



PROPOSED RESIDENTIAL DEVELOPMENT

**GREENVALE, BAMFORD
ROCHDALE**

FOR

WAINHOMES (NW) LTD

MARCH 2026

GEO-ENVIRONMENTAL INVESTIGATION REPORT

23154/GEIR/04



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EXECUTIVE SUMMARY

Site	The site is irregular in shape and extends to an area of approximately 2.73 hectares, located south of the Greenvale, Bamford, Rochdale.
NGR	SD 86024 13440
Site History	Careful appraisal of the historical maps show that the site has remained a parcel of farmland until around 2012 with the construction of the present-day residential property and outbuildings within the very north of the site. The remainder of the site has experienced no change or development and still comprises a parcel of land. Development within the surrounding area has been concentrated towards the north, with the construction and subsequent infilling of the reservoirs, and the expansion of residential properties. Immediately southwards, the area has remained farmland with little to no significant changes.
Investigations	The investigations have extended to: - • Walkover survey • Desk study • Extensive intrusive investigations by window sample boreholes and mechanically excavated trial pits • Chemical and geotechnical analyses of soil samples • Programme of ground gas monitoring
Ground Conditions	The ground investigation has identified made ground deposits only within WS01 to a depth of 2.20m bgl. The remainder of the site noted topsoil deposits overlying soft becoming firm clays, underlain by shallow mudstone of the Lower Pennine Coal Measures Formation. The eastern boundary recorded highly weathered bedrock of the Old Lawrence Rock from 1.00m.
Groundwater	These intrusive investigations have identified groundwater ingress within seven (7 No.) positions at depths between 1.50m and 3.00m below existing ground level. The water strike within the cohesive strata is considered to represent perched water. It is possible that minor water entries are likely to occur over a longer period of time where groundwater accumulates between the surface and underlying permeable clay material. It is also important to note that any sand deposits identified at depth may be susceptible to running sand conditions. TP05 and TP06 along the southern boundary have recorded the ingress of groundwater coinciding with the introduction of the weathered mudstone bedrock. It is possible that natural groundwater lies within the underlying bedrock and any excavations made to this depth may require localised pumping techniques.
Ground Gas	The conceptual site model suggests that the potential for explosive and toxic gases to be generated within this site is based on high on the basis of the following factors:- * Historical landfill located 104m north west * Made ground deposit – 99m north west * Infilled reservoirs – 114m north west and 165m north Final monitoring data classified the site as CS2 within the vicinity of WS01 only, which has been attributed to the Made Ground recorded within this position. Plots within this area should adopt CS2 Gas Protection Measures
Environmental	The chemical analysis undertaken on the representative samples of the Made Ground and topsoil material have identified elevated concentrations of lead within the Made Ground of WS01 only at a depth of 0.20m bgl. Based upon these results, there will be a requirement for a programme of localised capping regarding plots 43 to 45. The topsoil material is deemed suitable for retention and reuse within the residential development. It is anticipated that the site won topsoil can be used to form the 600mm required clean cover system. Final remediation proposals should be documented within a formal Remediation Strategy.
Foundations	Available BGS records show an inferred fault of unknown displacement located within the development site. Taking into consideration the information gained from the investigation, alongside the presence of the fault, it is anticipated that the majority of plots can be found utilising traditional strip or deep strip foundations. However, reinforcement is required within all strip footings due to the presence of the geological fault (B385). WS01 towards the north west of the site has recorded deep made ground deposits overlying soft clays to 2.80m. Based on the current conditions and site levels, properties within this area should be provided with a piled foundation solution. However, if levels within this area are to be reduced as part of the development process, then this may allow us to remove the gas risk to these plots and also eliminate the need for piling. Final site levels will need to be considered in greater detail, to assess the foundation solution and potential gas risk, based on current monitoring data. The majority of the shallow ground conditions present within the site comprise of cohesive clays which are susceptible to volume change potential as a result of varying moisture content. Laboratory analysis undertaken upon samples of clay strata have shown varying plasticity indices. However, under the worst case scenario, the site is classified as having a medium volume change potential as defined by the NHBC Handbook, Chapter 4.2.

Slabs	It is recommended that suspended ground floor construction be adopted for all properties located within this site. These floors may be of a pre-cast concrete beam and block arrangement or of a suitably designed cast in-situ reinforced concrete.
SUDS	Assessment of the ground conditions present within this site in terms of sustainable urban drainage confirms the presence of topsoil overlying effectively impermeable cohesive natural strata across the majority of the site. Where granular units and bedrock were identified, this typically corresponded with the ingress of groundwater. As such, we consider the site is unsuitable for the adoption of a soakaway system and other means of surface water disposal should be considered.
Further Works	Production of a formal Remediation Strategy detailing the minimal remedial works required to allow for the safe development of the site, including the capping of plots 43 to 45 and gas protection measures to CS2 for plots 43 to 45 If any unusual or suspicious strata or ground conditions are encountered during the subsequent site stripping preparation work, it will be necessary for these areas to be brought to the attention of the appropriate authorities so that all necessary inspection, sampling and testing may be undertaken to determine whether these materials present a hazard to human health. It is incumbent upon the site contractors to advise a responsible authority of any unusual findings within the site which may then be further investigated.

This brief summary should not be assumed to represent a complete account of all the potential geo-environmental issues that may exist at the site. As such it is strongly recommended that the report be read in its entirety.

GEO-ENVIRONMENTAL INVESTIGATION WORKS

GREENVALE, BAMFORD, ROCHDALE

1.0 INTRODUCTION

1.1 Instructions

1.1.1 We are instructed by Wainhomes (NW) Ltd, Kelburn Court, Daten Park, Birchwood, Warrington, WA3 6UT to undertake a programme of ground investigation works at a site located at Greenvale, Bamford, Rochdale, which they intend to redevelop in a residential manner.

1.2 Object

1.2.1 The object of these investigations are as follows:

- To determine the engineering properties of the soils, present within the site to form a basis upon which foundation and general infrastructure recommendations and design may be based;
- To enable sufficient information regarding ground conditions to be obtained from which risks to end users and the environment can be assessed;
- To utilise the information obtained from the investigations to provide recommendations for remediation measures where required.

1.3 Scope

1.3.1 The investigations considered within this report have comprised of the following elements:

- An initial environmental and engineering desk study based upon existing reports, services location information, geological, hydrogeology and hydrological information, a commercially available database and old Ordnance Survey maps;
- An initial walkover survey of the site has been undertaken prior to any intrusive investigations being commenced to determine the presence of any visible hazards or features which may affect the design of the ground investigation works;
- Undertake ground investigation works by window sample boreholes and mechanically excavated trial pits;
- Assess the possibility of toxic and explosive ground gases.
- Determine the presence, nature and extent of any soil and groundwater contamination at the site;
- Determination of the engineering properties of the soils present within the site to form a basis upon which recommendations for foundations and infrastructure construction may be based;
- Identify the potential requirements for any remedial action, where required.

1.4 Development Proposals

1.4.1 At the time of preparation of this report, we have been provided with a Proposed Site Layout (drawing number: WH-001-NW-A-401 revision Q, dated September 2025), a copy of which is appended to this report.

The development proposals include for the construction of forty-three (43 No.) residential plots in detached and semi-detached configurations, with associated road access and private garden areas. Due to the presence of the overhead power lines, an area of POS is located along the western and south western boundary.

- 1.4.2 It is acknowledged that the development proposals for the site are likely to be amended as a result of local planning requirements. It is however anticipated that the current proposals will be representative of the final development approval. However, if the final development proposals are radically different from the current proposals, then recommendations made within this report may become inappropriate.

1.5 Services

- 1.5.1 Service records show a surface water public sewer (300 VC) entering the site off Greenvale and travelling towards the south east corner before dog legging and leaving the site. Overhead 132kV power lines enter the site from the north west corner and travel southwards, before exiting the site on the southern boundary.

2.0 THE SITE

2.1 Location

- 2.1.1 The site is irregular in shape and extends to an area of approximately 2.73 hectares, located south of the Greenvale, Bamford, Rochdale. The centre of the site is situated at approximate National Grid Reference SD 86024 13440. The site location is shown in figure 1 below.



Figure 1 Site Location

2.2 Boundaries

- 2.2.1 The site boundaries towards the east, west and south lead onto further parcels of greenfield land, whilst the northern boundary is formed by residential properties along Greenvale.

2.3 Access

- 2.3.1 The site is currently accessed via the driveway of number 58 Greenvale, Bamford, with a further double gate providing access into the field. A review of the current development plans shows access into the residential development will be formed in the location of the existing property.

2.4 Topography

- 2.4.1 The north western corner of the site has been built up to become level with the access gate from the residential property. The site then slopes down, quite considerably towards the south. However, the wider site area shows minimal topographical change. Consideration will be needed on final site levels, especially towards the north of the site.

2.5 Site Conditions

- 2.5.1 At the time of the site walkover the site comprised of a residential property with outbuildings and a driveway to the north off Greenvale. Whilst the wider site area encompassed overgrown greenfield land.

2.6 Trees

- 2.6.1 Abundant mature trees and vegetation was noted within the site and along most of the sites boundaries. There will therefore be a requirement to undertake an arboricultural report.

2.7 Walkover Survey

- 2.7.1 Prior to commencing the ground investigation works, we have undertaken an initial walkover survey of the site to identify any areas which may impact upon the proposed site redevelopment works. These features are identified upon the walkover survey plan which is appended to this report for reference.
- 2.7.2 The site walkover was conducted on the 28th October 2024 and at the time of the survey the weather conditions were dry and relatively cloudy. The site, during the walkover survey, could be accessed using the tarmacked driveway of a residential property on Greenvale, Bamford, Rochdale. The access area, bound on both sides by residential dwellings, went down the side of the property leading to a metal gate on the right-hand side which provided access to the north west of the site. There is also a small residential gate that provides entrance to the north east part of the site. Adjacent to this gate resides a small open wooden shed that is empty.
- 2.7.3 The site was predominantly, to some extent, overgrown grassland encompassed by a variety of different shrubbery, bushes, well established trees and hedgerows with an overhead electricity line running from the north west of the site to the south. The northern section of the site is of higher elevation than the remaining site area therefore elevation declines from the north to the south.

The northern site boundary is bordered by residential properties and their gardens. Boundaries in the south, east and west are bordered by grassland and playing fields. A dry-stone wall is present along the site boundary in the north east. High mesh metal fencing creates a site boundary along the east, west and southern perimeters, with the integration of wooden fencing in the south. An electricity pylon resides just outside of the site boundary in the south. Centrally north of the site there is a portion of dense vegetation consisting of well-established trees and shrubbery, this area of land runs along the southern boundary of the residential property.

- 2.7.4 The parcel of elevated land in the north west, next to the site entrance, is comprised of overgrown grassland and shrubbery, complete with a stone wall to the east and deep vegetation to the north. Several pieces of household waste have been discarded onto this section of land, including old sinks and wood.

3.0 DESK STUDY

- 3.0.1 As part of our environmental desk studies we have commissioned an Enviro+Geo Insight report by Groundsure which gives detail of all recorded environmental features relating to the site and its immediate surrounding area. We have also obtained copies of all available old Ordnance Survey maps for the area, and these give some historical guidance regarding the former usage of the site area and its immediate vicinity.

3.1 Historical Industrial Sites

- 3.1.1 The Enviro-Insight report has identified forty-six (46 No.) records of historical industrial land uses within 500m of the site, six (6 No.) of which are within 250m of the development boundary. The closest of these records is situated 213m south east and relates to an unspecified mill on the 1890 year of mapping. Other records include a Cotton Mill (214m south east), unspecified mills (215m – 218m south east) and a gasometer (218m south east). Due to the distance of the records from the site, they are not believed to pose a contamination risk.
- 3.1.2 The Groundsure report has identified eighteen (18 No.) historical tanks within 500m of the site boundary. The closest of these records is located 223m north west and relates to settling tanks associated with the former water treatment works on the 1930 year of mapping.
- 3.1.3 The Groundsure report has identified nine (9 No.) historical energy features within 500m of the site boundary. All records relate to electricity substations, with the closest situated 133m north. Due to the distance of the substation from the development site, it is not believed to pose a PCB contamination risk.
- 3.1.4 The Groundsure report has not identified any historical petrol stations or historical garages within 500m of the site.

3.2 Landfill Sites

- 3.2.1 The Groundsure report has not identified any active or recent landfills, or historical landfills (BGS records or LA/mapping records). There is however one (1 No.) historical landfill under the EA/NRW records, located 104m north west at Clay Lane Water Treatment Works. No further information is provided with regards to waste type, operator or first and last records.

- 3.2.2 The report has not identified any historical waste sites or licensed waste sites within 480m of the site boundary, although records of licensed waste sites do exist beyond this point.
- 3.2.3 The report has not identified any waste exemptions within 250m of the development site, although records do exist beyond this point.

3.3 Current Land Uses

- 3.3.1 The Groundsure report has identified eight (8 No.) recent industrial land uses within 250m of the site. The first two records relate to pylons located 19m south and 131m north, with further records including electricity substations (139m north), Rochdale PC (142m north), and works (162m north west).
- 3.3.2 The Groundsure report has not identified any current or recent petrol stations within 500m of the search boundary.
- 3.3.3 The Groundsure report has not identified any records of licensed industrial activities (Part A(1)) or licensed pollutant release (Part A(2)/B) permits within 250m of the site boundary.
- 3.3.4 The report has not identified any licensed discharge to controlled waters within 250m of the site boundary, although records do exist beyond this point.

3.4 Hydrogeology & Hydrology

- 3.4.1 The superficial deposits below the site are recorded as a Secondary Undifferentiated. This is assigned where it is not possible to attribute either category A or B to a rock type. These layers have previously been designated as both minor and non-aquifers in different locations due to the variable characteristics of the rock type.
- 3.4.2 The underlying bedrock is noted to be a Secondary A aquifer which contains permeable layers capable of supporting water supplies at a local rather than strategic scale and in some cases, forms an important source of base flow to rivers.
- 3.4.3 The groundwater vulnerability map of the site shows the superficial deposits within the site to be of a low vulnerability, with a thickness greater than 10m. The underlying Secondary A aquifer within the bedrock is considered to be of a low vulnerability with a flow mechanism of well-connected fractures.
- 3.4.4 The site and surrounding 500m is not located within a Source Protection Zone (SPZ).
- 3.4.5 The report has not identified any surface water abstractions within 1,000m of the site boundary, although records do exist beyond this point. Additionally, there are no licensed groundwater abstractions within 500m of the site.
- 3.4.6 The Water Framework Directive (WFD) is an EU-led framework for the protection of inland surface waters, coastal waters and groundwater through river basin-level management planning. In terms of surface waters, these basins are broken down into smaller units known as management, operational and water body catchments. The development site is located within a WFD surface water body catchment, relating to the Roch (Spodden to Irwell), with an operational catchment of the Roch Irk Medlock and a management catchment of the Irwell.

- 3.4.7 The site lies within a WFD for groundwater bodies relating to the Northern Manchester Carboniferous Aquifers, with a poor overall and quantitative rating and a poor chemical rating.

3.5 Flooding

- 3.5.1 The site is not located within an area at risk of flooding from rivers and seas (RoFRaS) without defences.
- 3.5.2 The highest risk both on site and within 50m of the site boundary for surface water flooding is 1 in 30 years with a maximum modelled depth between 0.3m and 1.0m. Additionally, the highest risk on site and within 50m for groundwater flooding is low.

3.6 Environmentally Sensitive Areas

- 3.6.1 The site is located within a SSSI Impact Risk Zone and therefore an initial assessment of the potential risks to the SSSI are required, relating to the development proposals. The zones around each SSSI reflect particular sensitivities of the features for which could have potentially adverse impacts.
- 3.6.2 The report has identified that the site is located within an area of greenbelt land under Merseyside and Greater Manchester, with a Local Authority of Rochdale.
- 3.6.3 The land has been classified taking into consideration multiple factors including climate, physical geography and soil properties. The development site has been classified as Grade 3, containing good to moderate quality agricultural land with moderate limitations.

3.7 Geology

- 3.7.1 The Groundsure report has identified an area of made ground 99m north west of the development site. Reference to available mapping shows the record most probably relates to Clay Lane Water Treatment works and the infilling of the service reservoir.
- 3.7.2 The Groundsure report has indicated that the site is underlain by superficial deposits of diamicton till comprising predominantly of clays with minor sands and gravels. The qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of the superficial deposits have a low to high permeability with a mixed flow type.
- 3.7.3 The bedrock geology underlying the site is variable and comprises of both the Old Lawrence Rock of sandstone units, alongside Pennine Lower Coal Measures Formation of interbedded mudstone, siltstone and sandstone units. The rate of vertical movement of water within the bedrock has a low to high permeability with a fracture flow type.
- 3.7.4 The report has identified an inferred fault with an unknown displacement located within the site boundary. As such, there will be a requirement for all foundations to be provided with suitable reinforcement.
- 3.7.5 The site is located within an area where less than 1% of properties are above the action level for Radon gas and as such, no further consideration is required with regards to radon gas.

3.8 Ground Workings

- 3.8.1 The Groundsure report has recorded thirty (30 No.) surface ground working within 250m of the site boundary. The first fifteen records relate to reservoirs between 114m north west and 166m south east. The reservoirs to the north west relate to Clay Lane Service Reservoir, whilst the records to the south east possibly relate to the reservoirs associated with Pitfield Mills (Cotton).
- 3.8.2 The report has not identified any underground workings within 250m of the site, however, records do exist beyond this point.

3.9 Mining & Ground Stability

- 3.9.1 The Groundsure report has indicated that the site is located within a coal mining area as defined by the Coal Authority and therefore a Coal Authority mining report has been obtained and is appended to this report for reference. The Coal Authority report has indicated that the site does not lie within the potential zone of influence for any recorded underground coal workings. Additionally, there are no coal mine entries recorded to lie within 20m of the boundary and there have been no damage arising from geological faults or other lines of weakness active by coal mining. The Coal Authority have no evidence of a damage notice or subsidence claim for the site or within 50m since 31st October 1994. As a result of the information provided within the report, no further action needs to be taken in terms of coal mining.
- 3.9.2 The report indicates that there is a 'negligible' hazard rating for compressible deposits and ground dissolution of soluble rocks, whilst running sands, collapsible deposits, shrink swell clays and landslides all have a 'very low' hazard rating.

3.10 Background Soil Chemistry

- 3.10.1 The Geo-Insight report includes an estimated geometric mean soil concentration of various elements. Assessment of this information suggests that all determinands listed are at concentrations below the current tier 1 assessment criteria.

3.11 Railways & Tunnels

- 3.11.1 The Groundsure report has not identified any records relating to any railway infrastructure and projects within 250m of the development site boundary.

3.12 Site History

3.12.1

Table 1 – Review of Historical Maps & Aerial Photography		
Date	Site	Adjacent Land
1851	The site forms several parcels of farmland. The main pipe of Heywood Water Works enters the site within the north west corner before existing along the western boundary.	The wider area is predominantly farmland. Pitfield Mill (Cotton) is located 213m south east and includes the presence of a gasometer (218m south east). Further Mills including Minorea Mill and Ashworth Mill are situated in excess of 200m from the development site boundary.
1890	The water pipe to Heywood Water Works is no longer represented on the maps.	A small reservoir is located 100m north west, with a much larger reservoir situated 225m north. Both reservoirs are associated with Heywood Water Works. Further reservoirs have been constructed towards the south east, possibility relating to Pitfield Mill, which has been an expansion in size.
1908 – 1910	No significant changes.	The reservoir to the north west has been relabeled as Clay Lane Service Reservoir (Heywood & Middleton Water Board). Further expansion of Pitfield Mills. Increase in size of Bamford village.
1928 – 1930	A possible building or barn has been constructed within the north eastern corner.	Additional of several residential properties along Clay Lane to the north.
1956 – 1959	No significant changes.	Pitfield Mills have been demolished.
1960 – 1961	Overhead electricity cables enter the site from the southern boundary and travel towards the north west through the site. The building / barn within the north east is no longer presented on the maps.	Increase in number of residential properties along Clay Lane.
1967 – 1968	No significant changes.	No significant changes.
1975	No significant changes.	Residential estate constructed between Clay Lane and the northern boundary of the development site. Bamford has grown in size and contains abundant residential properties and schools.
1983 – 1987	No significant changes.	Increase in number of residential properties to the east.
1990 – 1992	No significant changes.	The smaller reservoir, 100m north has been backfilled.
2001	No significant changes.	The larger reservoir to the north has been backfilled and the area redeveloped into a residential estate.
2012	Residential property and outbuildings have been constructed within the northern most area of site, off Greenvale	No significant changes.
2024	No significant changes.	No significant changes.

3.12.2 Careful appraisal of the historical maps show that the site has remained a parcel of farmland until around 2012 with the construction of the present-day residential property and outbuildings within the very north of the site. The remainder of the site has experienced no change or development and still comprises a parcel of land. Development within the surrounding area has been concentrated towards the north, with the construction and subsequent infilling of the reservoirs, and the expansion of residential properties. Immediately southwards, the area has remained farmland with little to no significant changes.

3.13 Anticipated Ground Conditions

3.13.1 Based upon the information obtained during the initial desk study phase, the anticipated ground conditions are expected to comprise of strata as detailed in table 2.

Table 2 – Anticipated Ground Conditions	
Ground Material	Anticipated Condition
Topsoil	Topsoil is expected across the majority of the site at varying thicknesses.
Made Ground Deposits	Made ground is expected towards the north of the site in association with the residential property and outbuildings. Little to no made ground is expected across the wider area.
Superficial Deposits	Diamicton till deposits comprising of clays and silts with minor sand and gravel beds.
Bedrock	Combination of the Old Lawrence Rock (sandstone) and Pennine Lower Coal Measures (interbedded mudstone, siltstone and sandstone).
Groundwater	Expected to lie at depth within bedrock.

3.13.2 Based upon the data available within the desk study and tables 1 and 2 above, potential ground related issues associated with the proposed redevelopment of this site are likely to include the elements noted in table 3 below.

Table 3 – Potential Ground Related Issues		
Type of Issue	Site Specific Issue	Remarks (Refer to walk over survey plan)
Potential on Site Contamination Sources.	Potential varying depths of made ground in and around residential property	Concentrated towards the north of the site.
Potential off Site Contamination Sources.	Changing site usages directly adjacent to the development boundary.	Possible minor levels of contamination from neighbouring properties.
Potential Geotechnical Hazards.	Volume change potential of soils	Till deposits comprising of clays and silts with minor sands and gravels.

3.14 Preliminary Conceptual Model

3.14.1 The information presented within this Desk Study section of this report has been used to compile a preliminary conceptual model for the site. The identified potential contaminant and receptors have been considered along with any possible pathways that may link them. The resulting pollution linkages are considered in table 4. The risk classification has been estimated in accordance with the terms and definitions based upon CIRIA C552 Contaminated Land Risk Assessment, A Guide to Good Practice.

Table 4 – Preliminary Conceptual Site Model						
Potential Source	Potential Receptor	Possible Pathway	Probability	Consequence	Risk	Mitigation / Investigation
Contaminated soils	Future site users	Direct contact of soils Inhalation or ingestion of soil / dust	UI	Md	Low	Sampling and testing of topsoil deposits to determine their suitability for retention within a residential environment. Sampling and testing of any made ground strata encountered.
	Surface water in the vicinity of the site	Leaching of contaminants through drainage system	UI	Md	Low	
	Ground water in aquifer	Leaching of contaminants to ground water	UI	Md	Low	
	Future site users	Vapour migration from soils	UI	Md	Low	
	Proposed buildings and services	Direct contact with contaminated soils	Lw	Md	Moderate/ Low	
	Plants in gardens and soft landscaping	Direct contact	Lw	Md	Moderate/ Low	
Contaminated ground water	Site personnel during construction	Water entering excavations	Lw	Md	Moderate / Low	Sampling of ground water if contamination noted.
	Future site Users	Retained surface water	Lw	Mi	Low	
Toxic and explosive gases	Proposed buildings and occupiers	Ground gas migration into buildings	Lw	Md	Moderate / Low	Potential gas risk from the infilling of reservoirs to the north of the site.
Radon gases	Proposed buildings and occupiers	Ground gas migration into buildings	UI	Md	Low	Less than 1% of properties above the action level. No radon precautions required.
Key: Consequence: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor Probability: Hi = High, Li = Likely, Lw = Low Likelihood, UI = Unlikely						

4.0 SITE WORKS

4.1 Intrusive Works

- 4.1.1 The ground conditions present within this site have been investigated utilising a series of five (5 No.) window sample boreholes and fourteen (14 No.) trial pits supervised by a REFA Engineer utilising a backhoe style excavator.
- 4.1.2 Representative samples of strata encountered during these investigation works have been retained for laboratory analyses and testing where considered to be appropriate. Visual appraisal of the strata present has also been undertaken during these investigations.

4.2 Locations

- 4.2.1 The locations of the boreholes were chosen by ourselves in conjunction with the desk study information. The locations were chosen in an effort to identify the representative ground conditions and shallow geology present across the whole site area.
- 4.2.2 The locations of each of the window sample and trial pit positions are indicated upon the appended exploratory hole location plan 23154/01A. These locations are shown in relation to site features present at the time of the investigations. It should be noted that these intrusive investigations have been limited to the areas where access was available within the site.

4.3 Records

- 4.3.1 During the investigation's details of the strata types, water entries, ground conditions and levels have been maintained by the site engineer. This information has been collated into a series of borehole and trial pit journals which are appended to this report for reference.

4.4 Targeting

- 4.4.1 The investigation locations were undertaken to identify the shallow superficial strata present over the whole site area, though it is acknowledged that ground conditions may vary between investigation locations.
- 4.4.2 The investigation locations have been spread over the whole area of the site in accordance with the recommendations laid down in BS10175: 2011 "Investigation of Potentially Contaminated Sites". The initial ground investigation strategy is detailed within table 5.

Table 5 - Initial Ground Investigation Strategy		
Exploratory Hole No.	Target	Purpose
WS01-WS05 TP01 – TP14	Generally, over the site	To determine the general nature of underlying soils and geology including: 1. Nature, distribution and thickness of made ground. 2. Nature, degree and extent of potential contamination. 3. Content of unacceptable material e.g., peat and biodegradable matter etc. 4. Suitability of the ground for the founding of structures. 5. Engineering properties of the ground.

5.0 GROUND CONDITIONS

5.1 Topsoil

- 5.1.1 Topsoil deposits were recorded across the site to a maximum depth of 0.40m and comprised a dark grey silty clay with abundant rootlets. The topsoil has been sampled and sent for laboratory testing to determine its suitability for reuse and retention within a residential environment.

5.2 Made Ground

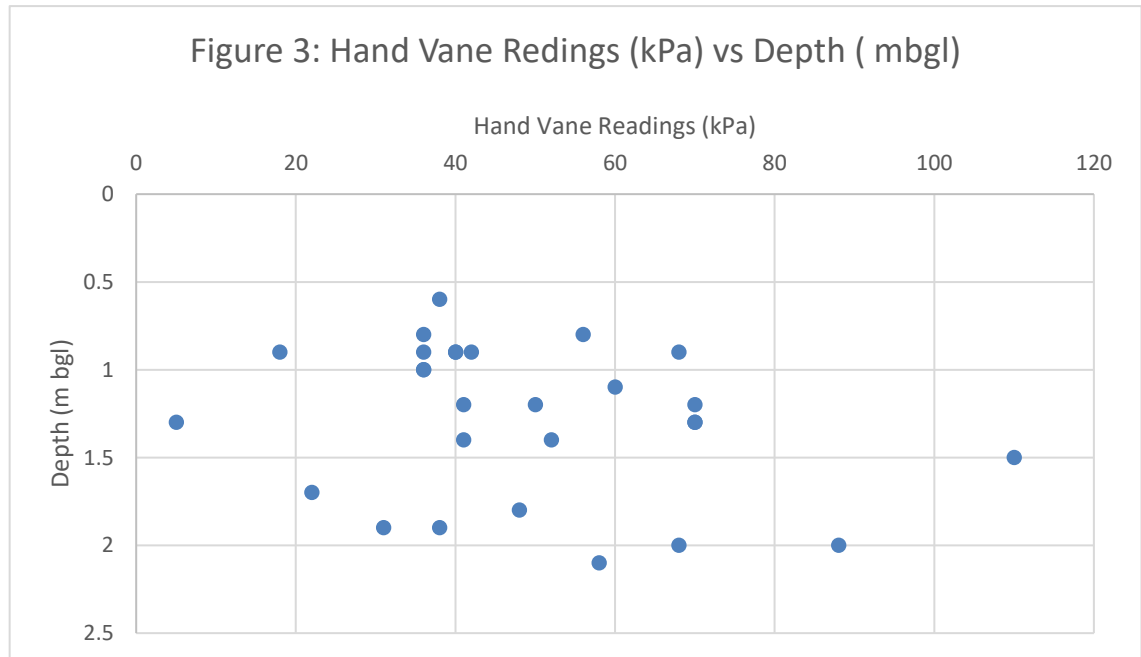
- 5.2.1 Made Ground was encountered within WS01 only to a maximum depth of 2.20m bgl and comprised a soft dark brown gravelly sandy clay with gravel of brick and fragments of glass to 0.50m bgl. This was seen to be underlain by a sandy gravel with fragments of ceramics to 0.70m, followed by dark grey clay with gravel of mudstone, sandstone and concrete, with fragments of plastic to 2.20m bgl.
- 5.2.2 Due to the variable nature of the made ground material, it is considered that the made ground is incapable of offering a uniform safe bearing capacity for foundations.

5.3 Natural Strata

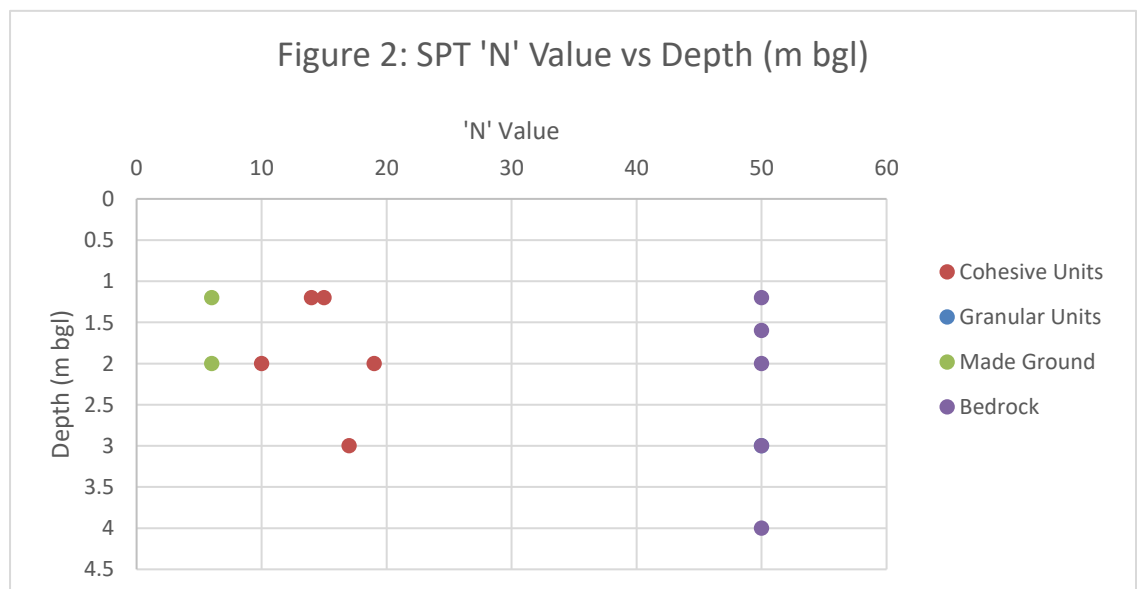
- 5.3.1 These investigations have identified cohesive strata across the site, with isolated pockets of granular sands towards the north west and eastern boundary. The upper clay units compose of very soft to soft, grey mottled orangish brown slightly gravelly silty clay with frequent sand pockets. Deeper soft units have been identified predominantly towards the south east (TP05, TP06 and TP12) and within isolated pockets (TP02 and WS01) to depths of up to 2.30m bgl.
- 5.3.2 Strength of the cohesive clay units increases with depth, with a marked transition from around 1.00m below existing ground level. These firmer units generally comprise of grey mottled brown, slightly gravelly, slightly sandy silty clay with an occasional cobble content of sandstone and mudstone.

In situ standard penetration tests (SPTs) have recorded 'N' values ranging from 10 to 18 within the clay. Whilst in-situ hand vane tests have recorded results between 5 kPa and 110 kPa. Based upon this information we can consider the clay strata of offering a safe bearing capacity in the order of 90kN/m² at a minimum depth of 1.00m bgl. Greater bearing capacities can be achieved with increasing depth.

- 5.3.3 Granular sands were recorded within only three locations (WS01, WS04 and TP01) and included for a shallow and deeper unit. The shallower sand within TP01 at depths between 0.40m and 0.70m comprised a dark grey mottled brown clayey sand, whilst within WS04 at 0.50m to 1.20m, the strata consist of a brown slightly gravelly sand with gravel of sandstone. By contrast, the underlying deeper sands, recorded from depths of 2.00m (TP01) recorded slight brown sand, whilst WS01 recorded a dark brown gravelly, clayey sand from 2.80m to 3.40m bgl. In situ standard penetration tests were only conducted within the granular units in WS01 at 3.00m and recorded an 'N' value of 50 blows over 245mm.
- 5.3.4 Figure 2 below plots the 'N' value of the cohesive, granular and made ground strata alongside the highly weathered bedrock strata against depth. The plots shows weaker readings within the made ground strata, increasing in strength within the clay units. All in-situ standard penetration test refused within the weathered bedrock strata.



5.3.5 Results from the in-situ hand vane tests have been plotted within Figure 3 overleaf. The graph shows that the majority of the softer clays are at the shallower depths, with foundations needing to be extended beyond these points. From 1.00m below ground level, the KPa of the clays increase to, in most cases, a suitable strength for the installation of foundations. Nevertheless, a Development Constraints Plan has been appended to this report which details further foundation recommendations and constraints across the development site.



5.4 Bedrock

- 5.4.1 During these investigations works, an extremely weak, thinly laminated, grey, highly weathered mudstone has been identified across the site at depths between 1.60m and 4.00m bgl and generally coincided with either refusal of the SPT or termination of the trial pits due to a failure to progress. It is believed this stratum represents the mudstone units within Pennine Lower Coal Measures Formation.
- 5.4.2 By contrast, TP07 and TP08 recorded light grey, slightly sandy clayey gravel of sandstone with occasional sandstone boulders and a high sandstone cobble content. Reference to BGS mapping shows the Old Lawrence Rock to possibly underly the site within the eastern corner, before being conjected by the inferred fault.
- 5.4.3 Although not all exploratory hole locations recorded the presence of bedrock during the investigation works, we can presume that bedrock lies at a relatively shallow depth across the development site. The underlying bedrock is considered to offer a safe bearing capacity within the weathered zone of at least 250kN/m². However, this increases significantly within the un-weathered material where bearing capacities in excess of 350kN/m² are achievable.

5.5 Groundwater

- 5.5.1 These intrusive investigations have identified groundwater ingress within seven (7 No.) positions at depths between 1.50m and 3.00m below existing ground level. The water strike within the cohesive strata is considered to represent perched water. It is possible that minor water entries are likely to occur over a longer period of time where groundwater accumulates between the surface and underlying permeable clay material. It is also important to note that any sand deposits identified at depth may be susceptible to running sand conditions.
- 5.5.2 TP05 and TP06 along the southern boundary have recorded the ingress of groundwater coinciding with the introduction of the weathered mudstone bedrock. It is possible that natural groundwater lies within the underlying bedrock and any excavations made to this depth may require localised pumping techniques.

Table 6: Summary of Groundwater Entries

Position	Depth (m bgl)	Strata	Comments
WS01	3.00	Sand	Ingress
TP02	1.60	Clay	Perched
TP04	1.80	Clay	Perched
TP05	2.00	Mudstone	Ingress
TP06	2.00	Mudstone	Ingress
TP10	1.50	Clay	Perched
TP12	2.00	Clay	Perched

- 5.5.3 It should be acknowledged that further localised groundwater may accumulate within the clay and sand deposits, especially during episodes of intense rainfall, and that this may locally result in flooding of deeper excavations and require localised sump pumping techniques.

5.6 Excavations

- 5.6.1 The natural strata across the site typically comprises of soft becoming stiff cohesive clays units, with an increase in granular sands and gravels towards the north eastern corner and north west of the development site. Shallow bedrock has been noted across most of the site, from an average depth of 2.00m bgl.

Excavations within the clay and bedrock strata would be anticipated to be capable of remaining open for a significant period of time without side support. However, the presence of sands, coinciding with groundwater in certain locations could result in unstable ground conditions. Therefore, there remains a risk of sudden collapse of excavations to ground workers and all excavations made within the site should be provided with appropriate side support.

- 5.6.2 It is essential that personnel should not be allowed to approach or enter any excavation made upon this site unless appropriate precautions have been adopted to ensure that hazardous side instability has been prevented. This is particularly important in relation to foundation and drainage construction where personnel may be specifically required to enter deeper excavations for construction purposes. Reference should be made to H.S.E. publications 150 for guidance.

5.7 Contamination

- 5.7.1 The intrusive investigations have recorded made ground only within WS01 to a depth of 2.20m bgl, noting also the presence of anthropogenic materials. Representative samples of the made ground material has been retained for analysis to determine whether it is suitable for retention within the proposed development.
- 5.7.2 Topsoil deposits have been recorded across the wider site area and further samples have been obtained to determine the topsoil's suitability for reuse and retention within the proposed residential development.

5.8 Sampling

- 5.8.1 Based upon the initial site appraisal in conjunction with the findings of the intrusive investigation, a series of representative samples of the strata encountered have been retained for laboratory analyses. These analyses have been intended to determine the potential presence of any contamination which may represent a hazard to the site operatives or end users of the site. This section of work is considered in more detail in section 7 of this report.

5.9 SUDS

- 5.9.1 Assessment of the ground conditions present within this site in terms of sustainable urban drainage confirms the presence of topsoil overlying effectively impermeable cohesive natural strata across the majority of the site. Where granular units and bedrock were identified, this typically corresponded with the ingress of groundwater. As such, we consider the site is unsuitable for the adoption of a soakaway system and other means of surface water disposal should be considered.

6.0 CONTAMINATION ANALYSIS & ASSESSMENT CRITERIA

6.1 Sampling

- 6.1.1 This investigation has identified made ground deposits within WS01, whilst topsoil has been recorded across the wider site area. A total of ten (10 No.) samples of strata have been retained during this investigation for chemical analysis. These samples are considered to be representative of the ground conditions within the site and form a basis for assessment of their potential for retention within a residential environment.

- 6.1.2 All samples obtained from this site were considered to be subject to a programme of PAH analyses. Accordingly, all samples have been placed into a 500ml wide necked brown glass jar. All soil samples have been stored in cool boxes at temperatures of approximately 4° (+ or - 2°C) until delivery to the selected laboratory. All sample containers were marked with the site address, trial pit or borehole number, depth and date of sampling. All samples have been tested within the specified handling period to accord with the sampling protocol presented by i2 Analytical Ltd.

6.2 Range

- 6.2.1 Made ground deposits have been identified within WS01 only, with topsoil deposits extending over the wider site area. Representative samples of the made ground and topsoil have been retained for analysis to determine whether their suitable for retention within the proposed development.
- 6.2.2 Desk Study information has not indicated any potentially naturally occurring elevated concentrations of contaminants within the natural strata and therefore, the natural strata is considered suitable for retention within the proposed development.

6.3 Laboratory

- 6.3.1 All samples selected for chemical analyses have been returned to i2 Analytical Ltd, who are an MCERTS and UKAS accredited laboratory facility. Each sample has been subject to a range of chemical analyses to determine the concentrations of a wide range of common contaminants applicable to the former use of this site and the materials present. Details of the analysis programme are shown in table 7 below. Confirmation of the UKAS and MCERTS accreditations for each test is indicated within the results which are appended to this report.

6.4 Development Proposals

- 6.4.1 We understand that the site is to be re-developed in a residential manner with associated rear gardens, areas of hard standing and access roads. It is essential to ensure that the materials present within the sensitive site areas are suitable for retention within a residential environment.

6.5 Analysis Range

- 6.5.1 The preliminary conceptual model identifies that there is the potential for a pollutant pathway linkage to be present at the site and that further assessment is required. Table 7 below confirms the range of analyses undertaken upon the samples of made ground and topsoil obtained from this site.

Table 7: Chemical Testing Schedule		
Analysis	Determinands	No. of Samples
Metals	Arsenic, Cadmium, Chromium (total), Copper, Lead, Mercury, Nickel, Selenium, Zinc	10
Organics 1	PAH – USEPA 16 suite, Phenol	10
Asbestos	Asbestos Screen	8
Inorganics	Cyanide, Soluble sulphates, Sulphide, pH, TOC	10
Hydrocarbons	TPH (CWG) (BTEX)	2

6.6 Results

- 6.6.1 Full details of the chemical analyses results are appended to this report for reference and should be read in conjunction with the comments and recommendations regarding risk assessments. Summaries of the test results are presented in conjunction with the current assessment criteria in Section 7 of this report.

6.7 Approach

- 6.7.1 The current UK approach to the consideration of contaminated land is based upon the Principals of risk assessment. This in turn is founded upon the use of a source-pathway-target Principal in order to establish the presence of a potential pollutant linkage. Our approach to the risk assessment is consistent with UK guidance and best practice. As advocated in the EA Policy Statement: Guidelines for Environmental Risk Assessment and Management a tiered approach has been adopted. This tiered approach is central to Part IIA of the Environmental Protection Act 1990 and the Town and Country Planning Act 1990.

6.8 Site Classification

- 6.8.1 A proposed site layout has been made available to us and we can confirm that the site is intended to be developed on a private residential basis with private rear garden areas. Accordingly, the site usage has been considered on the basis of an end land use of **residential with plant uptake** as defined by EA Science Report SC050021/SR3 2009 in relation to the most recent soil guideline values.

6.9 Criteria

- 6.9.1 The concentrations of contaminants within the ground have been compared to a range of generic soil guideline values that have been prepared by DEFRA and the Environment Agency. Where published, soil guideline values (SGV) have been utilised as intervention values for the purpose of an initial tier 1 assessment.
- 6.9.2 At the time of the preparation of this report soil guideline values were available only for a limited number of contaminants and the development of both the CLEA model and additional soil guideline values is on-going. Where published soil guideline values are available, they have been utilised as intervention values for the purposes of an initial tier 1 assessment. A number of SGV's have recently been updated to reflect a modern approach to the protection of human health.
- 6.9.3 In March 2014 the Department for Environment Food & Rural Affairs published SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination Policy Companion Document. This document provides a series of Category 4 screening levels based upon differing land uses. Reference has been made to the values presented within this report in relation to the appropriate land usage.
- 6.9.4 Where soil guideline values were not published at the time of preparing this report, generic assessment criteria (GAC) published by Land Quality Management Ltd., in conjunction with the Chartered Institute of Environmental Health have been adopted. The values published in the "LQM/CIEH S4UL's for Human Health Risk Assessment" Registration No. S4UL3265.

- 6.9.5 Reference has also been made to published soil screening values presented by Atkins Ltd., under their Atrisk Subscription Service. The SSVs have been adopted where SGVs or GACs are not available. The remaining contaminants have been considered based upon information that was the best available at the time of the study.

7.0 RESULTS OF ANALYSIS & QUALITATIVE RISK ASSESSMENT

7.1 Model

- 7.1.1 As discussed above, assessment of contaminated land is based upon a simple assessment of pollutant linkages referred to as the source-pathway-target model. This assessment considers the current or proposed usage of the site in terms of suitability for use. This implies the use of risk assessment in Principal in order to evaluate the potential effects and concerns of contamination on a site-specific basis.
- 7.1.2 Initial assessment of the chemical analyses results has been undertaken to assess the concentrations of determinands in relation to tier 1 assessment criteria. The summary of these test results is detailed below.

7.2 Results Summary

- 7.2.1 The samples were obtained from the made ground deposits across the whole of the site. Tables 8 to 11 have been prepared as a summary of the laboratory analyses depending upon the class of analyses undertaken and the strata type present. The test results have been compared to the adopted assessment criteria, relating to a proposed residential with home grown produce land usage.

7.3 Metals & Inorganics

- 7.3.1 Table 8 indicates the range of contaminants that were included within the metals and inorganics analyses along with their respective assessment criteria. Elevated lead concentrations were recorded within WS01 at 0.20m, within the made ground strata.

Table 8: Summary of Contamination Analysis: Metals & Inorganics					
	No. of Samples	Range of Values (mg/kg)	Assessment Criteria (mg/kg)	No. of Samples Failing	Locations
Arsenic	10	14 – 27	37 ³	0	-
Cadmium	10	<0.2 – 1.0	11.0 ³	0	-
Chromium (total)	10	15 – 330	910 ³	0	-
Copper	10	25 – 100	2400 ³	0	-
Lead	10	51 – 240	200 ¹	1	WS01 at 0.20m
Mercury	10	<0.3 – 0.4	40 ³	0	-
Nickel	10	10 – 150	180 ³	0	-
Selenium	10	<1.0	250 ³	0	-
Zinc	10	47 - 190	3700 ³	0	-
Total Cyanide	10	<1.0	34.0 ²	0	-
Phenol	10	<1.0 – 1.2	200 ³	0	-
pH	10	5.6 – 7.7	-	0	-
SOM	10	3.27 – 10.82	-	0	-
TOC %	10	1.9 – 9.1	-	0	-
SO ₄ (2:1)	10	31 - 1300	500	0	-
Asbestos	8	ND	Present/Absent	0	-
¹ DEFRA : SP1010 : Category 4 Screening Levels ² Atkins Atrisk SSV residential with home grown produce (2.5% SOM) ³ LQM and CIEH S4UL's for Human Health Risk Assessment (Registration No. S4UL 3265) residential with home grown produce (2.5% SOM) ⁴ BRE Special Digest 1:2005 DS-1 (units in g/l)					
ND – None Detected					

7.3.2 Samples of topsoil and made ground have been screened for the presence of asbestos. No asbestos fibres have been identified and therefore, no remedial works are required in terms of asbestos containing materials and fibres.

7.4 Speciated PAH

7.4.1 The made ground and topsoil samples retained from the site investigation have been subject to a programme of analyses which have assessed the concentrations of the individual constituents of the polycyclic aromatic hydrocarbon series. A summary of these results is shown in table 9. The assessment criteria utilised are based upon the presence of 2.5% soil organic matter within the samples generally. Reference to the tests results does however show more variable soil organic matter content.

Table 9: Summary of Contamination Analysis: Organics: PAH USEPA 16 Suite

	No. of Samples	Range of Values (mg/kg)	Assessment Criteria ¹ (mg/kg)	No. of Samples Failing	Locations
Naphthalene	10	<0.05 – 0.1	5.6	0	-
Acenaphthylene	10	<0.05 – 0.05	420	0	-
Acenaphthene	10	<0.05 – 0.2	510	0	-
Fluorene	10	<0.05 – 0.15	400	0	-
Phenanthrene	10	<0.05 – 1.5	220	0	-
Anthracene	10	<0.05 – 0.37	5400	0	-
Fluoranthene	10	0.05 – 2.4	560	0	-
Pyrene	10	0.05 – 2.2	1200	0	-
Benzo[a]anthracene	10	<0.05 – 1.0	11.0	0	-
Chrysene	10	<0.05 – 1.3	22.0	0	-
Benzo[a]pyrene	10	<0.05 – 1.1	5.0 ²	0	-
Indeno[123-cd]pyrene	10	<0.05 – 0.57	36.0	0	-
Dibenz[ah]anthracene	10	<0.05 – 0.15	0.28	0	-
Benzo[ghi]perylene	10	<0.05 – 0.61	340	0	-
Benzo[b]fluoranthene	10	<0.05 – 1.2	3.3	0	-
Benzo[k]fluoranthene	10	<0.05 – 0.61	93	0	-

¹ LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (2.5% SOM)

² DEFRA : SP1010 : Category 4 Screening Levels

7.4.2 Assessment of table 9 has indicated there are no elevated concentrations of PAH compounds above the adopted assessment criteria.

7.5 TPH (CWG)

7.5.1 As part of the analysis of the made ground material, chemical testing has been extended to the hydrocarbon fractions and the results are appended in table 10. A review of the data indicates the results are below the assessment criteria and as such, there is no requirement for remediation in terms of hydrocarbons.

Table 10: Summary of Contamination Analysis: Organics: TPH (CWG) Suite

	No. of Samples	Range of Values mg/kg	Assessment* Criteria mg/kg	No. of Samples Failing	Notes
Aliphatic EC> 5 - 6	2	<0.01	78.0	0	-
Aliphatic EC> 6 - 8	2	<0.01	230	0	-
Aliphatic EC> 8 - 10	2	<0.01	65.0	0	-
Aliphatic EC> 10 - 12	2	<1.0	330	0	-
Aliphatic EC> 12 - 16	2	<2.0 – 4.5	2400	0	-
Aliphatic EC> 16 - 35	2	<8.0 – 48	92000	0	-
Aliphatic EC> 35 - 44	2	<8.4 - 19	92000	0	-
Aromatic EC> 5 - 7	2	<0.01	140	0	-
Aromatic EC> 7 - 8	2	<0.01	290	0	-
Aromatic EC> 8 - 10	2	<0.02	83.0	0	-
Aromatic EC> 10 - 12	2	<1.0	180	0	-
Aromatic EC> 12 - 16	2	<2.0 – 5.6	330	0	-
Aromatic EC> 16 - 21	2	<10 – 22	540	0	-
Aromatic EC> 21 - 35	2	12 – 53	1500	0	-
Aromatic EC> 35 - 44	2	<8.4 - 22	1500	0	-

*Criteria values based upon LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (2.5% SOM)

7.6 BTEX

- 7.6.1 As part of the hydrocarbon analysis, the BTEX range of hydrocarbons have been analysed. All concentrations have been recorded below the limit of detection (LOD), and therefore no remediation is required in terms of BTEX fractions.

Table 11: Summary of Contamination Analysis: Organics: BTEX Suite

	No. of Samples	Range of Values (mg/kg)	Assessment* Criteria (mg/kg)	No. of Samples Failing	Notes
Benzene	2	<0.005	0.17	0	
Toluene	2	<0.005	290	0	
EthylBenzene	2	<0.005	110	0	
M/Pylenes	2	<0.005	140	0	
O - Xylene	2	<0.005	140	0	
Methyl tert-Butyl Ether	2	<0.005	20 ¹	0	
Criteria values based upon LQM & CIEH S4UL's for human health risk assessment (Registration No. S4UL 3265) – Residential with home grown produce (2.5% SOM) ¹ Atkins Atrisk SSV residential with home grown produce (1% SOM)					

7.7 Sulphates

- 7.7.1 Within the programme of laboratory testing each sample has also been analysed to determine the concentration of water-soluble sulphates within the ground. Reference to the laboratory results presented by i2 Analytical Ltd confirms that soluble sulphates are present at concentrations of 31 and 1300 mg/l. The elevated readings of 790 and 1300 mg/l were recorded within WS01 at 1.20m in the made ground material. It is possible due to the contamination noted within WS01 and existing site levels, the made ground may be removed within this area and as such, Table 12 details the two possible concrete classification scenarios, either taking into consideration the elevated omitting, if this material can be segregated. Reference to BRE Special Publication 1: 2005 "Concrete in Aggressive Ground".

Table 12: Concrete Classification Based on a Greenfield Location with Mobile Groundwater

	Laboratory Results (mg/l)	S04(2:1) (mg/l)	pH	Design Sulphate Class	ACEC Class	DC Class (100 years working life)
Omitting WS01 readings	31 – 200	<500	>5.5	DS-1	AC-1	DC-1
Including WS01 readings	31 - 1300	500 - 1500	>5.5	DS-2	AC-2	DC-2

7.8 Index Properties

- 7.8.1 A total of ten (10 No.) samples of the natural clay strata encountered during these investigations have been returned to a civil laboratory to determine their index properties. Copies of the laboratory tests are appended to this report for reference. A summary of the plasticity index tests are shown in table 13.

Table 13: Summary of Plasticity Index Test Results

Location	Depth (m bgl)	Modified Plasticity Index (%)	NHBC Volume Change Potential
WS01	1.20	17.82	Low
WS03	2.30	20.79	Medium
TP04	1.20	12.96	Low
TP05	1.40	14.40	Low
TP06	1.90	12.24	Low
TP07	0.90	16.00	Low
TP08	1.40	12.60	Low
TP09	1.70	24.36	Medium
TP10	1.00	10.01	Low
TP14	1.80	14.49	Low

7.8.2 Generally, the clays within the site exhibit a low volume change potential, with modified plasticity index results between 10.01% and 17.82%. However, two of the samples have recorded modified plasticity index results between 20.79% and 24.36%, which would equate to a medium volume change potential. With reference to the NHBC Guidance, Chapter 4.2, on average the site could be classified as having a low volume change, but under worst case scenario, this should be increased to a medium volume change potential.

8.0 GAS MONITORING

8.1 General

8.1.1 The Desk Study identified a historical landfill located 104m north west at Clay Lane Water Treatment Works, in addition to the area of made ground 99m north west and infilling or former reservoirs 114m north west and 165m north. It was therefore considered that base upon the this information, a programme of ground gas monitoring should be undertaken, with gas monitoring standpipes being installed within positions WS01, WS02, and WS03 to assess any possible gas generation issues.

8.2 Installation

8.2.1 To identify the presence of ground gases generating from the made ground material, window sample boreholes have been installed with permanent gas monitoring wells. In an effort to determine the presence of any gas migration or generation the response zone has been created at depths varying between 1.00m and 4.00m bgl.

