EAL

PHASE I DESK STUDY INVESTIGATION, PHASE II GROUND INVESTIGATION & REMEDIATION STRATEGY

AT

PROPOSED NEW SINGLE STOREY CLASSROON BUILDING, LEVENSHULME HIGH SCHOOL FOR GIRLS

12TH AUGUST 2024

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DISTRIBUTION LIST

Issued To	Title / Company / Location	Telephone No
	The Greater Manchester Education Trust	
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QUALITY ASSURANCE

Issue / Revision	Issue 1	Revision 1	Revision 2
Remarks	Final		
Date	12.08.24		
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1.0 INTRODUCTION

1.1. Background

Eccles Associates Limited (EAL) has been commissioned by HBL Ltd, who are acting as Engineers for the project on behalf of The Greater Manchester Education trust, hereafter referred to as "the Client", to undertake a Phase I and Phase II ground investigation to determine the shallow ground conditions and undertake a geoenvironmental risk assessment for proposed new single storey classroom to be constructed within the grounds of the existing Levenshulme High School For Girls, Crossley Road, Manchester M19 1FS.

1.2. Proposed Development

It is understood that the proposed development comprises the erection of a new single storey classroom building as part of an expansion project.

Figure 1 shows the proposed development.

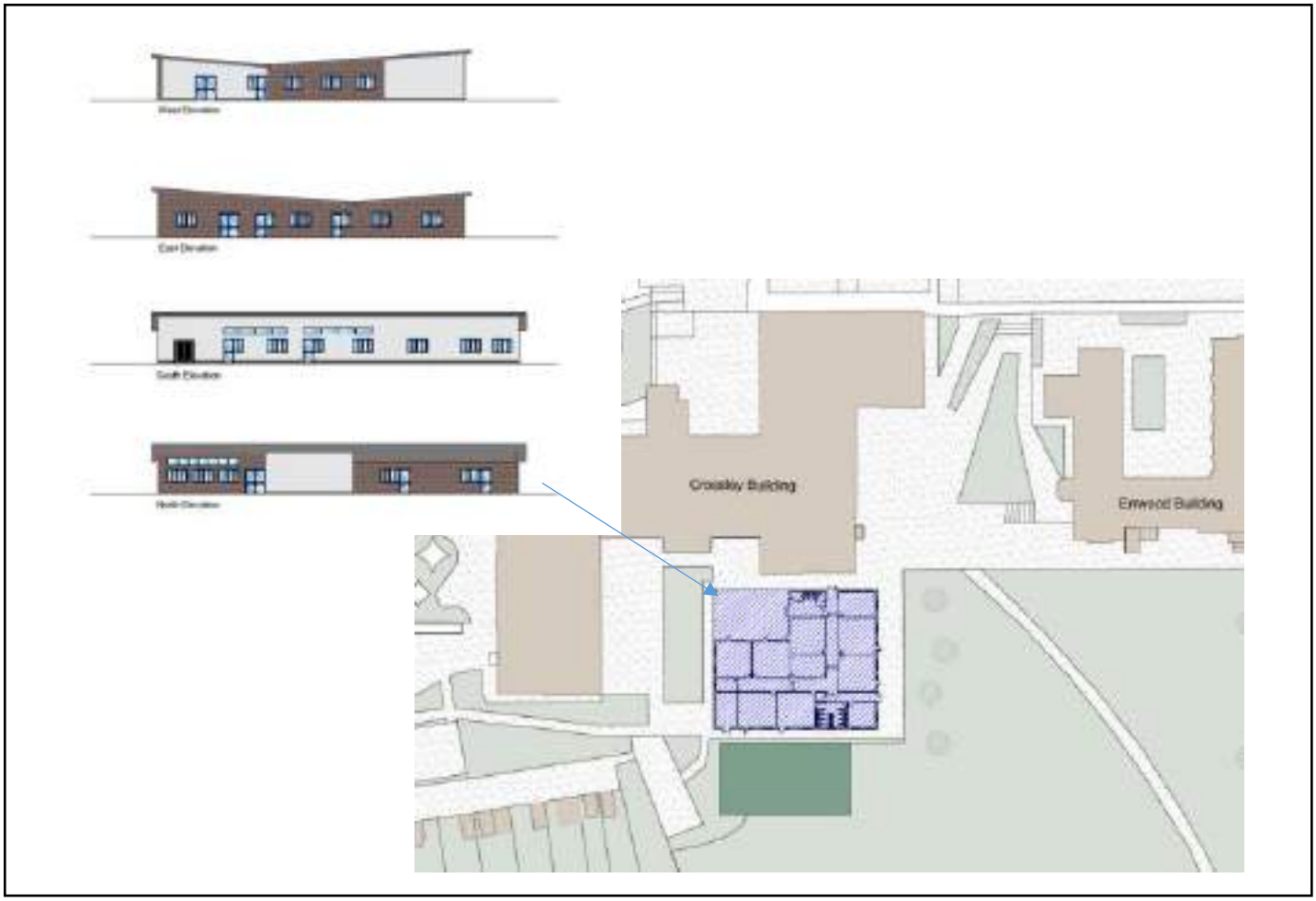


Figure 1: Proposed Development (Provided by the Engineer)

1.3. Planning

Planning permission has been granted with conditions by Manchester City Council Reference 138684/FO/2023.

Condition 4a (reproduced below) requires that a geoenvironmental risk assessment is undertaken:

> 4) a) Before the development hereby approved commences, a report (the Preliminary Risk Assessment) to identify and evaluate all potential sources and impacts of any ground contamination, groundwater contamination and/or ground gas relevant to the site shall be submitted to and approved in writing by the City Council as local planning authority. The Preliminary Risk Assessment shall conform to City Council's current guidance document (Planning Guidance in Relation to Ground Contamination).
>
> In the event of the Preliminary Risk Assessment identifying risks which in the written opinion of the Local Planning Authority require further investigation, the development shall not commence until a scheme for the investigation of the site and the identification of remediation measures (the Site Investigation Proposal) has been submitted to and approved in writing by the City Council as local planning authority.
>
> The measures for investigating the site identified in the Site Investigation Proposal shall be carried out before development commences and a report prepared outlining what measures, if any, are required to remediate the land (the Site Investigation Report and/or Remediation Strategy) which shall be submitted to and approved in writing by the City Council as local planning authority.
>
> b) When the development commences, the development shall be carried out in accordance with the previously agreed Remediation Strategy and prior to occupation a Completion/Verification Report shall be submitted to and approved in writing by the City Council as local planning authority.
>
> In the event that ground contamination, groundwater contamination and/or ground gas, not previously identified, are found to be present on the site at any time before the development in each phase is occupied, then development shall cease and/or the development shall not be occupied until, a report outlining what measures, if any, are required to remediate the land (the Revised Remediation Strategy) is submitted to and approved in writing by the City Council as local planning authority and the development shall be carried out in accordance with the Revised Remediation Strategy, which shall take precedence over any Remediation Strategy or earlier Revised Remediation Strategy.
>
> Reason - To ensure that the presence of or the potential for any contaminated land and/or groundwater is detected and appropriate remedial action is taken in the interests of public safety, pursuant to the Unitary Development Plan for the City of Manchester.

1.4. Objectives

The purpose of this report is to:

- purchase and review desk study information for the site with the aim of satisfying Condition 4a of the planning conditions
- design a phase 2 investigation based on the desk study, design and planning requirements
- provide an interpretive combined Phase I and Phase II report which presents:
  - a full geoenvironmental risk assessment of the site
  - geotechnical recommendations for foundation and floor slab design

Information has been taken from a range of sources including:

- Geoenvironmental and historical map data from Groundsure (Presented in Appendix III and IV)
- Geological maps and memoirs from the British Geological Survey (BGS) website
- Historical borehole log information from the BGS database (Appendix V)

- Online information from the Coal Authority

This report has been devised to generally comply with the relevant principles and requirements of a range of guidance including but not limited to:

- National Planning Policy Framework (HCA, December 2023).
- BS5930:2015+A1 2020: Code of practice for site investigations.
- BS10175: 2011+A2:2017: Investigation of potentially contaminated sites. Code of practice.
- NHBC Standards, 2024.
- The Building Regulations 2010. Part C (HM Government 2013).
- BS8004: 2015: Code of Practice for Foundations.

1.5. Confidentiality

Eccles Associates Ltd has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Eccles Associates Ltd. A charge may be levied against such approval.

1.6. Limitations

The full limitations of this report are presented in Appendix I.

The findings and conclusions of this report have been set out and recommendations given for the proposed construction. If there is a subsequent change in the proposed use, the assessments and conclusions should be reviewed to determine whether they are still applicable for the revised end use.

2.0 SITE SETTING

2.1 Site Details

A Site Location Plan is presented below. The site is located to the north west of the junction of Crossley Road and Erwood Road in Levenshulme, approximately 5.5km south east of Manchester centre with access from Erwood Road.

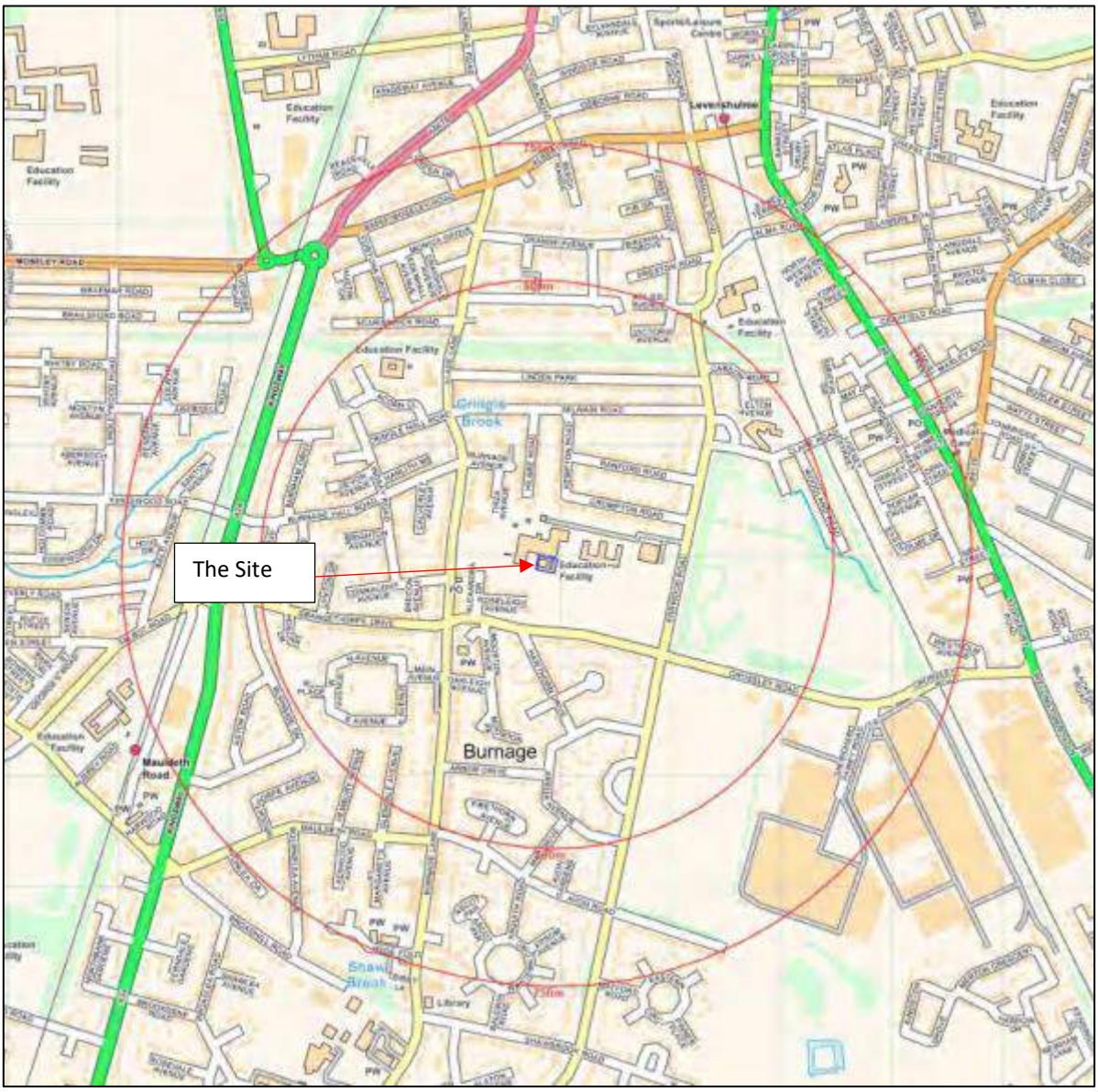


Figure 2 Site Location (Taken from Groundsure Report)

Table 1: Site Summary	
Site Address	Levenshulme High School For Girls, Crossley Road, Manchester, M19 1FS.
Nearest Postcode	M19 1FS
National Grid Reference	Centred at approximate National Grid Reference E: 386974 N: 393383
Site Area	0.09ha (approx.)

The site was visited on 25th July 2024. Photographs are presented in Appendix II.

At the time of the site visit, the site comprised an area of asphalt surfacing adjacent to the existing school buildings with a canopy structure, picnic tables and a bike shelter together with landscaping planters. To the north is the existing school buildings, to the west the site boundary is a beech hedge, beyond which is another school, to the east is a running track and to the south, tennis courts which are located beyond a small area of trees and shrubs.

It is understood that a large attenuation tank is located below the running track. The groundsmen at the school provided anecdotal evidence that it was installed around 15 years ago and comprised a very large and deep excavation, with a ramp at the southern end for excavation plant access.

The site was tidy and well maintained and there was no evidence of any fuel spills or other suspected contamination sources.

Several drains at both shallow (<1m) and deep (>3m) levels are present across the site area including a drainage network into the attenuation tank. Vent pipes for the tank are located in a hedge adjacent to the site, having been relocated to this position instead of directly above the tank, to minimise trip and maintenance hazards.

There were semi mature trees on the western and southern site boundaries mainly comprising beech. A hedge on the eastern boundary is suspected to be a variety of willow. A line of mature sycamore trees is present at the northern end of the running track.

2.2 Site History

A review of the site's history has been made with reference to historical maps (Appendix III) and historical aerial images (Appendix IV) provided by Groundsure. Some extracts from the maps are presented in Figure 3.

The earliest map of 1849 shows the site within a tree-lined agricultural field. The surrounding area is rural, with scattered residences within 200m to the north west and south east and several ponds in all directions. The closest ponds are approximately 78m NW (shown as infilled by 1892) and 80m to the east. The London to Manchester main line railway is approximately 500m to the east. "High farm" is present approximately 50m to the south, including a pump.

Gradual development of residential areas to the west and south west of the site occurs between the maps of 1892 and 1916.

Between 1923 and 1933, High Farm, to the south of the site, is demolished and the existing school is built, with netball courts shown to the north of the site itself. The school buildings cover the area of the former pond, 80m east. Additional buildings are shown at the north east corner of the site by 1956 and a very small pond in the north west corner of the school grounds, approximately 90m north of the site. In 1970, a small building is shown on the western site boundary and within the western sector. Sometime between 2010 and 2015, the existing buildings to the north of the site are constructed and the previous buildings demolished, with the existing canopy and bike store present on the site since some time after 2015.

The immediate surrounding area has remained mainly residential, with industrial sites present over 500m away including an engineering works (1905 – 2010) and a Motor car works (indicated as "works" from 1965) (1934 – present).

1881:	2009

Figure 3: Historical Extracts:

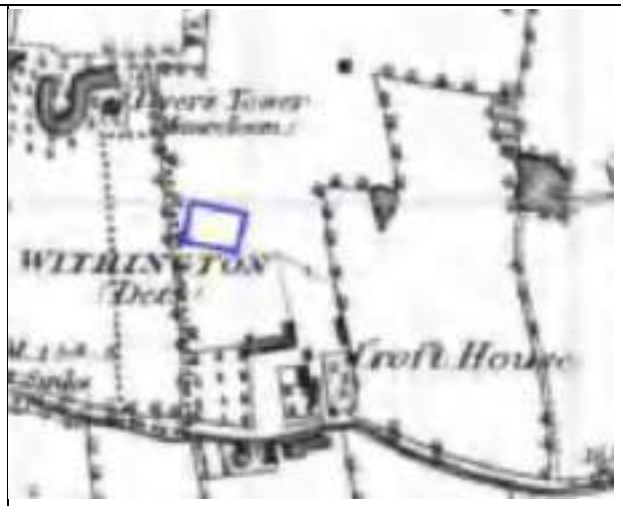
2.3 Geology

Information about the geology of the site has been taken from British Geological Survey (BGS) maps. memoirs and databases available online, as well as the Groundsure Report (Appendix IV).

Some made ground is indicated 92m to the north west (infilled ground) from Groundsure information. This is anticipated to be infilled ponds. The one to the NW has been infilled since at least 1892 hence any gas generation is expected to have long since ceased. Similarly, the infilled ground indicated to the east is anticipated to be a pond infilled since at least 1933 hence a ground gas risk is not anticipated.

The infilled ground is shown in Figure 4.

Groundsure: Infilled Ground



1849 Mapping: Historical ponds

Figure 4: Infilled ground

The geology at the site is indicated to be glacial till (i.e. glacial clay). A geological stratum boundary is present in the bedrock below the site with bedrock to the north east comprising the older Carboniferous Halesowen Formation, and bedrock to the south west comprising the younger Collyhurst Sandstone Formation. The map notes "Clay 5 to 14 ft on red sandstone" (1.53 to 4.26m) in boreholes near to the site. A map extract is presented as Figure 5.

The Halesowen Formation is described as *"Grey-green, micaceous sandstone (litharenite), and grey-green mudstone, with thin coals and limestone beds known as the 'Spirobis' limestone, with local intraformational conglomerate, strata may be reddened, locally"*

The Collyhurst Sandstone Formation is described as: *"A soft red sandstone with abundant beds of "millet seed" sand grains alternating with beds of fine-grained sharp sand (Tonks, and others, 1931); some interbedded grey sandstones locally"*.

To the north of the site, strata exposed in a railway cutting are indicated to dip 10 and 20 degrees to the south west.

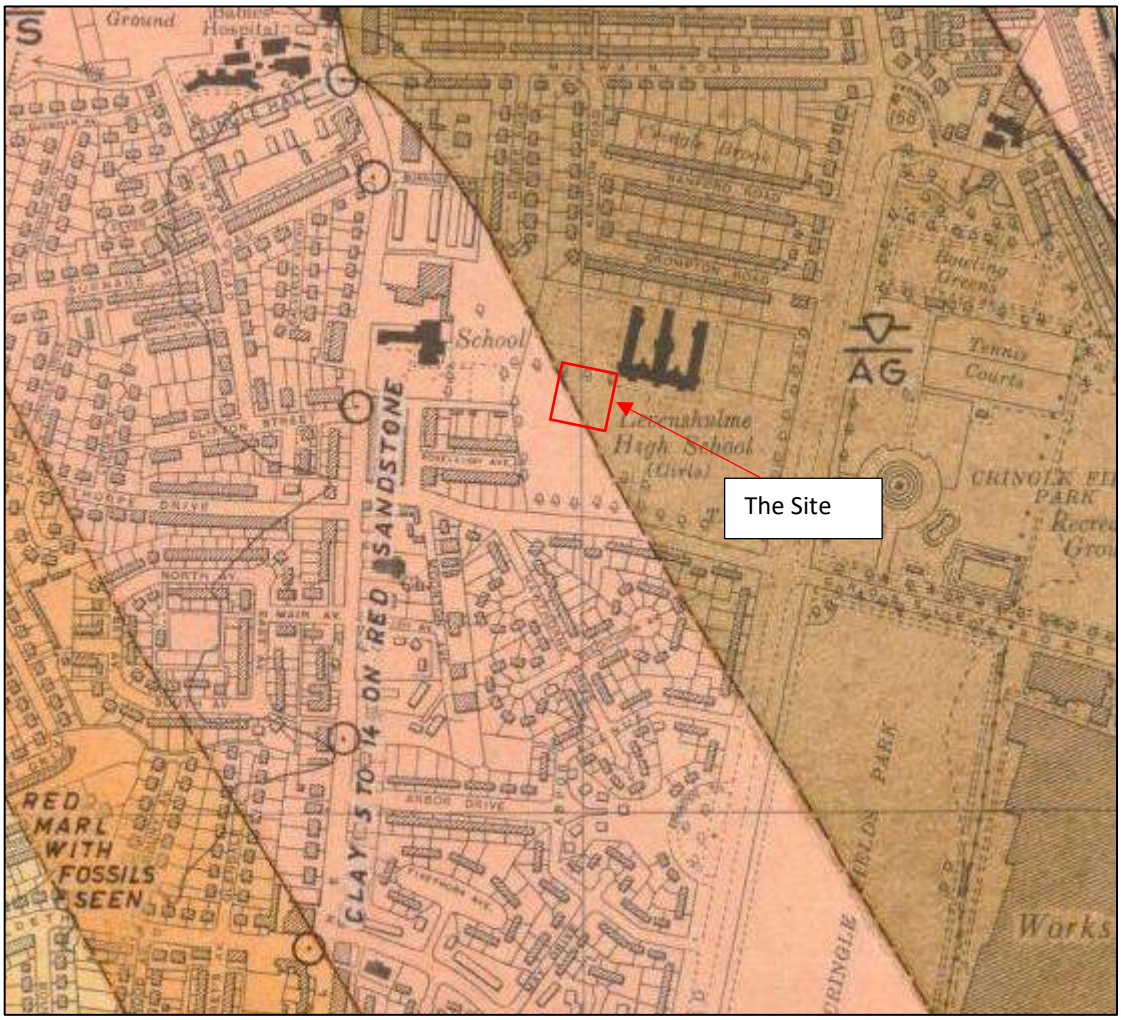


Figure 5 Extract from BGS 1:10,000 map SJ89SE
Halesowen Formation to the NE (Previously named "Ardwick Group") and Collyhurst Sandstone to the SW

There were no BGS borehole logs available within the site or in the immediate area. Most of the historic borehole records within a 1km radius being shallow and not penetrating beyond the glacial clays (max 3.4m deep). A hole 0.64km east of the site (SJ89SE455) records dense sand at 3.10m depth below the clay, which may represent rockhead. A water well located 0.57km south of the site (SJ89SE796) records yellow sandstone at 1m depth. SJ89SE4 is a report written in 1890 which includes a borehole drilled to 396m (1300 feet) 0.4km north of the site, through the Triassic, Permian and Carboniferous strata. The drift was 10.97m thick. No coal seams are mentioned. The BGS records are presented in Appendix V.

Coal Authority information indicates the area to be absent of coal mining risk, and there is no evidence for other mining or quarrying. However, the site is indicated to be in a Surface Coal Resource Area, from BGS and Coal Authority Information (https://mapapps2.bgs.ac.uk/coalauthority/home.html). These areas are defined as:

> *"The Surface Coal Resource Areas define the coal resources capable of being extracted by surface mining methods, often referred to as 'opencast'. This information is used by Local Planning Authorities as part of the duty to safeguard minerals from unnecessary sterilisation. The surface coal resource areas shown have been derived from current information available to the Coal Authority and British Geological Survey".*

The area indicated coincides with the area of the Halesowen Formation on the geological mapping. As there is already a significant amount of well established residential and infrastructure development over this area, it is not anticipated that surface mining will be an issue in the future.

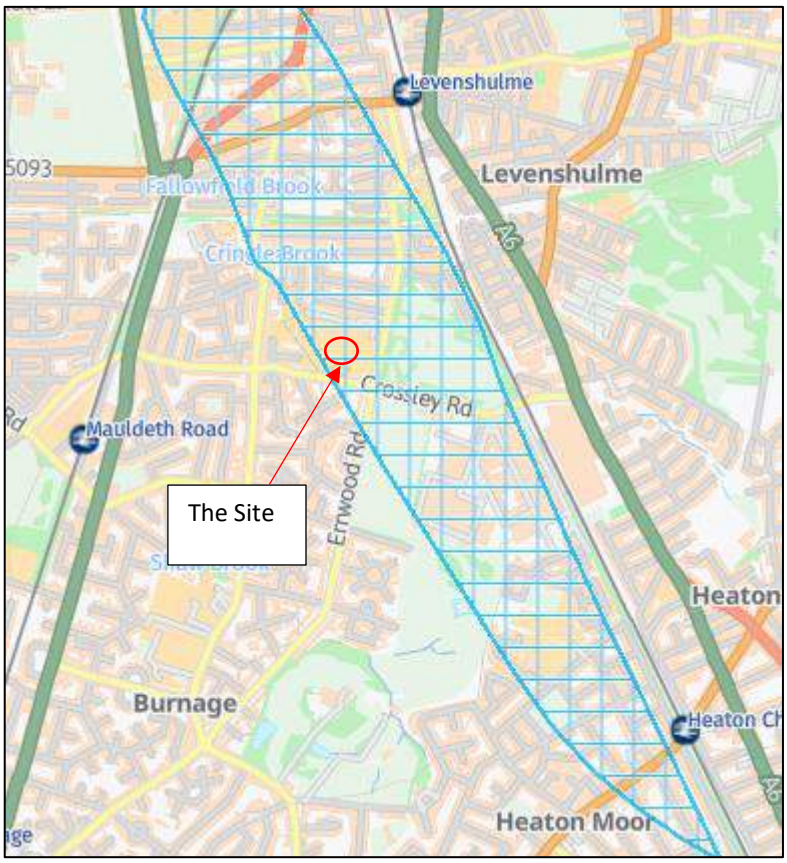


Figure 6 Extract from Coal Authority Information

2.4 Geoenvironmental Information

Environmental information for the site taken from the Groundsure Report in Appendix IV and some online sources is presented below.

Table 2: Data Summary: Environmental Setting

	Data Source	Data Summary
Historical and current Industrial Land Use	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	An historical garage is 93m NW (1956 - 1983 mapping) A gas governor is noted 66m North. A substation is noted 72m north.
Licenced Sites	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	No COMAH sites, regulated explosives sites, consents to store hazardous substances, IPC records, sites registered as contaminated land (under Part 2A of the Environmental Protection Act), licenced industrial activities, pollutant release or radioactive substance authorisations within 500m There are no licenced discharges within 300m
Landfill and Waste	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	No active or historical landfills or waste sites are noted within 500m
Unexploded Ordnance Risk	https://zeticauxo.com/	Moderate risk indicated. A moderate risk is indicated across most of the south and east areas of Greater Manchester. The large factories 500m+ to the south east of the site were Luftwaffe targets.
Radon	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	Probability of <1% of homes above Action Level. No further action required.
Mining	Coal Authority Information https://mapapps2.bgs.ac.uk/coalauthority/home.html July 2024	No mine entries, no recorded underground workings, no past opencast records The site is within a Surface Coal Resource Area (See section 2.3)
Aquifers	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	Aquifer (drift) – Secondary Aquifer (solid) – Principal (Collyhurst Sandstone) Aquifer (solid) – Secondary (Halesowen Formation)
Groundwater Abstraction	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	The site is not within a source protection zone The nearest groundwater abstraction is 593m SW and ceased in 2014. There are no active abstractions within 1km
Hydrology	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	The nearest surface water feature is Cringle Brook, located 250m north. There are no surface water abstractions within 2km

		Comments on flood risk are outside the scope of this report, however, a flood risk is not indicated from rivers.
Ecology and Environmental Designations	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	There are no Special Protection Areas, Special Area of Conservation, National or Local Nature Reserves, Biosphere reserves, Forest parks, Sites of Special Scientific Interest (SSSI) , Green Belt or RAMSAR sites within 1km of the site. The site is within an SSI impact zone but the proposed development is not one which requires consultation for this aspect.
Archaeological & Building Heritage	Groundsure Report: GS-9UC-ONT-Q5H-RGF July 24	There are no Areas of Outstanding Natural Beauty, National Parks, Heritage Sites, scheduled ancient monuments, and the site does not contain any listed buildings

3.0 HAZARD ASSESSMENT & PRELIMINARY CONCEPTUAL SITE MODEL

3.1 Hazards Identified with the Proposed Development

The hazard identification is based on the assumptions presented below:

- The site will be a school building (nearest standard land-use for contaminated is commercial development as the area is covered by buildings and hardstanding and will continue to be so after the development is completed.
- There is no soft landscaping proposed for this development.
- Drinking water will be from mains supply.

3.2 Potential Sources of Contamination

For the purpose of this assessment the potential contaminants of concern have been considered according to whether they are likely to have originated from on-site or off-site sources.

- Potential On-site Sources of Contamination:
  - Made Ground from previous development in the 1930s, 1950s and 1970s. Given the age of this development, asbestos could be present in demolition materials.
- Potential Off-site Sources of Contamination:
  - Infilled ponds are unlikely to pose a gas generation risk due to their age and distance.
  - No other potential off-site sources in the vicinity of the site.

3.3 Potential Receptors of Contamination

Based on the data previously discussed, the following potential receptors to contamination have been identified:

Table 3: Identified Potential Sensitive Receptors	
A	Humans – Pre-development completion, i.e. working on site during demolition and construction.
B	Humans working on the site including children post construction.
C	Off-site Human Health receptors: Adjacent residential properties
D	Surface Waters: No surface water receptors identified apart from drainage to the buildings
E	Groundwater –Groundwater within drift deposits and primary aquifer bedrock
F	Local flora and fauna during and post demolition and construction.
G	Building structure and services.

The possible contaminant linkages are discussed below. It should be noted not all may be formed between all sources and receptors.

3.4 Identification of Pathways

<u>Pathways to Human Health</u>
There are various routes by which a potential contaminant may reach a receptor. For example, in areas where contaminated material is exposed, dermal contact with the material, inhalation or ingestion of dust may occur.

Inhalation or ingestion of dust and water could occur during the construction and development phase at the site. Pathways from dermal contact with soil and groundwater may also arise. It is considered that the risk of short-term exposure for ground workers and other construction workers is low unless there are asbestos fibres in the Made Ground/ demolition wastes.

Post construction, the site will be entirely hardstanding and buildings, with a limited amount of perimeter landscaping. Pathways such as long-term direct contact and dust inhalation/ingestion, and contaminant uptake by home grown vegetables therefore do not apply.

Ground Gas
Gas and vapour entry into buildings could occur through service ducts and trenches.

Pathways to Controlled Waters
Leaching of contaminants could occur through any granular glacial till to groundwater in the Secondary aquifer drift and then into the bedrock. However, some attenuation in the unsaturated zone is anticipated, and layers of glacial clay are anticipated between the granular material and the bedrock, which will further slow transport of leached chemicals.

Overland pathways to controlled waters are not anticipated due to the distance to the Cringle Brook (250m north).

Other Pathways
Other potential pathways that are possibly less significant to the site but still require consideration are chemical attack on foundations and services and permeation of contaminants through water pipes.

3.5 Conceptual Site Model

In accordance with BS 10175, a schematic section has been developed for the site based on the previously presented data and contaminant linkage assessment:

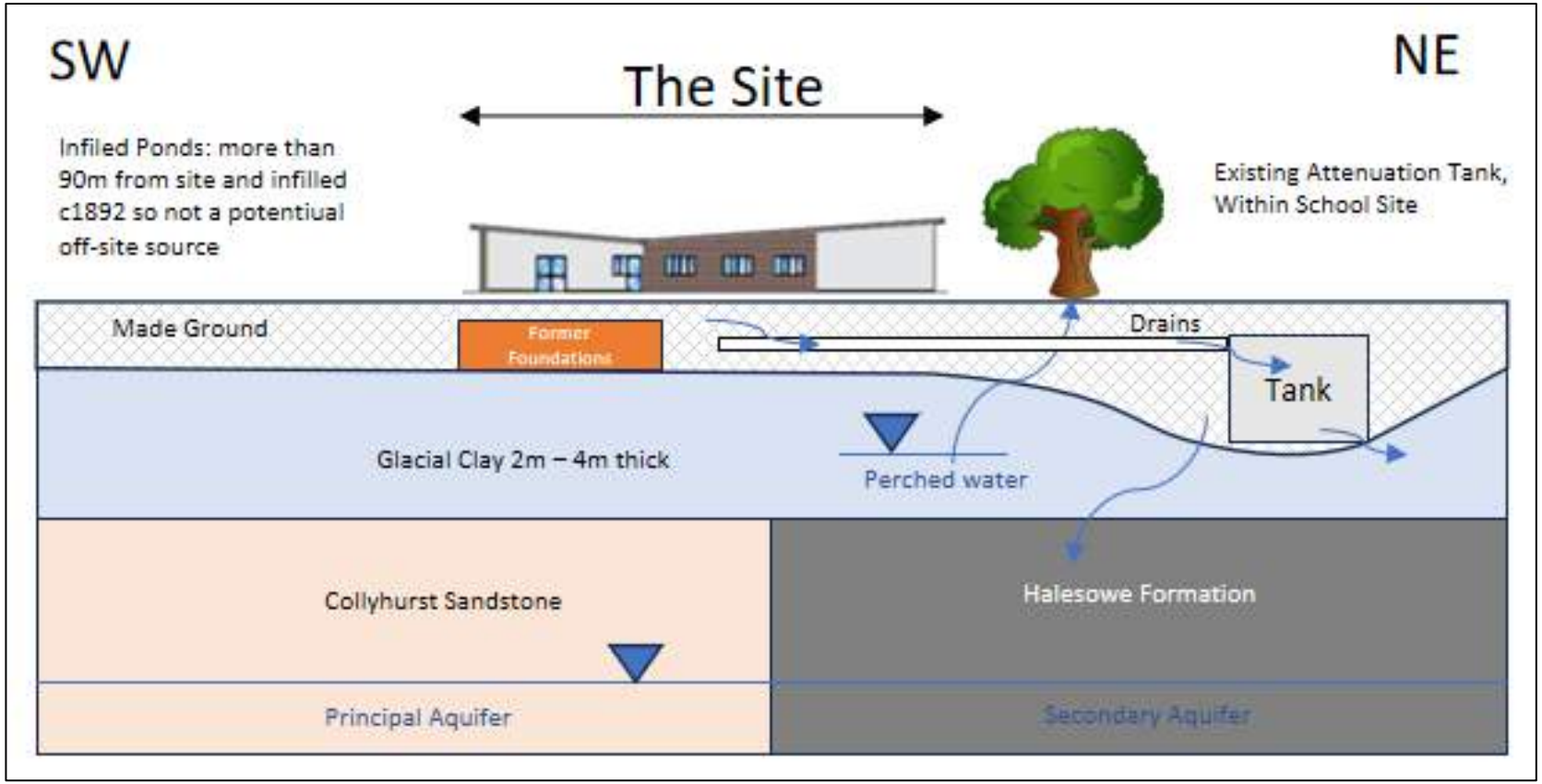
The model shows the predicted geology and topography, the major on site potential contamination sources and vulnerable receptors, based on data previously presented in the report. The information presented above represents the preliminary conceptual ground model for use in the design of the intrusive investigation, and may need to be revised based on information obtained as part of the intrusive investigation.

The ground model and proposed end use described above should be considered broadly representative of a commercial end use as defined in SR3 “Updated Technical Model to the CLEA Model” (SC050021/SR3, 2011) for the purpose of this report.

The model is presented in Figure 7. Overall, the contamination risk is low due to the whole of the development area being covered with the building or hard standing so pathways such as dust, direct contact and similar do not apply.

