DESK STUDY, GROUND INVESTIGATION AND CONTAMINATION ASSESSMENT

(PHASE 1 & PHASE 2 REPORT)

Report 1226: Rev 0

21st April 2020

PROPOSED DINING ROOM EXTENSION:

WITHINGTON GIRLS SCHOOL

100, WELLINGTON ROAD, FALLOWFIELD, MANCHESTER M14 6BL



Client:	WITHINGTON GIRLS SCHOOL
Architects: CASSIDY + ASHTON LTD 7, East Cliff Preston PR1 3JE	Consulting Civil & Structural Engineers: SLEATER & WATSON LLP 26, West Cliff Preston PR1 8HU

G7 Geotech Ltd
49, Church Rd
Leyland
Lancashire PR25 3AA

t : 01772 435206
m: 07752 197426
e : alan.w@g7geotech.co.uk
w : www.g7geotech.co.uk

G7 Geotech Ltd is Registered in England &Wales : Registration No: 9652069
Registered address : 107 – 109, Towngate, Leyland, Lancs PR25 2LQ
VAT Registration No : 217 5587 88

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1.0 INTRODUCTION

A new dining room extension is proposed at Withington Girls School, 100, Wellington Road, Fallowfield, Manchester M14 6BL. An existing single storey part of the dining room will be demolished to make way for the new extension which will be two-storey with a classroom extension on the first floor.

G7 Geotech Ltd have been instructed by Cassidy + Ashton Ltd, Architects for the project, on behalf of Withington Girls School, to undertake a Desk Study, Ground Investigation and Contamination Assessment (Phase 1 & Phase 2 Report) with the aim of providing geotechnical information for foundation design and of satisfying local authority planning requirements.

Sleater & Watson LLP, Consulting Civil & Structural Engineers for the project have provided some historical information, including a foundation drawing, for the adjacent 6th form block, by SWF Consulting Ltd (Ref 7362/F/001 Rev B dated Nov 2007) and extracts from a Geotechnical Report on Ground Investigation by Northern Foundations Ltd (Ref 9162 dated May 2007) which includes borehole records, two of which are in the vicinity of the currently proposed dining room extension.

This Phase 1 & Phase 2 Report presents the findings of our site walkover and a review of commercially available databases and historical maps and follows on with our exploratory records, laboratory test results and geotechnical recommendations. The report concludes with a ground contamination assessment and conceptual model. We have consulted Manchester City Council Environmental Protection Department.

2.0 SITE DESCRIPTION

Withington Girls School is located on the north west side of Wellington Road, Fallowfield and about 4km south of Manchester city centre. The overall school site has playing fields in the central and north western parts, and the school buildings are in the south eastern part fronting onto Wellington Road. The main entrance and reception and one of the car parks, are accessed off Wellington Road and the school site is bounded to the south west by Victoria Road off which is a second car park entrance.

The site of the proposed dining room extension is near the eastern corner of the wider school site and is directly north west and to the rear of the existing dining room. The proposed extension has dimensions of about 12m (NW-SE) by 24m (SW-NE). National Grid reference 385017E 393642N is given on the appended maps and databases and has been derived within the wider school site.

The school buildings in the immediate vicinity of the proposed extension include the existing dining room, which is partly single storey, together with the staff dining room, which also has a second storey, and the sixth form block, constructed around 2009, which is two storey and situated directly south west. The site is presently occupied by a memorial garden, with planters and bench seats and there are netball courts to the north west. A rear car park and delivery area is situated to the north east, including a bicycle shelter. The only vegetation in the immediate vicinity is within raised planters.

The surrounding area is predominantly residential in character, with rear gardens of properties in Brocklebank Road and Leighbrook Road forming the north west and north east boundaries of the wider school site.

The current site features are shown on the appended plans and photographs. The aerial photograph on the front cover was captured in April 2019, since when the site has remained unchanged.

3.0 SITE HISTORY

Historical maps were obtained from Groundsure to provide a basis for this summary of the history and usage of the site and surrounding land. In the following sections, 'the site' will refer to the site of the proposed dining room extension. The gradual development of the site and surrounding area can be seen on the historical maps (shown in Appendix B). The following table summarises the site history.

Site History

Map Date	Site of Proposed Dining Room Extension	Surrounding Area(generally within 250m)
❖ 1849 / 94	❖ The site is undeveloped farmland and forms part of a field.	❖ The surrounding area is farmland with occasional houses and cottages in 1849 and there has been substantial residential development to the SE by 1881. ❖ Rassbeaur's Lane is present directly south east of the site in 1849 and has been diverted and renamed Raspberry Road by 1881, running outside the south east boundary of the wider site. ❖ Ley Brook flows from E to W approx. 75m S of the site and may have been partly culverted by 1881. ❖ There are several ponds in the surrounding fields. ❖ Fallowfield Brook is shown approx. 250m NE. ❖ By 1891 a large residence known as The Woodlands has been constructed SW of the site and there are many trees depicted within the grounds. ❖ Raspberry Road has been renamed Wellington Road. ❖ By 1892 a railway line is shown approx. 225m N and Withington has become established 300m WSW.
❖ 1905/ 23	❖ By 1905 there is a school on the wider site and a small outbuilding associated with the school may encroach on the present day dining room area. ❖ Otherwise the site remains undeveloped within open land adjacent to the school.	❖ The large residence formerly named The Woodlands is now labelled as a school for the first time. ❖ The railway is labelled Manchester Central Station Line. ❖ By 1922 there has been some further residential development and Fallowfield Bowling Club and a Tennis Ground are situated to the SE / E.
❖ 1934 / 38	❖ The school on the wider site is now labelled Withington School (Girls) for the first time. ❖ The school buildings now extend into the area of the present day dining room. ❖ The NW part of the site is occupied by playing fields at this time.	❖ The school buildings extend away from the site along the Wellington Road frontage as far as Victoria Road, which has now been constructed to the SW of the wider school site. ❖ Houses in Brocklebank Road and Leighbrook Road have also now been constructed within an extensive area of residential development. ❖ The former ponds in the surrounding area have all evidently been infilled by this time.
❖ 1955 / 76	❖ The site itself remains partly within school buildings and partly within school playing fields.	❖ By the 1956-1957 edition, the school buildings have now been extended to the E of the site area towards the NE boundary of the wider school. ❖ Some of the other school buildings have been extended or reconfigured.
❖ 1981 / 95	❖ The site itself remains partly within school buildings and partly within school playing fields.	❖ By 1981, an octagonal rear extension has been added to the school. ❖ By 1992 a further substantial rear extension has been added. ❖ There are a number of small buildings, possibly bicycle sheds to the NE of the site at this time.
❖ 2001/ 20	❖ The NW part of the site area is now an enclosed external area adjacent to the dining room.	❖ By 2003 a Games Court is shown where the present day netball courts are ❖ We understand the 6th form block was constructed in 2009 and is first shown on the 2020 edition.

In summary, the site of the proposed dining room extension was within farm fields from the earliest maps of the 19thCentury until 1905 when a school is first shown on the wider school site and a small outbuilding is shown in the vicinity of the site itself. By 1934 the school buildings extend into the area now in use as the dining room. Some of the school may have been partly rebuilt or reconfigured since then although this is not necessarily apparent from the available mapping. The school gradually increased in size during the 20th Century and early 21st Century, including the most recent addition of the 6th form block adjacent to the site in 2009.

A number of ponds are shown on the earliest editions, which were all evidently infilled by the 1930's following the extensive residential development of the surrounding area which has remained the established character up until the present day.

4.0 LAND USE

The environmental database includes sections on land use, waste and pollution prevention and control. The information in this section will be used to check for potential sources of ground contamination and environmental risks. Database entries within 250m (unless otherwise stated) are listed below.

4.1 Historical industrial sites

- There are 3No grouped entries in the database as potentially contaminative past land uses within 250m of the site boundaries. The nearest entry is within the wider school site and is referred to as an unspecified tank, but we believe this relates to the octagonal shaped rear extension to the school which first appeared in the early 1980s and has been misinterpreted by the feature search algorithm. The other two groups of entries relate to the railway cuttings 92m to 97m N and 245m to 255m NE.
- Historical tanks: none recorded within 500m.
- Electricity sub-stations: 5No groups of entries within 250m, which are the sub-stations 19m SE, 150m to 152m SE, 203m to 205m W, 224m S & 227m to 228m E.
- Historical petrol or fuel filling stations: none listed within 500m
- Historical garage and motor vehicle repair sites: none within 250m, nearest is 251m S.

4.2 Landfill and other waste sites

- Environment Agency Active or Recent Landfill data: none within 500m.
- BGS / Local Authority / Environment Agency historical landfill sites: none within 500m.
- Historical waste sites: none within 500m.
- Licensed waste sites: none within 500m.
- Waste exemptions: none within 250m, nearest is 292m NE (storage of waste, sorting of controlled waste and disposal by incineration)

4.3 Current land use

- Records of potentially contaminative industrial sites: 12No entries within 250m, which are electricity sub-stations, civil engineers (design), electrical equipment, repair and servicing, distribution and haulage, construction completion services, civil engineers (building contractors).
- Petrol and fuel sites: none within 250m, nearest are 266m E (Shell) and 360m N (Esso).
- National Grid high voltage underground electricity cables: none within 500m
- National Grid high pressure gas transmission pipelines: none within 500m
- Sites determined as contaminated land: none within 500m.
- Control of Major Accident Hazards (COMAH): none within 500m.
- Hazardous substance storage / usage: none listed within 500m.
- Historical licensed industrial activities (IPC): none within 500m.
- Licensed industrial activities (Part A(1)): none within 500m.
- Licensed pollutant release (Part A(2)/B): none within 250m, nearest is 283m SE (unloading petrol at service station).
- Radioactive substance authorisations: none listed within 500m.
- Licensed discharges to controlled waters: 5No within 250m, including on school site, adjacent to Ley Brook, storm sewer overflow (water company) – surrendered 2010. Also storm sewer overflows 130m SE & 246m SE (both historical).
- Pollutant release to surface waters: none listed within 500m.
- Pollutant release to public sewer: none listed within 500m.
- List 1 & List 2 dangerous substances: none listed within 500m.
- Pollution incidents (EA / NRW): none listed within 500m.
- Pollution inventory substances, waste transfers and radioactive waste: none listed within 500m.

4.4 Railway infrastructure and projects

- Historical railways and tunnel features: 233m to 238m NE.
- Historical railways: 105m N (razed, abandoned)
- High Speed 2 (HS2) : the site is not within 500m of HS2.

4.5 Manchester City Council Information

We consulted Manchester City Council Environmental Protection and they have responded with a summary of nearby environmental information (appended). There is nothing of any significant concern but they have alerted us that MCC hold some site investigation records for the school site. We have found these records to be the reports already provided by Sleater & Watson.

5.0 GEOLOGICAL INFORMATION

The geological database includes sections on geology, Radon, historical workings and mining and hazard ratings for natural ground subsidence. The information in this section will be used to check for potential sources of ground contamination and environmental sensitivity. Database entries within 250m are described in the following listings.

- Artificial /Made Ground: 7No entries within 250m including infilled ground 46m N, 72m NE, 104m NE, 216m S & 227m E, which appear to relate to nearby ponds probably infilled by the 1930s and worked ground 95m & 96m N, which relates to the railway cuttings.
- Superficial Deposits/Drift Geology: 2No entries within 250m, both on site for Devensian Till (low to high permeability, mixed flow type). No records of Landslip within 500m.
- Bedrock/Solid Geology: 3No entries within 250m, Chester Pebble Beds Formation on site (moderate to high permeability and mixed flow type) and Wilmslow Sandstone Formation 71m SW.
- Bedrock faults and other linear features: none listed within 500m.
- Borehole Records Map: no records within 250m
- Natural Ground Subsidence: very low to negligible hazard rating for all categories where listed.
- Natural cavities: none recorded within 500m.
- British Pits (BGS active and closed surface and underground mineral workings): none listed within 500m.
- Surface ground workings: 4No groups of entries in the database within 250m. These are a pond 27m E, railway cuttings 92m N & 96m to 97m N, ponds 242m S and cuttings 245m NE.
- Underground workings: none listed within 1,000m
- Historical mineral planning areas: none listed within 500m
- Non-Coal Mining: none listed within 1,000m
- Mining cavities: none listed within 1,000m
- Johnson, Poole & Bloomer mining areas: JPB have information within 1km of the site, but given the database entries for other mining aspects, this is unlikely to be relevant to the site itself.
- Coal mining: the site is not in a coal mining area
- Brine areas, gypsum areas, tin mining and clay mining: no records on site.
- Radon: the property is not in a Radon area as less than 1% of properties are above the Action Level. No Radon protective measures are necessary.
- BGS estimated background soil chemistry: on site: As 15-25mg/kg; Pb 100-200mg/kg; Cd <1.8mg/kg; Cr 60-90mg/kg;Ni 30-45mg/kg.