8.2.2 The installations have included for the insertion of high-density polyethylene 50mm diameter plain and slotted standpipes. The annulus space around the standpipes has been filled with non-calcareous pea gravel in the range of 2mm – 5 mm. Above and below each response zone a minimum 1.0m bentonite clay seal has been installed and each position has been finished with a gas tap and flush lockable steel cover. Full details of the installations are appended to this report for reference.

8.3 Dates

8.3.1 Gas monitoring points were installed on the 28th October 2024 and the first visit was undertaken on the 22nd November 2024. Monitoring has been carried out over a three month period and was comprised of a gas monitoring visit every two weeks, totalling six visits over three months. The final visit was carried out on the 30th January 2025.

8.4 Procedure

8.4.1 The installation of the gas wells and gas monitoring procedures have been based upon the recommendations laid down in CIRIA C665 "Assessing Risks Posed by Hazardous Ground Gases to Buildings" along with NHBC publication No. 4 "Guidance on Evaluation of Development Proposals on Site where Methane and Carbon Dioxide are Present". In accordance with the documentation, it is intended that the period of monitoring will be up to three months with at least six monitoring visits being undertaken during that period. This assessment is based upon Tables 5.5a and 5.5b of CIRIA C665 and relates to a residential development with a low potential source of gas.

8.5 Range

8.5.1 The installed gas wells are intended to be monitored for flammable gas calibrated to methane, carbon dioxide, oxygen and gas flow using a portable infrared gas analyser. The analyser is an LMS type G3Xi gas meter and has been calibrated with an annual period. Full details of the analysis program and assessments are presented within the appendix of this report.

8.6 Monitoring

8.6.1 The gas monitoring recommendations require that gas monitoring rounds should encompass various climatic conditions particularly in relation to atmospheric pressures. Ideally at least one round should be undertaken at an atmospheric pressure of less than 1000mb although this has not been achievable over the monitoring period. Readings at falling pressures and after heavy rain are also considered to be desirable.

8.7 Results

8.7.1 The conceptual site model suggests that the potential for explosive and toxic gases to be generated within this site is based on high on the basis of the following factors:-

- Historical landfill located 104m north west
- Made ground deposit – 99m north west
- Infilled reservoirs – 114m north west and 165m north

8.7.2 The final results of the ground gas monitoring are reported below in table 14.

Table 14: Summary of Gas Monitoring Results								
Location	No of Monitoring Visits	Methane % v/v	Carbon Dioxide % v/v	Oxygen %	Flow l/hr	W.L. Depth	Base Of Installation (m)	Atmospheric Pressure (mB)
WS01	6	0.0	0.0-8.2	13.0-20.0	0.00	0.00-2.50	3.00	960 – 1002
WS02	6	0.0	0.0-4.2	16.9-20.1	0.00	0.00-2.00	3.00	962 – 1002
WS03	6	0.0	0.0-5.2	15.7-20.1	0.00	0.00-DRY	4.00	960 - 1002

Note ND - none detected

8.7.3 Final gas results have identified a maximum concentration of methane at 0.0% and maximum carbon dioxide concentration has been identified at 8.2% within positions WS01.

8.7.4 Monitoring has recorded no measurable flows and therefore minimum flow value of 0.1 l/hr has been utilised for the calculation of a gas screening value (gsv).

- 8.7.5 Based upon the monitoring data calculations we can confirm that the maximum GSV for methane is 0.0% and the maximum GSV for carbon dioxide is 0.0082 l/hr. Reference to Table 8.5 CIRIA C665 confirms that based upon this GSV values the site should be classified as Characteristic Situation 1. However, carbon dioxide has been recorded at levels above 5% and therefore, gas protective measures will increase to Characteristic Situation 2.
- 8.7.6 The elevated carbon dioxide reading identified within WS01 has been attributed to the Made Ground strata recorded within this position to 2.20m. It is considered within the area of WS01, the level of the ground has been raised which has attributed to a localised area of Made Ground. As such, based on the results of ground gas monitoring programme, localised ground gas protection measures are required within the 'raised' area, as identified within the appended development constraints plan, 23154/02B.
- 8.7.7 Within the area of WS03, one slightly raised reading was recorded within WS03 at 5.2% and the subsequent visits, have not recorded any carbon dioxide readings. The material encountered within this position comprised of natural topsoil deposits overlying superficial deposits which do not contain any organic content. As the remaining visits did not show any levels of carbon dioxide or methane, it is considered that this reading poses a very low risk to the end users of the site and subsequently ground gas protection measures are not required within the vicinity of WS03.

9.0 DISCUSSIONS

9.1 General

- 9.1.1 The desk study information has identified the site has remained a parcel of farmland until around until around 2012 with the construction of the present-day residential property and outbuildings within the very north of the site. The remainder of the site has experienced no change or development and still comprises a parcel of land. Development within the surrounding area has been concentrated towards the north, with the construction and subsequent infilling of the reservoirs, and the expansion of residential properties. Immediately southwards, the area has remained farmland with little to no significant changes.
- 9.1.2 The ground investigation has identified made ground deposits only within WS01 to a depth of 2.20m bgl. The remainder of the site noted topsoil deposits overlying soft becoming firm clays, underlain by shallow mudstone of the Lower Pennine Coal Measures Formation. The eastern boundary recorded highly weathered bedrock of the Old Lawrence Rock from 1.00m.
- 9.1.3 The results of the chemical analyses undertaken upon representative samples of strata obtained from this site have been assessed in Section 7 above and subject to further discussion below.

9.2 Contamination

- 9.2.1 The chemical analysis undertaken on the representative samples of Made Ground material have identified elevated lead concentrations within WS01 only at 0.20m. Analysis of the topsoil material from across the whole site area has not recorded any elevated concentrations of metals, inorganics, PAH or TPH compounds and therefore, the topsoil is deemed suitable for reuse and retention within the proposed development.

- 9.2.2 Where any visual or olfactory evidence of suspicious ground conditions are encountered during the development process, it is important that works within this area are terminated and appropriate authorities notified. Appropriate inspection, sampling and testing should then be undertaken to determine whether these materials represent a potential hazard to site operatives or end users of the site prior to works recommencing.

9.3 Revised Conceptual Site Model

- 9.3.1 As a result of these intrusive ground investigations and subsequent programme of chemical analyses, it has been possible to revise the preliminary conceptual site model presented in Section 3. The revised conceptual site model is now shown in table 15. This report adopts the methodology for risk evaluation presented in CIRIA report C552 'Contaminated Land Risk Assessment – A Guide to Good Practice', 2001. The method is qualitative and involves the classification of the following:

- 9.3.2 In the context of regulatory definition of 'Contaminated Land' (as defined by the EPA 1990), 'very high' and 'high' risks would fall under the classification of 'Contaminated Land'. 'Moderate' risk could also potentially be classified as 'Contaminated Land' but any lower risk rating would not. Thus, the following potential exposure pathways between potential and known contaminant sources based on information provided to date and receptors are tentatively identified in table 15.

Table 15 – Revised Conceptual Site Model						
Potential Source	Potential Receptor	Possible Pathway	Probability	Consequence	Risk	Mitigation / Investigation
Contaminated soils	Future site users	Direct contact of soils Inhalation or ingestion of soil / dust	Li	Mi	Moderate / Low	High lead concentrations noted within the made ground material at WS01 (0.20m bgl). Localised programme of capping required. Testing of topsoil recorded no elevated concentrations and is therefore suitable for reuse and retention.
	Surface water in the vicinity of the site	Leaching of contaminants through drainage system	Li	Mi	Moderate / Low	
	Ground water in aquifer	Leaching of contaminants to ground water	UI	Md	Low	
	Future site users	Vapour migration from soils	UI	Md	Low	
	Proposed buildings and services	Direct contact with contaminated soils	UI	Md	Low	
	Plants in gardens and soft landscaping	Direct contact	Lw	Mi	Low	
Contaminated ground water	Site personnel during construction	Water entering excavations	Lw	Mi	Very Low	
	Future site Users	Retained surface water	Lw	Mi	Very Low	
Toxic and explosive gases	Proposed buildings and occupiers	Ground gas migration into buildings	Li	Md	Moderate	CS2 Ground Gas Protection Measures required within the vicinity of WS01.
Radon gases	Proposed buildings and occupiers	Ground gas migration into buildings	UI	Md	Very Low	Less than 1% of properties above the action level. No radon precautions required.
Key: Consequence: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor Probability: Hi = High, Li = Likely, Lw = Low Likelihood, UI = Unlikely						

9.4 Foundations

- 9.4.1 The investigation has identified topsoil overlying natural drift deposits across the whole site area. The superficial strata generally comprised soft becoming stiff clays, with isolated pockets of granular sands towards to the north west and eastern boundary. Strength of the cohesive clay units increases with depth, with a marked transition from around 1.00m bgl. In-situ standard penetration tests have recorded 'N' values ranging from 10 to 18 and based upon this information, the clay units are considered capable of offering a safe bearing capacity of 90kN/m² at a minimum depth of 1.00m bgl.
- 9.4.2 Available BGS records show an inferred fault of unknown displacement located within the development site. Taking into consideration the information gained from the investigation, alongside the presence of the fault, it is anticipated that the majority of plots can be found utilising traditional strip or deep strip foundations. However, reinforcement is required within all strip footings due to the presence of the geological fault (B385).
- 9.4.3 The Development Constraints Plan (23154/02/C) identifies an area of soft ground conditions towards the south west of the site (TP05, TP06, TP12). These deposits have recorded soft clays to depths of 2.30m bgl, overlying highly weathered mudstone bedrock and as such, there will be a requirement for foundations within this area to be taken deeper. Bedrock was encountered within the majority of locations, at depths ranging from 1.60m to 4.00m bgl as a weathered mudstone, whilst TP07 and TP08 recorded a sandstone gravel, possibly representing the start of the Old Lawrence Rock formation. It is anticipated that within the highly weathered zones, the bedrock is capable of offering a minimum safe bearing capacity of 250kN/m², at a minimum depth of 1.60m, increasing rapidly within the un-weathered zone, where bearing capacities in excess of 350kN/m² are achievable.
- 9.4.4 In those areas where softer, weaker strata is present, foundations will need to extend to greater depths. However, it is essential that foundation excavations are not 'over dug' where rock is encountered, as it will then be necessary for the whole foundations to be formed upon rock. Any foundations extending to rockhead, will also require the provision of a reinforced foundation solution, though, a full assessment should be undertaken by a foundations engineer.
- 9.4.5 WS01 towards the north west of the site has recorded deep Made Ground deposits overlying soft clays to 2.80m. Based on the current conditions and site levels, properties within this area should be provided with a piled foundation solution. However, if levels within this area are to be reduced as part of the development process, then this may allow us to remove the gas risk to these plots and also eliminate the need for piling. Final site levels will need to be considered in greater detail, to assess the foundation solution and potential gas risk, based on current monitoring data.
- 9.4.6 The majority of the shallow ground conditions present within the site comprise of cohesive clays which are susceptible to volume change potential as a result of varying moisture content. Laboratory analysis undertaken upon samples of clay strata have shown varying plasticity indices. However, under the worst case scenario, the site is classified as having a medium volume change potential as defined by the NHBC Handbook, Chapter 4.2.

9.5 Ground Floor Construction

- 9.5.1 It is recommended that all properties within the site should be provided with a suspended ground floor construction. This may be of a specialist manufactured pre-cast concrete beam and block type or of a designed cast in situ construction. In those areas where tree root effects are important it is recommended that a pre-cast concrete beam and block type floor is utilised to allow for the provision of a suitable air void below ground floor construction.
- 9.5.2 The programme of ground gas monitoring has concluded and it is recommended that CS2 ground precautions are adopted within the area of WS01 as part of the ground floor construction.

9.6 SUDS

- 9.6.1 Assessment of the ground conditions present within this site in terms of sustainable urban drainage confirms the presence of topsoil overlying effectively impermeable cohesive natural strata across the majority of the site. Where granular units and bedrock were identified, this typically corresponded with the ingress of groundwater. As such, we consider the site is unsuitable for the adoption of a soakaway system and other means of surface water disposal should be considered.

10.0 CONCLUSIONS & RECOMMENDATIONS

10.1 Further Work

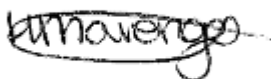
- 10.1.1 Due to the raised concentrations of lead within the Made Ground material in WS01 at 0.20m, there will be a requirement for a programme of capping for plots 43 to 45. In addition, the Remediation Strategy should also include proposals for the adoption of CS2 Gas Protection measures for the plots within the vicinity of WS01. These should be detailed within a formal Remediation Strategy to allow for the safe development of the site.
- 10.1.2 If any unusual or suspicious strata or ground conditions are encountered during the subsequent site stripping preparation work, it will be necessary for these areas to be brought to the attention of the appropriate authorities so that all necessary inspection, sampling and testing may be undertaken to determine whether these materials present a hazard to human health. It is incumbent upon the site contractors to advise a responsible authority of any unusual findings within the site which may then be further investigated.

11.0 NOTES

- 11.1 All reports are for advisory purposes only and all design decisions are the ultimate responsibility of others.
- 11.2 Unless stated otherwise the investigation has been undertaken in general accordance with the recommendations given in BS 5930 : 1999 "A Code of Practice for site Investigations" and the laboratory testing has been carried out in accordance with BS 1377 : 1990 "Methods of Test for Civil Engineering Purposes".

- 11.3** Soil and rock descriptions are generally based on the scales of strength and relative density within BS 5930 although it should be noted that in certain circumstances descriptions are based on site records or a qualitative assessment without the benefit of in-situ or laboratory test results.
- 11.4** The assessment of ground conditions given in this report is based on the results of the fieldwork and laboratory testing carried out and there may be other conditions at the site not encountered by these works, which have not been taken into account.
- 11.5** The scope of the investigation and information provided may not necessarily reflect all the geotechnical and environmental aspects related to the site, and the omission of certain items does not mean that the site is unaffected by such problems.
- 11.6** It should be noted that groundwater levels can vary and may at times be significantly different to those recorded during the investigation and attention is drawn to BS 5930 which indicates that measurements may be necessary over an extended period of time to investigate changes in groundwater pressures due to seasonal, tidal and other causes.
- 11.7** Any recommendations on construction methods within this report are for initial guidance only and all design proposals remain the responsibility of the appropriate contractor/consultant.
- 11.8** Further assessment, investigation, construction activities or time may reveal conditions that were not found during the period of investigation and, therefore, could not have been taken into account in the preparation of the report and where such information might impact upon the stated opinion R. E. Fry & Associates Ltd request the opportunity to review such information and modify the report if necessary.
- 11.9** Where information has been obtained from sources other than the direct findings of the investigation, R. E. Fry & Associates Ltd cannot and does not guarantee the authenticity or reliability of this information.
- 11.10** Where opinions expressed in this report are based on current available guidelines and legislation, no liability can be accepted by R. E. Fry & Associates Ltd for the effects of any future changes to such guidelines and legislation.
- 11.11** This report has been prepared on the instructions and to the requirements of the named client and any unauthorised party using this information for any purpose does so at his own risk and any duty of care to that party is excluded.

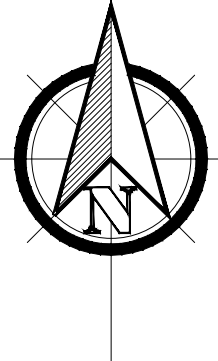
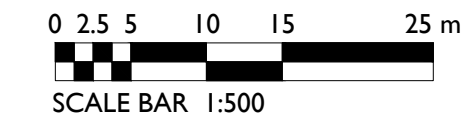
Signed for and on behalf of
R E FRY & ASSOCIATES LIMITED



Hollie Marengo BSc (Hons), MSc, FGS
Senior Geo-Environmental Manager

APPENDIX A

Code	House Type	Bed & Type	Storey	Parking	Unit No.	Build Sq/Ft	Total Build Sq/Ft	Mix %
Affordable								
GOR	Gorsefield	3B-4P Mews	2	2PS	3	970	2910	7%
OAK	Oakrise	4B-5P Semi	2.5	2PS	3	1294	3882	7%
Sub-Total					6	2264	6792	13%
Open Market								
PAR	Parkland	3B-4P Semi	2	2PS	5	1012	5060	11%
MEA	Meadowvale	3B-4P Semi / Detached	2	2PS	9	1094	9846	20%
HIG	Highstone	4B-7P Detached	2	2PS + SIG	7	1396	9772	16%
PEA	Peakridge	5B-8P Detached	2	2PS + SIG	6	1679	10074	13%
STA	Standish	5B-8P Detached	2	2PS + SIG	6	1907	11442	13%
CAP	Capstone	5B-8P Detached	2	2PS + DDG	6	2240	13440	13%
Sub-Total					39	9328	59634	87%
TOTAL					45	11592	66426	100%
Gross Site Area		6.66	Acres					
Nett Site Area		4.23	Acres					
Net Density		11	Units / Acre					
SqFt / Net Developable Acre		15704	SqFt / Acre					



General notes:

- All information on this drawing is copyright ©
- All sizes to be verified on-site
- No dimensions to be scaled off this drawing
- All dimensions to drawing in metres unless otherwise stated
- This drawing is to be read in conjunction with all other project drawings

In locations where it is not possible to erect a boundary treatment on the line of the legal ownership, an additional line will be identified on the above plan to illustrate the approximate fence location. The boundary fence will, therefore, be erected as close to the title boundary as possible without causing damage to the existing features. This may be a result of the following items:

Existing hedgerows/trees and Woodland areas
Existing boundary fences and significant topographical features
Proposed and existing retaining structures and foundations.

The resident is responsible for maintaining all items within the plot boundary identified by the red edge boundary.

DRAWING TO BE PRINTED IN COLOUR.

KEY	
	Red Edge Application Boundary
	Adopted Roads
	Adopted Roads (Red chipping)
	Adopted footpaths
	Shared Drives
	Parking Bays
	Private Paths
	Private Gardens
	Open Space
	Grasscrete / Bodpave ground reinforcement
	Pond / Attenuation Pond
	Self binding hoggin path
	Plot divisional boundaries
	Knee Rail
	Brick Pier Wall & Timber Infill
	Screen Wall R4
	Railings
	Service verge
	Feature Plot with dual aspect elevations
	Affordable Units
	Feather Edge Fencing & gate
	Denotes overhead line swing
	1.2M Estate Railing Gate (BT1201)
	Indicative Native Understorey Scrub mix
	Indicative Native Hedge Planting
	Indicative Ornamental Hedge Planting
	Indicative Ornamental Shrub Planting
	Indicative Tree Planting
	Removed Trees / Hedges
	Retained Trees / Hedges

REV	DATE	DESCRIPTION	BY
Project Title: GREENVALE BAMFORD ROCHDALE			
Drawing Title: PROPOSED SITE LAYOUT (JG Option 07)			
PLANNING			
Drawing No: WH-001-NW-A-401			
Scale: 1:500@A1	Date: Sep 2025	Site Code: 001	
Drawn by: JSG	Checked by: XX	Revision: Q	

APPENDIX B

54, GREENVALE, ROCHDALE, OL11 5QJ

Order Details

Date: 19/02/2024
Your ref: 23154
Our Ref: GS-JBF-XN5-121-69D

Site Details

Location: 386024 413440
Area: 2.73 ha
Authority: [Rochdale Metropolitan Borough Council](#) ↗



Summary of findings

[p. 2 >](#) **Aerial image**

[p. 9 >](#)

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 >	Historical industrial land uses >	0	0	6	40	-
15 >	1.2 >	Historical tanks >	0	0	3	15	-
16 >	1.3 >	Historical energy features >	0	0	2	7	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
18	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
19 >	2.1 >	Historical industrial land uses >	0	0	10	57	-
22 >	2.2 >	Historical tanks >	0	0	4	23	-
23 >	2.3 >	Historical energy features >	0	0	3	7	-
24	2.4	Historical petrol stations	0	0	0	0	-
24	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
25	3.1	Active or recent landfill	0	0	0	0	-
25	3.2	Historical landfill (BGS records)	0	0	0	0	-
26	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
26 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	1	0	-
26	3.5	Historical waste sites	0	0	0	0	-
26	3.6	Licensed waste sites	0	0	0	0	-
27 >	3.7 >	Waste exemptions >	0	0	0	61	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
33 >	4.1 >	Recent industrial land uses >	0	1	7	-	-
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	-
35	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	-
36	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	1	-
36	4.12	Radioactive Substance Authorisations	0	0	0	0	-
36 >	4.13 >	Licensed Discharges to controlled waters >	0	0	0	2	-
37	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
37	4.15	Pollutant release to public sewer	0	0	0	0	-
37	4.16	List 1 Dangerous Substances	0	0	0	0	-
38	4.17	List 2 Dangerous Substances	0	0	0	0	-
38	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
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 >	Superficial aquifer >	Identified (within 500m)				
41 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
42 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
43	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
43	5.5	Groundwater vulnerability- local information	None (within 0m)				
44 >	5.6 >	Groundwater abstractions >	0	0	0	0	24
51 >	5.7 >	Surface water abstractions >	0	0	0	0	17
55 >	5.8 >	Potable abstractions >	0	0	0	0	5
56	5.9	Source Protection Zones	0	0	0	0	-
57	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
58	6.1	Water Network (OS MasterMap)	0	0	0	-	-



58	6.2	Surface water features	0	0	0	-	-
59 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
59 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
60 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
61	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
61	7.2	Historical Flood Events	0	0	0	-	-
61	7.3	Flood Defences	0	0	0	-	-
62	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
62	7.5	Flood Storage Areas	0	0	0	-	-
63	7.6	Flood Zone 2	None (within 50m)				
63	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
64 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
66 >	9.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
67	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
68	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
68	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
68	10.4	Special Protection Areas (SPA)	0	0	0	0	0
68	10.5	National Nature Reserves (NNR)	0	0	0	0	0
69	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
69 >	10.7 >	Designated Ancient Woodland >	0	0	0	1	12
70	10.8	Biosphere Reserves	0	0	0	0	0
70	10.9	Forest Parks	0	0	0	0	0
70	10.10	Marine Conservation Zones	0	0	0	0	0
70 >	10.11 >	Green Belt >	1	0	0	0	0
71	10.12	Proposed Ramsar sites	0	0	0	0	0



71	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
71	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
71	10.15	Nitrate Sensitive Areas	0	0	0	0	0
72	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
73 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
74	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
75	11.1	World Heritage Sites	0	0	0	-	-
75	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
75	11.3	National Parks	0	0	0	-	-
75	11.4	Listed Buildings	0	0	0	-	-
76	11.5	Conservation Areas	0	0	0	-	-
76	11.6	Scheduled Ancient Monuments	0	0	0	-	-
76	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
77 >	12.1 >	Agricultural Land Classification >	Grade 4 (within 250m)				
78	12.2	Open Access Land	0	0	0	-	-
78	12.3	Tree Felling Licences	0	0	0	-	-
78	12.4	Environmental Stewardship Schemes	0	0	0	-	-
79	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
80	13.1	Priority Habitat Inventory	0	0	0	-	-
80	13.2	Habitat Networks	0	0	0	-	-
80	13.3	Open Mosaic Habitat	0	0	0	-	-
80	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
81 >	14.1 >	10k Availability >	Identified (within 500m)				
82 >	14.2 >	Artificial and made ground (10k) >	0	0	2	1	-
83 >	14.3 >	Superficial geology (10k) >	1	0	1	4	-



84 >	14.4 >	Landslip (10k) >	0	0	0	1	-
85 >	14.5 >	Bedrock geology (10k) >	7	1	9	4	-
87 >	14.6 >	Bedrock faults and other linear features (10k) >	1	0	5	3	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
88 >	15.1 >	50k Availability >	Identified (within 500m)				
89 >	15.2 >	Artificial and made ground (50k) >	0	0	1	0	-
90	15.3	Artificial ground permeability (50k)	0	0	-	-	-
91 >	15.4 >	Superficial geology (50k) >	1	0	2	4	-
92 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
92	15.6	Landslip (50k)	0	0	0	0	-
92	15.7	Landslip permeability (50k)	None (within 50m)				
93 >	15.8 >	Bedrock geology (50k) >	7	1	13	5	-
95 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
95 >	15.10 >	Bedrock faults and other linear features (50k) >	1	0	5	2	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
97 >	16.1 >	BGS Boreholes >	0	0	13	-	-
Page	Section	Natural ground subsidence >					
99 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
100 >	17.2 >	Running sands >	Very low (within 50m)				
101 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
102 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
103 >	17.5 >	Landslides >	Very low (within 50m)				
104 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
106	18.1	BritPits	0	0	0	0	-
107 >	18.2 >	Surface ground workings >	0	0	30	-	-
108 >	18.3 >	Underground workings >	0	0	0	3	11
109	18.4	Underground mining extents	0	0	0	0	-
109	18.5	Historical Mineral Planning Areas	0	0	0	0	-



109 >	18.6 >	Non-coal mining >	0	0	0	0	1
110	18.7	JPB mining areas	None (within 0m)				
110	18.8	The Coal Authority non-coal mining	0	0	0	0	-
110	18.9	Researched mining	0	0	0	0	-
110	18.10	Mining record office plans	0	0	0	0	-
111	18.11	BGS mine plans	0	0	0	0	-
111 >	18.12 >	Coal mining >	Identified (within 0m)				
111	18.13	Brine areas	None (within 0m)				
111	18.14	Gypsum areas	None (within 0m)				
111	18.15	Tin mining	None (within 0m)				
112	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes >	On site	0-50m	50-250m	250-500m	500-2000m
113	19.1	Natural cavities	0	0	0	0	-
114	19.2	Mining cavities	0	0	0	0	0
114	19.3	Reported recent incidents	0	0	0	0	-
114 >	19.4 >	Historical incidents >	0	0	0	4	-
115	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
116 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
118 >	21.1 >	BGS Estimated Background Soil Chemistry >	16	3	-	-	-
119	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
119	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
120	22.1	Underground railways (London)	0	0	0	-	-
120	22.2	Underground railways (Non-London)	0	0	0	-	-
120	22.3	Railway tunnels	0	0	0	-	-
120	22.4	Historical railway and tunnel features	0	0	0	-	-
120	22.5	Royal Mail tunnels	0	0	0	-	-



121	22.6	Historical railways	0	0	0	-	-
121	22.7	Railways	0	0	0	-	-
121	22.8	Crossrail 1	0	0	0	0	-
121	22.9	Crossrail 2	0	0	0	0	-
121	22.10	HS2	0	0	0	0	-

Recent aerial photograph



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Capture Date: 23/05/2019

Site Area: 2.73ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 19 February 2024

Recent site history - 2012 aerial photograph



Capture Date: 26/03/2012

Site Area: 2.73ha



Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 19 February 2024

Recent site history - 1999 aerial photograph



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Capture Date: 10/09/1999

Site Area: 2.73ha



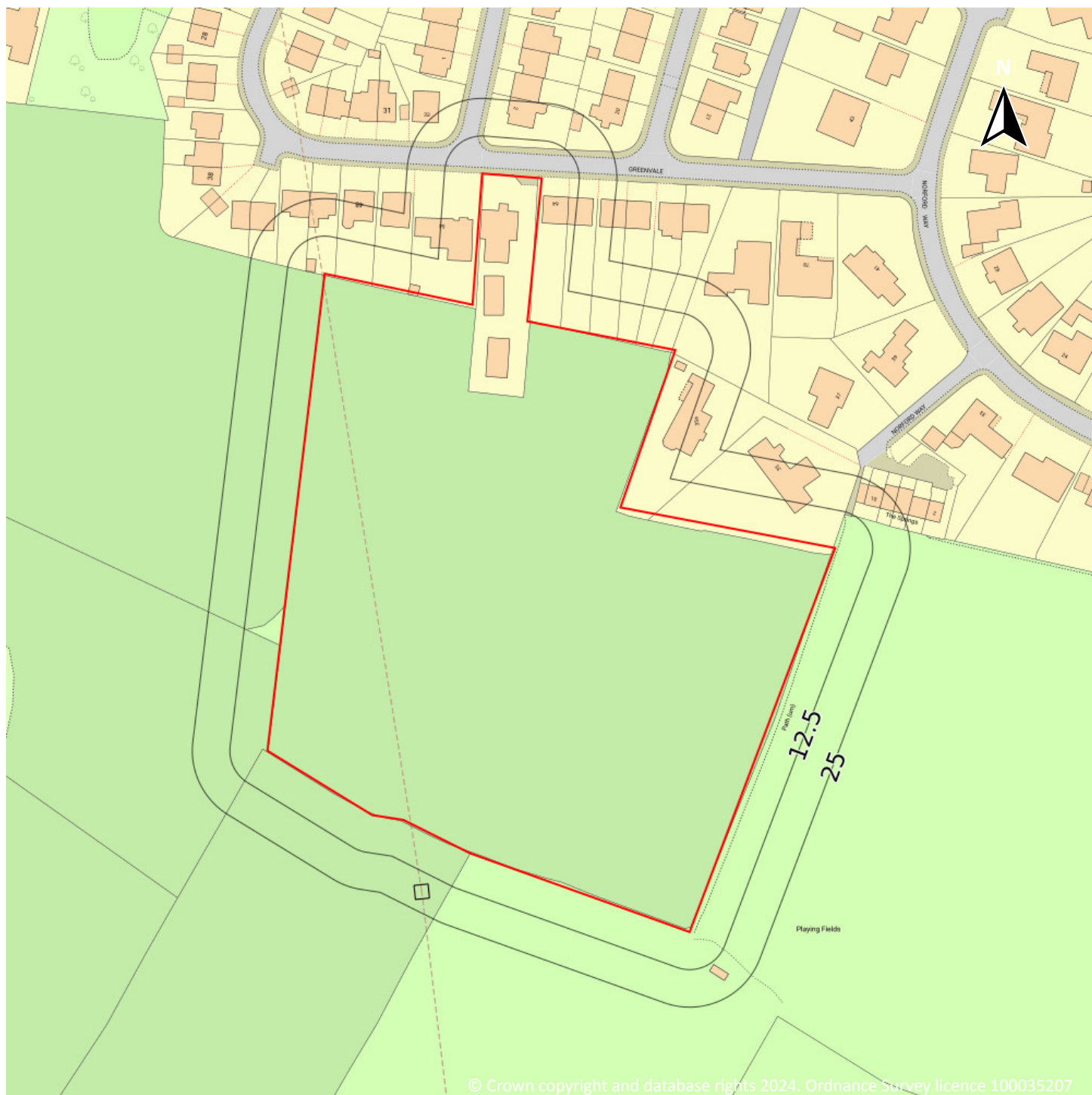
Contact us with any questions at:

info@groundsure.com

01273 257 755

Date: 19 February 2024

OS MasterMap site plan



Site Area: 2.73ha



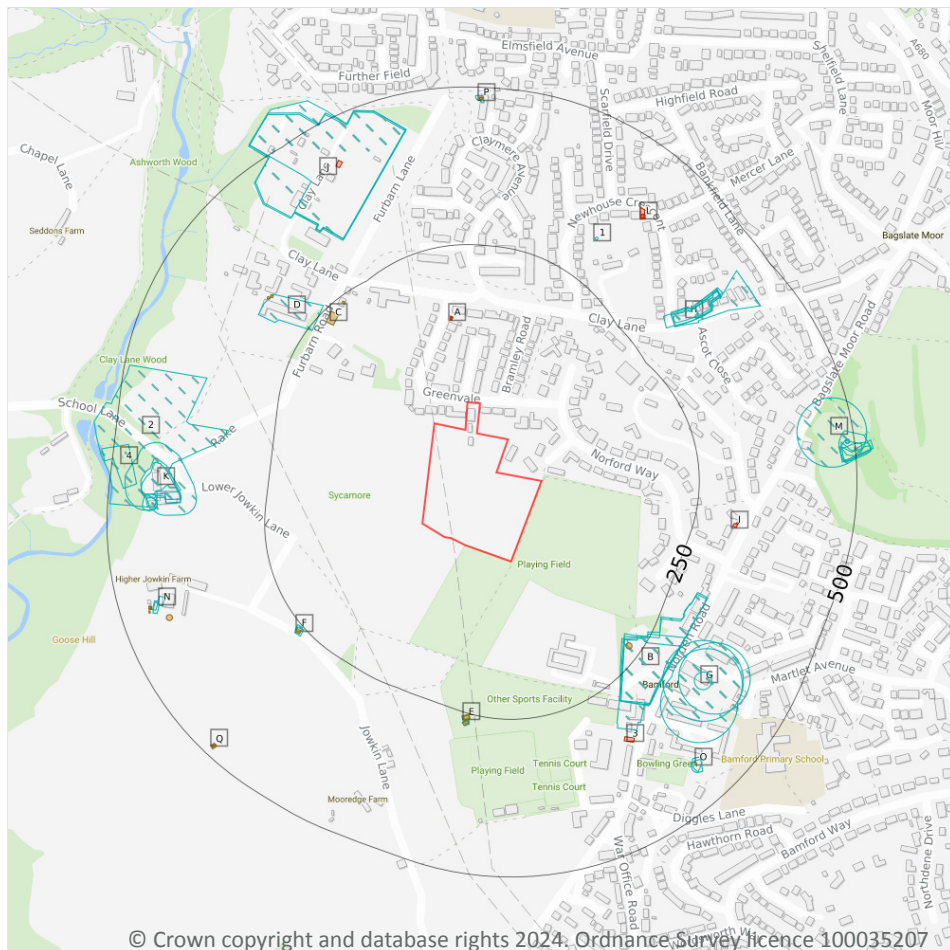
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Date: 19 February 2024

1 Past land use



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

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1.1 Historical industrial land uses

Records within 500m

46

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
B	213m SE	Unspecified Mills	1890	711653



ID	Location	Land use	Dates present	Group ID
B	214m SE	Cotton Mill	1851	644249
B	215m SE	Unspecified Mills	1908	761420
B	218m SE	Gasometer	1851	655115
B	218m SE	Unspecified Mills	1928 - 1938	720419
D	243m NW	Hospital	1968 - 1992	713614
F	252m SW	Unspecified Tank	1949	713233
E	252m S	Unspecified Tank	1975 - 1992	712800
F	252m SW	Unspecified Tank	1928 - 1938	736329
E	258m S	Unspecified Tank	1949	768263
E	260m S	Unspecified Tank	1928 - 1938	728182
G	294m SE	Unspecified Hole	1938	758167
H	307m NE	Unspecified Mill	1890	657010
G	309m SE	Unspecified Hole	1890 - 1908	767148
G	315m SE	Unspecified Hole	1949	752333
1	318m NE	Coal Pit	1851	654090
H	319m NE	Cotton Mill	1851	644259
H	319m NE	Laundry	1928	762028
2	322m W	Fulling Mill	1851	655336
H	323m NE	Laundry	1949	749517
J	324m NW	Electric Substation	1975 - 1987	734968
J	324m NW	Electric Substation	1992	751546
J	326m NW	Unspecified Works	1968	678963
G	345m SE	Pit Hole	1928	652025
H	355m NE	Laundry	1938	766728
K	360m W	Unspecified Disused Mill	1949	704339
K	385m W	Unspecified Disused Mill	1908	771918
K	385m W	Unspecified Disused Mill	1928 - 1938	726809
K	385m W	Unspecified Commercial/Industrial	1968 - 1975	769757



ID	Location	Land use	Dates present	Group ID
M	411m E	Unspecified Shaft	1890	665154
K	421m W	Unspecified Pit	1890 - 1908	751986
K	421m W	Unspecified Pit	1928 - 1938	768314
K	422m W	Unspecified Pit	1949	730315
O	425m SE	Unspecified Pit	1949	697288
N	425m W	Unspecified Tanks	1928 - 1938	720738
O	429m SE	Unspecified Pit	1928 - 1938	772548
N	436m W	Unspecified Tanks	1949	764617
4	457m W	Unspecified Mill	1890	657009
M	474m E	Unspecified Ground Workings	1928 - 1938	745785
M	475m E	Old Coal Pit	1890	682296
P	476m N	Unspecified Tanks	1949	666402
M	476m E	Refuse Heap	1908	677415
M	477m E	Unspecified Heap	1968 - 1992	783617
M	478m E	Unspecified Ground Workings	1949	694194
M	485m E	Old Coal Shaft	1908	639845
M	486m E	Shafts	1851	675288

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

18

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
C	223m NW	Settling Tanks	1930	78166



ID	Location	Land use	Dates present	Group ID
B	225m SE	Unspecified Tank	1890 - 1910	99271
C	237m NW	Unspecified Tank	1930	84156
E	251m S	Unspecified Tank	1959 - 1975	100386
E	251m S	Unspecified Tank	1990	97179
F	257m SW	Unspecified Tank	1930	84230
E	261m S	Unspecified Tank	1930	84232
D	325m NW	Unspecified Tank	1961	84155
D	327m NW	Unspecified Tank	1979	84154
N	423m SW	Unspecified Tank	1992	84236
N	449m W	Tanks	1961 - 1992	104262
N	451m W	Tanks	1979	87674
N	453m W	Tanks	1930	87675
Q	480m SW	Unspecified Tank	1979	84235
Q	480m SW	Unspecified Tank	1961	98330
P	481m N	Tanks	1959 - 1991	100131
P	481m N	Unspecified Tanks	1992	88211
Q	482m SW	Unspecified Tank	1992	93827

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

9

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
A	133m N	Electricity Substation	1975 - 1992	50045



ID	Location	Land use	Dates present	Group ID
A	133m N	Electricity Substation	1985	49685
I	311m E	Electricity Substation	1975	45478
I	316m E	Electricity Substation	1990	45477
3	331m SE	Electricity Substation	1990	45476
L	388m NE	Electricity Substation	1985	53636
L	388m NE	Electricity Substation	1992	58193
L	389m NE	Electricity Substation	1975	53096
J	424m NW	Electricity Substation	1979	45474

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

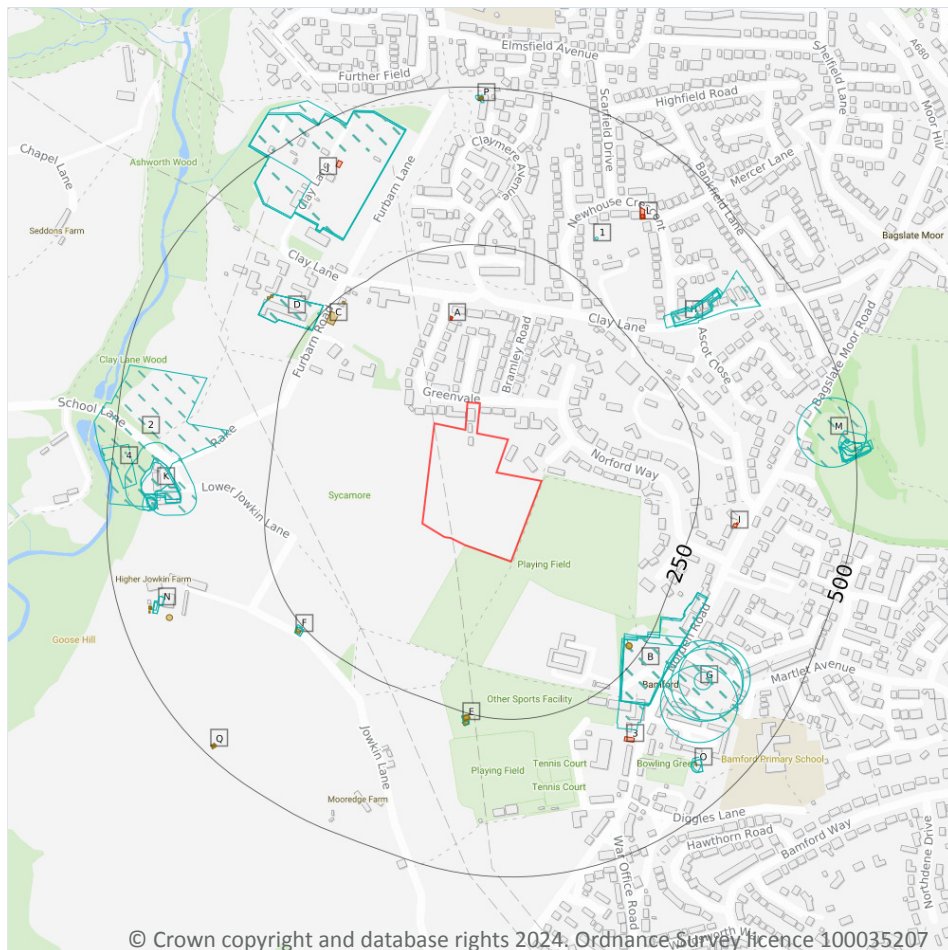
0

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

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2.1 Historical industrial land uses

Records within 500m

67

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 19](#) >

ID	Location	Land Use	Date	Group ID
B	213m SE	Unspecified Mills	1890	711653
B	214m SE	Cotton Mill	1851	644249
B	215m SE	Unspecified Mills	1908	761420



ID	Location	Land Use	Date	Group ID
B	218m SE	Gasometer	1851	655115
B	218m SE	Unspecified Mills	1938	720419
B	218m SE	Unspecified Mills	1928	720419
D	243m NW	Hospital	1992	713614
D	243m NW	Hospital	1987	713614
D	243m NW	Hospital	1975	713614
D	243m NW	Hospital	1968	713614
F	252m SW	Unspecified Tank	1949	713233
E	252m S	Unspecified Tank	1992	712800
E	252m S	Unspecified Tank	1987	712800
E	252m S	Unspecified Tank	1975	712800
F	252m SW	Unspecified Tank	1938	736329
F	252m SW	Unspecified Tank	1928	736329
E	258m S	Unspecified Tank	1949	768263
E	260m S	Unspecified Tank	1938	728182
E	260m S	Unspecified Tank	1928	728182
G	294m SE	Unspecified Hole	1938	758167
H	307m NE	Unspecified Mill	1890	657010
G	309m SE	Unspecified Hole	1908	767148
G	313m SE	Unspecified Hole	1890	767148
G	315m SE	Unspecified Hole	1949	752333
1	318m NE	Coal Pit	1851	654090
H	319m NE	Cotton Mill	1851	644259
H	319m NE	Laundry	1928	762028
2	322m W	Fulling Mill	1851	655336
H	323m NE	Laundry	1949	749517
J	324m NW	Electric Substation	1987	734968
J	324m NW	Electric Substation	1975	734968



ID	Location	Land Use	Date	Group ID
J	324m NW	Electric Substation	1992	751546
J	326m NW	Unspecified Works	1968	678963
G	345m SE	Pit Hole	1928	652025
H	355m NE	Laundry	1938	766728
K	360m W	Unspecified Disused Mill	1949	704339
K	385m W	Unspecified Disused Mill	1908	771918
K	385m W	Unspecified Disused Mill	1938	726809
K	385m W	Unspecified Disused Mill	1928	726809
K	385m W	Unspecified Commercial/Industrial	1975	769757
K	385m W	Unspecified Commercial/Industrial	1968	769757
M	411m E	Unspecified Shaft	1890	665154
K	421m W	Unspecified Pit	1908	751986
K	421m W	Unspecified Pit	1938	768314
K	421m W	Unspecified Pit	1928	768314
K	421m W	Unspecified Pit	1928	768314
K	422m W	Unspecified Pit	1949	730315
O	425m SE	Unspecified Pit	1949	697288
K	425m W	Unspecified Pit	1890	751986
N	425m W	Unspecified Tanks	1938	720738
N	425m W	Unspecified Tanks	1928	720738
O	429m SE	Unspecified Pit	1938	772548
O	429m SE	Unspecified Pit	1928	772548
N	436m W	Unspecified Tanks	1949	764617
4	457m W	Unspecified Mill	1890	657009
M	474m E	Unspecified Ground Workings	1938	745785
M	474m E	Unspecified Ground Workings	1928	745785
M	475m E	Old Coal Pit	1890	682296
P	476m N	Unspecified Tanks	1949	666402



ID	Location	Land Use	Date	Group ID
M	476m E	Refuse Heap	1908	677415
M	477m E	Unspecified Heap	1992	783617
M	477m E	Unspecified Heap	1987	783617
M	477m E	Unspecified Heap	1975	783617
M	477m E	Unspecified Heap	1968	783617
M	478m E	Unspecified Ground Workings	1949	694194
M	485m E	Old Coal Shaft	1908	639845
M	486m E	Shafts	1851	675288

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

27

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 19 >](#)

ID	Location	Land Use	Date	Group ID
C	223m NW	Settling Tanks	1930	78166
B	225m SE	Unspecified Tank	1890	99271
B	225m SE	Unspecified Tank	1910	99271
C	237m NW	Unspecified Tank	1930	84156
E	251m S	Unspecified Tank	1959	100386
E	251m S	Unspecified Tank	1975	100386
E	251m S	Unspecified Tank	1990	97179
E	252m S	Unspecified Tank	1960	100386
F	257m SW	Unspecified Tank	1930	84230
E	261m S	Unspecified Tank	1930	84232
D	325m NW	Unspecified Tank	1961	84155
D	327m NW	Unspecified Tank	1979	84154



ID	Location	Land Use	Date	Group ID
N	423m SW	Unspecified Tank	1992	84236
N	449m W	Tanks	1992	104262
N	449m W	Tanks	1961	104262
N	451m W	Tanks	1979	87674
N	453m W	Tanks	1930	87675
Q	480m SW	Unspecified Tank	1979	84235
Q	480m SW	Unspecified Tank	1961	98330
P	481m N	Tanks	1961	100131
P	481m N	Tanks	1988	100131
P	481m N	Tanks	1991	100131
P	481m N	Unspecified Tanks	1992	88211
P	481m N	Tanks	1959	100131
P	481m N	Tanks	1981	100131
P	481m N	Tanks	1968	100131
Q	482m SW	Unspecified Tank	1992	93827

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

10

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 19 >](#)

ID	Location	Land Use	Date	Group ID
A	133m N	Electricity Substation	1975	50045
A	133m N	Electricity Substation	1985	49685
A	134m N	Electricity Substation	1992	50045
I	311m E	Electricity Substation	1975	45478
I	316m E	Electricity Substation	1990	45477



ID	Location	Land Use	Date	Group ID
3	331m SE	Electricity Substation	1990	45476
L	388m NE	Electricity Substation	1985	53636
L	388m NE	Electricity Substation	1992	58193
L	389m NE	Electricity Substation	1975	53096
J	424m NW	Electricity Substation	1979	45474

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

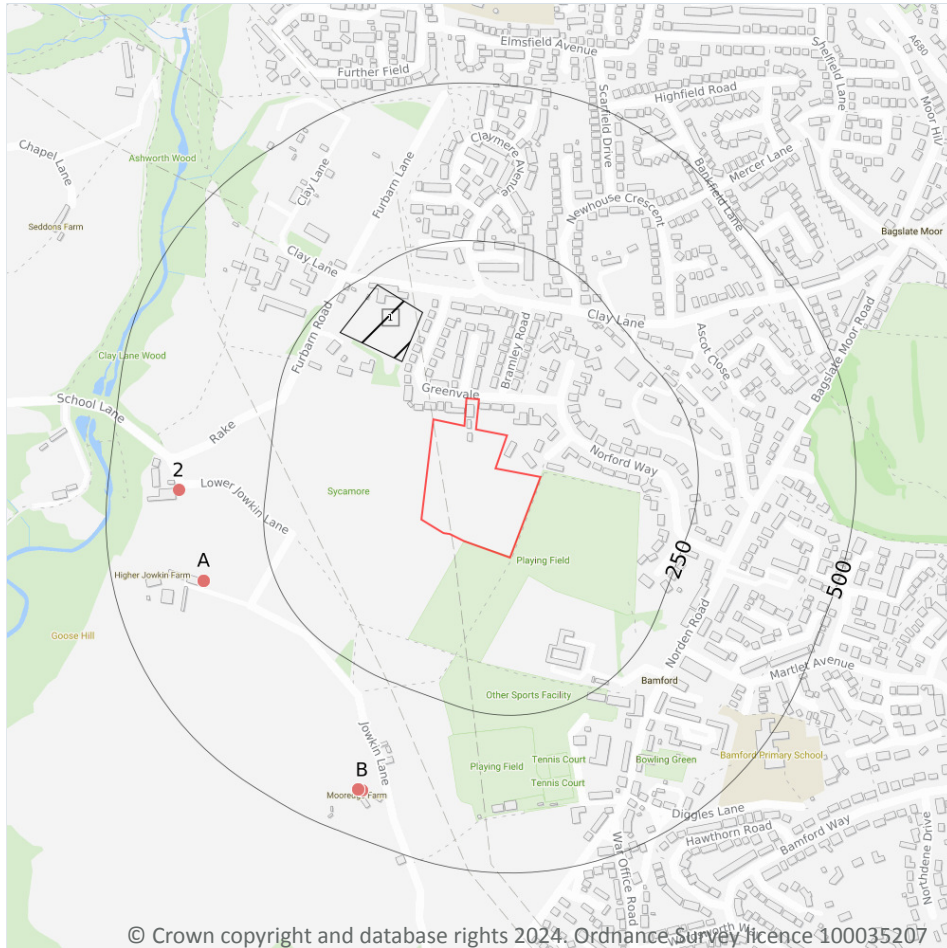
0

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)
- Waste exemptions

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 25 >](#)

ID	Location	Details		
1	104m NW	Site Address: Clay Lane Water treatment Works, Clay Lane, Norden, Rochdale Licence Holder Address: -	Waste Licence: - Site Reference: RD/LIC/496/87 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded: - Last Recorded: -

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

61

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.

Features are displayed on the Waste and landfill map on [page 25 >](#)

ID	Location	Site	Reference	Category	Sub-Category	Description
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Using waste exemption	On a farm	Use of waste in construction
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Using waste exemption	On a farm	Use of waste for a specified purpose
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Using waste exemption	On a farm	Incorporation of ash into soil
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Storing waste exemption	On a farm	Storage of waste in secure containers



ID	Location	Site	Reference	Category	Sub-Category	Description
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Storing waste exemption	On a farm	Storage of waste in a secure place
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Using waste exemption	On a farm	Use of mulch
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX347986	Disposing of waste exemption	On a farm	Burning waste in the open
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Storing waste exemption	On a Farm	Storage of waste in a secure place
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Storing waste exemption	On a Farm	Storage of waste in secure containers
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Disposing of waste exemption	On a Farm	Deposit of waste from dredging of inland waters
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Treating waste exemption	On a Farm	Aerobic composting and associated prior treatment
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Treating waste exemption	On a Farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Treating waste exemption	On a Farm	Preparatory treatments (baling, sorting, shredding etc)
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Treating waste exemption	On a Farm	Cleaning, washing, spraying or coating relevant waste
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Using waste exemption	On a Farm	Incorporation of ash into soil
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Using waste exemption	On a Farm	Spreading of plant matter to confer benefit



ID	Location	Site	Reference	Category	Sub-Category	Description
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Using waste exemption	On a Farm	Use of waste for a specified purpose
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Using waste exemption	On a Farm	Burning of waste as a fuel in a small appliance
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Using waste exemption	On a Farm	Use of waste in construction
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Disposing of waste exemption	On a Farm	Burning waste in the open
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Using waste exemption	On a Farm	Use of mulch
A	359m W	LOWER JOWKIN FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX220260	Using waste exemption	On a Farm	Spreading waste on agricultural land to confer benefit
2	388m W	WATERLOO FARM, CARR WOOD, ROCHDALE, OL11 5UT	WEX260417	Using waste exemption	On a farm	Use of waste in construction
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Deposit of waste from dredging of inland waters
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Storing waste exemption	Both agricultural and non-agricultural waste	Storage of waste in secure containers
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Storing waste exemption	Both agricultural and non-agricultural waste	Storage of waste in a secure place
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Treating waste exemption	Both agricultural and non-agricultural waste	Cleaning, washing, spraying or coating relevant waste



ID	Location	Site	Reference	Category	Sub-Category	Description
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Treating waste exemption	Both agricultural and non-agricultural waste	Aerobic composting and associated prior treatment
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Treating waste exemption	Both agricultural and non-agricultural waste	Preparatory treatments (baling, sorting, shredding etc)
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Treating waste exemption	Both agricultural and non-agricultural waste	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste in construction
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading of plant matter to confer benefit
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Using waste exemption	Both agricultural and non-agricultural waste	Incorporation of ash into soil
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Using waste exemption	Both agricultural and non-agricultural waste	Burning of waste as a fuel in a small appliance
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste for a specified purpose
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Burning waste in the open



ID	Location	Site	Reference	Category	Sub-Category	Description
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading waste on agricultural land to confer benefit
B	427m S	Mooredge Farm Jowkin Lane ROCHDALE Lancashire OL11 5UU	EPR/PF0233TU /A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of mulch
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Storing waste exemption	On a farm	Storage of waste in secure containers
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Storing waste exemption	On a farm	Storage of waste in a secure place
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Treating waste exemption	On a farm	Preparatory treatments (baling, sorting, shredding etc)
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Using waste exemption	On a farm	Use of waste in construction
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Using waste exemption	On a farm	Incorporation of ash into soil

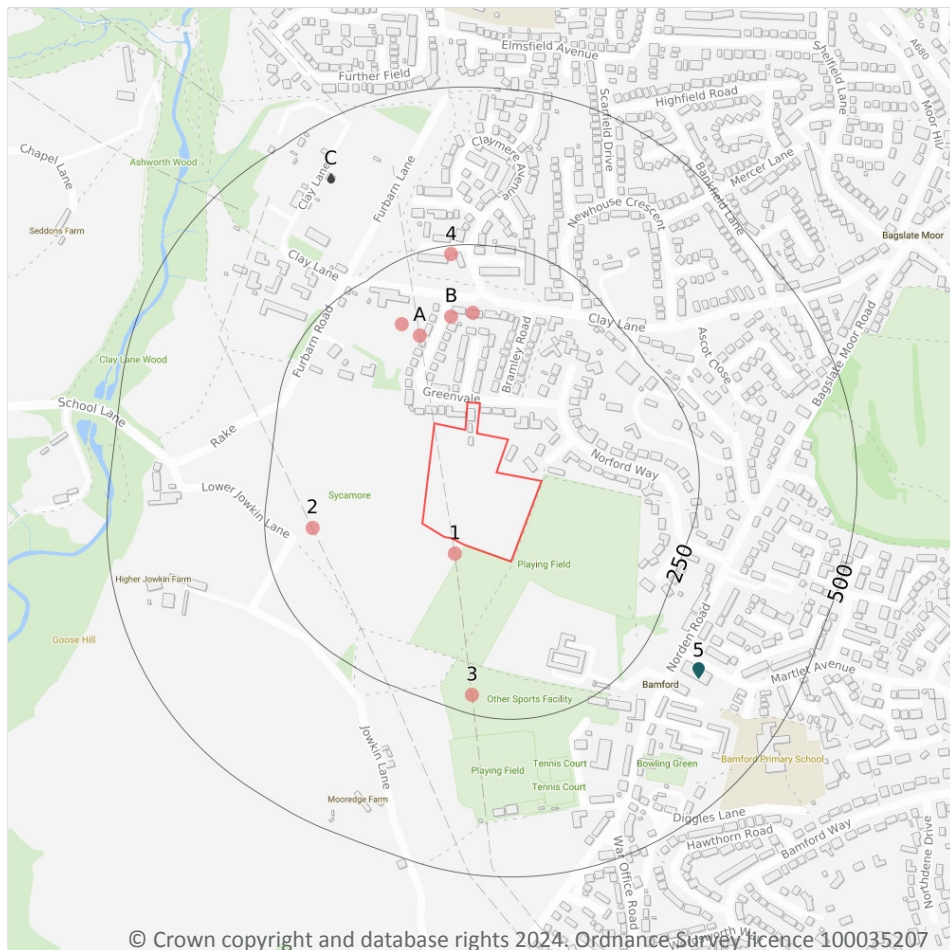


ID	Location	Site	Reference	Category	Sub-Category	Description
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Using waste exemption	On a farm	Use of waste for a specified purpose
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Disposing of waste exemption	On a farm	Burning waste in the open
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
B	429m S	MOOREDGE FARM, JOWKIN LANE, ROCHDALE, OL11 5UU	WEX068638	Using waste exemption	On a farm	Use of mulch

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
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters

4.1 Recent industrial land uses

Records within 250m

8

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	19m S	Pylon	Greater Manchester, OL11	Electrical Features	Infrastructure and Facilities
A	131m N	Pylon	Greater Manchester, OL11	Electrical Features	Infrastructure and Facilities
B	139m N	Electricity Sub Station	Greater Manchester, OL11	Electrical Features	Infrastructure and Facilities



ID	Location	Company	Address	Activity	Category
B	142m N	Rochdale P C	105, Clay Lane, Rochdale, Greater Manchester, OL11 5QW	Electrical Equipment Repair and Servicing	Repair and Servicing
A	162m NW	Works	Greater Manchester, OL11	Unspecified Works Or Factories	Industrial Features
2	175m W	Pylon	Greater Manchester, OL11	Electrical Features	Infrastructure and Facilities
3	220m S	Pylon	Greater Manchester, OL11	Electrical Features	Infrastructure and Facilities
4	236m N	Electricity Sub Station	Greater Manchester, OL11	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**1**

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.

