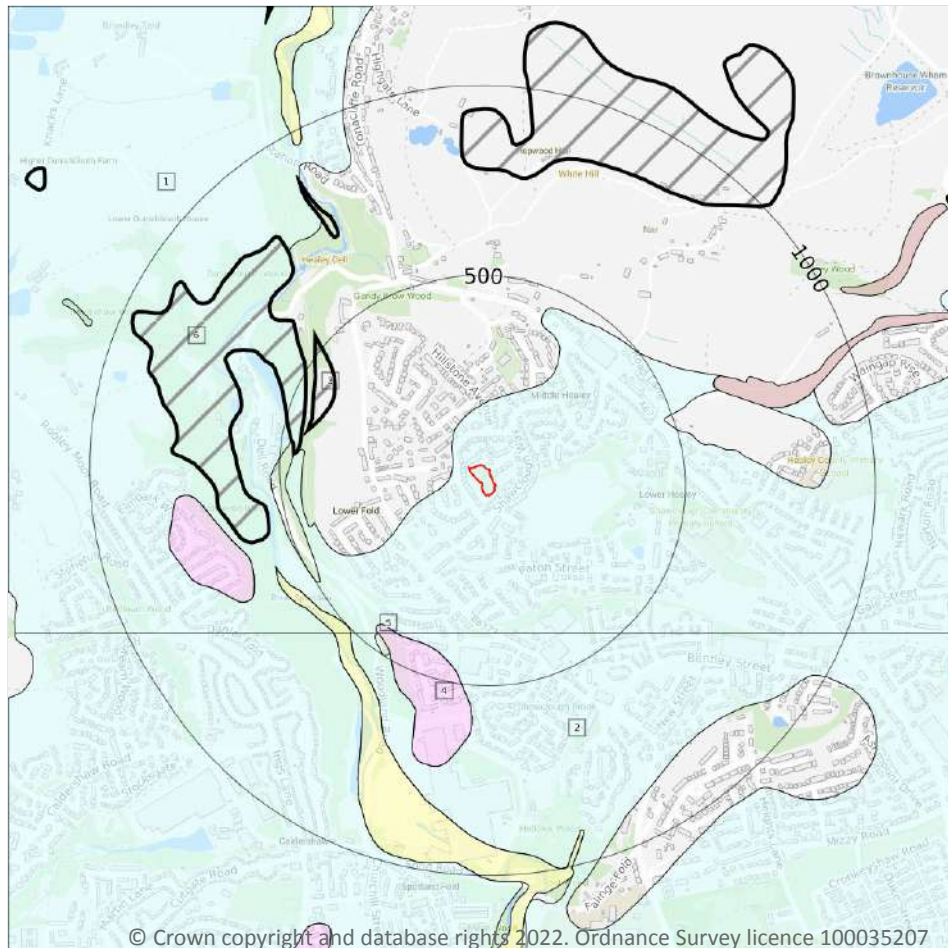


ID	Location	LEX Code	Description	Rock description
5	293m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	298m S	WGR-VOID	Worked Ground (Undivided)	Void
6	327m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	329m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	330m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	334m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
8	367m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	408m W	WGR-VOID	Worked Ground (Undivided)	Void
9	417m NW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
10	426m SW	WGR-VOID	Worked Ground (Undivided)	Void
11	436m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
C	488m SE	WGR-VOID	Worked Ground (Undivided)	Void
D	492m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
12	494m NW	WGR-VOID	Worked Ground (Undivided)	Void

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m

4

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 82**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	363m S	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
4	422m SW	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel



ID	Location	LEX Code	Description	Rock description
5	432m SW	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

2

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

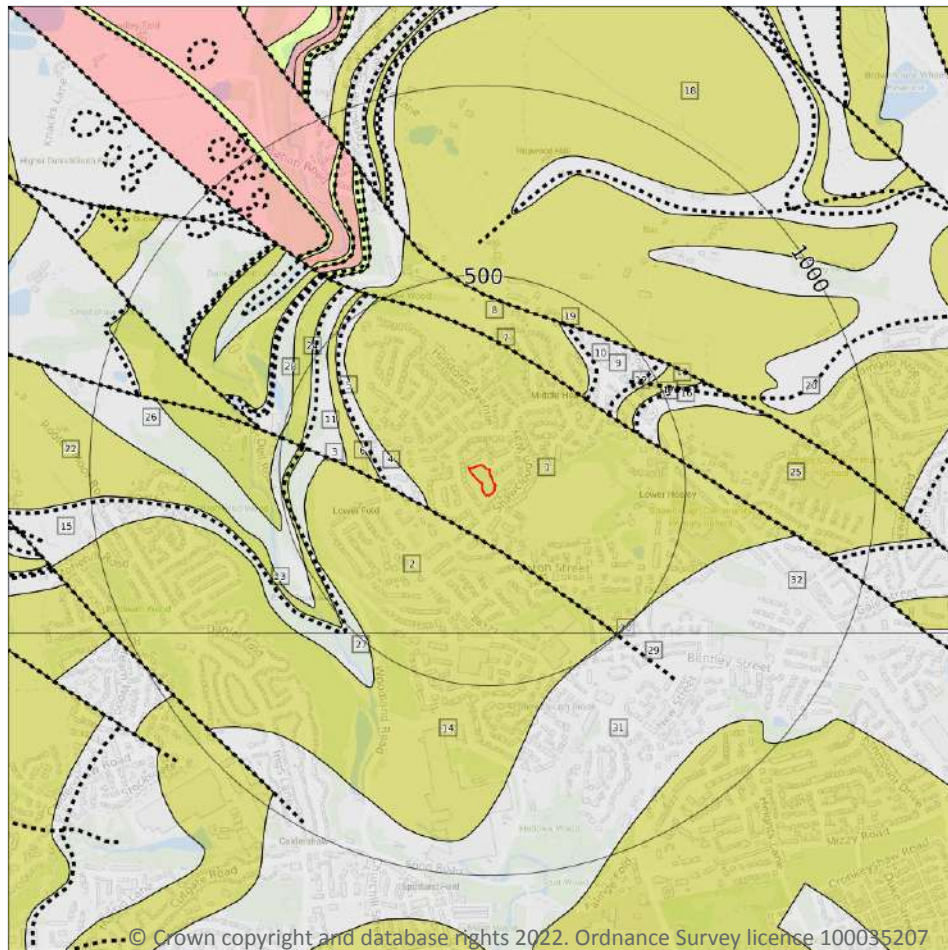
Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 82**

ID	Location	LEX Code	Description	Rock description
3	401m NW	SLIP-UNKNOWN	Landslide Deposits	Unknown/unclassified Entry
6	451m W	SLIP-UNKNOWN	Landslide Deposits	Unknown/unclassified Entry

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

..... Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m

21

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 84**

ID	Location	LEX Code	Description	Rock age
1	On site	MLRS-SDST	Milnrow Sandstone - Sandstone	Langsettian Sub-age
2	107m SW	MLRS-SDST	Milnrow Sandstone - Sandstone	Langsettian Sub-age
4	137m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age



ID	Location	LEX Code	Description	Rock age
6	232m W	DF-SDST	Darwen Flags - Sandstone	Langsettian Sub-age
8	297m NE	WH-SDST	Woodhead Hill Rock - Sandstone	Langsettian Sub-age
9	311m NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
11	323m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
13	360m E	GAS-SDST	Great Arc Sandstone - Sandstone	Langsettian Sub-age
14	363m S	MLRS-SDST	Milnrow Sandstone - Sandstone	Langsettian Sub-age
15	378m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
16	392m E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
18	423m N	HER-SDST	Helpet Edge Rock - Sandstone	Langsettian Sub-age
22	433m W	DF-SDST	Darwen Flags - Sandstone	Langsettian Sub-age
24	445m W	HER-SDST	Helpet Edge Rock - Sandstone	Langsettian Sub-age
25	446m E	HER-SDST	Helpet Edge Rock - Sandstone	Langsettian Sub-age
26	450m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
27	485m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
28	490m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
30	492m SE	MLRS-SDST	Milnrow Sandstone - Sandstone	Langsettian Sub-age
31	493m SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
32	496m SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age

This data is sourced from the British Geological Survey.



14.6 Bedrock faults and other linear features (10k)

Records within 500m

11

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

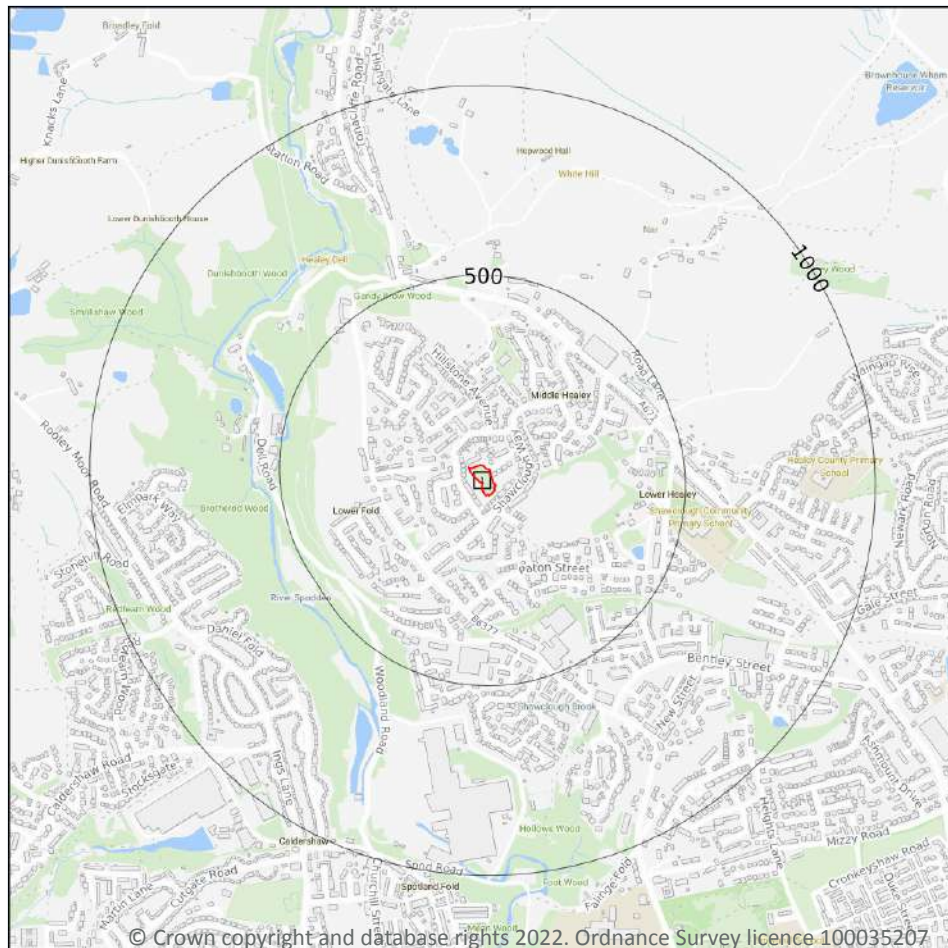
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 84**

ID	Location	Category	Description
3	107m SW	FAULT	Normal fault, inferred
5	219m W	FOSSIL_HORIZON	Fossil horizon, marine band
7	297m NE	FAULT	Normal fault, inferred
10	315m NE	ROCK	Coal seam, inferred
12	346m NE	ROCK	Coal seam, inferred
17	398m E	ROCK	Coal seam, inferred
19	423m N	FAULT	Normal fault, inferred
20	427m NE	LANDFORM	Glacial meltwater channel, undifferentiated, centre line
21	430m W	ROCK	Coal seam, inferred
23	442m W	FOSSIL_HORIZON	Fossil horizon, marine band
29	492m SE	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline

Search buffers in metres (m)

□ Geological map tile

15.1 50k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 87**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	Full	EW076_rochdale_v4

This data is sourced from the British Geological Survey.