The largest risk is from the previous development of the site (including potential asbestos), is during construction and this can be mitigated by removal.

Figure 7: Conceptual Model (not to scale)



4.0 SITE INVESTIGATION

4.1 Site Investigation Rationale

A Phase 2 site investigation was proposed in order to confirm the geological model and provide data to quantify the risk assessment. Exploratory holes were proposed in order to:

- Inform a profile of the ground over a depth range which may be affected by foundation pressures
- Carry out in situ testing for foundation design
- Take soil samples for geoenvironmental laboratory analysis to provide information for the risk assessments
- Take soil samples for geotechnical laboratory analysis to provide information for the design

The as-drilled hole positions are shown in Figure 8. The location of the exploratory holes was planned based on:

- Avoiding existing services
- Targeting areas where buildings are proposed
- Installing groundwater monitoring wells to confirm the anticipated ground water levels but also measure ground gas to confirm that there is a very low ground gas risk at this site as expected from the desk study.
- Targeting the existing attenuation tank to examine the depth of cover

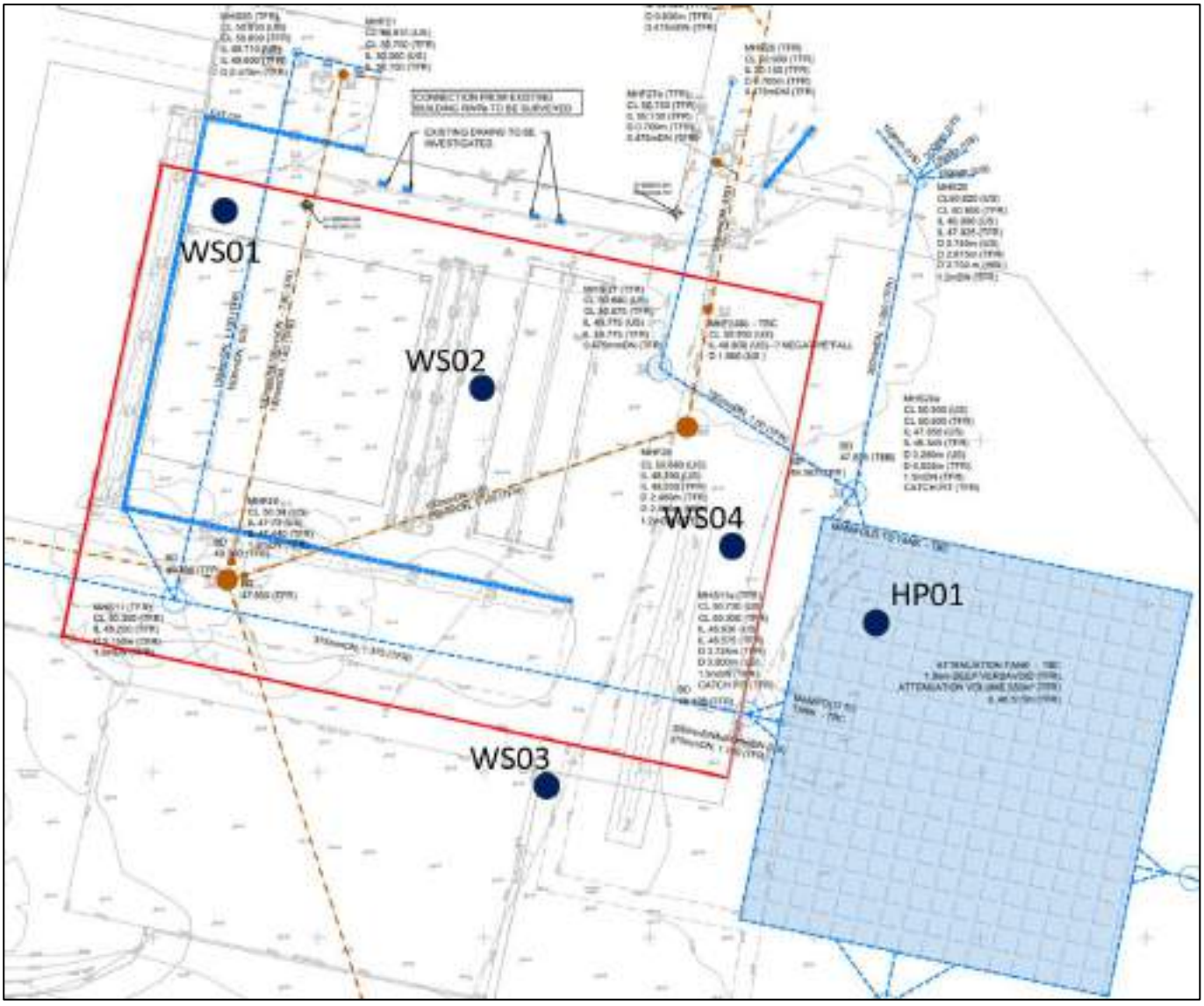


Figure 8:Site Investigation Positions

4.2 Fieldwork

Fieldworks were conducted on the 25th June 2024. An experienced geologist supervised the works, described the ground encountered and carried out in-situ testing.

Fieldwork procedures were undertaken in accordance with the relevant sections of: BS5930:2015 + A1:2020 Code of Practice for Site Investigations and BS10175: 2011+A2:2017: Investigation of potentially contaminated sites.

The investigation comprised:

- 4 no windowless dynamic sampling holes with SPT testing (WS)
- Installation of 3 no. monitoring wells
- 1 no Hand excavated trial pit (HP)

The depths of exploratory holes, descriptions of strata encountered and comments on groundwater conditions and ins itu testing are given on the records in Appendix VI with a list of all of the holes in Table 4 below:

Table 4: Summary of Exploratory Holes

Exploratory hole ID:	Type:	Date:	Maximum Depth (m bgl):	Termination reason:
WS01	WS	25/07/2024	4.13	Refusal
WS02	WS	25/07/2024	4.38	Refusal
WS03	WS	25/07/2024	4.16	Refusal
WS04	WS	25/07/2024	3.42	Refusal
HP01	HP	25/07/2024	1.37	Maximum depth of hand tools

5.0 GROUND CONDITIONS

5.1 Topsoil and Anthropogenic Material

Made Ground was present in all locations to between 0.46m and 1.30m depth below the proposed building and >1.37m in HP01, above the attenuation tank.

The asphalt surfacing was proven to be 0.15m and 0.20m thick in WS01 and WS102. At WS02, the surface was composed of two layers of 0.10m thickness.

Below the asphalt, hardcore predominantly comprising limestone gravel was present to 0.60m bgl in both holes. In WS01, a textile layer was present at the base of the hardcore. In WS01, below the membrane, reworked glacial clay with fragments of ash and glass was present, with possible former brick foundations identified at 1.25-1.30m bgl. In WS02, a 0.10m thick layer of brick, limestone and ash gravel was encountered below the hardcore and above the reworked glacial material. Reworked glacial clay was encountered to 0.8m bgl.

WS03 and WS04 were undertaken in areas of grass. Topsoil was present to 0.25m (WS03) and 0.18m (WS04). Hardcore was present below the topsoil in both holes to 0.50m and 0.46m, respectively, with a higher demolition rubble material type content than the other two holes. In WS03, the base of the made ground was a 0.10m thick layer of reworked glacial clay with demolition material and ash.

HP01 encountered made ground to the base of the hole at 1.37m (limit of hand tools). The excavated material was predominantly reworked glacial clay and is anticipated to be backfill to the excavation for the attenuation tank. The top of the tank was not encountered. It is noted from the drainage survey that the depths to invert level from the inspection covers at surface next to the tank are between 3m and 4m bgl, so it is expected that the tank is deep and sitting on bedrock.

5.2 Natural Superficial Material

Natural glacial clay was present below the made ground in all window sample locations. The upper layers of the clay were typically stiff and weathered to an orange brown and grey colour. Unweathered clay was very stiff, reddish brown and grey.

Below approximately 3.0m, the clay had a higher sand content and finer gravel.

There was evidence of desiccation in some of the glacial clay and rootlets were observed in WS01, WS02 and WS03 to between 1.00m and 2.50m depth.

5.3 Bedrock

Bedrock was encountered in all 4 window sample holes from between 3.00m (WS04, weathered) and 4.24m (WS02), with pinkish brown mudstones being recovered from WS01, WS02 and WS03. Very thin yellowish brown sandstone beds were present in WS01 and WS02. WS04 refused in a clay with mudstone lithorelicts.

This rock matches the description of the Halesowen Formation from the BGS information and is not the Collyhurst sandstone so there is no Principal Aquifer below the site. Note that the geological boundaries shown on the map are dashed and are conjectures. With no rock outcrops, deep boreholes or similar the accuracy of the geological boundaries in this area will not be very high.

5.4 Groundwater

Groundwater was not encountered.

5.5 Contamination

There was no visual or olfactory evidence of contamination noted during the fieldwork. All anthropogenic fragments were low risk inert type in the made ground.

5.6 In Situ Testing: SPT and Hand Shear Vanes

Standard Penetration Tests (SPTs) were carried out in the glacial clays in the window sample holes. Hand shear vanes were undertaken within hand excavated inspection pits where possible.

The SPT tests are shown in Figure 9, corrected for hammer energy (Er), together with the ground model.

A plot of shear strength against depth is presented as Figure 10 using Stroud's correlation with SPT N values, and the hand shear vane average results. The shear strength of one sample was also tested in the laboratory (see section 5.7) and is also presented on the graph.

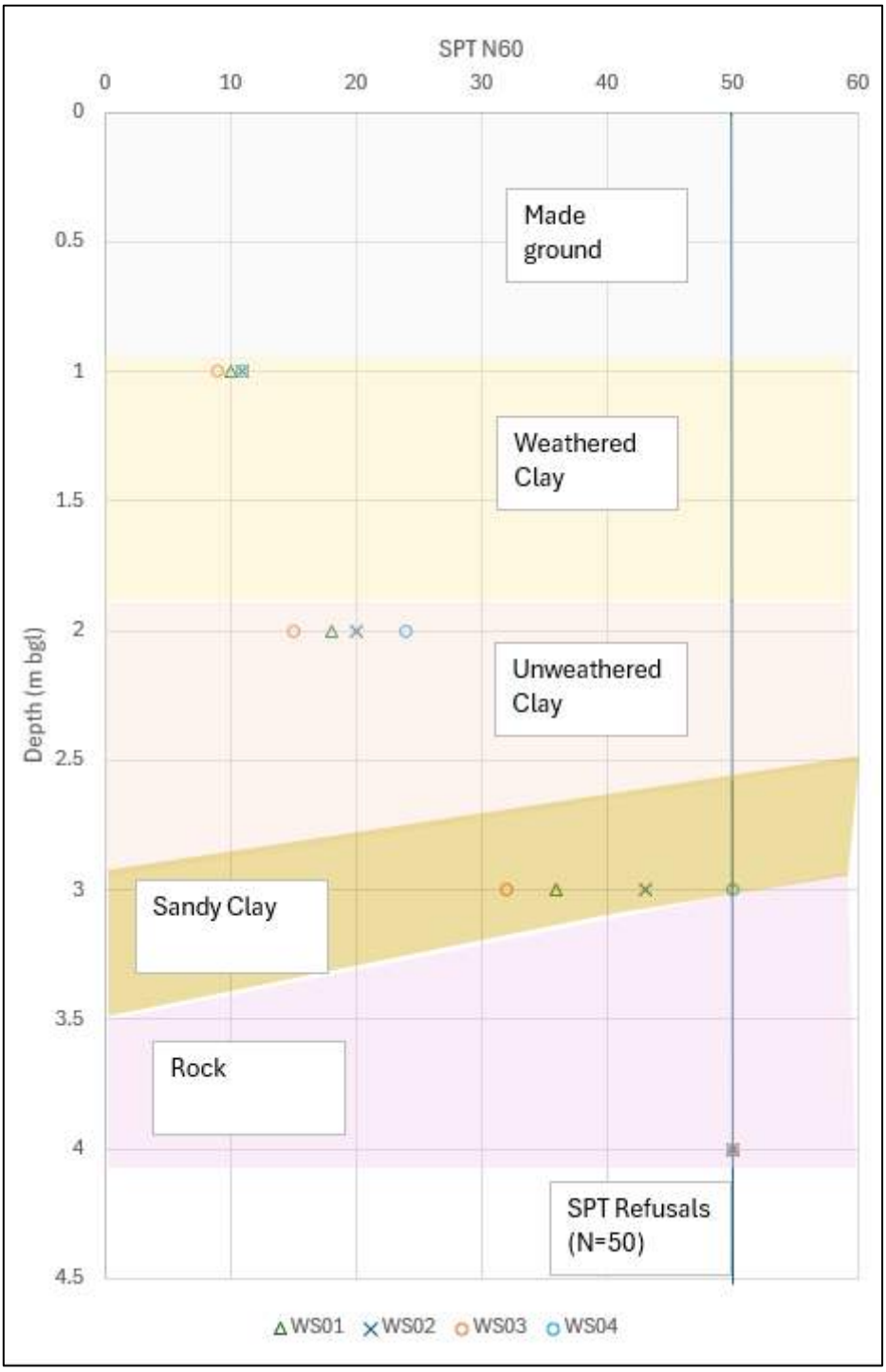


Figure 9: SPT N_{60} v Depth and Ground Model

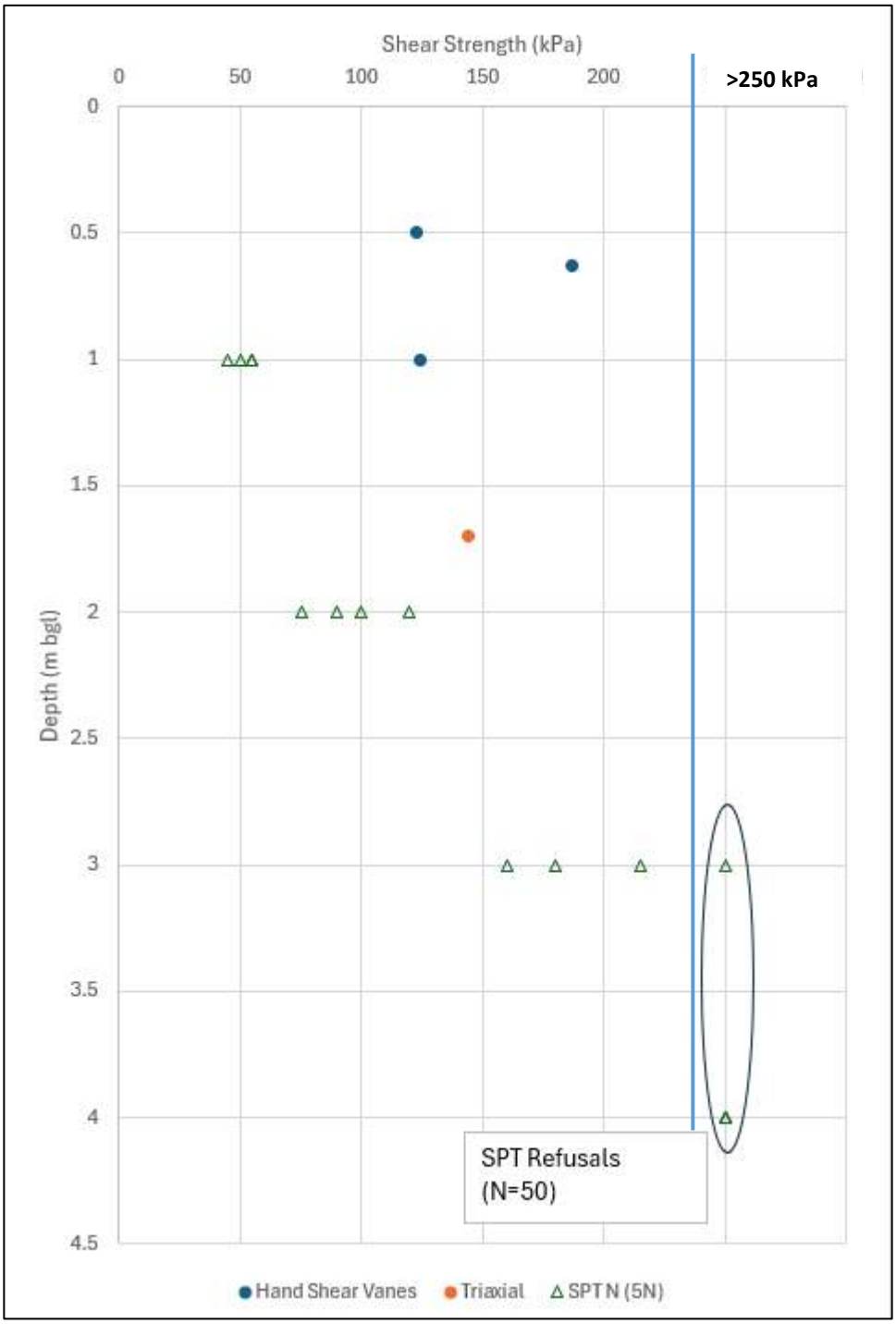


Figure 10: Shear Strength v Depth

5.7 Geotechnical Testing

Representative samples were selected from the materials present on site to provide an overview of the geotechnical properties for foundation design. Samples were sent to PSL, a UKAS accredited testing laboratory in Doncaster. The results are presented in Appendix VII and are summarised below.

Laboratory testing was undertaken on six samples of the glacial material to obtain plasticity information. The upper clay is assessed as being of intermediate plasticity and medium volume change potential when assessed in accordance with NHBC Chapter 4.2. The lower, sandier, clay is assessed as being of low plasticity and low volume change potential when assessed in accordance with NHBC Chapter 4.2.

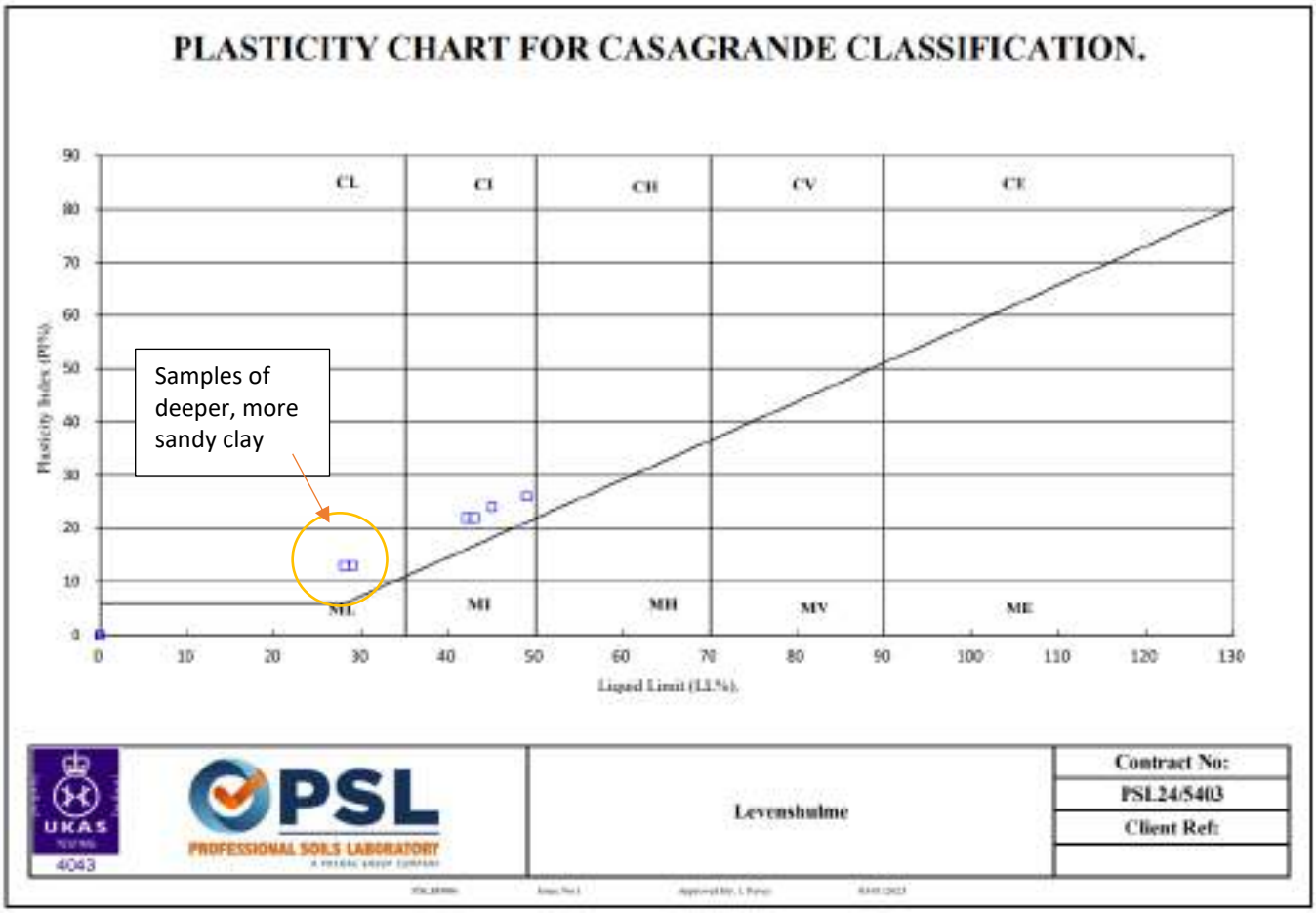


Figure 12: PSL A Line Plot

The natural moisture content of the glacial clays was at or below the plastic limit in all the samples, indicating generally stiff and dry material to be present (Figure 13).

Natural moisture at dry of the plastic limit is often an indication of general desiccation. In accordance with BRE Digest 412 Desiccation in Clay Soils (1996), if the moisture content is <0.4 times the liquid limit this can indicate desiccation. Three of the six samples are classed as desiccated using this formula. The three samples are of the sandier clay below 2.5m, and 1.9m in WS03, which is between the willow hedge and a group of beech trees.

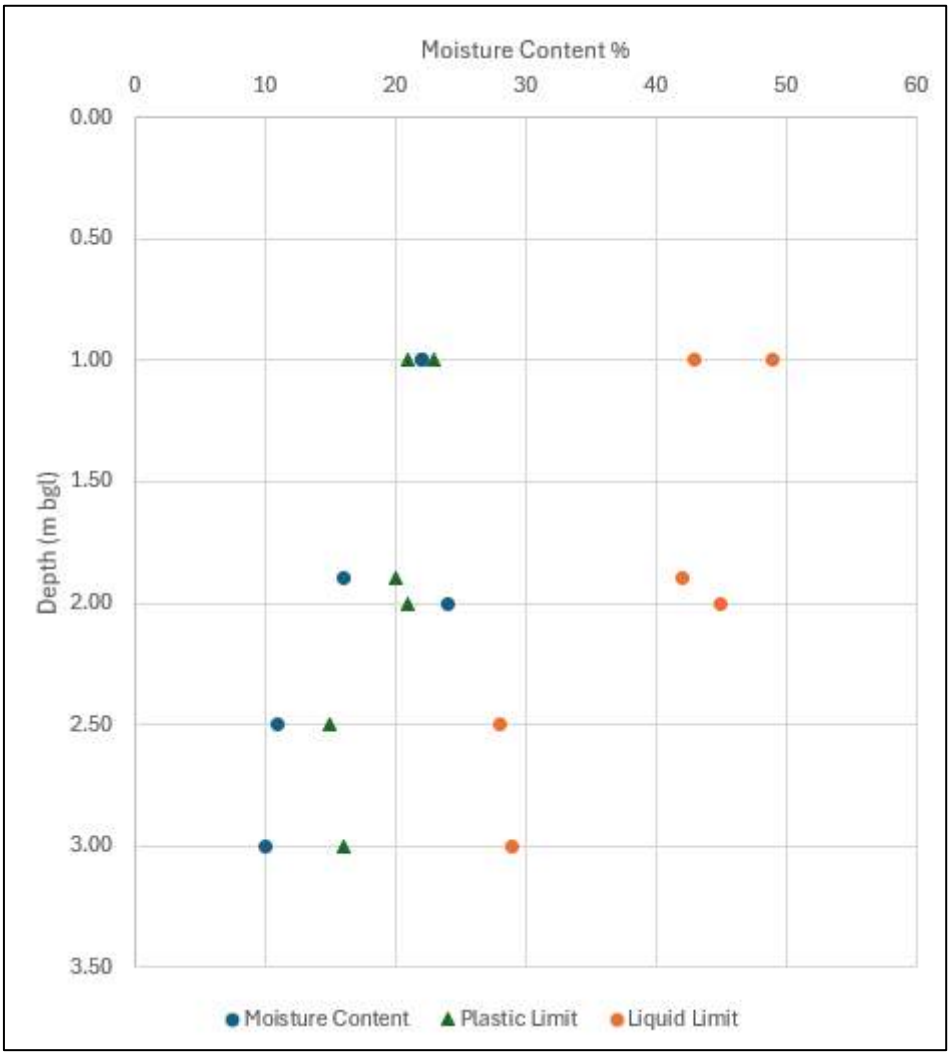


Figure 13: Atterberg Limit Plot v Depth

One sample of unweathered glacial clay retrieved from the windowless sampler tube was cut from the tube and preserved in plastic wrap and tested for shear strength in a triaxial cell. The sample was at a depth of 1.70m and an undrained shear strength of 144kPa was obtained. The result is presented in Figure 10.

5.8 Geoenvironmental Testing

In order to provide an initial assessment of the geoenvironmental risk, representative samples of the materials present on the site at shallow depths were assessed for a range of contaminants based on the desk study and site history.

Samples for chemical analysis were stored on site in a cool box and submitted under chain of custody procedures to DETS who are UKAS accredited in accordance with ISO17025 and are also MCERTS accredited for soil analysis in accordance with the Environment Agency's scheme. The laboratory carries out Quality Assurance and Quality Control in accordance with BS ISO 17025 and participate in external laboratory comparison and quality control schemes. Details of the accreditation and the methods of analysis are provided on the relevant test reports.

The results of the laboratory analysis are presented in Appendix VII and summarised in Table 8:

Table 5 : Geoenvironmental Testing			
Location	Depth	Testing	Material Type
WS01	0.6-0.75	Geochemical Suite*	Clay Made Ground
WS01	0.9-1.0	Geochemical Suite*	Reworked Natural
WS02	0.6-0.7	Geochemical Suite	Granular Made Ground
WS03	0.1-0.2	Geochemical Suite*	Topsoil
WS04	0.25-0.46	Geochemical Suite, WAC Suite	Granular Made Ground
WS01	1.4 - 1.5	BRE SD1	Top of natural clay
WS02	0.9 - 1.0	BRE SD1	Top of natural clay
WS02	3 - 3.45	BRE SD1	Sandy clay
WS02	4.30	BRE SD1	Rock

Following the presence of elevated PID and methane readings in the first round of monitoring, additional chemical testing for TPH was added to three of the samples, indicated with *.

5.9 Monitoring

Groundwater and ground atmosphere monitoring is ongoing. Results to date (2 visits) indicate some gas flow in WS01 together with methane (0.3 to 2.5% v/v)(WS01 and WS02 only), carbon dioxide (0.9 to11.3% v/v). In WS01 and WS02 only, on the first visit only, carbon monoxide (2.6 to 4.2 %v/v).

Evidence of hydrocarbons was also encountered:

- WS01: Hexane 0.134% & 0.100% on the two visits and PID of 2.1 and 1.1 ppm
- WA02: Hexane 0.04 then <0.001% and PID 1.1 and <1 ppm

The source of this gas is unknown and may be related to the made ground at the site. It could be a minor spillage by the contractor who placed the asphalt or similar. It is unlikely to be related to the school use.

Further assessment will be made upon completion of the monitoring.

6.0 GEOENVIRONMENTAL ASSESSMENT

6.1 Assessment

The assessment of contamination has been carried out in accordance with the overall guidance presented in Environment Agency (2021) "Land Contamination Risk Management (LCRM) procedures. Generic risk assessment is a two-stage process. Firstly, in the Risk Estimation stage, the measured contaminant concentrations are compared to the relevant first tier assessment criteria where they have been published. Where there is a suitable dataset, this is done after carrying out statistical analysis to determine the upper confidence limit on the true mean. Otherwise, maximum or specific data points are compared directly. The second stage, Risk Evaluation, comprises an authoritative review of the findings with other pertinent information, in cases where the first stage assessment criteria are exceeded, in order to consider if exceedance may be acceptable in the particular circumstances.

The aspects of risk from substances in the ground considered below are as follows:

- human health;
- plant life;
- pollution of Controlled Waters;
- water supply pipes
- below ground concrete; and
- ground gases.

6.2 Assessment for the Protection of Human Health

The Generic Qualitative Risk Assessment (GQRA) has been carried out assessing the risk based on commercial end use as this is the closest standard land use and is in line with current regulations and guidance for England (there are no published criteria for land being used as a school). A summary of the chemical test results is presented in Appendix VIII (including the source of the assessment criteria) with a comparison against assessment criteria for commercial end use, but the residential criteria are also presented in this table for comparison.

The results of the risk assessments indicate that the concentrations of metals met the criteria for residential use and the pH was near neutral (from 7.0 to 7.9). Asbestos was not detected. However, there were elevated concentrations of PAHs and TPH in the made ground in WS04 higher than residential reuse criteria but lower than commercial reuse criteria. The concentrations in the other locations presented below for comparison:

- PAHs:
  - WS01 to WS03 – 4 No tests, all meeting the criteria for residential use.
  - **WS04 0.25 to 0.46m:**
    - Total PAHs 380 mg/kg
    - Benzo(a)pyrene 33.5 mg/kg, use as a PAH marker, exceeds residential criteria of 5 mg/kg
    - Four other individual PAHs exceed residential land use criteria
- TPH – five test results:

  Four with low concentrations:
  - WS01 0.60 – 0.75m:
    - TPH CWG (C_5 - C_{25}) 139 mg/kg
    - All aromatic >C_{12}, No aliphatic content
  - WS01 0.90 - 1.00m: EPH (C_{10} - C_{40}) <2 mg/kg
  - WS02 0.10 - 0.20m: EPH (C_{10} - C_{40}) 166 mg/kg
  - WS03 0.10 - 0.20m: EPH (C_{10} - C_{40}) 14 mg/kg

  One result with elevated TPH:
  - **WS04: 0.25 - 0.46m**:
    - EPH (C_{10} - C_{40}) 2,220 mg/kg with split:
    - Mineral Oil 82 mg/kg
    - Aromatics 2,138 mg/kg
- BTEX WS04: 0.25 - 0.46m
  - Benzene, Toluene & Ethylbenzene all less than the detection limit
  - Xylene (total) 17 ug/mg very low,

A further assessment has been carried out against criteria for use as Public Open Space (Park Use). PAHs (including benzo(a)pyrene) exceed the criteria for park use.

Overall, in terms of human health criteria there is a localised source of contaminants present around WS04. However, because all of the development area will be covered with a building or hard standing, no specific remediation is required due to the risk of contaminants to human health as the hard standing and buildings will break the pathway where the impacted soil remains on site. Therefore, no specific remedial measures are required due to the long-term risk to human health. However, the groundworks contractor should ensure that the generation of dust is minimised during their works.

6.3 Assessment for the Risk to Plant Life

This is not relevant for the development with no soft landscaping proposed but it is included for completeness. The concentrations of the phytotoxic metals copper, chromium, nickel and zinc have the potential to be harmful to plants. The measured concentrations of these metals are all below above the guideline values for the protection of plants as presented in the MAFF document "Code of Good agricultural practice for the protection of soil".

6.4 Assessment for the Protection of Controlled Waters

The following controlled waters receptors are present:

- Secondary Aquifer bedrock (Halesowen Formation is present, not the Principal Aquifer Collyhurst Sandstone)
- Surface Waters: No surface water receptors identified apart from drainage to the buildings
- Source Protection Zones: None

There is >2 m of low permeability clay over the bedrock and the whole site will be covered in the building and hard standing so there will be no infiltration in the development area.

Based on the above and the measured concentrations of total contaminant concentrations at the site there is a very low risk to controlled waters with no further action required.

6.5 Assessment for Water Supply Pipes

Plastic pipe materials are potentially vulnerable to attack from elevated levels of hydrocarbons, which can potentially lead to contamination of potable water supplies and water supply companies also require the risk to their workers from other contaminants in the ground to be assessed. The assessment has been completed in accordance with the current UK Guidance for the Specification of Water Supply Pipes, from United Utilities. This guidance provides threshold concentrations for different pipe material for various chemical groups. The default recommendation for water supply pipes is to use PE with other types of pipework only used if the limits for PE pipes are exceeded.

The presence of the hydrocarbons exceeds the limits for the use of PE so either copper pipe or suitably protected plastic pipes should be used. It is not likely that United Utilities will need to be contacted for the water supply changes within the site. If they are contacted, they would require a formal Water Supply Pipe Material Assessment to be carried out on their own proforma and submitted with the application for any new connection.

6.6 Chemical Attack on Below Ground Concrete

Below ground concrete structures are potentially at risk in areas of elevated sulphates and where there is low pH. An assessment of the soil and groundwater data (following the protocol established in BRE Special Digest 1, 2005) indicates that all below ground concrete should be designed to meet the requirements of DS-1 ACEC Class AC-1.

6.7 Permanent Ground Gases

Radon protection measures are not required at this site.

Groundwater and ground atmosphere monitoring is ongoing. Only three visits were initially anticipated and the principal reason for installing the monitoring wells was to confirm the anticipated ground water levels for geotechnical purposes with the measurement of ground gas just to confirm that there is a very low ground gas risk at this site as

expected from the desk study. Due to finding hydrocarbons in the Made Ground the gas monitoring became more important particularly given that both elevated methane and hydrocarbons were locally detected.

Results to date (2 visits) indicate:

- An initial peak gas flow in WS01 only then the steady flow less than 0.1 l/hr.
- Methane 0.3 to 2.5% v/v (WS01 and WS02 only).
- Carbon dioxide 8.8 &11.3% v/v in WS01. In WS02 and WS03.
- Carbon monoxide – WS01 and WS02 on the first visit only, carbon monoxide 2.6 to 4.2 %v/v.
- Evidence of hydrocarbons was also encountered:
  - WS01: Hexane 0.134% & 0.100% on the two visits and PID of 2.1 and 1.1 ppm.
  - WA02: Hexane 0.04 then <0.001% and PID 1.1 and <1 ppm.

The source of this gas is unknown and is likely to be related to the hydrocarbons in the made ground at the site with methane and carbon dioxide both being potential break-down products of the hydrocarbons.

Note that the highest gas concentrations are in WS01 which had the thickest Made Ground of 1.30m (rest of holes had 0.46 to 0.80m of Made Ground).

It is recommended that mitigation measures are required due to the hydrocarbons and methane recorded at this site.

6.8 Waste Assessment & Reuse of Soils on Site

Waste Assessment

Disposal of soils from the site should be supported by appropriate landfill WAC testing. One WAC suite was undertaken on a sample of the sandy demolition rubble type made ground in WS04 which is the location with the elevated PAHs and TPH. This sample had high levels of organic carbon, TPH and PAH. The organic carbon may be derived from the overlying topsoil mixed into the sand fraction of the material. This sample would be classified as hazardous waste if it were to be removed from site, due to PAH and TPH. However, in accordance with the Environment Agency Document WM3 UK, it is the upper 95th percentile of the mean concentration of the waste which is the threshold for waste assessment and not the maximum value for any waste stream. Therefore this granular hardcore material was present over much of the site so it may be that further testing is required to determine if WS04 made ground will be inert waste if it is sent to a landfill when all the laboratory data is taken into account as a whole dataset.