Features are displayed on the Current industrial land use map on [page 33 >](#)

ID	Location	Address	Details	
5	343m SE	Bamford Dry Cleaners, 5A Bamford Precinct, Martlett Avenue, Rochdale, Lancashire, OL11 5QY	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

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**2**

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

Features are displayed on the Current industrial land use map on [page 33 >](#)



ID	Location	Address	Details	
C	415m NW	ROCHDALE SUB STN, ROCHDALE, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 01M/239 Permit Version: 1 Receiving Water: -	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/04/1991 Revocation Date: 31/12/1994
C	415m NW	ROCHDALE SUB STN, ROCHDALE, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 01M/239 Permit Version: 2 Receiving Water: -	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: -

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

0

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

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

4.19 Pollution inventory substances

Records within 500m

0

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

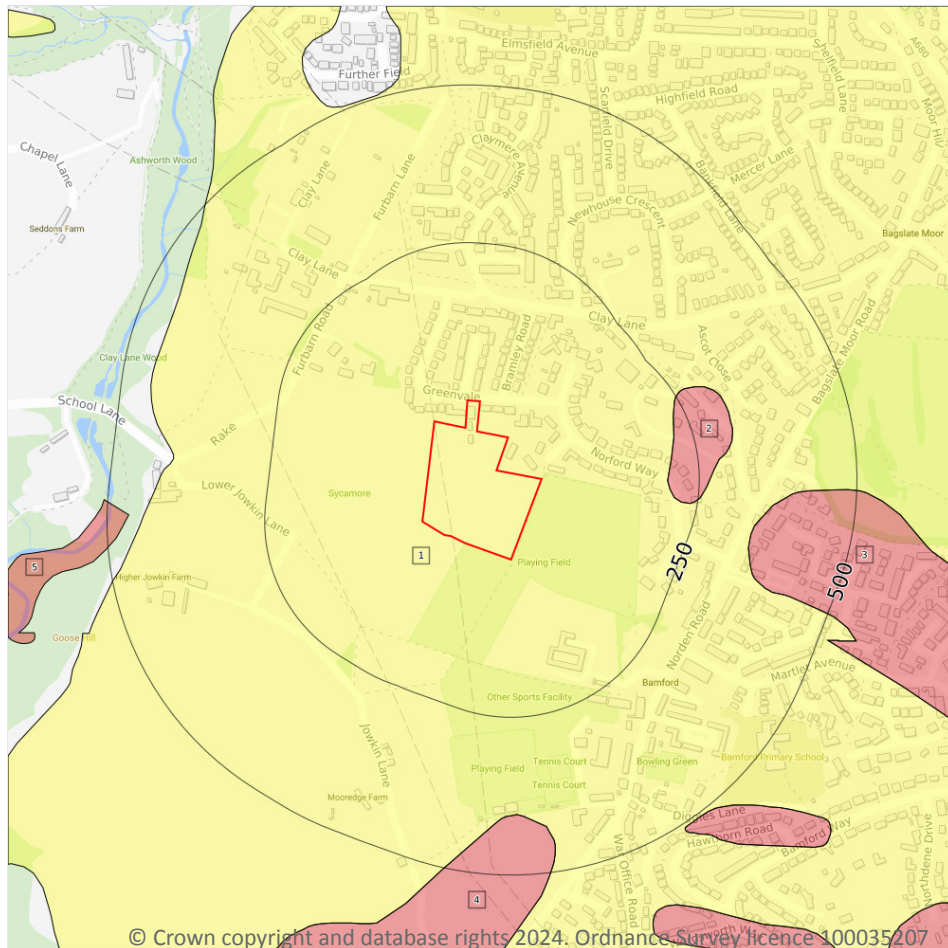
0

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	200m E	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

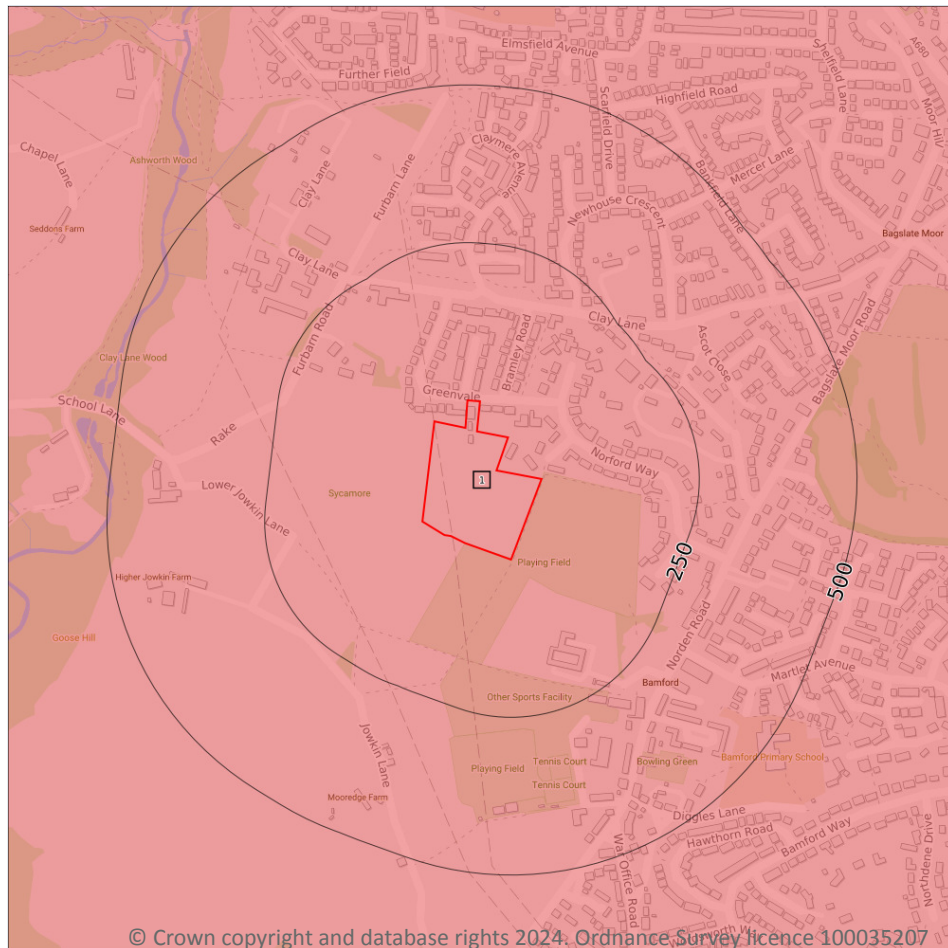


ID	Location	Designation	Description
3	343m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	404m S	Secondary 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
5	466m W	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

1

Aquifer status of groundwater held within bedrock geology.

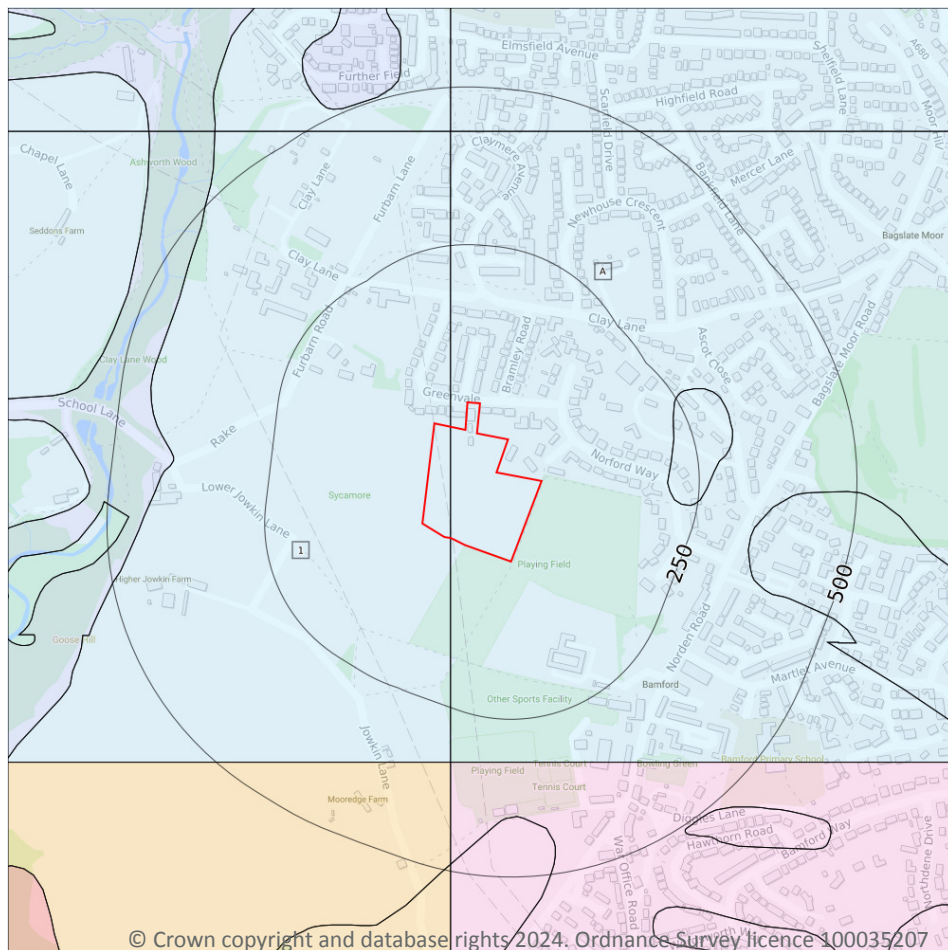
Features are displayed on the Bedrock aquifer map on [page 41](#) >

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

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



Groundwater vulnerability



— Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

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 42](#) >



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: 40-70% Dilution value: >550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: <90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
A	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% 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

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
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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

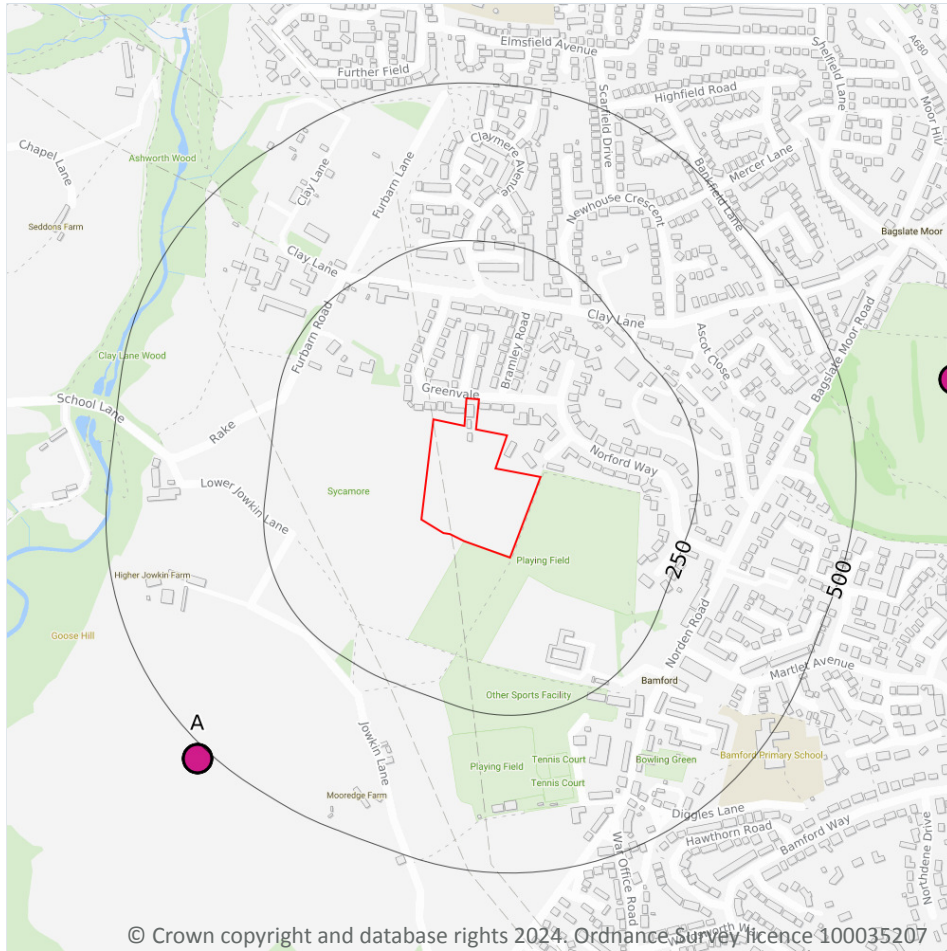
Records on site	0
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This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through 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



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- 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

24

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 44 >](#)

ID	Location	Details	
A	519m SW	Status: Historical Licence No: 2569002180 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT MOOR EDGE FARM, BAMFORD, ROCHDALE" Data Type: Point Name: BLACKBOROUGH Easting: 385600 Northing: 413000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date: -
A	519m SW	Status: Historical Licence No: 2569002183 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT MOOR EDGE FARM, BAMFORD, ROCHDALE" Data Type: Point Name: MILLS Easting: 385600 Northing: 413000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date: -
A	519m SW	Status: Historical Licence No: 2569002180 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT MOOR EDGE FARM, BAMFORD, ROCHDALE Data Type: Point Name: BLACKBOROUGH Easting: 385600 Northing: 413000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date: -
A	519m SW	Status: Historical Licence No: 2569002183 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT MOOR EDGE FARM, BAMFORD, ROCHDALE Data Type: Point Name: MILLS Easting: 385600 Northing: 413000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date: -



ID	Location	Details	
B	673m E	Status: Active Licence No: 2569002140 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT ROCHDALE GOLF COURSE AT NORDEN, ROCHDALE Data Type: Point Name: ROCHDALE GOLF CLUB LTD Easting: 386800 Northing: 413600	Annual Volume (m ³): 7272 Max Daily Volume (m ³): 120 Original Application No: 0962 Original Start Date: 01/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/11/1997 Version End Date: -
B	673m E	Status: Historical Licence No: 2569002140 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "BOREHOLE AT ROCHDALE GOLF COURSE AT NORDEN, ROCHDALE" Data Type: Point Name: ROCHDALE GOLF CLUB LTD Easting: 386800 Northing: 413600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/11/1997 Version End Date: -
-	964m S	Status: Active Licence No: 2569002217 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT BUTTERWORTH FOLD FARM BAMFORD ROCHDALE Data Type: Point Name: JAMES SWALLOW LTD Easting: 385800 Northing: 412400	Annual Volume (m ³): 33185.8 Max Daily Volume (m ³): 90.92 Original Application No: 2563 Original Start Date: 22/09/1980 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2007 Version End Date: -
-	964m S	Status: Historical Licence No: 2569002217 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT BUTTERWORTH FOLD FARM, BAMFORD, ROCHDALE" Data Type: Point Name: JAMES SWALLOW LTD Easting: 385800 Northing: 412400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 22/09/1980 Expiry Date: - Issue No: 100 Version Start Date: 22/09/1980 Version End Date: -



ID	Location	Details	
-	964m S	Status: Historical Licence No: 2569002217 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT BUTTERWORTH FOLD FARM, BAMFORD, ROCHDALE Data Type: Point Name: JAMES SWALLOW LTD Easting: 385800 Northing: 412400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 22/09/1980 Expiry Date: - Issue No: 100 Version Start Date: 22/09/1980 Version End Date: -
-	1764m S	Status: Historical Licence No: 2569002037 Details: Boiler Feed Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, CRIMBLE MILLS,HEYWOOD" Data Type: Point Name: ROE ACRE DYEING & FELTING CO LTD Easting: 386500 Northing: 411600	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: 21/05/1993 Version End Date: -
-	1764m S	Status: Historical Licence No: 2569002037 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, CRIMBLE MILLS,HEYWOOD" Data Type: Point Name: ROE ACRE DYEING & FELTING CO LTD Easting: 386500 Northing: 411600	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: 21/05/1993 Version End Date: -
-	1764m S	Status: Historical Licence No: 2569002037 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, CRIMBLE MILLS,HEYWOOD Data Type: Point Name: K.SHAW & COMPANY LTD. Easting: 386500 Northing: 411600	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: 01/10/2002 Version End Date: -

ID	Location	Details	
-	1764m S	Status: Historical Licence No: 2569002037 Details: Boiler Feed Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, CRIMBLE MILLS, HEYWOOD Data Type: Point Name: K. SHAW & COMPANY LTD. Easting: 386500 Northing: 411600	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: 01/10/2002 Version End Date: -
-	1962m SW	Status: Historical Licence No: 2569002248 Details: General Farming & Domestic Direct Source: Ground Water - North West Region Point: "BOREHOLE AT FERNISES FARM, GRIFEL HURST LANE" Data Type: Point Name: THOMPSON Easting: 384200 Northing: 412500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 12/06/1991 Expiry Date: - Issue No: 100 Version Start Date: 12/06/1991 Version End Date: -
-	1962m SW	Status: Historical Licence No: 2569002248 Details: General Farming & Domestic Direct Source: Ground Water - North West Region Point: BOREHOLE AT FERNISES FARM, GRIFEL HURST LANE Data Type: Point Name: THOMPSON Easting: 384200 Northing: 412500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 12/06/1991 Expiry Date: - Issue No: 100 Version Start Date: 12/06/1991 Version End Date: -
-	1968m N	Status: Historical Licence No: 2569002187 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE" Data Type: Point Name: ALEXANDER DREW & SONS LTD Easting: 385300 Northing: 415400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date: -



ID	Location	Details	
-	1968m N	Status: Historical Licence No: 2569002187 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE" Data Type: Point Name: ALEXANDER DREW & SONS LTD Easting: 385300 Northing: 415400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date: -
-	1968m N	Status: Historical Licence No: 2569002187 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE Data Type: Point Name: ALEXANDER DREW & SONS LTD Easting: 385300 Northing: 415400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date: -
-	1968m N	Status: Historical Licence No: 2569002187 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE Data Type: Point Name: ALEXANDER DREW & SONS LTD Easting: 385300 Northing: 415400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date: -
-	1975m W	Status: Historical Licence No: 2569002189 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT THORNHURST FARM, HEYWOOD Data Type: Point Name: OVENDEN Easting: 384000 Northing: 413100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date: -



ID	Location	Details	
-	1975m W	Status: Historical Licence No: 2569002189 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT THORNHURST FARM, HEYWOOD" Data Type: Point Name: OVENDEN Easting: 384000 Northing: 413100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1966 Version End Date: -
-	1988m W	Status: Historical Licence No: 2569002224 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, ASHWORTH" Data Type: Point Name: TOMLINSON Easting: 384100 Northing: 414200	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/11/1982 Expiry Date: - Issue No: 100 Version Start Date: 01/11/1982 Version End Date: -
-	1988m W	Status: Historical Licence No: 2569002224 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, ASHWORTH Data Type: Point Name: TOMLINSON Easting: 384100 Northing: 414200	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/11/1982 Expiry Date: - Issue No: 100 Version Start Date: 01/11/1982 Version End Date: -
-	1988m W	Status: Historical Licence No: 2569002224 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, ASHWORTH Data Type: Point Name: TOMLINSON Easting: 384100 Northing: 414200	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/11/1982 Expiry Date: - Issue No: 100 Version Start Date: 01/11/1982 Version End Date: -

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



5.7 Surface water abstractions

Records within 2000m

17

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 44](#) >

ID	Location	Details	
-	1177m SW	Status: Historical Licence No: 2569002166 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "CHEESDEN BRK AT SIMPSON CLOUGH, HEYWOOD" Data Type: Point Name: J R CROMPTON LTD Easting: 385300 Northing: 412400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 24/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/05/2001 Version End Date: -
-	1177m SW	Status: Historical Licence No: 2569002166 Details: Boiler Feed Direct Source: "Surface, Non-Tidal - North West Region" Point: "CHEESDEN BRK AT SIMPSON CLOUGH, HEYWOOD" Data Type: Point Name: J R CROMPTON LTD Easting: 385300 Northing: 412400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 24/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/05/2001 Version End Date: -
-	1177m SW	Status: Historical Licence No: 2569002166 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: CHEESDEN BRK AT SIMPSON CLOUGH, HEYWOOD Data Type: Point Name: J R CROMPTON LTD Easting: 385300 Northing: 412400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 24/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/05/2001 Version End Date: -



ID	Location	Details	
-	1177m SW	Status: Historical Licence No: 2569002166 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: CHEESDEN BRK AT SIMPSON CLOUGH, HEYWOOD Data Type: Point Name: J R CROMPTON LTD Easting: 385300 Northing: 412400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 24/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/05/2001 Version End Date: -
-	1177m SW	Status: Historical Licence No: 2569002166 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: CHEESDEN BROOK AT SIMPSON CLOUGH HEYWOOD Data Type: Point Name: UNION PAPERTECH LIMITED Easting: 385300 Northing: 412400	Annual Volume (m ³): 2136620 Max Daily Volume (m ³): 12437.86 Original Application No: 949 Original Start Date: 24/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 13/08/2007 Version End Date: -
-	1177m SW	Status: Historical Licence No: 2569002166 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: CHEESDEN BROOK AT SIMPSON CLOUGH HEYWOOD Data Type: Point Name: UNION PAPERTECH LIMITED Easting: 385300 Northing: 412400	Annual Volume (m ³): 2136620 Max Daily Volume (m ³): 12437.86 Original Application No: 949 Original Start Date: 24/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 13/08/2007 Version End Date: -
-	1291m SW	Status: Historical Licence No: 2569002255 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface, Non-Tidal - North West Region Point: NADEN BROOK AT SIMPSON CLOUGH, HEYWOOD 112 Data Type: Point Name: J R CROMPTON LTD Easting: 385360 Northing: 412230	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 12/02/1993 Expiry Date: - Issue No: 101 Version Start Date: 10/10/2000 Version End Date: -

ID	Location	Details	
-	1291m SW	Status: Historical Licence No: 2569002255 Details: General use relating to Secondary Category (Medium Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "NADEN BROOK AT SIMPSON CLOUGH, HEYWOOD S112" Data Type: Point Name: J R CROMPTON LTD Easting: 385360 Northing: 412230	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 12/02/1993 Expiry Date: - Issue No: 101 Version Start Date: 10/10/2000 Version End Date: -
-	1291m SW	Status: Historical Licence No: 2569002255 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface, Non-Tidal - North West Region Point: NADEN BROOK AT SIMPSON CLOUGH, HEYWOOD S112 Data Type: Point Name: J R CROMPTON LTD Easting: 385360 Northing: 412230	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 12/02/1993 Expiry Date: - Issue No: 101 Version Start Date: 10/10/2000 Version End Date: -
-	1291m SW	Status: Historical Licence No: 2569002255 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface, Non-Tidal - North West Region Point: NADEN BROOK AT SIMPSON CLOUGH, HEYWOOD Data Type: Point Name: UNION PAPERTECH LIMITED Easting: 385360 Northing: 412230	Annual Volume (m ³): 2136620 Max Daily Volume (m ³): 6219 Original Application No: 949 Original Start Date: 12/02/1993 Expiry Date: - Issue No: 102 Version Start Date: 13/08/2007 Version End Date: -
-	1301m N	Status: Historical Licence No: 2569002221 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "NADEN BRK AT NORDERN, NR ROCHDALE" Data Type: Point Name: TACKLEA WORKS LTD Easting: 385600 Northing: 414800	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 04/11/1981 Expiry Date: - Issue No: 100 Version Start Date: 05/02/1988 Version End Date: -



ID	Location	Details	
-	1301m N	Status: Historical Licence No: 2569002221 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: NADEN BRK AT NORDERN, NR ROCHDALE Data Type: Point Name: TACKLEA WORKS LTD Easting: 385600 Northing: 414800	Annual Volume (m ³): 150018 Max Daily Volume (m ³): 590.98 Original Application No: - Original Start Date: 04/11/1981 Expiry Date: - Issue No: 100 Version Start Date: 05/02/1988 Version End Date: -
-	1764m S	Status: Historical Licence No: 2569002270 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: RIVER ROCH AT HEYWOOD Data Type: Line Name: ROE ACRE DYEING & FELTING CO LTD Easting: 386620 Northing: 411500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 17/06/1999 Version End Date: -
-	1764m S	Status: Historical Licence No: 2569002270 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RIVER ROCH AT HEYWOOD Data Type: Line Name: ROE ACRE DYEING & FELTING CO LTD Easting: 386620 Northing: 411500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 17/06/1999 Version End Date: -
-	1784m NW	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE*31" Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 385300 Northing: 415200	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: 14/03/1990 Version End Date: -
-	1784m NW	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE*31 Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 385300 Northing: 415200	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: 14/03/1990 Version End Date: -



ID	Location	Details	
-	1784m NW	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE Data Type: Point Name: United Utilities Water Ltd Easting: 385300 Northing: 415200	Annual Volume (m ³): 9092000 Max Daily Volume (m ³): 40914 Original Application No: 1613 Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 14/03/1990 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m

5

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 44 >](#)

ID	Location	Details	
-	1784m NW	Status: Active Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE Data Type: Point Name: United Utilities Water Ltd Easting: 385300 Northing: 415200	Annual Volume (m ³): 9092000 Max Daily Volume (m ³): 40914 Original Application No: 1613 Original Start Date: 22/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 14/03/1990 Version End Date: -
-	1784m NW	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE*31" Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 385300 Northing: 415200	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: 14/03/1990 Version End Date: -



ID	Location	Details	
-	1784m NW	Status: Historical Licence No: 2569002197 Details: Potable Water Supply - Direct Direct Source: Surface, Non-Tidal - North West Region Point: ASHWORTH MOOR, NADEN & GREENBOOTH RESERVOIRS, ROCHDALE*31 Data Type: Point Name: UNITED UTILITIES WATER PLC Easting: 385300 Northing: 415200	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: 14/03/1990 Version End Date: -
-	1968m N	Status: Historical Licence No: 2569002187 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE" Data Type: Point Name: ALEXANDER DREW & SONS LTD Easting: 385300 Northing: 415400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date: -
-	1968m N	Status: Historical Licence No: 2569002187 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLES (2) AT PREMISES, NORDEN, ROCHDALE Data Type: Point Name: ALEXANDER DREW & SONS LTD Easting: 385300 Northing: 415400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 30/05/1990 Version End Date: -

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

5.9 Source Protection Zones

Records within 500m

0

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

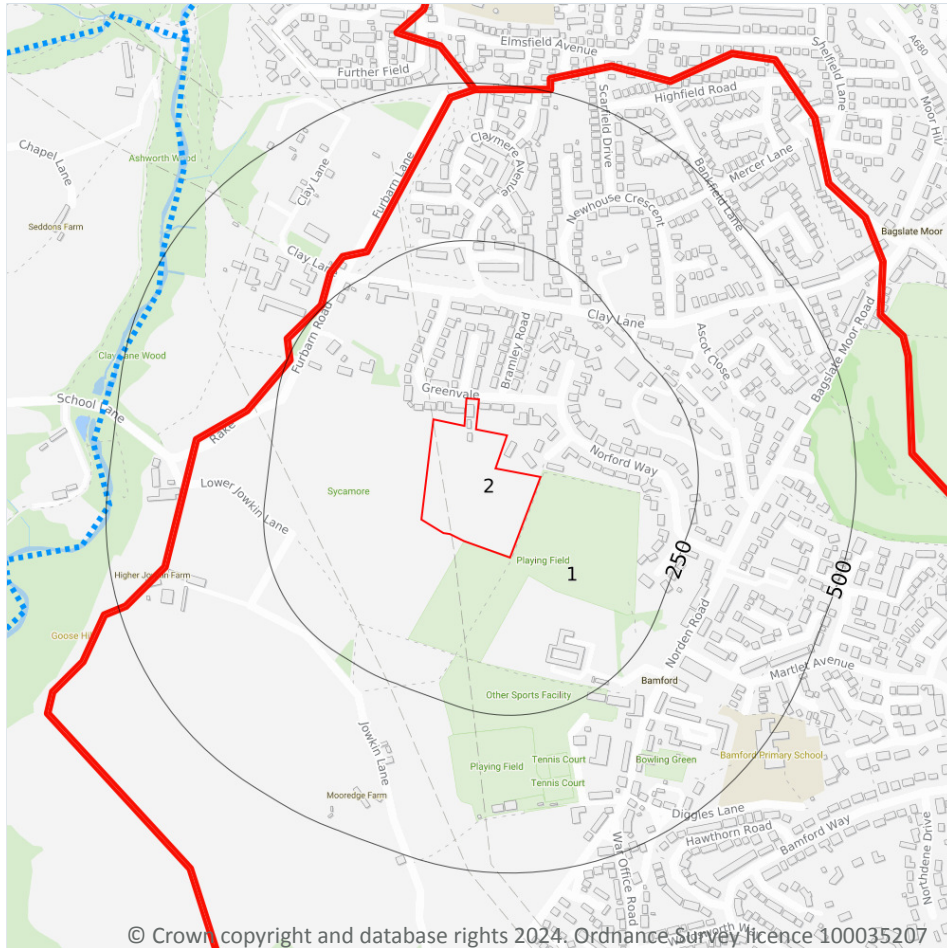
0

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

0

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

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

0

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.



This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site

1

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 58 >](#)

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River	Roch (Spodden to Irwell)	GB112069064600	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

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 58 >](#)

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1316m SE	River	Roch (Spodden to Irwell)	GB112069064600 ↗	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 58](#) >

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	On site	Northern Manchester Carboniferous Aquifers	GB41202G101800 ↗	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

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

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



— Site Outline

Search buffers in metres (m)

1 in 1000 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

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 64](#) >

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

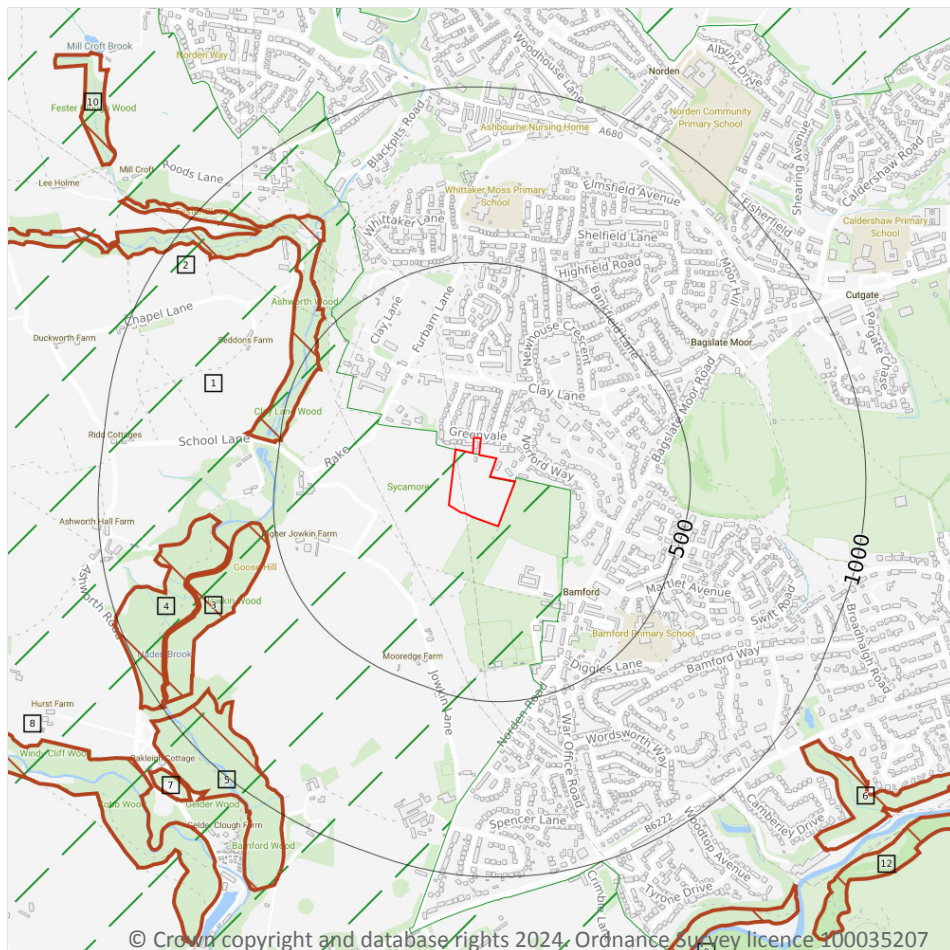
Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks 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 66](#) >

This data is sourced from Ambienta Risk Analytics.



10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- 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

0

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.

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

10.7 Designated Ancient Woodland

Records within 2000m

13

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 67 >](#)

ID	Location	Name	Woodland Type
2	448m NW	Naden Brook Wood	Ancient & Semi-Natural Woodland
3	527m W	Jowkin Wood	Ancient & Semi-Natural Woodland
4	640m W	Jowkin Wood	Ancient & Semi-Natural Woodland
5	834m SW	Jowkin Wood	Ancient & Semi-Natural Woodland
6	1072m SE	River Rock Wood (2)	Ancient & Semi-Natural Woodland
7	1098m SW	Jowkin Wood	Ancient & Semi-Natural Woodland
8	1156m SW	Jowkin Wood	Ancient & Semi-Natural Woodland
9	1250m SE	Unknown	Ancient & Semi-Natural Woodland
10	1277m NW	Fester Clough Wood	Ancient & Semi-Natural Woodland
-	1385m NW	Wolstenholme Wood	Ancient & Semi-Natural Woodland
12	1387m SE	Springfield Wood	Ancient & Semi-Natural Woodland
-	1540m SW	Simpson Clough Wood	Ancient & Semi-Natural Woodland
-	1885m SW	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

1

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

Features are displayed on the Environmental designations map on [page 67 >](#)

ID	Location	Name	Local Authority name
1	On site	Merseyside and Greater Manchester	Rochdale

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

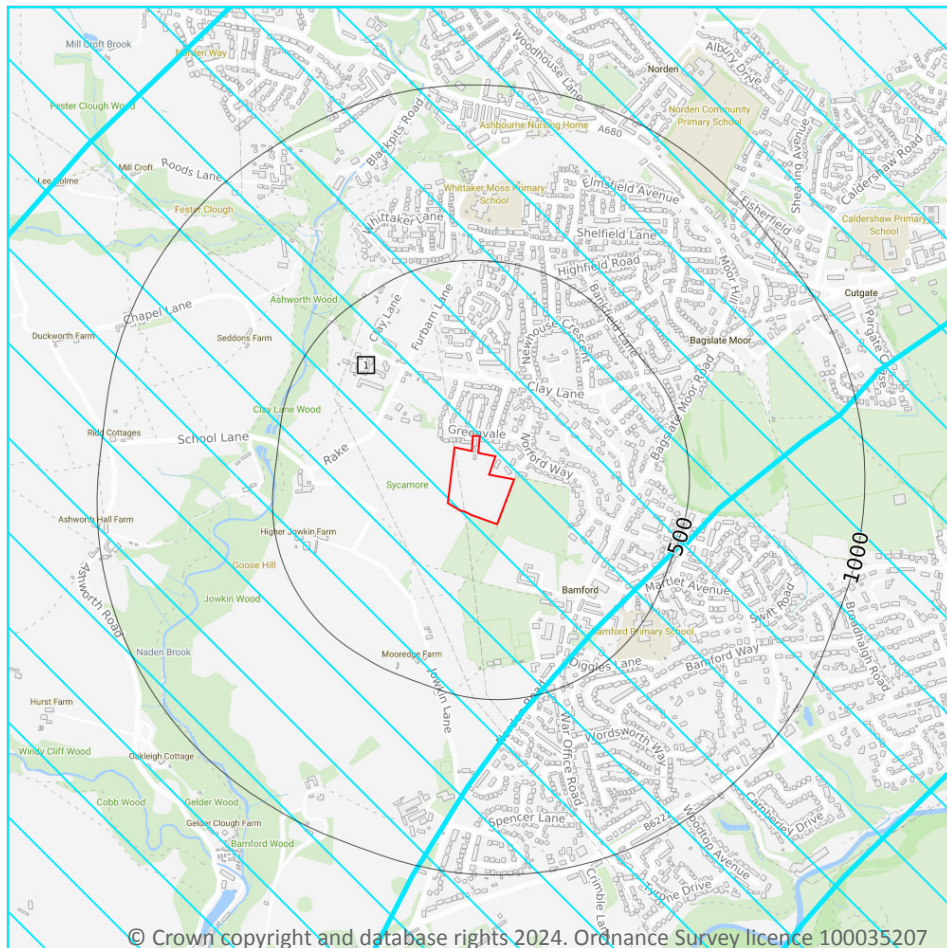
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Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle 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 73](#) >



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
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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

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

0

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.



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

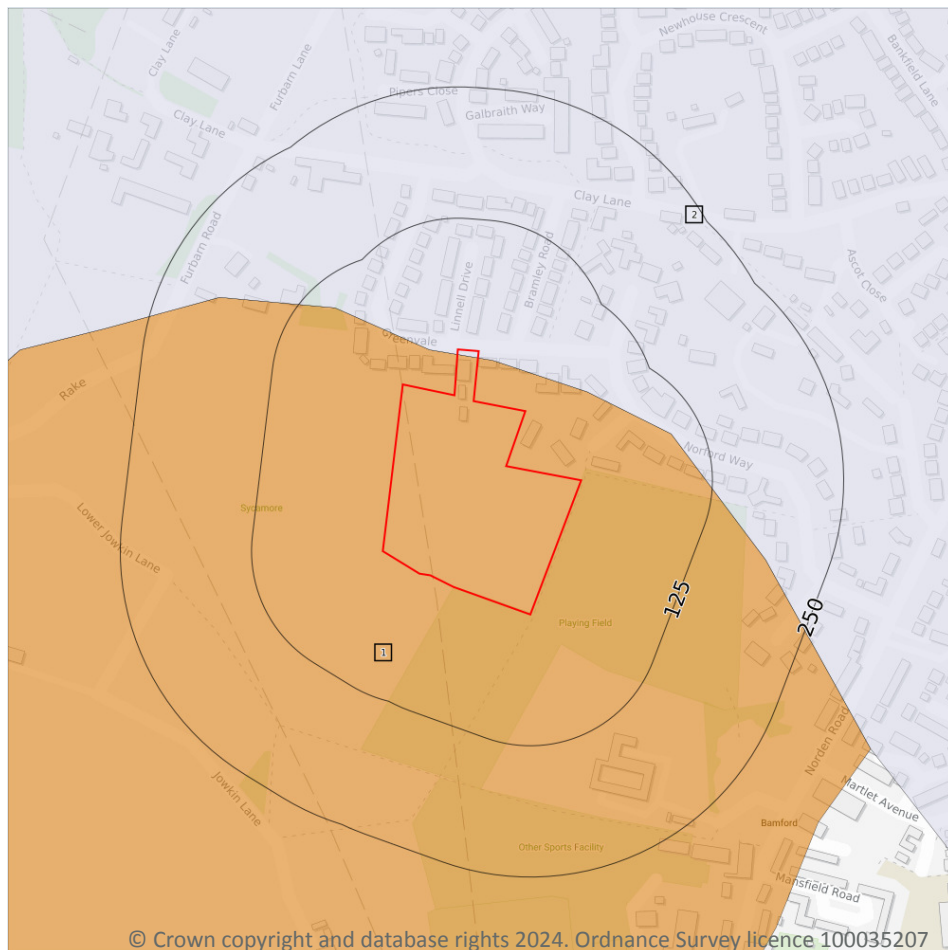
0

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

2

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 77](#) >

ID	Location	Classification	Description
1	On site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.



ID	Location	Classification	Description
2	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.

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

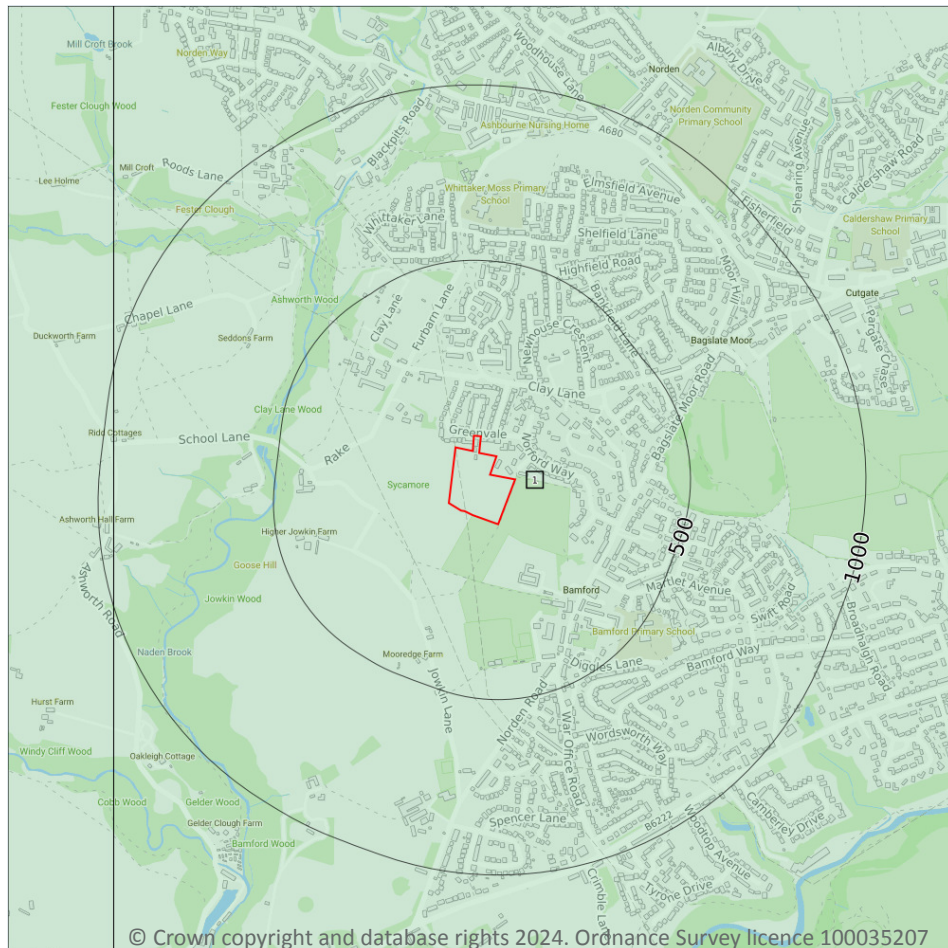
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Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable 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

1

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

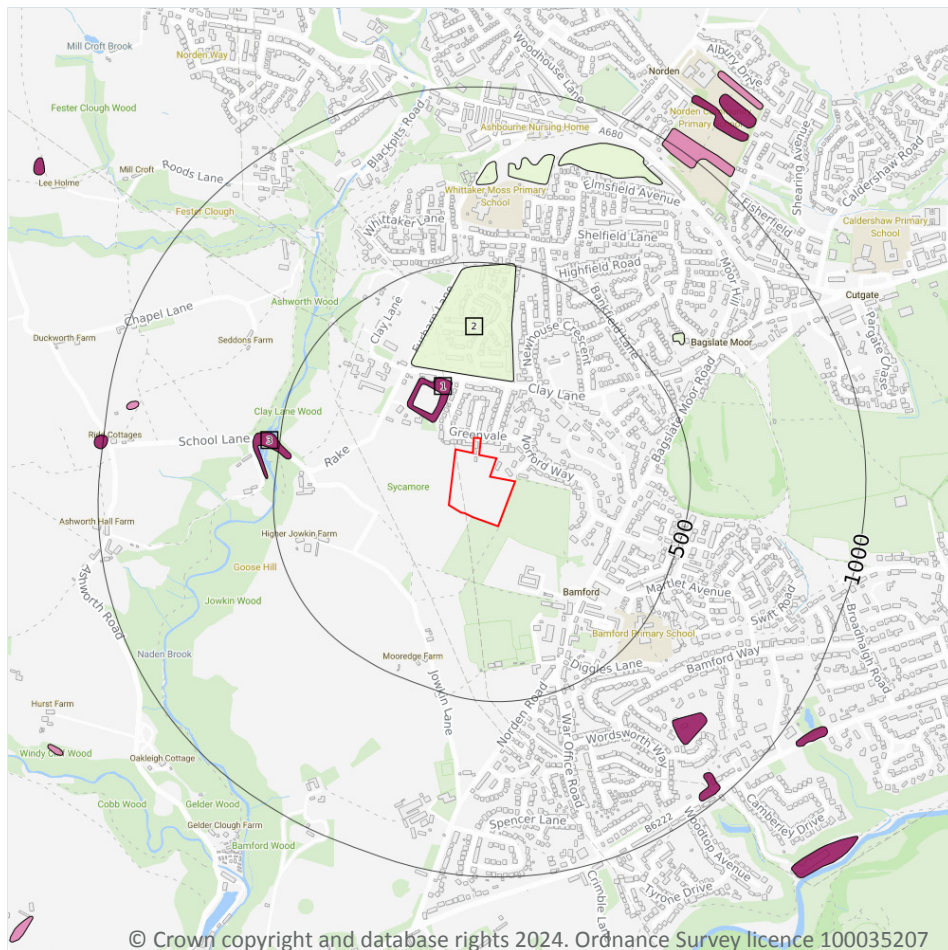
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 81](#) >

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

3

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 82](#) >

ID	Location	LEX Code	Description	Rock description
1	99m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	173m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	463m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.



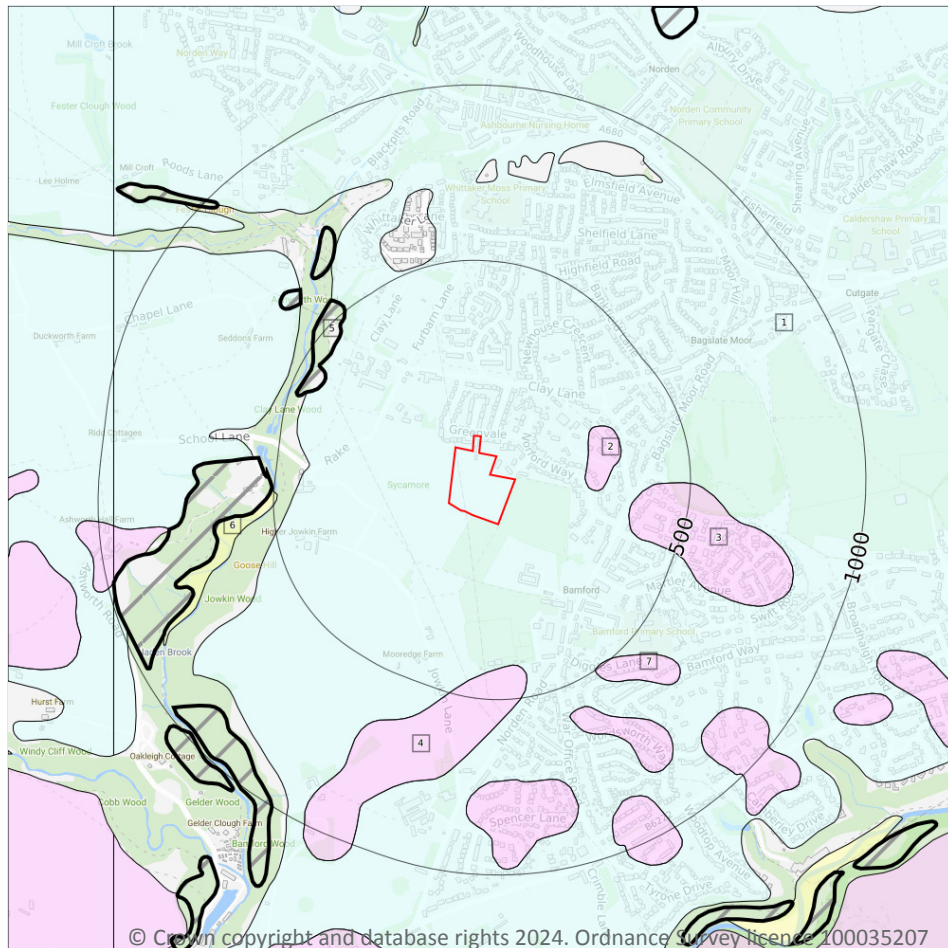
Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Date: 19 February 2024

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

6

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 83](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	199m E	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
3	338m E	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel



ID	Location	LEX Code	Description	Rock description
4	404m S	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
6	490m W	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
7	494m SE	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

1

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.

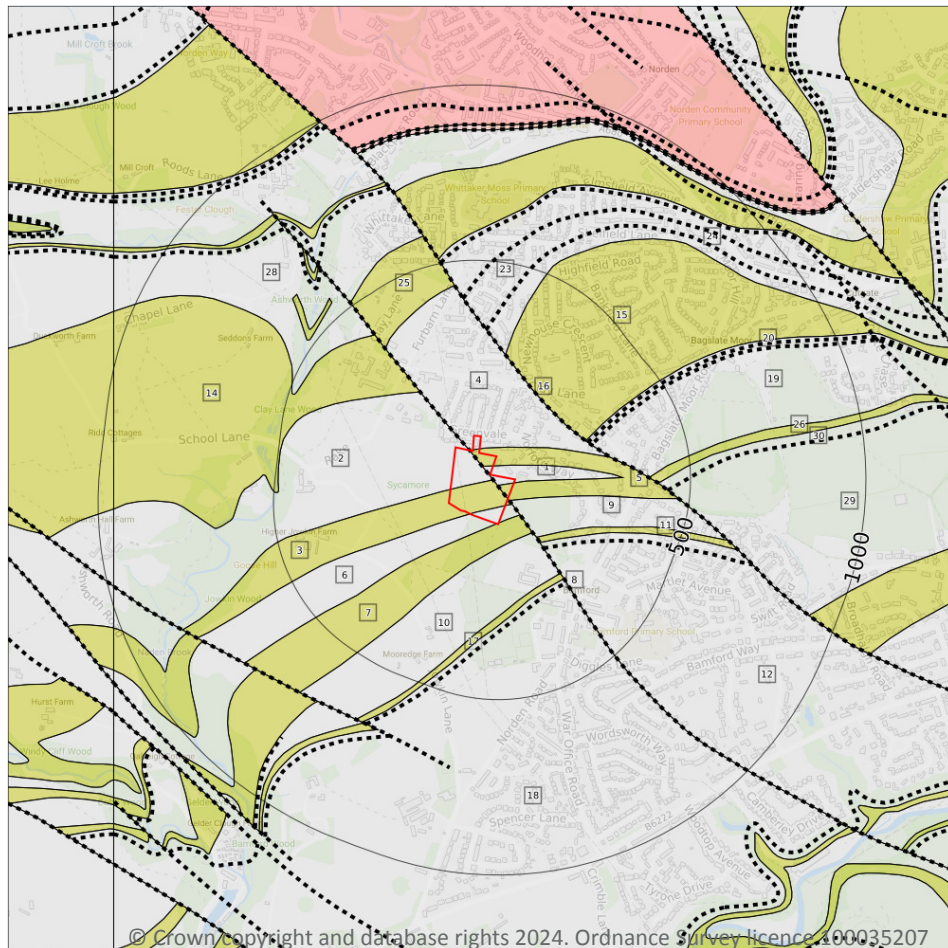
Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 83](#) >

ID	Location	LEX Code	Description	Rock description
5	419m NW	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 85](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
2	On site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
3	On site	OL-SDST	Old Lawrence Rock - Sandstone	Langsettian Sub-age



ID	Location	LEX Code	Description	Rock age
4	On site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
5	On site	OL-SDST	Old Lawrence Rock - Sandstone	Langsettian Sub-age
6	On site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
7	On site	OL-SDST	Old Lawrence Rock - Sandstone	Langsettian Sub-age
9	5m SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
10	61m SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
11	116m SE	RSC-SDST	Riddle Scout Rock - Sandstone	Langsettian Sub-age
12	130m SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
14	188m NW	MLRS-SDST	Milnrow Sandstone - Sandstone	Langsettian Sub-age
15	198m NE	GAS-SDST	Great Arc Sandstone - Sandstone	Langsettian Sub-age
17	211m SE	RSC-SDST	Riddle Scout Rock - Sandstone	Langsettian Sub-age
18	229m SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
19	229m E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
23	243m N	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
25	345m NW	MLRS-SDST	Milnrow Sandstone - Sandstone	Langsettian Sub-age
26	382m E	HER-SDST	Helpet Edge Rock - Sandstone	Langsettian Sub-age
28	395m NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
29	409m E	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

9

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.