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

15.2 Artificial and made ground (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

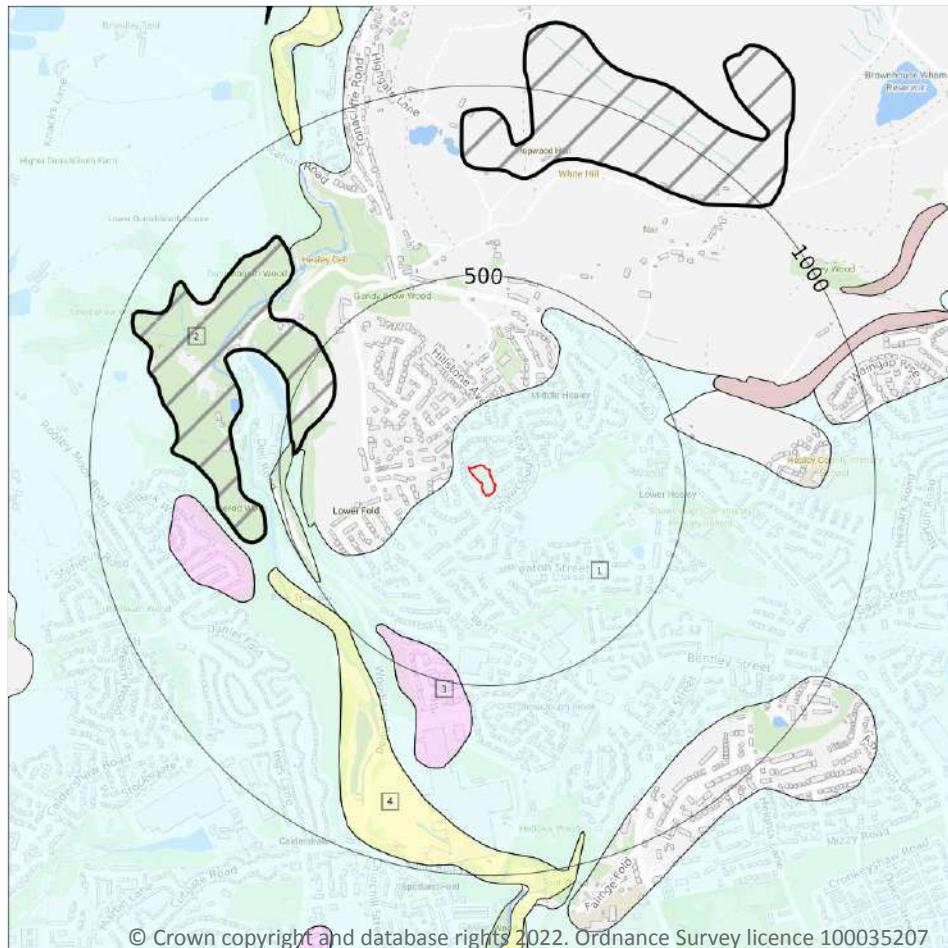
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m

3

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 89**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	422m SW	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
4	497m SW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL



This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m

1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 89**

ID	Location	LEX Code	Description	Rock description
2	401m NW	SLIP-UNKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

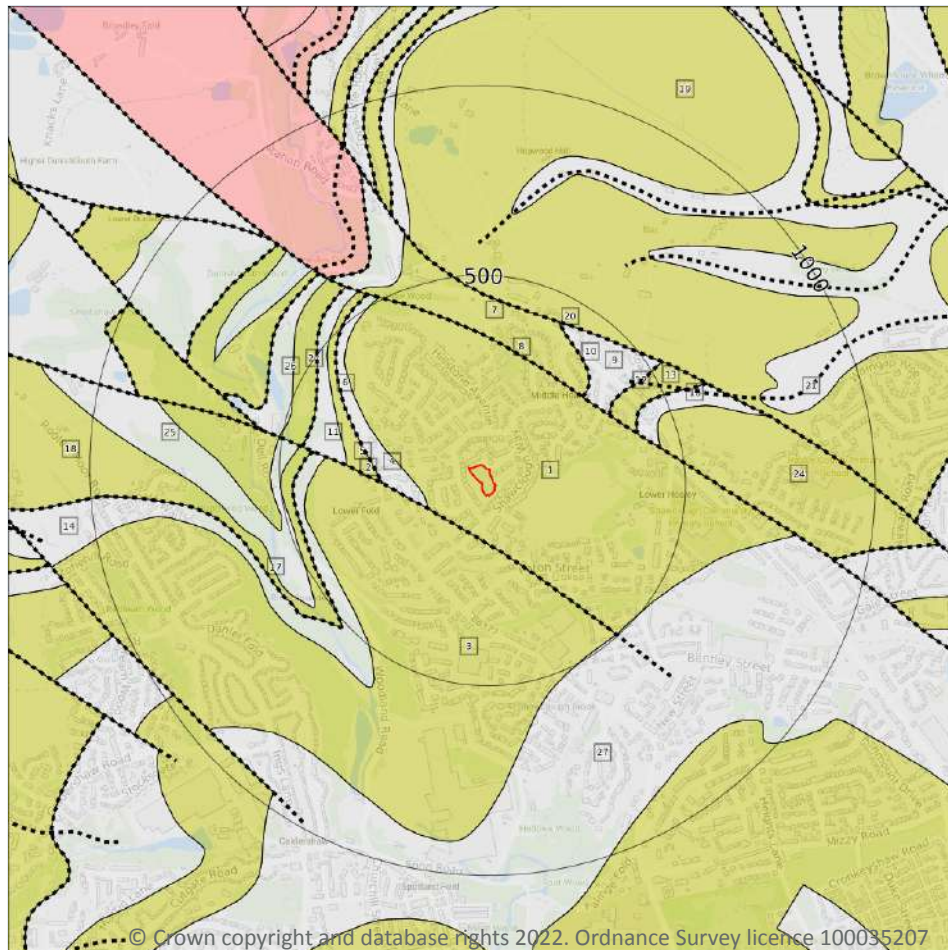
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

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

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

15.8 Bedrock geology (50k)

Records within 500m

17

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 91**

ID	Location	LEX Code	Description	Rock age
1	On site	MLRS-SDST	MILNROW SANDSTONE - SANDSTONE	WESTPHALIAN
3	107m SW	MLRS-SDST	MILNROW SANDSTONE - SANDSTONE	WESTPHALIAN
4	137m SW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
5	232m W	DF-SDST	DARWEN FLAGS - SANDSTONE	WESTPHALIAN
7	298m NE	WH-SDST	WOODHEAD HILL ROCK - SANDSTONE	WESTPHALIAN
9	311m NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
11	323m W	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
13	347m NE	GAS-SDST	GREAT ARC SANDSTONE - SANDSTONE	WESTPHALIAN
14	378m W	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
16	398m E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
18	414m W	DF-SDST	DARWEN FLAGS - SANDSTONE	WESTPHALIAN
19	423m N	HER-SDST	HELPET EDGE ROCK - SANDSTONE	WESTPHALIAN
22	429m W	HER-SDST	HELPET EDGE ROCK - SANDSTONE	WESTPHALIAN
24	446m E	HER-SDST	HELPET EDGE ROCK - SANDSTONE	WESTPHALIAN
25	450m W	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
26	490m W	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
27	493m SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

1

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

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

This data is sourced from the British Geological Survey.



15.10 Bedrock faults and other linear features (50k)

Records within 500m

10

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 91**

ID	Location	Category	Description
2	107m SW	FAULT	Fault, inferred
6	232m W	FOSSIL_HORIZON	Marine band
8	298m NE	FAULT	Fault, inferred
10	311m NE	ROCK	Coal seam, inferred
12	347m NE	ROCK	Coal seam, inferred
15	398m E	ROCK	Coal seam, inferred
17	414m W	FOSSIL_HORIZON	Marine band
20	423m N	FAULT	Fault, inferred
21	427m NE	LANDFORM	Glacial meltwater channel centre line, undifferentiated
23	429m W	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.



16 Boreholes

16.1 BGS Boreholes

Records within 250m

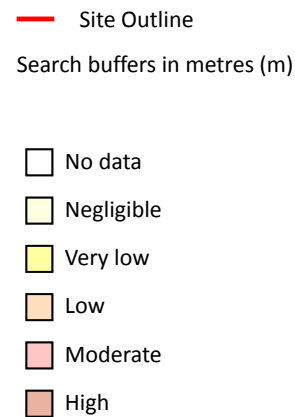
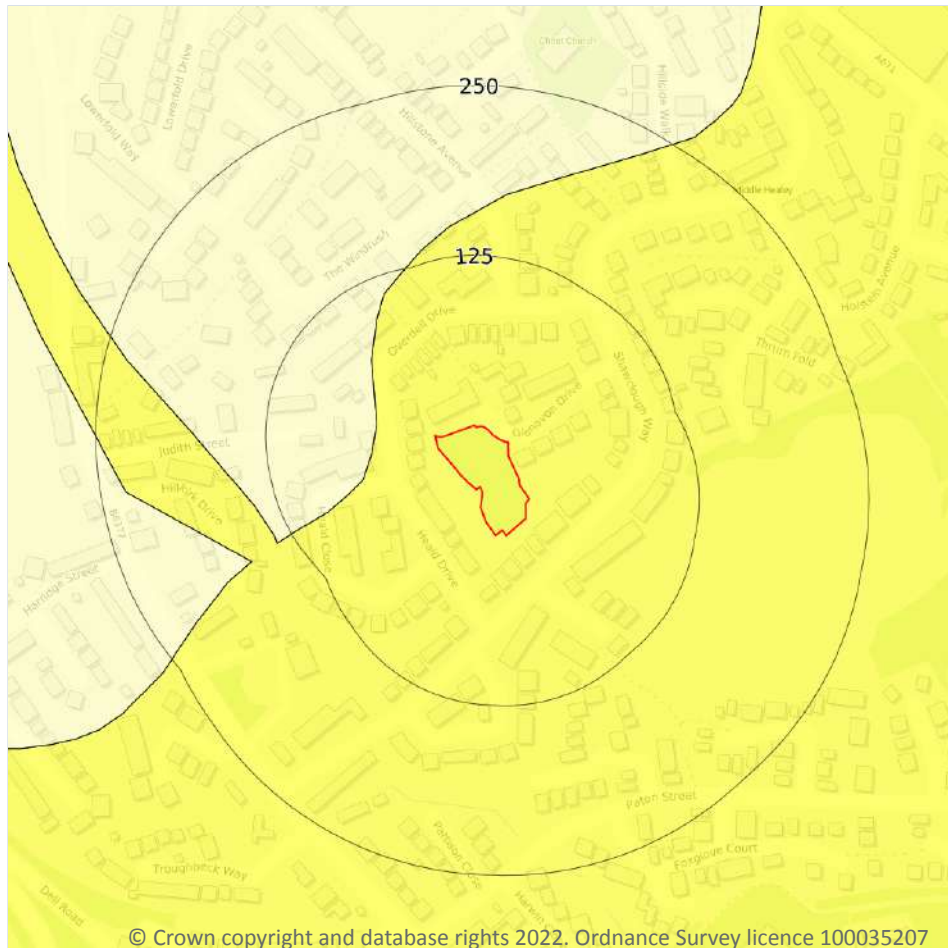
0