6.0 ENVIRONMENTAL INFORMATION

The environmental database also includes sections on hydrogeology, hydrology, flooding and environmentally sensitive areas. The information in this section will be considered when determining the site sensitivity. Database entries within 250m are described in the following paragraphs.

6.1 Hydrogeology and hydrology

- Aquifer within superficial deposits: Secondary (undifferentiated) on site; Secondary A 406m SW.
- Aquifer within bedrock deposits: Principal Aquifer on site.
- Groundwater vulnerability: low vulnerability on site.
- Groundwater abstractions: none within 1,500m, nearest is 1,771m SE (historical laundry).
- Surface water abstractions: none within 2,000m
- Potable water abstractions: none within 2,000m
- Source Protection Zones: none within 250m, nearest is 346m NE (total catchment).
- Source Protection Zones within the confined aquifer: none within 500m.
- Ordnance Survey MasterMap Water Network: 5No entries within 250m, including Cringle Brook (underground) at southern corner of school site, 132m N (underground) Fallowfield Brook, and 155m NE (on ground surface) also Fallowfield Brook.
- Surface Water Features: none identified within 250m.
- WFD surface water body catchments: Fallowfield Brook water body catchment on site.
- WFD surface water bodies: Fallowfield Brook on site.
- WFD groundwater bodies: Manchester and East Cheshire Permo-Triassic Sandstone Aquifers (overall rating is poor).

6.2 Flooding

- Risk of Flooding from Rivers and the Sea (RoFRaS): Low risk for dining room extension, Medium risk on wider school site. High risk within 50m of wider school site.
- Historical flood events: none listed within 250m
- Flood defences within 250m: none identified
- Areas benefitting from flood defences and flood storage within 250m: none identified
- Is the site within 50m of Environment Agency Zone 2 Floodplains? On wider school site yes but not for dining room extension.
- Is the site within 50m of Environment Agency Zone 3 Floodplains? On wider school site yes but not for dining room extension.
- Surface water flooding: highest risk on wider school site lesser risk for dining room extension.
- Groundwater flooding: highest risk on wider school site and moderate risk for dining room extension.

6.3 Designated environmentally sensitive areas

- SSSI impact risk zones: on site: current school usage is not listed as a potential risk.
- Agricultural land classification: on site: urban.
- Priority habitat inventory: 246m NE: deciduous woodland.

7.0 WALK-OVER SURVEY

Our site walkover survey was undertaken on 13th February 2020. We have incorporated many of our observations within Section 2.0, Site Description, which should be read in conjunction with this condensed summary.

We did not see any visible evidence of oil tanks, fuel tanks, chemical containers, nor any industrial processes undertaken on site, during our walkover. We have not seen any other evidence of historical potential sources of ground contamination such as electricity sub-stations.

The site and surrounding areas were generally noted to be in a well-maintained and tidy state. The surrounding area has been in residential usage since the area was first developed in the early 20th Century, so this should generally be considered low risk in terms of off site sources of ground contamination.

8.0 EXPLORATORY WORK

Our intrusive exploratory work was carried out on 13th & 14th February 2020 and was preceded by CAT & Genny scanning and Ground Penetrating Radar (GPR) in conjunction with reference to available service drawings and with the help of the school site manager. Our scope of fieldwork comprised the following elements:

Dynamic sampling and probing

Two (2No) dynamic sample boreholes (BHA & BHB) were completed to depths of 3.10m and 3.40m BGL (refusal) under the supervision of an experienced geotechnical engineer. Dynamic sampling involves driving hollow tubes [with a plastic liner] of gradually reducing diameter into the ground using a percussive tracked mini-rig. This provides a continuous profile of the soil and allows for hand penetrometer and hand shear vane tests [soil type permitting]. Representative small disturbed samples were taken for geotechnical testing and soil samples were taken in amber glass jars and plastic containers for contamination testing.

A standpipe was installed in BHA for subsequent groundwater monitoring, if required.

The tracked mini-rig also enabled dynamic probing which involves driving steel rods and end cone into the ground under the action of a 63.5kg hammer falling through a mast height difference of 750mm. This is DPSH-B in accordance with BS EN ISO 22476-2 : 2005. The number of hammer blows is recorded for each 100mm penetration. Dynamic probing was carried out at two positions adjacent to the boreholes to depths of 3.20m and 3.80m BGL when refusal was met.

Hand excavated trial pits

Three trial pits (TH1 to TH3) were completed by hand excavation to depths of up to 0.82m BGL under the supervision of an experienced geotechnical engineer. Representative small disturbed samples were taken for geotechnical testing and soil samples were taken in plastic containers for contamination testing.

Geotechnical laboratory testing

Soil samples were despatched to a specialist laboratory (James Fisher Testing Services Ltd) and the following geotechnical laboratory testing was completed:

- Moisture contents 8no samples
- Atterberg limits - 2no samples
- Particle size analysis - 2no samples
- Soluble sulphate/pH analyses - 5no samples
- Organic matter 1no sample

Contamination and chemical testing

Selected soil and groundwater samples were delivered to a specialist laboratory (DETS Ltd) and the following testing was carried out:

- General soil/water suite including asbestos screen 2no samples
- TPHLQM/CIEH 2no samples
- Waste Acceptance Criteria (WAC) 3no samples

The engineering borehole, probe& trial pit records and the laboratory test results are appended. Ground levels given on the borehole records are interpolated values taken from a historical buried services drawing.

9.0 GROUND CONDITIONS

The published geology comprises Devensian Till (Glacial Till) overlying Chester Formation (sandstone with pebble beds).

Our intrusive investigations have confirmed the anticipated natural geology and historical boreholes and have found a minimal thickness of Made Ground and relict topsoil (up to 0.50m BGL in the boreholes) underlain by Devensian Till (slightly gravelly and sandy silty clay) extending to depths of 1.90m and 2.30m BGL. Beneath this the underlying highly weathered sandstone was encountered and the boreholes and probes met with refusal between 3.10m & 3.80m penetration. The sequence is in broad agreement with that found in the appended historical borehole records.

Groundwater was not encountered in BHB, whilst groundwater was noted standing at 0.25m depth BGL on completion of BHA. Groundwater was not encountered in TH1, whilst minor seepages were noted in TH2 and standing water was noted at 0.70m depth in TH3. This suggests there are variable trapped pockets of groundwater within granular Made Ground overlying the natural clay soils.

The soils are described in more detail below.

9.1 Surfacing, Made Ground and relict topsoil

Dynamic samples BHA & BHB encountered dark grey fabric matting overlying Made Ground comprising dark grey gravelly clayey silt to 0.30m and 0.25m depths BGL underlain by a suspected relict topsoil to 0.50m depth BGL, which contains natural organic deposits.

The surfacing at the trial pits is paving slabs over grey cemented gravelly sand and the Made Ground comprises grey and brown silty sand, gravel and cobbles of brick, concrete breeze block, sandstone and black tile fragments and occasional plastic and wood (TH2) and pink polystyrene (TH3). This suggests that demolition rubble from a previous stage of development may have been placed in the vicinity of the existing foundations.

9.2 Devensian Till

The surface of the Devensian Till (Glacial Till) was encountered at depths of 0.50m BGL at the borehole positions. The surface of the Devensian Till may be locally deeper in the vicinity of the existing foundations, where granular infill is present to at least 0.82m depth BGL in TH3. The natural Devensian Till comprises generally medium strength, locally high strength, orange brown, blue grey and red brown, sandy silty clay, becoming slightly gravelly below 1.20m depth BGL. The Devensian Till extends to depths of 1.90m and 2.30m BGL at the borehole positions.

Relic/ancient decaying rootlets were seen throughout this stratum in both boreholes, and this may be indicative of historical vegetation, from whose influence the soils may have recovered to a natural moisture profile.

Standard Penetration Test (SPT) ‘N’ values of N = 9 and N = 10 were recorded at depths of 1.00m BGL in BHA and BHB, respectively.

Hand shear vane tests and hand penetrometer tests within the Devensian Till indicated undrained shear strengths generally of between 49kN/m^2 and 119kN/m^2 indicative of medium strength and high strength clay with occasionally higher values indicative of very high strength, which may be due to residual partial desiccation due to the effects of historical vegetation. Strength variability can be expected within the Devensian Till.

Laboratory plasticity testing on 2No soil samples indicates clay of low plasticity and clay of intermediate plasticity. Modified Plasticity Indices are in the range 12% to 23% which is equivalent to NHBC Low Volume Change Potential and Medium Volume Change Potential.

Laboratory moisture contents are generally equal to or higher than plastic limits which suggests that the soils have recovered from the historical vegetation, as this may have been over 75 years ago.

9.3 Chester Formation

Beneath the Devensian Till, the surface of the Chester Formation was encountered at depths of 1.90m (BHA) and 2.30m BGL (BHB). This stratum comprises medium dense rapidly becoming dense and very dense red silty fine to medium sand. The sand is partly cemented to varying degrees and also includes occasional very thin yellow brown cemented layers in BHA. This slightly cemented sand represents highly weathered sandstone of the Chester Formation.

The dynamic sample boreholes and dynamic probes refused within this stratum at depths of between 3.10m and 3.80m BGL.

Dynamic probes DPA and DPB recorded N_{100} blow counts of between 3 and 9 increasing rapidly to between 10 and 28 before refusal was met with N_{100} = >50.

Standard Penetration Test (SPT) 'N' values of N = 28 and N = 50 for 65mm penetration were recorded at depths of 2.00m and 3.00m BGL in BHA and N = 29 and N = 50 for 210mm penetration at depths of 2.00m and 3.00m BGL in BHB. The test at 2.00m depth in BHB commenced within the Devensian Till, but the result has been largely influenced by the Chester Formation in the latter part of the test.

Laboratory particle size analyses have indicated 14% fines, which is indicative of the silty nature of the stratum, along with 83% fine to medium sand, and only 3% of coarse sand.

9.4 Groundwater

Groundwater was not encountered in BHB, whilst groundwater was met at 0.60m depth BGL in BHA and noted standing at 0.25m depth BGL on completion of BHA.

Groundwater was not encountered in TH1, whilst minor seepages were noted in TH2 and standing water was noted at 0.70m depth in TH3.

These observations suggest there are variable trapped pockets of groundwater within the granular Made Ground overlying the natural clay soils.

Groundwater levels can vary due to seasonal and other effects. Monitoring of the installed standpipe may be helpful prior to carrying out the works.

9.5 Foundations

The foundations exposed in TH1 to TH3 are summarised in the table below.

Trial Pit	Step Out (m)	Founding Depth (m)	Foundation Type	Founding Stratum
TH1	0.28 to 0.30	0.25	Concrete Strip	Made Ground
TH2	0.35	0.45	Concrete Strip/Pad	Medium strength clay
TH3	0.28	Not proven	Concrete Pad	Unknown (possible clay or weathered sandstone)

9.6 Environmental observations

Manmade fragments of brick, concrete, roof tile, plastic, wood and polystyrene were noted within the Made Ground, but otherwise obvious olfactory or visual signs of soil or groundwater contamination were not encountered.

10.0 GEOTECHNICAL ASSESSMENT

Our intrusive investigations have confirmed the anticipated natural geology and historical boreholes and have found a minimal thickness of Made Ground and relict topsoil (up to 0.50m BGL in the boreholes) underlain by Devensian Till (slightly gravelly and sandy silty clay) extending to depths of 1.90m and 2.30m BGL. Beneath this the underlying highly weathered sandstone was encountered and the boreholes and probes met with refusal between 3.10m & 3.80m depth.

Groundwater was not encountered in BHB, whilst groundwater was noted standing at 0.25m depth BGL on completion of BHA. Groundwater was not encountered in TH1, whilst minor seepages were noted in TH2 and standing water was noted at 0.70m depth in TH3. This suggests there are variable trapped pockets of groundwater within granular Made Ground overlying the natural clay soils.

The soils are described in more detail in section 9.0.

The historical foundation drawing provided has indicated that the foundation design for the adjacent 6th form block was based on founding within the highly weathered sandstone on the basis of a nett allowable bearing pressure of 150kN/m^2 for pads and 125kN/m^2 for strip foundations.