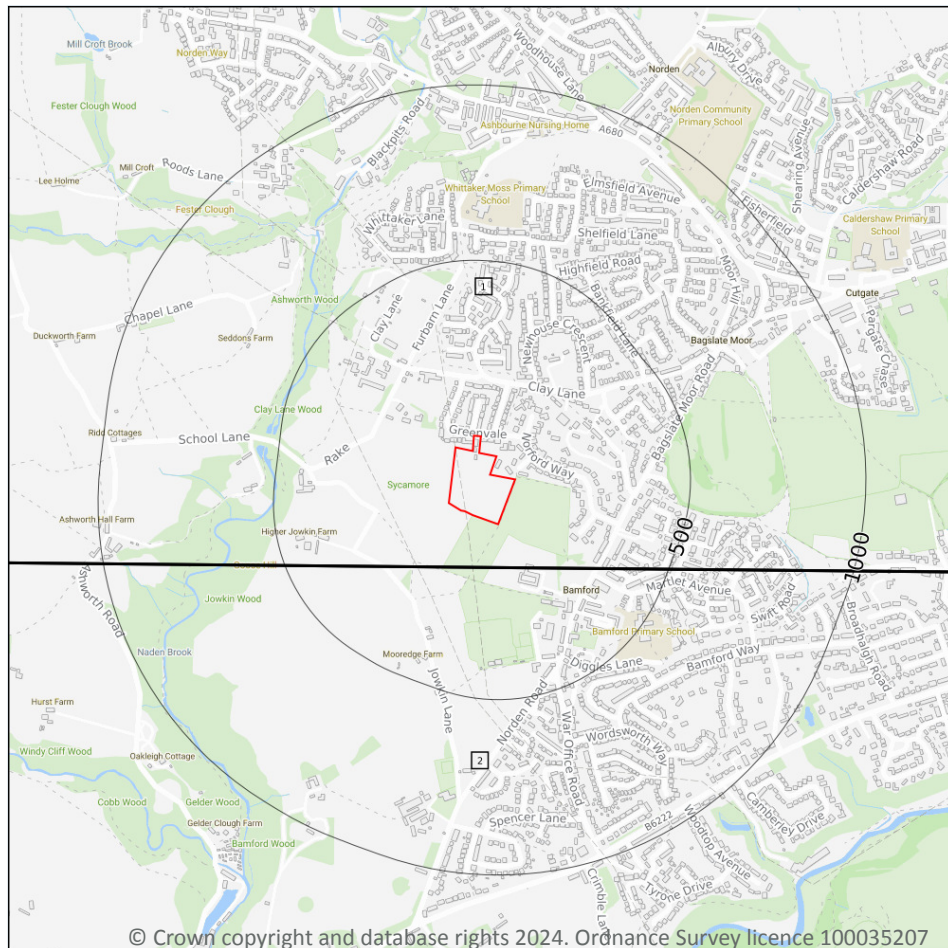
Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 85](#) >

ID	Location	Category	Description
8	On site	FAULT	Normal fault, inferred; crossmarks on downthrow side
13	147m SE	ROCK	Coal seam, inferred
16	198m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
20	233m E	ROCK	Coal seam, inferred
21	239m E	FOSSIL_HORIZON	Fossil horizon, marine band
22	241m SE	ROCK	Coal seam, inferred
24	304m N	ROCK	Coal seam, inferred
27	393m N	ROCK	Coal seam, inferred
30	436m E	ROCK	Coal seam, inferred

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

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15.1 50k Availability

Records within 500m

2

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 88](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	Full	EW076_rochdale_v4
2	124m S	No coverage	Full	Full	No coverage	EW085_manchester_v4

This data is sourced from the British Geological Survey.



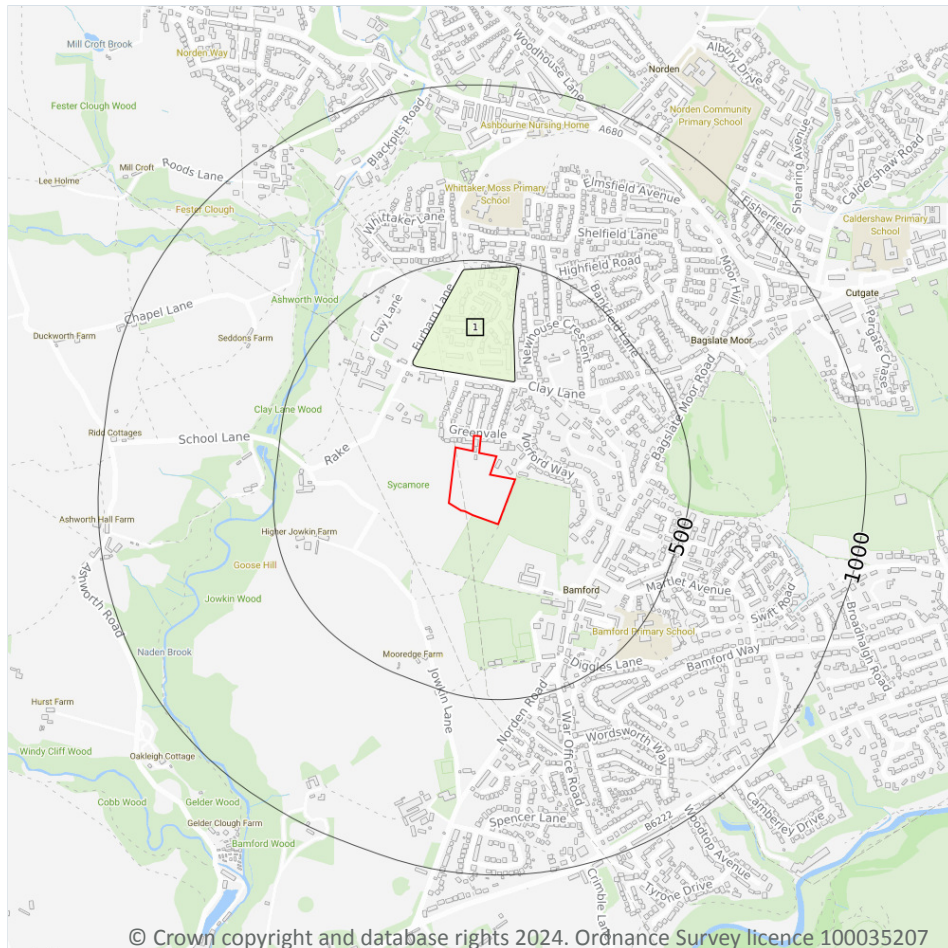
Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Date: 19 February 2024

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



— Site Outline
Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

1

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.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on [page 89](#) >

ID	Location	LEX Code	Description	Rock description
1	168m N	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.



15.3 Artificial ground permeability (50k)

Records within 50m

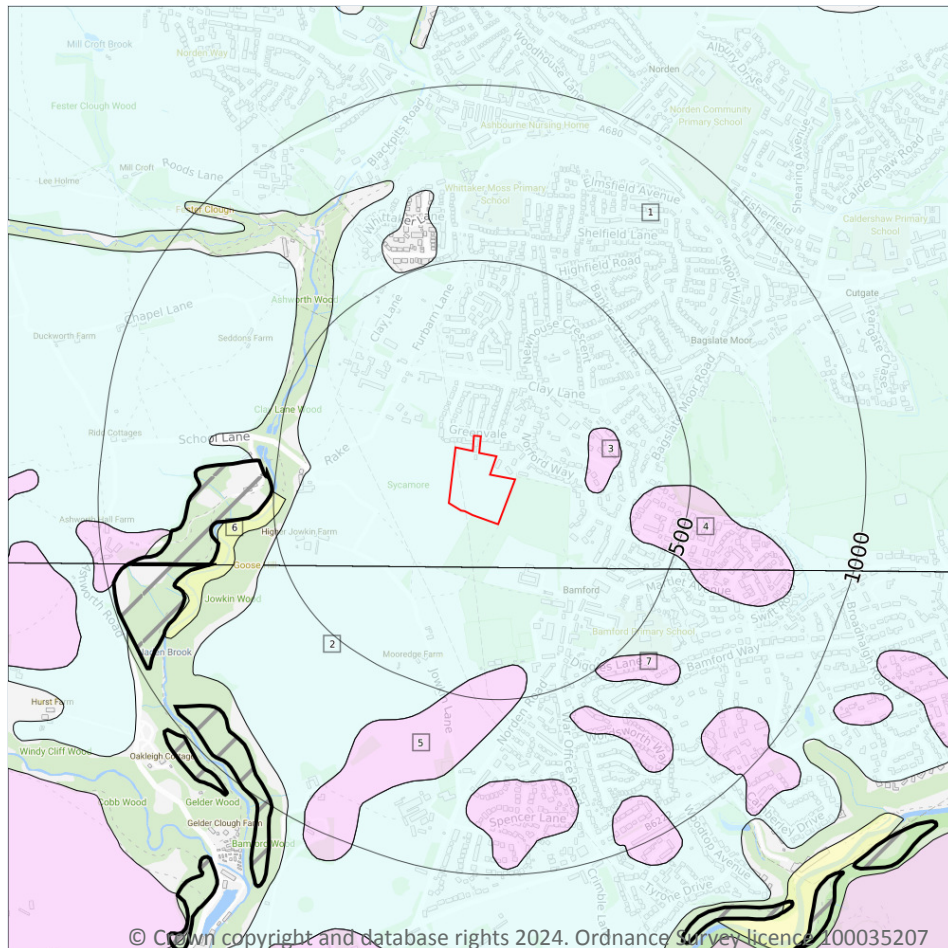
0

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

7

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 91](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
2	123m S	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	200m E	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL



ID	Location	LEX Code	Description	Rock description
4	343m E	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
5	403m S	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
6	466m W	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
7	494m SE	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	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

0

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

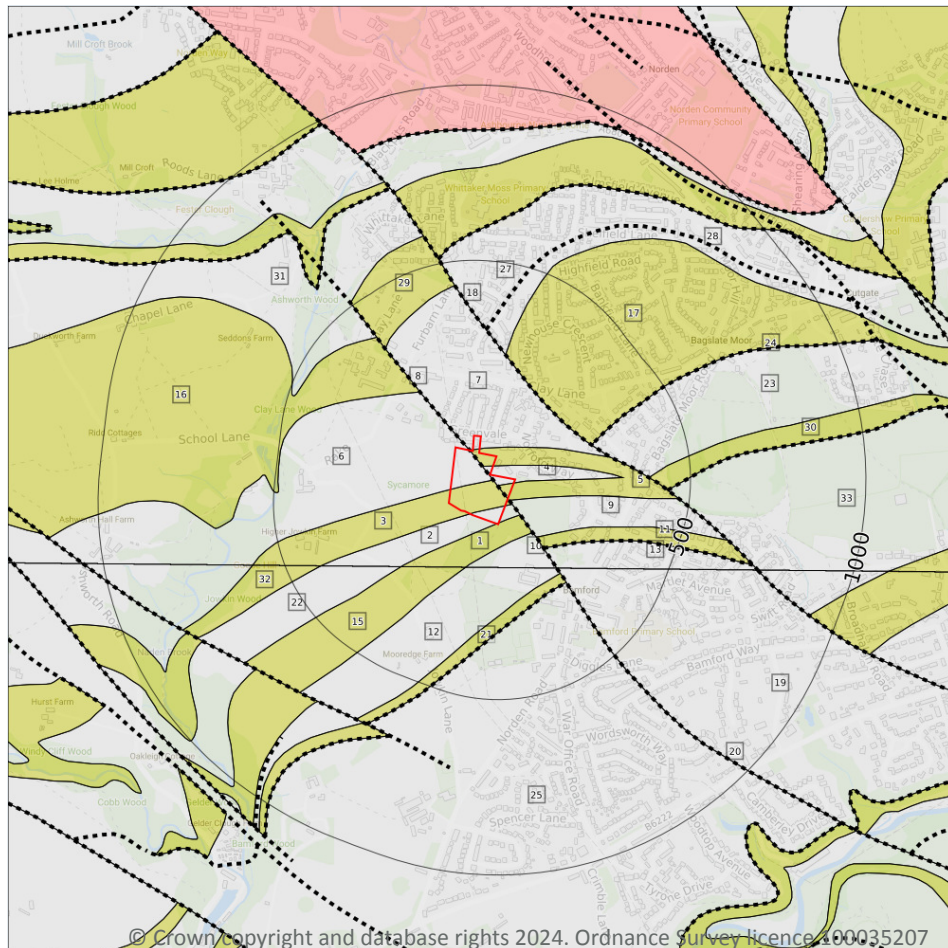
0

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

26

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 93](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE	WESTPHALIAN
2	On site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
3	On site	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE	WESTPHALIAN



ID	Location	LEX Code	Description	Rock age
4	On site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
5	On site	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE	WESTPHALIAN
6	On site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
7	On site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
9	5m SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10	61m SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
11	115m SE	RSC-SDST	RIDDLE SCOUT ROCK - SANDSTONE	WESTPHALIAN
12	123m S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
13	146m SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	147m S	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE	WESTPHALIAN
16	188m NW	MLRS-SDST	MILNROW SANDSTONE - SANDSTONE	WESTPHALIAN
17	199m NE	GAS-SDST	GREAT ARC SANDSTONE - SANDSTONE	WESTPHALIAN
19	209m SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
21	211m SE	RSC-SDST	RIDDLE SCOUT ROCK - SANDSTONE	WESTPHALIAN
22	227m SW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
23	239m E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
25	242m SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
27	243m N	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
29	345m NW	MLRS-SDST	MILNROW SANDSTONE - SANDSTONE	WESTPHALIAN
30	382m E	HER-SDST	HELPET EDGE ROCK - SANDSTONE	WESTPHALIAN
31	386m NW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN



ID	Location	LEX Code	Description	Rock age
32	407m SW	OL-SDST	OLD LAWRENCE ROCK - SANDSTONE	WESTPHALIAN
33	436m E	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

4

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	Moderate	Low
On site	Fracture	Moderate	Low
On site	Fracture	High	Moderate
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

8

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 93](#) >

ID	Location	Category	Description
8	On site	FAULT	Fault, inferred
14	146m SE	ROCK	Coal seam, inferred
18	199m NE	FAULT	Fault, inferred
20	209m SE	FAULT	Fault, inferred
24	239m E	FOSSIL_HORIZON	Marine band
26	242m SE	ROCK	Coal seam, inferred

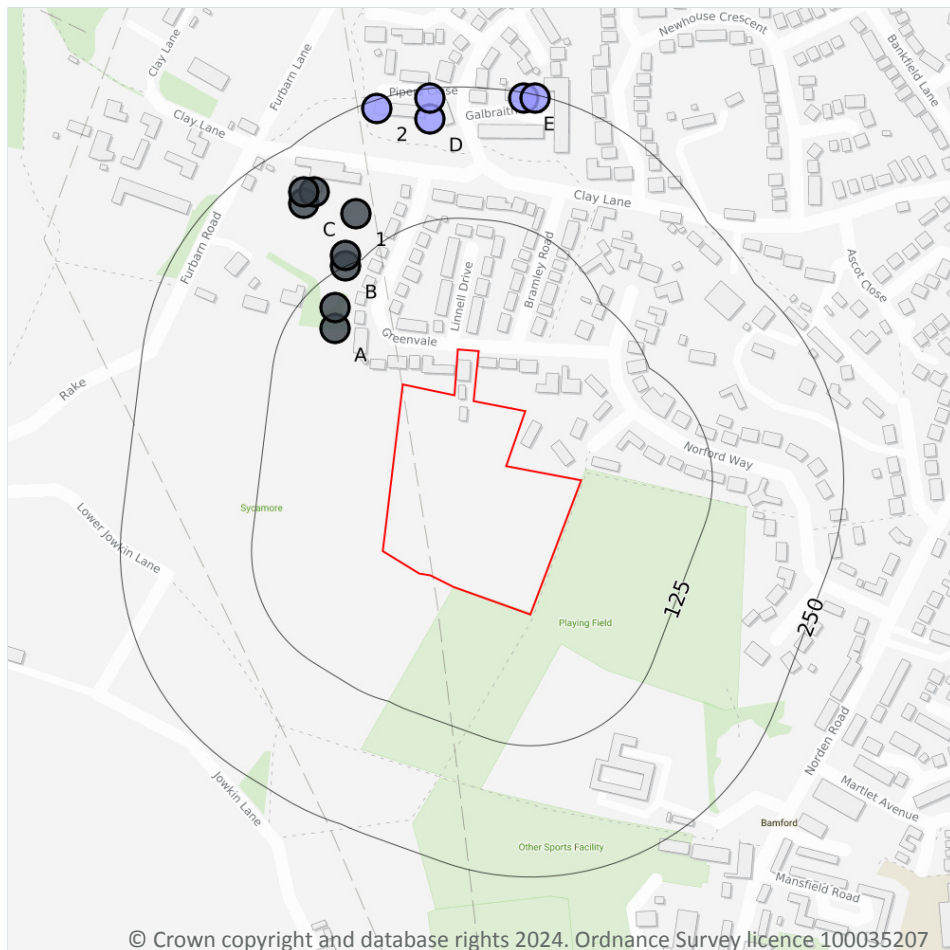


ID	Location	Category	Description
28	304m N	ROCK	Coal seam, inferred
34	436m E	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

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

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16.1 BGS Boreholes

Records within 250m

13

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

Features are displayed on the Boreholes map on [page 97](#) >

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	83m NW	385910 413590	CLAY LANE ROCHDALE 2	-	Y	N/A
A	97m NW	385910 413610	CLAY LANE ROCHDALE 3	-	Y	N/A
B	125m NW	385920 413650	CLAY LANE ROCHDALE 5	-	Y	N/A

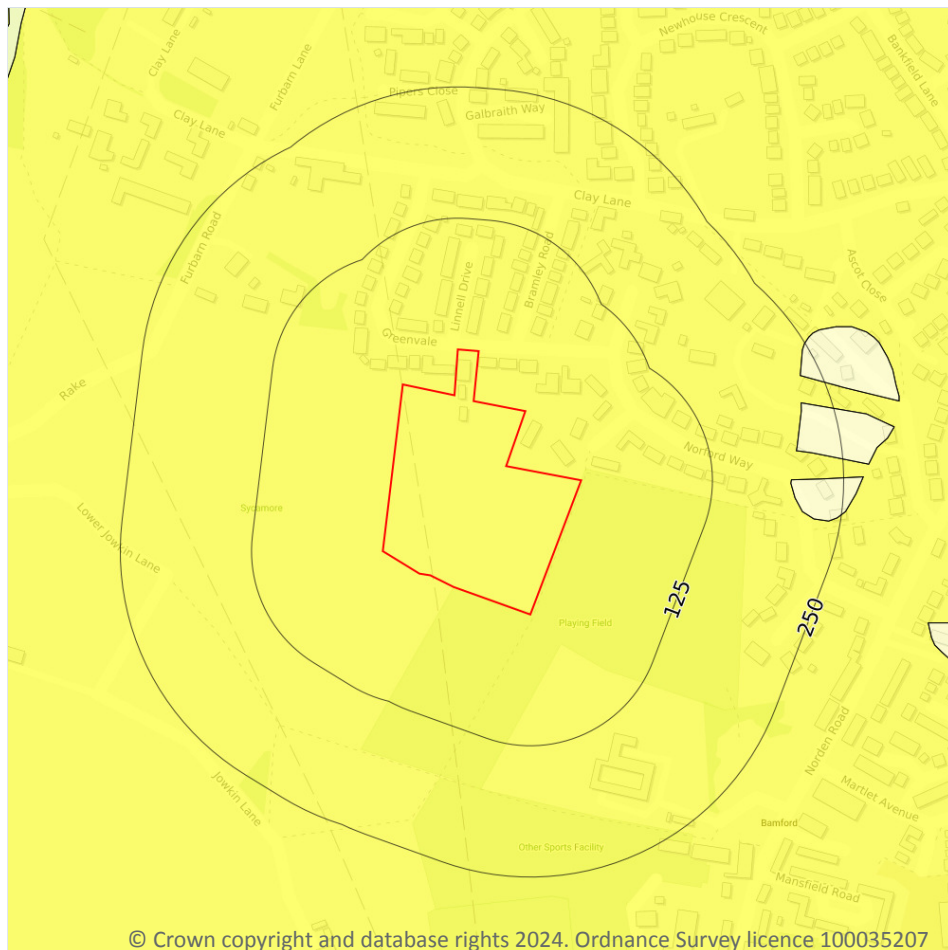


ID	Location	Grid reference	Name	Length	Confidential	Web link
B	134m NW	385920 413660	CLAY LANE ROCHDALE 4	-	Y	N/A
1	162m N	385930 413700	CLAY LANE ROCHDALE 7	-	Y	N/A
C	197m NW	385880 413710	CLAY LANE ROCHDALE 8	-	Y	N/A
C	202m NW	385890 413720	CLAY LANE ROCHDALE BH2	-	Y	N/A
C	206m NW	385880 413720	CLAY LANE ROCHDALE BH1	-	Y	N/A
D	221m N	386000 413790	FORMER CLAY LANE RESEVOIR TP 7A	3.8	N	30137 ↗
D	241m N	386000 413810	FORMER CLAY LANE RESEVOIR TP 7B	2.2	N	30138 ↗
2	242m N	385950 413800	FORMER CLAY LANE RESEVOIR TP 8A	3.5	N	30139 ↗
E	245m N	386090 413810	FORMER CLAY LANE RESEVOIR TP 3B	3.7	N	30130 ↗
E	247m N	386100 413810	FORMER CLAY LANE RESEVOIR TP 3A	3.5	N	30129 ↗

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



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

17.1 Shrink swell clays

Records within 50m

1

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).

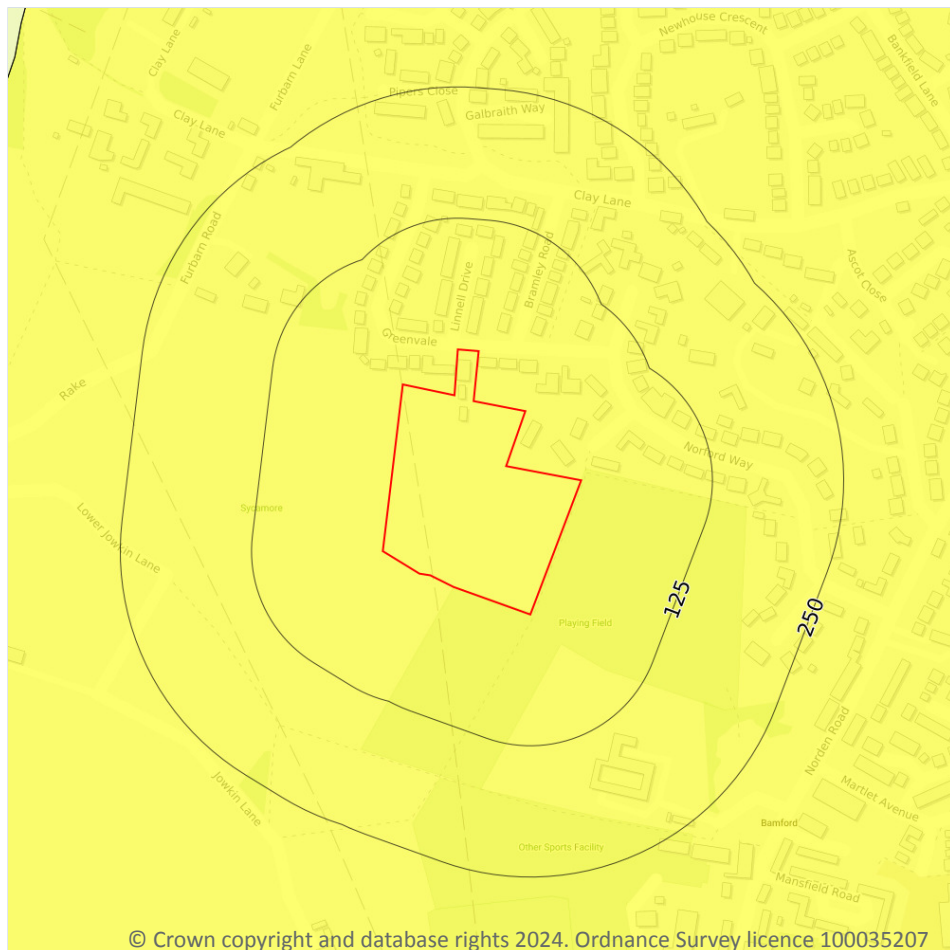
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 99 >](#)

Location	Hazard rating	Details
On site	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



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

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17.2 Running sands

Records within 50m

1

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.

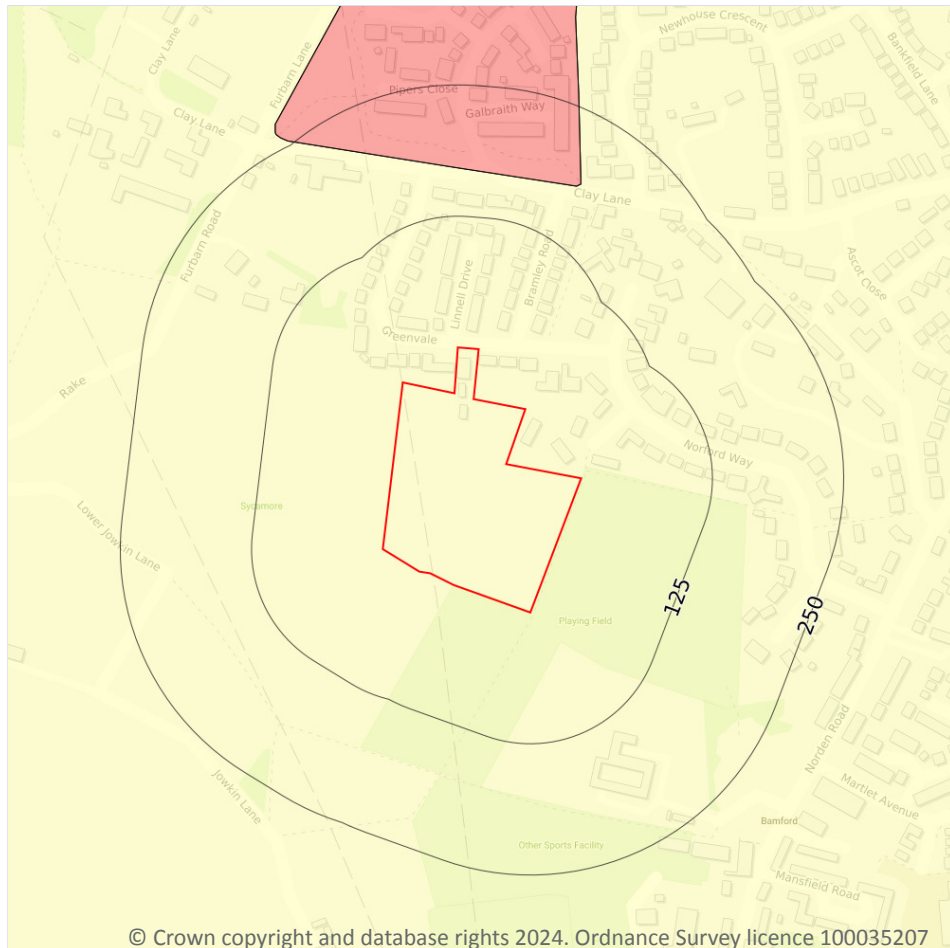
Features are displayed on the Natural ground subsidence - Running sands map on [page 100 >](#)

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.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



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

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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.

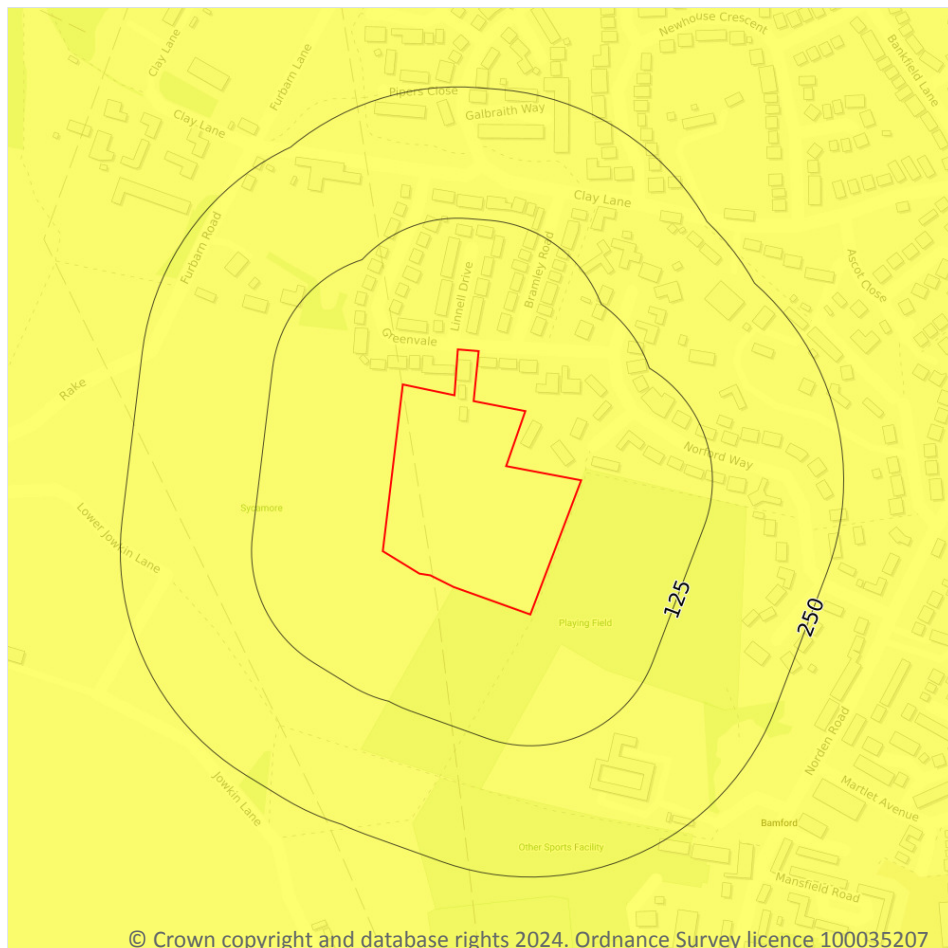
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 101](#) >

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



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

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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.

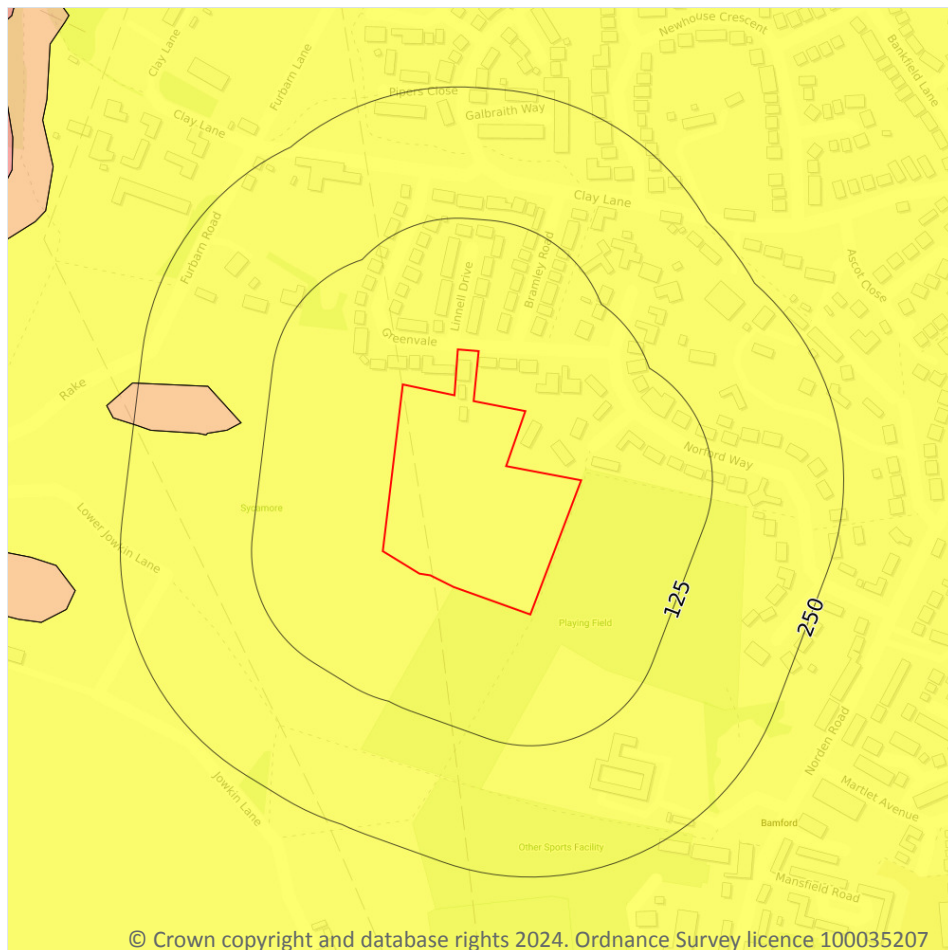
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 102 >](#)

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

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17.5 Landslides

Records within 50m

1

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

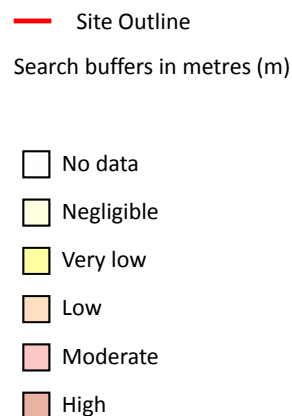
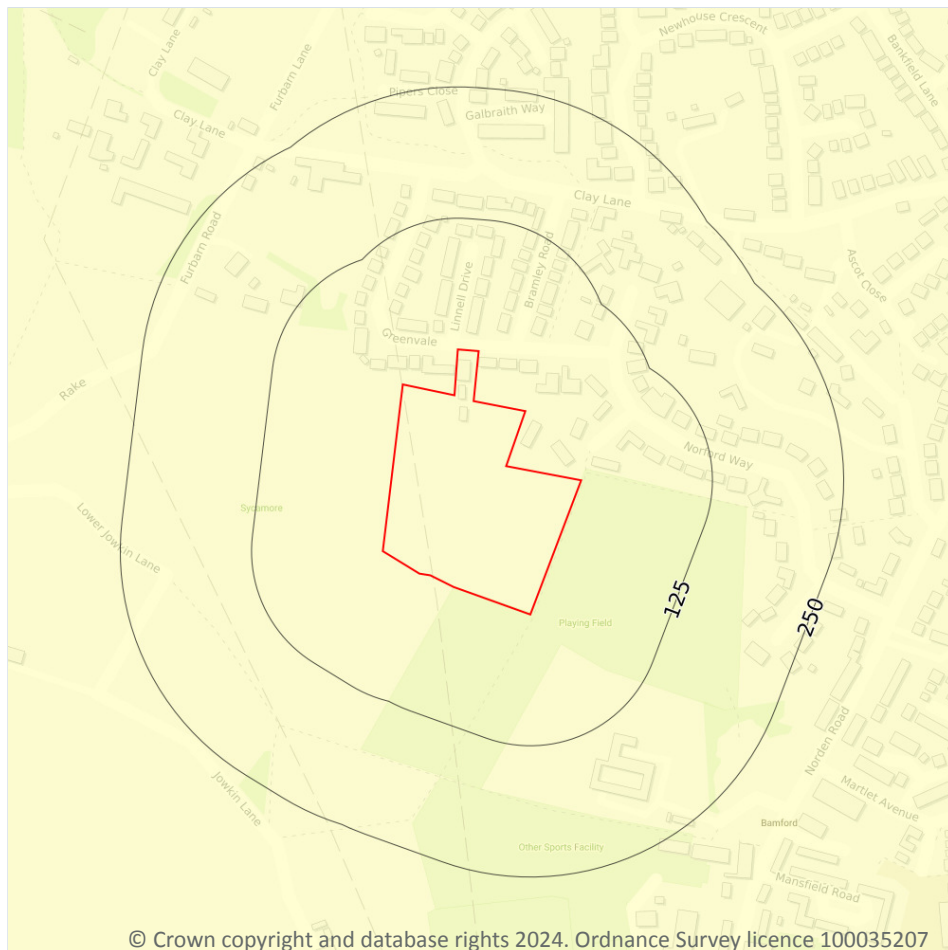
Features are displayed on the Natural ground subsidence - Landslides map on [page 103 >](#)

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



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.

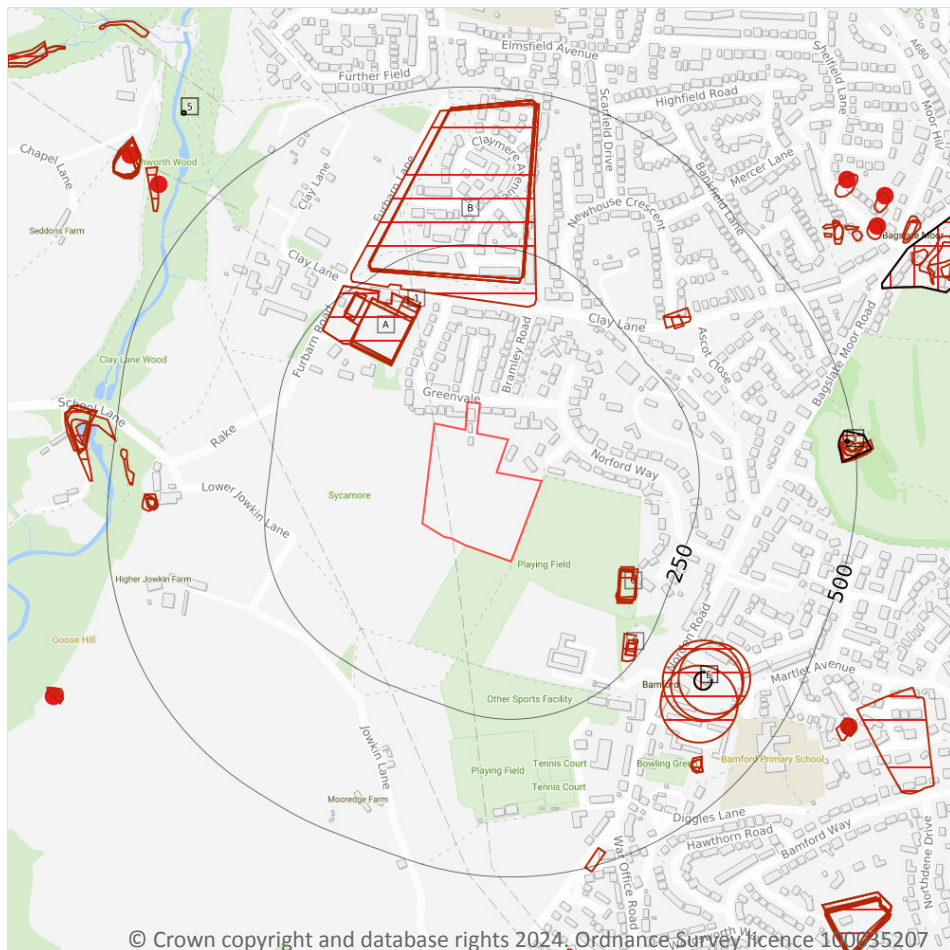
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 104](#) >

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 and ground workings



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

18.1 BritPits

Records within 500m

0

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

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m

30

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

Features are displayed on the Mining and ground workings map on [page 106](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
A	114m NW	Reservoir	1908	1:10560
A	116m NW	Reservoir	1928	1:10560
A	116m NW	Reservoir	1938	1:10560
A	116m NW	Reservoir	1890	1:10560
A	119m NW	Reservoir	1987	1:10000
A	119m NW	Reservoir	1975	1:10000
A	119m NW	Reservoir	1949	1:10560
A	119m NW	Reservoir	1968	1:10560
B	162m N	Reservoir	1908	1:10560
1	164m N	Reservoir	1949	1:10560
C	165m SE	Reservoir	1938	1:10560
C	165m SE	Reservoirs	1890	1:10560
C	165m SE	Reservoirs	1928	1:10560
C	166m SE	Reservoirs	1908	1:10560
C	166m SE	Reservoirs	1949	1:10560
C	168m SE	Pond	1968	1:10560
B	195m N	Reservoir	1938	1:10560
B	195m N	Reservoir	1890	1:10560
B	195m N	Reservoir	1928	1:10560
B	201m N	Reservoir	1992	1:10000
B	201m N	Reservoir	1987	1:10000
B	201m N	Reservoir	1975	1:10000
B	201m N	Reservoir	1949	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
B	201m N	Reservoir	1968	1:10560
A	207m NW	Pond	1928	1:10560
A	209m NW	Reservoir	1949	1:10560
D	213m SE	Reservoir	1890	1:10560
D	224m SE	Reservoir	1949	1:10560
D	225m SE	Reservoir	1938	1:10560
D	225m SE	Reservoir	1928	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m

14

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 and ground workings map on [page 106](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
E	345m SE	Pit Hole	1928	1:10560
I	475m E	Old Coal Pit	1890	1:10560
I	485m E	Old Coal Shaft	1908	1:10560
O	621m NE	Colliery	1890	1:10560
5	629m NW	Old Coal Shafts	1908	1:10560
-	873m E	Unspecified Old Shaft	1890	1:10560
-	881m N	Colliery	1890	1:10560
-	969m W	Disused Colliery	1908	1:10560
-	969m W	Disused Colliery	1949	1:10560
-	971m W	Unspecified Dismantled Mine	1983	1:10000
-	971m W	Unspecified Dismantled Mine	1967	1:10560
-	972m W	Colliery	1890	1:10560
-	978m W	Disused Colliery	1938	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
-	978m W	Disused Colliery	1928	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m

0

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

This data is sourced from Groundsure.

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 and ground workings map on [page 106](#) >

ID	Location	Name	Commodity	Class	Likelihood
-	895m N	Not available	Vein Mineral	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.



18.7 JPB mining areas

Records on site

0

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

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m

0

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

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m

0

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

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m

0

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

This data is sourced from Groundsure.



18.11 BGS mine plans

Records within 500m

0

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

This data is sourced from Groundsure.

18.12 Coal mining

Records on site

1

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

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site

0

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

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

18.14 Gypsum areas

Records on site

0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site

0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.



18.16 Clay mining

Records on site

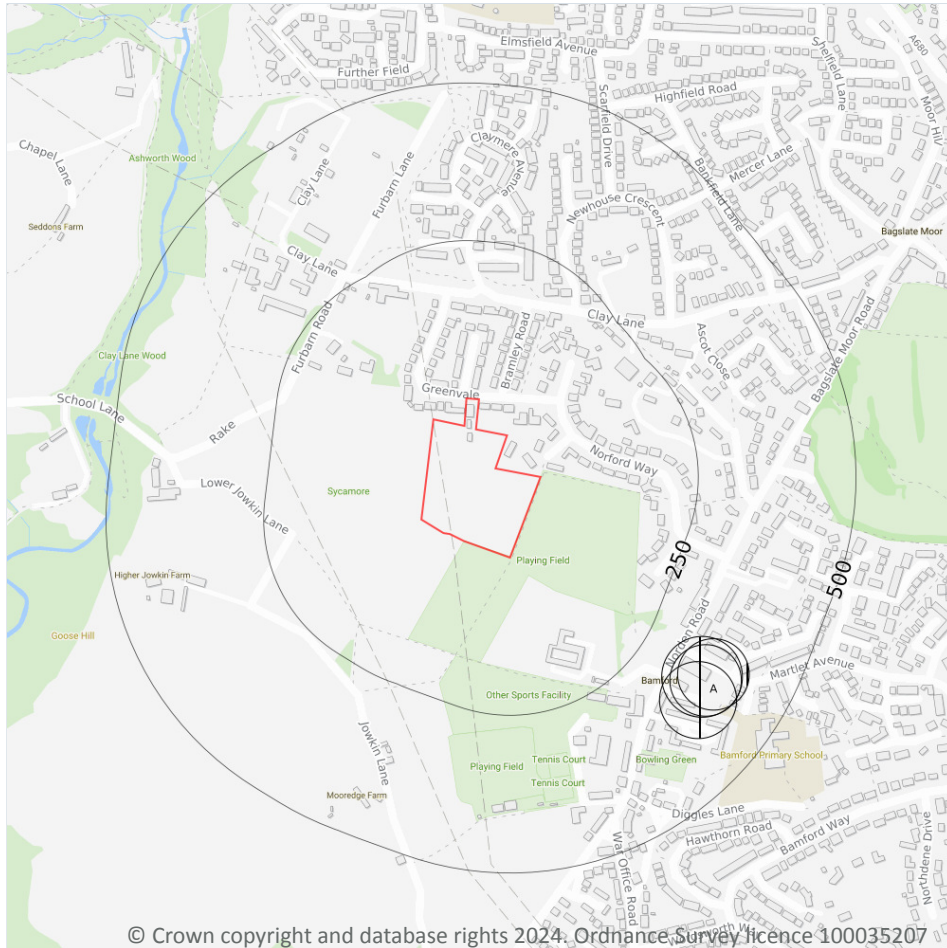
0

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

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



19 Ground cavities and sinkholes



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- Mining cavities
- Reported recent incidents
- Historical incidents
- BGS karst database (Point)
- BGS karst database (Line)
- BGS karst database (Area)

19.1 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.



19.2 Mining cavities

Records within 1000m

0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m

0

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

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m

4

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

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

Features are displayed on the Ground cavities and sinkholes map on [page 113](#) >

ID	Location	Type	Date of mapping
A	294m SE	Unspecified Hole	1938
A	309m SE	Unspecified Hole	1908
A	313m SE	Unspecified Hole	1890



ID	Location	Type	Date of mapping
A	315m SE	Unspecified Hole	1949

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m

0

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

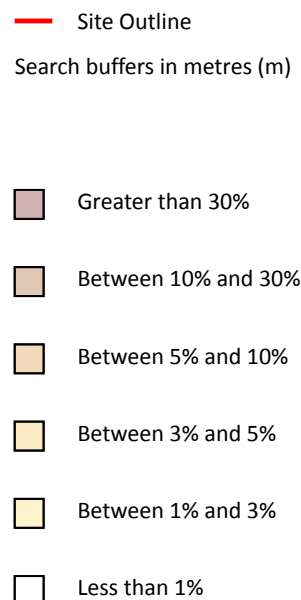
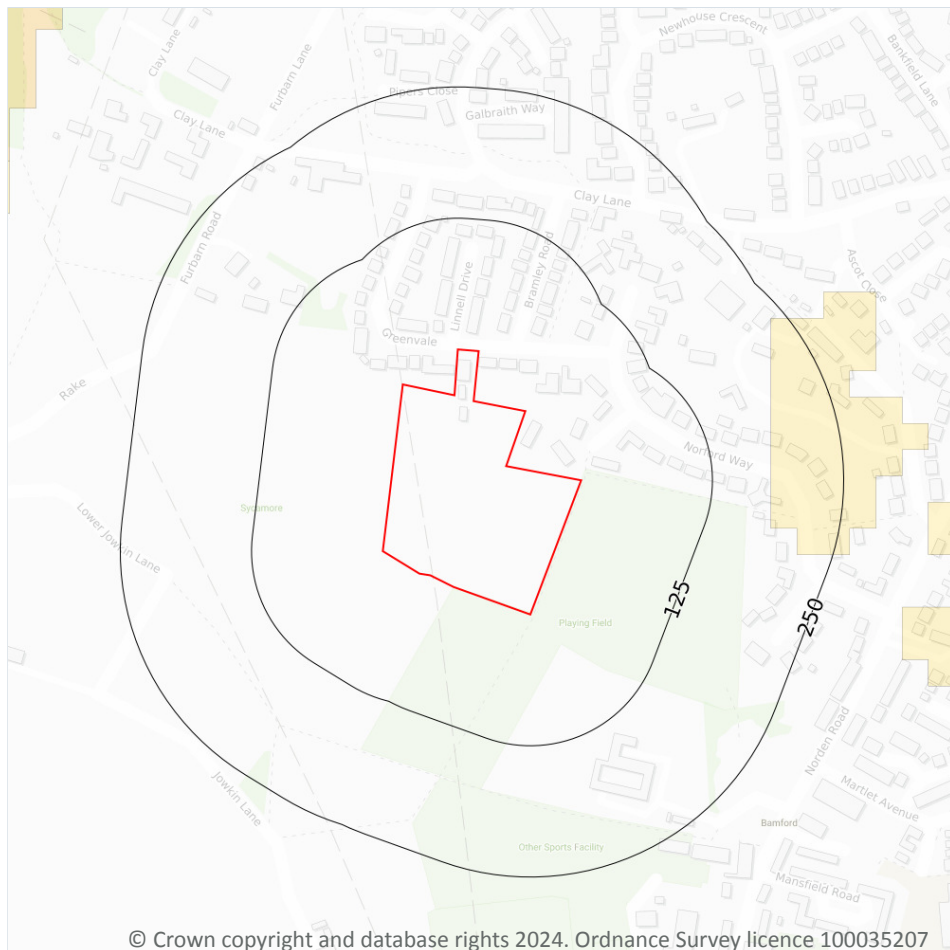
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over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

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

This data is sourced from the British Geological Survey.



20 Radon



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20.1 Radon

Records on site

1

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

Features are displayed on the Radon map on [page 116](#) >

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



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



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m

19

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	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg



Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
6m SW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
17m NW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
25m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 - 2.2 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

21.2 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.

21.3 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.



22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m**0**

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

This data is sourced from publicly available information by Groundsure.

22.2 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.

22.3 Railway tunnels

Records within 250m**0**

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 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.

22.5 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.

22.6 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.

22.7 Railways

Records within 250m

0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 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.

22.9 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.

22.10 HS2

Records within 500m

0

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

This data is sourced from HS2 Ltd.