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

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m

2

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

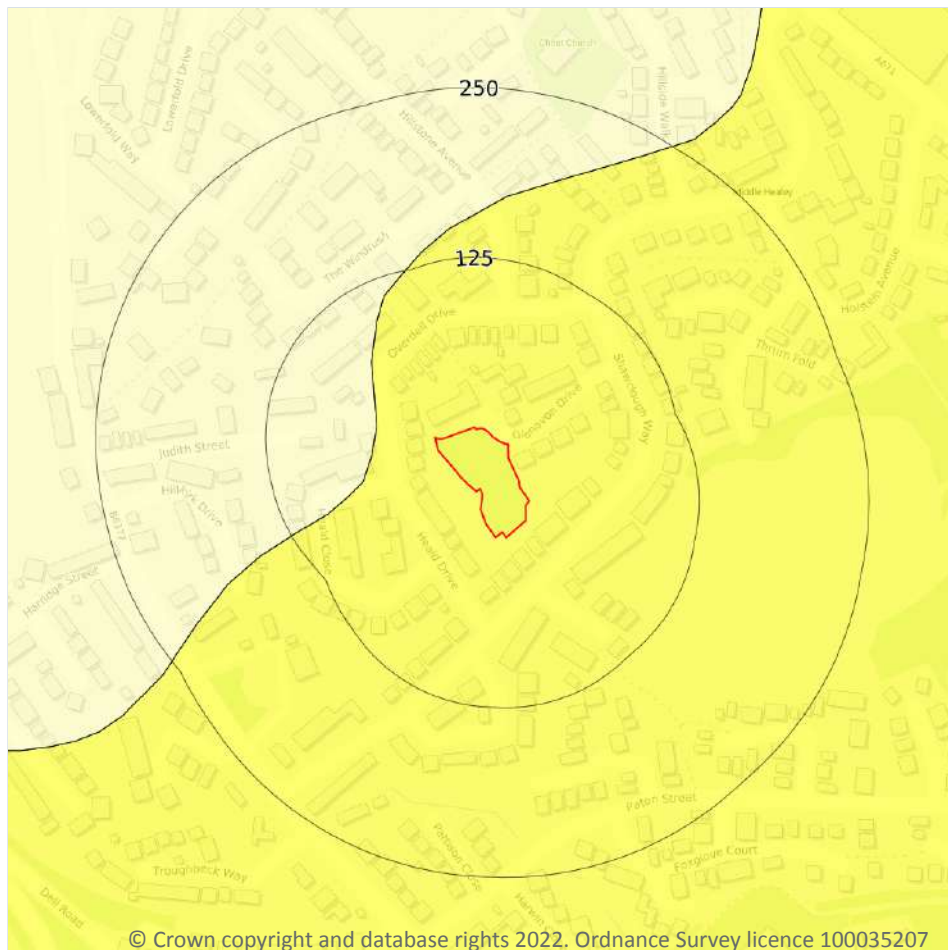
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 95**

Location	Hazard rating	Details
On site	Very low	Ground conditions predominantly low plasticity.
44m W	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



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

17.2 Running sands

Records within 50m

2

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

Features are displayed on the Natural ground subsidence - Running sands map on **page 96**

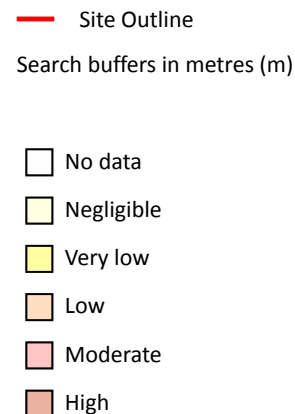
Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

Location	Hazard rating	Details
44m W	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



17.3 Compressible deposits

Records within 50m

1

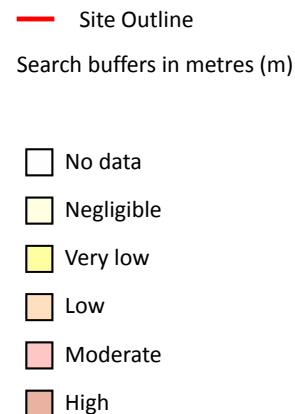
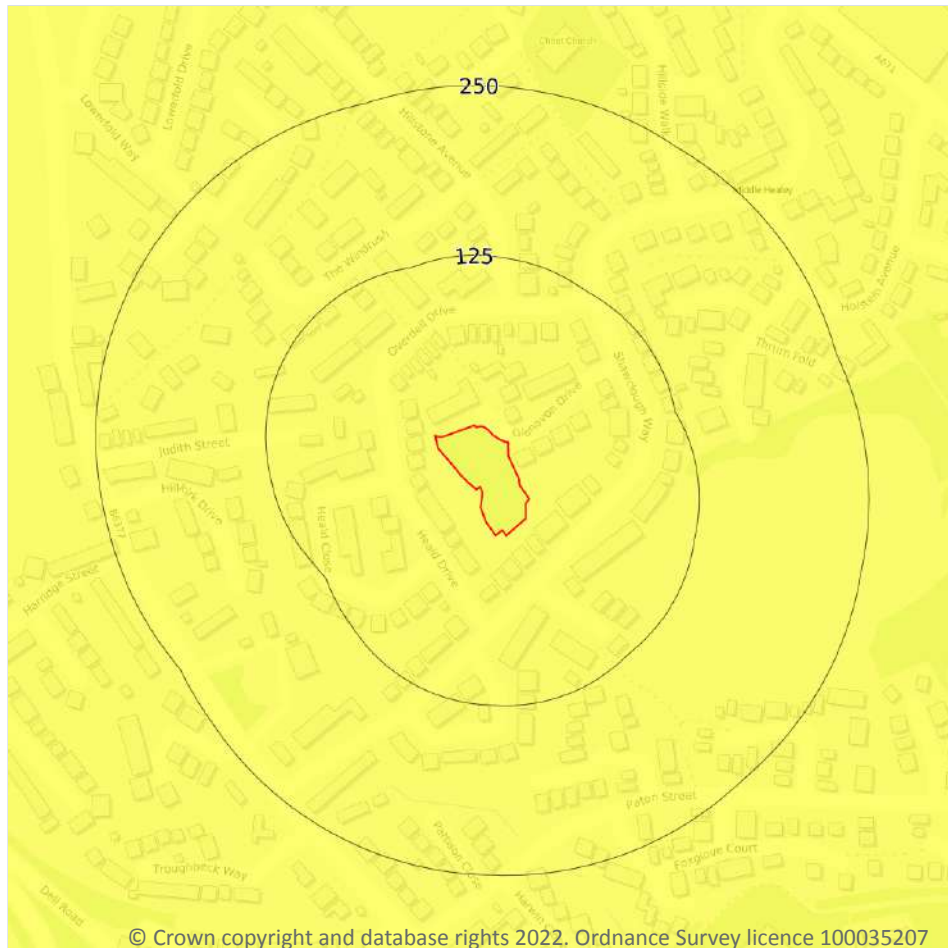
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 98**

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



17.4 Collapsible deposits

Records within 50m

1

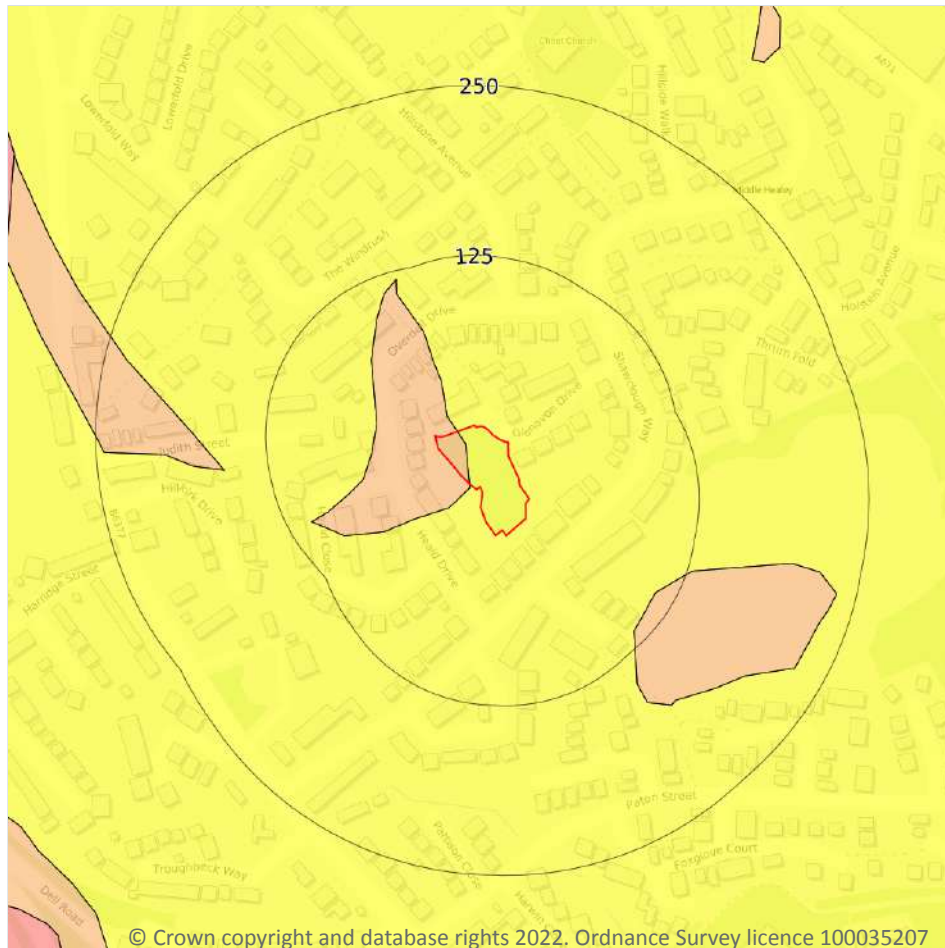
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 99**

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



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

17.5 Landslides

Records within 50m

2

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

Features are displayed on the Natural ground subsidence - Landslides map on **page 100**

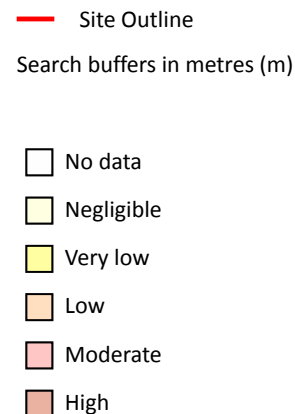
Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

Location	Hazard rating	Details
On site	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