The available service drawings and our buried service avoidance exercise has revealed live services crossing the area of the proposed extension, including drainage, lighting and fibre optic cables. These services may require consideration in terms of possibly diverting the routes prior to construction.

10.1 Foundations

There are two options for founding depths. The first option is that conventional shallow foundations can be constructed to a depth of 0.90m BGL, which will be within the medium strength, locally high strength slightly gravelly sandy silty clay (Devensian Till). This recommended founding depth is intended to be below all Made Ground and any desiccated / live root infested clay soils. In this regard the existing decaying ancient roots are not of concern and we do not anticipate any modern desiccation or root penetration as there is no vegetation present. Of course, if new planting were to be carried out then foundation depths should be designed to account for the potential root influence,

We recommend foundations at 0.90m depth should be designed on the basis of a maximum net allowable bearing pressure of 100kN/m^2 which should limit settlement to within normally tolerable limits. Foundation excavations are likely to stand unsupported for short periods during construction.

The second option is that conventional shallow foundations can be constructed to a depth of about 2.00m to 2.50m BGL, which will be within the medium dense, rapidly becoming dense silty fine to medium sand (highly weathered sandstone). This alternative founding depth is intended to obtain maximum benefit from a higher net allowable bearing pressure of 150kN/m^2 which should limit settlement to within normally tolerable limits.

Foundation excavations are likely to stand unsupported for short periods during construction. However, in view of the strata encountered and the probability of some water inflows from the trapped pockets of groundwater within granular Made Ground, an initial allowance should be made for full temporary support of the sides of the excavations.

10.2 Excavations and groundwater

Standing groundwater has been noted at depths of 0.25m (BHA) and 0.70m (TH3) which may include trapped pockets of groundwater within granular Made Ground. These trapped pockets may result in significant inflows following heavy rain so we suggest a contingency should be allowed for dealing with this by pumping from sumps if necessary within the excavations to enable excavations to be cleaned out prior to concreting. Monitoring of the installed standpipe may be helpful prior to undertaking excavations.

10.3 Floor slabs

The existing floor level within the dining room is about 0.50m above external ground level, and we understand that this raised floor level will be adopted for the proposed extension. A raised floor level could be accommodated by adopting suspended floor slabs constructed off the main foundations. A void may therefore be incorporated below the floor slab although this would not necessarily be required in terms of protection against clay heave as significant current vegetation is not present.

We recommend that the possible relict topsoil layer encountered in BHA, BHB & TH2 should be removed from beneath the proposed extension, as this contains organic deposits and may represent a minor ground gas risk, particularly if the raised floor results in an enclosed space beneath the floor.

10.4 Foundation concrete

We arranged for laboratory pH and water soluble sulphate testing to be undertaken on 5No soil samples. Water soluble sulphate results of up to 76.8mg/l were recorded. The pH varies from 6.7 to 8.9 which represents neutral to strongly alkaline conditions.

All the results fall within Site Design Class DS-1 of Table C2 given in BRE Special Digest 1 [2005]. We assess the site as having ‘mobile’ ground water and we recommend that buried concrete is designed in accordance with ACEC Site Class AC-1.

10.5 Infiltration sustainable drainage

We have not undertaken soakage testing and the following comments are intended to provide some general background information on the likely drainage properties of the ground based on our observations and soil descriptions.

The surface of the Devensian Till is present at 0.50m depth at BHA & BHB and this stratum is likely to be practically impermeable and is likely to offer poor drainage conditions.

We had intended to use Hazen’s Formula to obtain soakage rates for the underlying silty fine to medium sand but the effective particle size of this highly weathered sandstone is within the silt size particle range and this formula is therefore considered unsuitable for this purpose. The silty nature of the highly weathered zone is likely to offer poor drainage properties.

Consideration could be given to sinking a deeper borehole soakaway down into the less weathered zones of the Chester Formation in order to gain maximum benefit of improved drainage. This would normally be achieved by a ‘drill, test and install’ method of providing infiltration SuDS. This option would require EA approval as the Chester Formation is a Principal Aquifer, although there are no nearby Source Protection Zones so the EA may consider this option acceptable. If this option were to be pursued, the actual available soakage rate would be dependent on the depth to water table, which may limit the available storage volume, and also the results of the in situ tests undertaken immediately prior to installation. This approach cannot guarantee a successful outcome but ultimately, may be the most cost effective method where suitable drainage conditions can be proven.

11.0 GROUND CONTAMINATION ASSESSMENT

This assessment of risks to human health and environmental receptors is in accordance with current policy and practice in the UK and is applicable to new development under the planning regime. The comments and conclusions of this assessment relate specifically to the site of the proposed dining room extension.

11.1 Regulatory framework and assessment criteria

Development sites can only be assessed as significantly contaminated if all of the following are found to be present, namely

i) A contaminant; a substance in, on or under the land which has the potential to cause harm or to cause pollution of controlled waters
ii) A receptor; something that could be adversely affected by a contaminant, such as people, an ecological system, property, or a water body
iii) A pathway; a route or means by which a receptor can be exposed to or affected by a contaminant

This type of linked combination of contaminant-pathway-receptor is known as a pollutant linkage.

In terms of this current risk assessment, we must assess whether or not there is a potential for such a pollutant linkage to exist here and whether or not further investigation or protective measures are required.

11.2 Proposed end use

The proposed scheme is for a new two storey dining room extension. The scheme is still being formulated at the time of writing, but we understand will comprise a high proportion of hard cover thereby breaking some potential pollutant linkages.

The proposed secondary school end use should be considered of moderate to high sensitivity with regard to human health receptors.

11.3 Site sensitivity

The underlying geology includes a ‘Secondary A’ Aquifer and a Principal Aquifer. There are no groundwater abstractions or potable abstractions within 1,500m and there are no Source Protection Zones within 250m. There are watercourses within about 75m S and 250m N but these are not within influencing distance of the dining room extension.

At this stage the available environmental and geological information has indicated that the site should be considered of moderate sensitivity with regard to environmental receptors.

11.4 Contaminant sources

Made Ground is present and should be considered as a potential source of contaminants.

We did not see any visible evidence of chemical containers during our walkover, nor any industrial processes undertaken on site.

Parts of the existing buildings may have been constructed before the year 2000, so the possibility of asbestos containing materials (ACMs) should be considered. We recommend that the presence of ACMs should be considered following an asbestos survey unless one is already available. Asbestos was not present in the soil samples tested.

The site has been in a rural area and then a dominantly residential area since the early 20th Century so this may indicate a generally low risk from off-site contamination.

Off-site ground gas sources are considered in Section 11.8, below.

11.5 Contamination testing

We have carried out testing on 2No soil samples recovered during our exploratory fieldwork. The results have been assessed where relevant against the DEFRA Soil Guideline Values [SGV] and the LQM/CIEH Suitable for Use Levels [S4ULs] for Human Health Risk Assessment with permission from Land Quality Management Limited (Publication No S4UL3678. All rights reserved). The Category 4 Screening Levels [C4SLs] can also be useful for comparison with recorded results.

The contamination testing was carried out specifically for the purpose of providing a general guidance evaluation for the proposed development. We have used the assessment criteria for **residential development** to assess the results of the contamination testing. The residential assessment criteria are a convenient generic reference and are probably more onerous than absolutely necessary for a school setting. The criteria adopted can therefore be considered conservative and protective. We have found that all the results fall below these assessment thresholds without exception. The samples were screened for asbestos and none was detected. The soils tested can therefore be considered 'uncontaminated'.

It should be noted that whilst our investigation provided some coverage of the site, there may of course be pockets of undetected contamination. If ground contamination is found or is suspected during groundworks then specialist advice should be sought.

11.6 Construction workers

Risks to construction workers will be controlled by the use of appropriate PPE. Protective gloves and overalls should be worn and normal hygiene precautions observed as a precaution.

11.7 Surplus spoil disposal

Our standard suites of tests can be used to assist in classifying the soils in terms of waste disposal requirements. We have also arranged for 3No Waste Acceptance Criteria tests.

A rigorous hazard assessment with regard to spoil disposal was not within the scope of our investigation, but our preliminary conclusion is that the Made Ground may classify as 'Non-Hazardous and Inert'. The natural clay and sand should classify as 'Inert'. Early consultations should be made with appropriate waste facilities or regulators to confirm the classifications for off-site disposal.

It should be noted that whilst our investigation provided some coverage of the site, there may of course be pockets of undetected contamination. If ground contamination is found or is suspected during groundworks then specialist advice should be sought.

11.8 Ground gas

There are no nearby Landfills within 500m. The property is not in a Radon area as less than 1% of properties are above the Action Level and Radon protective measures are not necessary.

Significant thicknesses of Made Ground are unlikely on the basis of our exploratory work. There is, however, a layer of relict topsoil which contains organic deposits and may be a potential minor source of ground gas and we recommend this is removed from beneath the proposed building footprint.

Nearby ponds are shown on maps of the 19th and early 20th century but all these features appear to have been infilled as a result of the extensive residential development of the area which occurred in the early to mid 20th century. On this basis, these features are unlikely to contain significant biodegradable waste and are therefore unlikely to represent a ground gas risk.

The risk assessment findings are tabulated in Section 12.0: Preliminary Conceptual Model.

12.0 CONCEPTUAL SITE MODEL

Sources	Contaminants	Receptors	Pathways	Mitigating Factors and Risk Management	Risk Levels
A thin cover of Made Ground is present which may contain contaminants. We have found no other evidence of significant contaminant sources on site.	Potential contaminants include metals, inorganics, hydrocarbons & asbestos.	Construction workers, future site occupants and groundwater.	Ingestion, skin contact, breathing dust and permeation to aquifers	Risks to construction workers can be managed by appropriate PPE. Intrusive Phase 2 ground investigation and testing of soil samples for a range of commonly occurring potential contaminants including metals, inorganics, hydrocarbons & asbestos has found no exceedances of thresholds. Parts of the existing buildings may have been constructed before the year 2000, so the possibility of asbestos containing materials (ACMs) should be considered. We recommend that the presence of ACMs should be considered following an asbestos survey unless one is already available.	**Low Risk** Subject to asbestos survey
There are no nearby Landfills and the nearby historical ponds are unlikely to contain biodegradable waste due to the timing of infilling prior to the 1950s. There is no Radon risk. There appear to be no significant sources of ground gas other than the thin relict topsoil, which could be considered as a minor source.	Ground gas including carbon dioxide and methane.	Future site occupants	The relict topsoil is present directly below the proposed building footprint, In the absence of other significant sources, pathways are not considered further.	There is a layer of relict topsoil which we recommend is removed from beneath the proposed footprint to avoid this minor potential source of ground gas. On this basis, ground gas protection is not required.	**Low Risk** Subject to removal of relict topsoil.
The locality has been rural then residential since the early to mid 20th Century so there are unlikely to be significant off-site sources of potential contaminants.	Potential contaminants include metals, inorganics, hydrocarbons & asbestos.	Construction workers and future site occupants	Ingestion, skin contact and breathing dust	Intrusive Phase 2 ground investigation and testing of soil samples for a range of commonly occurring potential contaminants including metals, inorganics, hydrocarbons & asbestos has found no exceedances of thresholds.	**Low Risk**

13.0 CONCLUSIONS AND RECOMMENDATIONS

13.1 Geotechnical conclusions

Our assessment has drawn the following conclusions with regard to geotechnical factors.

a) There are two options for conventional shallow foundations. The first option is to found at a depth of 0.90m BGL within the Devensian Till (slightly gravelly sandy silty clay) on the basis of a net allowable bearing pressure of 100kN/m^2. The second option is to found at depths of about 2.00m to 2.50m BGL within the Chester Formation (highly weathered sandstone) on the basis of a net allowable bearing pressure of 150kN/m^2.
b) Standing groundwater has been noted at depths of 0.25m (BHA) and 0.70m (TH3) which may include trapped pockets of groundwater within granular Made Ground. These trapped pockets may result in significant inflows into foundation excavations following heavy rain so we suggest a contingency should be allowed for dealing with this by pumping from sumps if necessary within the excavations to enable excavations to be cleaned out prior to concreting. Monitoring of the installed standpipe may be helpful prior to undertaking excavations.
c) The existing floor level of the dining room is about 0.50m above the external ground level where the extension is proposed. We understand the proposed floor level will be consistent with existing, so this level constraint lends itself to fully suspended floor slabs constructed off the main foundations.
d) pH & sulphate results fall within Site Design Class DS-1 of Table C2 given in BRE Special Digest 1 [2005]. We assess the site as having 'mobile' ground water and we recommend that buried concrete is designed in accordance with ACEC Site Class AC-1.
e) The near surface soils encountered in our investigations are likely to offer poor drainage conditions when considering infiltration SuDS. A slightly deeper borehole soakaway may prove to be a suitable option, subject to a 'drill, test and installation' methodology.