The disturbed reworked glacial clay and the natural glacial clays would be classified as inert.

Reuse of Soils on Site

Due to the nature of the development, there will be no reuse of excavated soils at this site as part of the construction works.

7.0 REMEDIATION STRATEGY

7.1 Summary of Risk Due to Contaminated Land

The risks are summarised below:

- Therefore, no specific remedial measures are required due to the long-term risk to human health. However, the groundworks contractor should ensure that the generation of dust is minimised during their works.
- No remediation measures are required due to the risk to controlled waters or due to the phytotoxic risk.
- The presence of the hydrocarbons exceeds the limits for the use of PE so either copper pipe or suitably protected plastic pipes should be used. It is not likely that United Utilities will need to be contacted for the water supply changes within the site. If they are contacted, they would require a formal Water Supply Pipe Material Assessment to be carried out on their own proforma and submitted with the application for any new connection.
- All below ground concrete should be designed to meet the requirements of DS-1 ACEC Class AC-1.
- No remediation measures are required due to radon.

However, mitigation measures are required due to ground gas risk as set out in Section 6.7.

7.2 Mitigation Measures Required due to Ground Gases

Remediation is only required at this site due to ground gas with elevated hydrocarbons and methane being present. There are two methods of mitigating this risk:

- Option 1: Instal suitable ground gas protection measures, usually a ventilated sub-floor void with ground gas membrane.
- Option 2: Removal of the ground gas source, ie removal of the Made Ground from below the building and the hard standing immediately around the building.

Option 1

This is the conventional option. Based on the current short monitoring dataset (note that a full gas monitoring period would be over three months) it is recommended that these protection measures would be designed to meet Ground Gas Characteristic Situation 2 (CS2). A suspended ground floor slab with a ventilated sub-floor void with a ground gas membrane with sealed service penetrations would be appropriate. The gas membrane would have to be suitable for VOCs and the installation be independently verified.

All design and verification to be in accordance withBS8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings. Additional guidance on verification of the installation of ground gas protection systems is provided in CIRIA Report C735: Good practice on the testing and verification of protection systems for buildings against hazardous ground gases

Option 2

Made Ground was present in all locations to between 0.46m and 1.30m depth with an average depth of 0.76 m. If suitable ground gas protection measures were to be installed there would be a 450 mm subfloor void and with other construction thickness (e.g. floor slab and insulation, etc) then most of the Made Ground will be excavated. Therefore, excavation of a limited proportion of additional made ground would remove the requirement for specific ground has protection measures. However, because the principal gas source could be outside the limits of the development (ie beyond SW01 to the west, it is recommended that a granular gas vent trench would be provided around the perometer of the building to prevent lateral migration below the building. No other ground gas mitigation measures would be required.

The ground gas vent trench would:

- Extend all around the building on all sides
- The depth would be to 300 mm into the natural Glacial Clay

- The gravel vent trench would be 450mm wide and be filled with single sized coarse gravel (a 40/60 aggregate).
- The top of the trench soil part be asphalted with Aco grids around the building adjacent to the building to vent ground gases. This would prevent gravel being present at ground level and provide a safter and neater option.
- This trench would collect water and need to be connected into the surface water drainage system.

7.3 Other Remediation Related Activities

As with any site, there is the potential for areas of previously unexpected contamination to be present, as is the case with any "brownfield" site. Whilst no remediation of contamination is required there is a possibility that unsuspected contamination could be encountered. If this is encountered then the procedures in Appendix IX Unforeseen Ground Contamination should be implemented.

8.0 GEOTECHNICAL COMMENTS

Geotechnical considerations at this site comprise:

- Made ground
- Clay soils and trees
- Loading conditions are unknown at this stage. Reasonably light commercial structures are anticipated.

The made ground is not a suitable bearing stratum due to the risk of excessive total and differential settlements and is a relatively thin stratum over most of the building footprint being between 0.46m and 1.30m depth with an average depth of 0.76 m.

Loads should be taken to at least 0.2m below any made ground into the natural clay, which would be to a maximum depth of 1.5m at this site. However, clay soils are present which require deepened foundations due to the presence of trees, as described below.

Clay soils can exhibit movement in response to seasonal moisture content change within the influence of existing or removed trees and hedgerows, or if trees are planted close to the building upon completion. The amount of movement is a function of the mineralogy of the clay (which is related to its plasticity characteristics) the species of tree and the distance to the foundations. The influence of the tree lessens with depth, hence near surface soils are more prone to the effects of desiccation.

The clay soils are assessed as low and medium volume change potential in accordance with NHBC Chapter 4.2, with medium volume change being taken for design purposes, based on a worst case. The minimum foundation depth in medium volume change potential soils is 0.9m, however this will need to be deepened to reflect the influence of existing and removed trees. At this site:

- Large mature sycamore trees are present immediately adjacent to the site to the east, which it is assumed will remain post development. The closest tree is approximately 2m from the nearest proposed foundation edge. This tree may have a root protection zone within which excavation is not permitted. Advice should be sought from an arboricultural expert.
- The wooded/hedgerow boundary line (predominantly beech/medium moisture demand) to the west is assumed to remain post development. This is taken as approximately 1m from the closest foundations.
- It is assumed the willow hedge/soft landscaping to the east will be removed, together with the wooded/hedgerow area (predominantly beech/medium moisture demand) along the southern sector of the site, at their current heights. These trees are currently <50% of the mature height, hence foundation depth calculations in accordance with NHBC 4.2 can be adjusted.

Note that guidance in relation to foundation depths for schools or light commercial buildings is limited. The guidance published by the NHBC is for low rise residential development, and is risk based and given that the proposed building is of a single storey it is assessed that the NHBC Standards (2024) provides the most appropriate guidance for the development in relation to the risk from trees.

Suggested foundation depths are indicated on Figure 14, together with the influence zones of the trees, calculated using NHBC Chapter 4.2. Foundations closest to the western hedge and the north eastern sycamore should be taken to 1.7m bgl, shallowing in steps not more than 0.5m to the minimum depths of 0.9m at the edge of the shaded area. Where the trees in the south are removed, foundations need to be deepened to 1.4m bgl in an area of 6m radius around the trees, except where they also lie within the influence of the western hedge, in which case whichever is the deepest case should be used. Where the depth of made ground plus 0.2m is the deepest case, this depth should be used instead.

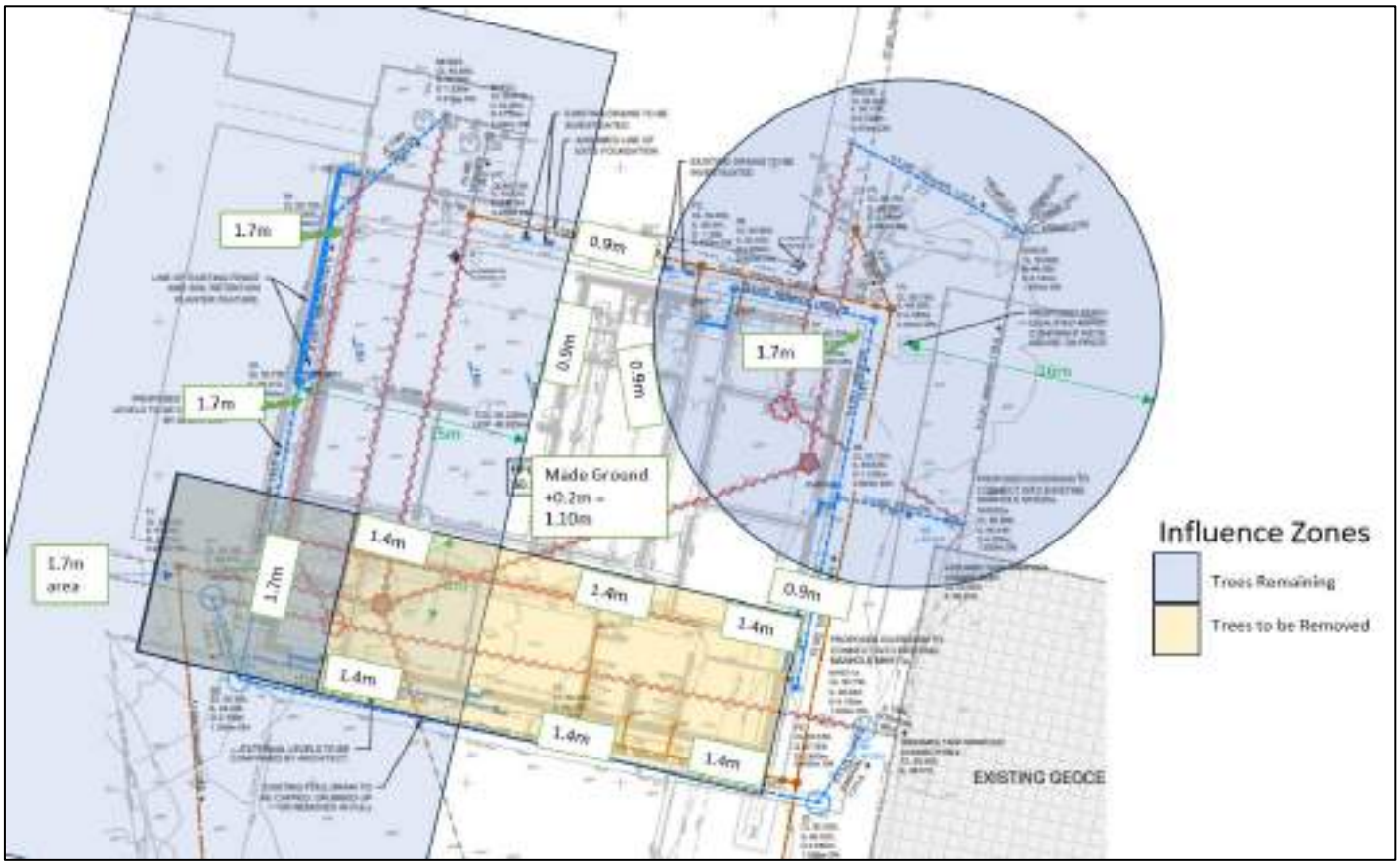


Figure 14: Trees and Approximate Influence Zones with Minimum Foundation Depth (not accounting for made ground)

Design values for structural calculations in the glacial clay have been selected based on the previous sections of this report and published values:

Table 6: Design Soil Parameters for Glacial Clay at the site	
Volume Change Potential (NHBC Ch 4.2)	Medium
Shear Strength Cu	50 KPa
C'	0
Angle of Shearing Resistance Φ'	26°
N_{60}	10
Bulk Unit Weight, γ'	20 kN/m^3
Mv	0.15 m^2/MN

It is calculated that allowable bearing pressures of 110 kN/m^2 are available at the minimum depths of 0.90m and up to 175 kN/m^2 at a depth of 1.7m bgl in the natural glacial clay for strip footings up to 0.6m wide or pads up to 1.5m square. Expected settlements would be less than 20mm.

Alternatively, piles could be considered into the shallow bedrock. Further investigation would be required in this case but it is likely that piles to around 5m depth including a 1m rock socket would be appropriate. The piles would have to be designed to counteract any heave movements and can be designed to allow for the additional tensile forces due to shrink/swell movement.

In order to protect the proposed floor slabs from soil movement associated with moisture content change, a void is required below ground beams and suspended in situ concrete floor slabs (100mm), against the side of foundations and ground beams (25mm) and below suspended precast concrete and timber floor slabs (250mm) in accordance with NHBC Chapter 4.2.

9.0 CONCLUSION

9.1 Geotechnical Assessment

Foundations should be taken down into the glacial clays and deepened where tree influence is present, or where trees have been removed.

It is calculated that allowable bearing pressures of 110kN/m^2 are available at the minimum depths of 0.90m and up to 1.7m bgl in the natural glacial clay for strip footings up to 0.6m wide or pads up to 1.5m square, with expected settlements less than 25mm.

In order to protect the proposed floor slabs from soil movement associated with moisture content change, a void is required below ground beams and suspended insitu concrete floor slabs (100mm), against the side of foundations and ground beams (25mm) and below suspended precast concrete and timber floor slabs (250mm) in accordance with NHBC Chapter 4.2.

9.2 Contaminated Land

The risks are summarised below:

- Therefore, no specific remedial measures are required due to the long-term risk to human health. However, the groundworks contractor should ensure that the generation of dust is minimised during their works.
- No remediation measures are required due to the risk to controlled waters or due to the phytotoxic risk.
- The presence of the hydrocarbons exceeds the limits for the use of PE so either copper pipe or suitably protected plastic pipes should be used. It is not likely that United Utilities will need to be contacted for the water supply changes within the site. If they are contacted, they would require a formal Water Supply Pipe Material Assessment to be carried out on their own proforma and submitted with the application for any new connection.
- All below ground concrete should be designed to meet the requirements of DS-1 ACEC Class AC-1.
- No remediation measures are required due to radon.

However, mitigation measures are required due to ground gas risk as set out in Section 6.7.

9.3 Remediation

Remediation is only required at this site due to ground gas with elevated hydrocarbons and methane being present. There are two alternative methods of mitigating this risk set out in Section 7.2:

- Option 1: Instal suitable ground gas protection measures, usually a ventilated sub-floor void with ground gas membrane.
- Option 2: Removal of the ground gas source, ie removal of the Made Ground from below the building and the hard standing immediately around the building.

END OF REPORT

APPENDIX I – LIMITATIONS

APPENDIX I - LIMITATIONS

LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between Eccles Associates Ltd and the Client as indicated in Section 1.0.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency/Natural Resources Wales. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not be made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. In addition to the above Eccles Associates Ltd note that when investigating, or developing, potentially contaminated land it is important to recognise that sub-surface conditions may vary spatially and also with time. The absence of certain ground, ground gas, and contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Due to the presence of existing buildings and structures access could not be obtained to all areas. Additional contamination may be identified following the removal of the buildings or hard standing.

7. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

8. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.

9. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

10. This report presents an interpretation of the geotechnical information established by excavation, observation, and testing. Whilst every effort is made in interpretative reporting to assess the soil conditions over the Site it should be noted that natural strata vary from point to point and that man-made deposits are subject to an even greater diversity. Groundwater conditions are dependent on seasonal and other factors. Consequently, there may be conditions present not revealed by this investigation.

11. Eccles Associates Ltd cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by Eccles Associates Ltd is owned by them and no such plans or documents may be reproduced, published, or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by Eccles Associates Ltd in this connection without their explicit written agreement there to by Eccles Associates Ltd.

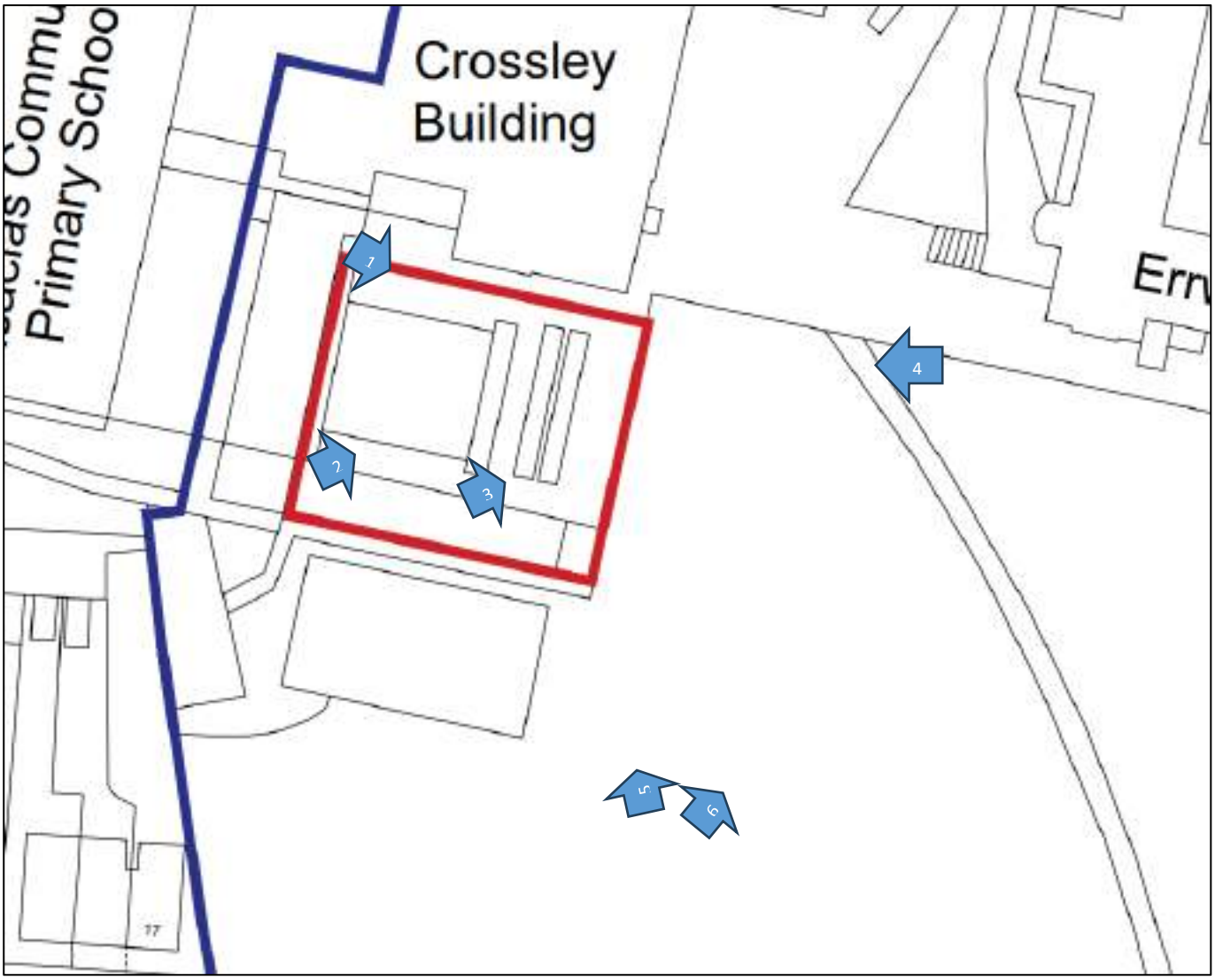
12. Rather, this investigation has been undertaken to provide a preliminary characterisation of the existing sub-surface geotechnical characteristics and make up and the findings of this study are our best interpretation of the data collected, within the scope of work and agreed budget. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

13. This investigation has been undertaken to reasonably characterise existing sub-surface conditions and the findings of this study are our best interpretation of the data collected, within the scope of work and agreed budget. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II – SITE PHOTOGRAPHS

APPENDIX II SITE PHOTOGRAPHS

Photograph Location Plan



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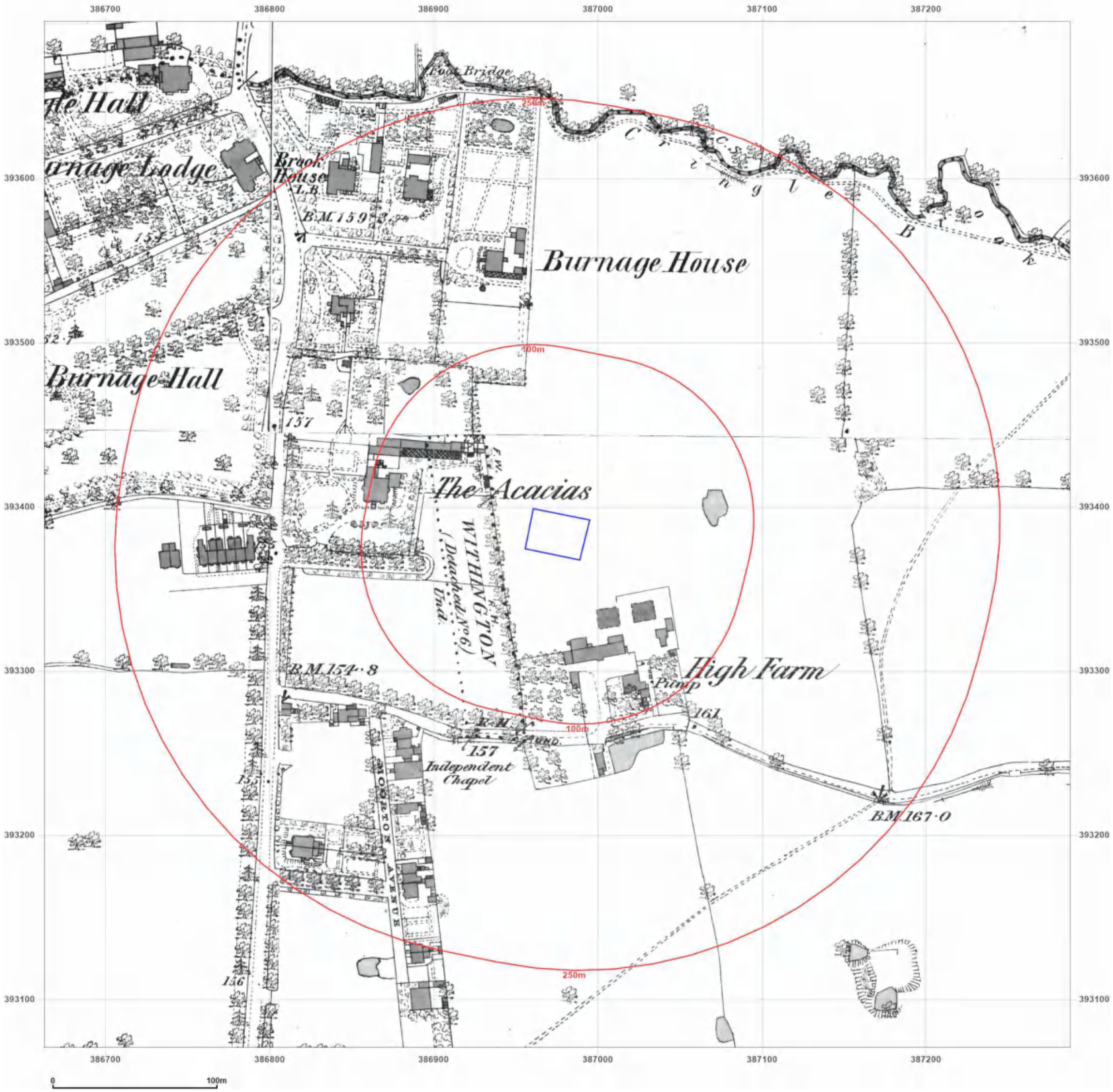
APPENDIX III : GROUNDSURE HISTORICAL MAP INFORMATION

APPENDIX III GROUNDSURE HISTORICAL MAP INFORMATION



Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1881**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1881
Revised 1881
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1881
Revised 1881
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1881
Revised 1881
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1881
Revised 1881
Edition N/A
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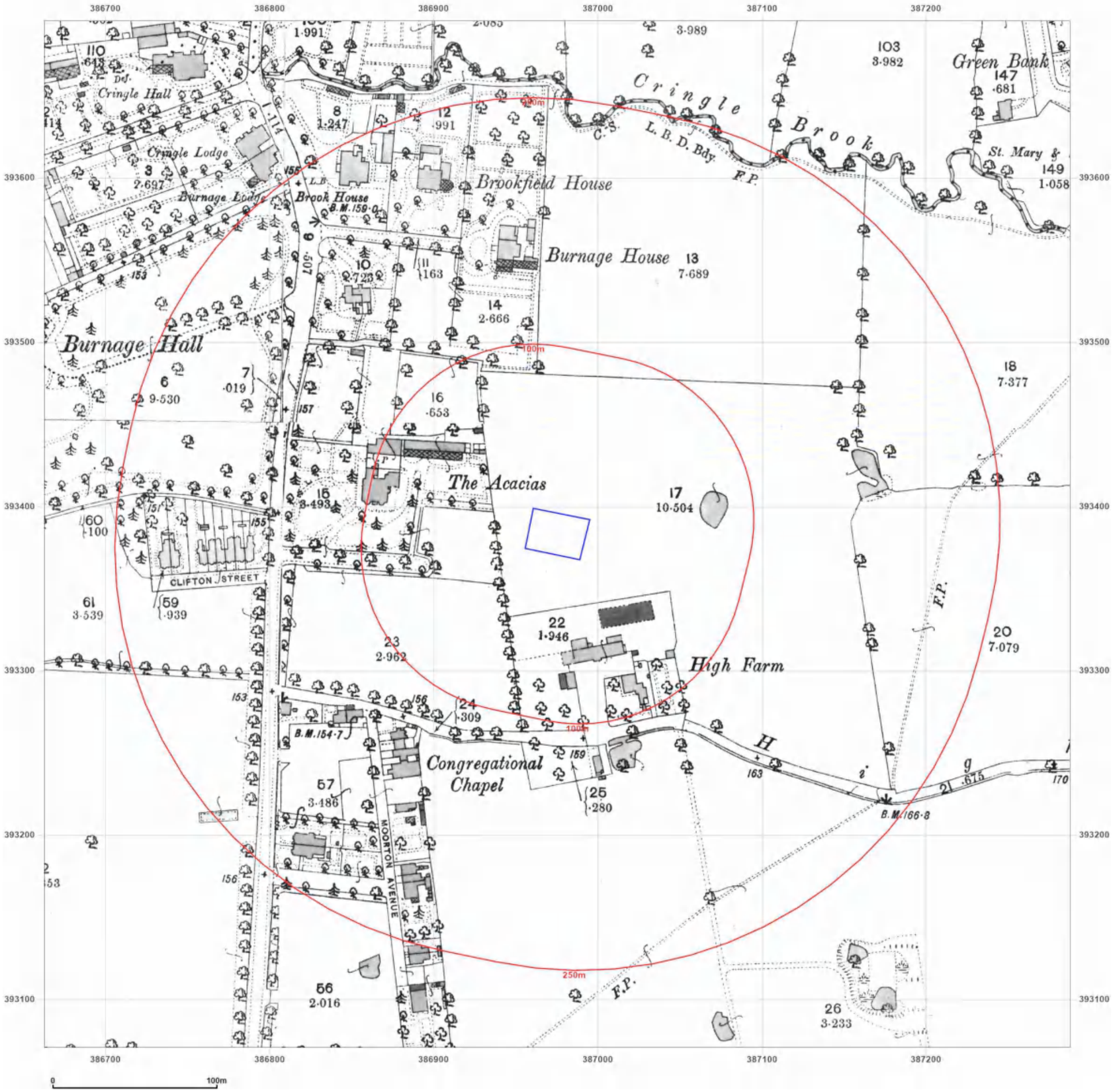
Production date: 16 July 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1893-1894**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1894
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1893
Revised 1893
Edition N/A
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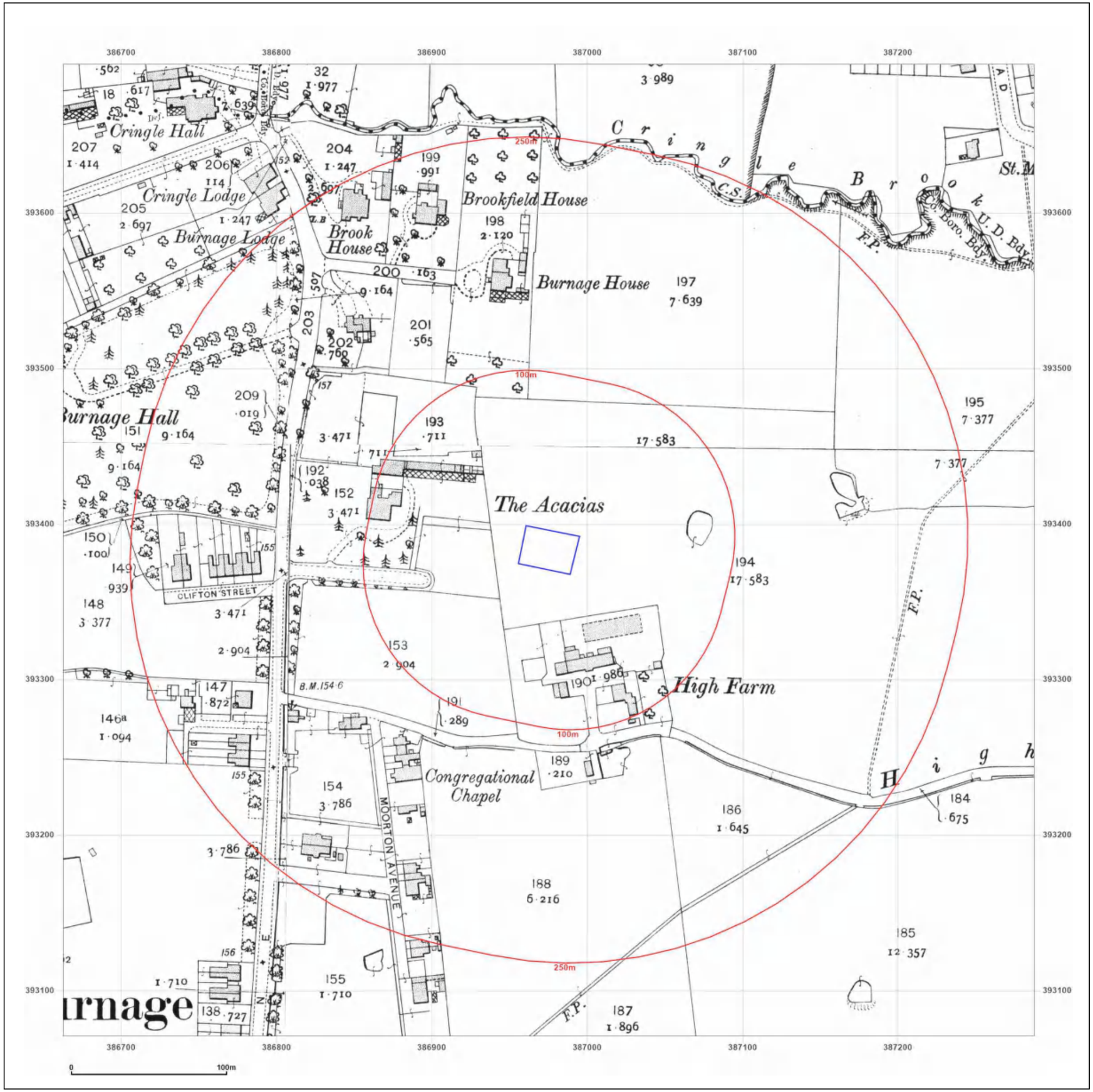

Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1907
Revised 1907
Edition N/A
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Revised 1907
Edition N/A
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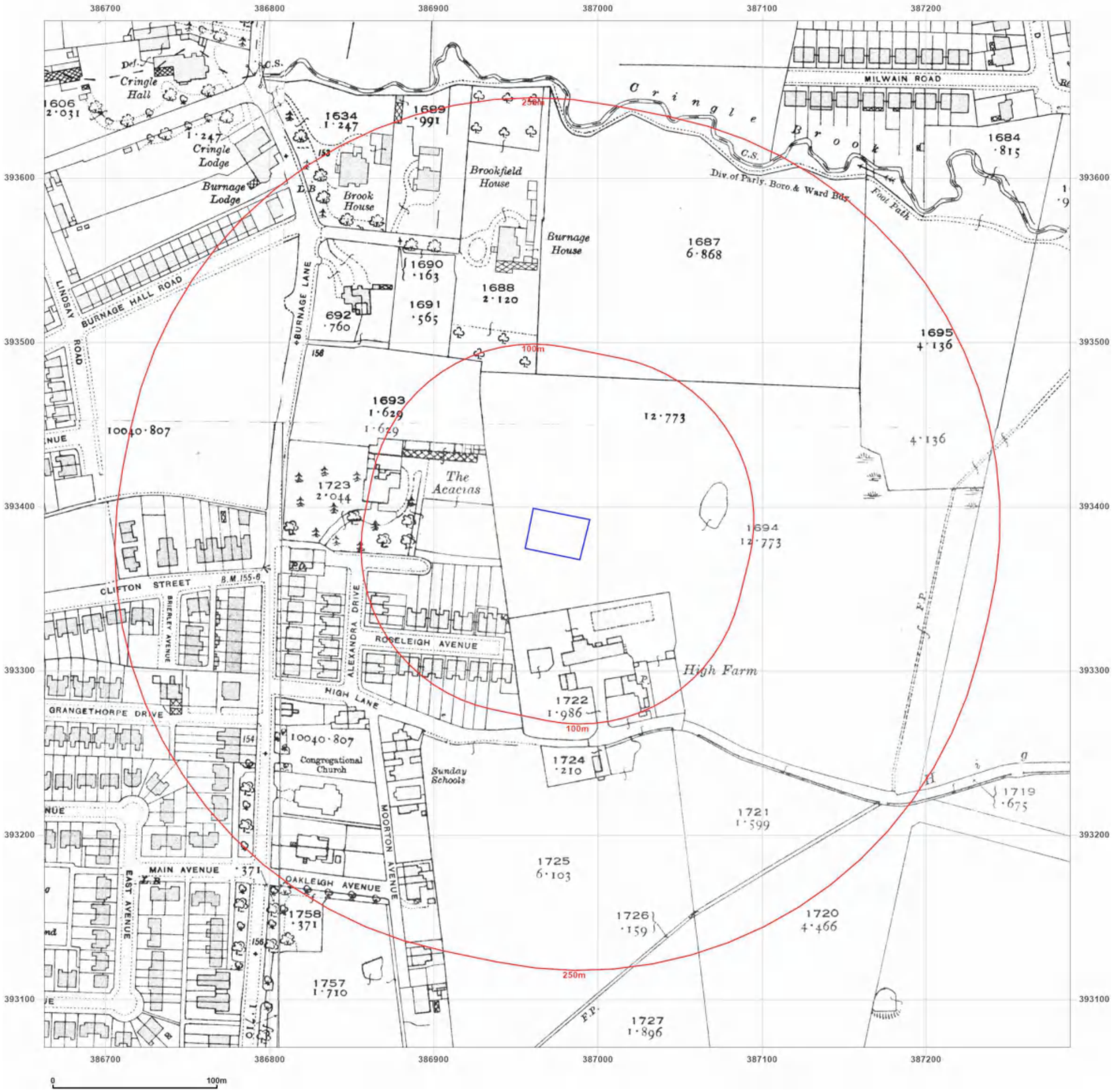

Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: 1922

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
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Surveyed 1922
Revised 1922
Edition N/A
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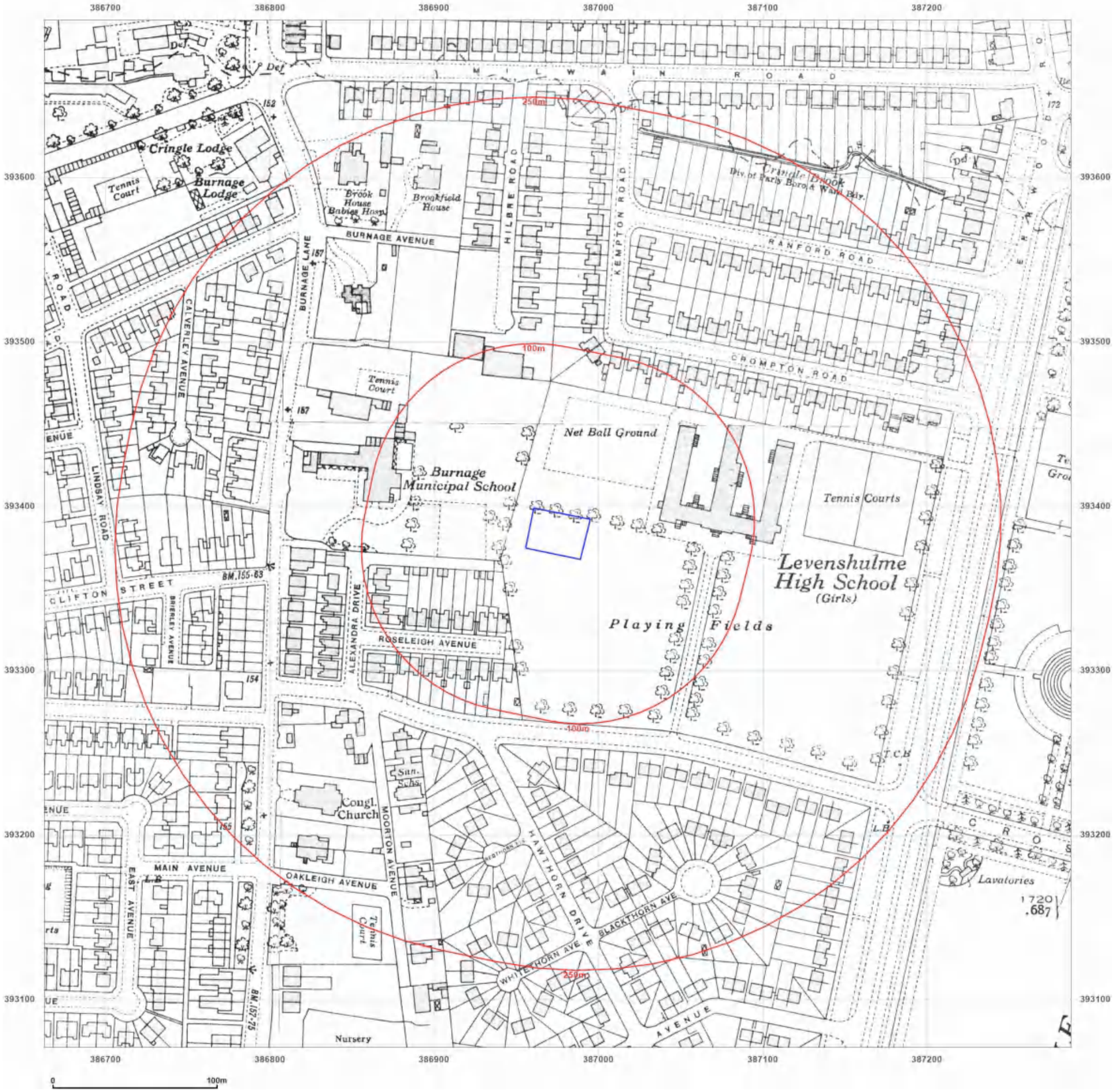

Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1933-1934**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1934
Revised 1934
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1933
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1934
Revised 1934
Edition N/A
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Levelled N/A

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Revised 1934
Edition N/A
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Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1956-1957**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1949

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1948

Surveyed 1956
Revised 1956
Edition N/A
Copyright N/A
Levelled 1948

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1948

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MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1958**

Scale: 1:1,250

Printed at: 1:2,000

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

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Revised N/A
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Surveyed N/A
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MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1958**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1956
Revised 1956
Edition 1958
Copyright N/A
Levelled 1949

Surveyed 1957
Revised 1957
Edition 1958
Copyright N/A
Levelled 1948

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MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1970-1975**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1957
Revised 1970
Edition N/A
Copyright 1970
Levelled 1958

Surveyed 1956
Revised 1974
Edition N/A
Copyright 1975
Levelled 1958

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MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1984-1988**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1984
Levelled 1958

Surveyed 1959
Revised 1984
Edition N/A
Copyright 1984
Levelled 1959

Surveyed 1958
Revised 1988
Edition N/A
Copyright 1988
Levelled 1958

Surveyed 1959
Revised 1984
Edition N/A
Copyright 1984
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MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1958
Revised 1989
Edition N/A
Copyright 1989
Levelled 1958

Surveyed 1959
Revised 1987
Edition N/A
Copyright 1987
Levelled 1959

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

Surveyed 1959
Revised 1987
Edition N/A
Copyright 1987
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FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1989-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1989
Levelled 1958

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

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

Surveyed 1992
Revised 1992
Edition N/A
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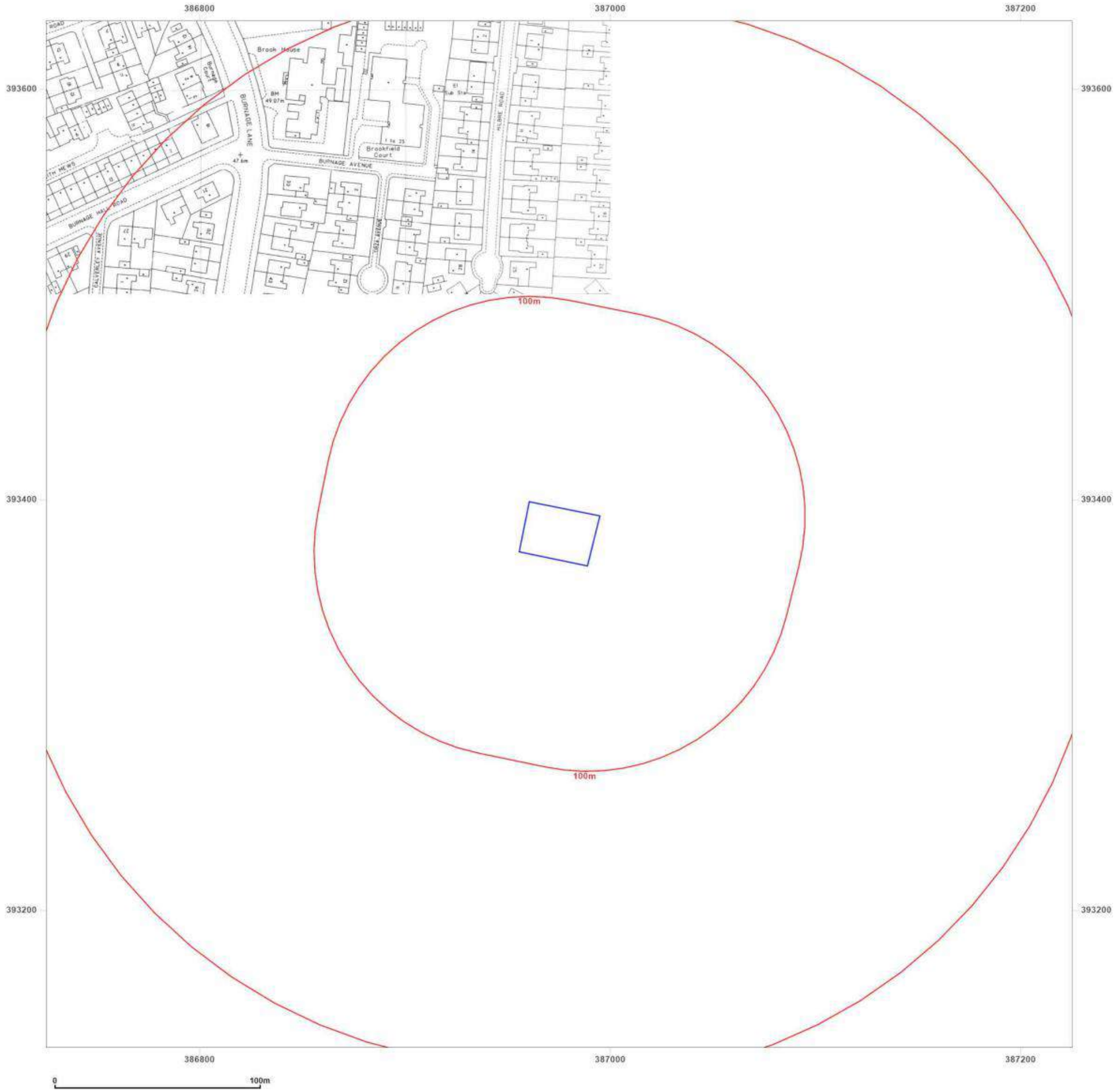

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Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000

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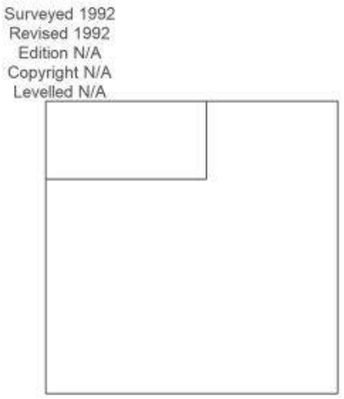
Surveyed 1992
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A



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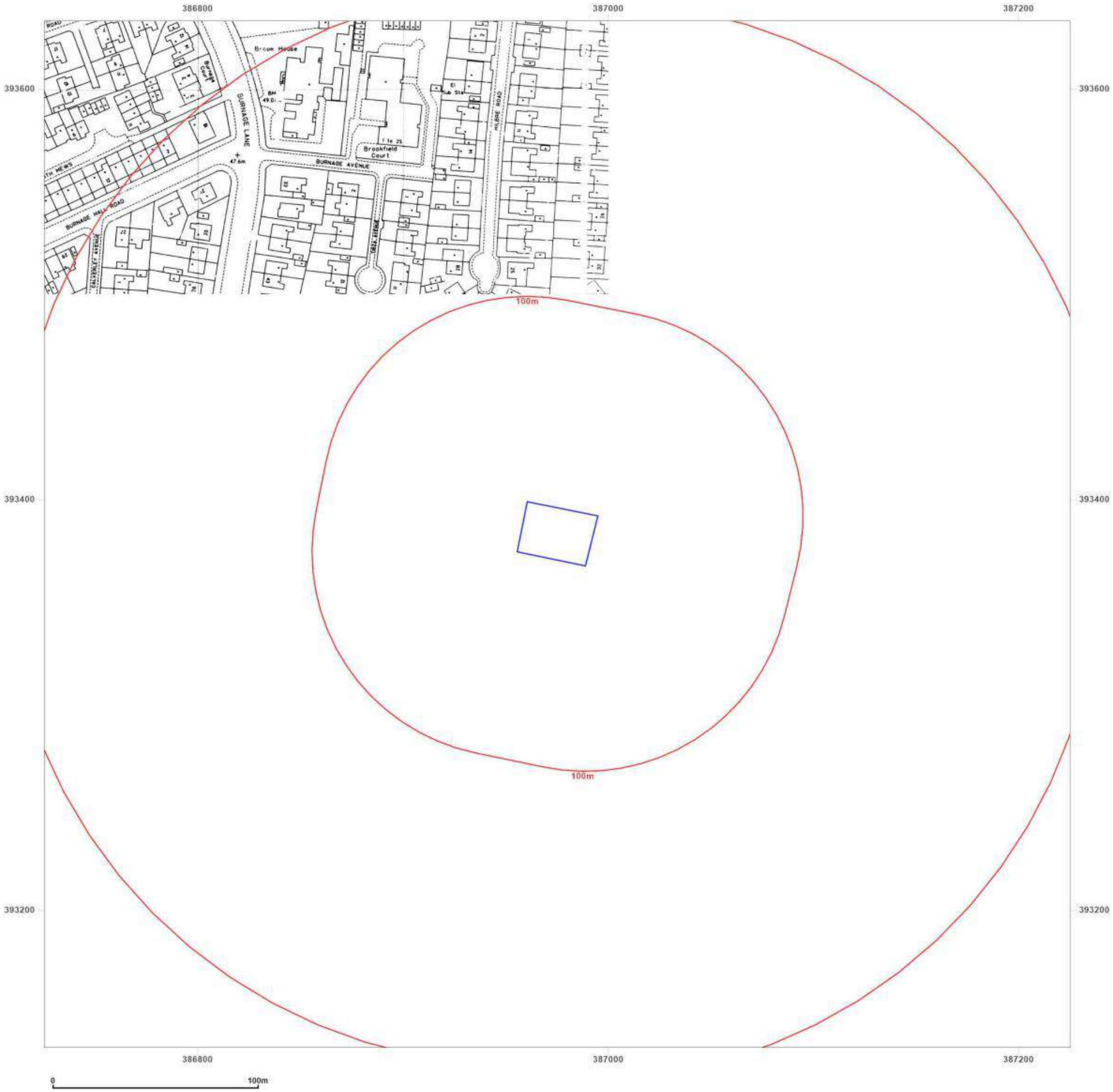

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000

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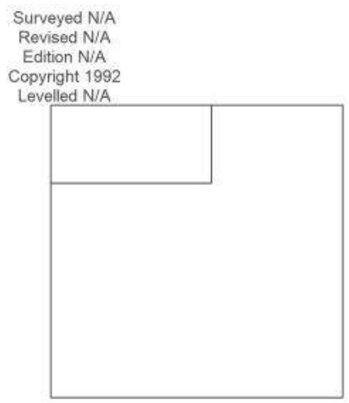
Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A



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Site Details:

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FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250

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2003

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Site Details:

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FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1849**

Scale: 1:10,560

Printed at: 1:10,560

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W E
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Surveyed 1845
Revised 1849
Edition 1848
Copyright N/A
Levelled N/A

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Site Details:

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FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: 1892

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1892
Revised 1892
Edition N/A
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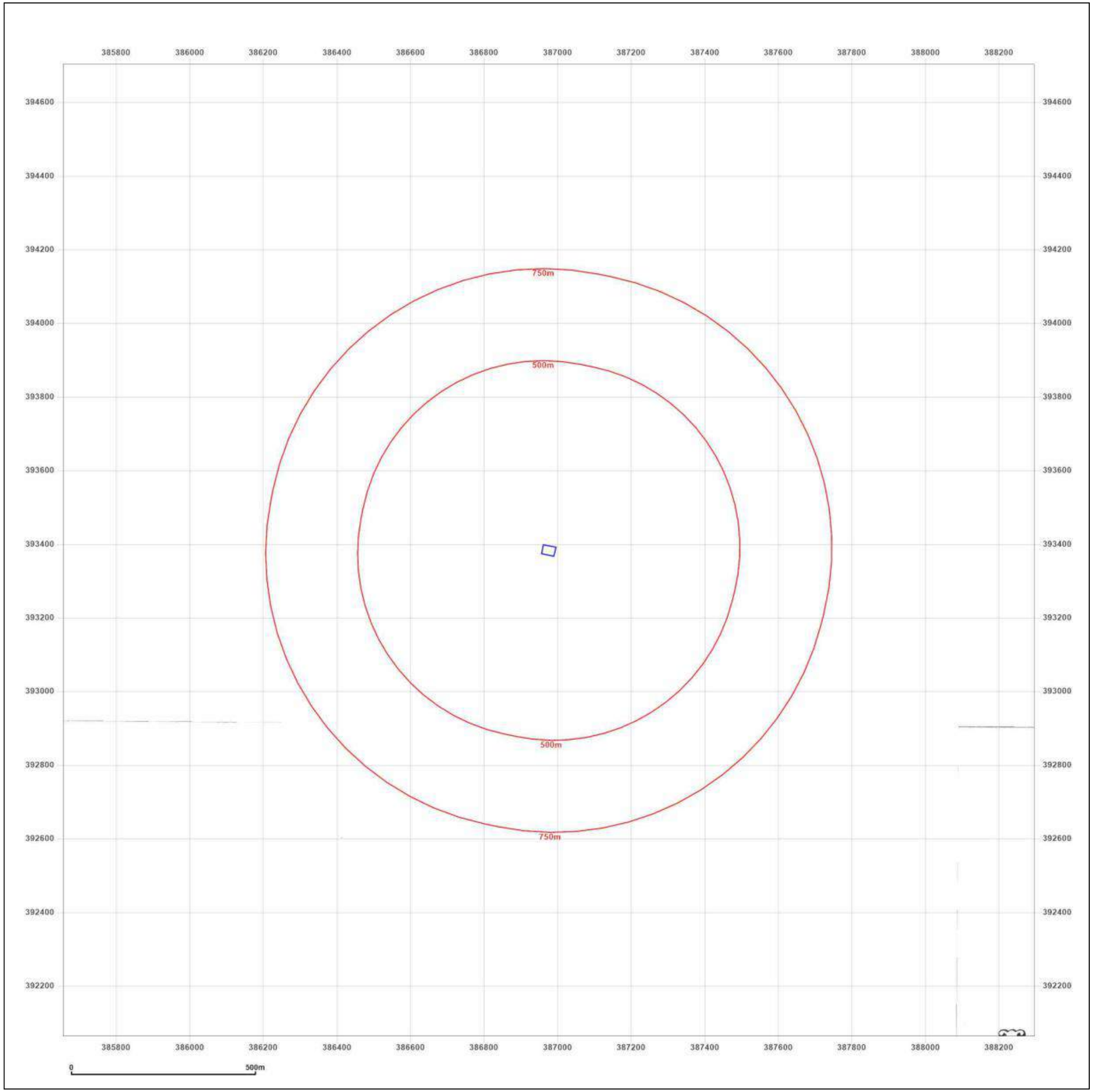

Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1897**

Scale: 1:10,560

Printed at: 1:10,560

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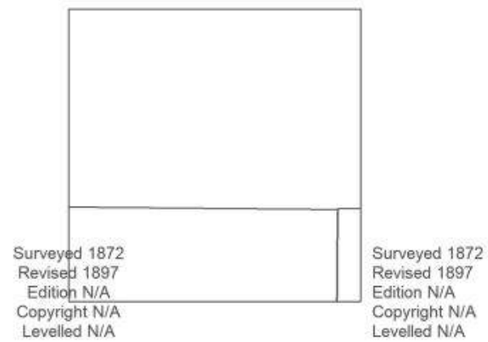

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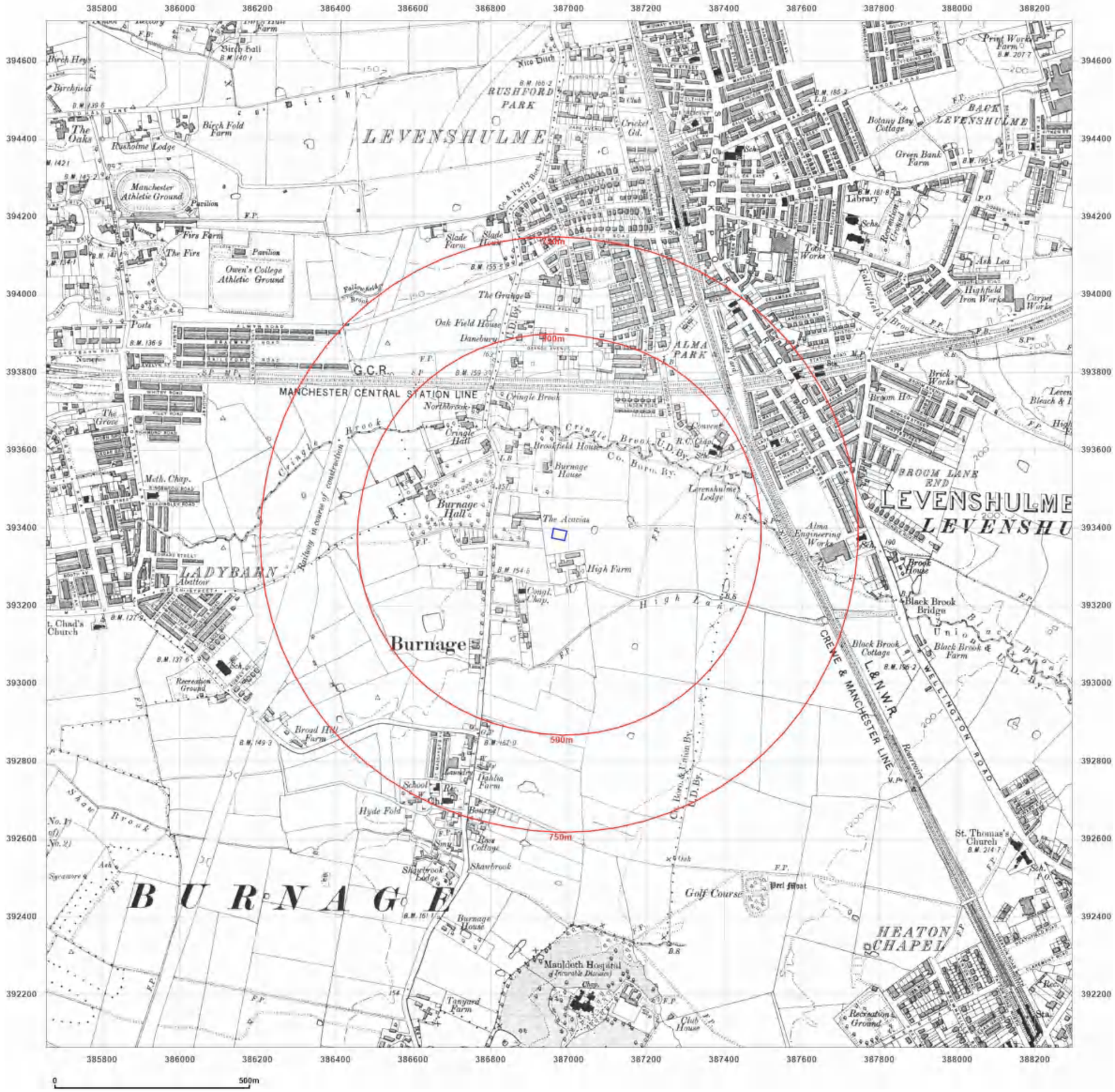

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1892
Revised 1905
Edition N/A
Copyright N/A
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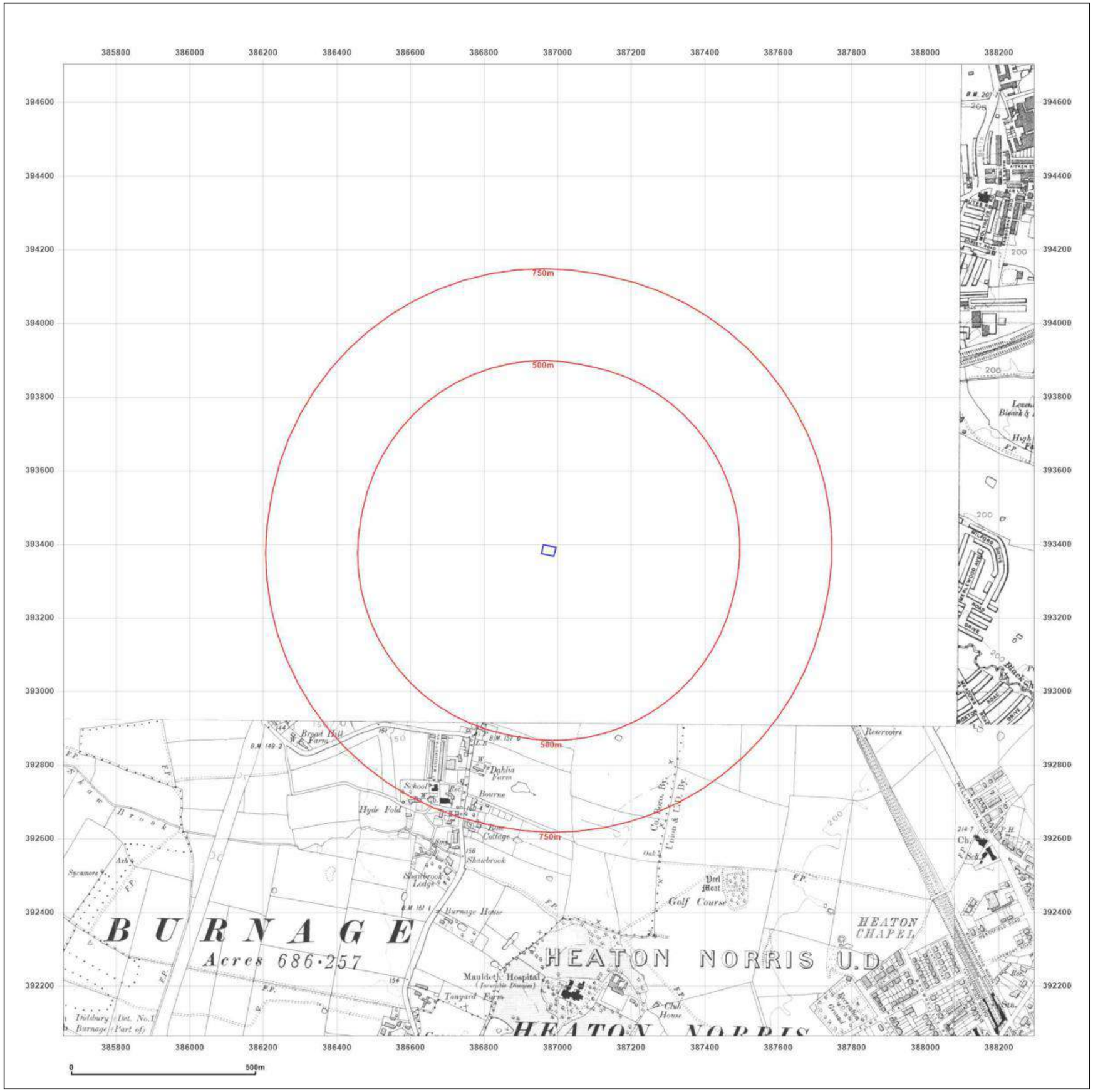

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Site Details:

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FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1907-1911**

Scale: 1:10,560

Printed at: 1:10,560

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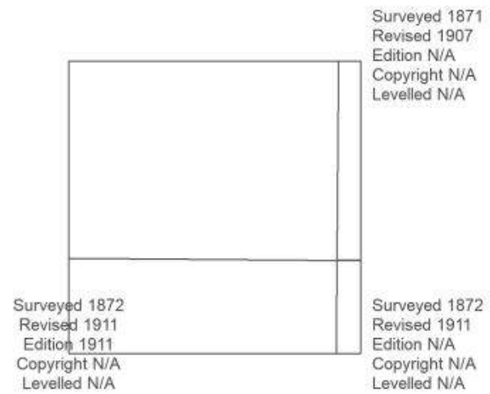

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Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1916**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1844
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A

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LEVENSHULME HIGH SCHOOL
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MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1923
Edition N/A
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Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1934**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1934
Edition N/A
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Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1938
Edition N/A
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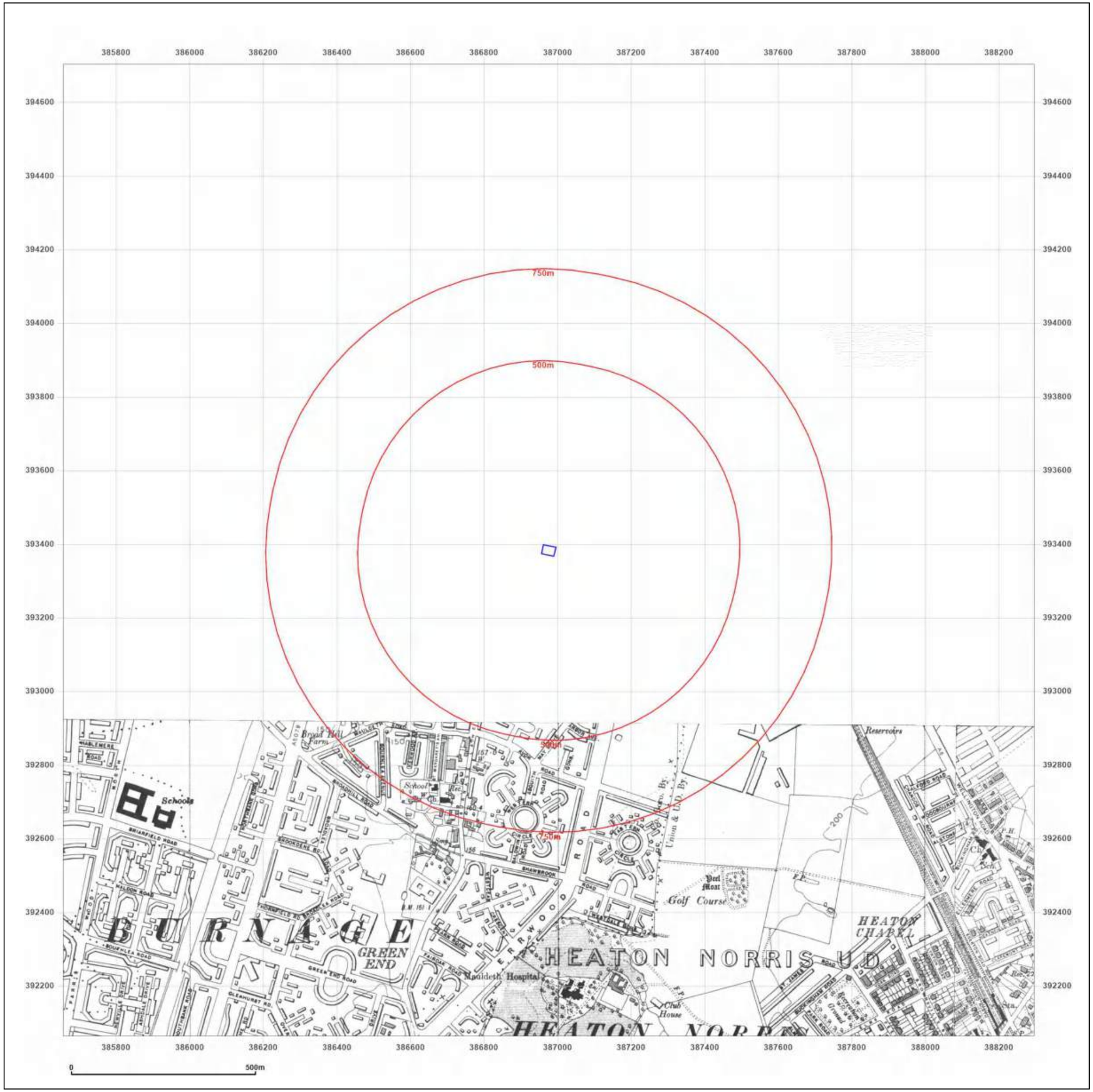

Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1872
Revised 1938
Edition N/A
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Levelled N/A

Surveyed 1872
Revised 1938
Edition 1938
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Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: Provisional

Map date: **1955**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed N/A
Revised 1955
Edition 1955
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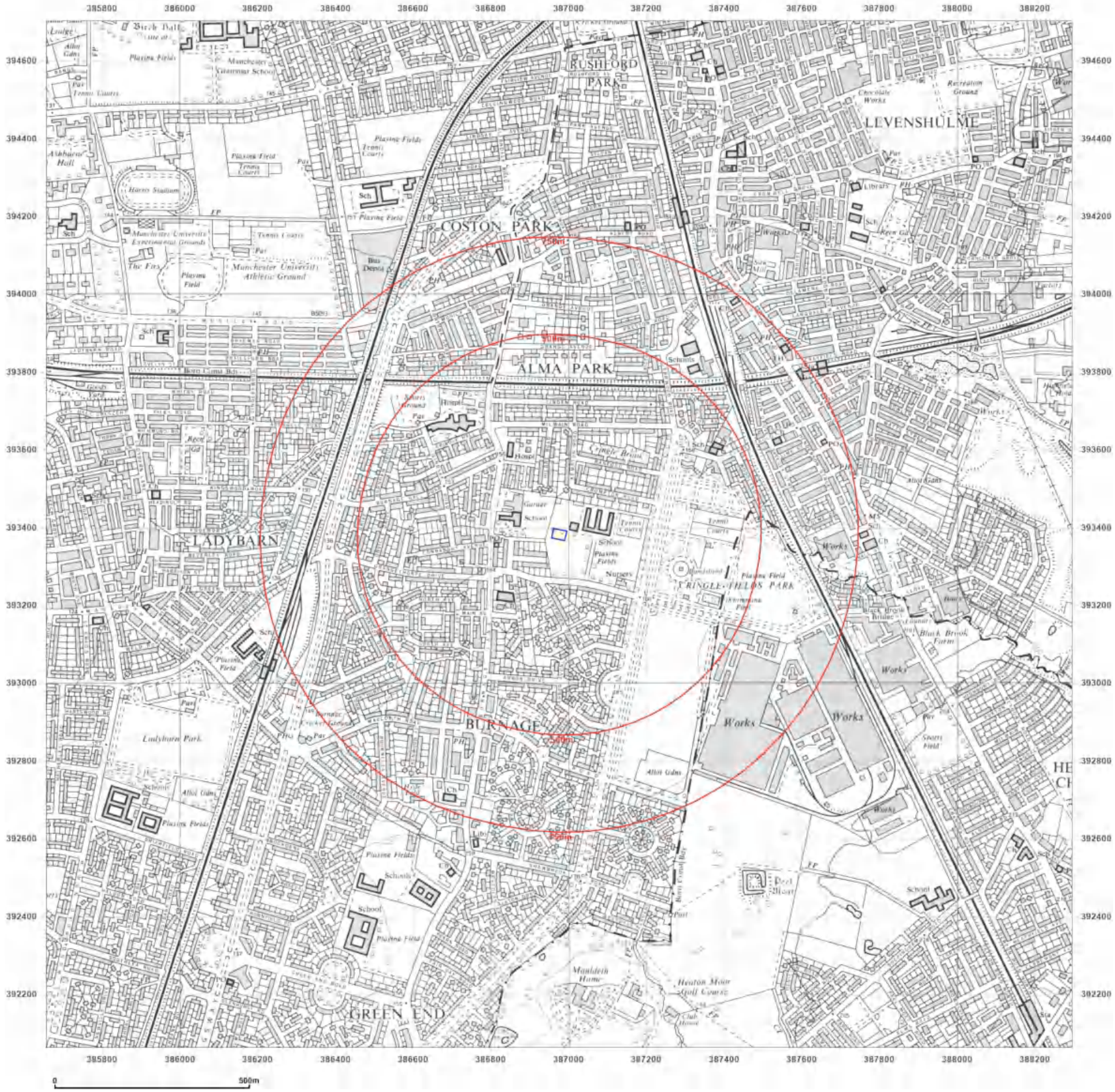

Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: Provisional

Map date: **1965**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1965
Revised 1965
Edition N/A
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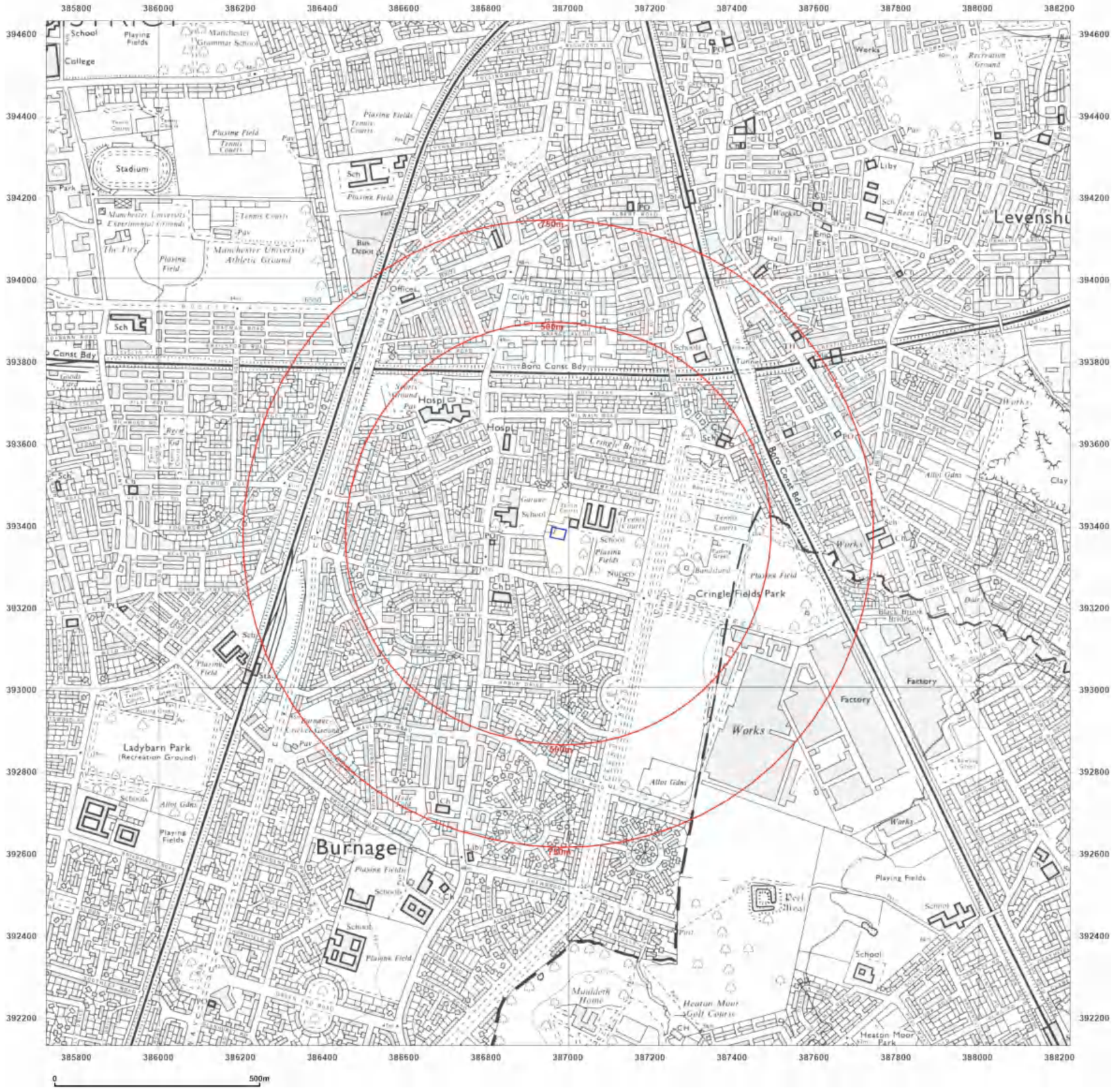

Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1976**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1974
Revised 1975
Edition N/A
Copyright 1976
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Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: **1983**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1981
Revised 1983
Edition N/A
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Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: 1989

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1986
Revised 1989
Edition N/A
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Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

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2001

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Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

N
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2010

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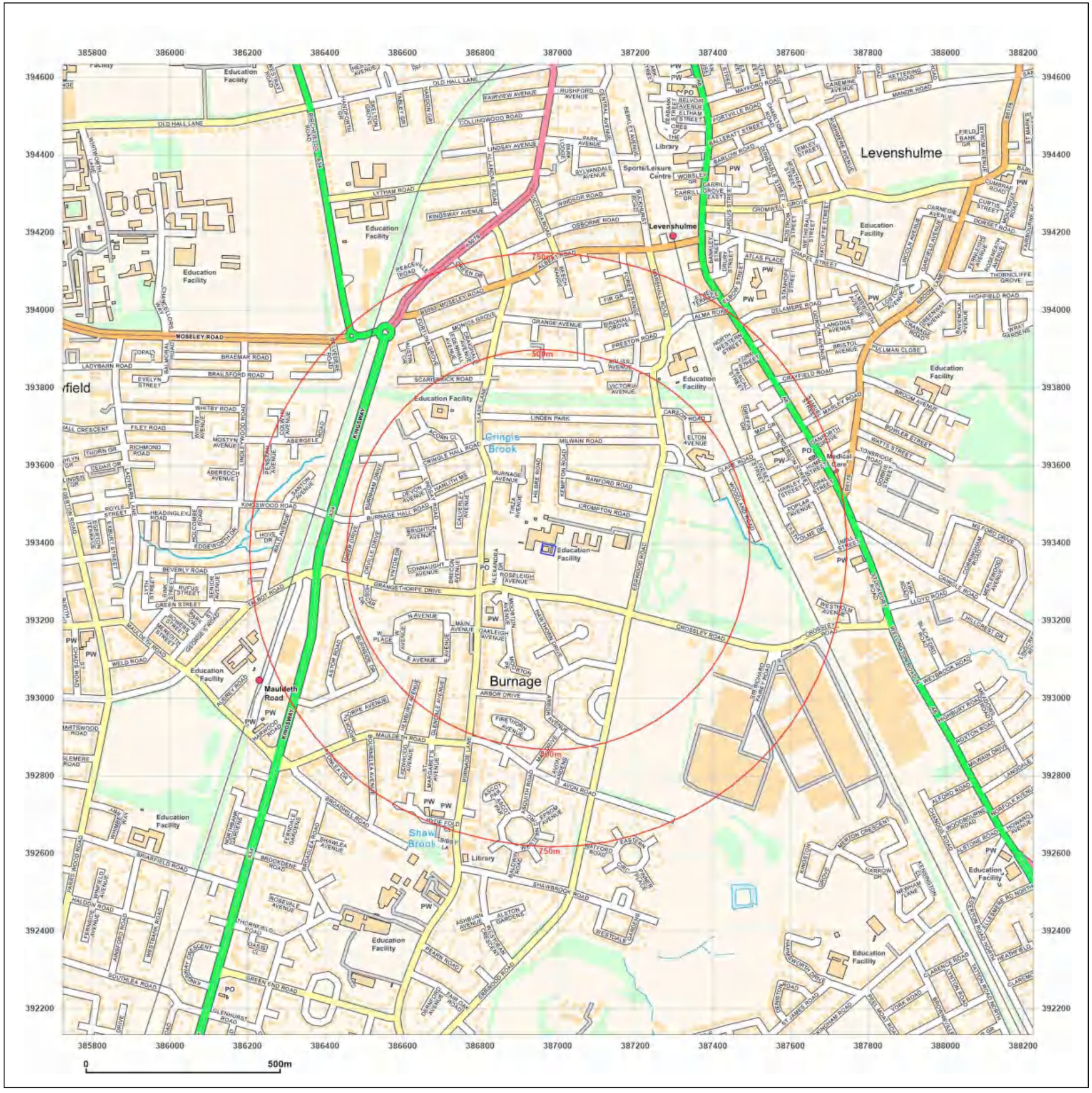

Groundsure INSIGHTS

Site Details:

LEVENSHULME HIGH SCHOOL
FOR GIRLS, CROSSLEY ROAD,
MANCHESTER, M19 1FS

Client Ref: Levenshulme High School
Report Ref: GS-3ZJ-1IO-TJC-BJM
Grid Ref: 386975, 393383

Map Name: National Grid

Map date: 2024

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2024

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APPENDIX IV – GROUNDSURE GEOENVIRONMENTAL INFORMATION

APPENDIX IV GROUNDSURE GEOENVIRONMENTAL INFORMATION

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

LEVENSHULME HIGH SCHOOL FOR GIRLS, CROSSLEY ROAD, MANCHESTER, M19 1FS

Order Details

Date: 16/07/2024

Your ref: Levenshulme High School

Our Ref: GS-9UC-ONT-Q5H-RGF

Site Details

Location: 386974 393383

Area: 0.09 ha

Authority: Manchester City Council ↗

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Summary of findings p. 2 >

Aerial image p. 9 >

OS MasterMap site plan p.14 >

Insight User Guide ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	0	0	7	23	-
17 >	1.2 >	Historical tanks >	0	0	0	1	-
17 >	1.3 >	Historical energy features >	0	0	2	4	-
18	1.4	Historical petrol stations	0	0	0	0	-
18 >	1.5 >	Historical garages >	0	0	3	0	-
18 >	1.6 >	Historical military land >	0	0	0	1	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
20 >	2.1 >	Historical industrial land uses >	0	0	9	46	-
23 >	2.2 >	Historical tanks >	0	0	0	1	-
23 >	2.3 >	Historical energy features >	0	0	7	8	-
24	2.4	Historical petrol stations	0	0	0	0	-
24 >	2.5 >	Historical garages >	0	0	3	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	-
25	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
25	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
25	3.5	Historical waste sites	0	0	0	0	-
26	3.6	Licensed waste sites	0	0	0	0	-
26	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
27 >	4.1 >	Recent industrial land uses >	0	0	8	-	-
28	4.2	Current or recent petrol stations	0	0	0	0	-
28	4.3	Electricity cables	0	0	0	0	-
28	4.4	Gas pipelines	0	0	0	0	-
29	4.5	Sites determined as Contaminated Land	0	0	0	0	-

29	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
29	4.7	Regulated explosive sites	0	0	0	0	-
29	4.8	Hazardous substance storage/usage	0	0	0	0	-
29	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
30	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
30	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
30	4.12	Radioactive Substance Authorisations	0	0	0	0	-
30 >	**4.13 >**	**Licensed Discharges to controlled waters >**	0	0	0	6	-
31	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
31	4.15	Pollutant release to public sewer	0	0	0	0	-
32	4.16	List 1 Dangerous Substances	0	0	0	0	-
32	4.17	List 2 Dangerous Substances	0	0	0	0	-
32	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
32	4.19	Pollution inventory substances	0	0	0	0	-
32	4.20	Pollution inventory waste transfers	0	0	0	0	-
33	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
34 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
35 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
37 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
38	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
39	5.5	Groundwater vulnerability- local information	None (within 0m)				
40 >	**5.6 >**	**Groundwater abstractions >**	0	0	0	0	9
43	5.7	Surface water abstractions	0	0	0	0	0
43	5.8	Potable abstractions	0	0	0	0	0
43	5.9	Source Protection Zones	0	0	0	0	-
44	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m
45 >	**6.1 >**	**Water Network (OS MasterMap) >**	0	0	2	-	-

46	6.2	Surface water features	0	0	0	-	-
46 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
46 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
47 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
48	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
48	7.2	Historical Flood Events	0	0	0	-	-
48	7.3	Flood Defences	0	0	0	-	-
49	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
49	7.5	Flood Storage Areas	0	0	0	-	-
50	7.6	Flood Zone 2	None (within 50m)				
50	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
51	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding >					
52 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
53	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
54	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
54	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
54	10.4	Special Protection Areas (SPA)	0	0	0	0	0
54	10.5	National Nature Reserves (NNR)	0	0	0	0	0
55 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	1
55	10.7	Designated Ancient Woodland	0	0	0	0	0
55	10.8	Biosphere Reserves	0	0	0	0	0
55	10.9	Forest Parks	0	0	0	0	0
56	10.10	Marine Conservation Zones	0	0	0	0	0
56	10.11	Green Belt	0	0	0	0	0
56	10.12	Proposed Ramsar sites	0	0	0	0	0

56	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
56	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
57	10.15	Nitrate Sensitive Areas	0	0	0	0	0
57	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
58 >	**10.17 >**	**SSSI Impact Risk Zones >**	1	-	-	-	-
59	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
60	11.1	World Heritage Sites	0	0	0	-	-
60	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
60	11.3	National Parks	0	0	0	-	-
60	11.4	Listed Buildings	0	0	0	-	-
61	11.5	Conservation Areas	0	0	0	-	-
61	11.6	Scheduled Ancient Monuments	0	0	0	-	-
61	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	**Agricultural designations >**	On site	0-50m	50-250m	250-500m	500-2000m
62 >	**12.1 >**	**Agricultural Land Classification >**	Urban (within 250m)				
63	12.2	Open Access Land	0	0	0	-	-
63	12.3	Tree Felling Licences	0	0	0	-	-
63	12.4	Environmental Stewardship Schemes	0	0	0	-	-
63	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	**Habitat designations >**	On site	0-50m	50-250m	250-500m	500-2000m
64 >	**13.1 >**	**Priority Habitat Inventory >**	0	0	8	-	-
65	13.2	Habitat Networks	0	0	0	-	-
65	13.3	Open Mosaic Habitat	0	0	0	-	-
65	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
66 >	**14.1 >**	**10k Availability >**	Identified (within 500m)				
67 >	**14.2 >**	**Artificial and made ground (10k) >**	0	0	2	9	-
69 >	**14.3 >**	**Superficial geology (10k) >**	1	0	0	0	-

70	14.4	Landslip (10k)	0	0	0	0	-
71 >	14.5 >	Bedrock geology (10k) >	2	0	1	2	-
72 >	14.6 >	Bedrock faults and other linear features (10k) >	0	0	0	1	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
73 >	15.1 >	50k Availability >	Identified (within 500m)				
74	15.2	Artificial and made ground (50k)	0	0	0	0	-
74	15.3	Artificial ground permeability (50k)	0	0	-	-	-
75 >	15.4 >	Superficial geology (50k) >	1	0	0	1	-
76 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
76	15.6	Landslip (50k)	0	0	0	0	-
76	15.7	Landslip permeability (50k)	None (within 50m)				
77 >	15.8 >	Bedrock geology (50k) >	2	0	1	3	-
78 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
78	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
79	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
80 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
81 >	17.2 >	Running sands >	Very low (within 50m)				
82 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
83 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
84 >	17.5 >	Landslides >	Very low (within 50m)				
85 >	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
87	18.1	BritPits	0	0	0	0	-
88 >	18.2 >	Surface ground workings >	0	0	2	-	-
88 >	18.3 >	Underground workings >	0	0	0	0	3
88	18.4	Underground mining extents	0	0	0	0	-
89	18.5	Historical Mineral Planning Areas	0	0	0	0	-

89 >	18.6 >	Non-coal mining >	0	0	1	0	0
89 >	18.7 >	JPB mining areas >	Identified (within 0m)				
90	18.8	The Coal Authority non-coal mining	0	0	0	0	-
90	18.9	Researched mining	0	0	0	0	-
90	18.10	Mining record office plans	0	0	0	0	-
90	18.11	BGS mine plans	0	0	0	0	-
91	18.12	Coal mining	None (within 0m)				
91	18.13	Brine areas	None (within 0m)				
91	18.14	Gypsum areas	None (within 0m)				
91	18.15	Tin mining	None (within 0m)				
91	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
92	19.1	Natural cavities	0	0	0	0	-
92	19.2	Mining cavities	0	0	0	0	0
92	19.3	Reported recent incidents	0	0	0	0	-
92	19.4	Historical incidents	0	0	0	0	-
93	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
94 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
96 >	21.1 >	BGS Estimated Background Soil Chemistry >	2	2	-	-	-
96	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
97	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
98	22.1	Underground railways (London)	0	0	0	-	-
98	22.2	Underground railways (Non-London)	0	0	0	-	-
99	22.3	Railway tunnels	0	0	0	-	-
99 >	22.4 >	Historical railway and tunnel features >	0	0	1	-	-
99	22.5	Royal Mail tunnels	0	0	0	-	-

99	22.6	Historical railways	0	0	0	-	-
100	22.7	Railways	0	0	0	-	-
100	22.8	Crossrail 1	0	0	0	0	-
100	22.9	Crossrail 2	0	0	0	0	-
100	22.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 28/09/2022

Site Area: 0.09ha

Recent site history - 2019 aerial photograph

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Capture Date: 22/04/2019

Site Area: 0.09ha

Recent site history - 2015 aerial photograph

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Capture Date: 11/06/2015

Site Area: 0.09ha

Recent site history - 2009 aerial photograph

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Capture Date: 02/06/2009

Site Area: 0.09ha

Recent site history - 2000 aerial photograph

Capture Date: 19/06/2000

Site Area: 0.09ha

OS MasterMap site plan

Site Area: 0.09ha

1 Past land use

Site Outline

Search buffers in metres (m)

- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages
- Historical military land

1.1 Historical industrial land uses

Records within 500m	30

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 15 >**

ID	Location	Land use	Dates present	Group ID
A	93m NW	Garage	1983	868555

ID	Location	Land use	Dates present	Group ID
A	93m NW	Garage	1965 - 1976	907514
B	166m SE	Nursery	1983	938621
B	166m SE	Nursery	1965 - 1976	975908
C	194m NW	Hospital	1965	868874
C	197m NW	Hospital	1976	882230
C	197m NW	Hospital	1983	941999
D	314m NW	Hospital	1934 - 1938	859708
D	315m NW	Hospital	1983	940050
D	316m NW	Hospital	1955 - 1965	900952
D	318m NW	Hospital	1976	951525
E	355m N	Cuttings	1892 - 1938	897804
E	358m N	Cuttings	1983 - 1989	900908
E	358m N	Cuttings	1955 - 1976	915611
F	396m NW	Cuttings	1892	958887
F	396m NW	Cuttings	1923	1001395
F	396m NW	Cuttings	1905	1008335
G	398m NW	Cuttings	1934 - 1938	959127
G	402m NW	Cuttings	1955	997590
G	402m NW	Cuttings	1916	970711
G	406m NW	Cutting Works	1965	820500
G	408m NW	Cuttings	1976 - 1989	880673
H	442m NE	Cuttings	1892 - 1938	964098
I	445m SE	Disused Motor Car Works	1934 - 1938	966969
H	445m NE	Cuttings	1955 - 1976	929542
H	445m NE	Cuttings	1983 - 1989	950159
I	452m SE	Unspecified Works	1983 - 1989	868710
I	452m SE	Unspecified Works	1976	873069
I	461m SE	Unspecified Works	1965	898226

ID	Location	Land use	Dates present	Group ID
I	466m SE	Motor Car Works	1955	856199

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	1

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 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 15 >**

ID	Location	Land use	Dates present	Group ID
3	382m W	Unspecified Tank	1881	120841

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	6

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 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 15 >**

ID	Location	Land use	Dates present	Group ID
1	183m SW	Electricity Substation	1975 - 1992	70966
2	204m N	Electricity Substation	1984 - 1992	86842
C	282m NW	Electricity Substation	1989 - 1992	70921
C	283m NW	Electricity Substation	1970	79499
4	397m NE	Electricity Substation	1984 - 1992	73339
5	433m NW	Electricity Substation	1992	66782

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 un-grouped 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	3

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 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 15 >**

ID	Location	Land use	Dates present	Group ID
A	90m NW	Garage	1956	23382
A	90m NW	Garage	1975	30507
A	90m NW	Garage	1958	22887

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m	1

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.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Site Name	Date of Operation	Activities
I	445m SE	Heaton Chapel	circa WWI	National Aircraft Factory; Aeroplanes

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

2 Past land use - un-grouped

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Site Outline

Search buffers in metres (m)

- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m	55

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 20 >**

ID	Location	Land Use	Date	Group ID
A	93m NW	Garage	1976	907514
A	93m NW	Garage	1983	868555
A	93m NW	Garage	1965	907514

ID	Location	Land Use	Date	Group ID
B	166m SE	Nursery	1976	975908
B	166m SE	Nursery	1983	938621
B	166m SE	Nursery	1965	975908
D	194m NW	Hospital	1965	868874
D	197m NW	Hospital	1976	882230
D	197m NW	Hospital	1983	941999
F	314m NW	Hospital	1938	859708
F	314m NW	Hospital	1934	859708
F	315m NW	Hospital	1983	940050
F	316m NW	Hospital	1965	900952
F	317m NW	Hospital	1955	900952
F	318m NW	Hospital	1976	951525
G	355m N	Cuttings	1923	897804
G	355m N	Cuttings	1938	897804
G	355m N	Cuttings	1934	897804
G	355m N	Cuttings	1916	897804
G	355m N	Cuttings	1905	897804
G	355m N	Cuttings	1892	897804
G	358m N	Cuttings	1976	915611
G	358m N	Cuttings	1983	900908
G	358m N	Cuttings	1989	900908
G	358m N	Cuttings	1955	915611
G	358m N	Cuttings	1965	915611
H	396m NW	Cuttings	1892	958887
H	396m NW	Cuttings	1923	1001395
H	396m NW	Cuttings	1905	1008335
J	398m NW	Cuttings	1938	959127
J	398m NW	Cuttings	1934	959127

ID	Location	Land Use	Date	Group ID
J	402m NW	Cuttings	1955	997590
J	402m NW	Cuttings	1916	970711
J	406m NW	Cutting Works	1965	820500
J	408m NW	Cuttings	1976	880673
J	408m NW	Cuttings	1983	880673
J	408m NW	Cuttings	1989	880673
K	442m NE	Cuttings	1923	964098
K	442m NE	Cuttings	1938	964098
K	442m NE	Cuttings	1934	964098
K	442m NE	Cuttings	1916	964098
K	442m NE	Cuttings	1905	964098
K	442m NE	Cuttings	1892	964098
L	445m SE	Disused Motor Car Works	1938	966969
L	445m SE	Disused Motor Car Works	1934	966969
K	445m NE	Cuttings	1976	929542
K	445m NE	Cuttings	1983	950159
K	445m NE	Cuttings	1989	950159
K	445m NE	Cuttings	1955	929542
K	445m NE	Cuttings	1965	929542
L	452m SE	Unspecified Works	1976	873069
L	452m SE	Unspecified Works	1983	868710
L	452m SE	Unspecified Works	1989	868710
L	461m SE	Unspecified Works	1965	898226
L	466m SE	Motor Car Works	1955	856199

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	1

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 20 >**

ID	Location	Land Use	Date	Group ID
1	382m W	Unspecified Tank	1881	120841

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	15

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 20 >**

ID	Location	Land Use	Date	Group ID
C	183m SW	Electricity Substation	1975	70966
C	184m SW	Electricity Substation	1992	70966
C	184m SW	Electricity Substation	1988	70966
E	204m N	Electricity Substation	1992	86842
E	205m N	Electricity Substation	1984	86842
E	205m N	Electricity Substation	1989	86842
E	205m N	Electricity Substation	1989	86842
D	282m NW	Electricity Substation	1992	70921
D	283m NW	Electricity Substation	1989	70921
D	283m NW	Electricity Substation	1989	70921
D	283m NW	Electricity Substation	1970	79499
I	397m NE	Electricity Substation	1992	73339
I	398m NE	Electricity Substation	1984	73339

ID	Location	Land Use	Date	Group ID
1	398m NE	Electricity Substation	1987	73339
2	433m NW	Electricity Substation	1992	66782

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	3

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'.

Features are displayed on the Past land use - un-grouped map on **page 20 >**

ID	Location	Land Use	Date	Group ID
A	90m NW	Garage	1956	23382
A	90m NW	Garage	1975	30507
A	90m NW	Garage	1958	22887

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

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	0

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.

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

3.5 Historical waste sites

Records within 500m	0

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

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

3.6 Licensed waste sites

Records within 500m	0

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

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

3.7 Waste exemptions

Records within 500m	0

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

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

4 Current industrial land use

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 27 >**

ID	Location	Company	Address	Activity	Category
A	66m N	Gas Governor	Greater Manchester, M19	Gas Features	Infrastructure and Facilities
A	72m N	Electricity Sub Station	Greater Manchester, M19	Electrical Features	Infrastructure and Facilities
1	117m W	Silk Road Prints	19, Alexandra Drive, Manchester, Greater Manchester, M19 2WW	Clothing, Components and Accessories	Consumer Products

ID	Location	Company	Address	Activity	Category
2	149m SW	Home Car Valeting	2, Jersey Close, Manchester, Greater Manchester, M19 2NU	Cleaning Equipment and Supplies	Industrial Products
3	200m SW	Electricity Sub Station	Greater Manchester, M19	Electrical Features	Infrastructure and Facilities
4	201m NW	Electricity Sub Station	Greater Manchester, M19	Electrical Features	Infrastructure and Facilities
5	207m N	Electricity Sub Station	Greater Manchester, M19	Electrical Features	Infrastructure and Facilities
6	230m N	Dress My Windows	8, Kempton Road, Manchester, Greater Manchester, M19 2GJ	Curtains and Blinds	Consumer Products

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

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

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

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

Records within 500m	0

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

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	6

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 27 >**

ID	Location	Address	Details	
B	328m NW	FORMER DUCHESS OF YORK HOSPITAL, CRINGLE LANE, BURNAGE, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991373 Permit Version: 1 Receiving Water: THE PEAK FOREST CANAL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/11/1994 Revocation Date: 01/11/1994
B	328m NW	FORMER DUCHESS OF YORK HOSPITAL, CRINGLE LANE, BURNAGE, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991374 Permit Version: 1 Receiving Water: THE PEAK FOREST CANAL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/11/1994 Revocation Date: 01/11/1994

ID	Location	Address	Details	
C	384m NE	CLARE RD/DAVENHILL RD CSO, 21 CLARE ROAD, MANCHESTER, GREATER MANCHESTER, M19 2GN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016940833 Permit Version: 1 Receiving Water: CRINGLE BECK	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1900 Revocation Date: 22/10/2019
C	409m NE	CLARE RD/DAVENHILL RD CSO, 21 CLARE ROAD, MANCHESTER, GREATER MANCHESTER, M19 2GN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016940833 Permit Version: 2 Receiving Water: CRINGLE BECK	Status: VARIED UNDER EPR 2010 Issue date: 23/10/2019 Effective Date: 23/10/2019 Revocation Date: -
D	412m NW	FORMER DUCHESS OF YORK HOSPITAL, CRINGLE LANE, BURNAGE, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991372 Permit Version: 1 Receiving Water: UNNAMED WATERCOURSE O/F2	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/11/1994 Revocation Date: 01/11/1994
D	412m NW	FORMER DUCHESS OF YORK HOSPITAL, CRINGLE LANE, BURNAGE, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991371 Permit Version: 1 Receiving Water: THE PEAK FOREST CANAL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/11/1994 Revocation Date: 01/11/1994

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.

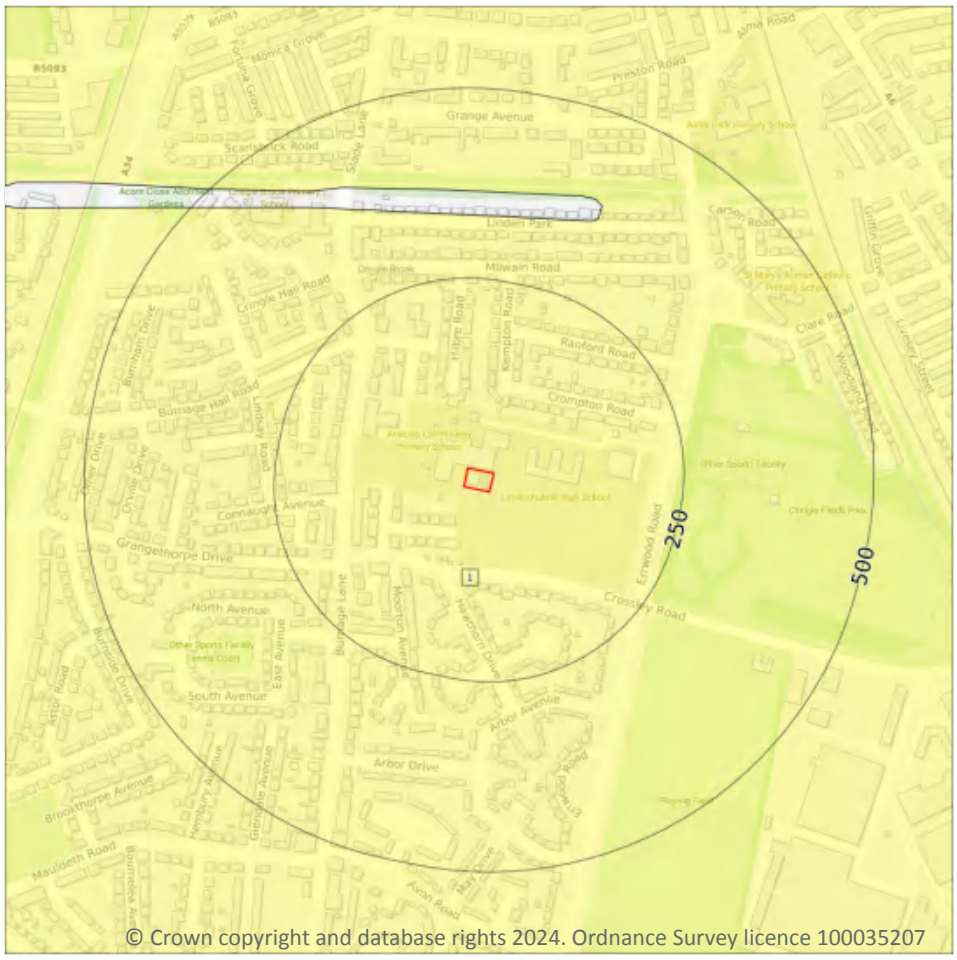
4.21 Pollution inventory radioactive waste

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



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Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	1

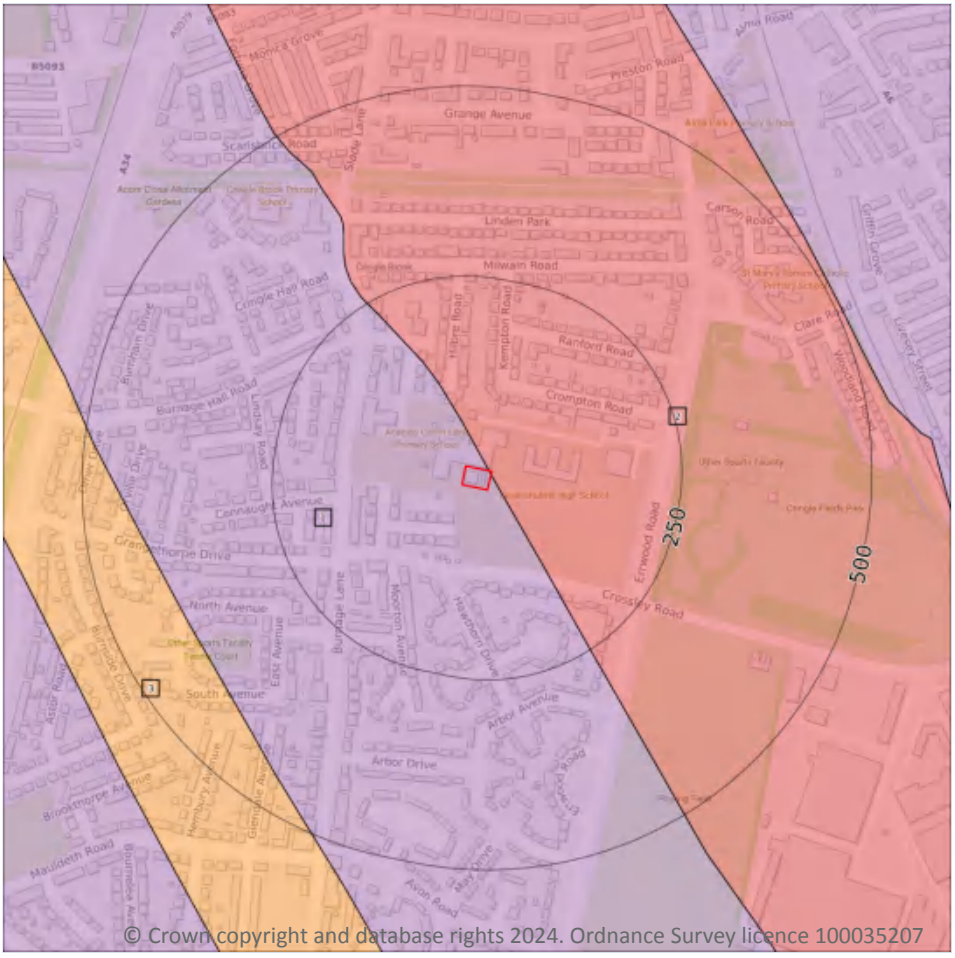
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 34** >

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

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

Bedrock aquifer



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Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	3

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 35** >

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	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

ID	Location	Designation	Description
3	403m SW	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-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	4

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 37 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year**	**Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures**
2	**On site**	**Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year**	**Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures**
3	5m E	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
4	8m E	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones

- Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- 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	9

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 40 >**

ID	Location	Details	
1	593m SW	Status: Historical Licence No: 2569013021 Details: Laundry Use Direct Source: Ground Water - North West Region Point: BURNAGE LANE, LEVENSHULME, MANCHESTER Data Type: Point Name: OCS GROUP UK LTD T/A CANNON Easting: 386720 Northing: 392830	Annual Volume (m^3): 91000 Max Daily Volume (m^3): 350 Original Application No: - Original Start Date: 19/03/2004 Expiry Date: 31/03/2014 Issue No: 2 Version Start Date: 17/01/2008 Version End Date: -
-	1105m SE	Status: Historical Licence No: 2569011037 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT CROSSLEY RD LEVENSHULME Data Type: Point Name: UNITED BISCUITS (UK) LIMITED Easting: 387960 Northing: 392840	Annual Volume (m^3): 170000 Max Daily Volume (m^3): 700 Original Application No: - Original Start Date: 16/03/1998 Expiry Date: 16/03/2008 Issue No: 101 Version Start Date: 01/01/2006 Version End Date: -
-	1105m SE	Status: Historical Licence No: 2569011040 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT CROSSLEY RD LEVENSHULME Data Type: Point Name: UNITED BISCUITS (UK) LIMITED Easting: 387960 Northing: 392840	Annual Volume (m^3): 132046 Max Daily Volume (m^3): 498 Original Application No: - Original Start Date: 03/10/2008 Expiry Date: 31/03/2017 Issue No: 1 Version Start Date: 03/10/2008 Version End Date: -
-	1267m S	Status: Historical Licence No: 2569013020 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "BOREHOLE AT HEATON MOOR GOLF CLUB, STOCKPORT" Data Type: Point Name: HEATON MOOR GOLF CLUB Easting: 387260 Northing: 392130	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/03/1997 Expiry Date: - Issue No: 100 Version Start Date: 18/03/1997 Version End Date: -

ID	Location	Details	
-	1267m S	Status: Historical Licence No: 2569013020 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT HEATON MOOR GOLF CLUB, STOCKPORT Data Type: Point Name: Brian McCrae Easting: 387260 Northing: 392130	Annual Volume (m^3): 8000 Max Daily Volume (m^3): 50 Original Application No: - Original Start Date: 18/03/1997 Expiry Date: - Issue No: 102 Version Start Date: 08/04/2009 Version End Date: -
-	1270m S	Status: Active Licence No: 2569013020 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT HEATON MOOR GOLF CLUB, STOCKPORT Data Type: Point Name: Heaton Moor Golf Club Limited Easting: 387258 Northing: 392126	Annual Volume (m^3): 8000 Max Daily Volume (m^3): 50 Original Application No: NPS/WR/029279 Original Start Date: 18/03/1997 Expiry Date: - Issue No: 104 Version Start Date: 09/08/2018 Version End Date: -
-	1994m NE	Status: Historical Licence No: 2569013018 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT SANDFOLD LANE, LEVENSHULME, MANCHESTER" Data Type: Point Name: CBA ENTERPRISES LTD Easting: 388500 Northing: 394700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/06/1992 Expiry Date: - Issue No: 100 Version Start Date: 29/03/1996 Version End Date: -
-	1994m NE	Status: Historical Licence No: 2569013018 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT SANDFOLD LANE, LEVENSHULME, MANCHESTER Data Type: Point Name: CBA ENTERPRISES LTD Easting: 388500 Northing: 394700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/06/1992 Expiry Date: - Issue No: 100 Version Start Date: 29/03/1996 Version End Date: -

ID	Location	Details	
-	1994m NE	Status: Historical Licence No: 2569013018 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT SANDFOLD LANE LEVENSHULME MANCHESTER Data Type: Point Name: CBA ENTERPRISES LTD Easting: 388500 Northing: 394700	Annual Volume (m^3): 117835 Max Daily Volume (m^3): 409 Original Application No: - Original Start Date: 18/06/1992 Expiry Date: - Issue No: 100 Version Start Date: 29/03/1996 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	0

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.