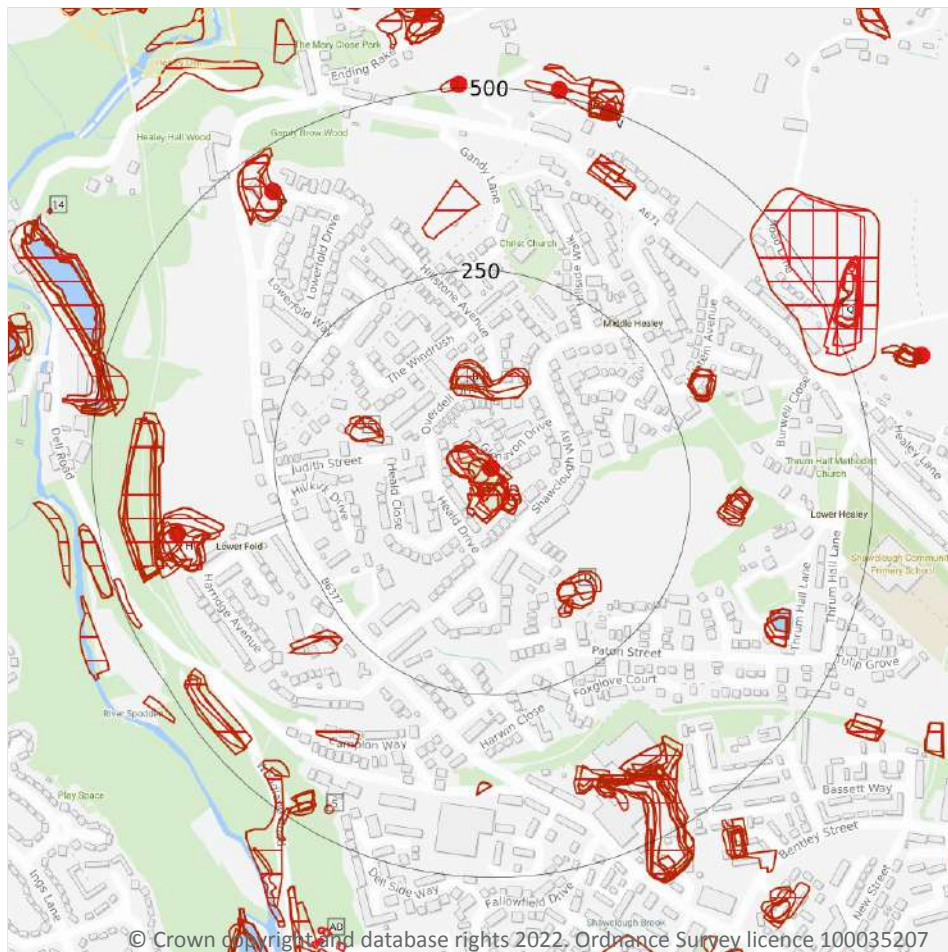
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 102**

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

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m

0

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

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m

4

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 104**

ID	Location	Details	Description
A	On site	Name: Healey Cottage Address: Healey, ROCHDALE, Lancashire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
H	396m W	Name: Lower Fold Address: Healey, ROCHDALE, Lancashire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
P	444m NW	Name: Healey Hall Cottage Address: Healey, ROCHDALE, Lancashire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
V	497m N	Name: White Hill Farm Address: Broadley, ROCHDALE, Lancashire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.



18.3 Surface ground workings

Records within 250m

33

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 104**

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Unspecified Ground Workings	1938	1:10560
A	On site	Unspecified Ground Workings	1928	1:10560
A	On site	Unspecified Heap	1928	1:10560
A	On site	Unspecified Heap	1909	1:10560
A	On site	Pond	1967	1:10560
A	On site	Pond	1949	1:10560
A	On site	Unspecified Heap	1967	1:10560
A	On site	Pond	1928	1:10560
A	On site	Unspecified Old Quarries	1909	1:10560
A	On site	Pond	1909	1:10560
A	On site	Unspecified Quarry	1890	1:10560
A	On site	Pond	1890	1:10560
A	On site	Sandstone Quarry	1851	1:10560
A	On site	Unspecified Heap	1949	1:10560
A	On site	Unspecified Pit	1949	1:10560
A	3m E	Unspecified Heap	1967	1:10560
B	75m N	Unspecified Pits	1928	1:10560
B	77m N	Unspecified Pits	1938	1:10560
B	77m N	Unspecified Old Quarries	1909	1:10560
B	86m N	Unspecified Pit	1949	1:10560
B	90m N	Unspecified Pit	1967	1:10560
C	104m W	Unspecified Quarry	1909	1:10560
C	106m W	Unspecified Pit	1928	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
C	109m W	Unspecified Quarry	1890	1:10560
D	133m SE	Unspecified Pit	1967	1:10560
D	134m SE	Unspecified Quarry	1909	1:10560
D	135m SE	Unspecified Pit	1938	1:10560
D	135m SE	Unspecified Pit	1928	1:10560
D	137m SE	Unspecified Pit	1949	1:10560
D	156m SE	Unspecified Heap	1949	1:10560
D	156m SE	Refuse Heap	1909	1:10560
D	161m SE	Unspecified Heap	1928	1:10560
D	161m SE	Unspecified Heap	1938	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

32

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 104**

ID	Location	Land Use	Year of mapping	Mapping scale
S	457m SW	Unspecified Disused Shaft	1975	1:10000
Q	476m E	Old Colliery	1909	1:10560
Q	483m NE	Unspecified Disused Mine	1979	1:10000
Q	500m NE	Old Colliery	1928	1:10560
Q	507m NE	Old Colliery	1949	1:10560
Q	548m NE	Unspecified Disused Shafts	1967	1:10560
Q	550m NE	Unspecified Old Shaft	1890	1:10560
Q	551m NE	Unspecified Disused Shafts	1979	1:10000
Q	558m NE	Unspecified Disused Shafts	1967	1:10560
Q	559m NE	Unspecified Disused Shafts	1979	1:10000



ID	Location	Land Use	Year of mapping	Mapping scale
AD	612m S	Unspecified Disused Shaft	1992	1:10000
AD	612m S	Unspecified Disused Shaft	1987	1:10000
AD	612m S	Unspecified Disused Shaft	1975	1:10000
AD	613m S	Unspecified Disused Shaft	1968	1:10560
AD	613m S	Old Air Shaft	1949	1:10560
AD	624m S	Unspecified Old Shaft	1938	1:10560
AD	628m S	Old Air Shaft	1938	1:10560
AD	630m S	Old Air Shaft	1909	1:10560
AD	630m S	Old Air Shaft	1928	1:10560
AD	635m S	Unspecified Old Shaft	1949	1:10560
AD	648m S	Unspecified Old Shaft	1938	1:10560
14	650m NW	Old Air Shaft	1909	1:10560
AD	651m S	Unspecified Old Shaft	1909	1:10560
AD	652m S	Unspecified Old Shaft	1928	1:10560
-	658m S	Unspecified Old Shaft	1938	1:10560
-	742m E	Unspecified Old Shaft	1928	1:10560
-	742m E	Unspecified Old Shaft	1890	1:10560
-	746m E	Unspecified Old Shaft	1909	1:10560
-	747m E	Unspecified Old Shaft	1938	1:10560
-	753m E	Unspecified Old Shaft	1949	1:10560
-	753m E	Unspecified Disused Shaft	1979	1:10000
-	957m W	Unspecified Old Shaft	1909	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

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



This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

1

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 104**

ID	Location	Name	Commodity	Class	Likelihood
12	623m NW	Not available	Vein Mineral	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

0

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

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site

0

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

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site

1

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



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

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0
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The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

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

18.11 Gypsum areas

Records on site	0
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Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

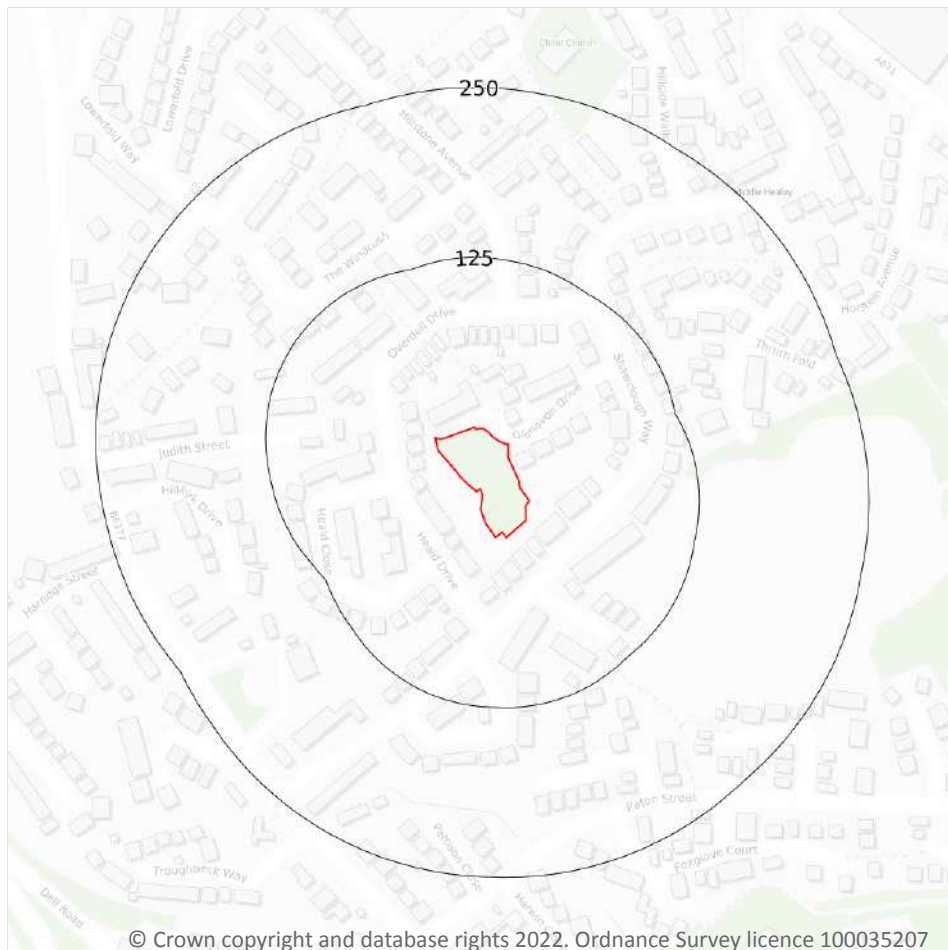
18.13 Clay mining

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

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

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

19 Radon



— Site Outline
Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 111**

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

This data is sourced from the British Geological Survey and Public Health England.



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

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

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

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

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects

21.1 Underground railways (London)

Records within 250m	0
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Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0
---------------------	---

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0
---------------------	---

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	0
---------------------	---

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

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0
---------------------	---

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



This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0
---------------------	---

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	0
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Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

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

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

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

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0
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HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-jan-2020/>.



APPENDIX C

TJ Boot Associates - Ground Stability Assessment



*J Noon Building Contractors Ltd
4 Drinkwater Lodge
PRESTWICH
M25 9AN.*

Monday, 07 February 2022

Ref: rep-tjba-JNOON-glenavon dr-ground stability assessment-310122.docx

Subject: **Land at Glenavon Drive, Shawclough Rochdale.
Ground Stability Assessment.**

Dear Sirs,

It is understood a planning application for development was submitted to Rochdale MBC in October 2021 for a new planning application for development at the above Site.