Data providers

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

Terms and conditions

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



APPENDIX C

These Ordnance Survey maps are not printed to scale and have been reduced to A4 size

A3 1/10,000 plans are available upon request

Site Details:

54, GREENVALE, ROCHDALE,
OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

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

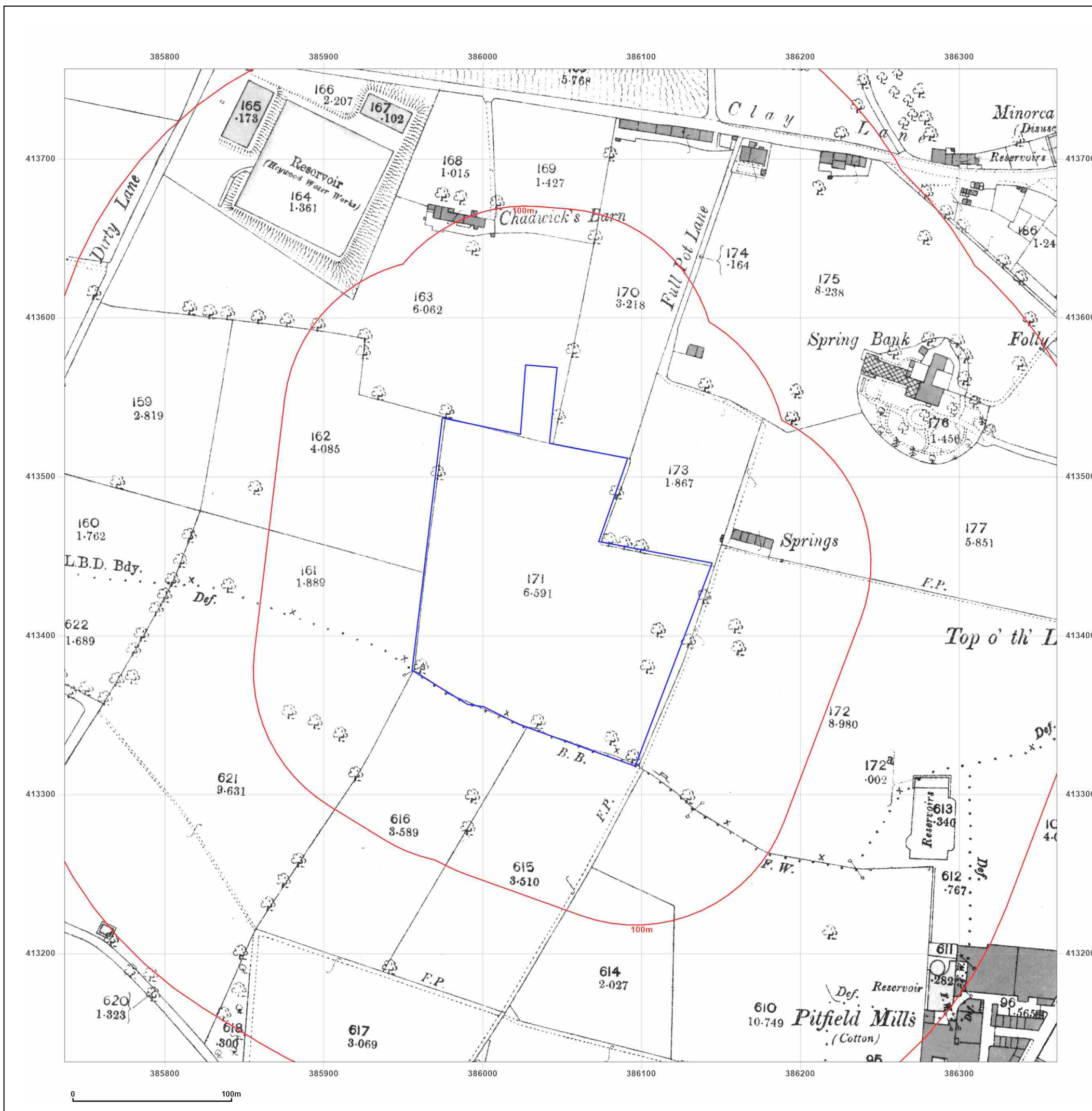


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Site Details:

54, GREENVALE, ROCHDALE,
OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: County Series

Map date: 1910

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1910
Revised 1910
Edition N/A
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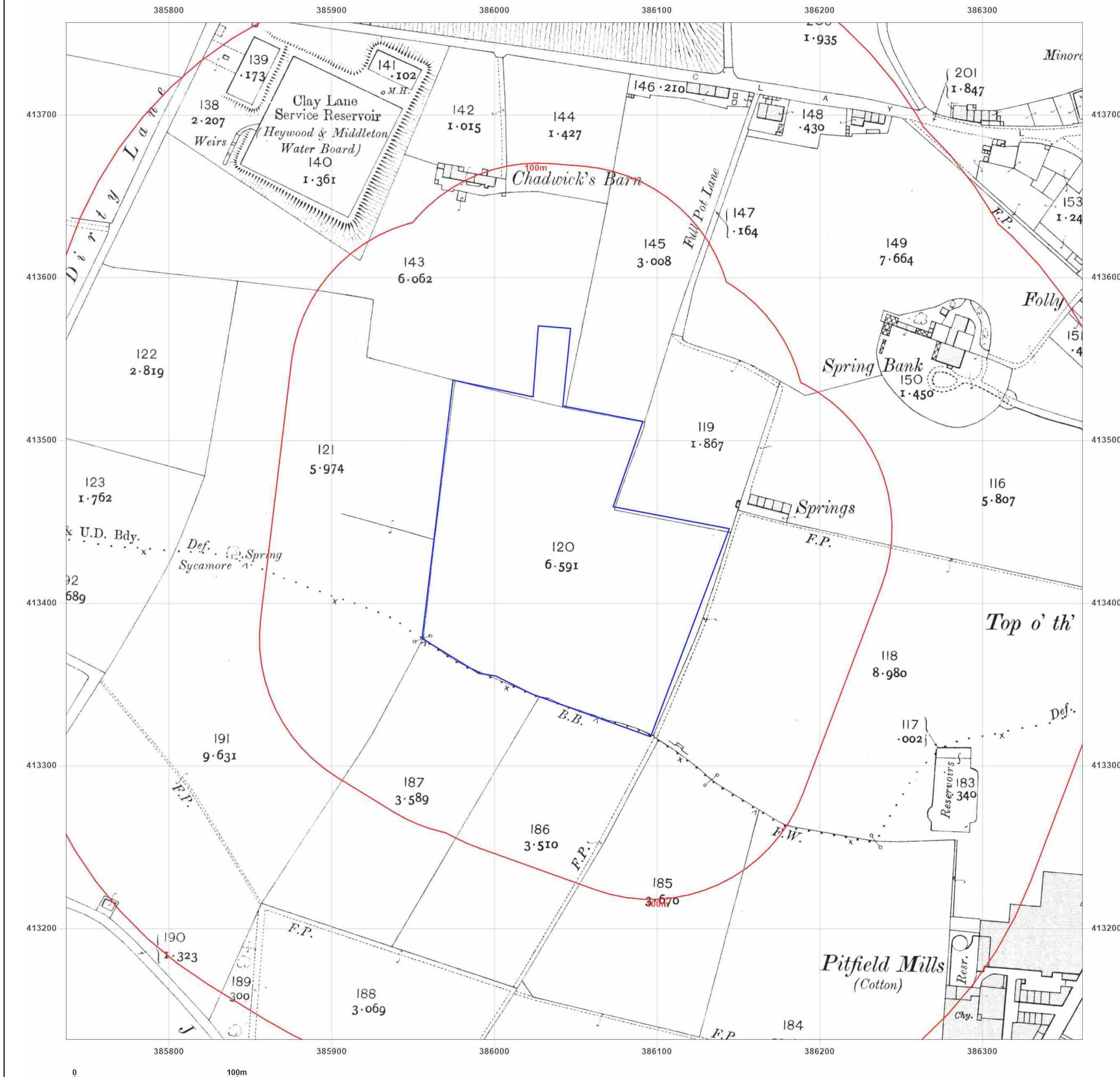


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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: County Series

Map date: 1930

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1930
Revised 1930
Edition N/A
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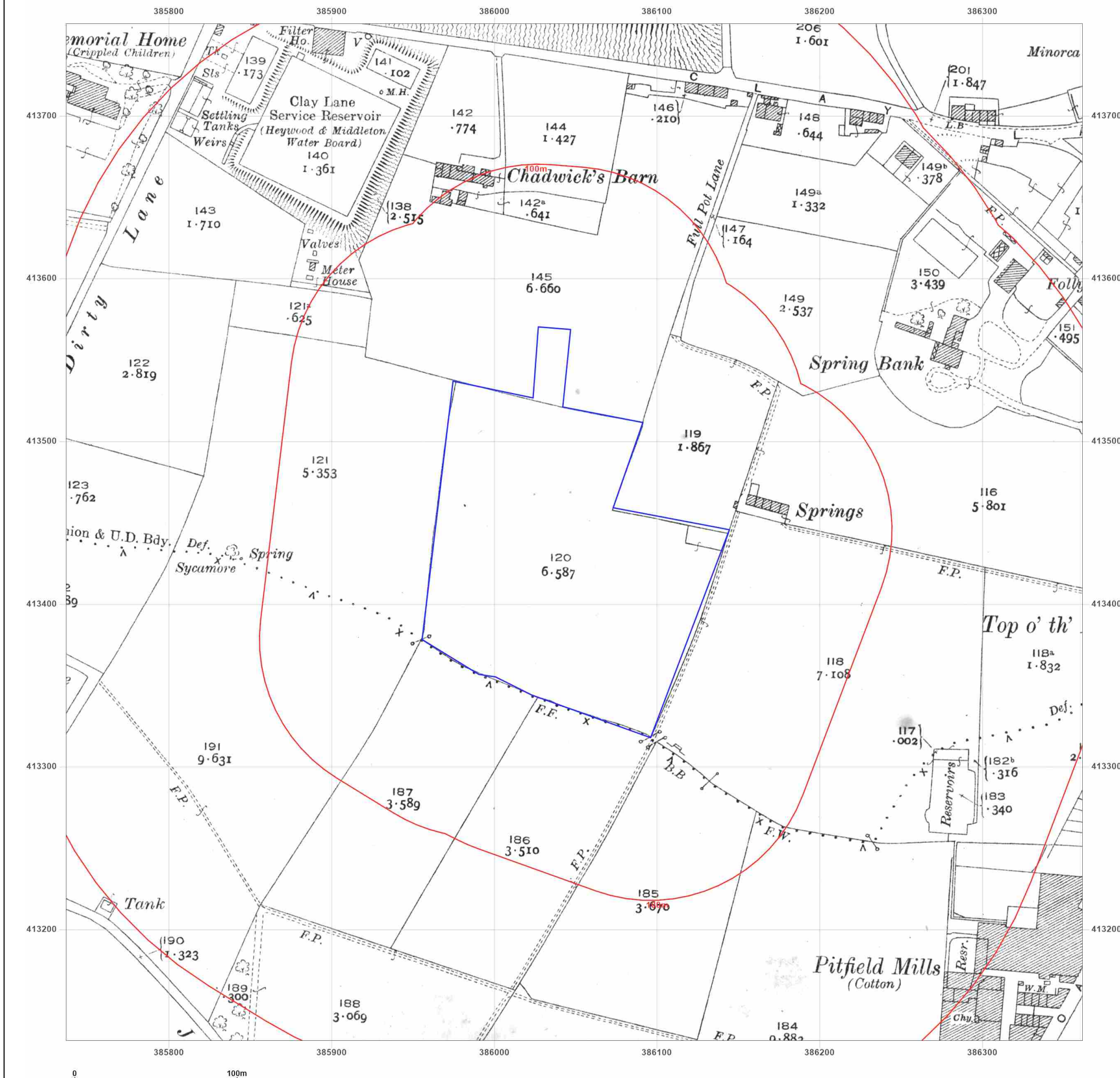


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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

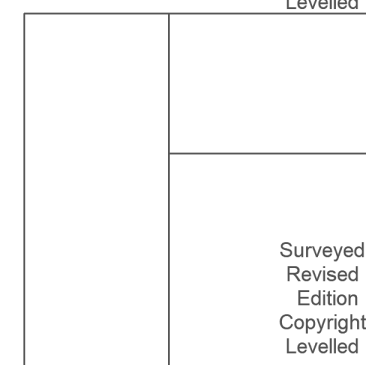
Map date: 1959

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 1963

Scale: 1:2,500

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Report Ref: GS-599-LRP-DEA-YZJ
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Map Name: National Grid

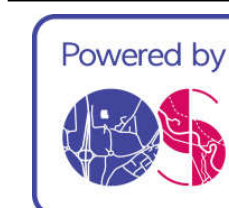
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Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

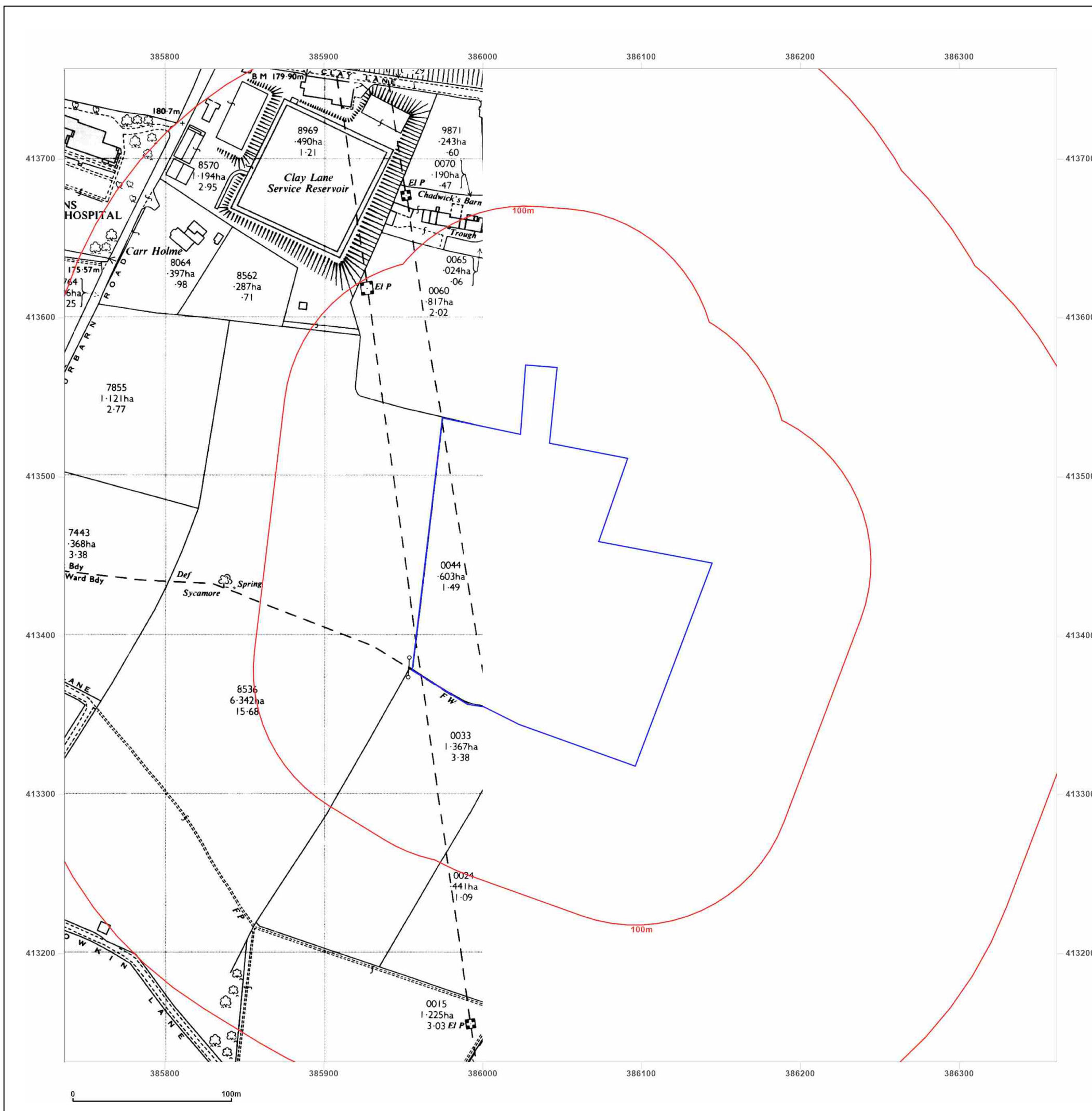


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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
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Map Name: National Grid

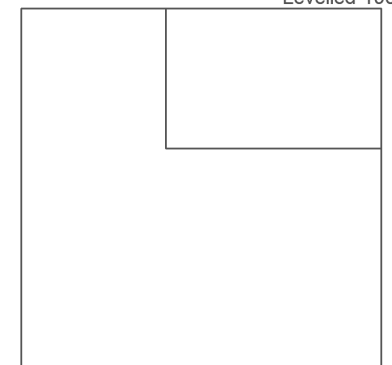
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Scale: 1:1,250

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Surveyed 1959
Revised 1965
Edition N/A
Copyright 1966
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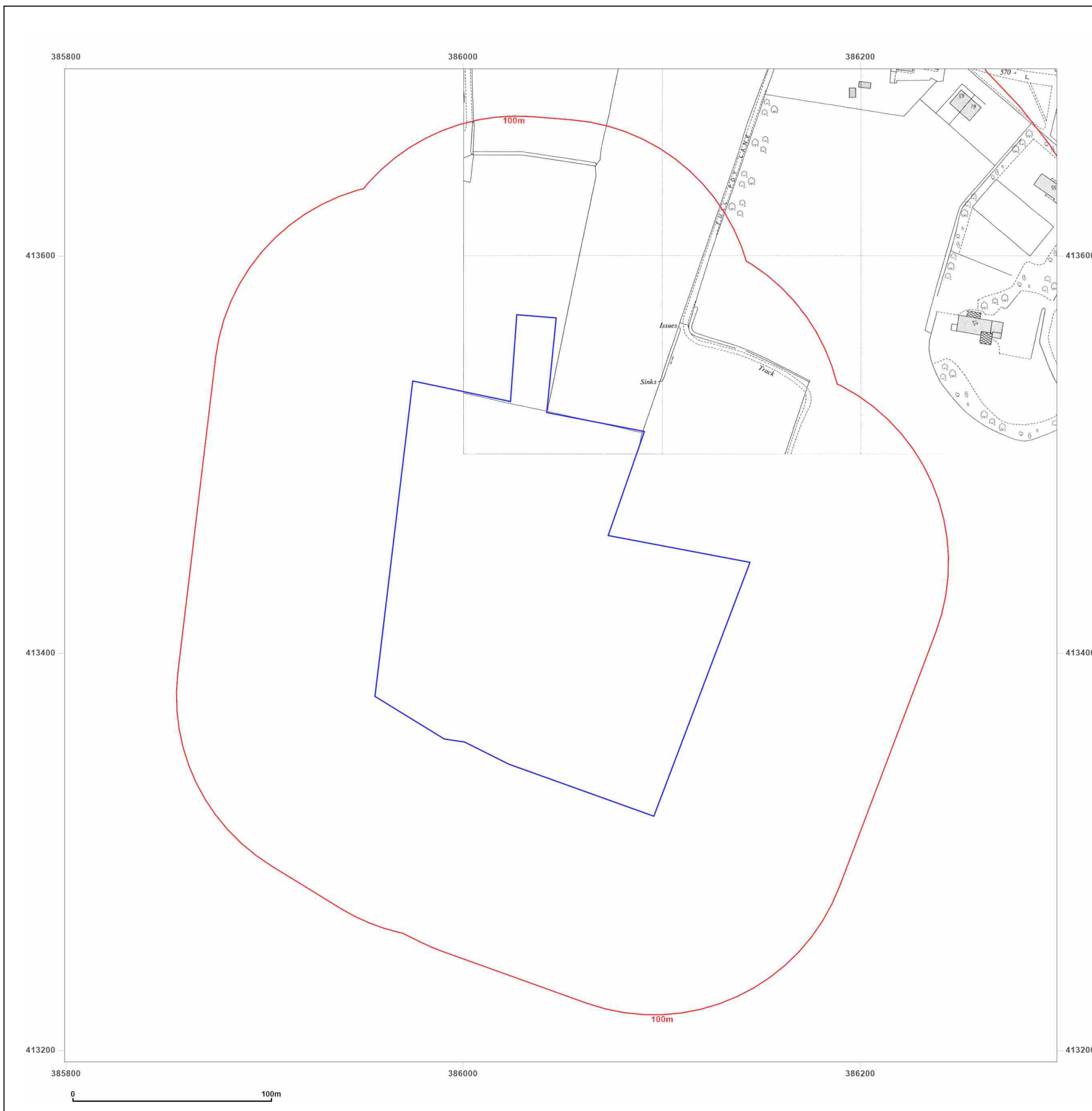


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OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
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Map Name: National Grid

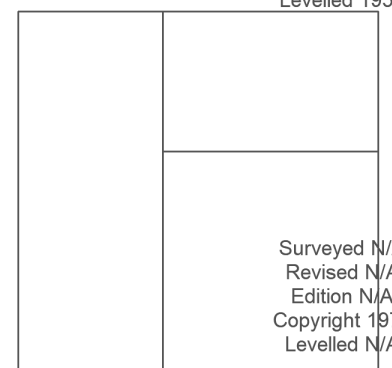
Map date: 1975

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 1979

Scale: 1:2,500

Printed at: 1:2,500



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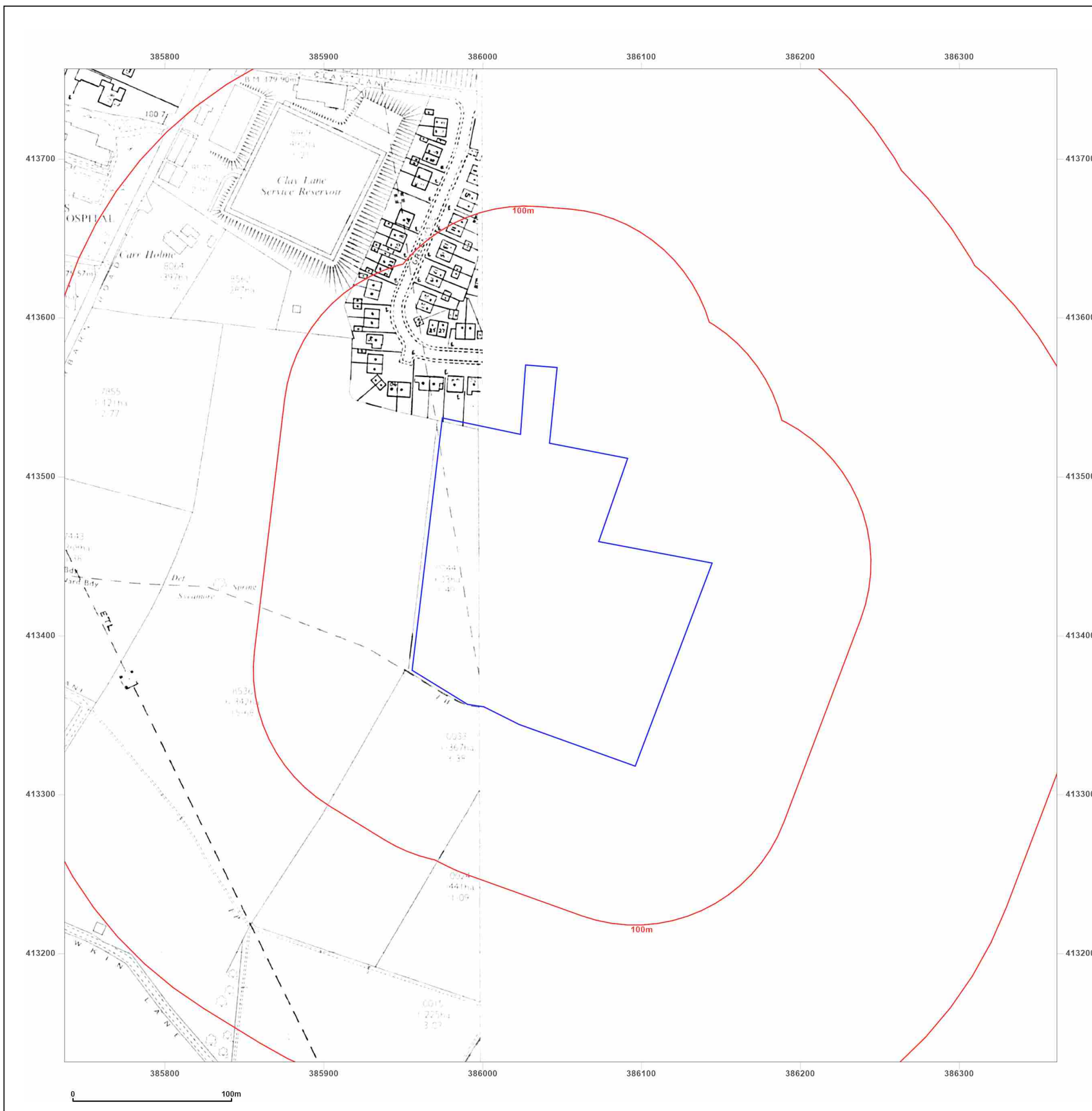


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OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
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Map Name: National Grid

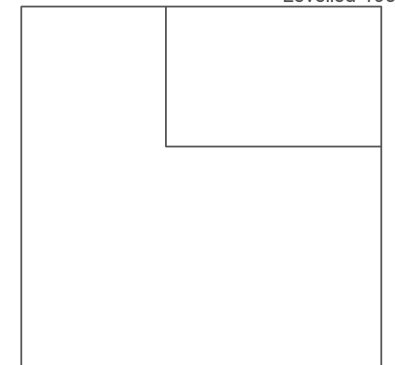
Map date: 1985

Scale: 1:1,250

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Report Ref: GS-599-LRP-DEA-YZJ
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Map Name: National Grid

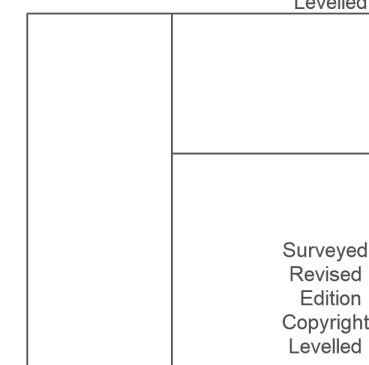
Map date: 1990-1992

Scale: 1:1,250

Printed at: 1:2,000



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OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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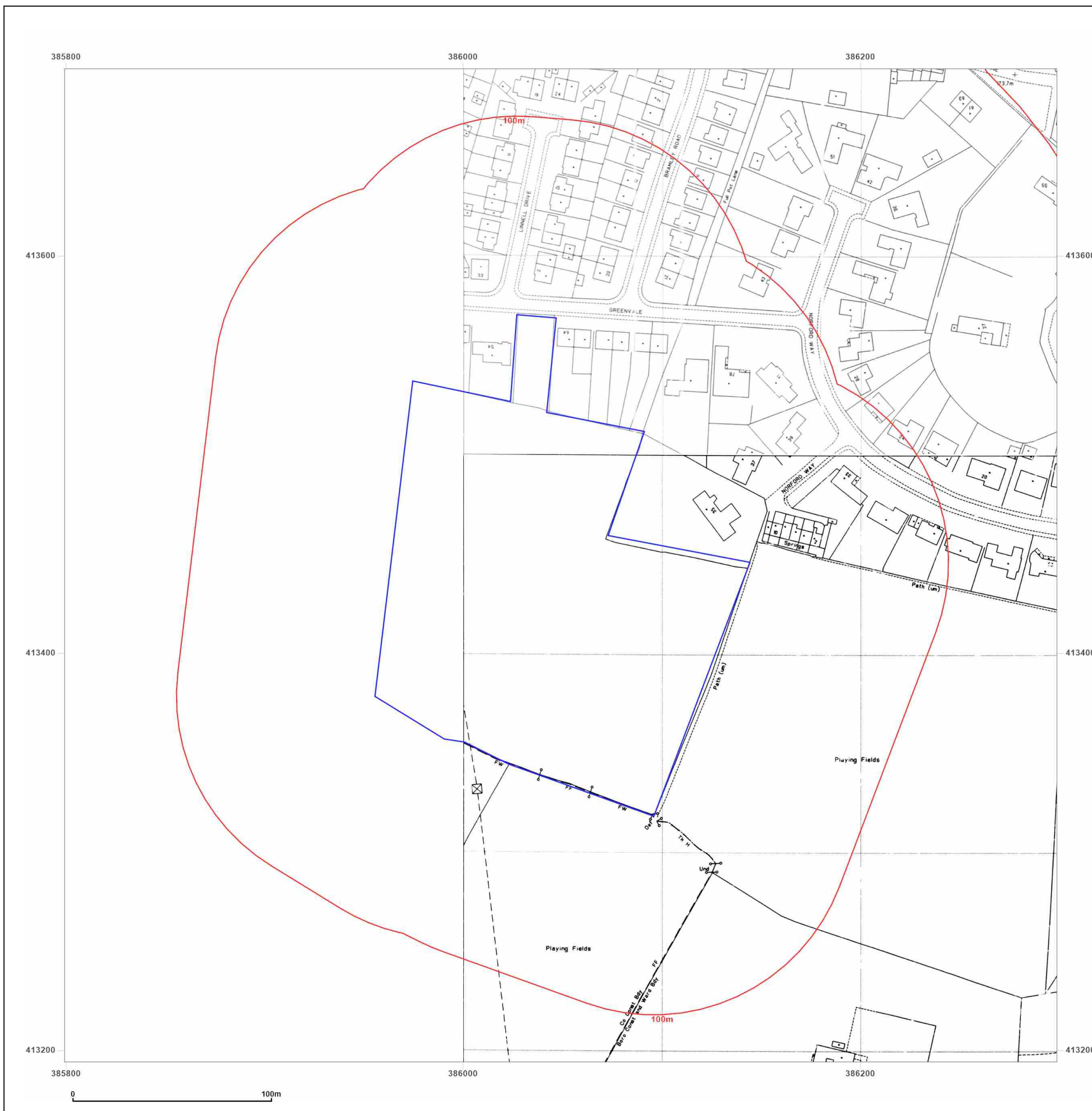


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OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 1992

Scale: 1:2,500

Printed at: 1:2,500



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Edition N/A
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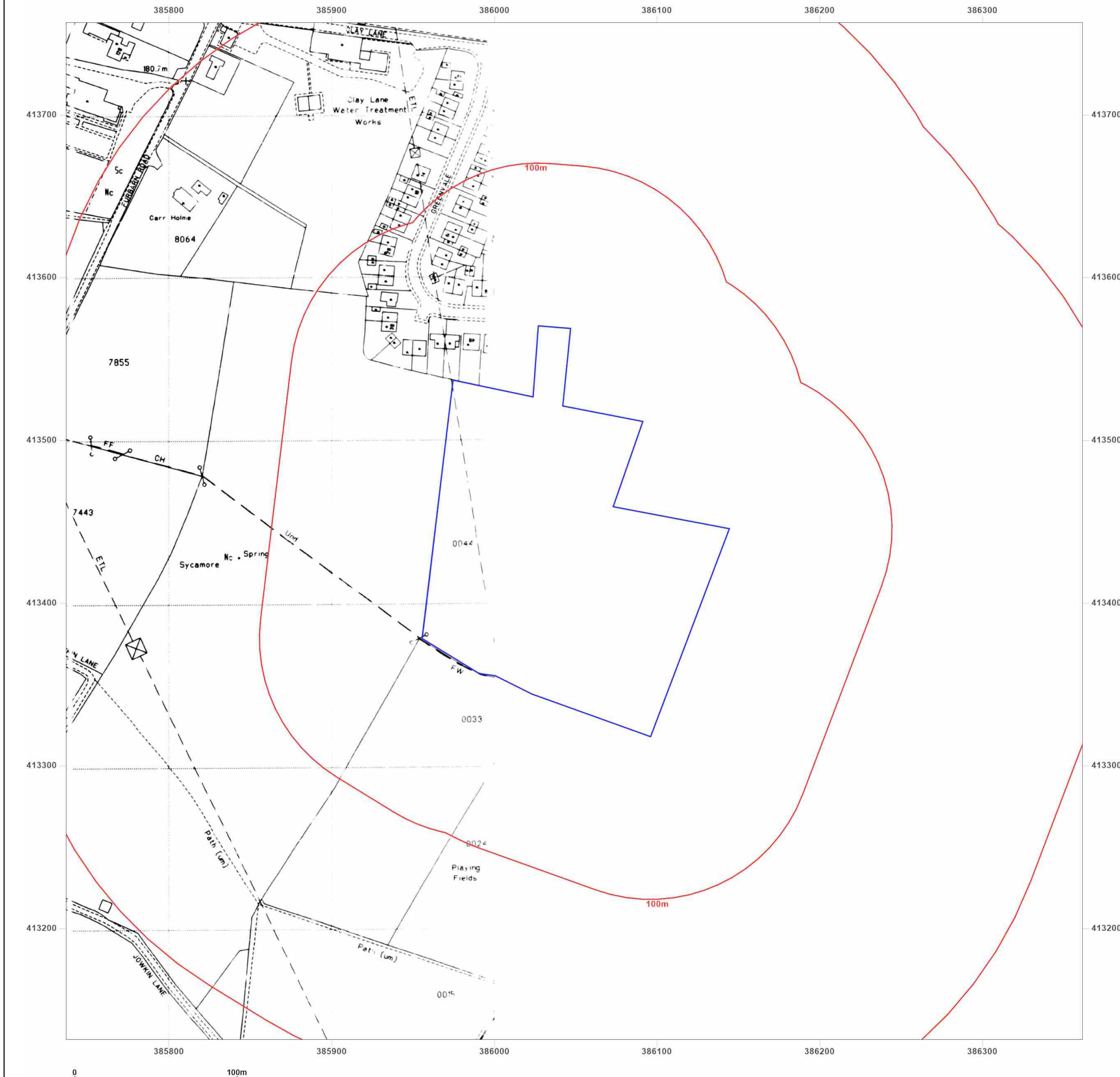


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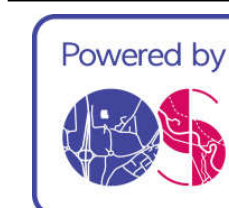
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Printed at: 1:2,500



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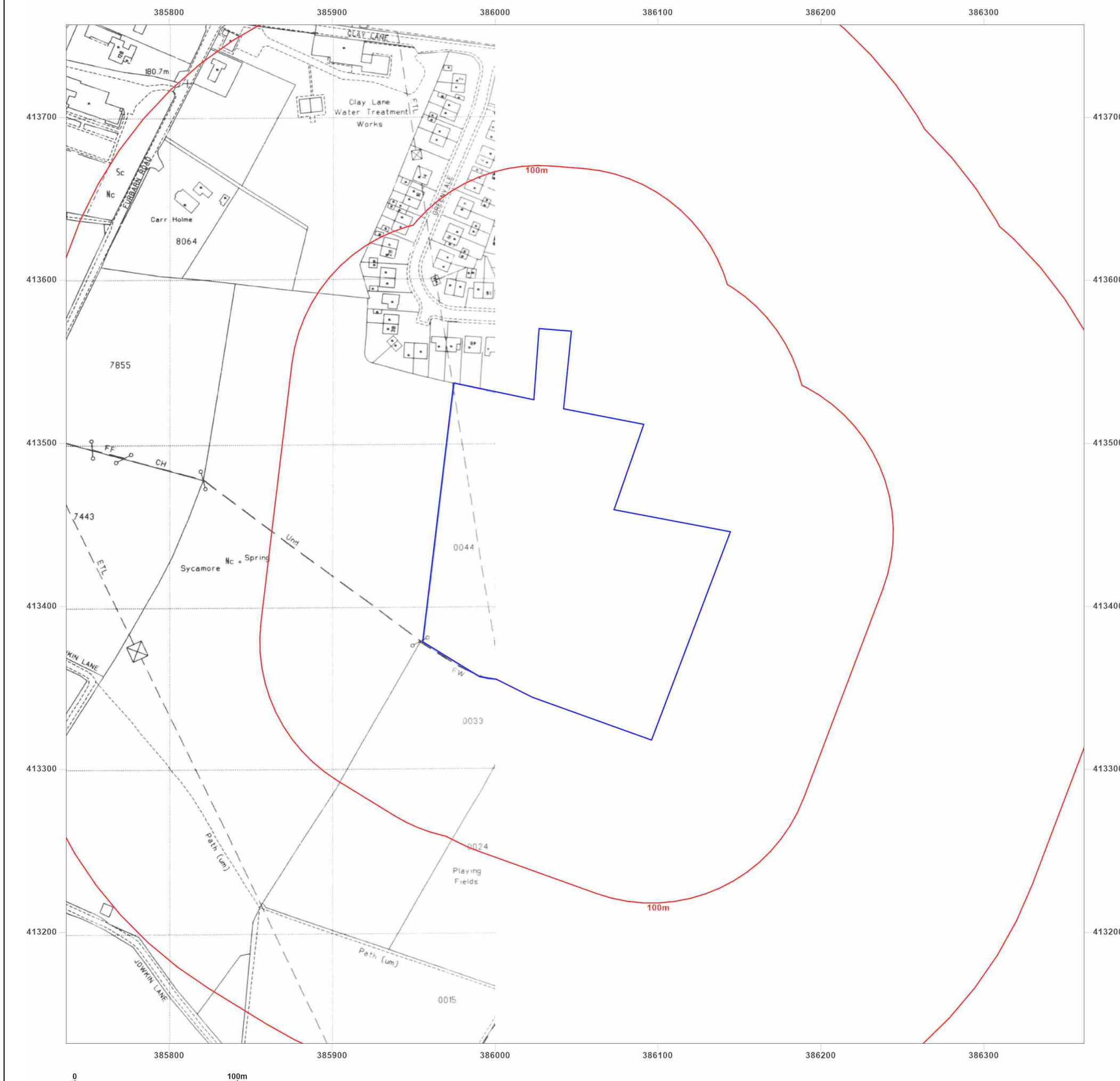


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Site Details:

54, GREENVALE, ROCHDALE,
OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



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Site Details:

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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: County Series

Map date: 1851

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1848
Revised N/A
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Surveyed 1847
Revised N/A
Edition 1851
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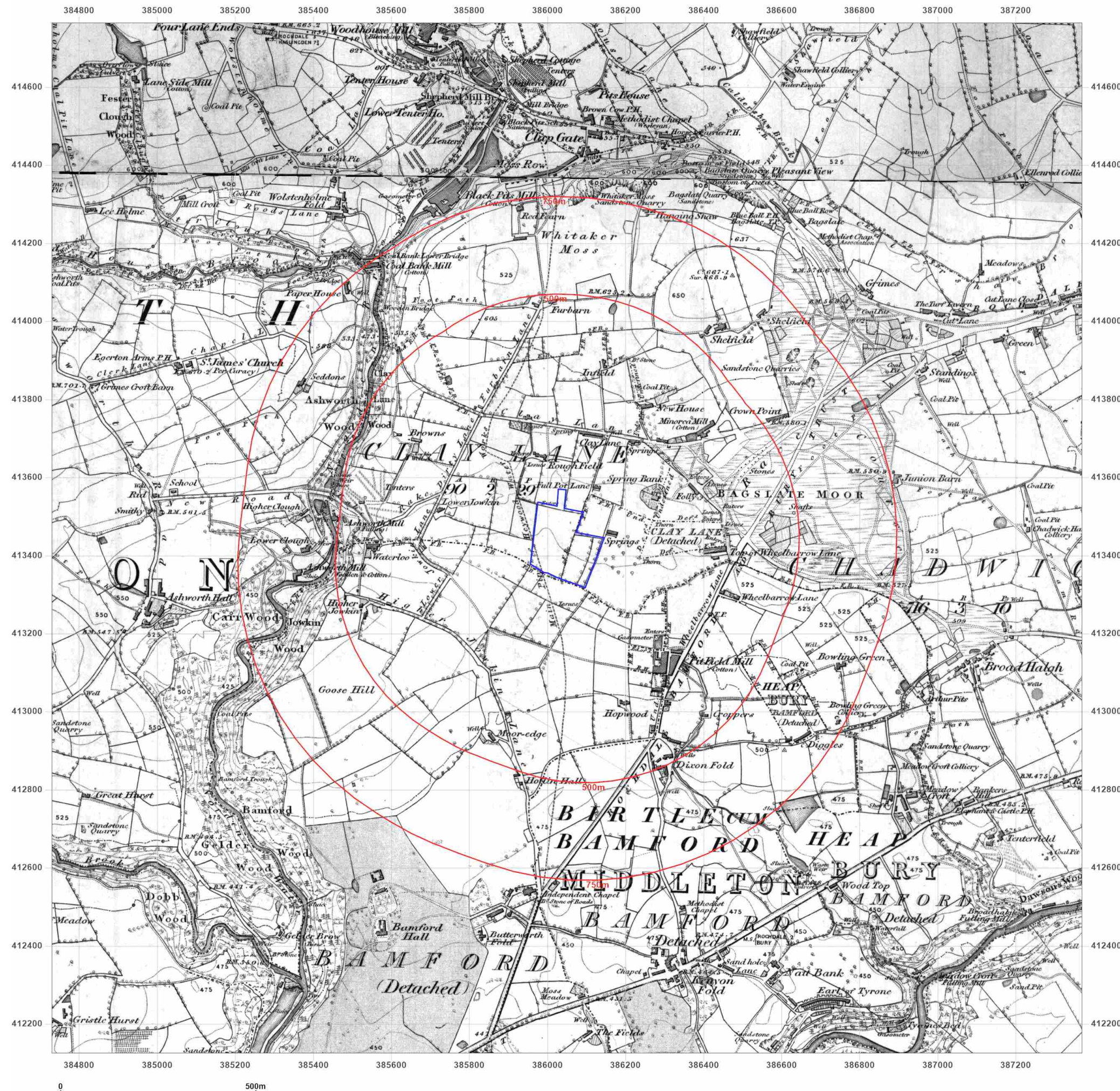


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Site Details:

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OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: County Series

Map date: 1890

Scale: 1:10,560

Printed at: 1:10,560



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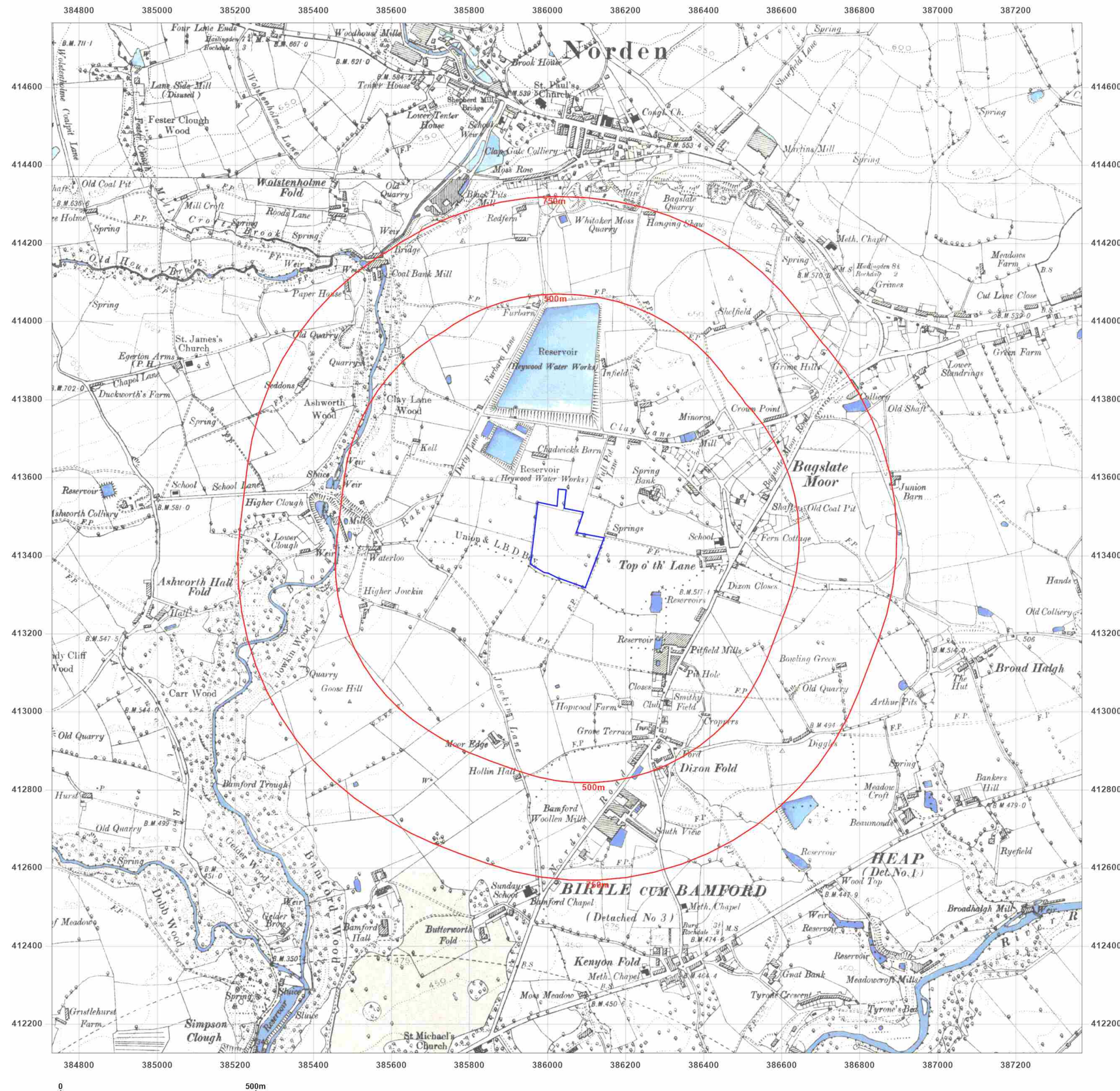


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Site Details:

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OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: County Series

Map date: 1908-1909

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1848
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Edition N/A
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Surveyed 1848
Revised 1908
Edition N/A
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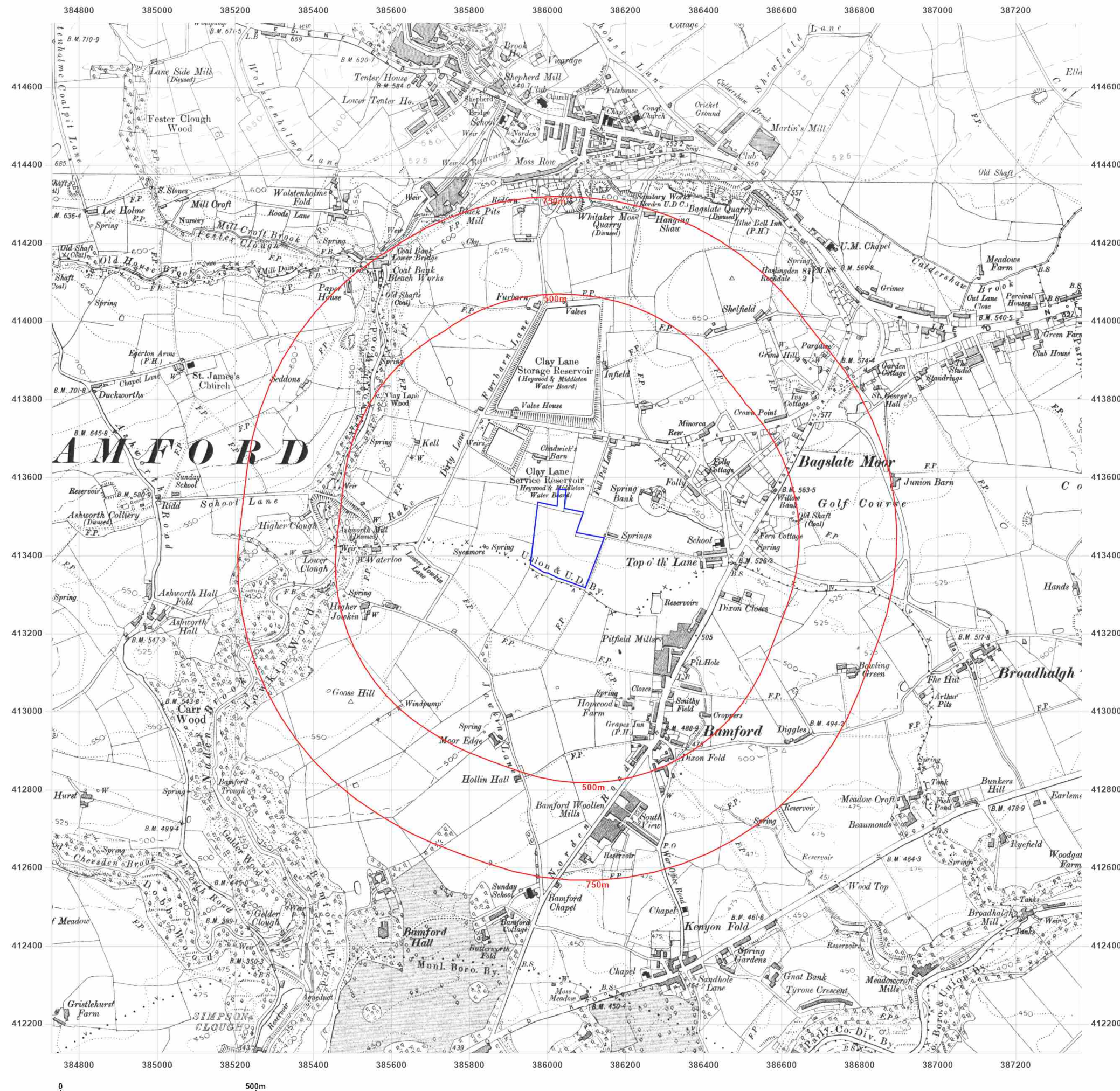


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Site Details:

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OL11 5QJ

Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: County Series

Map date: 1928

Scale: 1:10,560

Printed at: 1:10,560



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

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

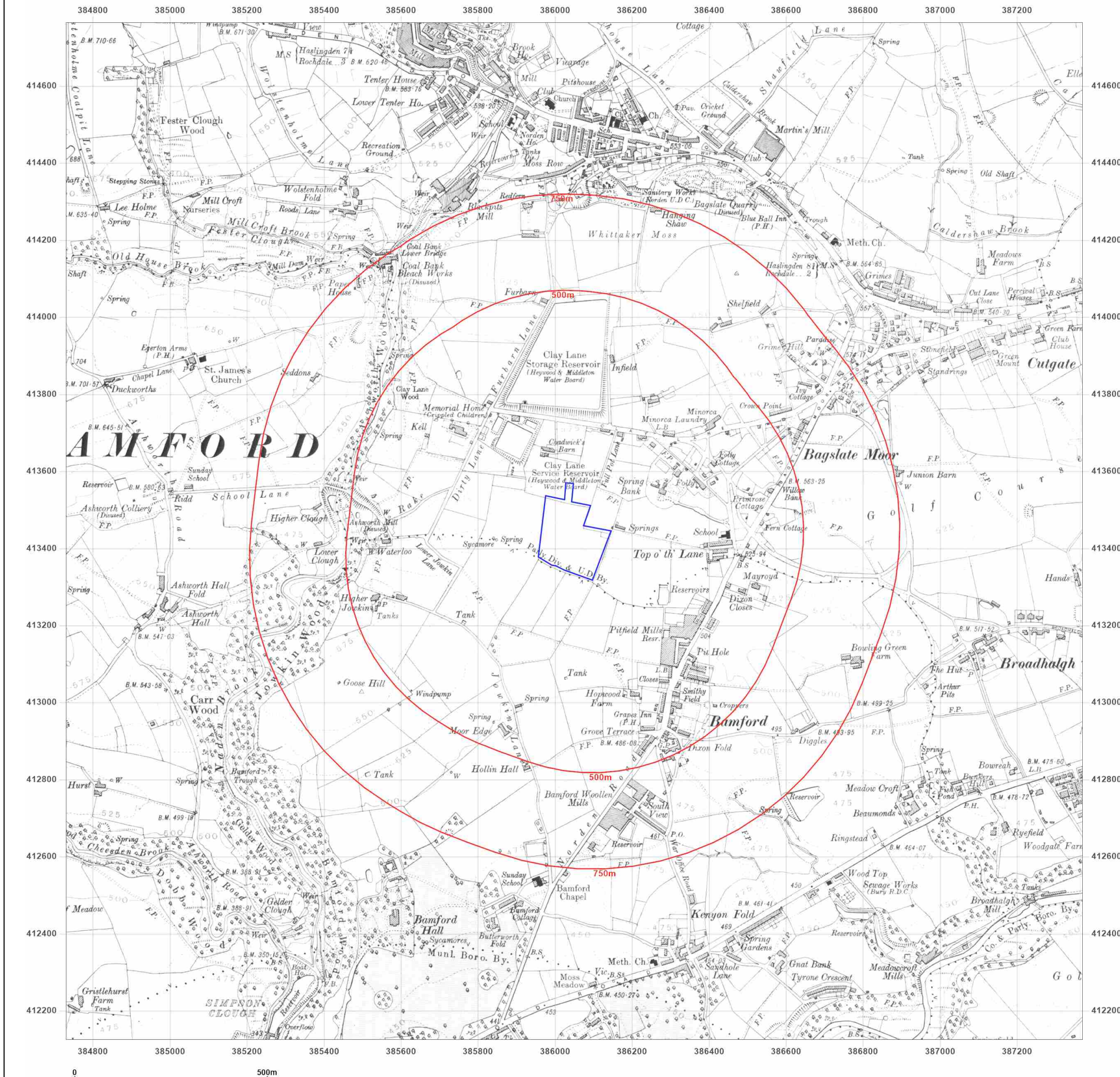


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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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

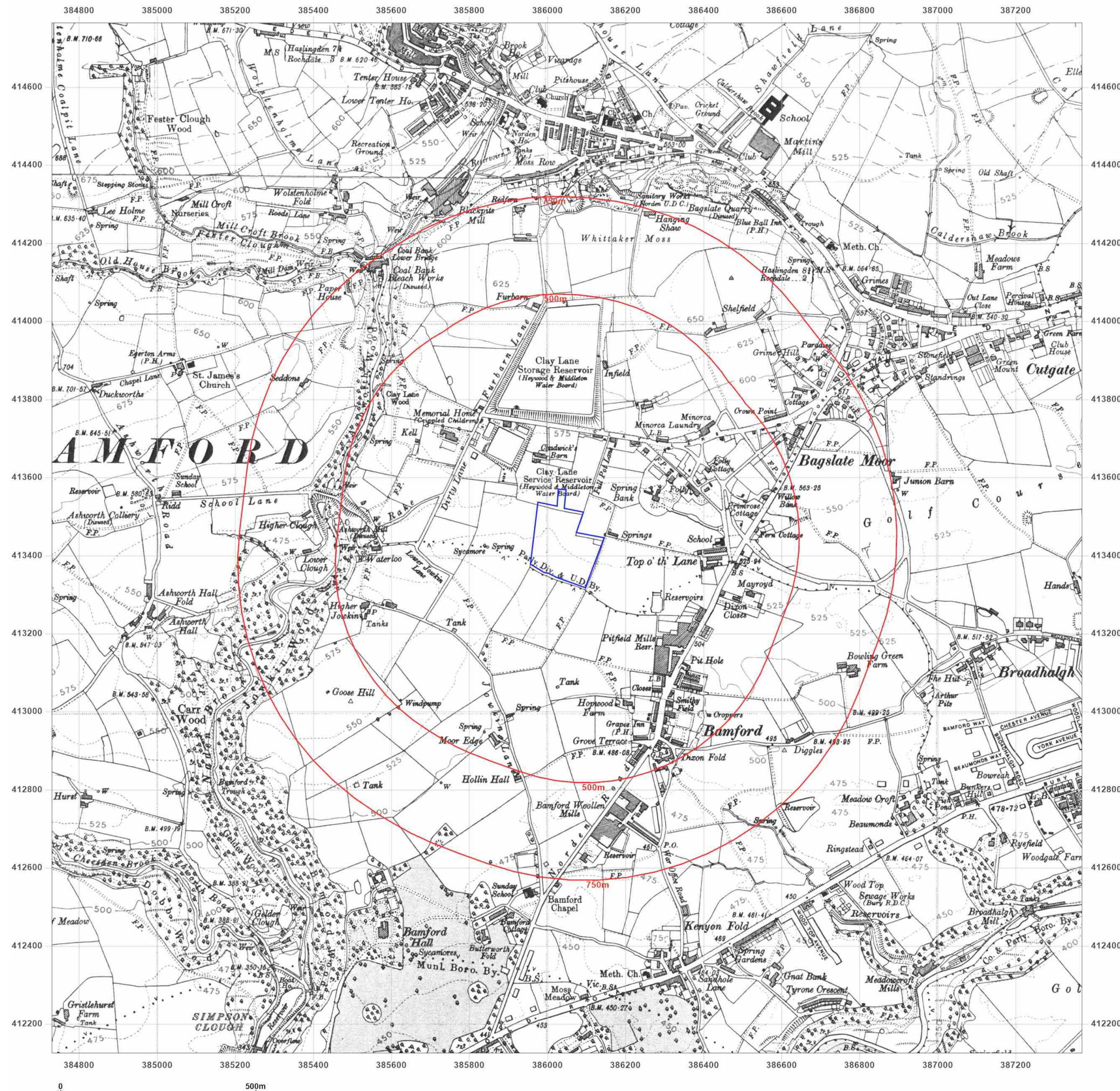


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Site Details:

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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: Provisional

Map date: 1956

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1949
Revised 1949
Edition N/A
Copyright 1956
Levelled N/A

Surveyed N/A
Revised 1955
Edition 1956
Copyright N/A
Levelled N/A

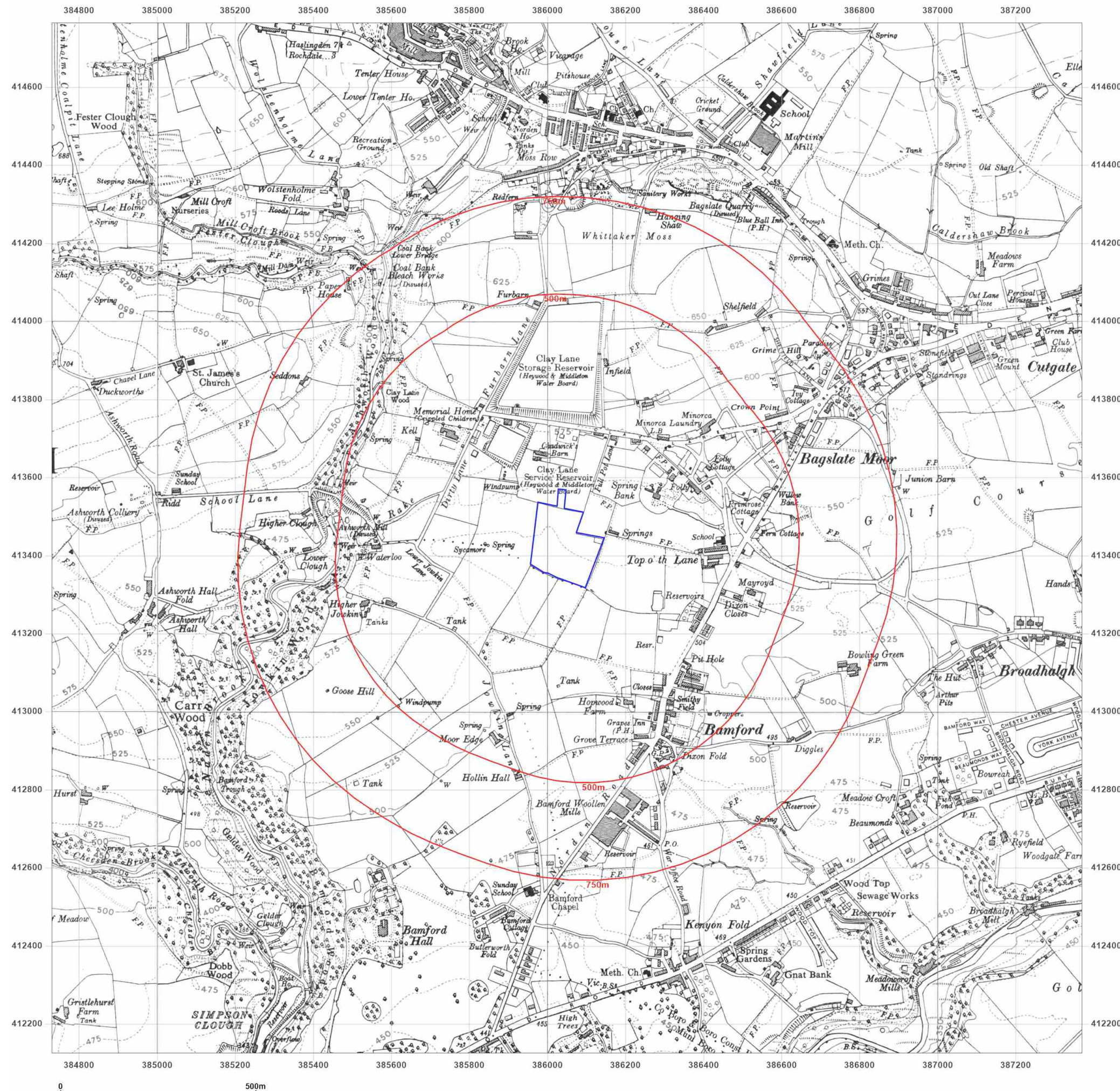


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Site Details:

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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: Provisional

Map date: 1967-1968

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1967
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Revised 1968
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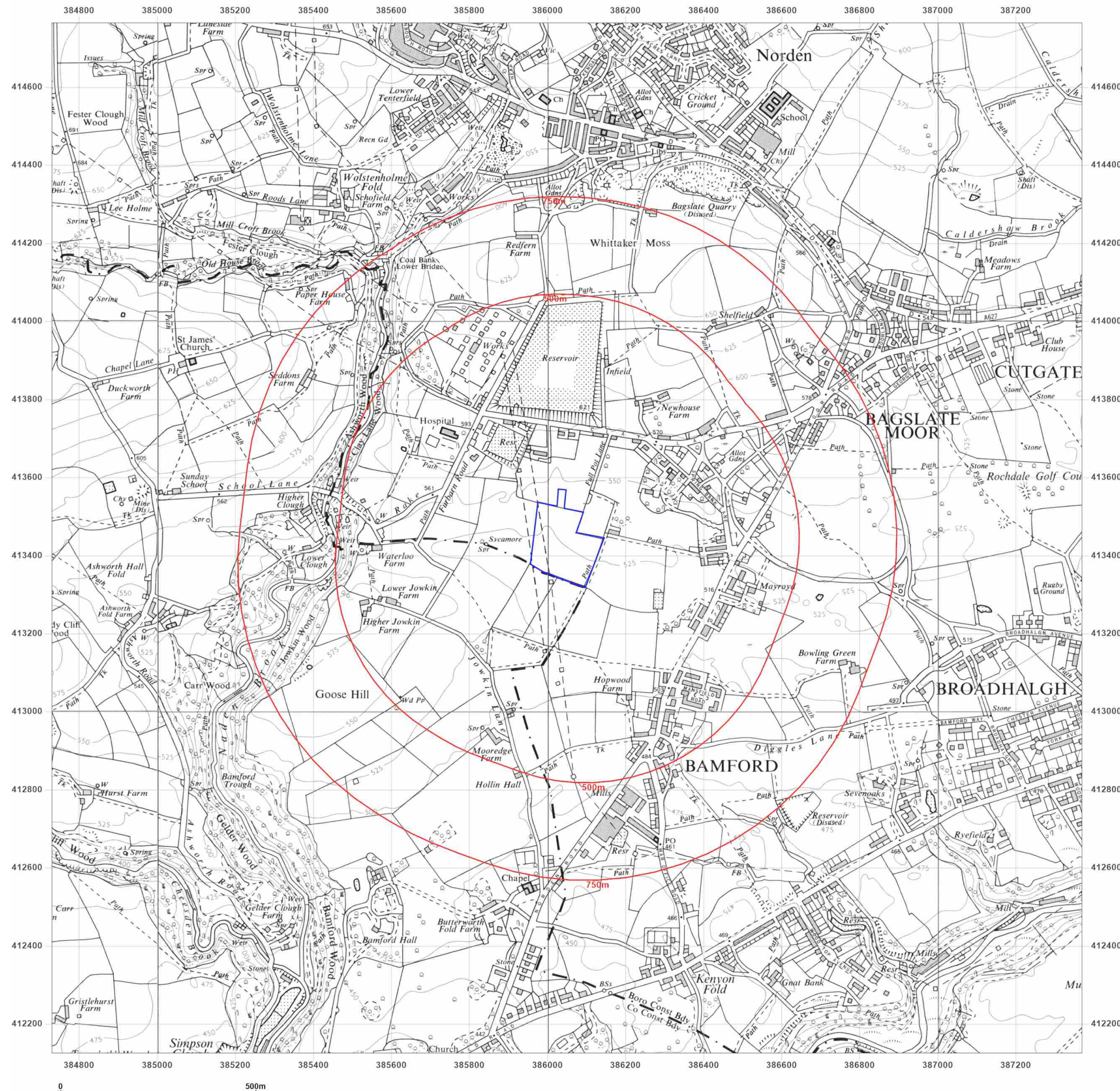


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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 1975

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1975
Edition N/A
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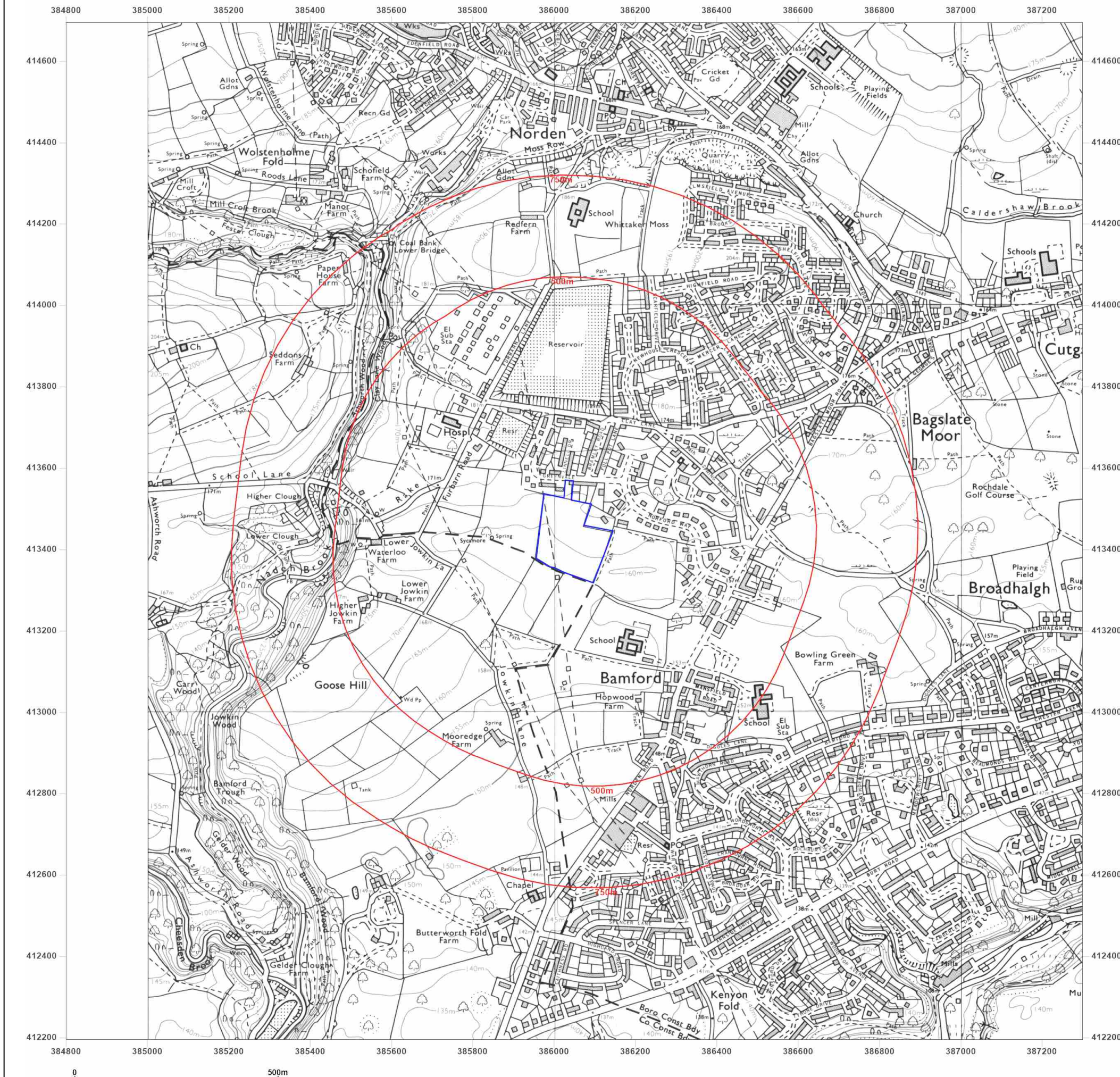


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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 1983-1987

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1977
Revised 1983
Edition N/A
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Surveyed 1984
Revised 1987
Edition N/A
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Levelled N/A

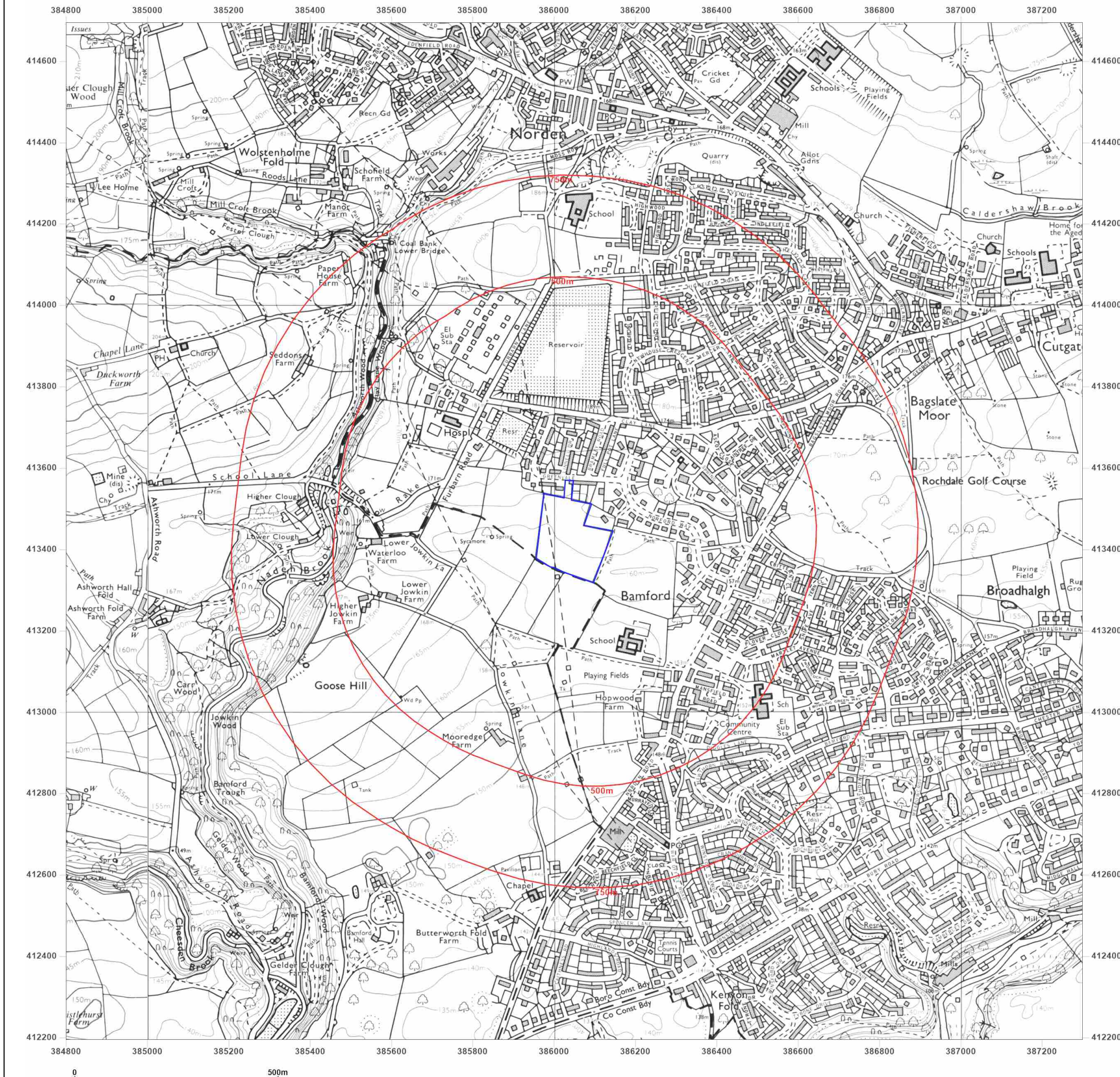


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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1984
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

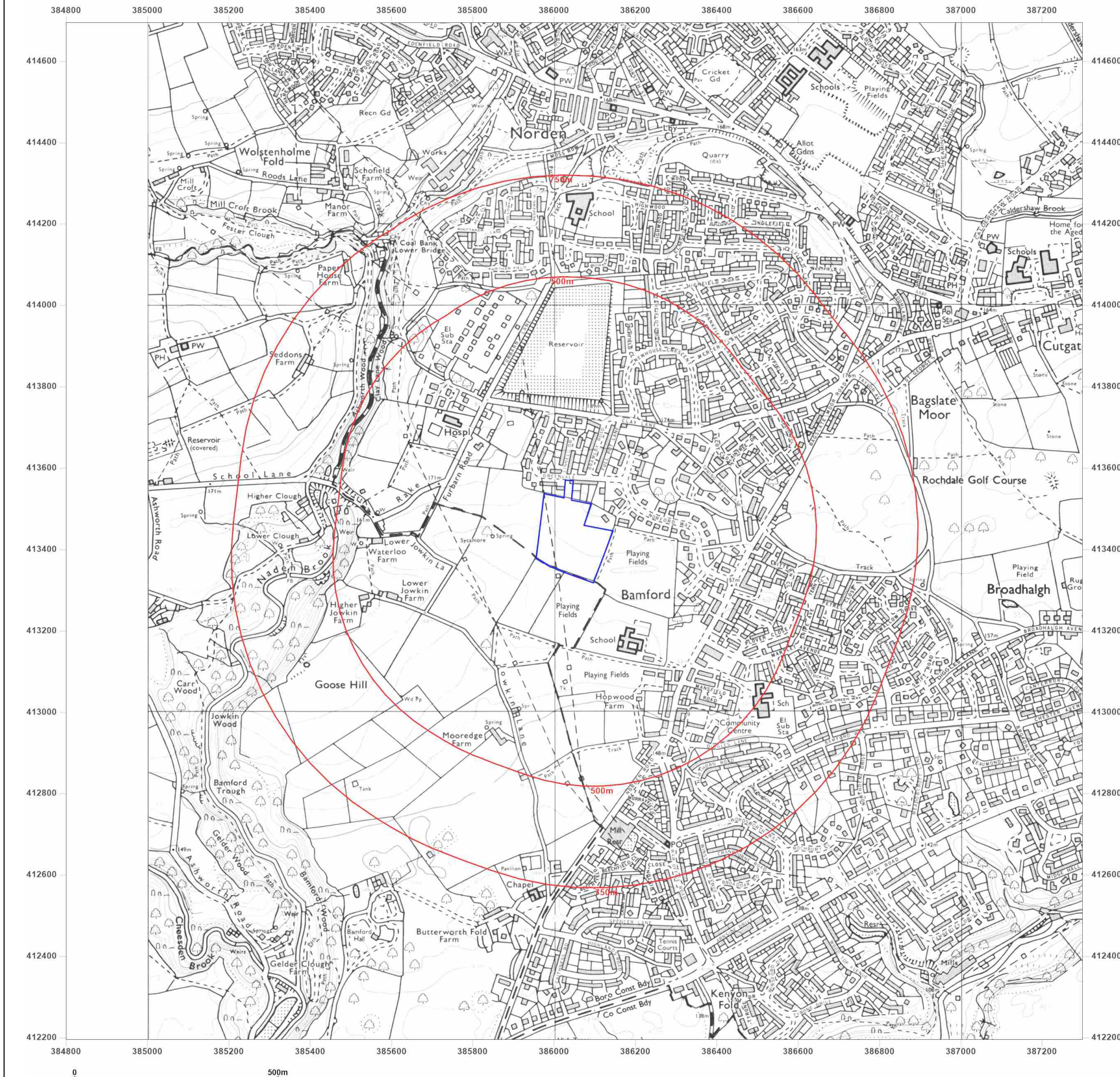


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Site Details:

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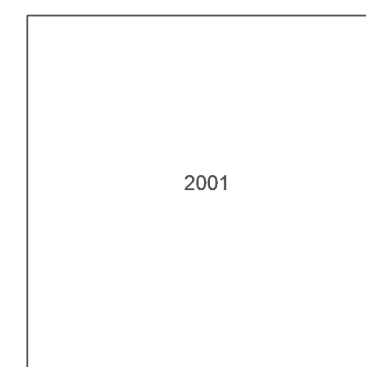
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Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

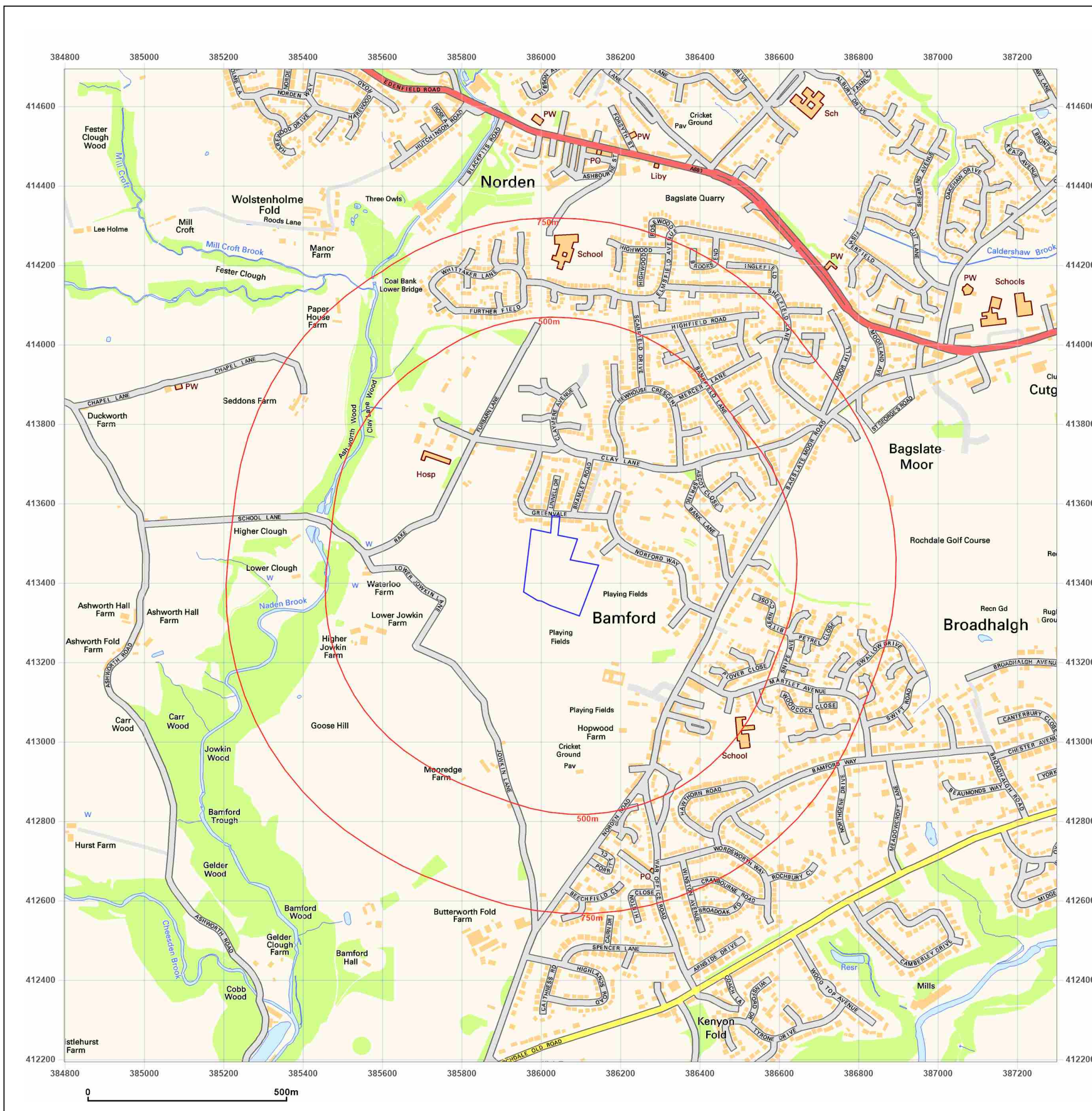


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Site Details:

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Client Ref: 23154
Report Ref: GS-599-LRP-DEA-YZJ
Grid Ref: 386049, 413444

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010

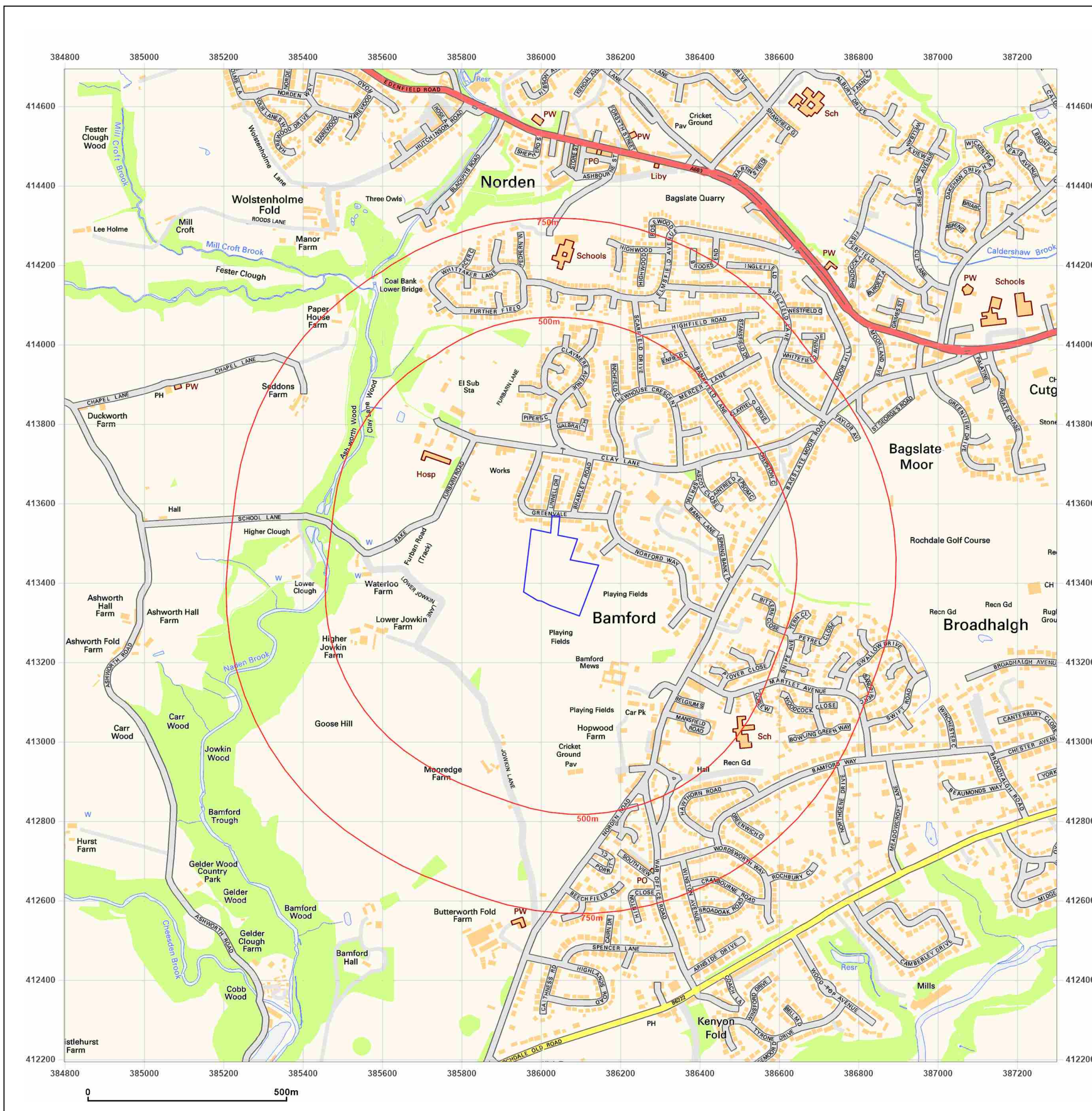


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APPENDIX D

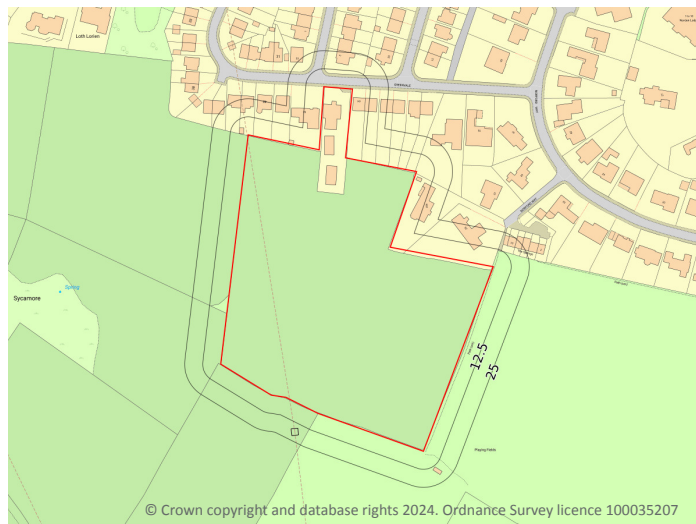
54, GREENVALE, ROCHDALE, OL11 5QJ

Professional opinion

Inc. integrated mine entry interpretive assessment



Site plan



Search results



1. Past underground coal mining
Not identified



2. Present underground coal mining
Not identified



3. Future underground coal mining
Not identified



4. Mine entries
Not identified



5. Coal mining geology
Not identified



6. Past opencast coal mining
Not identified



7. Present opencast coal mining
Not identified



8. Future opencast coal mining
Not identified



9. Coal mining subsidence claims
Not identified



10. Mine gas emissions
Not identified



11. Emergency Call Out incidents
Not identified



12. Withdrawal of support
Not identified



13. Working facilities orders
Not identified



14. Payments to copyhold owners
Not identified



Cheshire Brine
Not identified

Coal mining (CON29M) assessment

We consider the property to be acceptably free from coal mining related risk. No further action is required with regards to past coal mining.



Coal mining

CON29M reports are a requirement for conveyancing and are recommended throughout the official Coal Mining Reporting Area. This is the area within which it is deemed prudent to clarify the risk presented by coal mining, using the questions laid out in the Law Society's CON29M form. The need for a CON29M does not always translate to an identification of risk, and reports will often be assessed as free from risk or 'Passed' even though they are within the official Coal Mining Reporting Area.



Coal mining (CON29M)



- Site Outline
- Search buffers in metres (m)
- Mine entries
 - Adits
 - Shafts
 - Calculated 'zone of influence'
- Subsidence claims
 - Awaiting decision
 - Rejected
 - Admitted
 - Deferred
 - Settled
 - Withdrawn
- Probable shallow coal mine workings
- Coal outcrops
- Past shallow coal mine workings

Coal mining (CON29M)

The map above shows relevant, mappable hazards identified that could constitute a risk to the property. It does not necessarily show all features or potential issues identified in this report. Further details of any features shown indicating the location of Mine Entries or Subsidence Claims can be found in the relevant sections of this report (4 and 9 respectively).

Responses to the Law Society CON29M Coal Mining search enquiries are produced using official Coal Authority data and the expert interpretation of Groundsure. This report is prepared in accordance with The Law Society CON29M (2018) Guidance Notes. Additional interpretation and calculation of mine entry zones of influence has also been carried out by Groundsure using Coal Authority and British Geological Survey data.

Please read this report carefully, and in particular any sections flagged with an amber 'i'.





The Law Society

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1. Past underground coal mining



Is the property within the zone of likely physical influence on the surface of past underground coal workings?

- The property does not lie within the potential zone of influence of any recorded underground coal workings.

2. Present underground coal mining



Is the property within the zone of likely physical influence on the surface of present underground coal workings?

- The property does not lie within the boundary of an underground site from which coal is being removed by underground methods.

3. Future underground coal mining



(a) Is the property within any geographical area for which the Coal Authority is determining whether to grant a licence to remove coal by underground methods?

- The property does not lie within the boundary of an underground site for which the Coal Authority is determining whether to grant a licence to remove coal by underground methods.

(b) Is the property within any geographical area for which a licence to remove coal by underground methods has been granted?

- The property does not lie within the boundary of an underground site for which a licence to remove coal by underground methods has been granted.

(c) Is the property within the zone of likely physical influence on the surface of planned future underground coal workings?

- The property does not lie within the zone of likely physical influence on the surface of planned future underground workings.

(d) Has any notice of proposals relating to underground coal mining operations been given under section 46 of

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Your ref: 23154
Grid ref: 386024 413440

the Coal Mining Subsidence Act 1991?

- No notices have been given under Section 46 of the Coal Mining Subsidence Act 1991 stating that the land is at risk of subsidence.

4. Mine entries



Are there any shafts and adits or other entries to underground coal mine workings within the property or within 20 metres of the boundary of the property?

- No coal mine entries are recorded to lie within 20 metres of the property.

5. Coal mining geology



Is there any record of any fault or other line of weakness due to coal mining at the surface within the boundary of the property that has made the property unstable?

- No damage arising from geological faults or other lines of weakness activated by coal mining are recorded within the property.

6. Past opencast coal mining



Is the property situated within the geographical boundary of an opencast site from which coal has been removed in the past by opencast methods?

- The property does not lie within the boundary of an opencast site from which coal was removed by opencast methods.

7. Present opencast coal mining



Is the property within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods?

- The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8. Future opencast coal mining



(a) Is the property within 800 metres of the boundary of an opencast site for which the Coal Authority are determining whether to grant a licence to remove coal by opencast methods?



- The property does not lie within 800 metres of the boundary of an opencast site for which the Coal Authority are determining whether to grant a licence to remove coal by opencast methods.

(b) Is the property within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted?

- The property does not lie within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence claims



(a) Has any damage notice or claim for alleged coal mining subsidence damage to the property been given, made or pursued since 31st October 1994?

- We have no evidence of a damage notice or subsidence claim for the property or within 50m of the property since 31st October 1994.

(b) In respect of any such notice or claim has the responsible person given notice agreeing that there is a remedial obligation or otherwise accepted that a claim would lie against them?

- Not applicable.

(c) In respect of any such notice or acceptance has the remedial obligation or claim been discharged?

- Not applicable.

(d) Does any current "Stop Notice" delaying the start of remedial works or repairs affect the property?

- There are no current Stop Notices delaying the start of remedial works or repairs to the property.

(e) Has any request been made under Section 33 of the 1991 Act to execute preventive works before coal is worked, which would prevent the occurrence or reduce the extent of subsidence damage to any buildings, structures or works and, if yes, has any person withheld consent or failed to comply with any such request to execute preventive works?

- There is no record of a request that has been made to carry out preventive works before coal is worked under Section 33 of the Coal Mining Subsidence Act 1991.

NB. Records of damage notices or subsidence claims before 31st October 1994 are excluded from The Coal Authority data from which this search is compiled.

10. Mine gas emissions



Does the Coal Authority have record of any mine gas emission within the boundary of the property being reported that subsequently required action by the Authority to mitigate the effects of the mine gas emission?

- No mine gas emissions are recorded within the boundary of the property.



11. Emergency Surface Hazard Call Out incidents



Have the Coal Authority carried out any work on or within the boundaries of the property following a report of an alleged hazard related to coal mining under the Authority's Emergency Surface Hazard Call Out procedures?

- **No Emergency Surface Hazard Call Out procedures are recorded against the property.**

12. Withdrawal of support



(a) Does the land lie within a geographical area in respect of which a notice of entitlement to withdraw support has been published?

- **The property does not lie in an area where the right to withdraw support has been granted.**

(b) Does the land lie within a geographical area in respect of which a revocation notice has been given under section 41 of the Coal Industry Act 1994?

- **The property does not lie within a geographical area in which a revocation notice has been given under section 41 of the Coal Industry Act 1994.**

13. Working facilities orders



Is the property within a geographical area subject to an order in respect of the working of coal under the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof?

- **The property is not in an area where a court order has been issued.**

14. Payments to owners of former copyhold land



(a) Has any relevant notice, which may affect the property, been given?

- **The property does not lie within former copyholder land.**

(b) If yes, has any notice of retained interests in coal and coal mines been given?

- **No notices of retained interests in coal and coal mines been given.**

(c) If yes, has any acceptance notice or rejection notice been served?

- **No acceptance or rejection notices have been served.**

(d) If any such acceptance notice has been served, has any compensation been paid to a claimant?

- **No compensation has been paid to a claimant.**



CON29M notes and guidance

This report is prepared in accordance with [The Law Society Guidance Notes 2018](#); under which all replies to these enquiries are made. Groundsure's Terms and Conditions are applicable at the time the report was produced.

Property owners have the benefit of statutory protection (under the Coal Mining Subsidence Act 1991). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0345 762 6848. Further information can be found on their website:

www.groundstability.com ↗.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries).

The Coal Authority emergency telephone number at all times is 01623 646333.

Responses to The Law Society CON29M (2018) Coal Mining Search enquiries and associated findings and recommendations relating to coal mining risk have been provided by Groundsure Ltd. Groundsure Ltd have additionally provided information relating to the Cheshire Brine Compensation Area, and have compiled all information into this report.

Queries should be made of Groundsure Ltd on 01273 257 755, or via email: info@groundsure.com ↗.

CON29M report limitations

This CON29M (2018) Coal Mining Report has been carried out with reference to all available official Coal Authority licensed data, an extensive collection of abandoned mine plans, maps and records. From this material, we have endeavoured to provide as accurate a report as possible. Any and all analysis and interpretation of licensed Coal Authority data in this report is made by Groundsure

The information provided in this report by Groundsure Ltd has been compiled in response to The Law Society CON29M (2018) Coal Mining search enquiries. The scope of the assessment is limited to interpretation of past, present and future extraction of coal, and does not consider the impact from non-coal mining hazards and/or natural ground stability hazards. The Law Society's Guidance Notes 2018 recommends separate enquiries to the appropriate sources are made with regard to other minerals.

The Report is created by a remote investigation and reviews only information provided by the client (address and site location boundaries) and from the databases of publicly available and/or licensable information that enable a desk-based assessment of the Site. The Report does not include a Site Investigation, nor does Groundsure Ltd make additional specific information requests of the regulatory authorities for any relevant information they may hold.

This report is concerned solely with the Site searched and should not be used in connection with nearby properties, as only known coal mining features that could potentially have a direct influence upon the Site searched are considered relevant; other features present in the general area may have been omitted for ease of reference.

This report is confidential to the client, the client's legal advisor and the client's Mortgage lender, as defined in the Groundsure terms & conditions, and as such may be used by them for conveyancing or related purposes. Groundsure has no liability toward any person or organisation not party to commissioning this report. This report or any part of it is not permitted to be reproduced, copied, altered or in any other way distributed by any other person or organisation.

Additional mine entry assessment is based on and limited to the data supplied by the Coal Authority at the time of production. In order to determine whether a property is within the likely zone of influence of a disused coal mine entry the following is considered: the actual or plotted position of the mine entry, its known or assumed diameter and the thickness of superficial deposits above rockhead. Where these figures are not known, assumptions based on established estimations have been made.



CON29M report licensing

This report contains Data provided by the Coal Authority. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure Limited and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure Limited prior to any re-use. Due to data collection methods and processing time, there may be a period of up to 2 weeks between the Coal Authority updating their data and it appearing within the Groundsure report.

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Complaints Advice

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure.

If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Standards.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs.

COMPLAINTS PROCEDURE: If you want to make a complaint, we will:

- acknowledge it within 5 working days of receipt
- normally deal with it fully and provide a final response, in writing, within 20 working days of receipt
- liaise, at your request, with anyone acting formally on your behalf

Complaints should be sent to:

Operations Director, Groundsure Ltd, Nile House, Nile Street, Brighton, BN1 1HW. Tel: 01273 257 755. Email: info@groundsure.com

↗ If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk ↗ We will co-operate fully with the Ombudsman during an investigation and comply with their final decision.

Groundsure's Terms and Conditions can be viewed online at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗

Important consumer protection information

All of the advice and reports that Groundsure produces are covered by a comprehensive Remediation Contribution policy to ensure customers are protected, see www.groundsure.com/remediation ↗ for full details.

Data providers

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



Coal Mining Report Insurance Policy



Coal Mining Report Insurance Policy

The Schedule

Policy Number: The Reference contained in the **Coal Mining Search Report**

Premium: £1.40 inclusive of Insurance Premium Tax at 12%

Property: The property which is the subject of the **Coal Mining Search Report**

Limit of Indemnity: £100,000 increasing by 10% compound per annum on each anniversary of and for the first 10 years following the **Commencement Date**

Commencement Date: The date of the **Coal Mining Search Report**

You/Your:

1. A purchaser of the **Property**
2. A lender providing a **Mortgage** in connection with a purchase of the **Property**
3. A lender providing a **Mortgage** by way of a re-mortgage of the **Property**

Definitions

Where a word is defined below or in the schedule it shall carry the same meaning wherever it appears in bold text in this policy

Insured Use: The continued use of the **Property** as a single house or flat or a single commercial premises

Market Value: The value as determined by a surveyor appointed by agreement between **You** and **Us** or (in default of agreement) the President for the time being of the Royal Institution of Chartered Surveyors

Mortgage: A mortgage or charge secured on the **Property** by an institutional mortgage lender

Coal Mining Search Report: The coal mining search report attached to this policy

Search: An official search comprising a search in form CON29M (2018) being mining searches relating to coal and brine in the area in which the **Property** is situated

We/Our/Us:

Zurich Insurance plc. A public limited company incorporated in Ireland. Registration No. 13460. Registered Office: Zurich House, Ballsbridge Park, Dublin 4, Ireland. UK Branch registered in England and Wales Registration No. BR7985. UK Branch Head Office: The Zurich Centre, 3000 Parkway, Whiteley, Fareham, Hampshire PO15 7JZ.

Zurich Insurance plc is authorised by the Central Bank of Ireland and authorised and subject to limited regulation by the Financial Conduct Authority. Details about the extent of our authorisation by the Financial Conduct Authority are available from us on request. Our FCA Firm Reference Number is 203093.

Communications may be monitored or recorded to improve our service and for security and regulatory purposes.

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Your Policy

This is a legal document and should be kept in a safe place.

This policy is an agreement between **You** and **Us** and cover is provided subject to the payment of the **Premium**.

You must read this policy and its conditions, exclusions, schedule and any endorsements as one contract. Please read all of them to make sure that they provide the cover **You** require. If they do not, please contact **Us** or **Your** insurance adviser who arranged the policy for **You**.

When **You** take out and make changes to the cover provided by this policy, **You** must take reasonable care to ensure that **You** accurately answer any questions which **We** ask of **You** and that any information **You** give **Us** is accurate. If **You** are taking out this policy for purposes which are mainly related to **Your** trade, business or profession, **You** must also let **Us** know about all facts which are material to **Our** decision to provide **You** with insurance. Failure to meet these obligations could result in this policy being invalidated, a claim not being paid, or an additional premium being charged.

Fair presentation of the risk

a) At inception of this policy and also whenever changes are made to it at **Your** request **You** must:

- i) where **You** have taken out this policy for purposes which are wholly or mainly related to **Your** trade, business or profession, disclose to **Us** all material facts in a clear and accessible manner and not misrepresent any material facts, and
- ii) where **You** have taken out this policy for purposes which are wholly or mainly unrelated to **Your** trade, business or profession, take reasonable care not to misrepresent any material facts.

b) If **You** do not comply with clause a) of this condition **We** may:

- i) avoid this policy which means that **We** will treat it as if it had never existed and refuse all claims where any non-disclosure or misrepresentation by **You** is proven by **Us** to be deliberate or reckless in which case **We** will not return the premium paid by **You**; and
- ii) recover from **You** any amount **We** have already paid for any claims including costs or expenses **We** have incurred.

c) If **You** do not comply with clause a) of this condition and the non-disclosure or misrepresentation is not deliberate or reckless this policy may be affected in one or more of the following ways depending on what **We** would have done if **We** had known about the facts which **You** failed to disclose or misrepresented:

- i) if **We** would not have provided **You** with any cover **We** will have the option to:
 1. avoid the policy which means that **We** will treat it as if it had never existed and repay the premium paid; and
 2. recover from **You** any amount **We** have already paid for any claims including costs or expenses **We** have incurred
- ii) if **We** would have applied different terms to the cover **We** will have the option to treat this policy as if those different terms apply. **We** may recover any payments made by **Us** on claims which have already been paid to the extent that such claims would not have been payable had such additional terms been applied
- iii) if **We** would have charged **You** a higher premium for providing the cover **We** will charge **You** the additional premium which **You** must pay in full.

d) If any insured person, other than **You**, is responsible for a misrepresentation or failure to make a fair presentation of the risk, **We** will invoke the remedies available to **Us** under this condition as against that particular person as if a separate insurance contract had been issued to them leaving the remainder of the policy unaffected.

NB: For the purposes of the duty of disclosure stated in paragraphs a) i) and ii) above the content of the **Coal Mining Search Report** will be deemed to satisfy **Your** disclosure obligations.

Cover

1. **You** are in the process of purchasing the **Property** relying on the **Coal Mining Search Report** and/or
2. **You** (being a lender) have agreed to provide a **Mortgage** in connection with **Your** borrower's purchase or re-mortgage of the **Property** relying on the **Coal Mining Search Report**.

We will pay the following losses sustained by **You** arising out of the **Property** being affected by any matter which would have been revealed by a **Search** had one been carried out on the date of the **Coal Mining Search Report** but which was not revealed by the **Coal Mining Search Report**:



1. any reduction in **Market Value** of the **Property** calculated at the date **You** become aware of the matter(s) and/or loss in connection with a **Mortgage** as a result of such reduction.
2. all other costs and expenses including out of court settlement costs incurred by **Us** or by **You** with **Our** prior written agreement.

Waiver of Breach of Policy Condition

We will not exercise **Our** right to avoid **Our** liability to **You** in respect of loss where **You** have inadvertently breached any term or condition of the policy provided that such breach does not prejudice **Our** rights and remedies under the policy or otherwise directly or indirectly result in or increase the amount of any loss.

Protection for Mortgagees and Successors in Title

We will not avoid **Our** liability to make a payment to **You** solely because another person breaches the terms and conditions of this policy, provided such breach was not committed on **Your** behalf or with **Your** agreement, and **We** will invoke the remedies available to **Us** under the Policy as against that other person as if a separate insurance contract had been issued to them leaving the remainder of the policy unaffected.

Joint Insured

Any party insured under this policy standing in the relation of parent company, subsidiary company, associated company, branch office or joint venture partner to each other will be deemed to be joint insured for the purposes of this policy and jointly liable and responsible for any breach of any terms and conditions of this policy. If there is any inconsistency between this clause and any other term of this policy, this clause shall prevail.

Exclusions

We will not pay for any:

1. amount in excess of the **Limit of Indemnity**.
2. loss which would be recoverable under a household buildings insurance policy.
3. loss arising from any matter that **You** were aware of at the **Commencement Date**.
4. loss if the **Property** is used for any purpose other than the **Insured Use**.

Claims Conditions and How to Claim

1. **You** must:

- i) give **Us** written notice as soon as possible of any potential or actual claim or any circumstances likely to result in a claim. Please provide the policy number, **Your** name, the full address of the **Property** and a brief description of the incident that has occurred. Notifications should be sent to: Speciality Lines Claims Team, Zurich Insurance, 8th Floor, 70 Mark Lane, London, EC3R 7NQ. Email: claims@uk.zurich.com ↗, Enquiry line: telephone 0207 648 3523
- ii) pass all court documents and/or other communications to **Us** as soon as possible after receipt
- iii) not deal with, make any admission of liability or attempt to settle a claim without **Our** prior written agreement.
- iv) agree to and carry out at **Our** expense all things necessary to minimise any loss.
- v) provide all information and assistance that **We** may require to help defend and settle the claim.

2. **We** are entitled to:

- i) decide how to settle or defend a claim and may carry out proceedings in the name of any person insured under this policy, including proceedings for recovering any claim.
- ii) pay to **You** at any time, an amount equal to the **Limit of Indemnity** or any lower amount for which the claim can be settled, after deduction of any sum already paid. **We** may then give up control of and have no further liability in connection with the claim.

3. If **We** admit liability for a claim but there is a dispute as to the amount to be paid the dispute will be referred to an arbitrator. The arbitrator will be appointed jointly by **You** and **Us** in accordance with the law at the time. **You** may not take any legal action against **Us** over the dispute before the arbitrator has reached a decision.

4. If **You** or anyone acting on **Your** behalf:



- a) makes a fraudulent or exaggerated claim under this policy; or
- b) uses fraudulent means or devices including the submission of false or forged documents in support of a claim whether or not the claim is itself genuine; or
- c) makes a false statement in support of a claim whether or not the claim is itself genuine; or
- d) submits a claim under this policy for loss or damage which **You** or anyone acting on **Your** behalf or in connivance with **You** deliberately caused; or
- e) realises after submitting what **You** reasonably believed was a genuine claim under this policy and then fails to tell **Us** that **You** have not suffered any loss or damage; or
- f) suppresses information which **You** know would otherwise enable **Us** to refuse to pay a claim under this policy

We will be entitled to refuse to pay the whole of the claim and recover any sums that **We** have already paid in respect of the claim.

If any fraud is perpetrated by or on behalf of an insured person and not on behalf of **You** this condition should be read as if it applies only to that insured person's claim and references to this policy should be read as if they were references to the cover effected for that person alone and not to the policy as a whole.

5. If any claim is covered by any other insurance, **We** will not pay for more than **Our** share of that claim.

6. The most **We** will pay for any loss (or all losses in the aggregate), including costs and expenses agreed by **Us** is the **Limit of Indemnity**. Once **We** have paid a loss or losses equal to the amount of the **Limit of Indemnity**, **We** will have no further liability under this policy.

General Conditions

1. Neither **You** (nor anyone acting on **Your** behalf) must disclose the existence of this policy to any other party except **Your** legal and other professional advisers, prospective purchasers, lessees and tenants of the **Property**, their respective mortgagees, legal and other professional advisers.
2. In the UK the law allows both **You** and **Us** to choose the law applicable to the contract. This contract will be subject to the relevant law of England and Wales, Scotland, Northern Ireland, the Isle of Man or the Channel Islands depending upon the Property address stated in the Schedule. If there is any dispute as to which law applies it will be English law. The parties agree to submit to the exclusive jurisdiction of the English courts.
3. Notwithstanding any other terms of this policy **We** will be deemed not to provide cover nor will **We** make any payment or provide any service or benefit to **You** or any other party to the extent that such cover, payment, service, benefit and/or any business or activity of **Yours** would violate any applicable trade or economic sanctions law or regulation.

Cancellation Clause

If **You** have taken out this policy for purposes which are wholly or mainly unrelated to **Your** trade, business or profession, **You** may cancel this policy within 14 days of receiving the policy by writing to **Us** and in such event **We** may, at **Our** discretion, charge **You** for the time that **You** have been on cover. Any refund will be made to the party who paid the premium. If **You** do cancel, **You** may be in breach of the terms of **Your** mortgage or the terms of the contract for the sale of **Your** property. If **You** are in doubt, **You** may wish to seek legal advice prior to cancellation.

Fair Processing and Complaints Procedure

Our Complaints Procedure

Our commitment to customer service

We are committed to providing a high level of customer service. If you feel we have not delivered this, we would welcome the opportunity to put things right for you.

Who to contact in the first instance

Many concerns can be resolved straight away. Therefore in the first instance, please get in touch with your usual contact at Zurich or your broker or insurance intermediary, as they will generally be able to provide you with a prompt response to your satisfaction.

Contact details will be provided on correspondence that we or our representatives have sent you.

Many complaints can be resolved within a few days of receipt

If we can resolve your complaint to your satisfaction within the first few days of receipt, we will do so. Otherwise, we will keep you



updated with progress and will provide you with our decision as quickly as possible.

Next steps if you are still unhappy

If you are not happy with the outcome of your complaint, you may be able to ask the Financial Ombudsman Service to review your case.

We will let you know if we believe the ombudsman service can consider your complaint when we provide you with our decision. The service they provide is free and impartial, but you would need to contact them within 6 months of the date of our decision.

More information about the ombudsman and the type of complaints they can review is available via their website www.financial-ombudsman.org.uk ↗.

You can also contact them as follows:

Post: Financial Ombudsman Service, Exchange Tower, London, E14 9SR

Telephone: 08000 234567 (free on mobile phones and landlines)

Email: complaint.info@financial-ombudsman.org.uk ↗

If the Financial Ombudsman Service is unable to consider your complaint, you may wish to obtain advice from the Citizens Advice Bureau or seek legal advice.