13.2 Ground contamination conclusions

Our assessment has drawn the following conclusions with regard to ground contamination.

a) There is Made Ground on site which may be a potential source of contaminants, and we have noted no other significant on site or off site potential sources.
b) Two soil samples have been tested for a range of metals, inorganics, hydrocarbons and asbestos and the results have shown that all the values are below the regulatory thresholds without exception. The soils tested are therefore considered uncontaminated.
c) There are no nearby Landfills and the nearby historical ponds were infilled before the 1950s so are unlikely to contain biodegradable waste. There is no Radon risk. There is relict topsoil containing organic deposits beneath the proposed building footprint which should be removed prior to construction to avoid a minor build-up of ground gas and to avoid any requirement for ground gas protection measures.
d) Parts of the existing buildings may have been constructed before the year 2000 so should be checked for asbestos containing materials (ACMs). A specialist should be consulted and an asbestos survey may be required so that risks can be assessed and safely managed.

Based upon the information reviewed, our assessment is that ground contamination risks to potential receptors should be considered **LOW** for the proposed development subject to the stated mitigation measures. Groundworkers should remain vigilant during construction. If ground contamination is found or is suspected then specialist advice should be sought.

GENERAL INFORMATION, LIMITATIONS AND EXCEPTIONS

Unless otherwise stated, our Report is a Ground Investigation Report [GIR] as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report [GDR] as defined in EN1997-2. If 'design' recommendations are provided, they are for guidance only and are intended to allow the designer to assess the results and implications of our investigation/testing and to permit preliminary design of relevant elements of the proposed scheme. When the title of the report is 'Factual Report on Ground Investigation' this means that geotechnical design recommendations are not provided.

The scope and methods of investigation used have been chosen taking into account project and site constraints including but not limited to access and space limitations. Where it has not been possible to reasonably undertake an EC7 compliant scope or investigation technique we have adopted a practical and economic scope and technique(s) to obtain indicative soil parameters and any interpretation is based upon our engineering experience and relevant published information.

The Report is issued on the condition that G7 Geotech Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during our investigation. In addition G7 Geotech Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata both between the exploratory points and/or below the maximum depth of the investigation; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.

Comments made relating to ground-water or ground-gas are based upon observations made during our investigation unless otherwise stated. Ground-water and ground-gas conditions may vary with time from those reported due to factors such as seasonal effects, atmospheric effects and and/or tidal conditions. We recommend that if monitoring installations have been included as part of our investigation, continued monitoring should be carried out to maximise the information gained.

Specific geotechnical features/hazards such as [but not limited to] areas of root-related desiccation and dissolution features in chalk/soluble rock can exist in discrete localised areas - there can be no certainty that any or all of such features/hazards have been located, sampled or identified. Where a risk is identified the designer should provide appropriate contingencies to mitigate the risk through additional exploratory work and/or an engineered solution.

Where spread foundations are used, we recommend that all excavations are inspected and approved by suitably experienced personnel; appropriate inspection records should be kept. This should also apply to any structures which are in direct contact with the soil where the soil could have a detrimental effect on performance or integrity of the structure.

Ground contamination often exists in small discrete areas - there can be no certainty that any or all such areas have been located, sampled or identified.

The findings and opinions conveyed in this Report may be based on information from a variety of third party sources such as commercially available desk based geological and environmental searches, historical maps, mining reports, radon reports, geotechnical laboratory testing and contamination laboratory analyses. G7 Geotech Ltd cannot and does not provide any guarantee as to the authenticity, accuracy or reliability of such information from third parties; such information has not been independently verified unless stated in our Report.

Our Report is written in the context of an agreed scope of work between G7 Geotech Ltd and the Client and should not be used in any different context. In light of additional information becoming available, improved practices and changes in legislation, amendment or re-interpretation of the assessment or the Report in part or in whole may be necessary after its original publication.

Unless otherwise stated our investigation does not include an arboricultural survey, asbestos survey, ecological survey or flood risk assessment and these should be deemed to be outside the scope of our investigation.

G7 Geotech Ltd
49, Church Rd
Leyland
Lancashire PR25 3AA

t : 01772 435206
m: 07752 197426
e : alan.w@g7geotech.co.uk
w : www.g7geotech.co.uk

G7 Geotech Ltd is Registered in England & Wales : Registration No: 9652069
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APPENDIX A SITE PHOTOGRAPHS: 13 & 14 / 02 / 2020

APPENDIX B HISTORICAL MAPS
GROUNDSURE MAPINSIGHT G7GEO-6612803: 11 / 02 / 2020

APPENDIX C ENVIRONMENTAL DATABASE
GROUNDSURE ENVIRO+GEO INSIGHT G7GEO-6612804: 11 / 02 / 2020

APPENDIX D MANCHESTER CITY COUNCIL ENVIRONMENTAL INFORMATION

APPENDIX E HISTORICAL RECORDS
BOREHOLE RECORDS (NORTHERN FOUNDATIONS LTD REF GI 9162 MAY 2007)
FOUNDATION DRAWING (SWF CONSULTING LTD REF 7362/F/001 REV B NOV 2007)

APPENDIX F EXPLORATORY RECORDS
FOREWORD TO DYNAMIC SAMPLING
DYNAMIC SAMPLE BOREHOLE RECORDS
DYNAMIC PROBE RECORDS
HAMMER CALIBRATION CERTIFICATE
TRIAL PIT RECORDS

APPENDIX G LABORATORY TEST RESULTS
JAMES FISHER TESTING SERVICES REPORT 14276/21: 11 / 03 / 2020
DETS REPORT 20-02059 : 25 / 02 / 2020

APPENDIX H SUMMARY TABLES AND PLOTS
LABORATORY PLASTICITY SUMMARY

APPENDIX I PLANS AND MAPS
EXPLORATORY HOLE LOCATION PLAN
SITE LOCATION PLANS

APPENDIX A

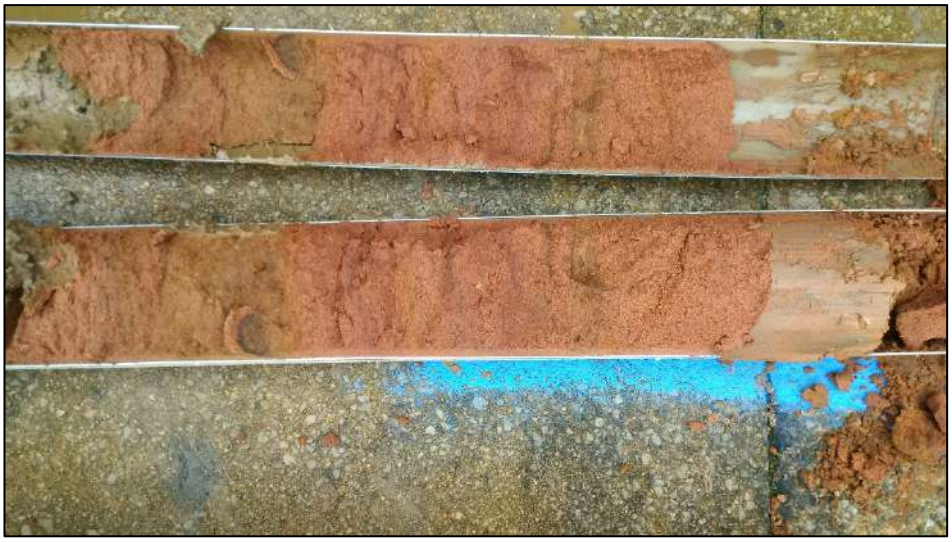
SITE PHOTOGRAPHS 13 & 14 / 02 / 2020



Photograph No 1 :Single storey part of existing dining room



Photograph No 2 :Drilling rig on position at BHB with 6th form block in background.



Photograph No 3 : Red brown silty fine to medium SAND (highly weathered sandstone) in BHA

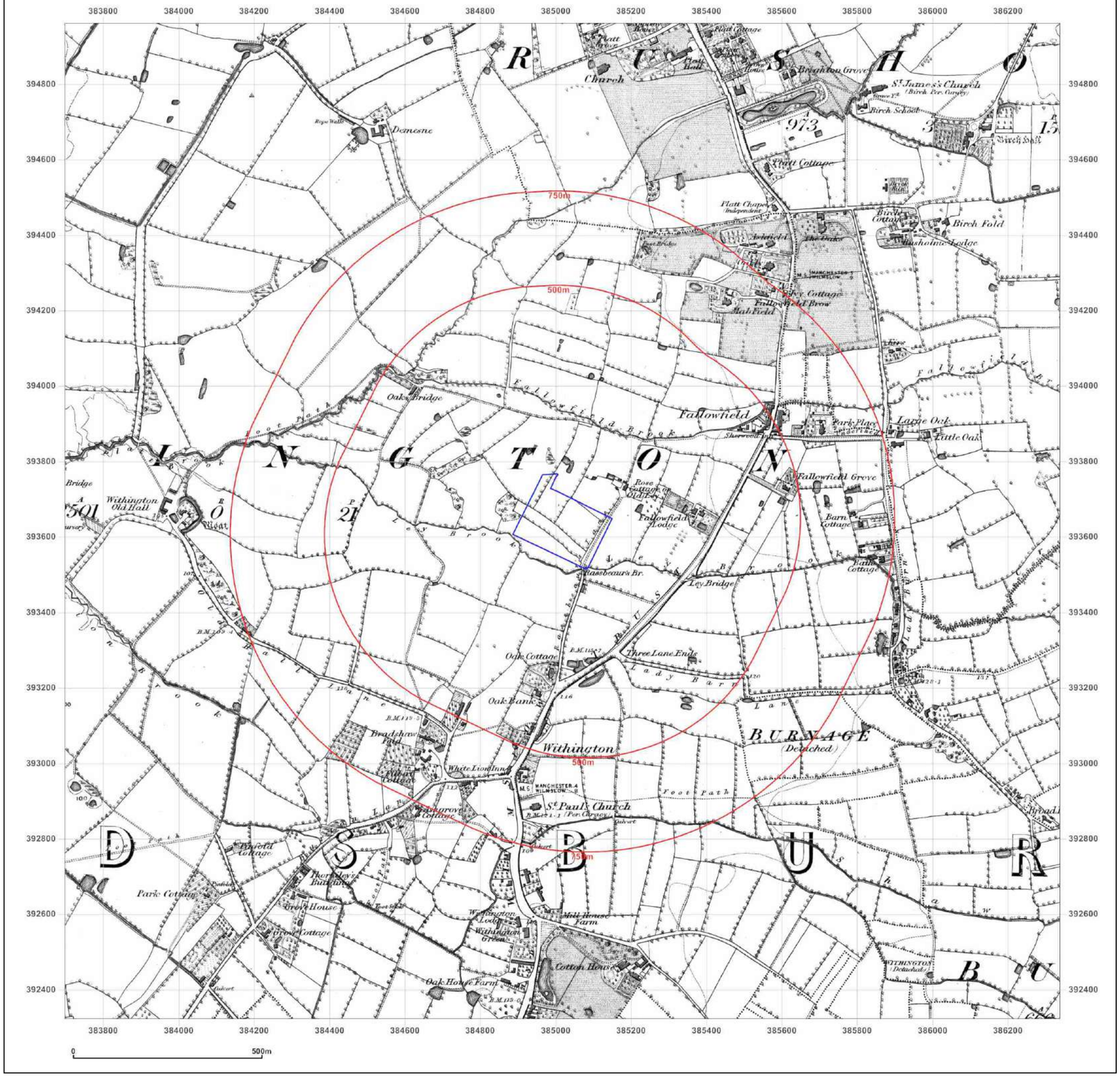


Photograph No 4 : Orange brown, blue grey and red brown slightly gravelly sandy silty CLAY (Devensian Till) in BHB

APPENDIX B

HISTORICAL MAPS

GROUNDSURE MAPINSIGHT G7GEO-6612803: 11 / 02 / 2020



Groundsure INSIGHTS

Site Details:

Withington Girl's School, 100 Wellington Rd, Fallowfield, Manchester M14 6BL

Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: County Series

Map date: **1849**

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Edition 1849
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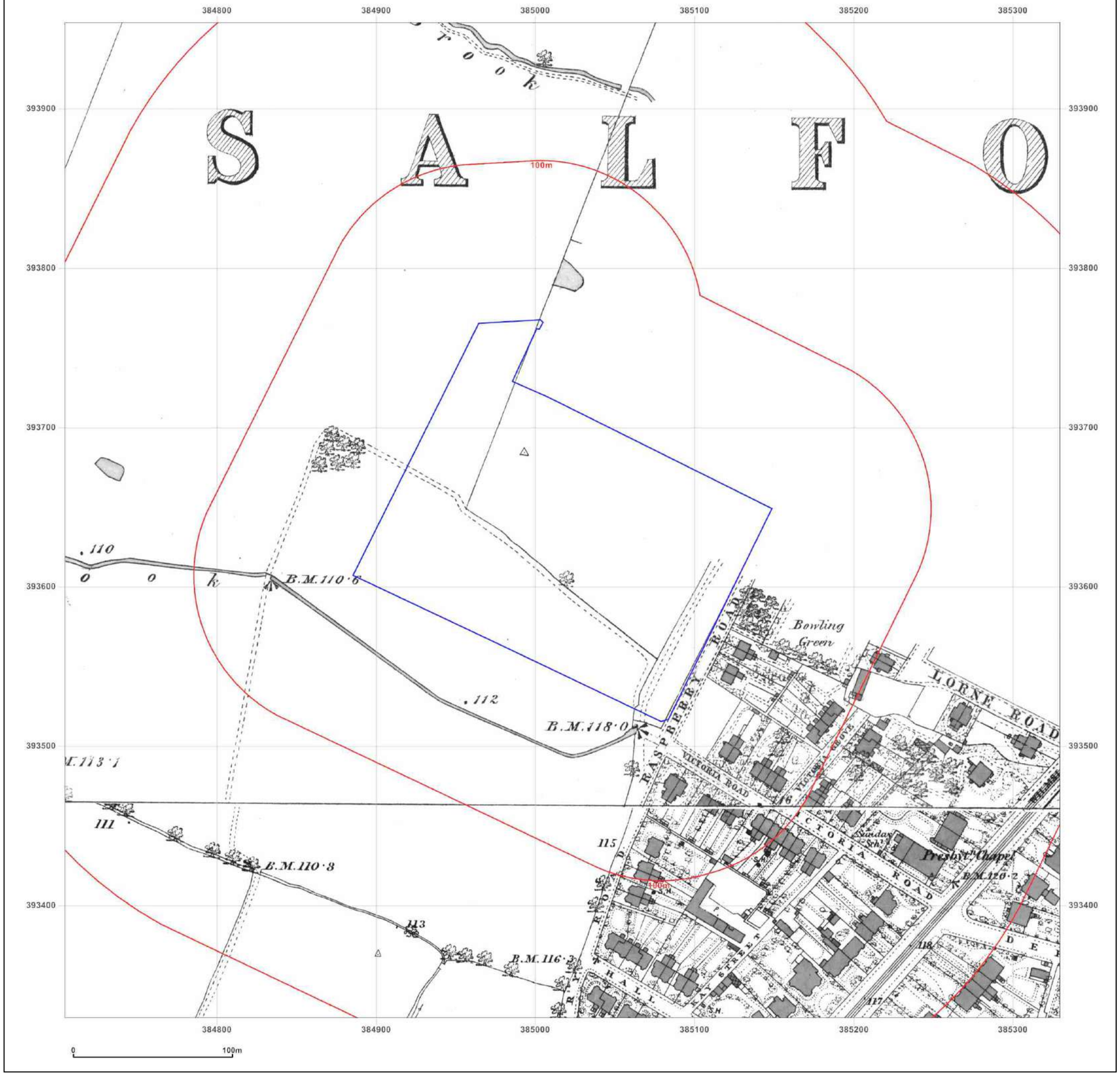
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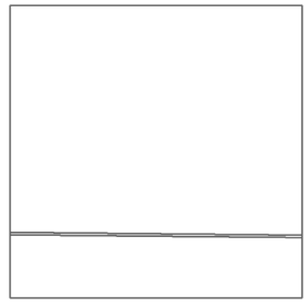
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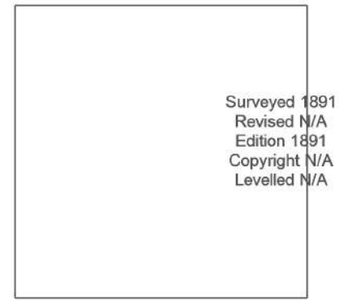
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Report Ref: G7GEO-6612803
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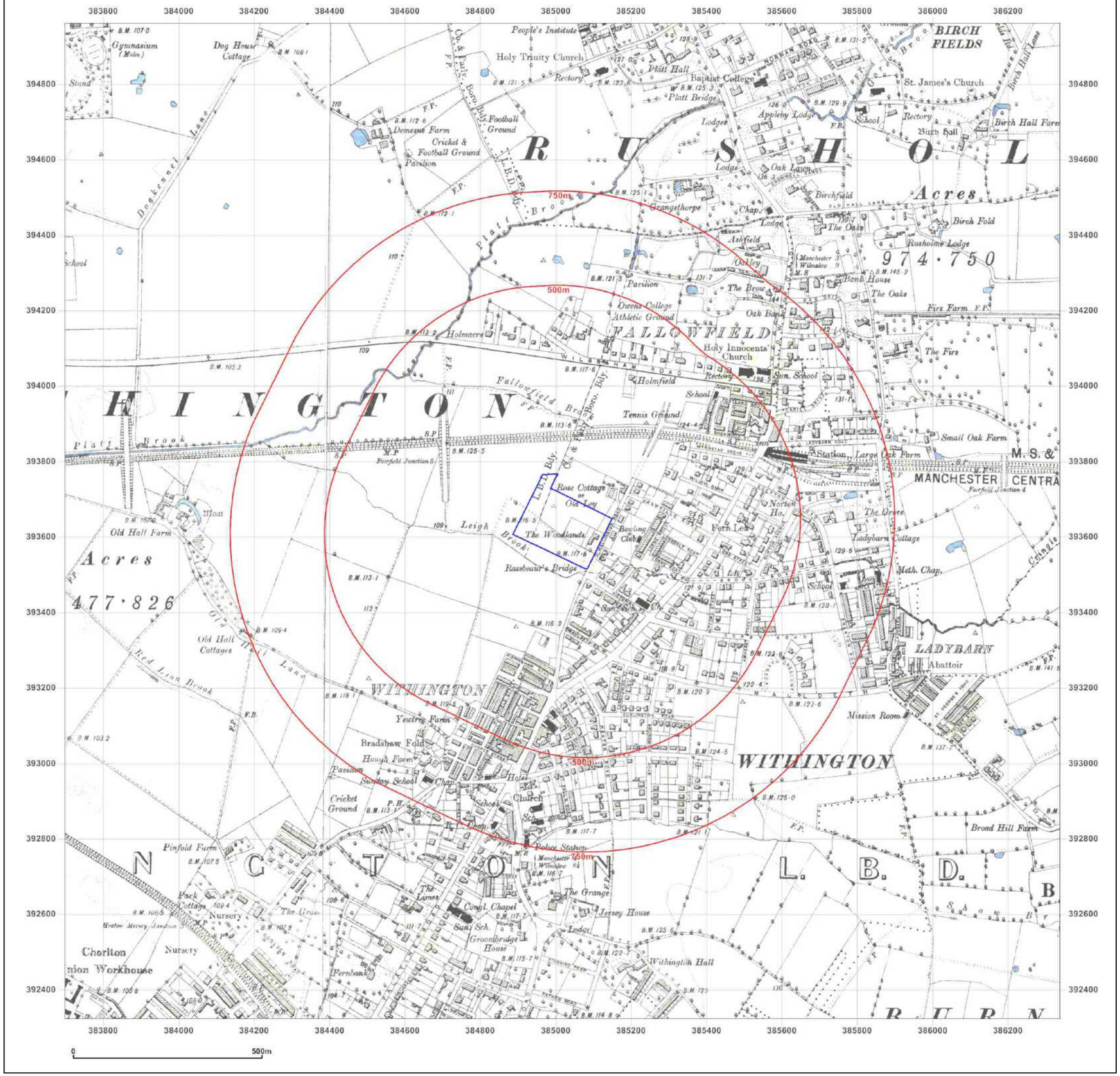
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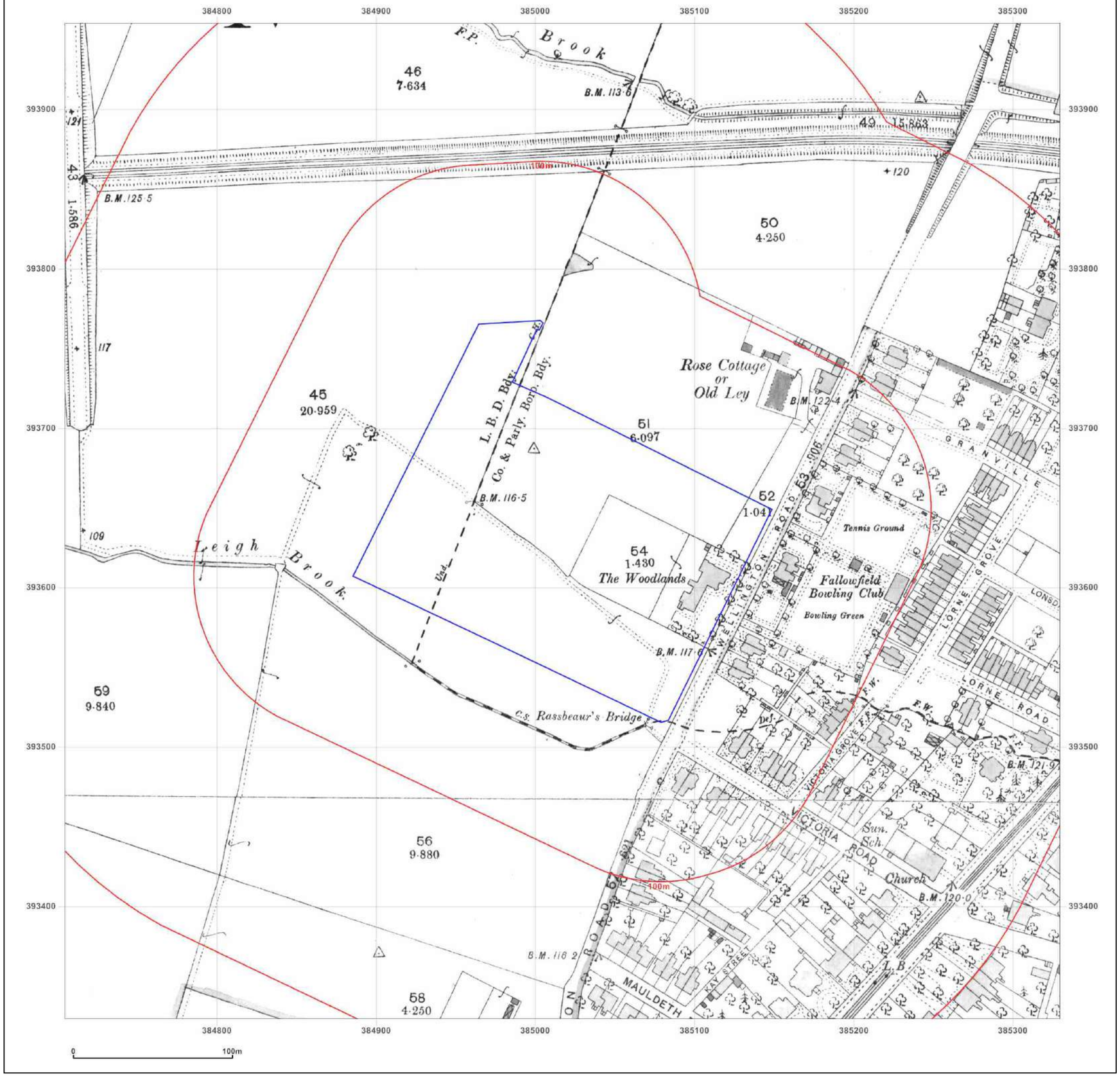
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Report Ref: G7GEO-6612803
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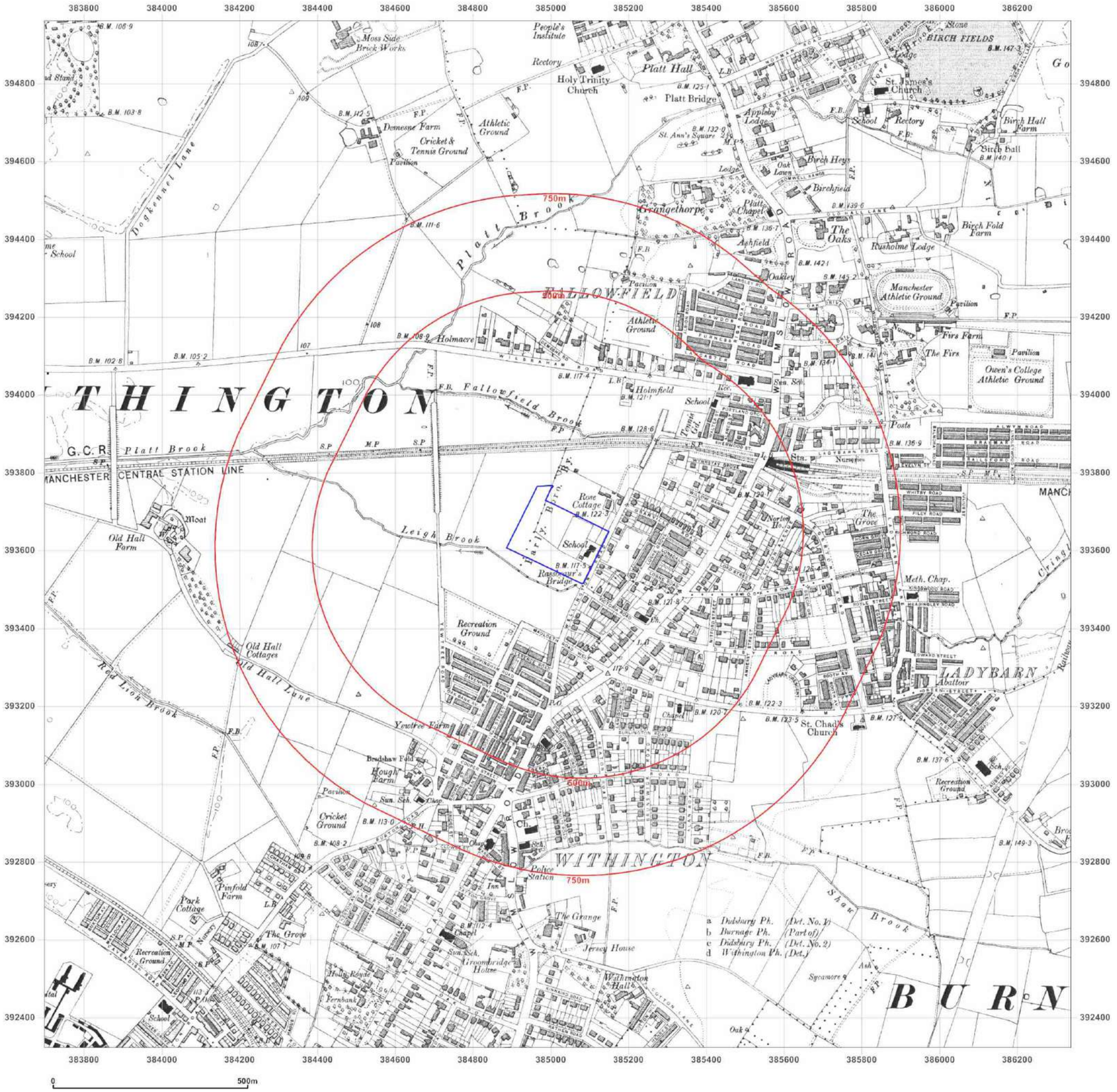
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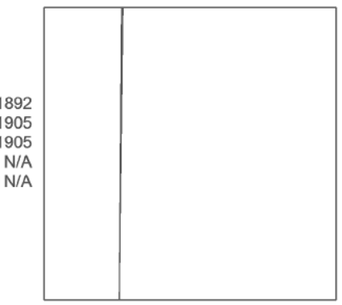
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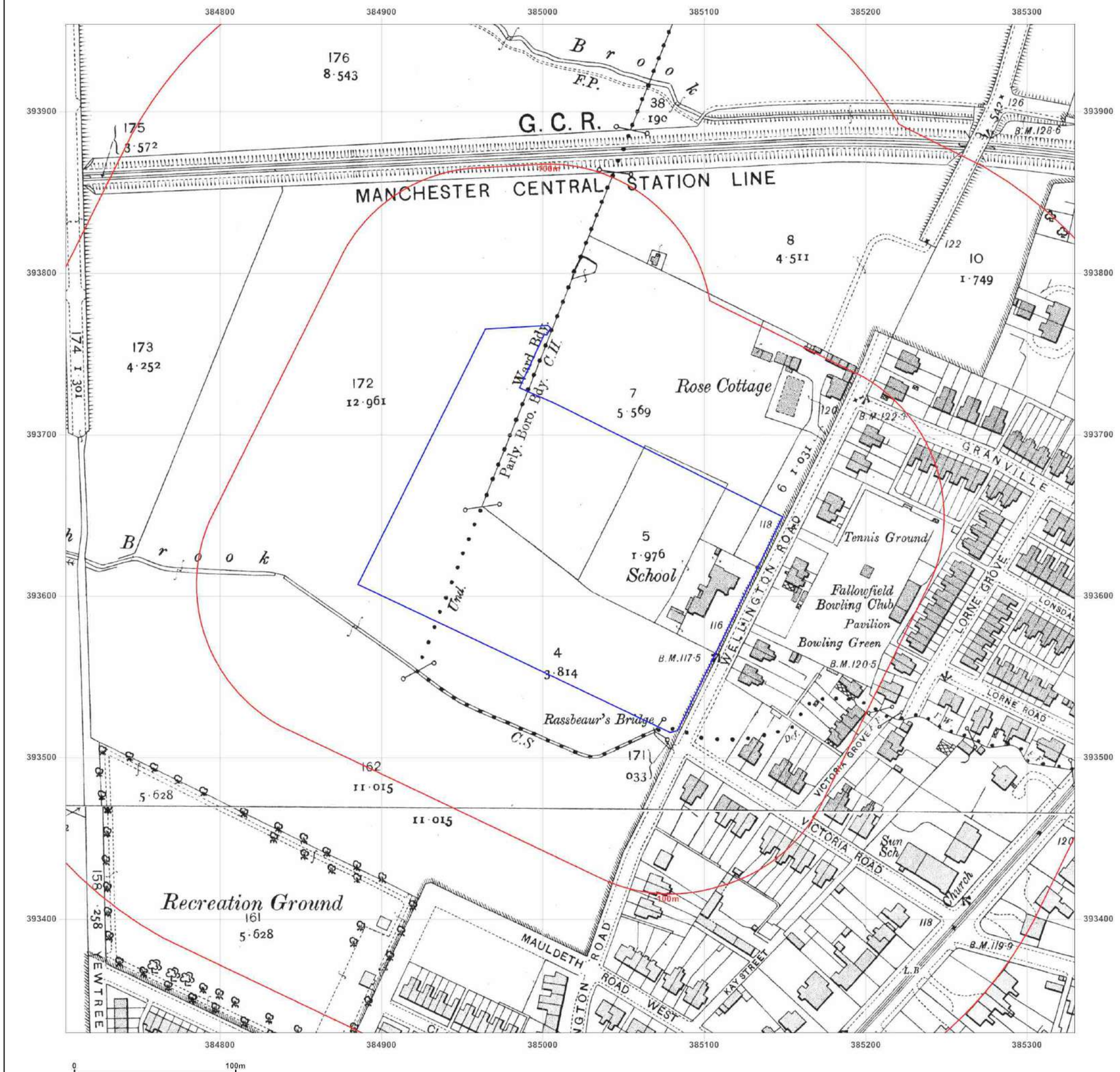
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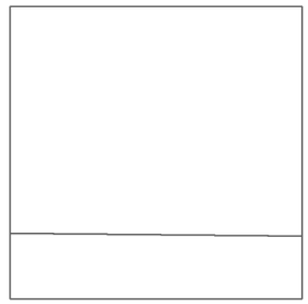
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Copyright N/A
Levelled N/A