The new planning application was given reference number: 21/01553/FUL, and is for the: "Proposed Erection of 4 No dwellings (2 pairs of semi-detached houses), following approval of 2 No dwellings ref: 18/00740/FUL".

T J Booth Associates undertook an assessment of the Site for the previous owner c2018 and as part of the submission for the 18/00740/FUL planning application/approval.

Due to changes in the new application, Rochdale Planning have requested an updated Ground Stability Report particular to the new development, refer to letter below:

INCOMPLETE PLANNING APPLICATION	
Application No:	21/01553/FUL
Application Type:	Full Planning Application
Proposal:	Proposed Erection of 4 No dwellings (2 pairs of semi-detached houses), following approval of 2 No dwellings ref: 18/00740/FUL.
Location:	Land Off , Glenavon Drive, Rochdale, OL12 6DT

I refer to the planning application, received on 29 October 2021, which you have submitted in respect of the above development. I regret that further consideration cannot be given to the application as it is currently incomplete in respect of the following:-

- 1) We would require arboricultural impact assessment, as referenced in the proposed site plan Arboricultural Survey dated May 2018 this could be re-submitted (with the owners consent) with an addendum to demonstrate that it is still up to date.
- 2) We would require an Ecology Report.
- 3) We would require a ground stability report for the above application.
- 4) Please provide existing site levels.

Continued...

The LPA have requested the assessment as the Site is located above an historic quarry, and dwellings locally are reported to have suffered subsidence historically.

T J Booth Associates hold existing site investigation information and environmental data for the Site.

Historic Maps.

The Site was formerly a minor local quarry dating back to c1890 when it was noted as disused, and remained so until the current housing estate was erected c1970, when the Site was infilled.

A topographic survey c1991 shows a gentler slope than is observed in the present day and topographic map for 2018. It is understood that further periodic minor infilling between c1991-2008 had occurred at the Site.

A 1960s Ordnance Survey overlay on a Google Earth Map is noted in the Appendix showing the extent of the quarry before infilling.

Current Site & Topography.

The Site currently comprises a heavily vegetated vacant plot of land. To the N of the Site, land elevation is nominally level with Glenavon Drive. From there the Site slopes down and plateaus nominally 3m below; and then falls via a slope (approx 1:2) to a pond at the S side of the Site where ground level is around 8m lower than Glenavon Drive.

BGS Maps.

The BGS Geology map of the area indicated the wider area to be underlain by Milnrow Sandstone which is generally made up of large beds of coarse grained sandstone locally.

RMBC.

There are records of subsidence & structural remediation to the surrounding local properties within the informative notes on historic planning permissions for the Application Site. The accounts of subsidence remediation claims were attributed to local residents.

RMBC Building Control was contacted to obtain any pertinent information regarding the above claims, but no records were found for the properties local to the application Site.

Site Investigations.

Site investigations had previously been undertaken in January 1991 by Mini Soil Surveys Ltd and comprised 6No. window sample boreholes (BHs1-6). Refer to Site Investigation Plan in appendix for locations.

The boreholes were undertaken before the further infilling of the Site had occurred, and the original topography was reflected in the original borehole SI Plan.

The boreholes recorded depths of between 4.3m-10m from ground level to refusal on competent bedrock. Above this was generally sand & gravel (often disturbed), and clay fill above. These depths to bedrock have been adjusted for the difference in level due to later minor infilling which is reflected in the current topographic survey and current Site Investigation Plan in the Appendix, and tabulated below:

BH No.				BH1	BH2	BH3	BH4	BH5	BH6
Current	GL	at	BH	22.75	24.22	21.80	23.30	20.90	21.30

Continued...

position (m aSD).						
Depth to Bedrock (m).	5.77	8.84	9.32	8.92	10.62	9.42
Bedrock level (m aSD)	16.98	15.38	12.48	14.38	10.28	11.88

Trial Holes TH1-5 were undertaken in 07/04/08. Trial holes 1-3 were located around the upper part of the Site around the proposed development. TH1 noted weathered bedrock at approx 3m depth. It is likely from the positioning of the TH and the Google Earth/historic overlay, that the trial hole encountered ground outside of the original quarry area. THs 2&3 noted clay fill to approx 3m depth corroborating the BH records.

Proposed Development.

The proposed development is for the construction of 4No. semi-detached residential dwellings. The dwellings will be large 4 storey with associated driveways and open access at Glenavon Road level to the front of the Site, supported by retaining walls on the property face.

The rear of the site will step down behind this to a lower ground floor within the dwellings. Ground floor will be at Glenavon Road level.

There will be soft landscaping/garden areas within the Site comprising small areas to the front and sides of the dwellings, and the main garden areas to the rear.

Conclusions & Recommendations.

There are claims within historic planning documents that note dwellings local to the Site have suffered subsidence historically, although RMBC Building Control have no records of any remediation.

The Google Earth/historic overlay shows that the quarry face extends beneath Nos.35, 37 & 39, and records made ground beneath No.17 Glenavon Drive. It is expected that these properties would have specialist/deep foundations to account for the quarry proximity & mitigate the risk of differential settlement.

Regarding the proposed Application Site layout, the dwellings will comprise an upper floor nominally level with Glenavon Drive, and a lower ground floor level sunk into the Site.

The proposed dwellings are located around BHs 1, 2, 3 & 4 (plots adj No.35), and BHs 5 & 6 (plots adj No.17). Assuming a lower ground floor of approximately 3m below Glenavon drive (~21.30m aSD) GL, the depth to competent sandstone bedrock is between 4.5-11m.

Due to the above, a piled solution to the development foundations will be required, formed by end bearing piles, bearing on to the competent bedrock to avoid differential settlement. The slope to the S side of the Site is generally made up of soft to firm & firm to stiff semi consolidated clays over sand & gravel and is approximately 1:2 gradient.

The proposed piles would be either augered or small diameter driven types in order to cause minimal vibration/disturbance outside of the Site.

It is advised that base line records are taken of Nos. 35, 37, 39 & 17 prior to piling commencing, to establish condition and provide a reference for later comparison if needed.

Detailed design of both retaining walls to the N side of the Site with Glenavon Dr, and foundations will be produced as part of the Building Regulation requirements.

Continued...

It is concluded that the above details and conclusions are sufficient to enable the planning permission to be granted for the application proposal, in respect of the ground stability considerations, with relevant planning conditions requiring the submission of more detailed information if considered necessary. This study has not identified any issues regarding ground/slope stability that would give rise to the necessity of refusing consent.

Signed.....

D.S.Slattery BSc (Hons).

T J Booth Associates.

Authorised.....

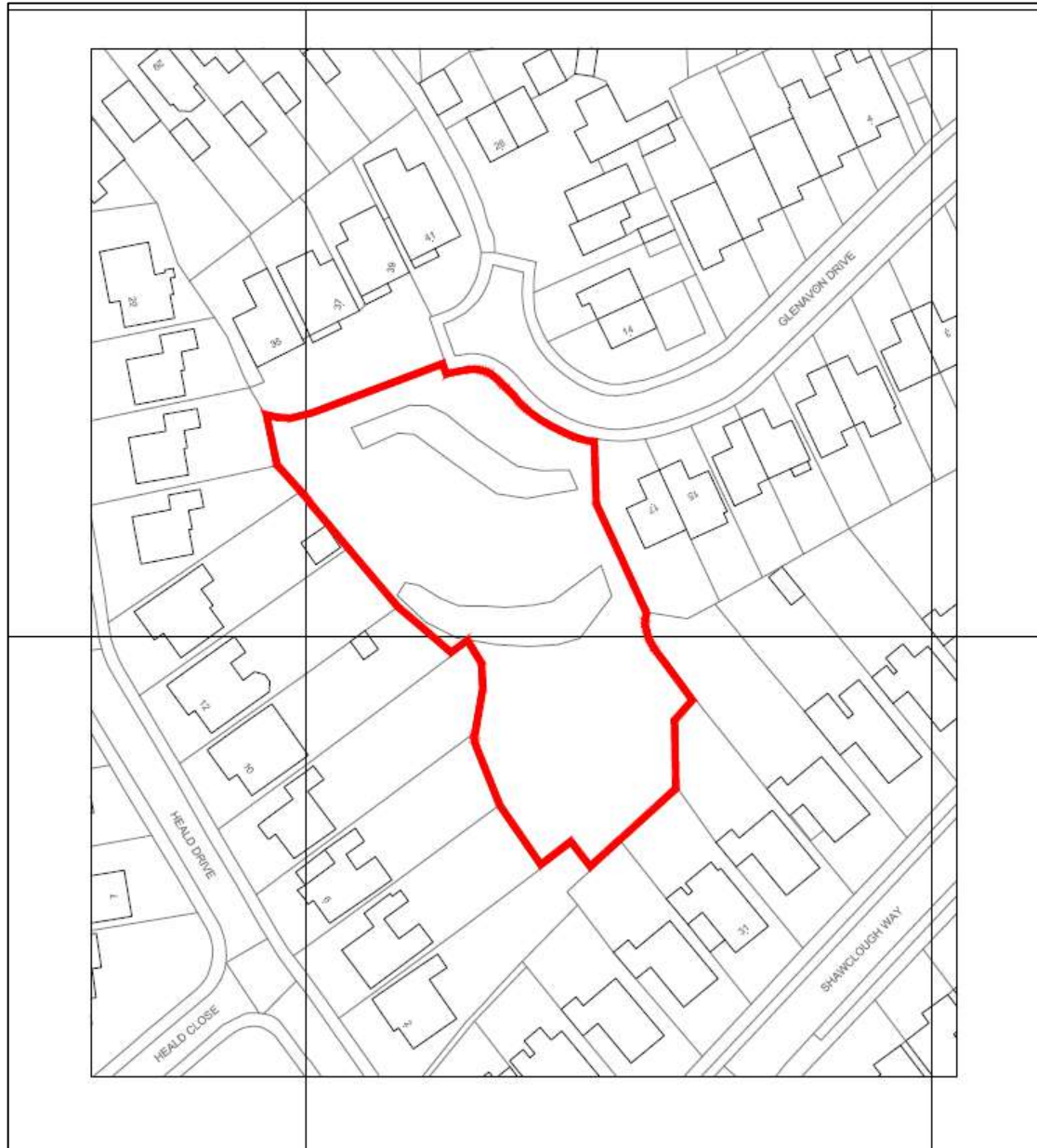
T J Booth BSc (Hons), C. Eng. C. Env. MICE.

T J Booth Associates.

Continued...

Appendix.

Site Location Plan.