The Financial Services Compensation Scheme (FSCS)

We are covered by the Financial Services Compensation Scheme (FSCS) which means that you may be entitled to compensation if we are unable to meet our obligations to you. Further information is available on www.fscs.org.uk ↗ or by contacting the FSCS directly on 0800 678 1100.

How we use your information

Who controls your personal information

This notice tells you how Zurich Insurance plc ('Zurich'), as data controller, will deal with your personal information. Where Zurich introduces you to a company outside the group, that company will tell you how your personal information will be used.

You can ask for further information about our use of your personal information or complain about its use in the first instance, by contacting our Data Protection Officer at: Zurich Insurance Group, Tri-centre 1, Newbridge Square, Swindon, SN1 1HN or by emailing the Data Protection Officer at GBZ.General.Data.Protection@uk.zurich.com ↗.

If you have any concerns regarding our processing of your personal information, or are not satisfied with our handling of any request by you in relation to your rights, you also have the right to make a complaint to the Information Commissioner's Office. Their address is: First Contact Team, Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, SK9 5AF.

What personal information we collect about you

We will collect and process the personal information that you give us by phone, e-mail, filling in forms, including on our website, and when you report a problem with our website. We also collect personal information from your appointed agent such as your trustee, broker, intermediary or financial adviser in order to provide you with the services you have requested and from other sources, such as credit reference agencies and other insurance companies, for verification purposes. We will also collect information you have volunteered to be in the public domain and other industry-wide sources. We will only collect personal information that we require to fulfil our contractual or legal requirements unless you consent to provide additional information. The type of personal information we will collect includes; basic personal information (i.e. name, address and date of birth), occupation and financial details, health and family information, claims and convictions information and where you have requested other individuals be included in the arrangement, personal information about those individuals.

If you give us personal information on other individuals, this will be used to provide you with a quotation and/or contract of insurance and/or provision of financial services. You agree you have their permission to do so. Except where you are managing the contract on another's behalf, please ensure that the individual knows how their personal information will be used by Zurich. More information about this can be found in the 'How we use your personal information' section.

How we use your personal information

We and our selected third parties will only collect and use your personal information (i) where the processing is necessary in connection with providing you with a quotation and/or contract of insurance and/or provision of financial services that you have requested; (ii) to meet our legal or regulatory obligations; or (iii) for our 'legitimate interests'. It is in our legitimate interests to collect



your personal information as it provides us with the information that we need to provide our services to you more effectively including providing you with information about our products and services. We will always ensure that we keep the amount of information collected and the extent of any processing to the absolute minimum to meet this legitimate interest. Examples of the purposes for which we will collect and use your personal information are:

1. to provide you with a quotation and/or contract of insurance;
2. to identify you when you contact us;
3. to deal with administration and assess claims;
4. to make and receive payments;
5. to obtain feedback on the service we provide to you;
6. to administer our site and for internal operations including troubleshooting, data analysis, testing, research, statistical and survey purposes;
7. for fraud prevention and detection purposes.

We will contact you to obtain consent prior to processing your personal information for any other purpose, including for the purposes of targeted marketing unless we already have consent to do so.

Who we share your personal information with

Where necessary, we will share the personal information you gave us for the purposes of providing you with the goods and services you requested with the types of organisations described below:

associated companies including reinsurers, suppliers and service providers;
introducers and professional advisers;
regulatory and legal bodies;
survey and research organisations;
credit reference agencies;
healthcare professionals, social and welfare organisations; and
other insurance companies

Or, in order to meet our legal or regulatory requirements, with the types of organisations described below:

regulatory and legal bodies;
central government or local councils;
law enforcement bodies, including investigators;
credit reference agencies; and
other insurance companies

How we use your personal information for websites and email communications

When you visit one of our websites we may collect information from you such as your email address or IP address. This helps us to track unique visits and monitor patterns of customer website traffic, such as who visits and why they visit.

We use cookies and/or pixel tags on some pages of our website. A cookie is a small text file sent to your computer. A pixel tag is an invisible tag placed on certain pages of our website but not on your computer. Pixel tags usually work together with cookies to assist us to provide you with a more tailored service. This allows us to monitor and improve our email communications and website. Useful information about cookies, including how to remove them, can be found on our websites.

How we transfer your personal information to other countries

Where we transfer your personal information to countries that are outside of the UK and the European Union (EU) we will ensure that it is protected and that the transfer is lawful. We will do this by ensuring that the personal information is given adequate safeguards by using 'standard contractual clauses' which have been adopted or approved by the UK and the EU, or other solutions that are in line with the requirements of European data protection laws.

A copy of our security measures for personal information transfers can be obtained from our Data Protection Officer at: Zurich Insurance Group, Tri-centre 1, Newbridge Square, Swindon, SN1 1HN, or by emailing the Data Protection Officer at GBZ.General.Data.Protection@uk.zurich.com ↗.

How long we keep your personal information for

We will retain and process your personal information for as long as necessary to meet the purposes for which it was originally



collected. These periods of time are subject to legal, tax and regulatory requirements or to enable us to manage our business.

Your data protection rights

You have a number of rights under the data protection laws, namely:

- to access your data (by way of a subject access request);
 - to have your data rectified if it is inaccurate or incomplete;
 - in certain circumstances, to have your data deleted or removed;
 - in certain circumstances, to restrict the processing of your data;
 - a right of data portability, namely to obtain and reuse your data for your own purposes across different services;
 - to object to direct marketing;
 - not to be subject to automated decision making (including profiling), where it produces a legal effect or a similarly significant effect on you;
 - to claim compensation for damages caused by a breach of the data protection legislation.
- if we are processing your personal information with your consent, you have the right to withdraw your consent at any time.

We will, for the purposes of providing you with a contract of insurance, processing claims, reinsurance and targeted marketing, process your personal information by means of automated decision making and profiling where we have a legitimate interest or you have consented to this.

What happens if you fail to provide your personal information to us

If you do not provide us with your personal information, we will not be able to provide you with a contract or assess future claims for the service you have requested.

Fraud prevention and detection

In order to prevent and detect fraud we may at any time:

- check your personal data against counter fraud systems
- use your information to search against various publicly available and third party resources
- use industry fraud tools including undertaking credit searches and to review your claims history
- share information about you with other organisations including but not limited to the police, the Insurance Fraud Bureau (IFB), other insurers and other interested parties.

If you provide false or inaccurate information and fraud is identified, the matter will be investigated and appropriate action taken. This may result in your case being referred to the Insurance Fraud Enforcement Department (IFED) or other police forces and fraud prevention agencies. You may face fines or criminal prosecution. In addition, Zurich may register your name on the Insurance Fraud Register, an industry-wide fraud database.

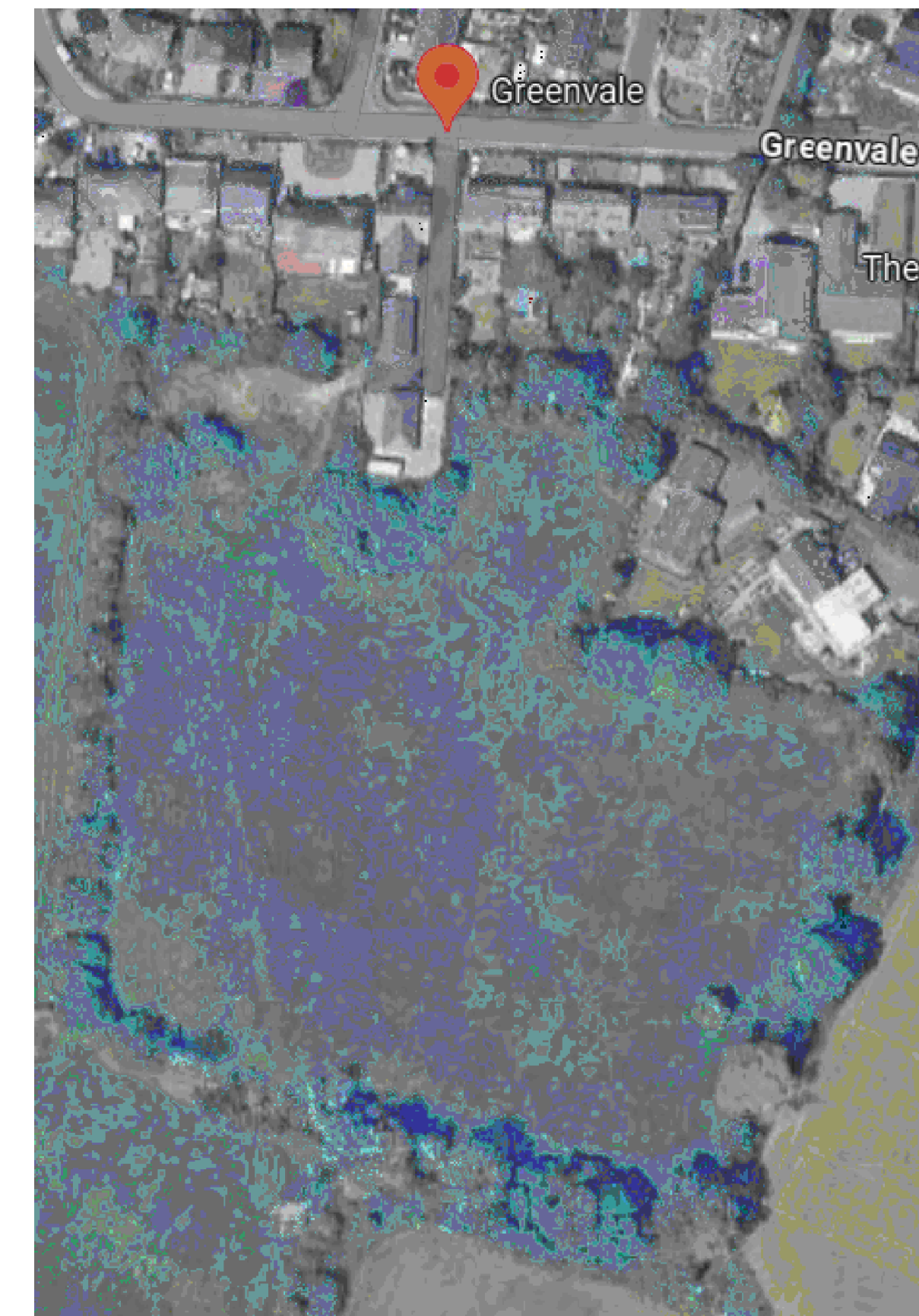
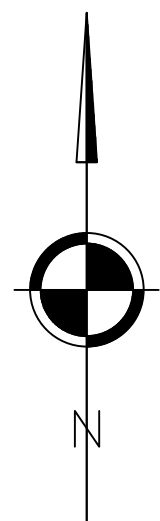
Claims history

We may pass information relating to claims or potential claims to any relevant database. We and other insurers may search these databases when you apply for insurance, when claims or potential claims are notified to us or at time of renewal to validate your claims history or that of any other person or property likely to be involved in the policy or claim.

This helps to check information provided and prevent fraudulent claims.



APPENDIX E



Location Image

revision suffix	Revision Details	Date
smas worksafe consultant www.smasltd.com as recognised by SSIP SAFETY SCHEMES IN PROCUREMENT		
Drawing Stage	Drawing Status	
Draft	Comments	Tender
Issued	Information	Construction
Preliminary	Approval	As Built
This drawing is not authorised unless signed as checked & approved		
Client		
Wainhomes (NW) Ltd		
Job title		
Greenvale, Bamford Rochdale		
Drawing title		
Walkover Survey & Photo Location Plan		
REFA CONSULTING ENGINEERS CIVIL • STRUCTURAL GEOTECHNICAL • ENVIRONMENTAL 45 Bridgeman Terrace Wigan, Lancs WN1 1TT Tel: +(01942) 826020 Fax: +(01942) 230816		
Chkd	Appvd	date
		29.11.24
scale		drawn
1:500 @ A1		HG
DRAWING No		rev
23154/03		
© This drawing is the property of REFA and should not be copied, used or its contents divulged without prior written consent		
Any discrepancies to this drawing discovered on site should be reported to REFA immediately. IF IN DOUBT ASK!		

Plan On Proposed S.I. Locations

APPENDIX F

REFA		Photographs	
Site: GREENVALE, ROCHDALE		Report Number: 23154	
Client: WAINHOMES		Sheet: 1/5	
		Survey Date: 28.10.24	
WALKOVER SURVEY PHOTOGRAPHS			
1		2	
3		4	
5		6	

REFA		Photographs	
Site: GREENVALE, ROCHDALE		Report Number: 23154	
Client: WAINHOMES		Sheet: 2/5	
		Survey Date: 28.10.24	
WALKOVER SURVEY PHOTOGRAPHS			
7		8	
9		10	
11		12	



Photographs

Site: GREENVALE, ROCHDALE

Client: WAINHOMES

Report Number:

23154

Sheet:

3/5

Survey Date:

28.10.24

WALKOVER SURVEY PHOTOGRAPHS

13



14



15



16



17



18





Photographs

Site: GREENVALE, ROCHDALE

Client: WAINHOMES

Report Number:

23154

Sheet:

4/5

Survey Date:

28.10.24

WALKOVER SURVEY PHOTOGRAPHS

19



20



21



22



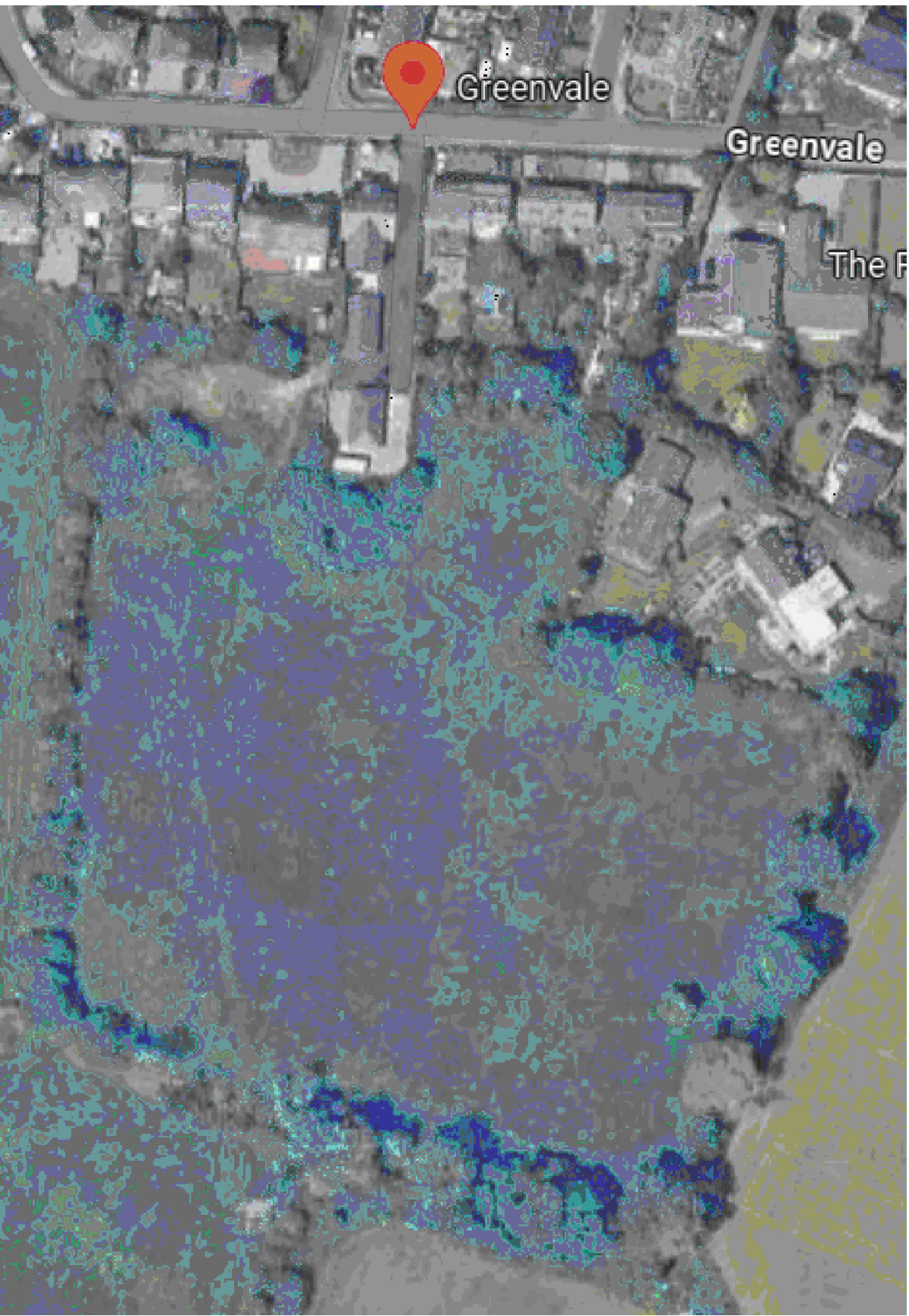
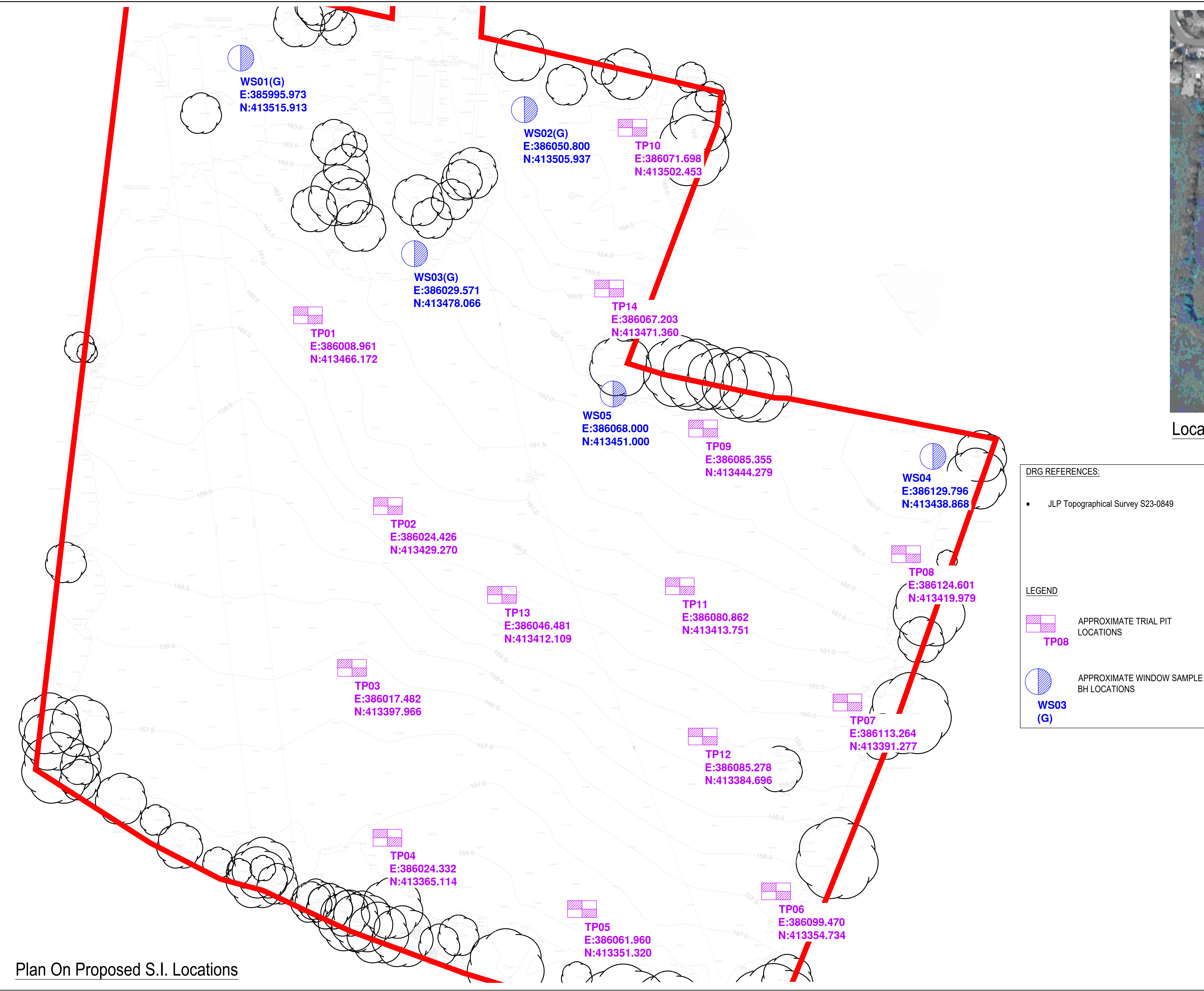
23



24



APPENDIX G



Location Image

DRG REFERENCES:

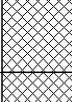
- JLP Topographical Survey S23-0849

LEGEND

- APPROXIMATE TRIAL PIT LOCATIONS (TP08)
- APPROXIMATE WINDOW SAMPLE BH LOCATIONS (WS03 (G))

A		PLANNING LAYOUT REMOVED	29.11.24
revision suffix	Revision Details		Date
Drawing Stage		Drawing Status	
Draft		Comments	Tender
Issued		Information	Construction
Preliminary		Approval	As Built
This drawing is not authorised unless signed as checked & approved			
Client			
Wainhomes (NW) Ltd			
Job title			
Greenvale, Bamford Rochdale			
Drawing title			
Exploratory Hole Location Plan			
REFA		45 Bridgeman Terrace Wigan, Lancs WN1 1TT Tel: -(01942) 826020 Fax: -(01942) 230816	
CONSULTING ENGINEERS		CIVIL • STRUCTURAL	
GEOTECHNICAL • ENVIRONMENTAL			
Chkd	Appvd	date	scale
		29.11.24	1:500 @ A2
DRAWING No		23154/01	rev A
© This drawing is the property of REFA and should not be copied, used or its contents divulged without prior written consent			
Any discrepancies to this drawing discovered on site should be reported to REFA immediately. IF IN DOUBT ASK!			

APPENDIX H

		ROBERT E. FRY & ASSOCIATES LTD. 45 Bridgeman Terrace, Wigan, WN1 1TT				Site Greenvale, Rochdale		Number WS01	
Excavation Method Drive-in Windowless Sampler		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 28/10/2024					
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	ES		2, 1/1,2,1,2		0.50 (0.20) 0.70	MADE GROUND: Soft dark brown gravelly sandy clay with occasional yellowish brown coarse sand pockets. Gravel is angular to subrounded fine to coarse of mudstone, sandstone, brick and fragments of glass			
1.00-1.45	D				(0.90)	MADE GROUND: Brown mottled grey slightly clayey sandy gravel. Gravel is angular to subrounded fine to coarse of concrete, sandstone and fragments of ceramics			
1.20-1.65 1.20	SPT N=6 ES				1.60 (0.60)	MADE GROUND: Very dark grey slightly gravelly slightly sandy silty clay with frequent rootlets and occasional light brown medium to coarse sand pockets. Gravel is angular to subrounded fine to coarse of sandstone, mudstone and concrete ... Slight hydrocarbon odour at 1.20m			
2.00-2.45 2.00-2.45	SPT N=6 D		1, 1/1,1,2,2		2.20 (0.60)	MADE GROUND: dark grey mottled bottled brown slightly gravelly silty clay. Gravel is angular to subrounded fine to coarse of mudstone and concrete with fragments of plastic		V1	
3.00-3.40	D				2.80 (0.60)	Soft grey mottled orangish brown slightly gravelly sandy CLAY with occasional light brown medium to coarse sand pockets. Gravel is subangular to subrounded fine to medium of sandstone and quartz			
3.00-3.40	SPT 50/245				3.40	Very dense dark brown gravelly clayey medium to coarse SAND. Gravel is angular to subrounded fine to medium of sandstone. Terminated at 3.40m			
Remarks Groundwater recorded at 3.00m Position terminated at 3.395m following SPT refusal at 3.00m. On completion, borehole was installed using 1.5m plain pipe and 1.5m slotted pipe.								Scale (approx) 1:50	Logged By RM
								Figure No. 23154.WS01	

		ROBERT E. FRY & ASSOCIATES LTD. 45 Bridgeman Terrace, Wigan, WN1 1TT				Site Greenvale, Rochdale		Number WS02	
Excavation Method Drive-in Windowless Sampler		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 28/10/2024		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.15	ES				(0.20) 0.20	Dark grey slightly sandy silty CLAY, with frequent rootlets (topsoil)			
					(0.80)	Soft grey mottled orangish brown slightly gravelly silty CLAY with frequent fine to medium sand pockets. Gravel is subangular to subrounded fine to medium of mudstone			
1.00-1.45	D				1.00	Firm brown gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse of mudstone and sandstone.			
1.20-1.65	SPT N=14		2,3/3,3,4,4		(0.50)				
					1.50	Firm grey gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse of mudstone. (Completeley weathered bedrock).			
2.00-2.45	SPT N=19		3,3/4,5,5,5		(1.00)				
2.00-2.45	D				2.50	Extremly weak, thinnly laminated, grey highly weathered MUDSTONE.			
3.00-3.40	SPT 50/245		4,8/12,12,13,13		(0.90)				
3.00-3.45	D				3.40	Complete at 3.40m			
Remarks No groundwater encountered. Position terminated at 3.395m following SPT refusal from 3.00m due to mudstone bedrock. On completion, borehole was installed using 1.00m plain pipe and 2.00m 50mm sorted pipe.							Scale (approx)	Logged By	
							1:50	RM	
							Figure No. 23154.WS02		



ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Number
WS03

Excavation Method
Drive-in Windowless Sampler

Dimensions

Ground Level (mOD)

Client
Wainhomes (NW)

Job Number
23154

Location

Dates
28/10/2024

Engineer

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10 0.10	D ES				(0.20) 0.20	Slightly dark brown silty CLAY with rootlets (topsoil),			
					(0.90)	Firm light grey mottled orangish brown slightly gravelly slightly sandy CLAY with frequent brown medium to coarse sand pockets. Gravel is subrounded to rounded fine to medium of mudstone, siltstone and sandstone			
1.20-1.65	SPT N=15		2,2/3,4,4,4		1.10 (0.70)	Firm dark brown gravelly sandy CLAY with frequent organish brown medium to coarse sand pockets. Gravel is subangular to rounded fine to medium of sandstone and mudstone.			
1.90 2.00-2.45 2.30	D SPT N=10 D		2,2/2,2,3,3		1.80 (1.00)	Stiff brown silty CLAY			
3.00-3.45	SPT N=17		3,3/4,4,4,5		2.80 (0.30) 3.10	Firm dark brown slightly sandy gravelly CLAY. Gravel is subangular to rounded fine of mudstone and siltstone			
					(0.90)	Stiff dark brown slightly gravelly CLAY. Gravel is subrounded fine of mudstone			
4.00-4.41	SPT 50/255		4,7/12,12,13,13		4.00 (0.41) 4.41	Extremely weak, thinnly laminated, grey highly weathered MUDSTONE.			
						Complete at 4.41m			

Remarks
No groundwater encountered.
Borehole terminated at 4.405m followinf 4.00m SPT refusal at 4.00m. On completion, borehole was installed using 1.00m plain pipe and 3.00m 50mm slotted pipe.

Scale (approx)
1:50

Logged By
HM

Figure No.
23154.WS03



ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Number
WS04

Excavation Method Drive-in Windowless Sampler		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 28/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.20-1.60	SPT 50/245		5,7/12,12,13,13		(0.30)	Dark brown silty SAND with abundant rootlets (topsoil)		
					0.30 (0.20) 0.50	Stiff light brown sandy CLAY		
1.60-2.03	SPT 50/275		13,9/13,13,13,11		(0.70)	Brown slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of sandstone		
					1.20 (0.83)	Extremely weak, thinly laminated grey highly weathered MUDSTONE.		
					2.03	Complete at 2.03m		

Remarks SPT refusal at 1.20m and 1.60m. Position terminated at 2.025m. On completion, borehole was backfilled with arisings. No groundwater encountered.							Scale (approx)	Logged By
							1:50	HM
							Figure No. 23154.WS04	



ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Number
WS05

Excavation Method Drive-in Windowless Sampler		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 28/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.20-1.65	SPT N=18		3,3/3,5,4,6		(0.20) 0.20	Soft dark brown slightly sandy silty CLAY with frequent rootlets (topsoil)		
					(1.65)	Firm grey mottled orangish brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium of sandstone and mudstone		
2.00-2.31	SPT 50/160		6,8/15,15,20		(1.85) (0.15) 2.00	Extremely weak, thinly laminated grey highly weathered MUDSTONE.		
						Complete at 2.31m		

Remarks No groundwater encountered. Position terminated at 2.31m. On completion, position was backfilled with arisings.	Scale (approx)	Logged By
	1:50	HM
	Figure No. 23154.WS05	

APPENDIX I



ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP01

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.40)	Dark grey silty CLAY with occasional rootlets (topsoil)		
0.50	D				0.40 (0.30)	Dark grey mottled brown clayey fine to medium SAND		
1.00	HV 36kPa				0.70 (0.40)	Soft brown mottled grey slightly gravelly silty CLAY with low sandstone cobble content. Gravel is subangular to subrounded fine to medium of sandstone and siltstone		
1.00	D				1.10 (0.90)	Very soft light grey sandy gravelly CLAY with low sandstone cobble content. Gravel is angular to subrounded fine to coarse sandstone		
1.30	HV 5kPa				2.00 (0.40)	Light brown silty fine to medium SAND		
1.30	D				2.40	Complete at 2.40m		



Remarks

Vertical, stable and dry

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP01
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ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale
Trial Pit
Number
TP02

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.40)	Dark grey silty CLAY with frequent rootlets (topsoil)		
0.80	HV 36kPa				0.40			
0.80	D				(0.30)	Very soft light brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone		
					0.70			
					(0.80)	Soft grey mottled brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse of sandstone		
1.70	HV 22kPa		Water strike(1) at 1.60m.		1.50	Soft light grey sandy gravelly CLAY, with occasional light brown fine to coarse sand pockets. Gravel is subangular to subrounded fine to coarse of mudstone and sandstone		Σ1
1.70	D				(0.70)			
2.30	D				2.20	Dark grey weathered bedrock recovered as angular to subrounded fine to coarse gravel of MUDSTONE		
					(0.20)			
					2.40	Complete at 2.40m		



Remarks
Vertical and stable. Groundwater ingress at 1.60m

Scale (approx)	Logged By	Figure No.
1:50	RM	23154.TP02



ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP03

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	D				(0.30)	Dark grey silty CLAY with frequent rootlets (topsoil)		
					0.30			
					(0.20)	Firm light brown mottled grey slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse of sandstone		
					0.50			
					(0.50)	Soft orangish brown mottled grey slightly gravelly sandy CLAY with brown fine to coarse sand bands. Gravel is angular to subrounded fine to coarse sandstone		
1.20	HV 50kPa				1.00			
1.20	D					Firm grey mottled brown slightly gravelly slightly sandy silty CLAY, with low sandstone cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, mudstone and siltstone		
					(1.20)	... Becoming friable at 1.80m		
2.00	HV 68kPa							
2.00	D				2.20	Complete at 2.20m		



Remarks

Vertical, stable and dry

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP03
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ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP04

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	D				(0.20) 0.20	Dark grey silty CLAY with frequent rootlets (topsoil)		
					(0.50)	Soft brown slightly gravelly silty CLAY, with low siltstone cobble content		
					0.70			
					(0.50)	Very soft light grey sandy gravelly CLAY with occasional brown fine to coarse sand pockets. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone		
1.20 1.40	D HV 52kPa				1.20	Firm becoming stiff grey mottled brown slightly gravelly slightly sandy silty CLAY with low sandstone cobble content and occasional brown fine to coarse sand pockets. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone		
			Groundwater ingress(1) at 1.80m.		(1.00)			▽1
2.10 2.10	HV 58kPa D				2.20 2.30	Dark grey weathered bedrock recovered as angular to subangular fine to coarse gravel of MUDSTONE		
						Complete at 2.30m		



Remarks

Water ingress recorded at 1.80m.
Vertical and stable

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP04
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ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP05

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.40)	Dark grey silty CLAY with frequent rootlets (topsoil)		
					0.40			
					(0.60)	Soft brown mottled grey slightly sandy slightly gravelly CLAY and occasional brown fine to coarse sand pockets and occasional sandstone boulder content. Gravel is subangular to subrounded fine to coarse sandstone		
1.00	HV 36kPa				1.00			
1.00	D					Soft light grey slightly sandy gravelly silty CLAY, with low sandstone cobble content. Gravel is subangular to subrounded fine to coarse of mudstone and sandstone		
1.40	HV 41kPa				(1.00)			
1.40	D							
1.80	HV 48kPa							
			Seepage(1) at 2.00m.		2.00	Extremely weak, thinly laminated, light grey highly weathered MUDSTONE.		√1
					(0.30)			
					2.30	Complete at 2.30m		



Remarks

Seepage recorded at 2.00m.
Moved pit slightly to prevent water ingress from a land drain.

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP05
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ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP06

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.15	D				(0.30)	Dark grey silty CLAY with frequent rootlets (topsoil)		
					0.30			
0.90	HV 42kPa				(0.70)	Soft to firm light brown mottled grey slightly sandy gravelly silty CLAY, with high sandstone cobble content and occasional brown fine to coarse sand pockets. Gravel is angular to subrounded fine to medium of sandstone		
0.90	D				1.00			
1.20	HV 41kPa				(0.40)	Soft to firm dark brown mottled grey slightly sandy slightly gravelly silty CLAY with high sandstone cobble content and frequent brown fine to coarse sand pockets. Gravel is subangular to subrounded fine to coarse of sandstone		
					1.40			
1.90	HV 31kPa				(0.80)	Soft dark brown mottled grey gravelly sandy CLAY, with high sandstone cobble content. Gravel is angular to subrounded fine to coarse of mudstone and sandstone		
1.90	D		Seepage(1) at 2.00m.		2.20			
					(0.20)	Extremely weak, thinly laminated highly weathered MUDSTONE		
					2.40	Complete at 2.40m		



Remarks

Seepasge recorded at 2.00m.
Verticle and stable. Land drain at 0.50m

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP06
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ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit
Number
TP07

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	D				(0.30)	Dark grey silty CLAY with frequent rootlets (topsoil)		
					0.30			
0.90	HV 18kPa				(0.70)	Very soft light brown slightly gravelly sandy CLAY with low sandstone cobble content and frequent light brown fine to coarse sand lenses. Gravel is angular to subrounded fine to coarse of sandstone and mudstone		
0.90	D				1.00			
					(0.40)	Orangish light brown sandy clayey angular to subrounded fine to coarse GRAVEL of sandstone, with occasional sandstone boulders and high sandstone cobble content. (Potentially weathered sandstone bedrock- Old Lawrence Rock)		
					1.40			
						Complete at 1.40m		



Remarks

Pit terminated at 1.40m due to suspected bedrock. Vertical, stable and dry

Scale (approx)	Logged By	Figure No.
1:50	RM	23154.TP07

REFA ROBERT E. FRY & ASSOCIATES LTD. 45 Bridgeman Terrace, Wigan, WN1 1TT				Site Greenvale, Rochdale		Trial Pit Number TP08				
Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154		
		Location		Dates 29/10/2024		Engineer		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	
0.20	D				(0.35) 0.35	Dark grey silty CLAY with frequent rootlets (topsoil)				
0.90	D				(0.65) 1.00	Firm light brown mottled grey slightly sandy gravelly CLAY, with frequent sandstone cobbles. Gravel is angular to subrounded fine to coarse of sandstone and mudstone ...Becoming friable at 0.60m				
1.40	D				(0.50) 1.50	Orangish yellow slightly sandy clayey angular to subrounded fine to coarse GRAVEL of sandstone with occasional sandstone cobbles. (Potentially weathered sandstone bedrock- Old Lawrence Rock)				
						Complete at 1.50m				
					Remarks					
					Terminated at 1.50m due to suspected sandstone bedrock. Vertical, stable and dry					
					Scale (approx)		Logged By		Figure No.	
					1:50		RM		23154.TP08	



ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit
Number
TP09

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.30) 0.30	Dark grey slightly gravelly slightly sandy silty CLAY. Gravel is angular to subrounded fine to coarse of siltstone (topsoil)		
0.90 0.90	HV 40kPa D				(0.80) 1.10	Soft grey mottled brown slightly gravelly slightly sandy silty CLAY with low sandstone cobble content and occasional orangish brown fine to coarse sand pockets. Gravel is angular to subrounded fine to coarse of mudstone and sandstone		
1.30	HV 70kPa				(1.00)	Firm becoming stiff dark brown slightly gravelly slightly sandy silty CLAY with low sandstone cobble content and occasional orangish brown fine to coarse sand pockets. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone		
1.70 2.00	D HV 88kPa		Seepage(1) at 2.10m.		2.10	Complete at 2.10m		∇1



Remarks

Seepage at 2.10m.
Terminated at 2.10m due to boulder at the base. Vertical and stable.

Scale (approx)	Logged By	Figure No.
1:50	RM	23154.TP09



ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP10

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.40)	Dark grey slightly sandy silty CLAY with frequent rootlets (topsoil)		
0.60	HV 38kPa				0.40			
					(0.70)	Soft light brown slightly gravelly sandy CLAY, with low sandstone cobble content and frequent orangish brown fine to coarse sand lenses. Gravel is angular to subrounded fine to coarse of sandstone and mudstone		
1.00	D				1.10			
					(0.50)	Firm dark brown mottled grey slightly gravelly sandy CLAY, with low sandstone cobble content. Gravel is angular to subrounded fine to coarse of sandstone and mudstone		∇1
					1.60			
					(0.30)	Extremley weak, thinlly laminated, grey highly weathered MUDSTONE.		
					1.90			
						Complete at 1.90m		



Remarks

Water ingress at 1.50m.
Terminated at 1.90m due to mudstone bedrock.

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP10
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ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP11

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	D				(0.30)	Dark grey silty CLAY with frequent rootlets (topsoil)		
					0.30			
					(0.70)	Soft light brown mottled orangish brown grey slightly gravelly slightly sandy silty CLAY, with occasional light brown fine to coarse sand pockets.		
0.90	HV 40kPa							
0.90	D				1.00	Firm dark brown mottled grey gravelly slightly sandy silty CLAY, with frequent sandstone cobble content. Gravel is angular to subrounded fine to coarse of sandstone, siltstone and mudstone		
1.20	HV 70kPa					... Becoming stiff and friable below 1.30m		
1.50	HV 110kPa				(1.00)			
					2.00	Complete at 2.00m		



Remarks

Terminated at 2.00m due to vewry slow excavating through stiff clays. Vertical, stable and dry

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP11
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ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP12

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D				(0.40)	Dark grey silty CLAY with occasional rootlets (topsoil)		
0.90	HV 68kPa				0.40			
0.90	D				(0.30)	Soft light brown mottled grey slightly gravelly sandy CLAY, with frequent light brown fine to coarse sand pockets. Gravel is subangular to subrounded fine to coarse of sandstone		
1.30	HV 70kPa				0.70			
					(0.60)	Firm brown mottled grey slightly gravelly slightly sandy CLAY with occasional light brown fine to coarse sand pockets. Gravel is subangular to subrounded fine to coarse of sandstone		
1.90	D		Seepage(1) at 2.00m.		1.30			
					(0.50)	Firm grey mottled dark brown slightly gravelly slightly sandy CLAY, with occasional sandstone cobbles. Gravel is angular to subrounded fine to coarse of sandstone and mudstone		
					1.80			
					(0.70)	Extremely weak, thinly laminated, grey highly weathered MUDSTONE. ... Becoming soft at 1.90m		∇1
					2.50	Complete at 2.50m		



Remarks

Seepage recorded at 2.00m.
Terminated at 2.50m due to mudstone bedrock. Vertical and stable.

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP12
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ROBERT E. FRY & ASSOCIATES LTD.
45 Bridgeman Terrace,
Wigan, WN1 1TT

Site
Greenvale, Rochdale

Trial Pit Number
TP13

Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.15	D				(0.30)	Dark grey silty CLAY with frequent rootlets (topsoil)		
					0.30			
0.80	HV 56kPa				(0.70)	Firmish light brown mottled grey slightly gravelly slightly sandy silty CLAY, with low sandstone cobble content		
0.80	D				1.00			
					(1.10)	Firm becoming stiff dark brown mottled grey gravelly slightly sandy silty CLAY, with frequent sandstone cobbles and occasional grey fine to coarse sand lenses. Gravel is angular to subrounded fine to coarse of sandstone and mudstone		
2.00	D				2.10			
						Complete at 2.10m		



Remarks

Vertical, stable and dry

Scale (approx) 1:50	Logged By RM	Figure No. 23154.TP13
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REFA ROBERT E. FRY & ASSOCIATES LTD. 45 Bridgeman Terrace, Wigan, WN1 1TT				Site Greenvale, Rochdale		Trial Pit Number TP14			
Excavation Method Trial Pit		Dimensions		Ground Level (mOD)		Client Wainhomes (NW)		Job Number 23154	
		Location		Dates 29/10/2024		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.30	D				(0.40) 0.40	Dark grey silty CLAY with frequent rootlets (topsoil)			
0.90 0.90 1.10	HV 36kPa D HV 60kPa				(0.70) 1.10	Soft brown mottled grey slightly gravelly slightly sandy silty CLAY with occasional orange fine to coarse sand pockets. Gravel is angular to subrounded fine to coarse of sandstone.			
					(0.80)	Extremely weak, thinnly laminated, grey highly weathered MUDSTONE.			
1.80	D				1.90	Complete at 1.90m			
						Remarks Land drain at 0.90m - water ingress associated Terminated at 1.90m due to rock at base of pit.			
						Scale (approx) 1:50		Logged By RM	

APPENDIX J



Robert E Fry & Associates Ltd
45 Bridgeman Terrace
WN1 1TT

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
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Analytical Report Number : 24-051423

Project / Site name:	Greenvale, Rochdale	Samples received on:	01/11/2024
Your job number:	23154	Samples instructed on/ Analysis started on:	01/11/2024
Your order number:		Analysis completed by:	12/11/2024
Report Issue Number:	1	Report issued on:	12/11/2024
Samples Analysed:	10 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-051423
Project / Site name: Greenvale, Rochdale

Lab Sample Number				366851	366852	366853	366854	366855
Sample Reference				WS01	WS01	WS02	TP01	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.20	0.15	0.20	0.20
Date Sampled				29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	3.7	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	28	29	46	33
Total mass of sample received	kg	0.1	NONE	0.9	0.1	0.5	0.9	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	-	MJN	MJN	MJN

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.7	6.9	5.6	6.4	6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	790	1300	33	140	47
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	397	625	16.4	68.5	23.6
Sulphide	mg/kg	1	MCERTS	3.7	7.7	< 1.0	1.2	< 1.0
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.9	3.5	3.9	6.3	4.7
Total Organic Carbon (TOC) - Manual	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.1	0.06	< 0.05	0.07	0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.2	0.06	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.15	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.5	0.38	0.32	0.31	0.14
Anthracene	mg/kg	0.05	MCERTS	0.37	0.08	0.06	0.06	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	2.4	0.66	0.67	0.67	0.35
Pyrene	mg/kg	0.05	MCERTS	2.2	0.59	0.59	0.6	0.33
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1	0.28	0.27	0.32	0.18
Chrysene	mg/kg	0.05	MCERTS	1.3	0.35	0.37	0.35	0.2
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.2	0.38	0.37	0.41	0.28
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.61	0.15	0.19	0.15	0.07
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1	0.3	0.31	< 0.05	0.24
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.57	0.16	0.15	0.16	0.09
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.15	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.61	0.16	0.16	0.18	0.11

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	13.6	3.62	3.47	3.28	2.04
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Analytical Report Number: 24-051423
Project / Site name: Greenvale, Rochdale

Lab Sample Number				366851	366852	366853	366854	366855
Sample Reference				WS01	WS01	WS02	TP01	TP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.20	0.15	0.20	0.20
Date Sampled				29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	14	20	22	18
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.6	< 0.2	< 0.2	0.7	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	330	46	16	25	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100	32	31	45	37
Lead (aqua regia extractable)	mg/kg	1	MCERTS	240	71	93	110	90
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	150	27	10	20	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	190	110	69	120	73

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	4.5	< 2.0	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	13	< 8.0	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	48	< 8.0	-	-	-
TPHCWG - Aliphatic >EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	19	< 8.4	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	65	< 10	-	-	-
TPHCWG - Aliphatic >EC5 - EC44 EH_CU+HS_1D_AL	mg/kg	10	NONE	84	< 10	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	< 0.020	< 0.020	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	5.6	< 2.0	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	22	< 10	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	53	12	-	-	-
TPHCWG - Aromatic >EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	22	< 8.4	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	80	12	-	-	-
TPHCWG - Aromatic >EC5 - EC44 EH_CU+HS_1D_AR	mg/kg	10	NONE	100	12	-	-	-

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



4041



Environmental Science

Analytical Report Number: 24-051423

Project / Site name: Greenvale, Rochdale

Lab Sample Number				366856	366857	366858	366859	366860
Sample Reference				TP04	TP06	TP08	TP11	TP14
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.15	0.20	0.10	0.30
Date Sampled				29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	50	41	31	23	28
Total mass of sample received	kg	0.1	NONE	0.5	0.6	0.5	0.5	0.1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN	MJN	MJN	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	5.6	6.2	5.8	6.7	5.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	88	62	84	31	200
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	43.9	31	42	15.3	98.8
Sulphide	mg/kg	1	MCERTS	1.8	< 1.0	2.1	< 1.0	1.5
Organic Matter	%	0.1	MCERTS	16	-	-	-	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	6	4	2.6	3.5
Total Organic Carbon (TOC) - Manual	%	0.1	MCERTS	9.1	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	1	1.2	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.06	0.07	< 0.05	< 0.05	0.06
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.08	0.06	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.49	0.4	0.45	< 0.05	0.26
Anthracene	mg/kg	0.05	MCERTS	0.1	0.1	0.07	< 0.05	0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.95	0.69	0.87	0.05	0.43
Pyrene	mg/kg	0.05	MCERTS	0.83	0.6	0.77	0.05	0.38
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.43	0.31	0.4	< 0.05	0.18
Chrysene	mg/kg	0.05	MCERTS	0.48	0.37	0.49	< 0.05	0.21
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.52	0.49	0.57	< 0.05	0.23
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.25	0.18	0.26	< 0.05	0.09
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.4	0.33	0.42	< 0.05	0.18
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.21	0.17	0.22	< 0.05	0.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.23	0.18	0.26	< 0.05	0.09

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	5.08	3.96	4.84	< 0.80	2.25
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Analytical Report Number: 24-051423
Project / Site name: Greenvale, Rochdale

Lab Sample Number				366856	366857	366858	366859	366860
Sample Reference				TP04	TP06	TP08	TP11	TP14
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.15	0.20	0.10	0.30
Date Sampled				29/10/2024	29/10/2024	29/10/2024	29/10/2024	29/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	27	19	21	15	16
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1	0.6	< 0.2	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	19	20	20	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	34	38	25	27
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	88	110	51	77
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	17	17	16	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	92	130	47	62

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC44 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC44 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	8	MCERTS	-	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 24-051423

Project / Site name: Greenvale, Rochdale

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
366851	WS01	None Supplied	0.2	Brown loam and clay with gravel and vegetation
366852	WS01	None Supplied	1.2	Brown loam and clay with vegetation
366853	WS02	None Supplied	0.15	Brown loam and clay with gravel and vegetation
366854	TP01	None Supplied	0.2	Brown loam and clay with gravel and vegetation
366855	TP02	None Supplied	0.2	Brown loam and clay with gravel and vegetation
366856	TP04	None Supplied	0.1	Brown loam and clay with gravel and vegetation
366857	TP06	None Supplied	0.15	Brown loam and clay with gravel and vegetation
366858	TP08	None Supplied	0.2	Brown loam and clay with gravel and vegetation
366859	TP11	None Supplied	0.1	Brown loam and clay with gravel and vegetation
366860	TP14	None Supplied	0.3	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-051423
Project / Site name: Greenvale, Rochdale

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L023B	D	MCERTS
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L023B	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS

Analytical Report Number : 24-051423
Project / Site name: Greenvale, Rochdale

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

APPENDIX K



TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Robert E Fry & Associates Ltd
Client Address: 45 Bridgeman Terrace, WN1 1TT

Client Reference: 24132
Job Number: 24-051794-1
Date Sampled: 29/10/2024
Date Received: 01/11/2024
Date Tested: 14/11/2024
Sampled By: Not Given

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

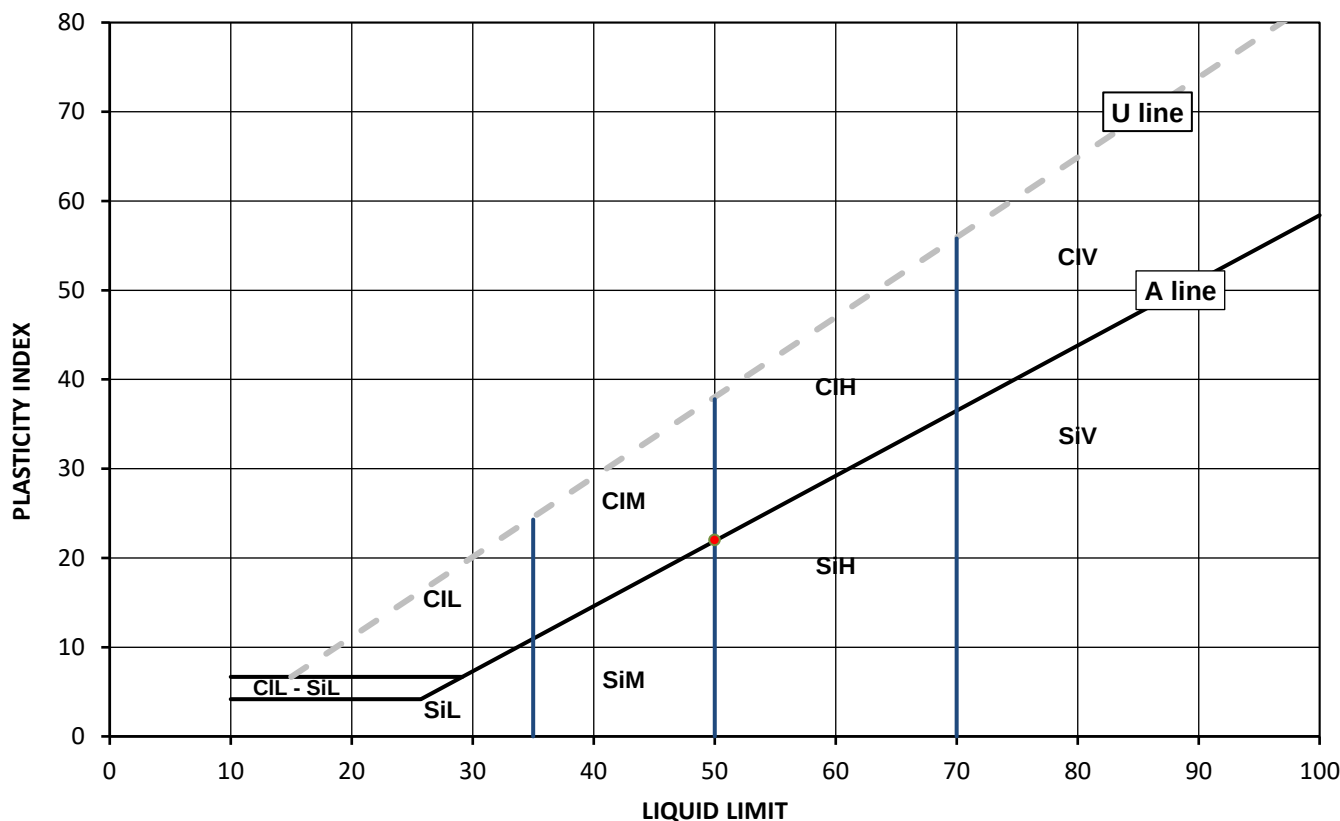
Test Results:

Laboratory Reference: 368814
Hole No.: WS01
Sample Reference: Not Given
Sample Description: Yellowish grey slightly gravelly slightly sandy silty CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425 mm;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
30.3	50	1.000	28	22	0.09	0.91	81



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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Sampled By: Not Given