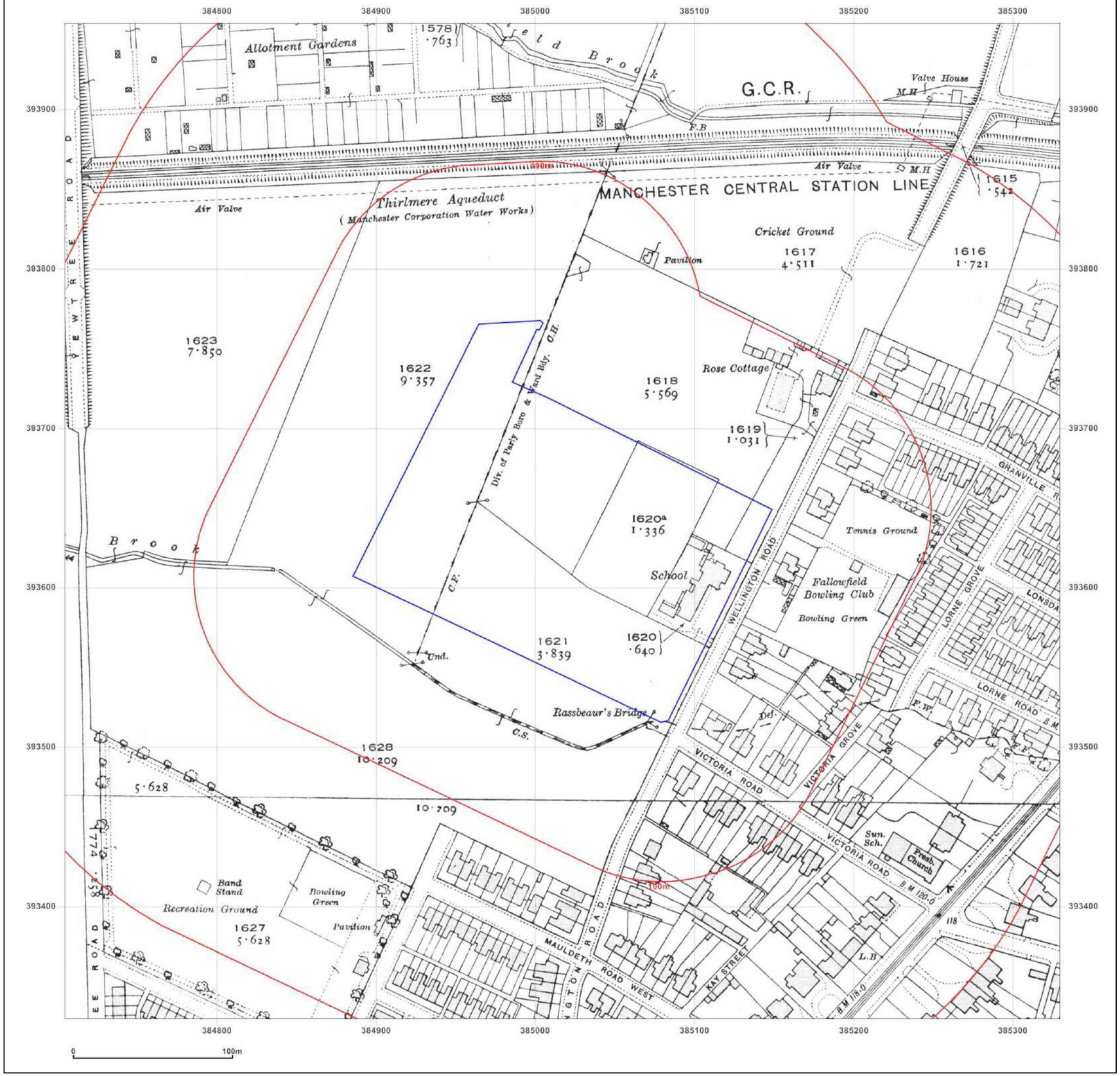
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Production date: 11 February 2020

Map legend available at:
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Groundsure INSIGHTS

Site Details:

Withington Girl's School, 100 Wellington Rd, Fallowfield, Manchester M14 6BLM14 6BL

Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: County Series

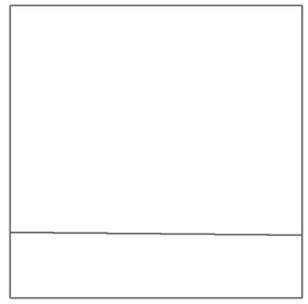
Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915



Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915

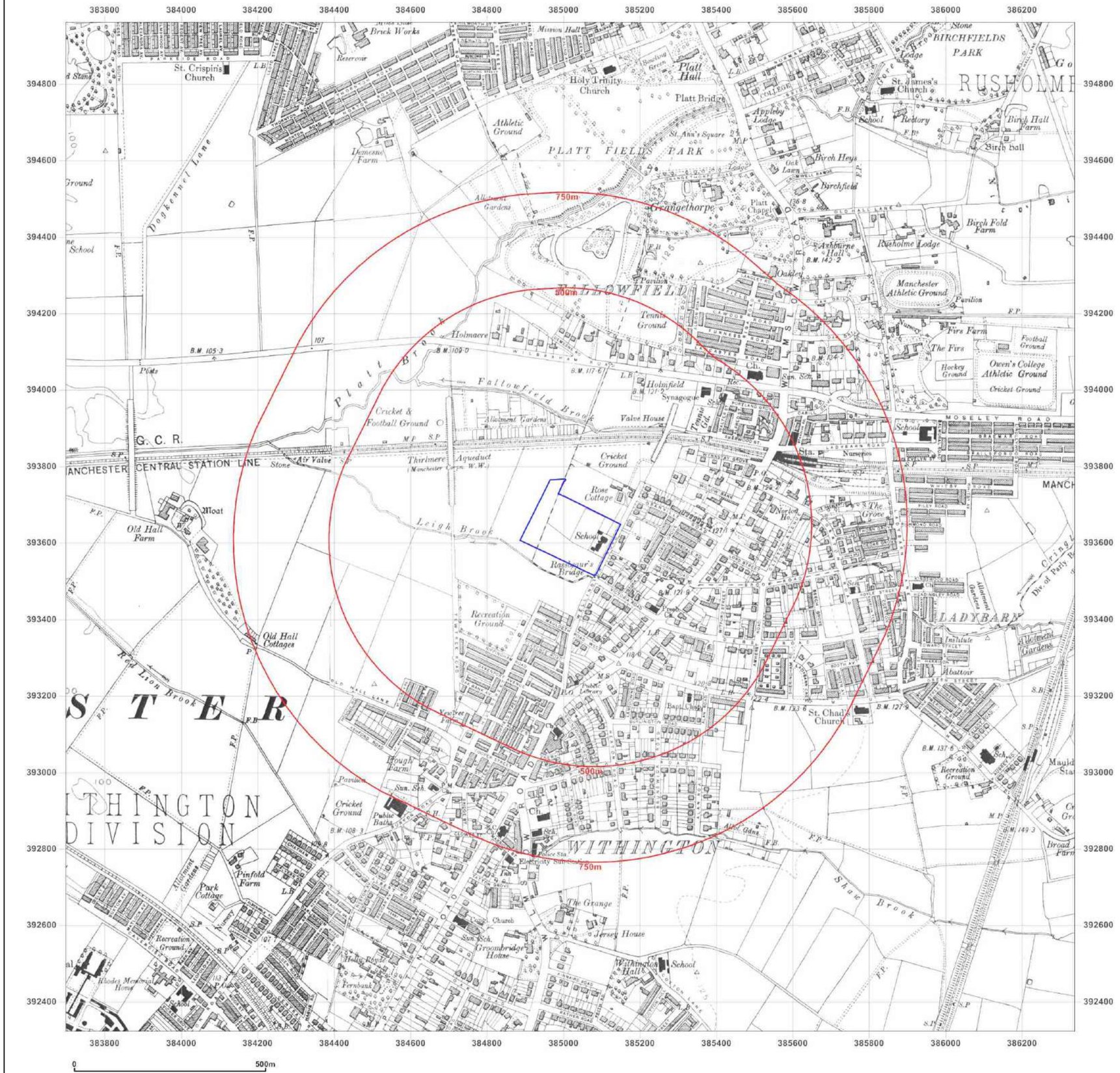
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Groundsure INSIGHTS

Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: County Series

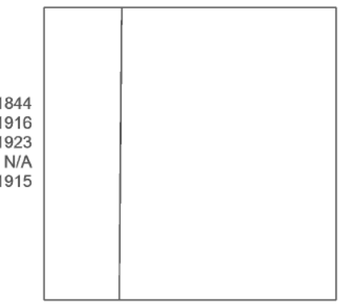
Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915



Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915

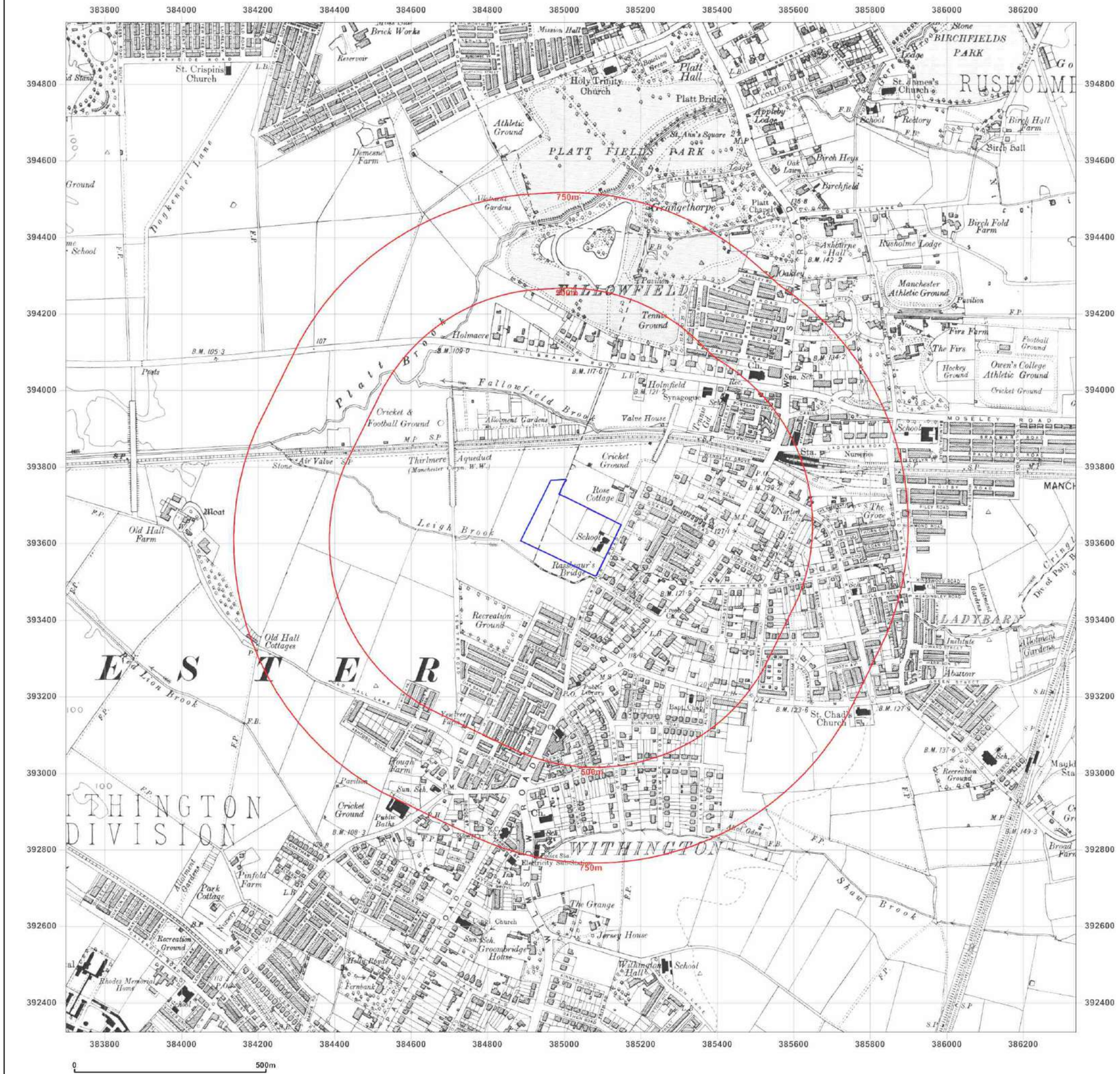
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915

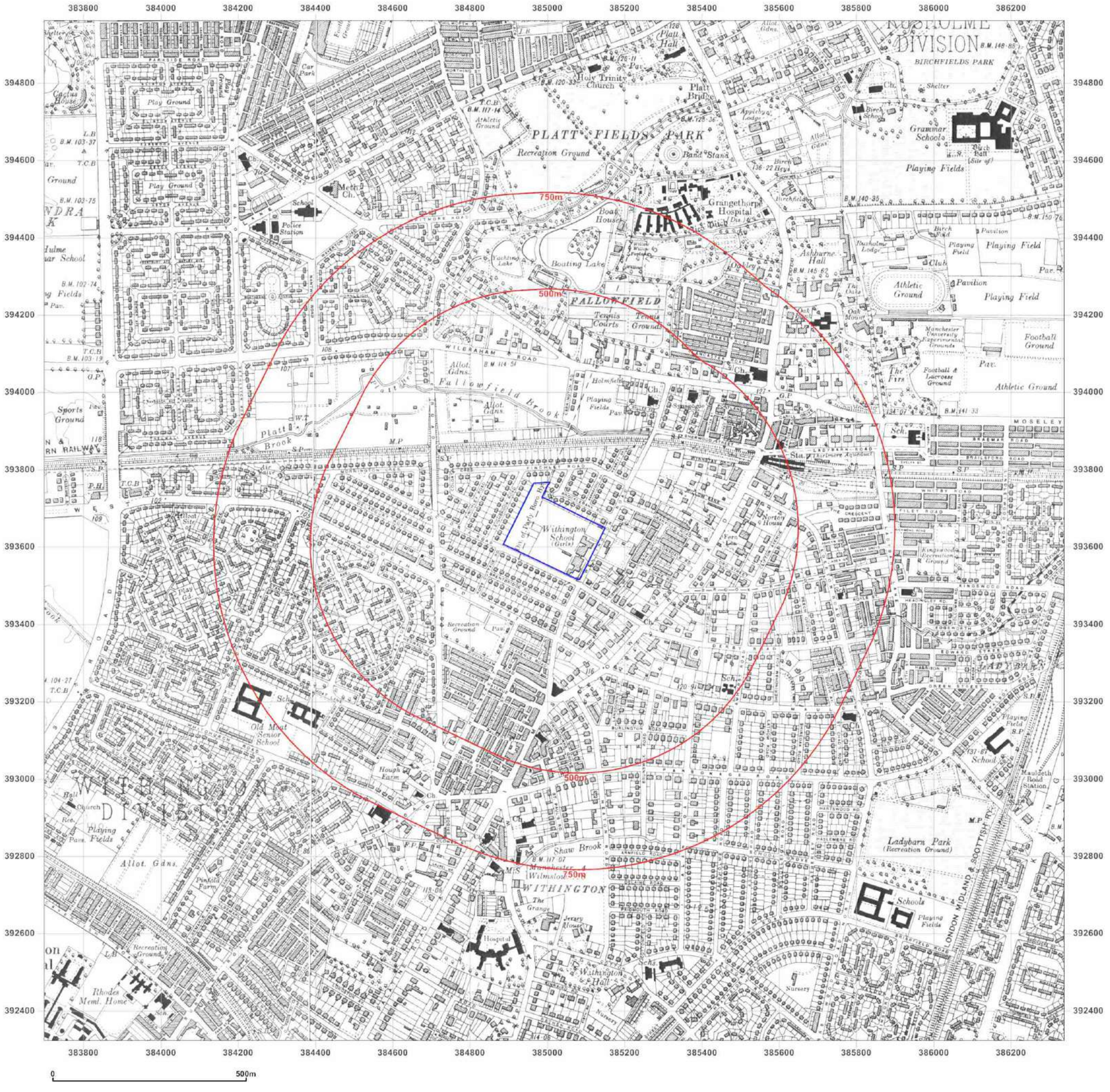
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: County Series

Map date: **1934**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1934
Edition 1934
Copyright N/A
Levelled 1927