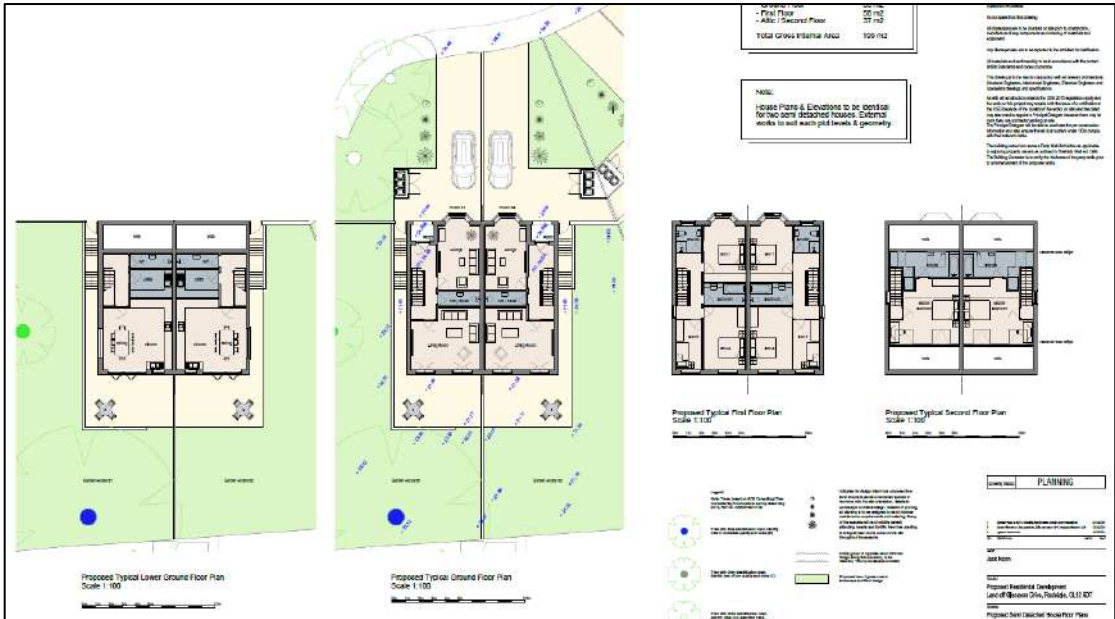


Continued...

Proposed Plan.

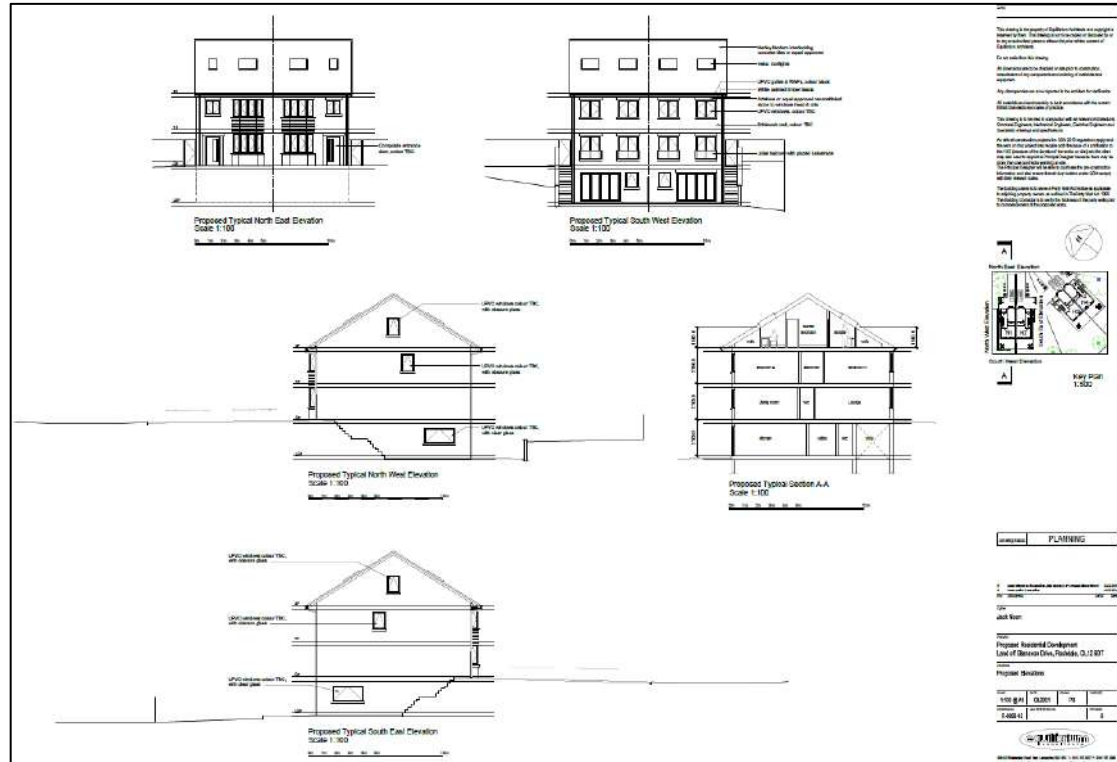


Proposed Floor Plans.



Continued...

Proposed Elevations.



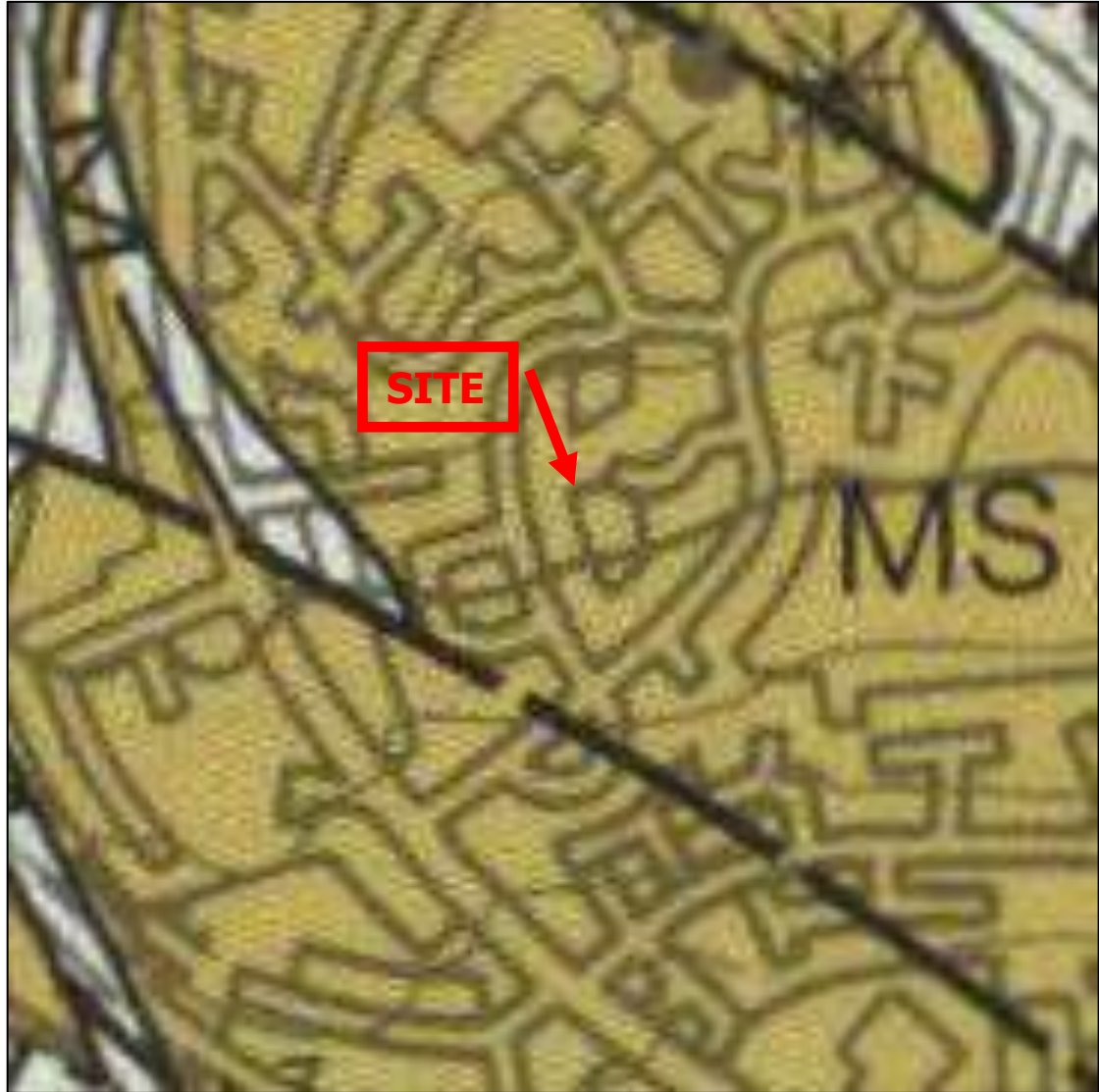
Continued...

Google Earth/c1960s OS overlay Map.



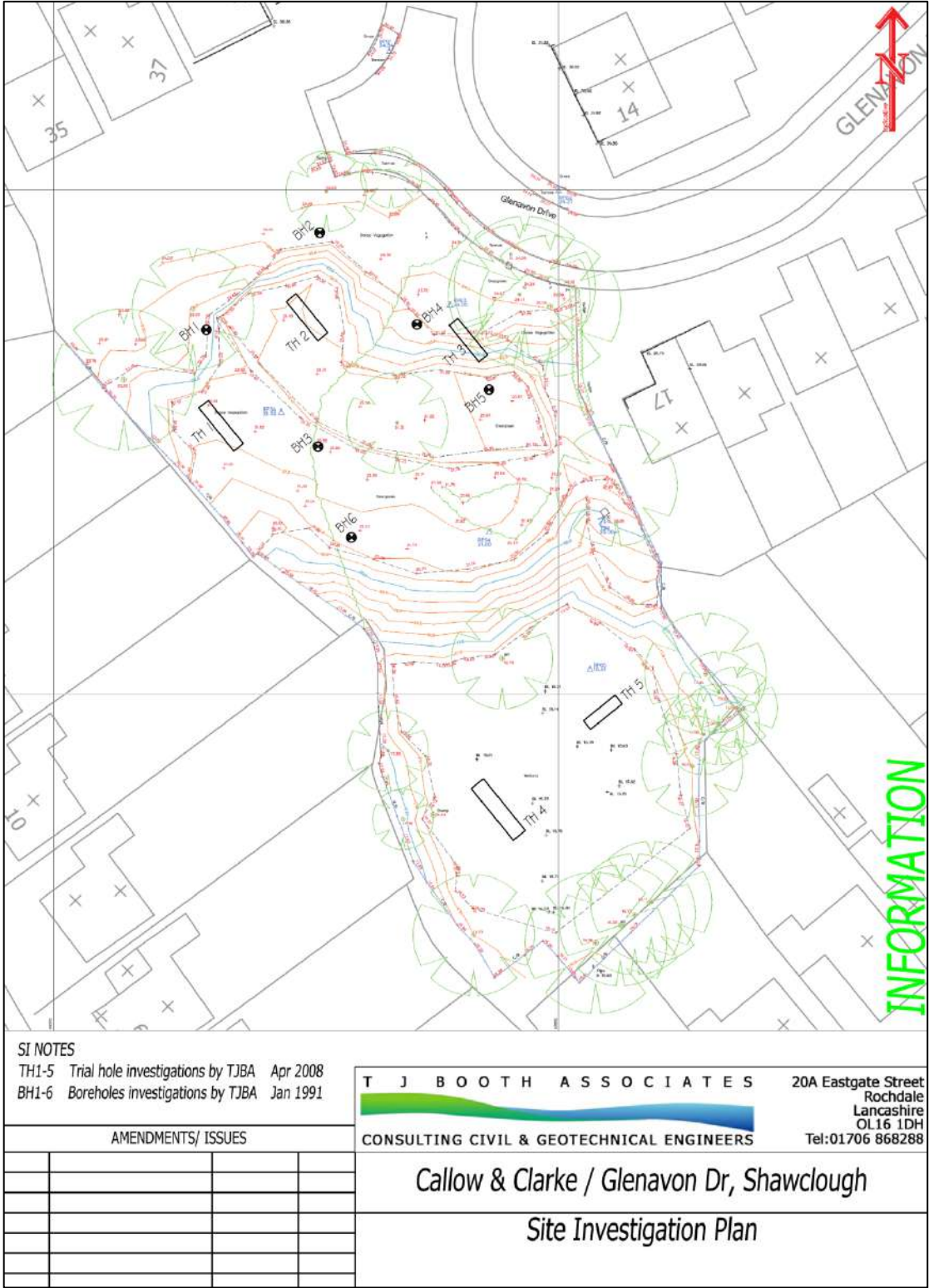
Continued...