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

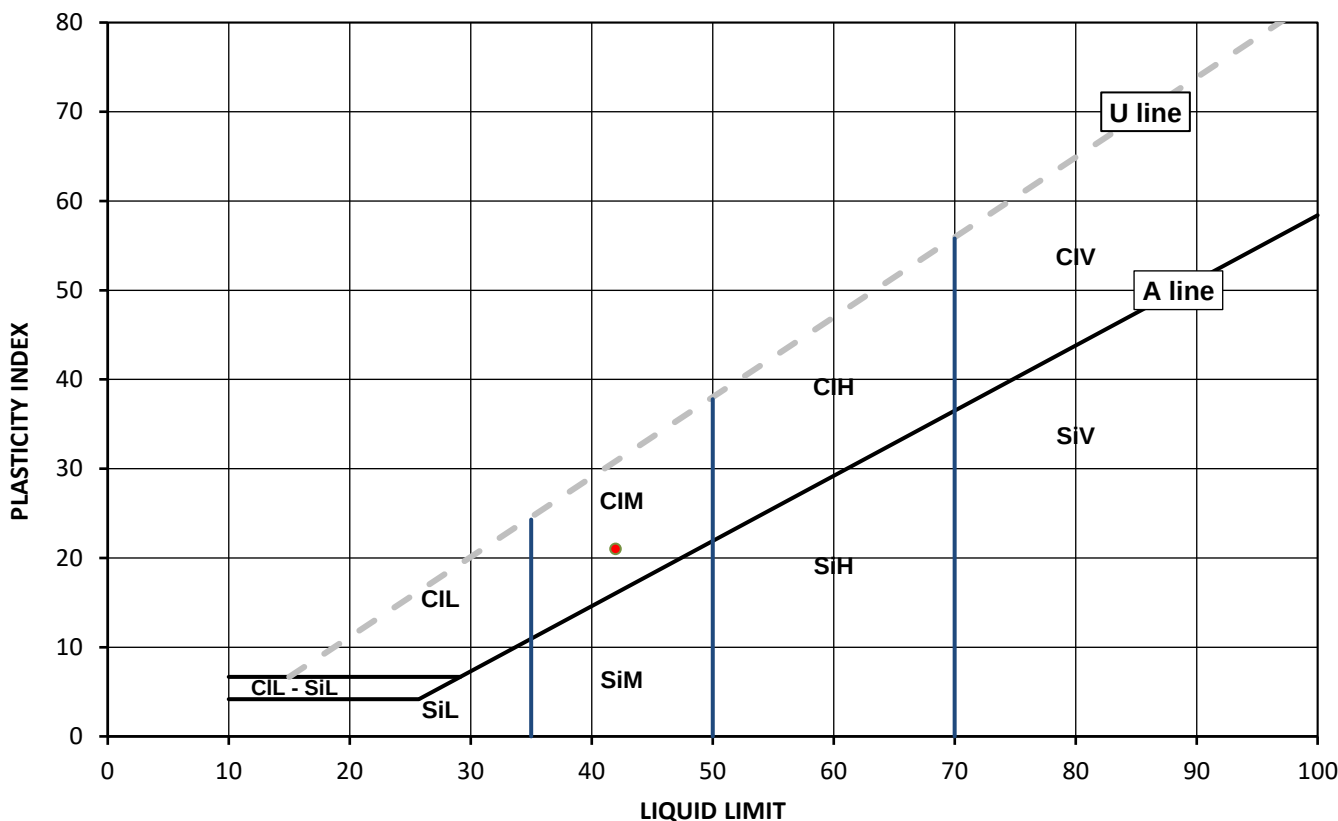
Test Results:

Laboratory Reference: 368815
Hole No.: WS03
Sample Reference: Not Given
Sample Description: Brownish grey slightly gravelly sandy CLAY

Depth Top [m]: 2.30
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
22.8	42	1.039	21	21	0.10	0.90	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Date Tested: 14/11/2024
Sampled By: Not Given

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

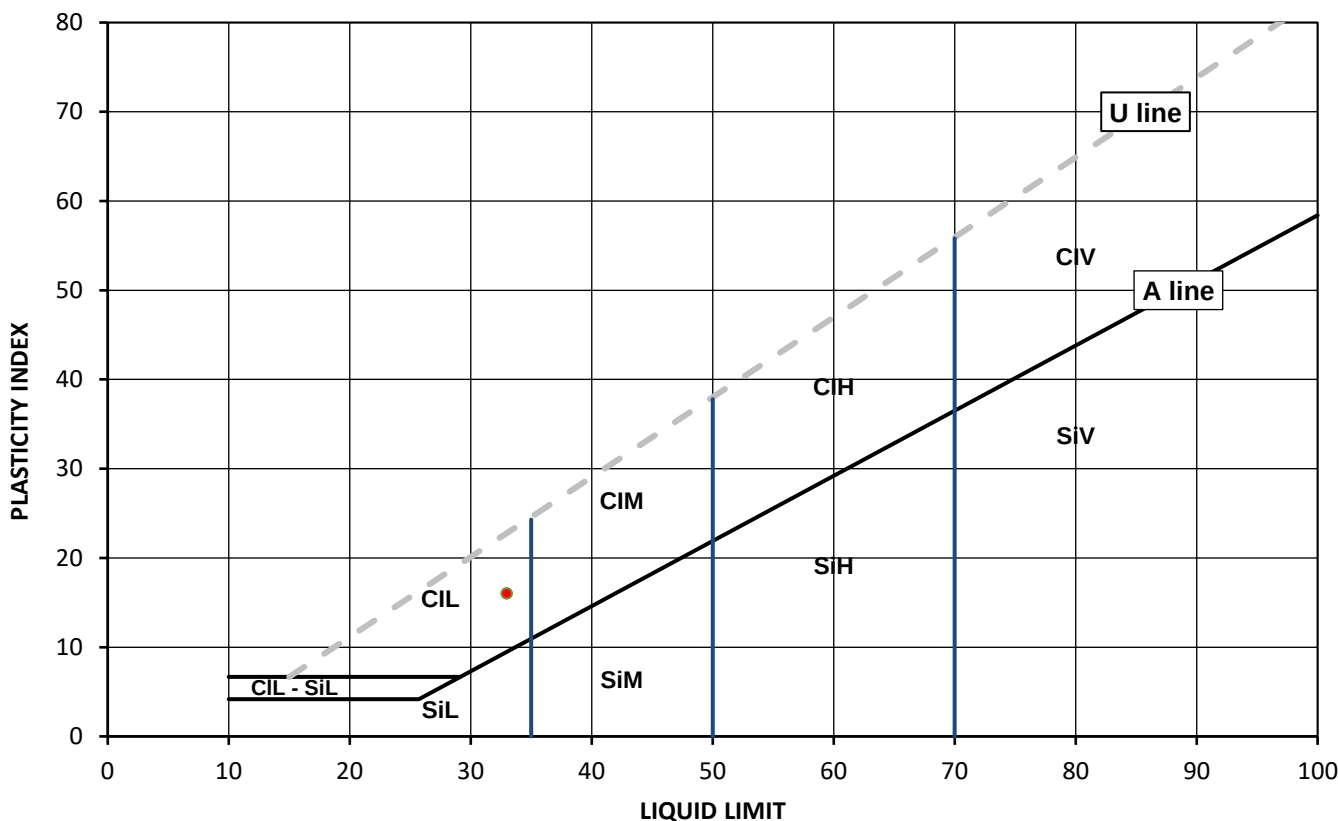
Test Results:

Laboratory Reference: 368816
Hole No.: TP04
Sample Reference: Not Given
Sample Description: Brownish grey slightly gravelly very sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425 mm;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
16.0	33	1.015	17	16	-0.06	1.06	81



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Date Tested: 14/11/2024
Sampled By: Not Given

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

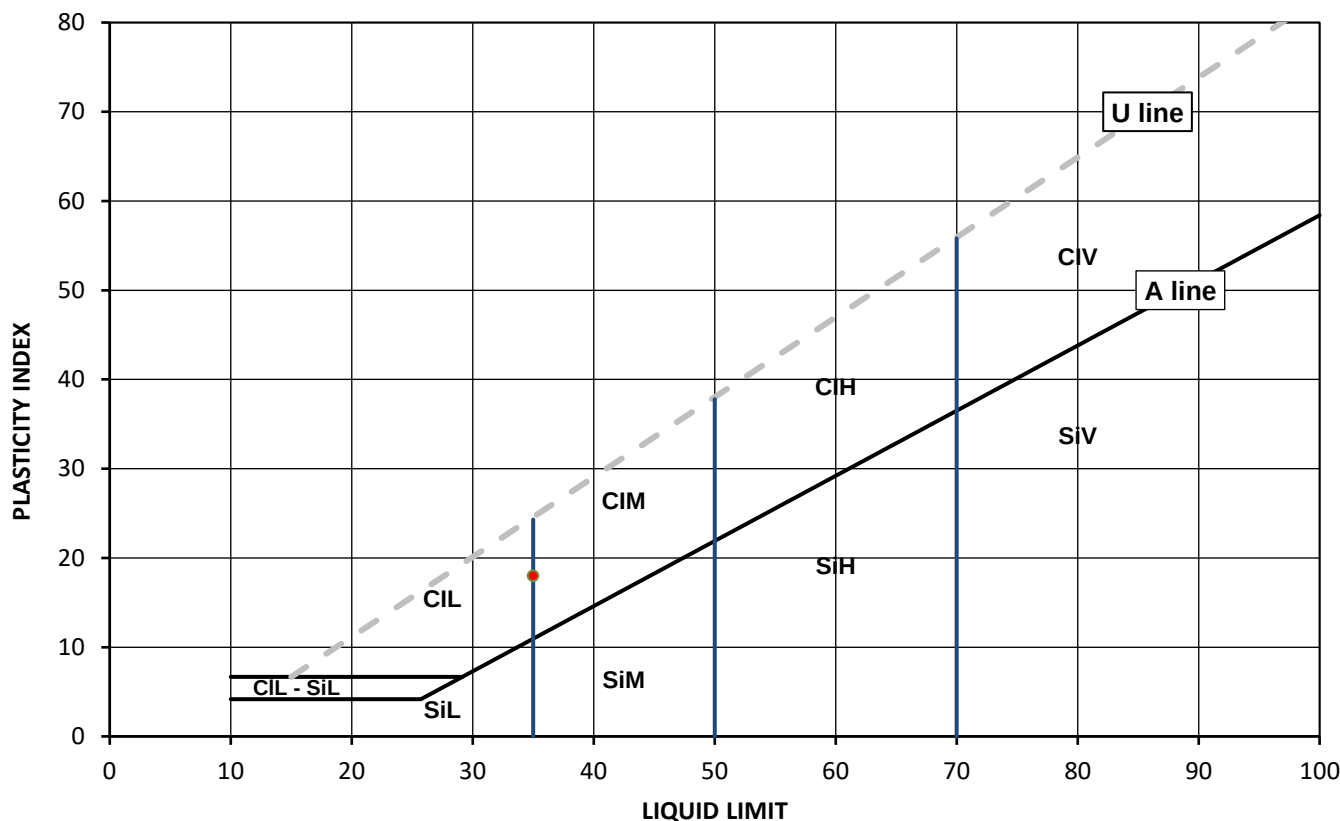
Test Results:

Laboratory Reference: 368817
Hole No.: TP05
Sample Reference: Not Given
Sample Description: Brownish grey slightly gravelly sandy CLAY

Depth Top [m]: 1.40
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425 mm;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
23.9	35	1.030	17	18	0.39	0.61	80



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity	Liquid Limit
Cl	Clay	L Low	below 35
Si	Silt	M Medium	35 to 50
		H High	50 to 70
		V Very high	exceeding 70
		O Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Date Tested: 14/11/2024
Sampled By: Not Given

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

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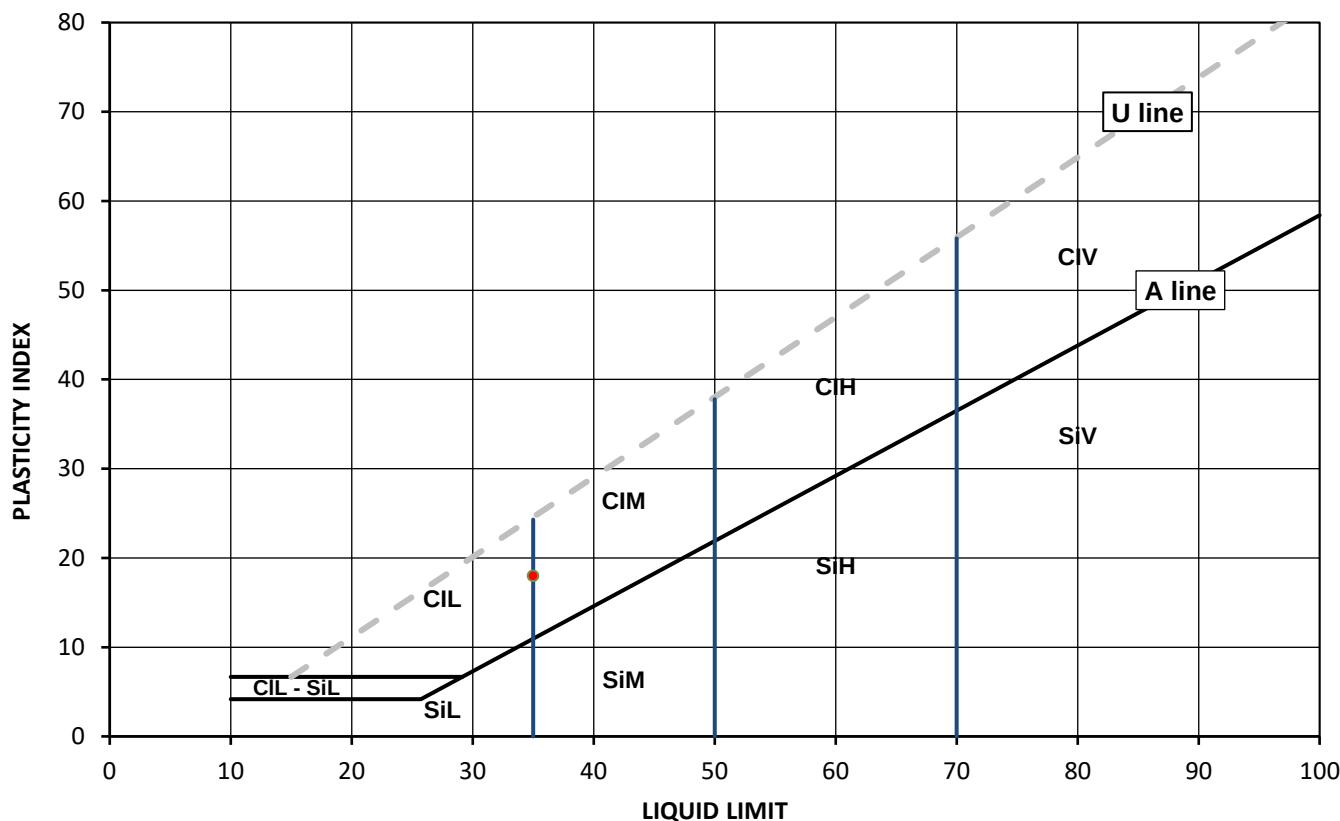
Test Results:

Laboratory Reference: 368818
Hole No.: TP06
Sample Reference: Not Given
Sample Description: Brownish grey slightly gravelly sandy CLAY

Depth Top [m]: 1.90
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425 mm;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
14.7	35	1.030	17	18	-0.11	1.11	68



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Sampled By: Not Given

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

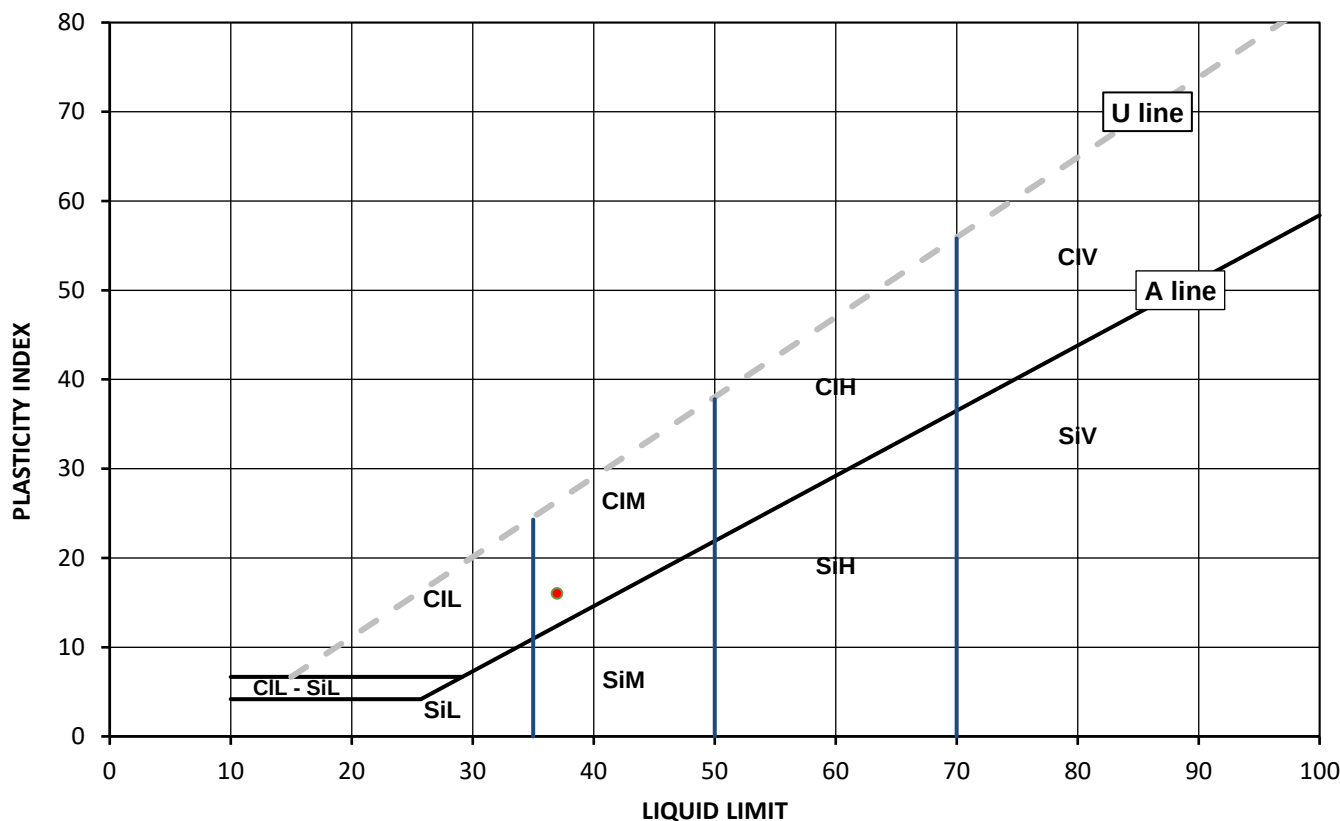
Test Results:

Laboratory Reference: 368819
Hole No.: TP07
Sample Reference: Not Given
Sample Description: Brownish grey sandy CLAY

Depth Top [m]: 0.90
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
27.6	37	1.000	21	16	0.44	0.56	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Sampled By: Not Given

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

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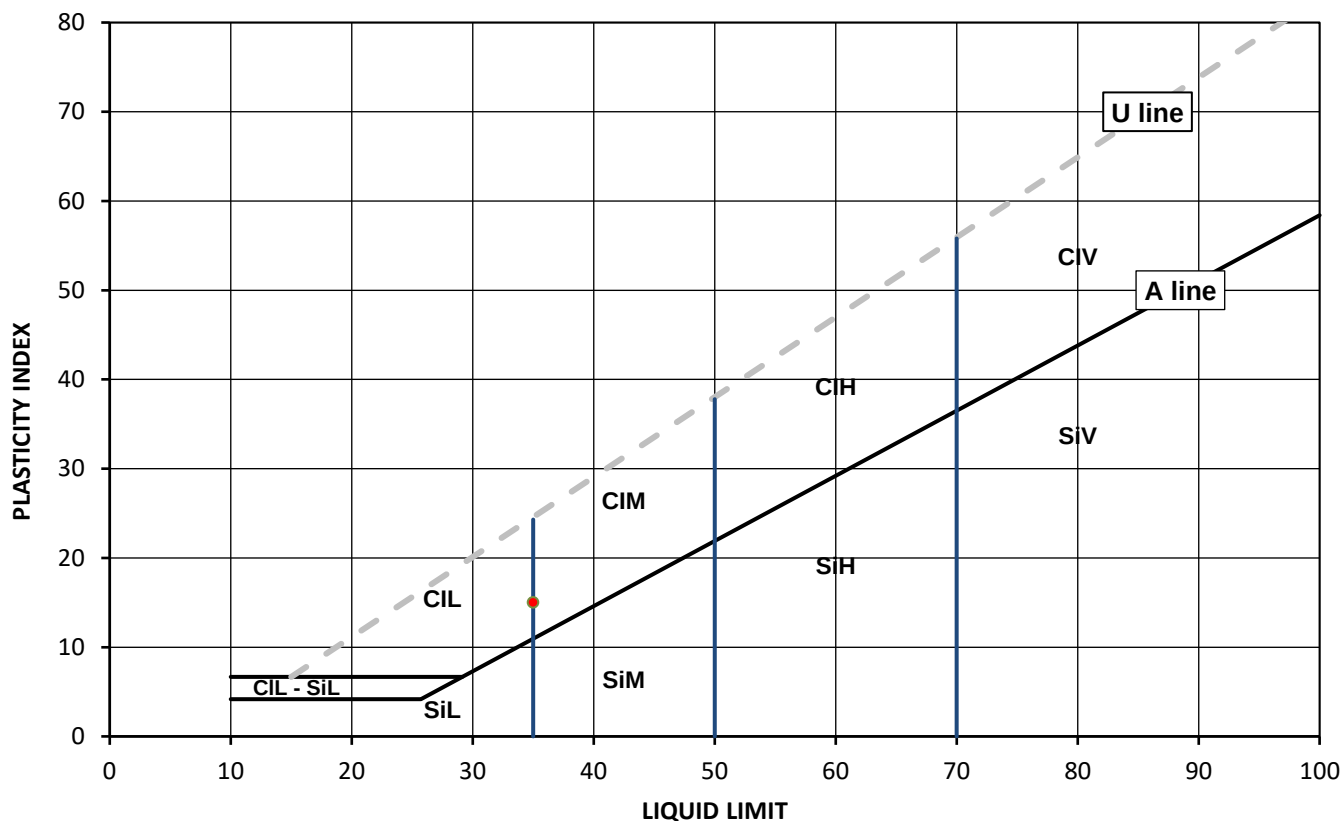
Test Results:

Laboratory Reference: 368820
Hole No.: TP08
Sample Reference: Not Given
Sample Description: Brownish grey slightly gravelly sandy CLAY

Depth Top [m]: 1.40
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425 mm;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
12.9	35	1.015	20	15	-0.47	1.47	84



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Sampled By: Not Given

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Site Address: Greenvale, Rochdale

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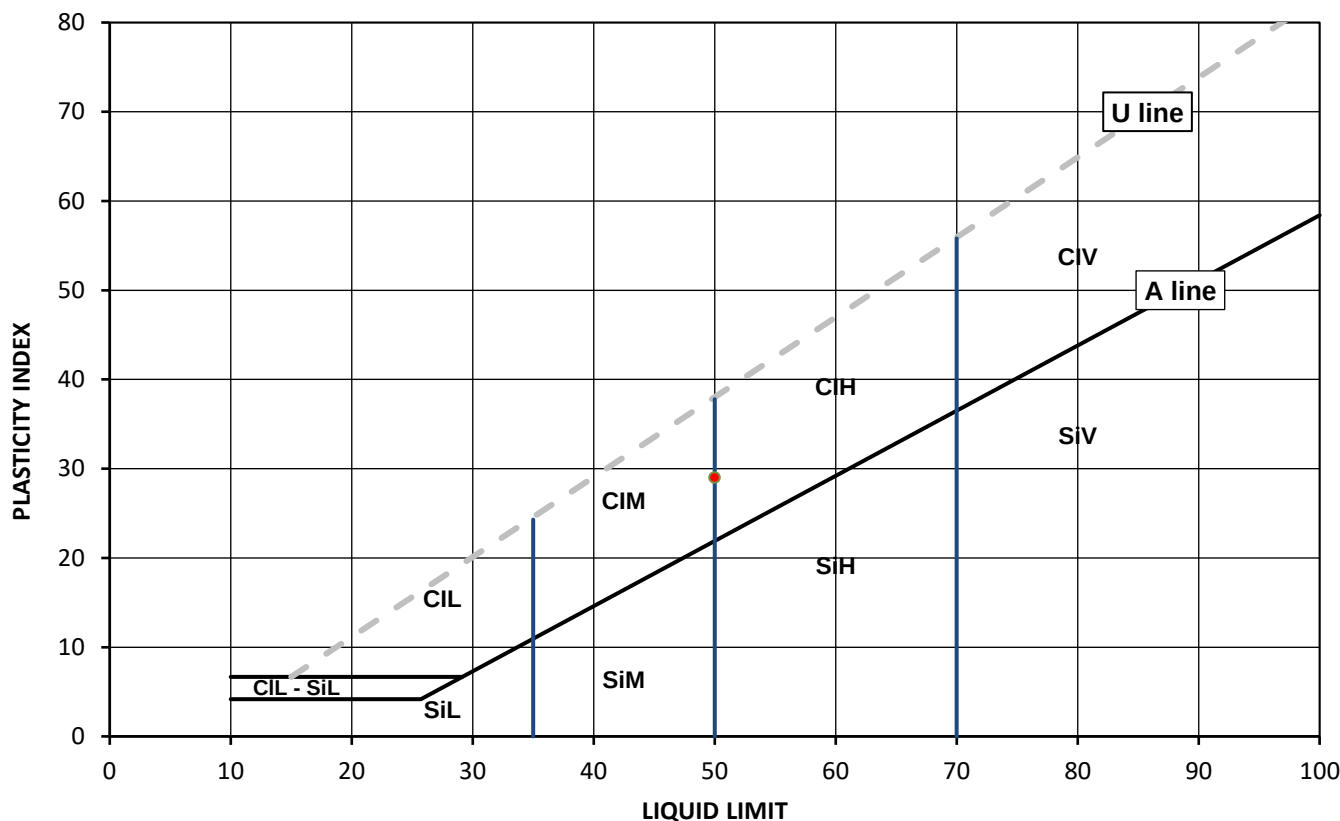
Test Results:

Laboratory Reference: 368821
Hole No.: TP09
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.70
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >0.425 mm removed by hand;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
20.8	50	1.039	21	29	0.00	1.00	84



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

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Sampled By: Not Given

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

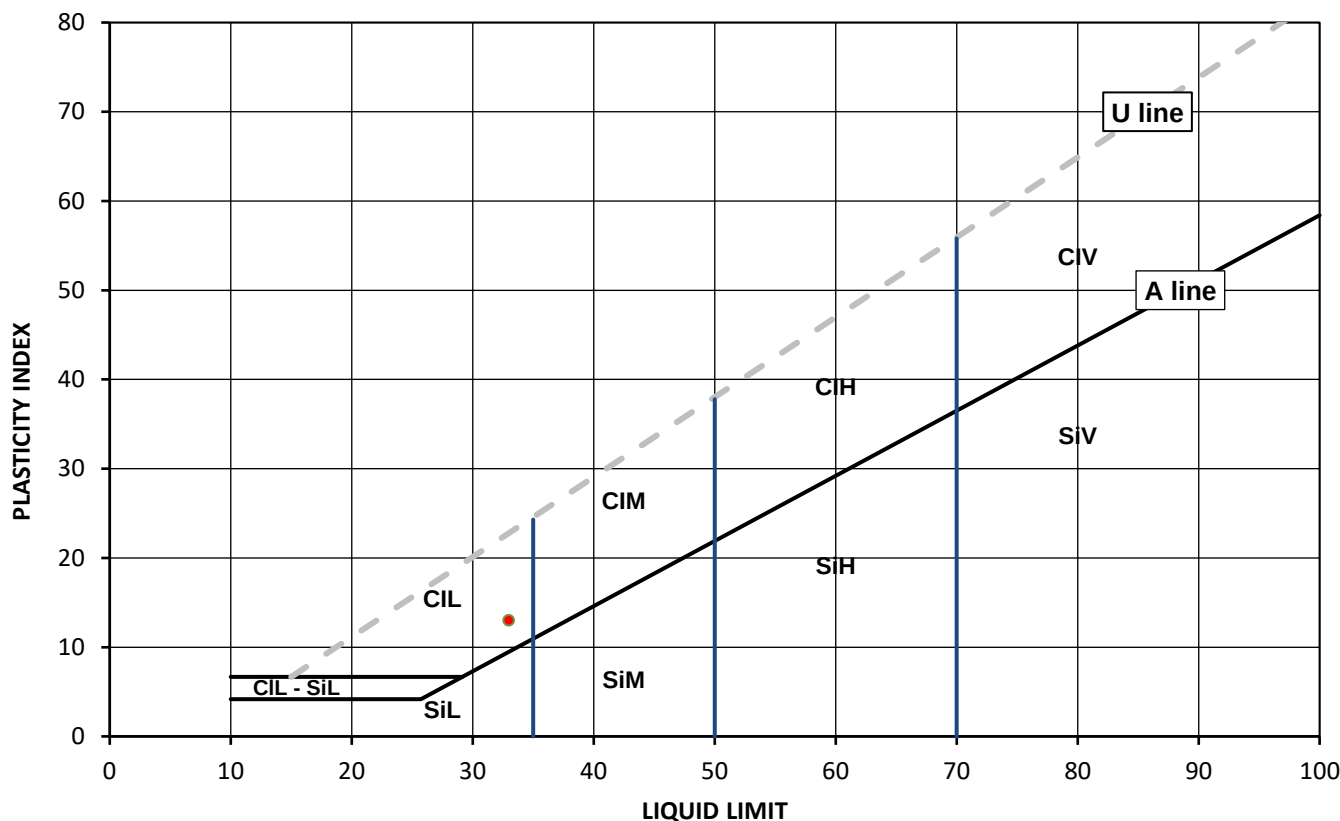
Test Results:

Laboratory Reference: 368822
Hole No.: TP10
Sample Reference: Not Given
Sample Description: Brownish white slightly gravelly very sandy CLAY

Depth Top [m]: 1.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425 mm;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
24.0	33	1.000	20	13	0.31	0.69	77



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022,
cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022,
cl 5.3, 6

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Robert E Fry & Associates Ltd
Client Address: 45 Bridgeman Terrace, WN1 1TT

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 24132
Job Number: 24-051794-1
Date Sampled: 29/10/2024
Date Received: 01/11/2024
Date Tested: 14/11/2024
Sampled By: Not Given

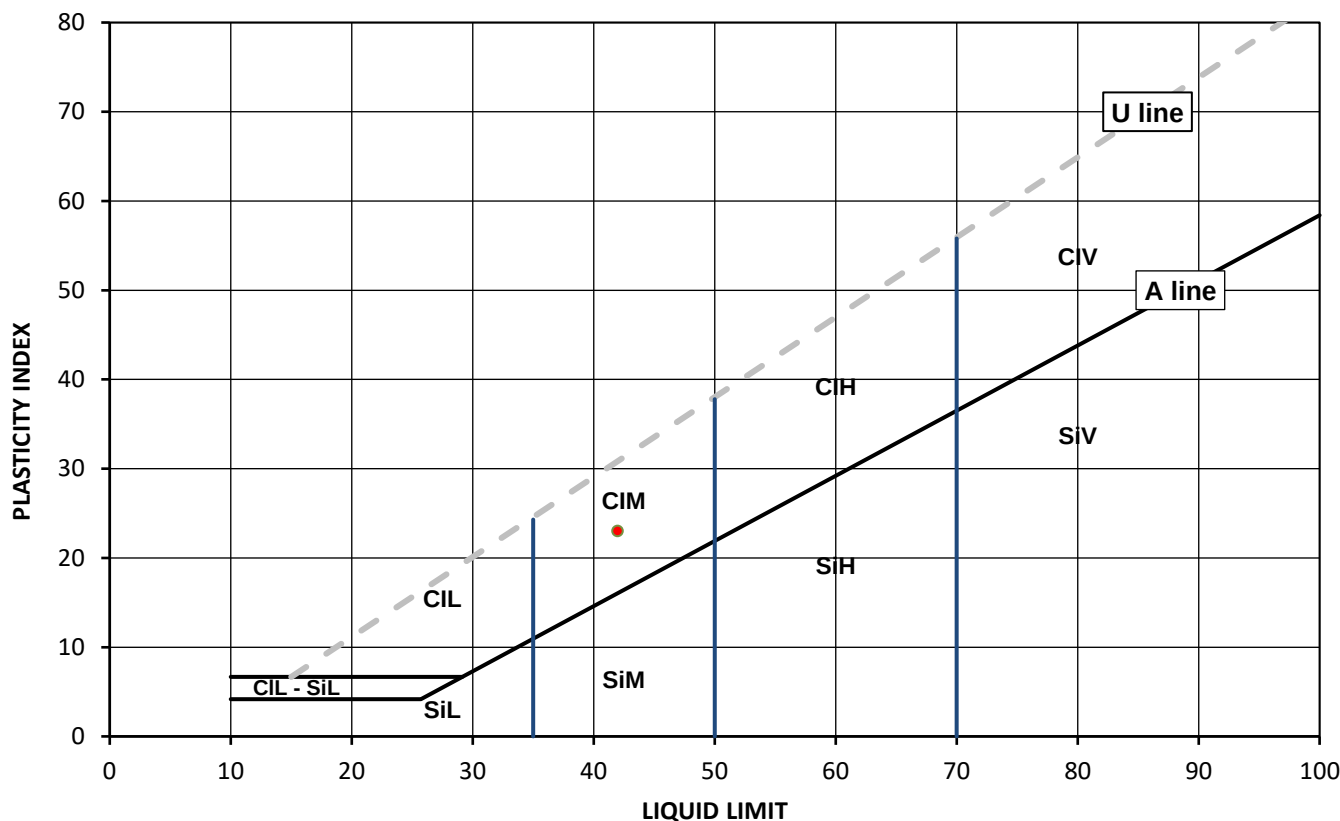
Test Results:

Laboratory Reference: 368823
Hole No.: TP14
Sample Reference: Not Given
Sample Description: Brownish grey gravelly sandy CLAY

Depth Top [m]: 1.80
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425 mm;
Cone Type: 80g/30deg

As Received Water Content [W] %	Corrected Liquid Limit [WL] %	Correlation Factor	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity index [IL] % #	Consistency index [IC] % #	% Passing 425µm BS Test Sieve
22.7	42	1.039	19	23	0.17	0.83	63



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg ClHO)

Note: Water Content by BS EN 17892-1:2014+A1:2022, BS 1377-2:2022; Correlation Factor by Clayton C.R.I and Jukes A.W (1978); # Non accredited

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Tested in Accordance with:

BS EN ISO 17892-12:2018+A2:2022, cl 5.3.14, 5.5, Fall Cone Method, 1 Pt Test, BS 1377-2:2022, cl 5.3, 6. Correlation Factor by Clayton C.R.I and Jukes A.W (1978). W by BS EN ISO 17892-1:2014+A1:2022.

Client Reference: 24132

Job Number: 24-051794-1

Date Sampled: 29/10/2024

Date Received: 01/11/2024

Date Tested: 14/11/2024

Sampled By: Not Given

4041

Client: Robert E Fry & Associates Ltd

Client Address: 45 Bridgeman Terrace, WN1 1TT

Contact: Rachael Mawdsley

Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit							Density		
		Reference	Depth Top	Depth Base	Type				% Passing 425um	WL*	Correlation Factor	Wp	Ip	Cone type	Sample Preparation	bulk	dry	PD
			m	m					%	%		%	%			Mg/m3	Mg/m3	Mg/m3
368814	WS01	Not Given	1.20	Not Given	D	Yellowish grey slightly gravelly slightly sandy silty CLAY	Atterberg 1 Point	30.3	81	50	1.000	28	22	80g/30 deg	WR			
368815	WS03	Not Given	2.30	Not Given	D	Brownish grey slightly gravelly sandy CLAY	Atterberg 1 Point	22.8	99	42	1.039	21	21	80g/30 deg	R			
368816	TP04	Not Given	1.20	Not Given	D	Brownish grey slightly gravelly very sandy CLAY	Atterberg 1 Point	16.0	81	33	1.015	17	16	80g/30 deg	WR			
368817	TP05	Not Given	1.40	Not Given	D	Brownish grey slightly gravelly sandy CLAY	Atterberg 1 Point	23.9	80	35	1.030	17	18	80g/30 deg	WR			
368818	TP06	Not Given	1.90	Not Given	D	Brownish grey slightly gravelly sandy CLAY	Atterberg 1 Point	14.7	68	35	1.030	17	18	80g/30 deg	WR			
368819	TP07	Not Given	0.90	Not Given	D	Brownish grey sandy CLAY	Atterberg 1 Point	27.6	100	37	1.000	21	16	80g/30 deg	N			
368820	TP08	Not Given	1.40	Not Given	D	Brownish grey slightly gravelly sandy CLAY	Atterberg 1 Point	12.9	84	35	1.015	20	15	80g/30 deg	WR			
368821	TP09	Not Given	1.70	Not Given	D	Brown slightly gravelly slightly sandy CLAY	Atterberg 1 Point	20.8	84	50	1.039	21	29	80g/30 deg	R			
368822	TP10	Not Given	1.00	Not Given	D	Brownish grey slightly gravelly very sandy CLAY	Atterberg 1 Point	24.0	77	33	1.000	20	13	80g/30 deg	WR			
368823	TP14	Not Given	1.80	Not Given	D	Brownish grey gravelly sandy CLAY	Atterberg 1 Point	22.7	63	42	1.039	19	23	80g/30 deg	WR			

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0.425mm removed by hand, WR - Tested after washing to remove >425mm; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022, clause 4.1

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Robert E Fry & Associates Ltd
Client Address: 45 Bridgeman Terrace, WN1 1TT

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 24132
Job Number: 24-051794-1
Date Sampled: 29/10/2024
Date Received: 01/11/2024
Date Tested: 14/11/2024
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC											
		Reference	Depth Top m	Depth Base m	Type														
368814	WS01	Not Given	1.20	Not Given	D	Yellowish grey slightly gravelly slightly sandy silty CLAY		30.3											
368815	WS03	Not Given	2.30	Not Given	D	Brownish grey slightly gravelly sandy CLAY		22.8											
368816	TP04	Not Given	1.20	Not Given	D	Brownish grey slightly gravelly very sandy CLAY		16.0											
368817	TP05	Not Given	1.40	Not Given	D	Brownish grey slightly gravelly sandy CLAY		23.9											
368818	TP06	Not Given	1.90	Not Given	D	Brownish grey slightly gravelly sandy CLAY		14.7											
368819	TP07	Not Given	0.90	Not Given	D	Brownish grey sandy CLAY		27.6											
368820	TP08	Not Given	1.40	Not Given	D	Brownish grey slightly gravelly sandy CLAY		12.9											
368821	TP09	Not Given	1.70	Not Given	D	Brown slightly gravelly slightly sandy CLAY		20.8											
368822	TP10	Not Given	1.00	Not Given	D	Brownish grey slightly gravelly very sandy CLAY		24.0											
368823	TP14	Not Given	1.80	Not Given	D	Brownish grey gravelly sandy CLAY		22.7											

Comments:

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Signed:

Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd



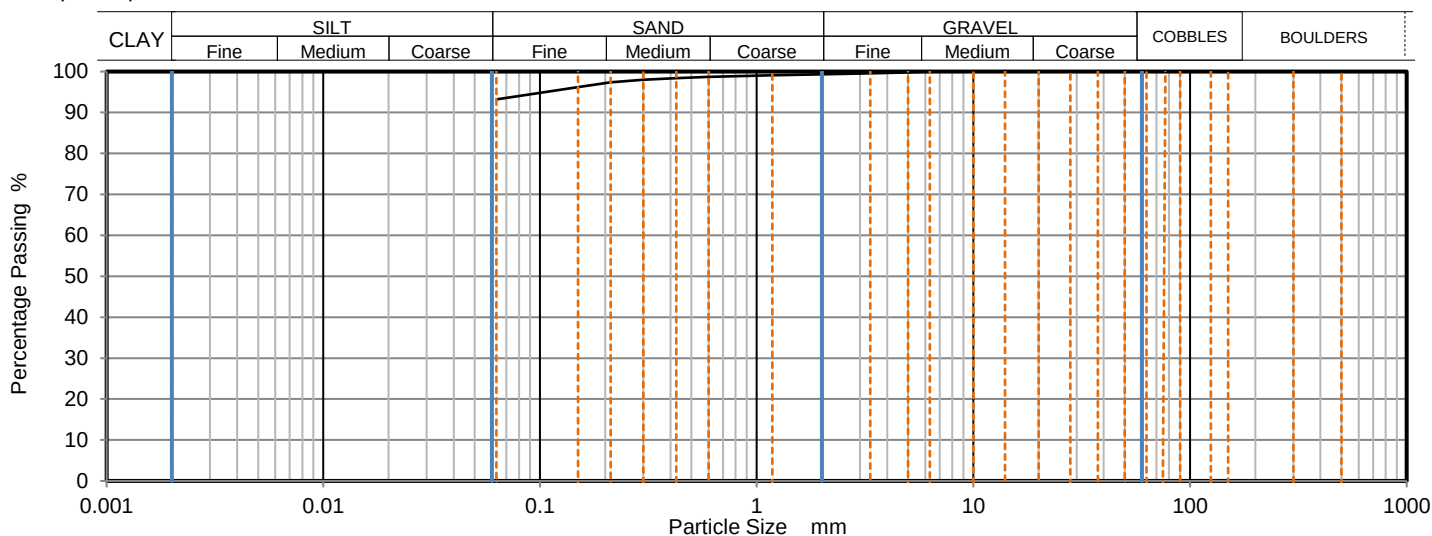
4041

**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client: Robert E Fry & Associates Ltd
Client Address: 45 Bridgeman Terrace, WN1 1TTClient Reference: 24132
Job Number: 24-051794-1
Date Sampled: 29/10/2024
Date Received: 01/11/2024
Date Tested: 14/11/2024
Sampled By: Not GivenContact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 368824
Hole No.: WS03
Sample Reference: Not Given
Sample Description: Brownish grey slightly sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 108.6 °C and broken down by hand.Depth Top [m]: 1.90
Depth Base [m]: Not Given
Sample Type: D

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	96		
0.063	93		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	1.00
Sand	6.00
Fines <0.063 mm	93.00

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF BULK DENSITY - IMMERSION IN FLUID METHOD

Tested in Accordance with: BS EN ISO 17892-2: 2014: Clause 5.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Robert E Fry & Associates Ltd

Client Address:
45 Bridgeman Terrace, WN1 1TT

Contact: Rachael Mawdsley
Site Address: Greenvale, Rochdale

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 24132

Job Number: 24-051794-1

Date Sampled: 29/10/2024

Date Received: 01/11/2024

Date Tested: 23/11/2024

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Bulk density Mg/m3	Dry density Mg/m3	WC %	Preparation		
		Reference	Depth Top m	Depth Base m	Type								
368816	TP04	Not Given	1.20	Not Given	D	Brownish grey slightly gravelly very sandy CLAY		2.17	1.87	15.7			
368817	TP05	Not Given	1.40	Not Given	D	Brownish grey slightly gravelly sandy CLAY		2.08	1.75	19.0			
368818	TP06	Not Given	1.90	Not Given	D	Brownish grey slightly gravelly sandy CLAY		2.21	1.94	13.8			
368819	TP07	Not Given	0.90	Not Given	D	Brownish grey sandy CLAY		1.95	1.56	24.8			
368821	TP09	Not Given	1.70	Not Given	D	Brown slightly gravelly slightly sandy CLAY		1.96	1.59	23.2			
368822	TP10	Not Given	1.00	Not Given	D	Brownish grey slightly gravelly very sandy CLAY		1.93	1.55	24.9			
368823	TP14	Not Given	1.80	Not Given	D	Brownish grey gravelly sandy CLAY		1.96	1.57	25.4			
368814	WS01	Not Given	1.20	Not Given	D	Yellowish grey slightly gravelly slightly sandy silty CLAY		1.86	1.45	28.4			
368815	WS03	Not Given	2.30	Not Given	D	Brownish grey slightly gravelly sandy CLAY		2.05	1.66	23.3			

Note: WC - Water Content by BS EN ISO 17892-1:2014+A1:2022, BS-1377:2022

Comments:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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APPENDIX L

Ground Gas Monitoring Record

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (% v/v)		Methane (%LEL*)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Nitrogen (%v/v)		Depth to water (m bgl)	Atmospheric Pressure (mB)	Comments
			Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
WS01	0.0		0.0	0.0			8.2	8.2	13.1	13.0			2.50	980	
WS02	0.0		0.0	0.0			4.2	4.2	17.0	16.9			2.00	982	
WS03	0.0		0.0	0.0			5.3	5.2	16.0	15.7			DRY	980	

Notes:

Monitoring should be for not less than 3 Minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 mins.

* LEL = Explosive Limit = 5%v/v

ND - Not Detected

Relevant Information at times of monitoring

Monitored by: Weather : Equipment used: Visible signs of vegetation stress: Boreholes sampled for laboratory analysis: Other comments / observations:	HM Sunny & Frosty	Contract:	Greenvale, Bamford
		Date:	22.11.2024
		Job No.	23154
		Sheet No.	1



Robert E Fry Associates
45 Bridgeman Terrace, Wigan, WN1 1TT

Ground Gas Monitoring Record

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (% v/v)		Methane (%LEL*)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Nitrogen (%v/v)		Depth to water (m bgl)	Atmospheric Pressure (mB)	Comments
			Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
WS01	0.0		0.0	0.0			0.0	0.0	19.6	19.7			1.22	997	
WS02	0.0		0.0	0.0			0.0	0.0	20.0	20.0			G.L	997	Well Flooded
WS03	0.0		0.0	0.0			0.0	0.0	16.0	15.7			DRY	997	

Notes:

Monitoring should be for not less than 3 Minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 mins.

* LEL = Explosive Limit = 5%v/v

ND - Not Detected

Relevant Information at times of monitoring

Monitored by: Weather : Equipment used: Visible signs of vegetation stress: Boreholes sampled for laboratory analysis: Other comments / observations:	HM Clear / Sunny & Wet	Contract:	Greenvale, Bamford
		Date:	06.12.2024
		Job No.	23154
		Sheet No.	2



Robert E Fry Associates
45 Bridgeman Terrace, Wigan, WN1 1TT

Ground Gas Monitoring Record

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (% v/v)		Methane (%LEL*)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Nitrogen (%v/v)		Depth to water (m bgl)	Atmospheric Pressure (mB)	Comments
			Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
WS01	0.0		0.0	0.0			0.0	0.0	19.3	19.6			0.00	997	
WS02	0.0		0.0	0.0			0.0	0.0	19.7	20.1			0.00	995	
WS03	0.0		0.0	0.0			0.0	0.0	19.9	20.1			0.08	995	

Notes:

Monitoring should be for not less than 3 Minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 mins.

* LEL = Explosive Limit = 5%v/v

ND - Not Detected

Relevant Information at times of monitoring

Monitored by: Weather : Equipment used: Visible signs of vegetation stress: Boreholes sampled for laboratory analysis: Other comments / observations:	RM Lightly raining	Contract:	Greenvale, Bamford
		Date:	20.12.24
		Job No.	23154
		Sheet No.	3



Robert E Fry Associates
45 Bridgeman Terrace, Wigan, WN1 1TT

Ground Gas Monitoring Record

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (% v/v)		Methane (%LEL*)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Nitrogen (%v/v)		Depth to water (m bgl)	Atmospheric Pressure (mB)	Comments
			Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
WS01	0.0		0.0	0.0			0.1	0.1	19.7	19.7			1.28	960	
WS02	0.0		0.0	0.0			0.0	0.0	19.7	19.6			G.L	961	Well Flooded
WS03	0.0		0.0	0.0			0.0	0.0	19.8	19.9			0.50	960	

Notes:

Monitoring should be for not less than 3 Minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 mins.

* LEL = Explosive Limit = 5%v/v

ND - Not Detected

Relevant Information at times of monitoring

Monitored by: Weather : Equipment used: Visible signs of vegetation stress: Boreholes sampled for laboratory analysis: Other comments / observations:	HM Clear & Snowy	Contract:	Greenvale, Bamford
		Date:	20.12.24
		Job No.	23154
		Sheet No.	4



Robert E Fry Associates
45 Bridgeman Terrace, Wigan, WN1 1TT

Ground Gas Monitoring Record

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (% v/v)		Methane (%LEL*)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Nitrogen (%v/v)		Depth to water (m bgl)	Atmospheric Pressure (mB)	Comments
			Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
WS01	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	19.4	19.7	0.0	0.0	0.00	1000	NA
WS02	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	19.6	19.8	0.0	0.0	0.00	999	NA
WS03	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	19.7	19.8	0.0	0.0	0.00	999	NA

Notes:

Monitoring should be for not less than 3 Minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 mins.

* LEL = Explosive Limit = 5%v/v

ND - Not Detected

Relevant Information at times of monitoring

Monitored by: Weather : Equipment used: Visible signs of vegetation stress: Boreholes sampled for laboratory analysis: Other comments / observations:	RM Dry	Contract:	Greenvale, Bamford
		Date:	20.01.2025
		Job No.	23154
		Sheet No.	5



Robert E Fry Associates
 45 Bridgeman Terrace, Wigan, WN1 1TT

Ground Gas Monitoring Record

Borehole	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (% v/v)		Methane (%LEL*)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Nitrogen (%v/v)		Depth to water (m bgl)	Atmospheric Pressure (mB)	Comments
			Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
WS01	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	20.0	20.0	0.0	0.0	2.10	1002	NA
WS02	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	20.3	19.9	0.0	0.0	0.10	1002	NA
WS03	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	19.6	19.9	0.0	0.0	0.45	1002	NA

Notes:

Monitoring should be for not less than 3 Minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 mins.

* LEL = Explosive Limit = 5%v/v

ND - Not Detected

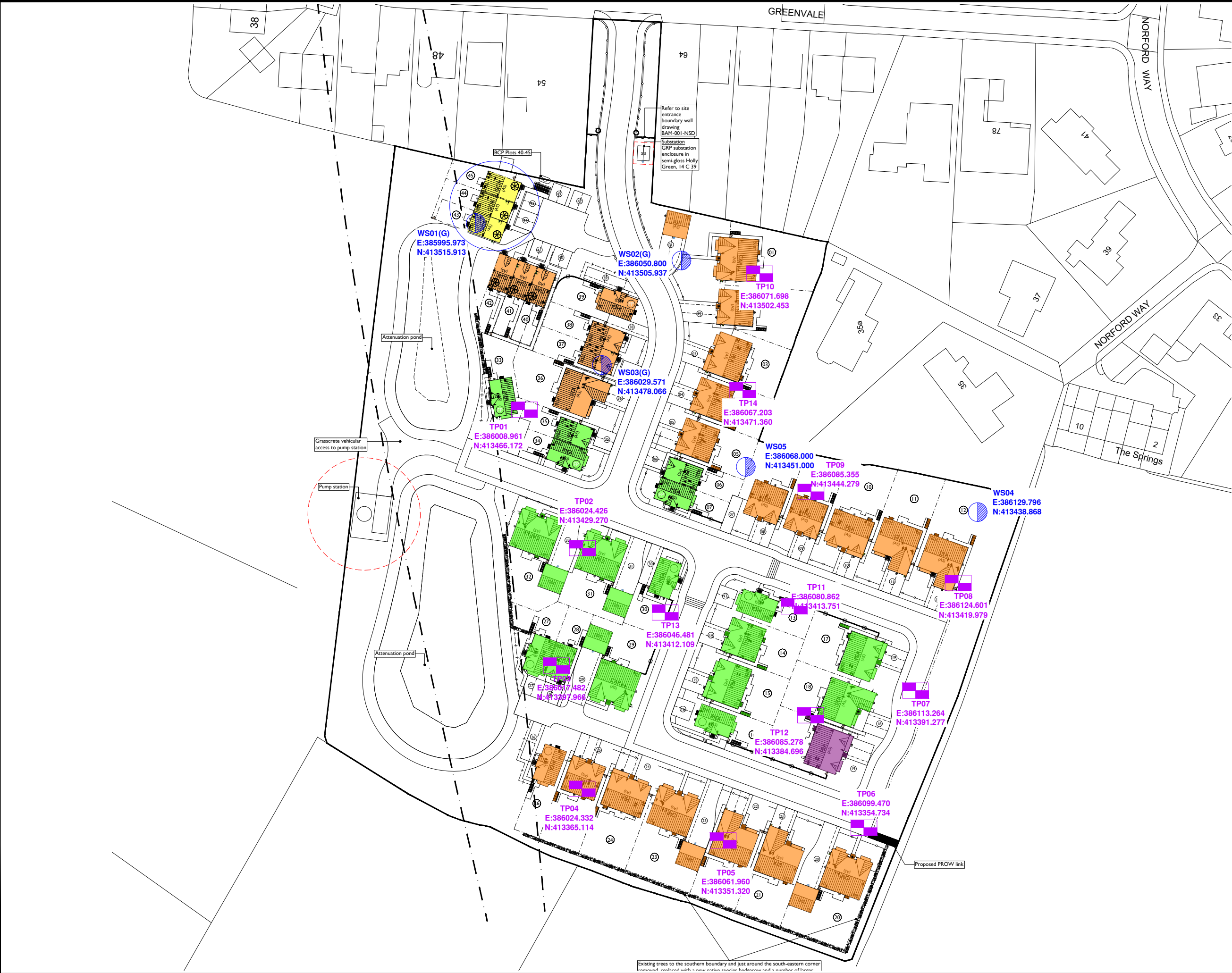
Relevant Information at times of monitoring

Monitored by: Weather : Equipment used: Visible signs of vegetation stress: Boreholes sampled for laboratory analysis: Other comments / observations:	SCB Overcast	Contract:	Greenvale, Bamford
		Date:	30.01.2025
		Job No.	23154
		Sheet No.	6



Robert E Fry Associates
 45 Bridgeman Terrace, Wigan, WN1 1TT

APPENDIX M



KEY

	Approximate Site Boundary
	Deep Strip
	Deep Strip (Tree Roots)
	Piled Plots
	Standard Strip
	CS2 Gas Protective Measures

NOTES

Layout info
Name: Proposed Site Layout
Rev: C

INFO

C Updated planning layout.		AB	04.03.26
B Updated planning layout and drawing format.		AW	20.03.25
A Updated to latest planning layout		AW	10.03.25

Rev.	Description	By	Date
Revision History			

45 Bridgeman Terrace
Wigan
Lancashire
WN1 1TT
01942 626020
info@refa.co.uk
www.refa.co.uk

This drawing is the property of REFA and should not be copied, used or its contents divulged without prior written consent.

Client	
Wainhomes (NW) Ltd	
Greenvale, Bramford Rochdale	
Drawing	
Development Constraints Plan	

Sheet Size	Scale at Sheet Size	Date	Drawn By	Checked By
A3	nts	28.11.24	HG	
Project Number		Drawing Number		Current Revision
23154		23154/02		C