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

5.8 Potable abstractions

Records within 2000m	0

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.

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	2

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

Features are displayed on the Hydrology map on **page 45 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
3	236m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Cringle Brook

ID	Location	Type of water feature	Ground level	Permanence	Name
5	238m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Cringle Brook

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 45 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Fallowfield Brook**	**GB112069061410**	**Bollin Dean Mersey Upper**	**Mersey Upper**

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 45 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
4	237m N	River	Fallowfield Brook	GB112069061410 ↗	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 45 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	**On site**	**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**GB41201G101100 ↗**	**Poor**	**Poor**	**Poor**	**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

8.1 Surface water flooding

Highest risk on site	**Negligible**
Highest risk within 50m	**Negligible**

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.

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	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding

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Site Outline

Search buffers in metres (m)

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

9.1 Groundwater flooding

Highest risk on site	**Moderate-High**
Highest risk within 50m	**High**

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 52 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations

Site Outline
Search buffers in metres (m)
Local Nature Reserves (LNR)

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on **page 53 >**

ID	Location	Name	Data source
1	1002m E	Highfield Country Park	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m	0

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.

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	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

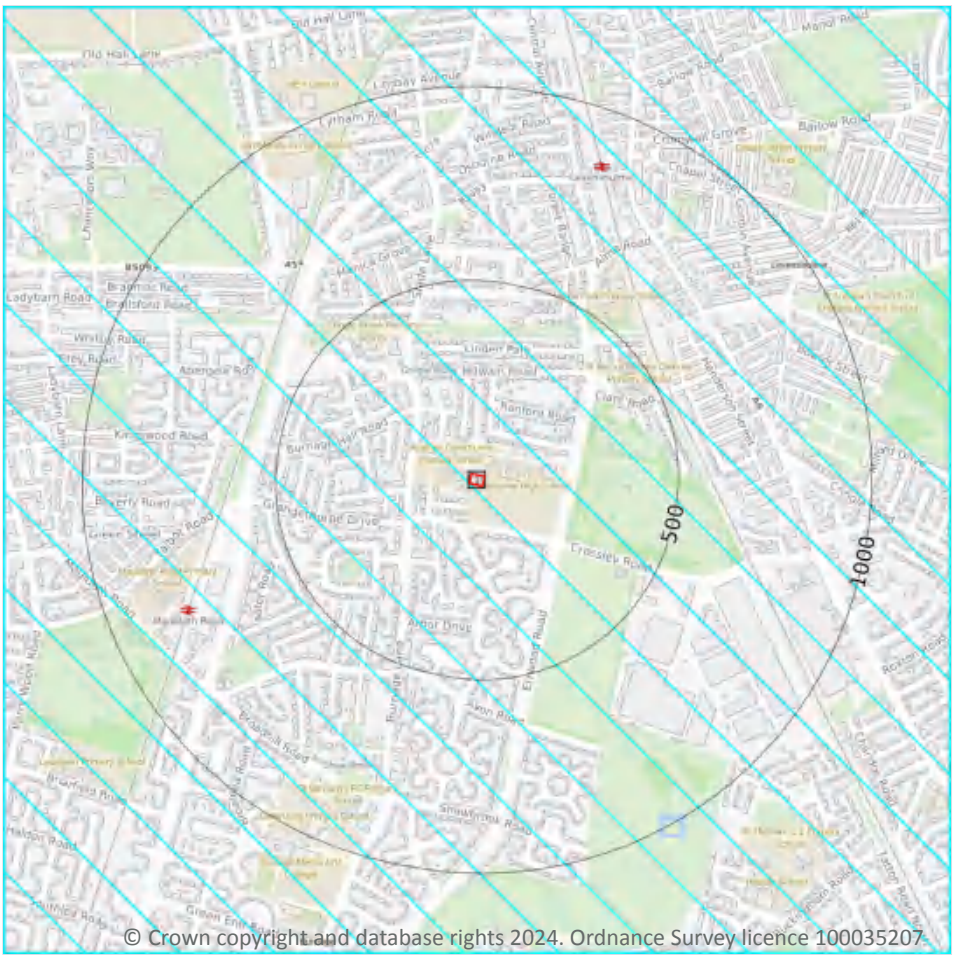
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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

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

SSSI Impact Zones and Units



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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 58 >**

ID	Location	Type of developments requiring consultation
1	On site	**Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m². Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

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

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

11 Visual and cultural designations

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.

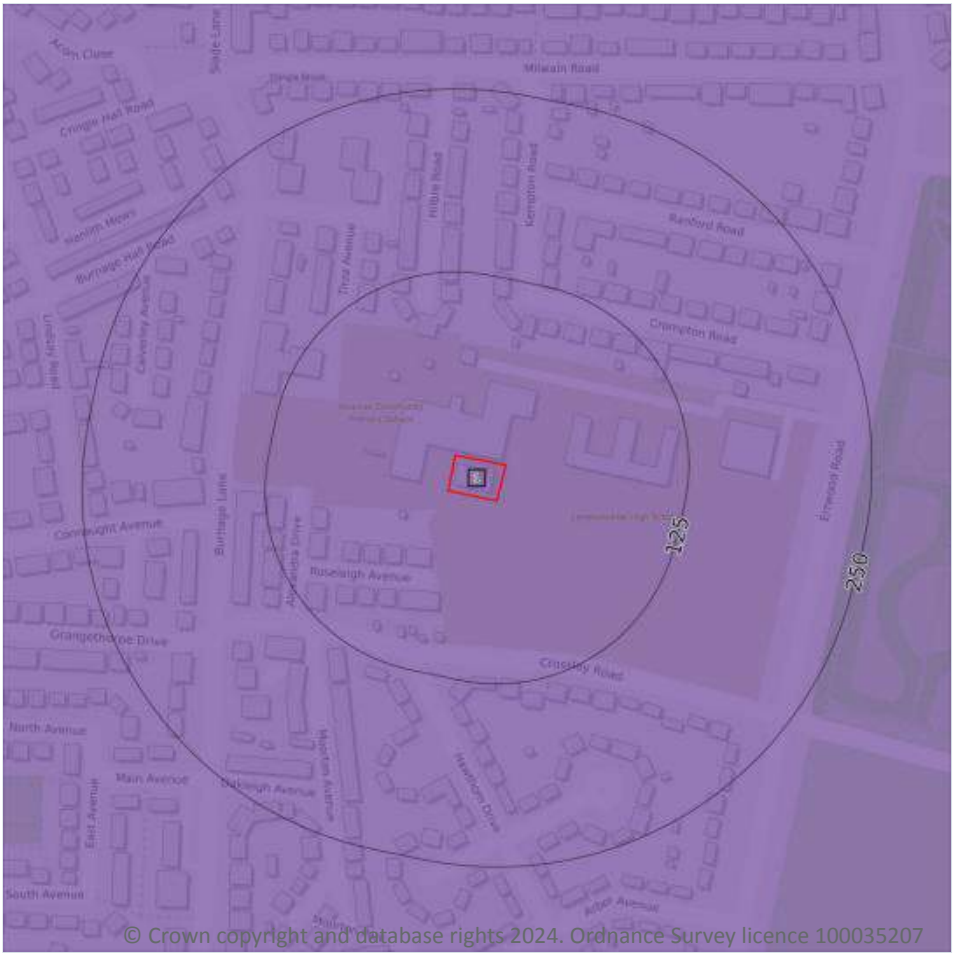
11.7 Registered Parks and Gardens

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	1

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 62 >**

ID	Location	Classification	Description
1	**On site**	**Urban**	**-**

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks
Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	8

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

Features are displayed on the Habitat designations map on **page 64 >**

ID	Location	Main Habitat	Other habitats
1	226m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	226m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	232m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	232m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
2	238m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	239m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	244m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	250m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

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

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability

Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	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 66 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SJ89SE**

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	11

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.

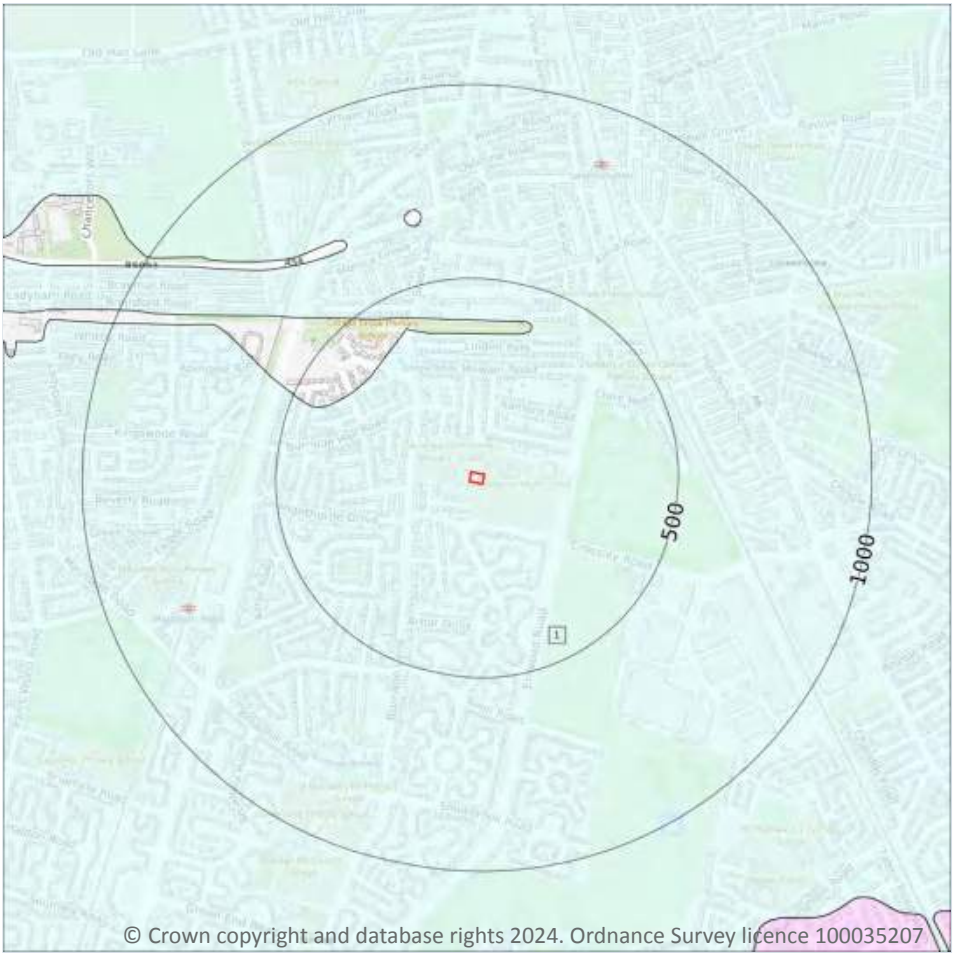
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 67 >**

ID	Location	LEX Code	Description	Rock description
1	92m NW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
2	160m E	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	271m SW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	297m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit

ID	Location	LEX Code	Description	Rock description
A	299m S	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	320m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	327m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	334m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	358m N	WGR-VOID	Worked Ground (Undivided)	Void
A	405m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	417m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m	1

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 69 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**Till, Devensian - Diamicton**	**Diamicton**

This data is sourced from the British Geological Survey.

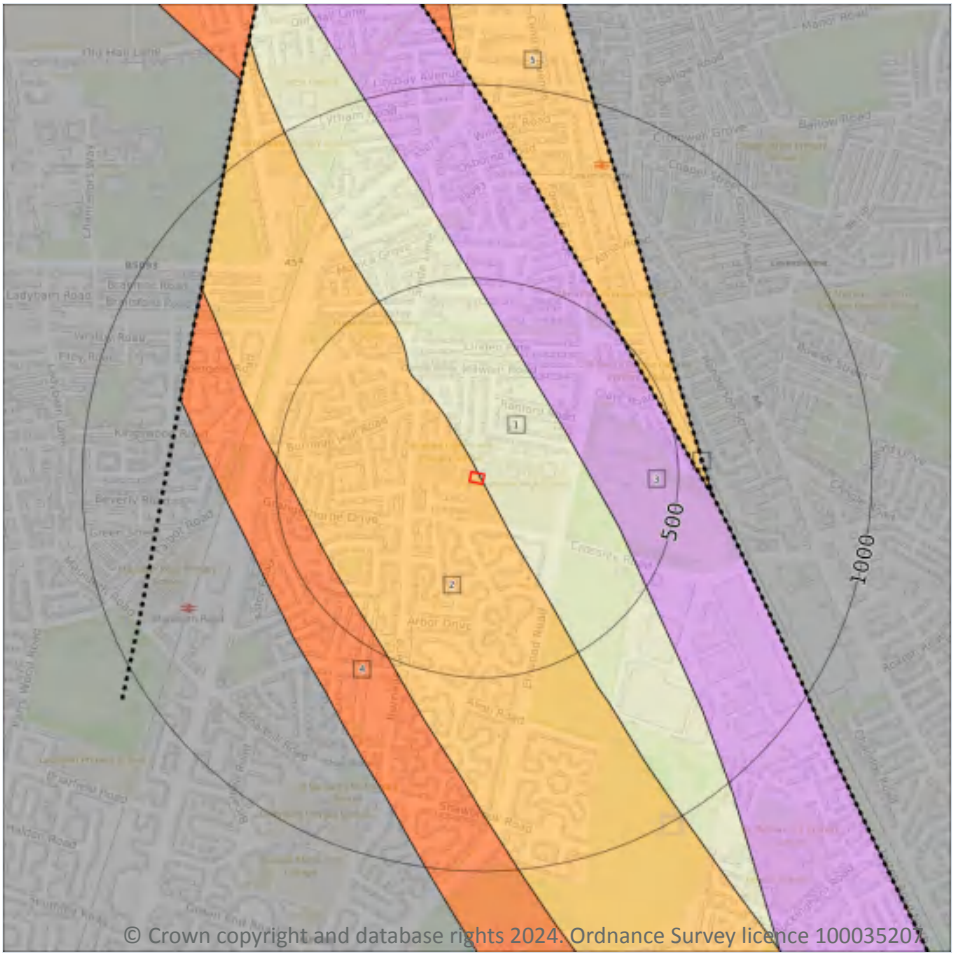
14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m	5

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 71 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**HA-MDSS**	**Halesowen Formation - Mudstone, Siltstone And Sandstone**	**Westphalian D Sub-age**
2	**On site**	**CS-SDST**	**Collyhurst Sandstone Formation - Sandstone**	**Cisuralian Epoch**
3	236m NE	ETM-STMD	Etruria Formation - Sandstone And Mudstone	Westphalian Age

ID	Location	LEX Code	Description	Rock age
4	416m SW	MM-MDST	Manchester Marls Formation - Mudstone	Late Permian Epoch [Obsolete name]
5	483m NE	CS-SDST	Collyhurst Sandstone Formation - Sandstone	Cisuralian Epoch

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**1**

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 71 >**

ID	Location	Category	Description
6	483m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability

Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	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 73 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW098_stockport_v4**
2	482m N	No coverage	Full	Full	No coverage	EW085_manchester_v4

This data is sourced from the British Geological Survey.

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

15.2 Artificial and made ground (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial

Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m	2

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 75 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	482m N	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

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.

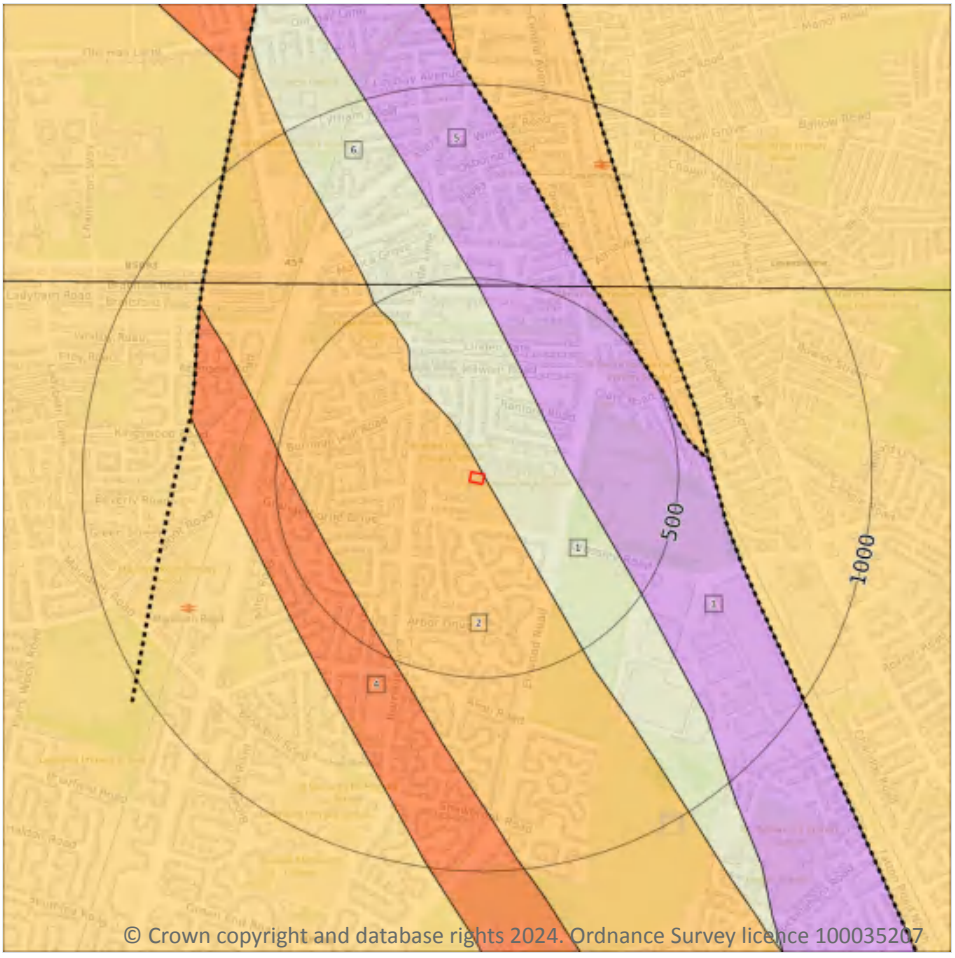
15.7 Landslip permeability (50k)

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	6

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 77 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**HA-MDSS**	**HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**
2	**On site**	**CS-SDST**	**COLLYHURST SANDSTONE FORMATION - SANDSTONE**	**-**
3	201m NE	ETM-STMD	ETRURIA FORMATION - SANDSTONE AND MUDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
4	403m SW	MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE	-
5	482m N	ETM-STMD	ETRURIA FORMATION - SANDSTONE AND MUDSTONE	WESTPHALIAN
6	482m N	HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2

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	**Intergranular**	**High**	**High**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

16 Boreholes

16.1 BGS Boreholes

Records within 250m	0

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

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays

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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 80 >**

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

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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

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 81 >**

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

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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

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 82 >**

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

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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

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 83 >**

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

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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

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 84 >**

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

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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

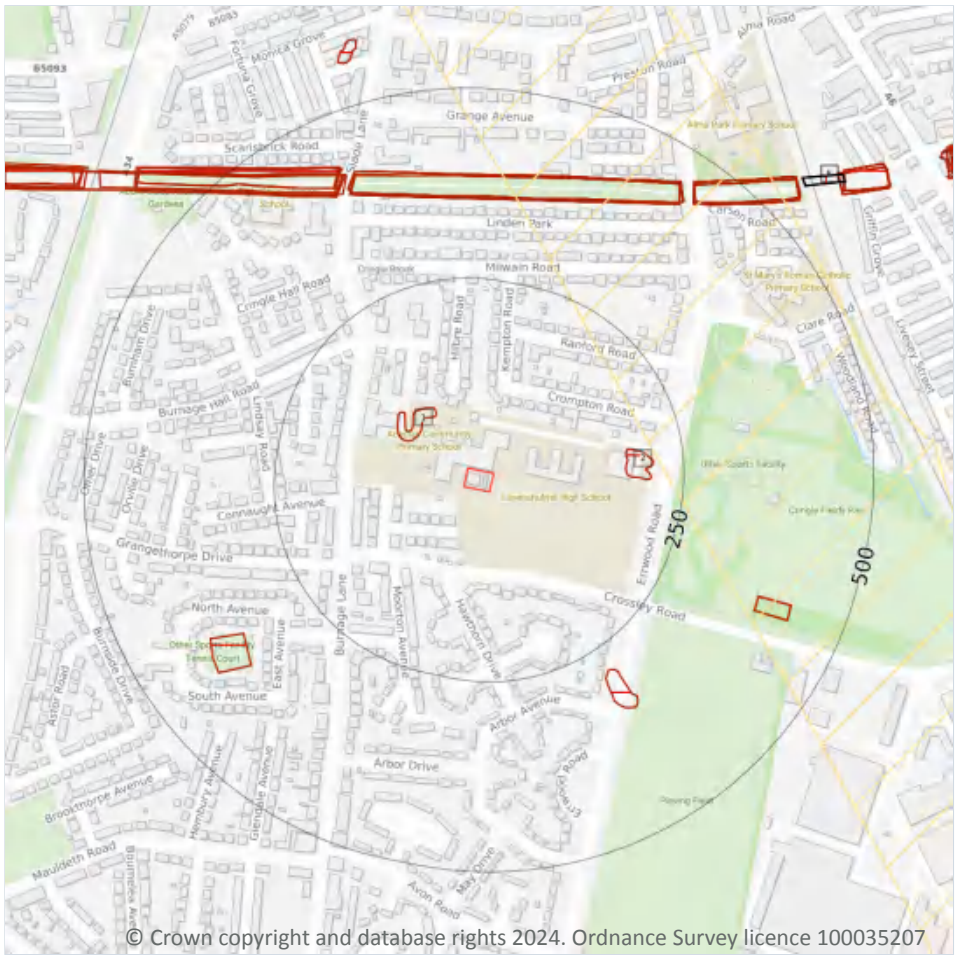
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 85 >**

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	2

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 87 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	78m NW	Pond	1849	1:10560
2	174m E	Pond	1849	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	3

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 87 >**

ID	Location	Land Use	Year of mapping	Mapping scale
F	558m NE	Tunnel	1976	1:10000
F	558m NE	Tunnel	1983	1:10000
F	558m NE	Tunnel	1989	1:10000

This is 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 87 >**

ID	Location	Name	Commodity	Class	Likelihood
3	198m NE	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	1

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

Location	Details
On site	**Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) may have information such as mining plans and maps held within their archive that have occurred within 1km of this property. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk ↗.**

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	0

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

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

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	0

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

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

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

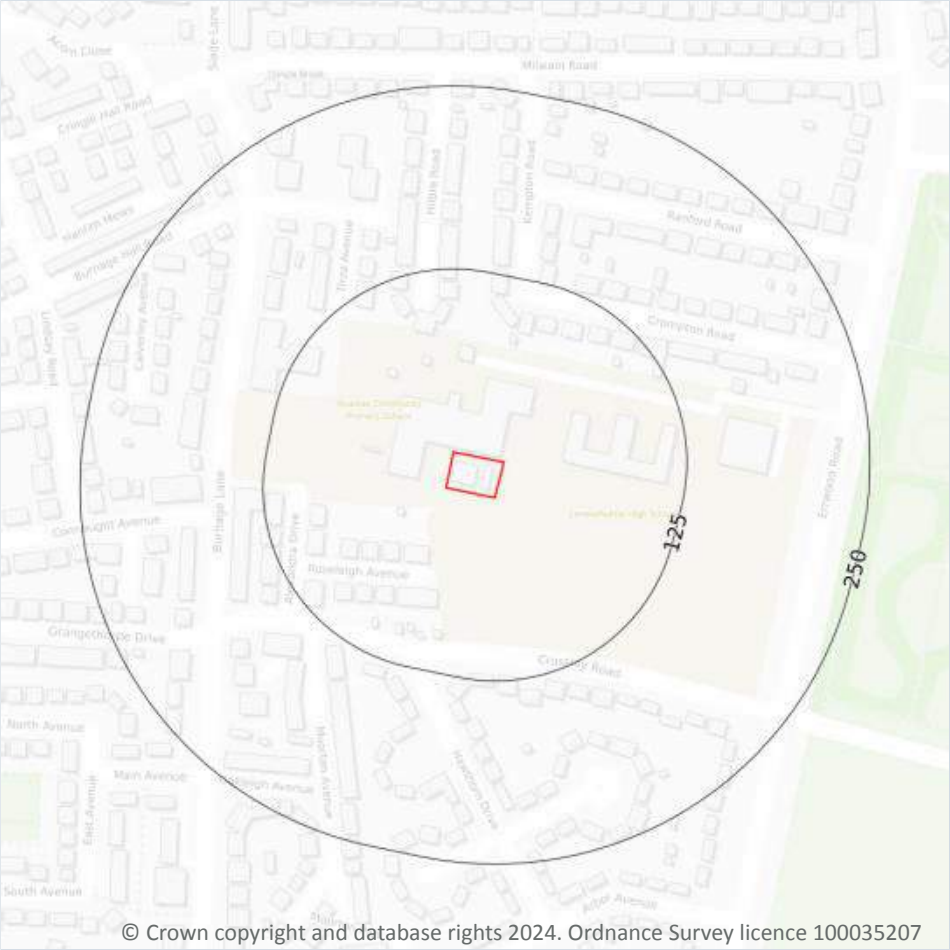
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

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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Site Outline

Search buffers in metres (m)

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

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 94 >**

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	4

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 km^2. 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 km^2; 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	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
5m E	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
9m E	25 - 35 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 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 km^2).

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 km^2.

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

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- Site Outline
- Search buffers in metres (m)
- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

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	1

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.

Features are displayed on the Railway infrastructure and projects map on **page 98 >**

Location	Land Use	Year of mapping	Mapping scale
153m S	Tramway Sidings	1922	2500

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 V – BGS BOREHOLE LOGS

APPENDIX V –BGS BOREHOLE LOGS

British Geological Survey

RECORD OF WELL (SHAFT OR BORE)

1" N.S. ____
1" O.S. ____
Grid Ref. 4

At Brockbank & DeRance's Section of Railway Cutting

Town or Village Levenshulme County LANCS Six inch quarter sheet 11 NE

Exact sites ____ in parish of ____ (A rough sketch-map or a tracing from a map is very desirable)

Level of ground surface above sea-level (O.D.) ____ ft. If well starts below ground surface state how far ____ ft.

Shaft ____ ft. diameter ____ ft. Bore ____ ft. Diameter of bore: at top ____ ins.; at bottom ____ ins.

Details of permanent lining tubes (internal diameters preferred) ____

Water struck at depths of (feet) ____

Rest-level of water below/above top of well ____ feet. Suction at ____ feet. Yield on ____ hours/days' test ____ gallons per ____ (with pump of capacity ____ g.p.h.); depressing water level to ____ feet below top. Time of recovery ____ hrs. Amount normally pumped daily ____ g.p.h. for ____ hours.

Quality (attach copy of analysis if available) ____

Sunk by ____ for Mr ____ Date of well ____

Information from ____

(For Survey use only) GEOLOGICAL CLASSIFICATION	NATURE OF STRATA (and any additional remarks)	THICKNESS Feet	THICKNESS Inches	DEPTH Feet	DEPTH Inches
	See ~~[illegible]~~ Mem. & Proc. Manch. Lit. & Phil. Soc. vol. IV. Ser. 4, 1891.				
	* See also attached report by DeRance to the Director General				

For Survey use only

Date Received	O.S.M. Office File No.	Site marked on 1" map (not symbol)

Geological Survey and Museum, South Kensington, London S.W.7.

British Geological Survey

SJ89SE4 K 4

Alderley Edge Manchester
24 April 1890

Sir,

In accordance with your instructions received from Mr Topley, I have carefully examined the cuttings now in progress for the Manchester and Sheffield and Lincolnshire Railway between Slade Lane Levenshulme and Withington high road at Fallowfield.

I yesterday I am glad to report found the junction of the Red Sandstone (which is not less than 800 feet in thickness), with dark purplish-grey marls with green bands, overlying what Mr Brockbank F.G.S. has called "the Levenshulme Limestone" and which he described in 1883, in a paper herewith enclosed.

The "mottled marls" overlie several beds of grey brecciated limestone with numerous specimens of Spirorbis Carbonarius, that limestone in colour, ring, structure, thickness, and included remains, resembles the Ardwick Limestone occurring at the top of the Upper Coal measures, 200 yards above the Openshaw Coal, the uppermost seam

The Director General of the Geological Surveys.

British Geological Survey

SJ89SE4

of the Manchester [illegible] The purple grey marls also resemble the mottled marls of Upper Coal Measure age containing Modiola Macadami of Sutton, nr St Helens.

Mr Brockbank informs me, that he had not noticed these purple marls, until I pointed them out to him, and was under the impression that the higher dip of what he called the "Levenshulme Limestone", was due to the mere presence of the Great fault, cutting off these old beds, and throwing down the Trias to the east instead of the higher dip, of the older rock.

The present section exposed, is cut nearly in the line of full dip, which as regards direction is nearly coincident, in the red sandstones, and the purple marls, and grey limestones beneath, he was therefore under the impression that there was a complete sequence without any break from his "Levenshulme Limestone", to the last beds of red sandstone seen at the western end of the cutting at Withington, towards which there is a steady westerly dip. The full dip of the Red Sandstone being to the W.S.W., at 10 degrees.

In this view he was confirmed, by his previous experience, in the Slade Lane sewer cutting, which ranging north and

British Geological Survey

SJ89SE4

south, followed the strike of the "Leaushulm Limestone", which when the seam abruptly changed its direction, was at once overlaid by the Red Sandstone without the intervention of the "Mottled Marls". The absence of which proves the red sandstone has been deposed upon an upturned, and eroded surface.

This surface, I pointed out to Mr Brockbank in the railway cutting yesterday, slopes westward at 10 degrees, the Red Sandstone above it dipping at 14 degrees, and the Mottled Marls below at 30 to 40, Mr Brockbank fully realized this well marked plane of division, and recognized the great physical difference between the exceedingly thin-bedded smooth marl partings in the Red Sandstone, with its bright red colour, and the "Knobly" rounded fracture of the dark purplish-grey "upper coal-measures marls" below them.

It is due to Prof. Boyd Dawkins to state, that he pointed out to Mr Brockbank, in 1883, that the "Leaushulm Limestone" were Upper Coal-measures, and were on the same horizon, as the "Ardwick Limestone", Mr Brockbank having regard to the then apparently unbroken sequence regarded them as Permian Limestone. This position cannot now be maintained, but

British Geological Survey

SJ89SE4

had not the plane of erosion between the two formations been discovered, it might have been pointed out that there is an absence of the magnesian limestone, that permian fossils do not occur either in the limestone, or in the associated marl, that the calcareous ironstone that occurs both in the Slade Lane railway cutting and previously in the Slade Lane, is not what would be expected in a Permian Limestone series.

The steam-navvy is now working eastwards, exposing lower and lower beds of the Limestone series, in a cutting of 18 to 20 feet depth, the rock-surface is extensively glaciated, and blocks of limestone have been torn out of their bed-planes, and deposited in the stiff blue Boulder Clay, the "angles" of these detached blocks are sharp, but the upper surface, or at least one surface, is worn and striated in a manner obviously produced by ice. Between the rock and the Clay, a bed of soft yellow sand occurs of varying thickness. Above the Boulder Clay is very compact, but to the west over the Red Sandstone there is first a bed of sand varying from inch to 10 feet, then a bed of brown Clay, with a majority of local Carboniferous pebbles and boulders varying upto 10 feet; then a line of erosion, and a bed of sand, varying from inch to 6 feet, but no shells were noticed above the occurrence about 12 feet of Boulder Clay, grey above and blue (small) below, traversed by vertical joints admitting water to the sand below, and containing Boulders (upto five feet), of Lake District Volcanics, Criffel Granite, and local Rocks.

British Geological Survey

SJ89SE4 4

The surface of the rock beneath the Drift is evidently descending eastwards and it is probable that in a very few yards it will descend below the rail-level, should however the beds continue visible, I should expect that the Ardwick thin coal will be found.

As regards the overlying Red Sandstone I think it probable that they may be referred to the Lower Permian, or Collyhurst Sandstones, as suggested by Mr Brockbank if this be so, the Permian marl and Limestone series will probably be found further westward, and I understand there is some evidence in borings, that this is the case, on which point I am expecting information. The sandstone resembles in its dark colour, and structure and size of constituent grains to Collyhurst Sandstone, and the beds, occurring at the base of the Trias in several borings, between Liverpool and Warrington, in the middle occurs a bed intersected by planes, or joints filled with purple marl, pockets of similar marl, including pebbles of vein-quartz, and quartzite, and of some ancient rock, these pebbles also occur through about 100 feet of sandstone, which is more open and concave in structure, and intersected by beds of marl up to two feet in thickness of a dark purple colour. The whole series resemble the Lower Permian Sandstone proved at the Clayton Boring for coal, this boring is rather less than 3 miles to the North east of the Stack section, and is to the east of the Manchester

British Geological Survey

SJ89SE4

Coalfield fault, it is close to the township boundary between Clayton and Openshaw, west of the Manchester & Stockport Canal at Clayton Gardens, through the kindness of the late Mr Binney I examined the cores on the ground, the following is an abstract of the section, the details of which I have printed:—

	Ft.	Feet. In.
Drift	36·0	82·2
Burnton	40·0	
Red Shale	6·2	
Permian marls with fossiliferous limestone		200·7
Conglomerate		2·0
Permian Sandstone		752·0
Upper Coal Measures, with Spirorbis Limestone		263·0
		1300·0

Further north at Clayton Vale Printworks a boring had previously established a similar sequence, and the width of the Pebble Beds east of the Manchester Coal field fault at Clayton Vale, and in fact from Gorton to Newton Heath, and the intermediate area, will have to be extended, and two new lines introduced, indicating the position of the base of the Trias, and the base of the Permian Marls, this will have to be

British Geological Survey

SJ89SE4

introduced in four sections maps, and the Manchester and Stockport on inch quarter-sheets.

East of Levenshulme, borings collected by Mr Binney, later by Prof. Hull, and still more recently by Mr Brockbank, point to the southern continuation of the Manchester Coalfield fault, and the occurrence of Triassic sandstones on its east or downthrow side, as shown on the Survey Map, but the position of the fault, as pointed out by Mr Brockbank in 1883, is certainly a great deal too far east, and the beds to the west of it, are not Permian overlaid by Trias, but Coalmeasures, overlaid by Permian Sandstone.