BGS Geology Map.



Continued...

Topographic/Site Investigation Plan.

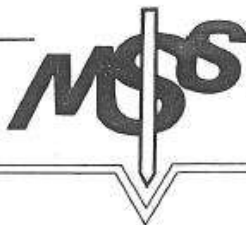


Continued...

Borehole Logs.

MINI • SOIL • SURVEYS			
JOB NUMBER BOL0910	BOREHOLE No. 1 of 6	CREW S	
SITE Glenavon Drive, Rochdale		DATE DRILLED 18/01/91	
GROUND LVL (if recorded)			
Description	Depth	Leg	Sample/Test
Brown, clay FILL with brick, cobbles and boulders.	0.80		1.0m S.V. Cu=43Kn/m ²
Soft to firm, brown/grey, sandy clay FILL with occ., peaty bands and occ., cinder fragments.			2.2m S.V. Cu=40Kn/m ²
			3.0m SPT N=6
			4.3m SPT N=*
End of hole.	4.30		
Comments: Refusal at 4.3 metres on SANDSTONE SPT @ 3.0m 1/1/1,1,2,2 SPT @ 4.3m * 15 blows for 10 mm of seating drive then refusal.			

Continued...



MINI • SOIL • SURVEYS

JOB NUMBER BOL0910

BOREHOLE No. 2 of 6

CREW S

SITE Glenavon Drive, Rochdale DATE DRILLED 18/01/91

GROUND LVL (if recorded)

Description	Depth	Leg	Sample/Test
Firm with stiffer bands of brown clay FILL with occ., cinders, gravel and sandy bands.			1.2m SPT N=6
Soft to firm, brown/grey, sandy, peaty CLAY with occ., gravel.	2.00		2.2m S.V. Cu=44Kn/m ²
Very loose, brown, clayey SAND AND GRAVEL.	2.70		3.0m SPT N=3
Firm with softer and stiffer bands, brown/grey, sandy CLAY with occ., gravel and peaty bands.	3.60		6.6m SPT N=6
End of hole.	8.90		

Comments:

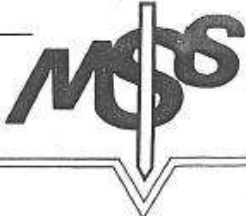
Refusal at 8.9 metres on sandstone. From 2.0 metres to 8.9 metres the soil is probably disturbed.

SPT @ 1.2m 3/3/2,2,1,1

SPT @ 3.0m 1/1/1,0,1,1

SPT @ 6.6m 2/1/2,1,0,3

Continued...



MINI • SOIL • SURVEYS

JOB NUMBER BOL0910

BOREHOLE No. 3 of 6

CREW S

SITE Glenavon Drive, Rochdale

DATE DRILLED 18/01/91

GROUND LVL (if recorded)

Description	Depth	Leg	Sample/Test
Brown, clay FILL with brick, cobbles and boulders.			
Loose, brown SAND AND GRAVEL with occ., clayey bands, becoming wet at 2.5 M.	1.60		1.8m SPT N=4
Firm to stiff, brown CLAY with occ., black shale.	2.90		3.0m S.V. Cu=79Kn/m ²
Loose, wet, brown SAND AND GRAVEL.	4.00		4.2m SPT N=7
			5.4m SPT N=9
End of hole.	5.80		

Comments:

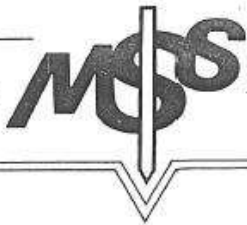
Refusal at 5.8 metres on SANDSTONE.

Water encountered at 2.5 metres, standing water after twenty minutes 2.5M.

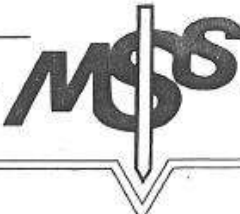
Standing water at end of borehole 3.0 metres.

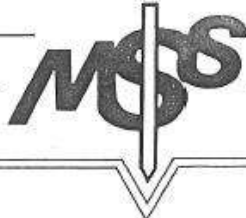
SPT @ 1.8m 1/1/1,0,1,2 SPT @ 4.2m 1/1/1,2,2,2 SPT @ 5.4m 1/2/2,3,2,2

Continued...

			
MINI • SOIL • SURVEYS			
JOB NUMBER BOL0910	BOREHOLE No. 4 of 6		
CREW B			
SITE Glenavon Drive, Rochdale			
DATE DRILLED 18/01/91			
GROUND LVL (if recorded)			
Description	Depth	Leg	Sample/Test
Brown, gravelly, clay FILL with brick fragments and fine rootlets (no rootlets seen after 1.6 metres).			
			1.8m SPT N=6
Loose becoming medium dense, clayey, sand and gravel FILL with occ., cinder fragments.	2.00		3.0m SPT N=6
			6.0m SPT N=22
End of hole.	6.40		
Comments: Borehole dry. SPT @ 1.8m 1/1/2,2,1,1 SPT @ 3.0m 2/4/1,2,1,2 SPT @ 6.0m 4/5/6,6,4,6			

Continued...

MINI • SOIL • SURVEYS 		
JOB NUMBER BOL0910	BOREHOLE No. 5 of 6	CREW A
SITE Glenavon Drive, Rochdale		DATE DRILLED 18/01/91
GROUND LVL (if recorded)		
Description	Depth	Leg
Loose, brown, sandy, gravelly, clay FILL occ., brick fragments.		
		1.8m SPT N=5
No sample return.	2.80	
Loose occ., medium dense, brown, clayey, SAND AND GRAVEL probably disturbed ground.	3.40	
		3.6m SPT N=5
		4.8m SPT N=14
		7.2m SPT N=6
End of hole.	10.00	
Comments:— Water encountered at 1.8 metres. Standing water after twenty minutes 2.2 metres. Standing water on completion of borehole 3.0 metres. SPT @ 1.8m 1/1/0,2,0,3 SPT @ 3.6m 1/1/1,1,1,3 SPT @ 4.8m 4/6/3,2,4,5 SPT @ 7.2m 1/1/1,2,2,1		



MINI • SOIL • SURVEYS

JOB NUMBER BOL0910

BOREHOLE No. 6 of 6

CREW B

SITE Glenavon Drive, Rochdale
DATE DRILLED 18/01/91

GROUND LVL (if recorded)

Description	Depth	Leg	Sample/Test
Brown, gravelly, clay FILL with occ., brick and wood fragments.			
Loose, brown, fine to medium SAND AND GRAVEL, becoming wet at 2.2 metres.	1.50		1.8m SPT N=7
SOFT to firm, wet, brown CLAY with occ., gravel and sand lenses.	2.60		2.9m S.V. Cu=45Kn/m ²
Medium dense, brown, medium to coarse SANDSTONE GRAVEL.	3.90		4.2m SPT N=21 4.8m SPT N=26
End of hole.	5.90		

Comments:
 Refusal at 5.9 metres on SANDSTONE. Water strike at 2.2 metres, standing water after 20 minutes 1.5 metres from ground level, Standing water at completion of borehole 600 mm from ground level.
 SPT @ 1.8m 3/2/1,2,2,2 SPT @ 4.2m 5/5/5,5,7,4 SPT @ 4.8m 6/6/9,9,4,4

APPENDIX D

Preliminary Conceptual Model

POTENTIAL RECEPTOR	COMMENTS	Include in PCM
PROPERTY: Other		
On Site		
Crops	None intended on site	✗
Domestic Produce	May be grown in residential gardens	✓
Livestock	None anticipated on site	✗
Domestic Animals	May be owned by residents	✓
Game	None on site	✗
Off Site		
Crops	Unlikely	✗
Domestic Produce	Possibly in houses in vicinity of the site	✓
Livestock	Unlikely	✗
Domestic Animals	May belong to adjacent residents	✓
Game	Unlikely	✗
PROPERTY: Buildings		
On Site		
	Residential Properties, services, flora	✓
Off Site		
	Residential Properties, recreational walkers, services, flora	✓
HUMANS		
On Site		
Residents	Future Residents	✓
Construction Workers	During ground excavations	✓
Employees	Landscape Gardeners	✓
Surface water users	No current surface water abstractions located on site	✗
Off Site		
Residents	Residents adjacent to the site	✓
Recreational users	Recreational Walkers	✓
Groundwater users	No groundwater abstractions within 250 m.	✗
Controlled Waters		
On Site		
Surface Waters	There are no surface water features located on site.	✗
Groundwater	The published superficial strata comprises of regionally continuous impermeable boulder clay which does not represent a potential receptor and would likely act as a barrier to the underlying Secondary A aquifer within the bedrock. Notwithstanding, historical OS maps show the site has been extensively quarried which is likely to have removed much/all of the boulder clay from the site. Any made ground present on site (and potential contaminants present within the made ground) may be in hydraulic continuity with the bedrock Secondary A Aquifer.	✓
Off Site		
Controlled Waters	The Enviro & Geo Insight Report indicates that Shawclough Brook (inland river not influenced by normal tidal action on ground surface) is located some 200 m south-west of the site. This is too distant from the site to be considered a potential receptor.	✗
Ecological Systems		
On/Off Site		
SSSIs, national nature reserves, SACs etc	The site is not affected by any of the ecological systems identified as a statutory receptor in the DETR Circular 01/2006.	✗

Table A: Potential Receptors to be Considered in the Preliminary Conceptual Model

Link	Source	Hazard	Transport Mechanism	Pathway	Medium of Exposure	Receptor	Risk Summary*
1	Contaminated soils	Direct contact /ingestion of soil or dust	Direct contact with contaminated soil	Dermal contact/ingestion of soil at surface	Soil	Humans (on-site/off-site), domestic pets	Medium
2	Contaminated soils	Particulate inhalation	Wind blown particulates	Inhalation of particulates	Air	Humans (on-site/off-site), domestic pets	Low
3	Contaminated Soils	Impaired produce growth	Uptake of contaminants by homegrown produce resulting in loss	Uptake during growth	Vegetable produce	Property (domestic produce)	Low to Medium
4	Contaminated Soils	Ingestion of Contaminants	Uptake of contaminants by homegrown produce	Consumption of homegrown produce	Vegetable produce	Humans	Low to Medium
5	Contaminated Soils	Inhalation of Ground Gas	Degradation of contaminants generating ground gas through unsaturated zone to soil leading to inhalation	Inhalation of Gases	Air	Humans (on-site/off-site, domestic pets)	Low
6	Contaminated Soils	Vapour Inhalation	Volatilisation of organic compounds through unsaturated zone of soil leading to inhalation	Inhalation of Vapours	Air	Humans (on-site/off-site, domestic pets)	Low
7	Contaminated Soils	Damage to structure/services	Direct contact of contaminants with building structures/services	Direct contact	Soil/Water	Flora, Services, concrete	Medium
8	Contaminated Soils	Degradation of perched water quality	Dissolution or suspension of contaminants into perched waters	Dissolution or Suspension	Water	Perched Waters	Low
9	Contaminated Soils	Pollution of underlying groundwater	Dissolution or suspension of contaminants into groundwaters (Bedrock Aquifer)	Dissolution or Suspension	Water	Groundwaters	Medium

Table B: Preliminary Conceptual Model

***Relative Risk Screening and Prioritisation for further Investigation & or Assessment**

High	Higher probability of occurrence and identification of primary sources of contamination with respect to most sensitive receptors.
Medium	Pollutant linkage generally dependent on the presence of other primary pollutant linkages and/or where pollutant linkage generally associated with less sensitive receptors.
Low	Lower probability of occurrence such as based on requirement for significant migration pathway or where pollutant linkage requires the presence of source contaminants at concentration likely to be much higher than other identified pollutant linkages.

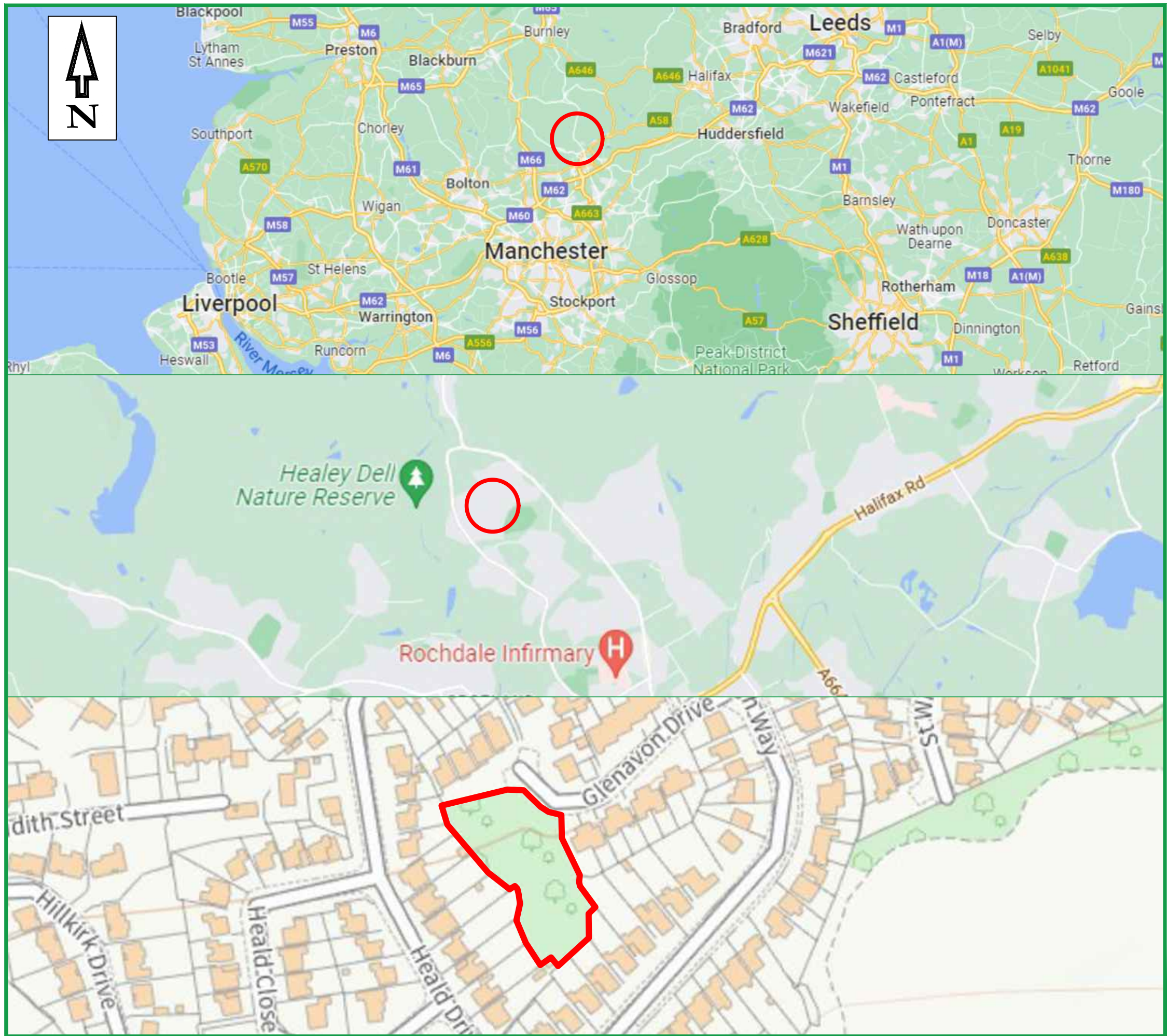
APPENDIX E

Site Photographs

				
P1: Entrance to the site form Glenavon Drive		P2: Manhole within site boundary (adjacent to entrance from Glenavon Drive)		
				
P3: Overgrown trees/plants in the west of the site		P4: View from entrance of site towards the south		
				
P5: Overgrown trees/plants in south-east of the site		P6: Flytipped material in east of the site		
Comments:				
		Photographs 1 to 6		
This appendix is for illustrative purposes only and is for use only in conjunction with associated reports relating to the project details adjacent. BEK accepts no liability for the misinterpretation or use of this illustration by any other parties.	Site: Land at Glenavon Drive, Rochdale	Project No: 22127	Created By: J Mashiter	Date: 25/10/22
	Title: Appendix E - Photographs	Client: J Noon Building Contractors Ltd		

APPENDIX F

Drawings



LEGEND

— SITE LOCATION

REV	DESCRIPTION	DATE	BY



GEO-ENVIRONMENTAL CONSULTING ENGINEERS

Suite One, No 3 Mitton Road Business Park,
Mitton Road, Whalley, Lancashire, BB7 9YE
Tel: 01254 377 622
Email: mbuckley@bekenviro.co.uk
Web: www.bekenviro.co.uk

CLIENT.

J NOON BUILDING
CONTRACTORS

JOB TITLE.

LAND OFF GLENAVON DRIVE,
ROCHDALE

DRAWING TITLE.

SITE LOCATION PLAN

SCALE © A3. N.T.S	DRAWN BY. D.E.	APPROVED BY. M.B.	DATE. 04/10/22
DRAWING No. 22127-1			REV. -



LEGEND



SITE FOOTPRINT

REV	DESCRIPTION	DATE	BY



GEO-ENVIRONMENTAL CONSULTING ENGINEERS

Suite One, No 3 Mitton Road Business Park,
Mitton Road, Whalley, Lancashire, BB7 9YE
Tel: 01254 377 622
Email: mbuckley@bekenviro.co.uk
Web: www.bekenviro.co.uk

CLIENT.

J NOON BUILDING
CONTRACTORS

JOB TITLE.

LAND OFF GLENAVON DRIVE,
ROCHDALE

DRAWING TITLE.

SITE LAYOUT PLAN

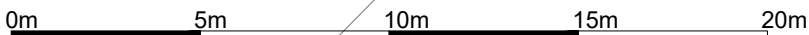
SCALE © A3. N'TS	DRAWN BY. D.E.	APPROVED BY. M.B.	DATE. 04/10/22
DRAWING No. 22127-2	REV. -		

NOTES

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As with all construction projects the CDM 2015 regulations apply and the work on this project may require both the issue of a notification to the HSE (because of the durationof the works on site) and the client may also need to appoint a Principal Designer because there may be more than one contractor working on site. The Principal Designer will be able to cooinate the pre-construction information and also ensure that all duty holders under CDM comply with their relevant duties. The building owner is to serve a Party Wall Act Notice as applicable to adjoining property owners as outlined in TheParty Wall Act 1996. The Building Contactor is to verify the thickness of the party walls prior to commencement of the proposed works.

Site Plan Detail
Scale 1:200



NOTES

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Do not scale from this drawing.

All dimensions are to be checked on site prior to construction, manufacture of any components and ordering of materials and equipment.

Any discrepancies are to be reported to the architect for clarification.

All materials and workmanship to be in accordance with the current British Standards and codes of practice.

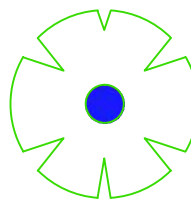
This drawing is to be read in conjunction with all relevant Architectural, Structural Engineers, Mechanical Engineers, Electrical Engineers and Specialists drawings and specifications.

As with all construction projects the CDM 2015 regulations apply and the work on this project may require both the issue of a notification to the HSE (because of the durationof the works on site) and the client may also need to appoint a Principal Designer because there may be more than one contractor working on site. The Principal Designer will be able to cooinate the pre-construction information and also ensure that all duty holders under CDM comply with their relevant duties.

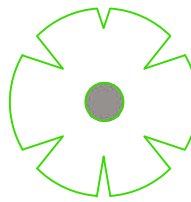
The building owner is to serve a Party Wall Act Notice as applicable to adjoining property owners as outlined in TheParty Wall Act 1996. The Building Contactor is to verify the thickness of the party walls prior to commencement of the proposed works.

Legend:

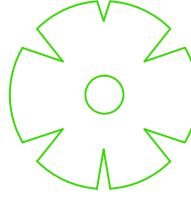
Note: Trees based on ACS Consulting (Tree Consultants) Arboricultural survey dated May 2018, Ref No. ARB/3790/Y/100.



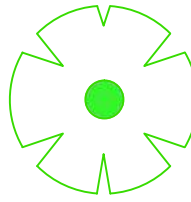
Tree with Blue identification mark identify tree of moderate quality and value (B)



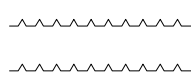
Tree with Grey identification mark identify tree of low quality and value (C)



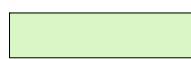
Tree with white identification mark identify other non specified trees retained, TBC by landscape architect



Indicates for design intent only proposed low level shrubs & plants ornamental species in harmony with the site orientation, details to Landscape Architect design. Outside of pruning, all planting is to be designed to be of minimal maintenance requirements and watering. Many of the species will be of wildlife benefit, attracting insects and birdlife. New tree planting to bring all year-round colour to the site throughout the seasons.



Linear group of Cypress as an informal hedge along the boundary, to be retained, TBC by landscape architect



Proposed lawn / grass area to landscape architect design

Drawing Status:	PLANNING
-----------------	----------

REV	DESCRIPTION	CHECK	DATE
-----	-------------	-------	------

CLIENT

Jack Noon

PROJECT

Proposed Residential Development
Land off Glenavon Drive, Rochdale, OL12 6DT

DRAWING

Proposed Soft Landscape Outline Plan

SCALE	DATE	DRAWN	CHECKED
1:200 @ A1	08.2021	PB	
DRAWING NO.	CAD REFERENCE NO.	REVISION	
R-0688-07			



435-437 Walmersley Road Bury Lancashire BL9 9EU T : 0161 797 2077 F : 0161 797 2088
info@equilibriumarchitects.co.uk www.equilibriumarchitects.co.uk