The results of recent borings have not only proved the Permian strata, to have a much greater vertical thickness than we previously knew, but to have a consequent greater horizontal area of exposure, the railway cutting now open, and the sewer excavation before described by Mr Brockbank, prove a second exposure of the Manchester Coalfield, the presence of which had already been forecasted, by borings at Charlton on-Medlock.

British Geological Survey

SJ89 SE4

I should be obliged if plain copies of the six inch maps be sent to me, on which I will mark the position of the faults and boundaries, which have been proved by recent excavations, and borings. The changes are considerable, but the country is hard and covered with glacial drift, and in the absence of sections, the nature of the underlying rocks, could only be inferred.

Mr Brockbank is expecting a section drawn to scale of the railway cutting, which he has promised to lend me, when I receive it. I purpose placing on a copy, the detail I have noted, during my examination of the cuttings.

Mr Brockbank is anxious to have a microscopic slide of the limestone, and has given me a piece he is specially anxious to have sliced, if this may be done, I will forward the specimen up.

Mr Brockbank is going to have some photographs taken of the more interesting points in the section, he is very anxious, if the cutting does not intersect the coal land to sink a 50 feet bore-hole to prove what is under the limestone, and would contribute to the cost, if the Survey, or the British Association would share it, I may add that I believe several hand, and expensive beds to penetrate in a boring, will occur in that depth.

Yours ever
C. E. Ranson

Status
Draft1
Date 16/2/93

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG - CABLE PERCUSSION

SJ 89 SE 455

Borehole No.
36
Sheet 1 of 1

Contract No.	F9638	Method	Mini Soils Survey	Coords.	8756 9355
Project	Chorlton Brook	Drilling Rig	Portable		
		Diameter	65mm	Ground Level	52.69
Client	National Rivers Authority			Orientation	Vertical
Consultant	Manstock			Date Started	15/12/92
				Date Completed	15/12/92

Description of Strata	Legend	Depth below O.L.	O.D. Level	Sampling			Casing Depth	( ) & "N"		Installation
MADE GROUND Brown silty clay with occasional brickrush and cinder fragments.				D	0.00	1.50				
		0.60	52.09							
MADE GROUND Brown clay with some ash and cinders.										
				S	1.00			"S"		
		1.50	51.19							
Stiff brown slightly silty CLAY with occasional fine rounded gravel				D	1.50	1.80				
		1.80	50.89							
Stiff to very stiff dark brown and grey slightly silty CLAY with occasional fine rounded gravel				DS	1.40	2.40		"M"		
		3.10	49.59							
Brown becoming very dense reddish brown silty fine SAND				D	3.10	3.40				
		3.40	49.29							
Borehole Complete at 3.40m.										

REMARKS - See Header Sheet for:
Key to Symbols and abbreviations
Drilling Details, Progress and Water Strikes
General Notes

Form 0.12
Version 1.04
Revised 24.09.92

Status		Borehole No.
Draft 1	Norwest Holst Soil Engineering Ltd.	36
Date 16/2/93	BOREHOLE LOG - CABLE PERCUSSION	Header Sheet

Contract No. F9638
Project Chorlton Brook
Client National Rivers Authority
Consultant Manstock

Method Mini Soils Survey
Drilling Rig Portable
Diameter 65mm

Coords. 8756 4855
Ground Level 52.69
Orientation Vertical
Date Started 15/12/92
Date Completed 15/12/92

PROGRESS

Date	Time	Hole Depth	Casing Depth	Casing Dia.	Water Depth	Remarks
15/12/92	-	3.40	3.40	65	Dry	

WATER STRIKES

Date	Time	Strike	Rise	After a Minutes	Flow	Sealed

DRILLING DETAILS

Chiselling From	Chiselling To	Chiselling Hours	Water added From	Water added To	Remarks

SPT AND CPT DETAILS

Depth	Blows for 75mm Increments
1.00	1,2,1,1,2,1
1.80	5,5,5,6,6,7
3.00	10,11,12,13,14,14

NOTES

All depths in metres; all diameters in millimetres.

Borehole sunk using Mini Soil Surveys technique.

GROUNDWATER LEVELS ARE SUBJECT TO SEASONAL, TIDAL AND OTHER FLUCTUATIONS AND SHOULD NOT BE TAKEN AS CONSTANT

Driller MS5/EM | Logged by MS5 | Checked by

KEY TO SYMBOLS AND ABBREVIATIONS

D	Small Disturbed Sample	W	Water Sample	S	Standard Penetration Test
B	Bulk Disturbed Sample	G	Gas Sample	C	Cone Penetration Test
LB	Large Bulk Disturbed Sample	C	Blows to drive 1000	N	N for full 300mm penetration
U	Undisturbed 0100 Sample	V	Earth Vane Test	0.15	For giving penetration (mm)
P	Piston Sample	PR	Pressuremeter Test	0.15	Sealing blows only
TW	Thin wall Sample	K	Permeability Test	NP	No penetration
NR	No Recovery				

Penetrometer: Upper Seal, Seal Cell, Penetrometer Tip, Lower Seal, Chord

Form G103
Version 1.04
Revised 24.09.92

Smarts Laundry, Levenshulme

NORTHWESTERN

SJ 89/252

98

SJ8990/746

SJ 8672 9283

Lond/ Abstr

Collyhurst Sndstn.

118.87

7.31

4/10/03

9/03

Borehole log + Casing details available

30m

J P Whitter

Record 21/1/04 5301/252

J P WHITTER (WATER WELL ENG) LTD

BOREHOLE RECORD

A SITE DETAILS

Borehole drilled for	CCS Ebarts Group	
Location	210 Rochdale Road, Crumpsall, Manchester M19 1FL	
NGR (8 fig.)	SJ 8672 6283	Please attach site plan.
Ground level (if known)	Unknown	
Drilling Company	J P Whitter (Water Well Engineering) Ltd	
Date of Drilling	Commenced: August 2003	Completed: September 2003

B CONSTRUCTION DETAILS

Borehole Datum (if not above level) GL m above/below GL
(point from which all measurements of depth are taken, flange, edge of chamber, etc.)

Borehole drilled diameter	250 mm from	GL	to	24	m/depth	
	200 mm from	24	to	27	m/depth	
	150 mm from	27	to	80	m/depth	
Casing material and type	Steel lining tubes plain					
	200 mm from	GL	to	27	m/depth	plain steel
	150 mm from	GL	to	36	m/depth	plain steel

Grouting Details: Using OPC grout from the bottom up using Tremmy pipes

Water struck at : 13.5 metres onwards m (depth below datum mbd)
m (depth below datum mbd)

Best water level on completion 8.5 metres

C TEST PUMPING SUMMARY (if not above, please attach a detailed test)

Test pumping datum (if different from borehole datum)	GL	m above/below datum (mbd)
Pump suction	40	mbd
Water level (Start of test) :	7.01	mbd
Water level (End of test) :	20.63	mbd
Pumping rate :	414 l/m	m³/day/l/s
for	5 days	days/hours
Recovery to : 7.47	mbd in 3 days	mins hrs days

Date of measurements 01-10-03 to 11-10-03

1345

D. STRATA LOG

Geological Classification (BGS only)	Description of Strata	Thickness M	Depth M
	Topsoil	1	0 - 1
	Yellow sandstone	5	1 - 7
	Sandstone	26	7 - 33
	Sandstone: marl	47	33 - 80
	Other Comments		

FOR OFFICIAL USE ONLY

FILE ... CONSENT NO: ... BGS REF. NO: ...

LICENCE NO ... USE OF BH ... NGR: ...

12015

APPENDIX VI – EXPLORATORY HOLE RECORDS AND PHOTOGRAPHS

APPENDIX VI – EXPLORATORY HOLE RECORDS AND PHOTOGRAPHS

Exploratory Hole Key Sheet

SAMPLES:

Undisturbed:

U	Driven tube sample
UT	Thin wall driven tube sample
TW	Pushed thin wall tube sample
P	Pushed piston sample
L	Liner sample (from windowless or similar sampler), full recovery unless otherwise stated
CBR	CBR mould sample
BLK	Block sample
C	Core sample (from rotary core) taken for laboratory testing

Disturbed:

D	Small sample
B	Bulk sample
AMAL	Amalgamated sample

Environmental:

ES	Environmental soil sample
EW	Environmental water sample

Comments: Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that an attempt was made to take a tube sample; however, there was no recovery. Sample recovery is given as a percentage.

TESTS:

SPT S or SPT C — Standard Penetration Test, open shoe (S) or solid cone (C)

The Standard Penetration Test is defined in BS EN ISO 22476-3 (2005). The incremental blow counts are given in the Field Records column; each increment is 75mm unless stated otherwise and any penetration under self weight in mm (SW) is noted. Where the full 300mm test drive is achieved the total number of blows for the test drive is presented as N = ** in the Test column. Where the test drive blows reach 50 (either in total or for a single increment) the total blow count beyond the seating drive is given (without the N = prefix).

ICBR	In situ CBR
IV	In situ vane shear strength, peak (p) and remoulded (r), kPa
HV	Hand vane shear strength, peak (p) and remoulded (r), kPa
PP	Pocket penetrometer test, converted to shear strength, kPa
KFH, KRH, KPI	Variable head permeability tests (KFH = falling head test, KRH = rising head test, KPI = packer test), permeability value
PID/FID	Photo-ionisation detector/Flame-ionisation detector

Test results provided in Field Records column

DRILLING RECORDS:

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930: 2015 and BS EN ISO 22575-1 (2006)

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm. Minimum, typical and maximum spacings are presented.
NI	Non intact is used where the core is fragmented.
CRF	Core recovered (length in m) in the following run
AZCL	Assessed zone of core loss
NR	Not recovered

FLUSH TYPE:

a - air
a/m - air/mist
f - foam
p - polymer
s - saline
w - water

GROUNDWATER:

▽ Groundwater strike

▼ Groundwater level after standing period

DEPTH REMARKS:

EoS	End of Shift
SoS	Start of Shift
EoBH	End of Borehole

INSTRUMENTATION:

Details of installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill. The type of instrument installed is indicated by a code adjacent to the Legend column at the base of the instrument.

SP	Standpipe
SPIE	Standpipe piezometer
PPIE	Pneumatic piezometer
EPIE	Electronic piezometer
AP	Access pipe
GMP	Gas monitoring standpipe
(xx)	Internal diameter (mm)
ICE	Biaxial inclinometer
ICM	Inclinometer tubing for use with probe
SLIP	Slip indicator
ESET	Electronic settlement cell/gauge
ETM	Magnetic extensometer settlement point
ETR	Rod extensometer

EXPLORATORY HOLE TYPE:

CP	Cable percussion
DP	Dynamic probe
DCP	Dynamic cone penetrometer
HA	Hand auger
IP	Inspection pit
OP	Observation pit/trench
PC	Pavement core
RC	Rotary core
RO	Rotary open hole
SH	Shaft
SNC	Sonic (resonance)
TP	Trial pit/trench
TRAV	Traverse
WLS	Windowless (dynamic) sample
WS	Window (dynamic) sample

Trial Pit Log

Exploratory position reference:

HP01

Personnel:		Equipment & methods:		Dimensions:		Coordinates & level:	Dates:	
Logged by:	CK	Method:	Hand excavated	Width:	0.60	Easting:	Start:	25/07/2024
Checked by:	DD			Length:	0.60	Northing:	End:	25/07/2024
Approved by:	CSE	Plant:	Hand tools	**Orientation:**		Level:	Logged:	25/07/2024
		Shoring:	None	Strike A - C = °		Grid:		

Backfill/ Instal'n	Water-strike	Legend	Level & Depth (Thickness)	Stratum Description	Samples & In Situ Testing: Depth	Type & No	Results
			0.18	Dark brown silty slightly clayey slightly gravelly fine to coarse SAND (TOPSOIL)			
			0.36	grey and brown slightly clayey very sandy fine to coarse angular GRAVEL . Gravel is of angular brick, tile and concrete (MADE GROUND)			
			(1.01)	Stiff and very stiff brown and grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse rounded sandstone and quartz (MADE GROUND)			
			1.37	Trial pit ends at 1.37 m (Limit of hand tools)			

Depth	Type & No	Results

Groundwater entries:

Depth:	Rose to:	After (mins):	Remarks:

Depth related remarks:

From	to:	Remarks:

General remarks:

Weather: Dry, sunny

Stability: Good

Remarks:

Log issue: DRAFT

Scale: 1:25

Printed: 06/08/2024 08:46

Project: Levenshulme High School

Project No: 24-056

Client: The Greater Manchester Education Trust

Notes: For explanation of symbols and abbreviations see Key Sheet. All depths and reduced levels are in metres.

Dynamic Sample Log

Exploratory position reference:
WS01

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Logger:	Logged:	Remarks:
WLS	0.00	4.13	25-07-24	25-07-24	GPD	DART	CK	25-07-24	Hammer ID: DART334 Er(%) 67

Location details:

Grid:

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results
				0.15	Asphalt (MADE GROUND)					
				(0.45)	Yellow brown becoming grey very sandy fine to coarse angular GRAVEL of limestone. Textile membrane at 0.60 m (MADE GROUND)					
				0.60				0.60 - 0.75	ES1	
				0.75	Firm dark grey slightly sandy slightly gravelly CLAY. Gravel is fine and medium angular ash and rare glass (MADE GROUND)					
	(52)			(0.50)	Firm becoming stiff yellow brown and grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse rounded and subrounded sandstone, mudstone and coal (MADE GROUND)	Dry		1.00 - 1.45 1.00	S D1	N=10 (1,2/1,3,3,3)
					0.85 - 1.90 m: Fine rootlets					
				1.25 1.30	Broken bricks (possible former foundation) (MADE GROUND)					
					Stiff reddish brown and grey mottled slightly sandy slightly gravelly CLAY. Gravel is fine to coarse rounded and subrounded sandstone and mudstone (GLACIAL TILL)			1.40 - 1.50	ES3	
				(1.30)		Dry		2.00 - 2.45	S	N=18 (3,3/4,4,5,5)
				2.60	Very stiff brown sandy slightly gravelly CLAY. Gravel is fine and medium rounded and subrounded quartz, sandstone and mudstone (GLACIAL TILL)					
						Dry		3.00 - 3.45 3.00	S D2	N=36 (4,5/8,8,10,10)
				(1.40)						
	SP (52)			4.00 4.13	Extremely weak pinkish brown finely laminated fine sandy MUDSTONE with very thin beds of extremely weak yellowish brown fine and medium grained SANDSTONE (HALESOWEN FORMATION)	Dry		4.00 - 4.13	S	50 (25 for 100mm/50 for 30mm)
					Dynamic sample ends at 4.13 m (Refusal)					
	Inst (Ø)					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Casing:

Cased to:	Diameter (mm):

Depth related remarks:

From	to:	Remarks

Run details:

From:	to:	Ø	Duration:	Recovery:
0.00	1.00	102		100
1.00	2.00	87		100
2.00	3.00	77		100
3.00	4.00	67		100

Log issue: DRAFT
Scale: 1:25
Checked/approved by: DD/CSE
Printed: 06/08/2024 08:45

Project: Levenshulme High School
Project No: 24-056
Client: The Greater Manchester Education Trust

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Dynamic Sample Log

Exploratory position reference:

WS02

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Logger:	Logged:	Remarks:
WLS	0.00	4.38	25-07-24	25-07-24	GPD	DART	CK	25-07-24	Hammer ID: DART334 Er(%) 67

Location details:

Grid:

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results
					Asphalt, two layers of 0.10m (MADE GROUND)					
				0.20	Yellow brown becoming grey very sandy fine to coarse angular GRAVEL of limestone and rare brick (MADE GROUND)					
				(0.40)	*0.20 - 1.00 m: Fine rootlets*					
				0.60	dark grey slightly clayey very sandy fine to coarse GRAVEL. Gravel is fine to coarse angular brick, limestone and ash (MADE GROUND)			0.60 - 0.70	ES1	
				0.70						
				0.80	Stiff grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse rounded and subrounded sandstone , mudstone and coal (MADE GROUND)			0.90 - 1.00	ES2	
	(52)			(0.40)		Dry		1.00 - 1.45 1.00	S HV	N=11 (1,2/2,3,3,3) P/R 124/- kPa
				1.20	Stiff orange brown and grey mottled slightly sandy slightly gravelly CLAY. Gravel is fine and medium rounded sandstone and quartz (GLACIAL TILL)					
					Very stiff reddish brown and grey mottled slightly sandy slightly gravelly CLAY. Gravel is fine and medium rounded and subrounded sandstone and mudstone and coal (GLACIAL TILL)			1.70 - 2.00	U1	
				(1.80)		Dry		2.00 - 2.45 2.00	S D1	N=20 (3,4/4,5,5,6)
				3.00	Very stiff brown sandy slightly gravelly CLAY. Gravel is fine and medium rounded and subrounded quartz, sandstone and mudstone (GLACIAL TILL)	Dry		3.00 - 3.45 3.00 - 3.45	S ES3	N=43 (5,8/9,11,11,12)
				(1.24)						
	SP (52)					Dry		4.00 - 4.38	S	N=50 (7,11/50 for 230mm)
				4.24	Extremely weak pinkish brown finely laminated fine sandy MUDSTONE with very thin beds of extremely weak yellowish brown fine and medium grained SANDSTONE (HALESOWEN FORMATION)			4.30	ES4	
				4.38	Dynamic sample ends at 4.38 m (Refusal)					
	Inst (Ø)					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Casing:

Cased to:	Diameter (mm):

Depth related remarks:

From	to:	Remarks
1.35		Hand vane - soil fractured rather than sheared
2.55		Hand vane - too stiff

Run details:

From:	to:	Ø	Duration:	Recovery:
0.00	1.00	102		100
1.00	2.00	87		100
2.00	3.00	77		100
3.00	4.00	67		100

Log issue: DRAFT

Scale: 1:25

Checked/approved by: DD/CSE

Printed: 06/08/2024 08:45

Project: Levenshulme High School

Project No: 24-056

Client: The Greater Manchester Education Trust

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Dynamic Sample Log

Exploratory position reference:

WS03

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Logger:	Logged:	Remarks:
WLS	0.00	4.16	25-07-24	25-07-24	GPD	DART	CK	25-07-24	Hammer ID: DART334 Er(%) 67

Location details:

Grid:

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results
					Dark brown silty slightly clayey slightly gravelly fine to coarse SAND (TOPSOIL) *0.00 - 2.50 m: Fine rootlets*			0.10 - 0.20	ES1	
				0.23	grey and brown very sandy fine to coarse angular GRAVEL with low cobble content. Gravel is of limestone and occasional brick and concrete. Cobbles are whole bricks and sandstone (340x260x40mm) (MADE GROUND)					
				0.50	Stiff dark grey and brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular brick, concrete and ash (MADE GROUND)			0.63	HV	P/R >140/- kPa
				0.60	Stiff orange brown and grey mottled slightly sandy slightly gravelly CLAY. Gravel is fine and medium rounded sandstone and quartz (GLACIAL TILL)					
	(52)			(0.60)		Dry		1.00 - 1.45	S	N=9 (2,1/2,2,2,3)
								1.00	D1	
				1.20	Very stiff reddish brown and grey mottled slightly sandy slightly gravelly CLAY. Gravel is fine and medium rounded and subrounded sandstone and mudstone (GLACIAL TILL)					
				(1.40)				1.90	D2	
						Dry		2.00 - 2.45	S	N=15 (3,3/3,4,4,4)
				2.60	Very stiff brown sandy slightly gravelly CLAY. Gravel is fine and medium rounded and subrounded quartz, sandstone and mudstone (GLACIAL TILL)					
						Dry		3.00 - 3.45	S	N=32 (5,6/7,8,8,9)
				(1.44)						
	SP (52)			4.04		Dry		4.00 - 4.16	S	50 (25 for 60mm/50 for 95mm)
				4.16	Extremely weak pinkish brown finely laminated fine sandy MUDSTONE (HALESOWEN FORMATION)					
					Dynamic sample ends at 4.16 m (Refusal)					
	Inst (Ø)					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Casing:

Cased to:	Diameter (mm):

Depth related remarks:

From	to:	Remarks

Run details:

From:	to:	Ø	Duration:	Recovery:
0.00	1.00	102		100
1.00	2.00	87		100
2.00	3.00	77		100
3.00	4.00	67		100

Log issue: DRAFT
Scale: 1:25
Checked/approved by: DD/CSE
Printed: 06/08/2024 08:45

Project: Levenshulme High School
Project No: 24-056
Client: The Greater Manchester Education Trust

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.

Dynamic Sample Log

Exploratory position reference: **WS04**

Borehole formation details:

Type:	From:	To:	Start date:	End date:	Crew:	Plant:	Logger:	Logged:	Remarks:
WLS	0.00	3.42	25-07-24	25-07-24	GPD	DART	CK	25-07-24	Hammer ID: DART334 Er(%) 67

Location details:

Grid:

Backfill/ Instal'n	Water-strike	Legend	Level	Depth (thick-ness)	Stratum Description	Water	Casing	Depth	Type & No	Results
					Dark brown silty slightly clayey slightly gravelly fine to coarse SAND (TOPSOIL)					
				0.25	grey and brown very sandy fine to coarse angular GRAVEL with low cobble content. Gravel is of angular brick and concrete, cobbles are whole bricks (MADE GROUND)			0.25 - 0.46	ES1	
				0.46	Stiff orange brown and grey mottled slightly sandy slightly gravelly CLAY. Gravel is fine and medium rounded sandstone and quartz (GLACIAL TILL)			0.50	HV	P/R 122/- kPa
				(0.54)						
				1.00	Very stiff reddish brown and grey mottled slightly sandy slightly gravelly CLAY. Gravel is fine and medium rounded and subrounded sandstone and mudstone (GLACIAL TILL)	Dry		1.00 - 1.45	S	N=11 (2,2/2,3,3,3)
				(1.40)						
						Dry		2.00 - 2.45	S	N=24 (4,3/6,5,6,7)
				2.40	Very stiff brown sandy slightly gravelly CLAY. Gravel is fine and medium rounded and subrounded quartz, sandstone and mudstone (GLACIAL TILL)			2.50	D1	
				(0.60)						
				3.00	Very stiff reddish brown slightly sandy CLAY with mudstone lithorelicts (WEATHERED HALESOWEN FORMATION)	Dry		3.00 - 3.42	S	N=50 (9,9/50 for 265mm)
				(0.42)						
				3.42	Dynamic sample ends at 3.42 m (Refusal)					
	Inst (Ø)					Water	Casing	Depth	Type & No	Results

Groundwater entries:

Struck:	Rose to:	Casing:	Sealed:

Casing:

Cased to:	Diameter (mm):

Depth related remarks:

From	to:	Remarks

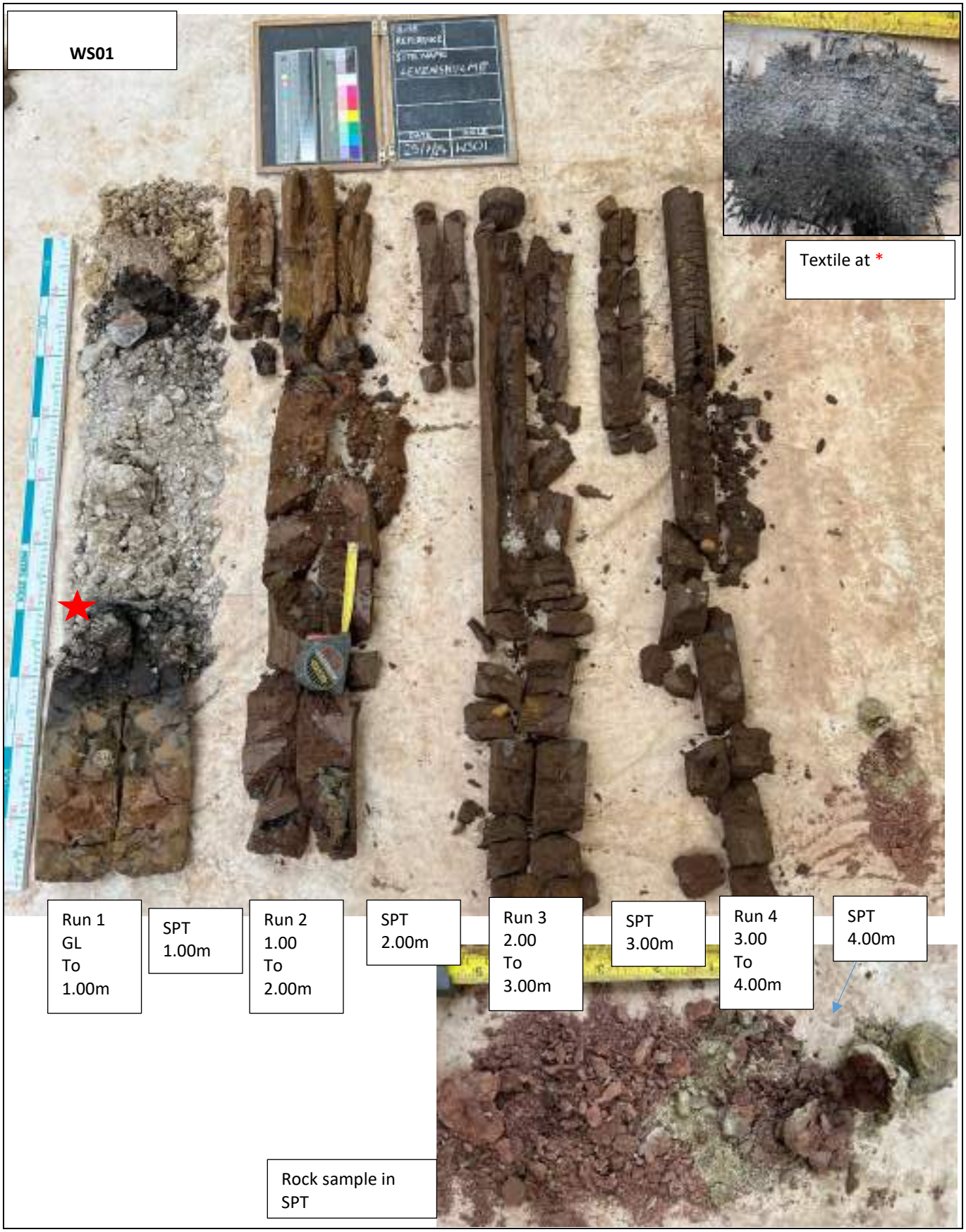
Run details:

From:	to:	Ø	Duration:	Recovery:
0.00	1.00	102		100
1.00	2.00	87		100
2.00	3.00	77		100

Log issue: DRAFT
Scale: 1:25
Checked/approved by: DD/CSE
Printed: 06/08/2024 08:45

Project: Levenshulme High School
Project No: 24-056
Client: The Greater Manchester Education Trust

Notes: For explanation of symbols and abbreviations see Key Sheet.
All depths and reduced levels are in metres.


WS01
Textile at *
Run 1
GL
To
1.00m
SPT
1.00m
Run 2
1.00
To
2.00m
SPT
2.00m
Run 3
2.00
To
3.00m
SPT
3.00m
Run 4
3.00
To
4.00m
SPT
4.00m
Rock sample in
SPT

Run 1 GL To 1.00m	SPT 1.00m	Run 2 1.00 To 2.00m	SPT 2.00m	Run 3 2.00 To 3.00m	SPT 3.00m	Run 4 3.00 To 4.00m	SPT 4.00m

WS03

Hand Pit: GL To 1.00m

Rootlets detail from *

SPT 1.00m

Run 1 1.00 To 2.00m

SPT 2.00m

Run 2 2.00 To 3.00m

SPT 3.00m

Run 3 3.00 To 4.00m

SPT 4.00m

WS04

Hand Pit: GL To 1.00m

SPT 1.00m

Run 1 1.00 To 2.00m

SPT 2.00m

Run 2 2.00 To 3.00m

SPT 3.00m

HP01
SITE NAME
LEVENSHULME
DATE
HOLE
25/7/24
HP01

APPENDIX VII – LABORATORY TESTING

APPENDIX VII –LABORATORY TESTING

Chris Eccles
Eccles Associates Ltd
Trimble House
9 Bold Street
Warrington
WA1 1DN

Normec DETS Limited
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-08557

Site Reference:	Levenshulme
Project / Job Ref:	None Supplied
Order No:	42528
Sample Receipt Date:	29/07/2024
Sample Scheduled Date:	29/07/2024
Report Issue Number:	1
Reporting Date:	02/08/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.

Normec DETS Limited '
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 24-08557	**~Date Sampled**	25/07/24	25/07/24	25/07/24	25/07/24	25/07/24
Eccles Associates Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Levenshulme	**~TP / BH No**	WS01	WS01	WS02	WS03	WS04
~Project / Job Ref: None Supplied	**~Additional Refs**	ES1	ES2	ES1	ES1	ES1
~Order No: 42528	**~Depth (m)**	0.60 - 0.75	0.90 - 1.00	0.60 - 0.70	0.10 - 0.20	0.25 - 0.46
Reporting Date: 02/08/2024	**DETS Sample No**	729001	729002	729003	729004	729005

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	**MCERTS**	7.0	7.2	7.2	7.5	7.8
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**	481	< 200	1202	437	970
Total Sulphate as SO_4	%	< 0.02	**MCERTS**	0.05	< 0.02	0.12	0.04	0.10
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	58	15	76	21	23
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.06	0.01	0.08	0.02	0.02
Total Sulphur	%	< 0.02	NONE					
Arsenic (As)	mg/kg	< 2	**MCERTS**	16	8	9	9	13
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	< 0.2	1	< 0.2	0.5
Chromium (Cr)	mg/kg	< 2	**MCERTS**	17	21	12	8	14
Copper (Cu)	mg/kg	< 4	**MCERTS**	44	15	42	19	59
Lead (Pb)	mg/kg	< 3	**MCERTS**	84	18	60	42	78
Mercury (Hg)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	15	13	13	7	14
Selenium (Se)	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	**MCERTS**	75	47	129	38	166
EPH (C10 - C40) with silica gel cleanup	mg/kg	< 6	**MCERTS**			166		2220

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
~Sample details provided by customer and can affect the validity of results

Normec DETS Limited '
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 24-08557	**~Date Sampled**	25/07/24	25/07/24	25/07/24	25/07/24	
Eccles Associates Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
~Site Reference: Levenshulme	**~TP / BH No**	WS01	WS02	WS02	WS02	
~Project / Job Ref: None Supplied	**~Additional Refs**	ES3	ES2	ES3	ES5	
~Order No: 42528	**~Depth (m)**	1.40 - 1.50	0.90 - 1.00	3.00 - 3.45	4.30	
Reporting Date: 02/08/2024	**DETS Sample No**	729006	729007	729008	729009	

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**					
pH	pH Units	N/a	**MCERTS**	7.2	7.9	7.8	7.9	
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**	< 200	< 200	< 200	< 200	
Total Sulphate as SO_4	%	< 0.02	**MCERTS**	< 0.02	< 0.02	< 0.02	< 0.02	
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	27	29	13	21	
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.03	0.03	0.01	0.02	
Total Sulphur	%	< 0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	
Arsenic (As)	mg/kg	< 2	**MCERTS**					
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**					
Chromium (Cr)	mg/kg	< 2	**MCERTS**					
Copper (Cu)	mg/kg	< 4	**MCERTS**					
Lead (Pb)	mg/kg	< 3	**MCERTS**					
Mercury (Hg)	mg/kg	< 1	**MCERTS**					
Nickel (Ni)	mg/kg	< 3	**MCERTS**					
Selenium (Se)	mg/kg	< 2	**MCERTS**					
Zinc (Zn)	mg/kg	< 3	**MCERTS**					
EPH (C10 - C40) with silica gel cleanup	mg/kg	< 6	**MCERTS**					

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-08557	**~Date Sampled**	25/07/24	25/07/24	25/07/24	25/07/24	25/07/24
Eccles Associates Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Levenshulme	**~TP / BH No**	WS01	WS01	WS02	WS03	WS04
~Project / Job Ref: None Supplied	**~Additional Refs**	ES1	ES2	ES1	ES1	ES1
~Order No: 42528	**~Depth (m)**	0.60 - 0.75	0.90 - 1.00	0.60 - 0.70	0.10 - 0.20	0.25 - 0.46
Reporting Date: 02/08/2024	**DETS Sample No**	729001	729002	729003	729004	729005

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	0.46
Acenaphthene	mg/kg	< 0.1	**MCERTS**	1.22	< 0.1	< 0.1	< 0.1	4.66
Fluorene	mg/kg	< 0.1	**MCERTS**	1.33	< 0.1	< 0.1	< 0.1	3.65
Phenanthrene	mg/kg	< 0.1	**MCERTS**	8.11	< 0.1	1.60	0.38	31.70
Anthracene	mg/kg	< 0.1	**MCERTS**	2.28	< 0.1	0.51	< 0.1	11.50
Fluoranthene	mg/kg	< 0.1	**MCERTS**	8.05	< 0.1	3.66	0.87	79.70
Pyrene	mg/kg	< 0.1	**MCERTS**	6.67	< 0.1	3.11	0.81	64.40
Benzo(a)anthracene	mg/kg	< 0.1	**MCERTS**	2.12	< 0.1	1.30	0.34	37.40
Chrysene	mg/kg	< 0.1	**MCERTS**	1.98	< 0.1	1.40	0.44	26.70
Benzo(b)fluoranthene	mg/kg	< 0.1	**MCERTS**	1.57	< 0.1	1.13	0.40	35.30
Benzo(k)fluoranthene	mg/kg	< 0.1	**MCERTS**	0.60	< 0.1	0.65	0.16	13.40
Benzo(a)pyrene	mg/kg	< 0.1	**MCERTS**	1.44	< 0.1	1.19	0.34	33.50
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	**MCERTS**	0.81	< 0.1	< 0.1	0.23	18.80
Dibenz(a,h)anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	3.98
Benzo(ghi)perylene	mg/kg	< 0.1	**MCERTS**	0.66	< 0.1	< 0.1	0.22	15.10
Total EPA-16 PAHs	mg/kg	< 1.6	**MCERTS**	36.8	< 1.6	14.6	4.2	380

~Sample details provided by customer and can affect the validity of results

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Waste Acceptance Criteria Analytical Certificate

				Landfill Waste Acceptance Criteria Limits		
DETS Report No: 24-08557	**~Date Sampled**	25/07/24		**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Eccles Associates Ltd	**~Time Sampled**	None Supplied				
~Site Reference: Levenshulme	**~TP / BH No**	WS04				
~Project / Job Ref: None Supplied	**~Additional Refs**	ES1				
~Order No: 42528	**~Depth (m)**	0.25 - 0.46				
Reporting Date: 02/08/2024	**DETS Sample No**	729005				
Determinand	**Unit**	**MDL**				
TOC[MU]	%	< 0.1	8.2	3%	5%	**6%**
Loss on Ignition[MU]	%	< 0.01	15.10	--	--	**10%**
BTEX[MU]	mg/kg	< 0.05	< 0.05	6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1	1	--	--
Mineral Oil[MU]	mg/kg	< 10	82	500	--	--
Total PAH[MU]	mg/kg	< 1.7	382	**100**	--	--
pH[MU]	pH Units	N/a	7.8	--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	1.8	--	To be evaluated	To be evaluated

Eluate Analysis		**10:1 mg/l**			**Cumulative 10:1 * mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]		0.0027			0.027	0.5	2	25
Barium[U]		0.0235			0.235	20	100	300
Cadmium[U]		< 0.0002			< 0.002	0.04	1	5
Chromium[U]		0.0006			0.006	0.5	10	70
Copper[U]		0.0134			0.134	2	50	100
Mercury[U]		< 0.00004			< 0.0004	0.01	0.2	2
Molybdenum[U]		0.0015			0.015	0.5	10	30
Nickel[U]		0.0005			0.005	0.4	10	40
Lead[U]		0.0012			0.012	0.5	10	50
Antimony[U]		< 0.0002			< 0.002	0.06	0.7	5
Selenium[U]		0.0004			0.004	0.1	0.5	7
Zinc[U]		0.007			0.07	4	50	200
Chloride[U]		< 1.0			< 10	800	15000	25000
Fluoride[U]		0.9			8.8	10	150	500
Sulphate[U]		1.5			15	1000	20000	50000
TDS		52			520	4000	60000	100000
Phenol Index[U]		< 0.01			< 0.1	1	-	-
DOC[U]		7.5			74.6	500	800	1000
Leach Test Information								
Sample Mass (kg)		0.10						
Dry Matter (%)		90.4						
Moisture (%)		10.8						
Stage 1								
Volume Eluate L10 (litres)		0.89						

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
Stated limits are for guidance only and Normec DETS Limited cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test
~Sample details provided by customer and can affect the validity of results
* DETS are accredited for the testing of leachate and not the leachate preparation stage which is unaccredited

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-08557	
Eccles Associates Ltd	
~Site Reference: Levenshulme	
~Project / Job Ref: None Supplied	
~Order No: 42528	
Reporting Date: 02/08/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
729001	WS01	ES1	0.60 - 0.75	17.1	Brown sandy clay
729002	WS01	ES2	0.90 - 1.00	15.7	Brown sandy clay
729003	WS02	ES1	0.60 - 0.70	6.8	Brown sandy clay with stones and brick
729004	WS03	ES1	0.10 - 0.20	12.3	Brown loamy clay with stones and vegetation
729005	WS04	ES1	0.25 - 0.46	9.7	Brown loamy sand with stones and brick
729006	WS01	ES3	1.40 - 1.50	12.6	Brown sandy clay
729007	WS02	ES2	0.90 - 1.00	9.9	Brown sandy clay
729008	WS02	ES3	3.00 - 3.45	7.1	Brown sandy clay
729009	WS02	ES5	4.30	6.4	Brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S
~Sample details provided by customer and can affect the validity of results

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 24-08557
Eccles Associates Ltd
~Site Reference: Levenshulme
~Project / Job Ref: None Supplied
~Order No: 42528
Reporting Date: 02/08/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

~Sample details provided by customer and can affect the validity of results

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UKAS TESTING 4480

Water Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 24-08557
Eccles Associates Ltd
~Site Reference: Levenshulme
~Project / Job Ref: None Supplied
~Order No: 42528
Reporting Date: 02/08/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	U	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	UF	Biological Oxygen Demand (COD)	Determination using BOD sensors measuring the change of pressure	E133
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichlorometha	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered
~Sample details provided by customer and can affect the validity of results

Parameter	Matrix Type	Expanded Uncertainity Measurement	Unit
TOC	Soil	12.2	%
Loss on Ignition	Soil	22.9	%
BTEX	Soil	11.2	%
Sum of PCBs	Soil	43.4	%
Mineral Oil	Soil	9.0	%
Total PAH	Soil	18.5	%
pH	Soil	0.335	Units
Acid Neutralisation Capacity	Soil	18.0	%
Clay Content	Soil	15.0	%
Silt Content	Soil	14.0	%
Sand Content	Soil	13.0	%
Loss on Ignition	Soil	22.9	%
pH	Soil	0.335	Units
Carbonate	Soil	12.0	%
Total Nitrogen	Soil	12.0	%
Phosphorus (Extractable)	Soil	24.0	%
Potassium (Extractable)	Soil	20.0	%
Magnesium (Extractable)	Soil	26.0	%
Zinc	Soil	21.6	%
Copper	Soil	18.2	%
Nickel	Soil	24.3	%
Available Sodium	Soil	23.0	%
Available Calcium	Soil	23.0	%
Electrical Conductivity	Soil	10.0	%

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DETS Report No: 24-08905

Site Reference:	Levenshulme
Project / Job Ref:	None Supplied
Order No:	42528
Sample Receipt Date:	29/07/2024
Sample Scheduled Date:	05/08/2024
Report Issue Number:	1
Reporting Date:	08/08/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate						
DETS Report No: 24-08905	**~Date Sampled**	25/07/24	25/07/24	25/07/24		
Eccles Associates Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied		
~Site Reference: Levenshulme	**~TP / BH No**	WS01	WS01	WS03		
~Project / Job Ref: None Supplied	**~Additional Refs**	ES1	ES2	ES1		
~Order No: 42528	**~Depth (m)**	0.60 - 0.75	0.90 - 1.00	0.10 - 0.20		
Reporting Date: 08/08/2024	**DETS Sample No**	730626	730627	730628		

Determinand	**Unit**	**RL**	**Accreditation**					
EPH (C10 - C40) with silica gel cleanup	mg/kg	< 6	**MCERTS**		< 6	14		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
~Sample details provided by customer and can affect the validity of results

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 24-08905	**~Date Sampled**	25/07/24				
Eccles Associates Ltd	**~Time Sampled**	None Supplied				
~Site Reference: Levenshulme	**~TP / BH No**	WS01				
~Project / Job Ref: None Supplied	**~Additional Refs**	ES1				
~Order No: 42528	**~Depth (m)**	0.60 - 0.75				
Reporting Date: 08/08/2024	**DETS Sample No**	730626				

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10	mg/kg	< 2	**MCERTS**	< 2				
Aliphatic >C10 - C12	mg/kg	< 2	**MCERTS**	< 2				
Aliphatic >C12 - C16	mg/kg	< 3	**MCERTS**	< 3				
Aliphatic >C16 - C21	mg/kg	< 3	**MCERTS**	< 3				
Aliphatic >C21 - C34	mg/kg	< 10	**MCERTS**	< 10				
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10	mg/kg	< 2	**MCERTS**	< 2				
Aromatic >C10 - C12	mg/kg	< 2	**MCERTS**	< 2				
Aromatic >C12 - C16	mg/kg	< 2	**MCERTS**	15				
Aromatic >C16 - C21	mg/kg	< 3	**MCERTS**	78				
Aromatic >C21 - C35	mg/kg	< 10	**MCERTS**	45				
Aromatic (C5 - C35)	mg/kg	< 21	NONE	139				
Total >C5 - C35	mg/kg	< 42	NONE	139				

~Sample details provided by customer and can affect the validity of results

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-08905	**~Date Sampled**	25/07/24				
Eccles Associates Ltd	**~Time Sampled**	None Supplied				
~Site Reference: Levenshulme	**~TP / BH No**	WS01				
~Project / Job Ref: None Supplied	**~Additional Refs**	ES1				
~Order No: 42528	**~Depth (m)**	0.60 - 0.75				
Reporting Date: 08/08/2024	**DETS Sample No**	730626				

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2				
Toluene	ug/kg	< 5	**MCERTS**	< 5				
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2				
p & m-xylene	ug/kg	< 2	**MCERTS**	9				
o-xylene	ug/kg	< 2	**MCERTS**	8				
MTBE	ug/kg	< 5	**MCERTS**	< 5				

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-08905	
Eccles Associates Ltd	
~Site Reference: Levenshulme	
~Project / Job Ref: None Supplied	
~Order No: 42528	
Reporting Date: 08/08/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 730626	WS01	ES1	0.60 - 0.75	18.1	Brown sandy clay with stones and crystalline material
$ 730627	WS01	ES2	0.90 - 1.00	16.3	Brown sandy clay
$ 730628	WS03	ES1	0.10 - 0.20	14.1	Brown loamy clay with stones and vegetation

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S
~Sample details provided by customer and can affect the validity of results

$ samples exceeded recommended holding times

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 24-08905
Eccles Associates Ltd
~Site Reference: Levenshulme
~Project / Job Ref: None Supplied
~Order No: 42528
Reporting Date: 08/08/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No.
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received
~Sample details provided by customer and can affect the validity of results

LABORATORY REPORT

Contract Number: PSL24/5403

Report Date: 01 August 2024

Client's Reference:

Client Name: Eccles Associates Ltd (EAL)
55 St Catherine Drive
Hartford
Cheshire
CW8 2FE

For the attention of: Caterine Kenny

Contract Title: Levenshulme

Date Received: 26/7/2024
Date Commenced: 26/7/2024
Date Completed: 1/8/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Managing Director)
R Berriman (Associate Director)
S Royle (Laboratory Manager)
L Knight (Assistant Laboratory Manager)
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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS01	1	D	1.00		Brown mottled grey slightly gravelly sandy CLAY.
WS01	2	D	3.00		Brown gravelly very sandy CLAY.
WS02	1	D	2.00		Brown mottled grey sandy CLAY.
WS03	1	D	1.00		Brown mottled grey sandy CLAY.
WS03	2	D	1.90		Brown mottled grey sandy CLAY.
WS04	1	D	2.50		Brown slightly gravelly very sandy CLAY.
WS02	1	U	1.70	2.00	Stiff brown gravelly sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

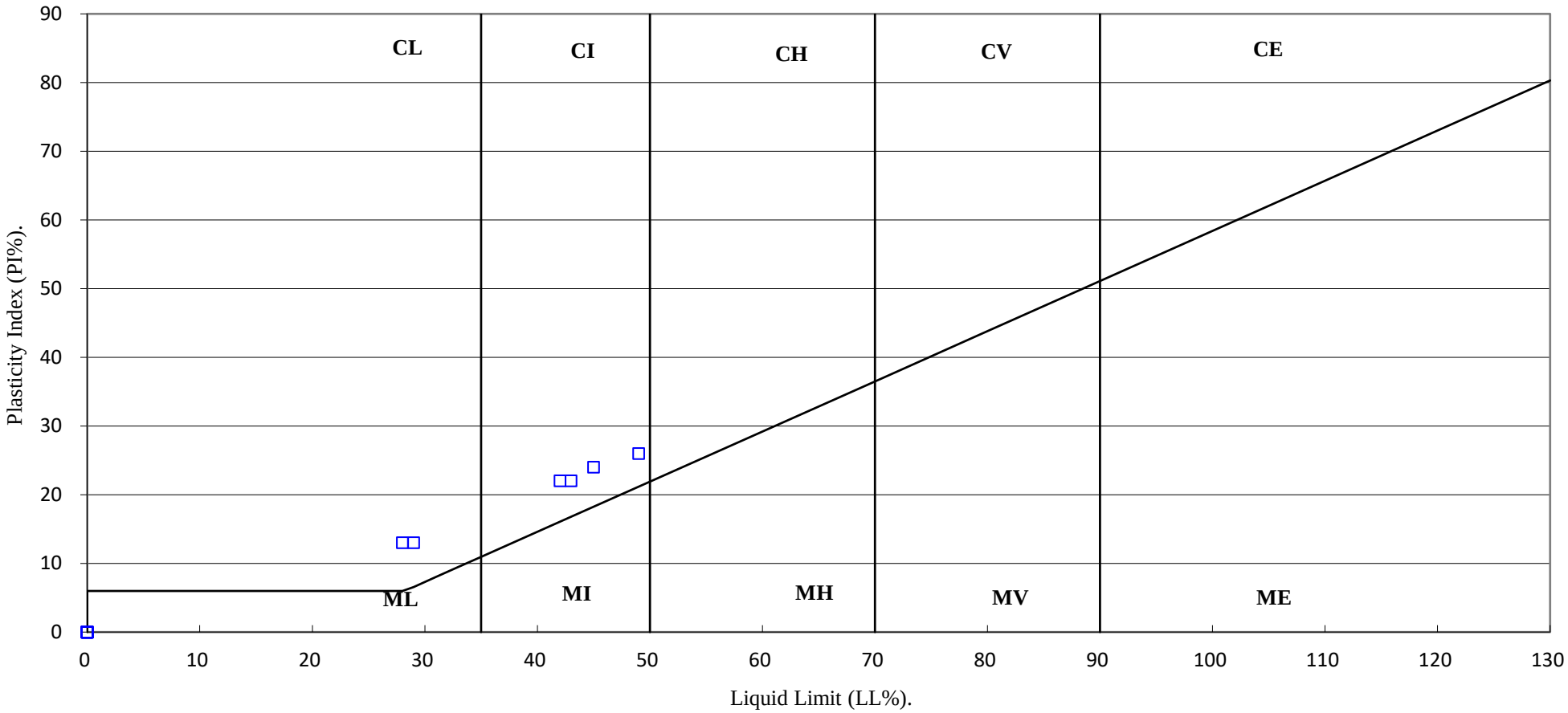
(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS01	1	D	1.00		22			43	21	22	99	Intermediate Plasticity CI
WS01	2	D	3.00		10			29	16	13	95	Low Plasticity CL
WS02	1	D	2.00		24			45	21	24	100	Intermediate Plasticity CI
WS03	1	D	1.00		22			49	23	26	100	Intermediate Plasticity CI
WS03	2	D	1.90		16			42	20	22	100	Intermediate Plasticity CI
WS04	1	D	2.50		11			28	15	13	98	Low Plasticity CL

SYMBOLS : NP : Non Plastic *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043 PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	Levenshulme	Contract No: PSL24/5403 Client Ref:

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



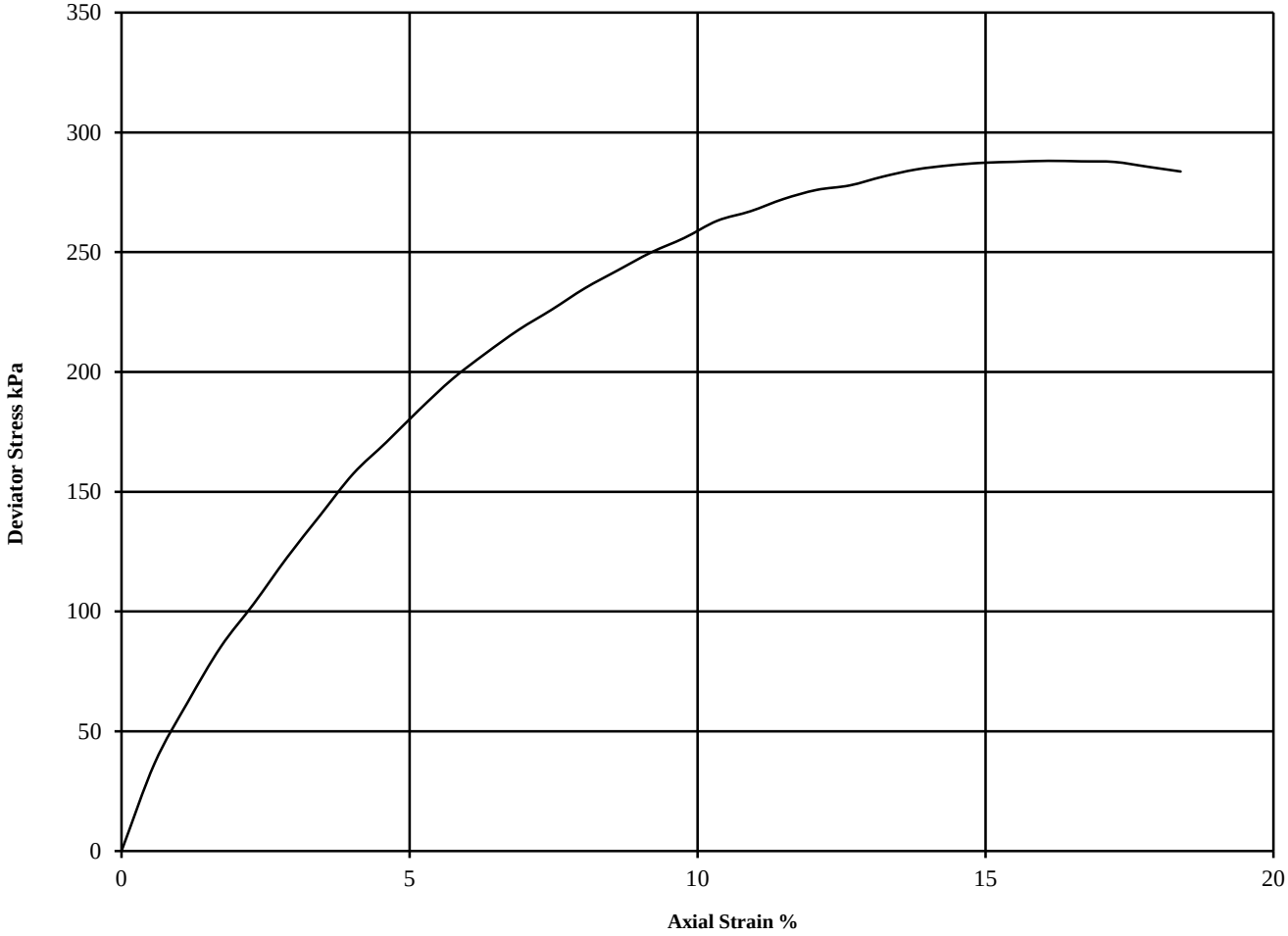
UKAS TESTING 4043 / PSL PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	Levenshulme	Contract No: PSL24/5403
		Client Ref:

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**WS02**	**Top Depth (m):**	**1.70**
Sample Number:	**1**	**Base Depth (m):**	**2.00**
Sample Type	**U**		



Diameter (mm):		85	Height (mm):		148	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.40
1	18	1.99	1.69	35	288	144	16.1	Intermediate	See summary of soil descriptions

UKAS TESTING 4043 PSL PROFESSIONAL SOILS LABORATORY	**Levenshulme**	**Contract No:** PSL24/5403 **Client Ref:**

EAL

APPENDIX VIII – SUMMARY OF CONTAMINATION TESTS &THRESHOLD VALUES

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Analyte	Limit of Detection	Minimum Test Result	Mean Test Result	Maximum Test Result	SSAC Residential with Gardens Tier 1 Screening Threshold	SSAC Commercial & Industrial Tier 1 Screening Threshold	Source of Screening Criteria	Tier 1 Screening Threshold
Asbestos NOT INCLUDING FLY TIPPING	<0.001%	<0.001	<0.001	<0.001	<0.001	<0.001		
Metals								
Arsenic	0.5	8	11	16	37	640	CLEA v1.071	Defra 2015/C4SL
Cadmium	0.2	<2	0.42	1.0	11	420	CLEA v1.071	Defra 2015/C4SL
Chromium	1	8	14.4	21	910	30400	CLEA v1.071	LQM 2009
Copper	4	15	35.8	59	2400	71700	CLEA v1.071	LQM 2009
Lead	1	18	56.4	84	210	6000	CLEA v1.071	Defra 2015/C4SL
Mercury	0.1	<1	<1	<1	40	3640	SC050021*	SC050021
Nickel	1	7.0	12.4	15.0	180	840	CLEA v1.071	EFSA
Selenium	1	<2	<2	<2	250	13000	SC050021*	SC050021
Zinc	4.5	38	91	166	3700	662000	CLEA v1.071	LQM 2009
Anions, pH & TOC								
Total Sulphur	0.02%	<0.02	<0.02	<0.02				
Acid Soluble Sulphate (SO4)	0.02%	<0.02	<0.02	<0.02				
Water Soluble Sulphate (mg/l)	10mg/l	13	31.4	76				
Water Soluble Sulphate	10mg/l	13	31.4	76	1800	1800	BRE SD1 for DS-1	
pH	0.1	7.0	7.5	7.9	>5.5	>5.5	BRE SD1 for DS-1	
Polyaromatic Hydrocarbons								
Naphthalene	0.1	<0.1	<0.1	<0.1	2.3	200	CLEA v1.071	LQM 2009
Acenaphthylene	0.1	<0.1	0.17	0.46	170	84000	CLEA v1.071	LQM 2009
Acenaphthene	0.1	<0.1	1.24	4.66	210	8500	CLEA v1.071	LQM 2009
Fluorene	0.1	<0.1	1.06	3.65	170	64000	CLEA v1.071	LQM 2009
Phenanthrene	0.1	<0.1	8.38	31.70	95	22000	CLEA v1.071	LQM 2009
Anthracene	0.1	<0.1	2.90	11.50	2400	530000	CLEA v1.071	LQM 2009
Fluoranthene	0.1	<0.1	18.48	79.70	280	23000	CLEA v1.071	LQM 2009
Pyrene	0.1	<0.1	15.02	64.40	620	54400	CLEA v1.071	LQM 2009
Benzo(a)anthracene	0.1	<0.1	8.26	37.40	7.2	92	CLEA v1.071	LQM 2009
Chrysene	0.1	<0.1	6.12	26.70	15	138	CLEA v1.071	LQM 2009
Benzo(b)fluoranthene	0.1	<0.1	7.74	35.50	2.6	100	CLEA v1.071	LQM 2009
Benzo(k)fluoranthene	0.1	<0.1	2.98	13.40	77	140	CLEA v1.071	LQM 2009
Benzo(a)pyrene	0.1	<0.1	7.31	33.50	2.2	77	CLEA v1.071	Defra 2015/C4SL
Indeno(1,2,3-cd)pyrene	0.1	<0.1	4.01	18.80	27	60	CLEA v1.071	LQM 2009
Dibenzo(a,h)anthracene	0.1	<0.1	0.88	3.98	0.24	13	CLEA v1.071	LQM 2009
Benzo[g,h,i]perylene	0.1	<0.1	3.24	15.10	320	650	CLEA v1.071	LQM 2009
Total PAH(16)	0.4	<0.4	14.30	36.80	-	-	-	-
BTEX								
Benzene	0.002	<0.002	<0.002	<0.002	0.087	43.6	CLEA v1.071	SC050021
Toluene	0.002	<0.002	<0.002	<0.002	130	86200	CLEA v1.071	SC050021

Ethylbenzene	0.002	<0.002	<0.002	<0.002	47	25000	CLEA v1.071	SC050021
Xylenes	0.002	0.017	0.017	0.017	56	9,630	CLEA v1.071	SC050021
TPH								
Aliphatic >C_5 - C_6	0.01	< 0.01	< 0.01	< 0.01	42	3400	CLEA v1.071	LQM 2009
Aliphatic >C_6 - C_8	0.01	< 0.01	< 0.01	< 0.01	100	8300	CLEA v1.071	LQM 2009
Aliphatic >C_8 - C_{10}	2	< 2.0	< 2.0	< 2.0	27	2100	CLEA v1.071	LQM 2009
Aliphatic >C_{10} - C_{12}	2	< 2.0	< 2.0	< 2.0	130	10000	CLEA v1.071	LQM 2009
Aliphatic >C_{12} - C_{16}	3	< 3.0	< 3.0	< 3.0	1100	61000	CLEA v1.071	LQM 2009
Aliphatic >C_{16} - C_{21}	1	< 1.0	1	1.2	65000	1600000	CLEA v1.071	LQM 2009
Aliphatic >C_{21} - C_{35}	1	< 1.0	6.1	24.9	6500	1600000	CLEA v1.071	LQM 2009
Total (>C_5-C_{40}) Aliphatic	1	< 1.0	6.8	28.5	-	-	-	-
Aromatic >C_5 - C_7	0.01	< 0.01	< 0.01	< 0.01	70	28000	CLEA v1.071	LQM 2009
Aromatic >C_7 - C_8	0.05	< 0.05	< 0.05	< 0.05	130	59000	CLEA v1.071	LQM 2009
Aromatic >C_8 - C_{10}	2	< 2.0	< 2.0	< 2.0	34	3700	CLEA v1.071	LQM 2009
Aromatic >C_{10} - C_{12}	2	< 2.0	< 2.0	< 2.0	74	17000	CLEA v1.071	LQM 2009
Aromatic >C_{12} - C_{16}	3	< 3.0	< 3.0	15	140	36000	CLEA v1.071	LQM 2009
Aromatic >C_{16} - C_{21}	3	< 3.0	< 3.0	78	260	28000	CLEA v1.071	LQM 2009
Aromatic >C_{21} - C_{35}	10	< 10	< 10	45	1100	28000	CLEA v1.071	LQM 2009
Total (>C_5-C_{40}) Aromatic	10	< 6	-	2,138	-	-	-	-
Total (>C_8-C_{40}) Ali/Aro	6	< 6.0	509	2,220	140	36000	Assess as all being Aromatic >C12 - C16	
Mineral Oil	6	<6	44	82	500	3400	CLEA v1.071	Aliphatic LQM
PCB (ICES 7 congeners)								
Total PCBs (7 congeners)	0.1	<0.1	<0.1	<0.1	-	-	-	-

Notes

1. Generic Qualitative Assessment Criteria have been used where appropriate based on the current CLEA 1.071 Model (default values, sandy loam 1%SOM). Where no CLEA generic guideline value has been calculated no assessment has been made.
2. For metals, where an SGV has been published, this value has been used. Note that the published SGVs do not include the residential without plant uptake scenario. CLEA v1.06 has therefore been used to derive GACs for this scenario. For organics, CLEA v1.071 has been used (as the SGV assumes 6% SOM)
3. C4SL based on adjusted toxicology and exposure assumptions
4. C4SL for benzene assumes 6% SOM
5. Assessment criteria for pH, Sulphide and Sulphate are not based on human health. Sulphate criteria assumes DS-1 ACEC classification for concrete.
6. Highlighted in red are concentrations higher than residential reuse criteria indicated.

EAL

APPENDIX IX– UNFORSEEN GROUND CONTAMINATION & ASBESTOS MANAGEMENT PLAN

APPENDIX IX– UNFORSEEN GROUND OCNTAMINATION & ASBESTOS MANAGEMENT PLAN

Appendix IX: Unforeseen Ground Contamination & Asbestos Management Plan

There is the potential for areas of previously unexpected contamination to be present, as is the case with any "brownfield" site. Any significant quantities of asbestos, unusual, brightly coloured, or significantly oily or odorous material should be considered in this category.

If unexpected contamination is found the following procedures should be adhered to:

1. All site works at the position of the suspected contamination will cease.
2. A suitably trained geo-environmental specialist should assess the visual and olfactory observations of the condition of the ground, the extent of contamination and take suitable samples so that a preliminary assessment can be made.
3. The Principal Contractor, their Client and the Local Authority contaminated land officer should be informed of the discovery. Should the contamination be likely to affect controlled waters the Environment Agency shall also be informed.
4. Depending on the findings of the preliminary assessment, a more detailed investigation of the suspected contaminated material will be undertaken appropriately in accordance with the assessed risks. The investigation works will be carried out in the presence of a suitably qualified geo-environmental engineer. The investigation works shall commence to recover samples for testing and, using visual and olfactory observations of the condition of the ground, delineate the area and depth over which contaminated materials are present.
5. The unexpected contaminated material will either be left in situ or be stockpiled whilst testing is carried out and suitable assessments completed to determine whether the material can be re-used on site or requires to be disposed as appropriate.
6. Where the material is left in situ awaiting results it will be reburied or covered with plastic sheeting.
7. Where the potentially contaminated material is to be temporarily stockpiled it will either be placed either on a prepared surface of compacted clay, or on 2000 gauge Visqueen sheeting (or other impermeable surface) and covered to prevent dust and odour emissions.
8. Any areas where unexpected visual or olfactory ground contamination will be surveyed, a photographic record kept and testing results incorporated into the Verification Report.
9. A photographic recorded will be made of relevant observations.
10. The testing suite will be determined by the independent geo-environmental specialist on the basis of visual and olfactory observations.
11. Test results will be compared against current assessment criteria suitable for the future use of the area of the site affected.
12. The results of the investigation and testing of any suspect unexpected contamination will be used to determine the relevant actions. After consultation with the Local Authority and if necessary the Environment Agency, materials should either be:
    - re-used in areas where test results indicate that it meets compliance targets so it can be reused without treatment; or
    - treatment of material on site to meet compliance targets so it can be reused; or
    - removal from site to a treatment centre or to a suitably licensed landfill or permitted treatment facility.
13. A separate Verification Report will be produced for the work which will be incorporated into an appendix of the main investigation report.

Asbestos

If asbestos is encountered in excavations which is assessed to require non-notifiable non-licensed works (e.g. chrysotile asbestos cement board) then it will be dealt with in accordance with the Control of Asbestos Regulations 2012 (CAR 2012) and the HSE's ACoP for asbestos (2013) and an Asbestos Plan of Work produced. Finding non-notifiable asbestos is a very common occurrence on brownfield sites and is a relatively low risk activity and can be dealt with as a matter of routine. Therefore, it is not proposed that the Council will be notified but an appropriate record will be kept of confirmatory testing and disposal. A remediation verification report should be produced on completion.

Unexpected Tanks

No buried underground fuel storage tanks have been encountered during the site investigation works and are not expected. However, there remains a low risk that tanks are present on site. Should an underground tank be encountered, operations should cease in the area. Additionally there may be pipework associated with these tanks which could have oily residues. The following procedures are to be adhered to if tanks and pipework are identified:

1. All site works at the position of the tanks/pipework should stop.
2. A description of the tank should be made by the geo-environmental engineer including; condition and surround, along with visual and olfactory observations should any contents in the tank be apparent. A photographic recorded will also be made of relevant observations.
3. The tank's position and depth should be determined and marked on a plan of the site.
4. The independent geo-environmental engineer will inform Client and the Local Authority.
5. During the presence of the independent geo-environmental engineer, investigation works should be undertaken to obtain samples of any liquid or sludge contents and to establish dimensions of the tank.
6. Testing will be determined on the basis of visual and olfactory observations by independent geo-environmental engineer.
7. Test results will be compared against current assessment criteria and proposals for disposal of any contents determined in agreement with the appropriate Regulatory Parties.
8. Emptying the tank and disposal of contents to a suitable licenced disposal facility.
9. Degassing and removal of the tank by a suitably qualified contractor will be required, and a Naked Flame Certificate should be provided.
10. Once the tank has been emptied in accordance with the above proposals, it is to be removed for disposal to a licensed waste management facility. Copies of the relevant waste consignment notes are to be kept and included in the Verification Report.
11. Excavation and remediation of any contaminated soils around the tank will be carried out.
12. Samples of the base and sides of the resultant hole will be sampled and supervised by the independent geo-environmental engineer to confirm whether risks to human health or controlled waters.

Verification

All of the above information will be incorporated into the Verification Report and submitted to the regulatory parties, the Local Authority and the Environment Agency where groundwater may potentially have been impacted.

APPENDIX X – GAS AND GROUNDWATER MONITORING RECORDS

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GROUNDWATER AND GROUND GAS MONITORING

EAL

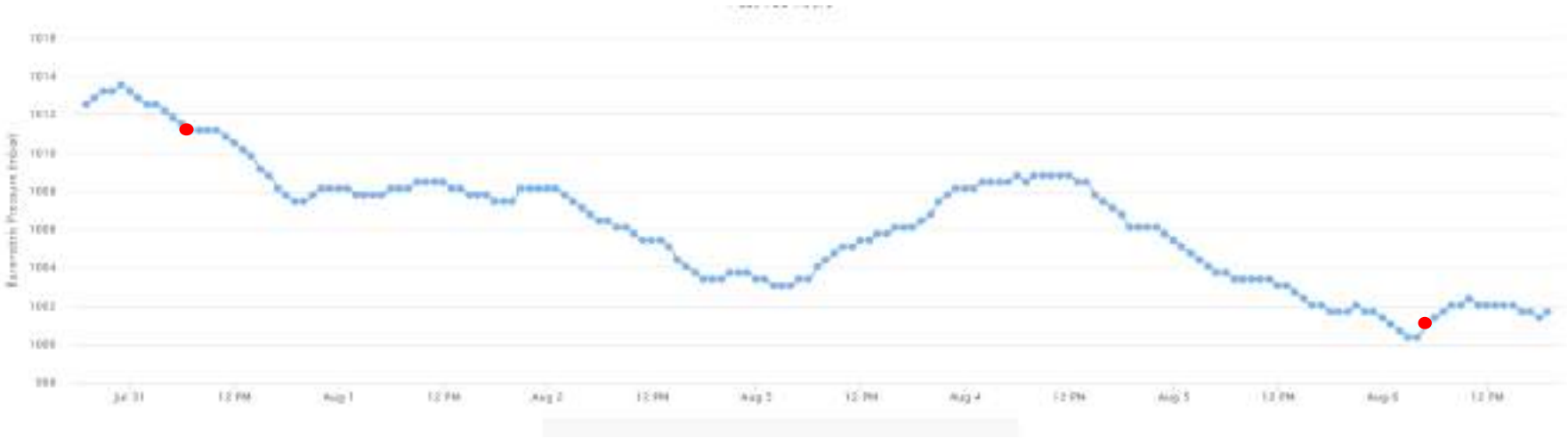
Site: Levenshulme School

Location	Date	Time	Monitored by	Well Details			Groundwater			Gas														Weather		Serial No.
				Standpipe diameter (mm)	Ground Level (mOD)	Depth to Base (m bgl)	Water Depth (m bgl)	Water Level (mOD)	Water Sample Taken?	Atmospheric Pressure (mbar)	Atmospheric Pressure Comment	Relative Pressure (mb)	Peak Flow (l/h)	Steady Flow (l/h)	CH_4 (% v/v)	GSV CH_4 (l/hr)	CO_2 (% v/v)	GSV CO_2 (l/hr)	O_2 (% v/v)	Hexane (% v/v)	PID (ppm)	CO (ppm)	H2S (ppm)	Conditions	Ambient Temp °C	
WS01	31/07/24	7:45	CSE	51		4.00	Dry		No	1009	Steady	1.55	14.4	0.1	2.5	0.0025	8.8	0.0088	9.3	0.134	2.9	4.2	1	Sunny Spells	16	14090
	06/08/24	7:23	CSE	51		4.00	3.55		No	999	Steady	22.79	23.0	0.1	0.8	0.0008	11.3	0.0113	5.1	0.1	1.3	1	1	Sunny Spells	15	14090
WS02	31/07/24	7:50	CSE	51		4.05	Dry		No	1009	Steady	0.01	0.1	0.1	0.3	0.0003	2.5	0.0025	11.0	0.040	1.1	2.6	1	Sunny Spells	16	14090
	06/08/24	7:30	CSE	51		4.05	Dry		No	999	Steady	0.01	0.1	0.1	0.1	0.0001	3.4	0.0034	8.4	0.001	1	1	1	Sunny Spells	15	14090
WS03	31/07/24	8:00	CSE	51		4.05	Dry		No	1009	Steady	0.01	0.1	0.1	0.1	0.0001	0.9	0.0009	18.5	0.001	1	1	1	Sunny Spells	16	14090
	06/08/24	7.32	CSE	51		4.05	Dry		No	999	Steady	0.01	0.1	0.1	0.1	0.0001	1.1	0.0011	18.4	0.001	1	1	1	Sunny Spells	15	14090

NOTES:
NM = Not Measured.
(x) = Peak value recorded.
[grey] = Below detection limit.

$$\text{GSV (l/HR)} = \frac{[\text{gas concentration (\%v/v)}] \times [\text{gas well flow rate (l/hr)}]}{100}$$

https://barometricpressure.app/



END OF REPORT