Surveyed 1844
Revised 1934
Edition 1934
Copyright N/A
Levelled 1927

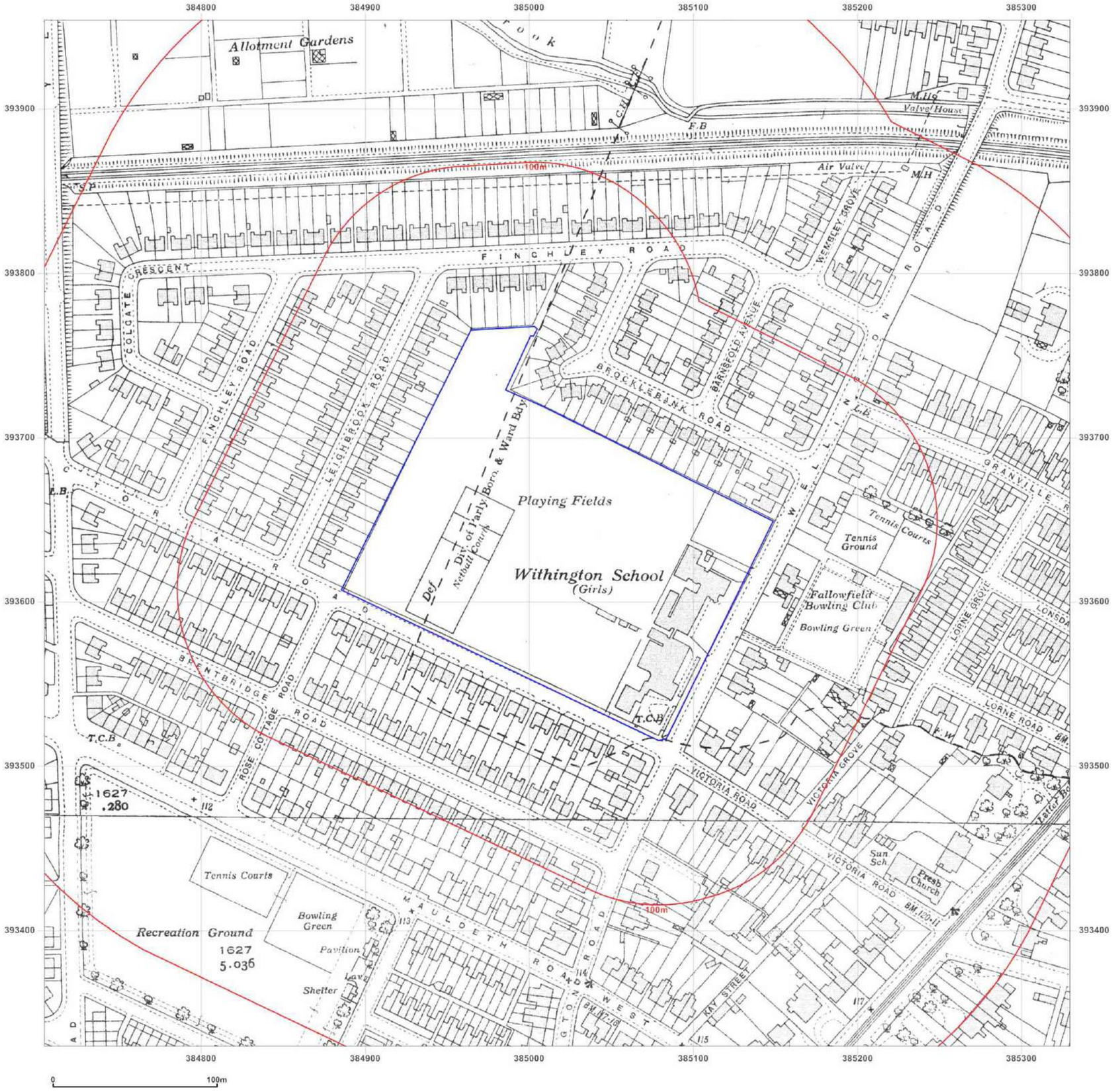
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: County Series

Map date: **1934**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1873
Revised 1934
Edition N/A
Copyright N/A
Levelled 1927

Surveyed 1873
Revised 1934
Edition N/A
Copyright N/A
Levelled 1927

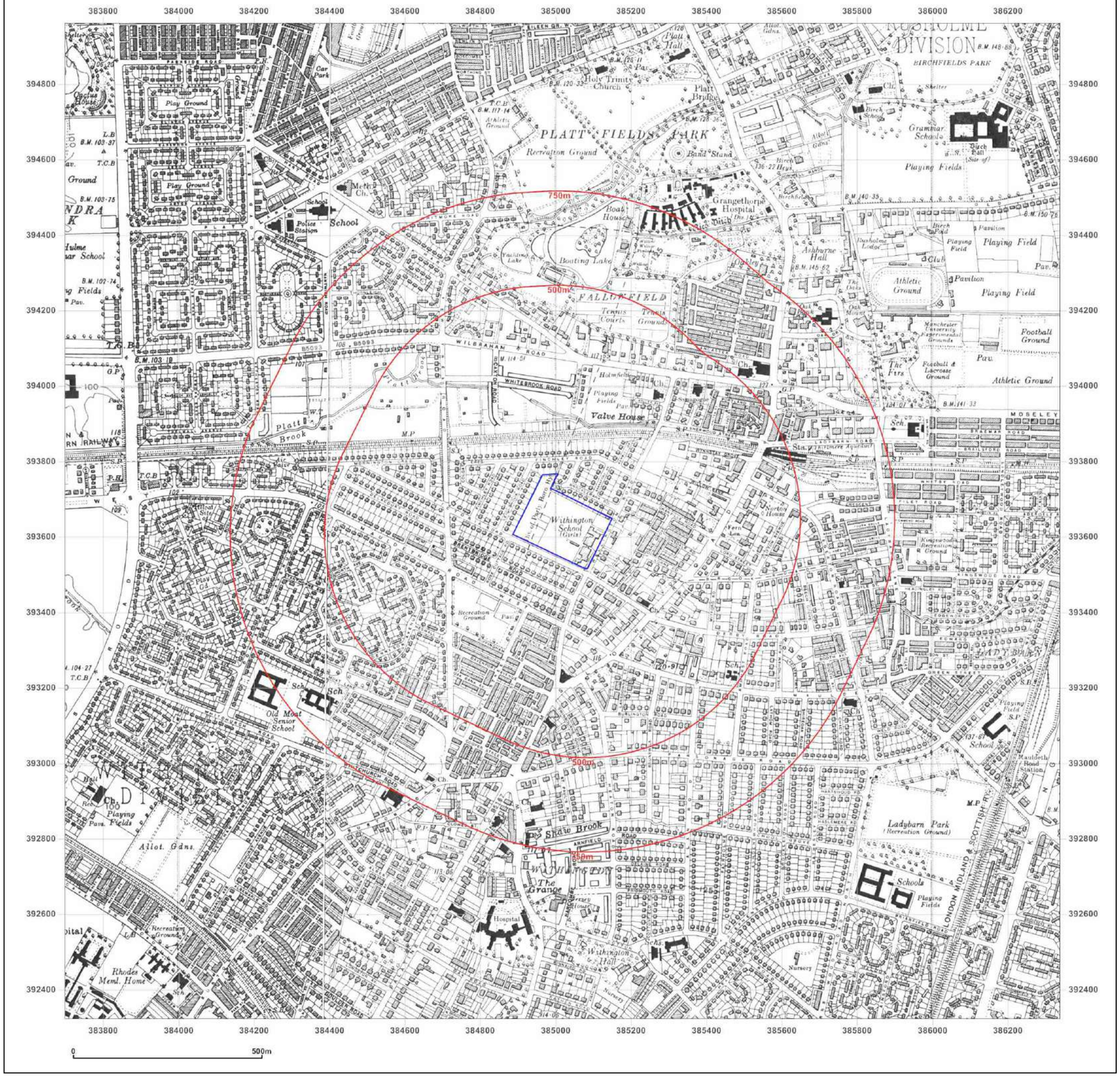
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1938
Edition 1938
Copyright N/A
Levelled 1927

Surveyed 1844
Revised 1938
Edition 1938
Copyright N/A
Levelled 1927

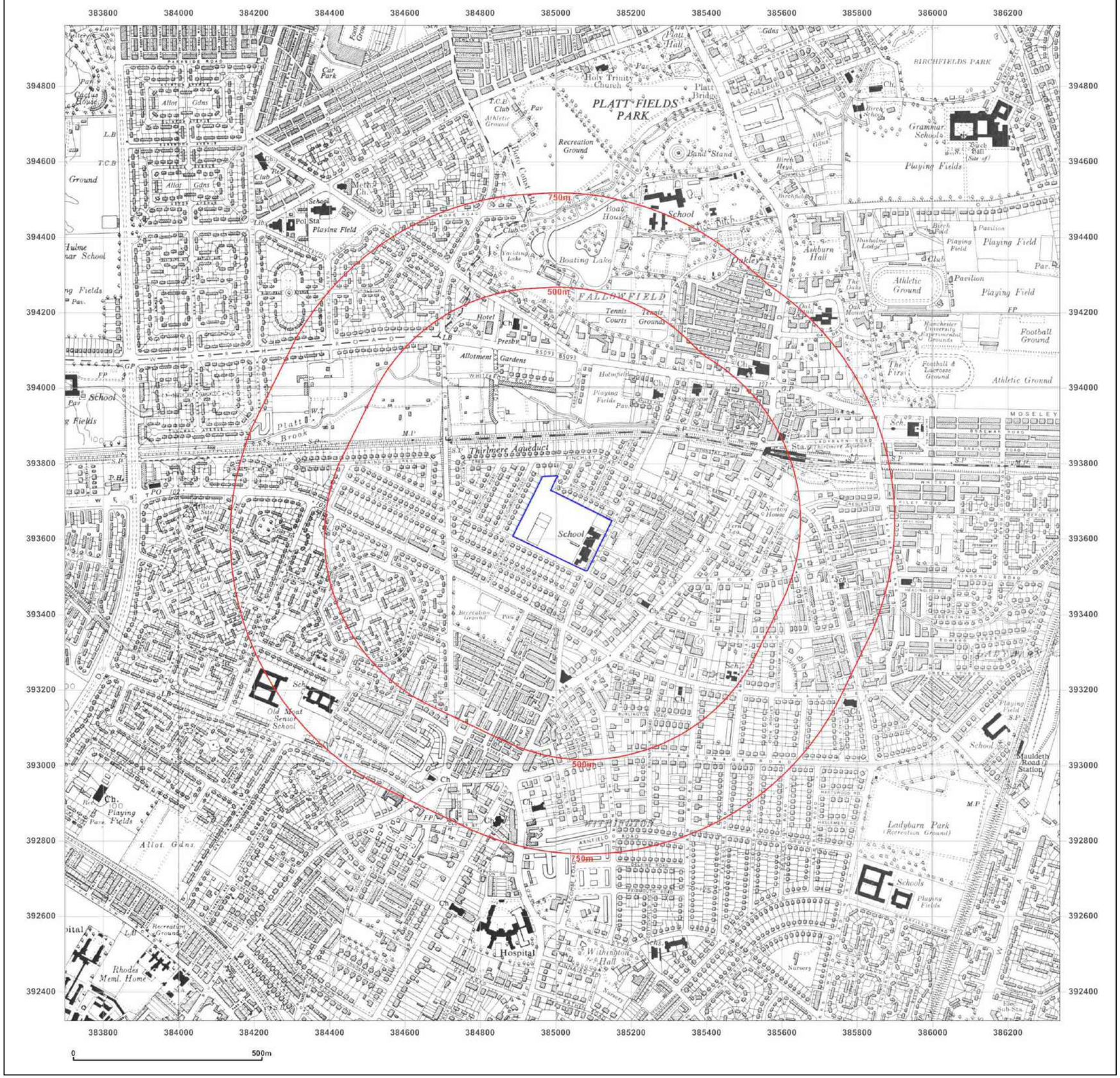
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

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 N/A
Copyright 1955
Levelled N/A

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

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Site Details:

Withington Girl's School, 100 Wellington Rd, Fallowfield, Manchester M14 6BL

Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1956-1957**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1956 Revised 1956 Edition N/A Copyright 1956 Levelled 1948		Surveyed 1957 Revised 1957 Edition N/A Copyright 1957 Levelled 1948
Surveyed 1956 Revised 1956 Edition N/A Copyright 1956 Levelled 1948		Surveyed 1957 Revised 1957 Edition N/A Copyright 1957 Levelled 1948

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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1956-1957**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1956	Surveyed 1957
Revised 1956	Revised 1957
Edition N/A	Edition N/A
Copyright 1957	Copyright 1958
Levelled 1948	Levelled 1948

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

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		Surveyed 1957 Revised 1957 Edition N/A Copyright 1958 Levelled 1958
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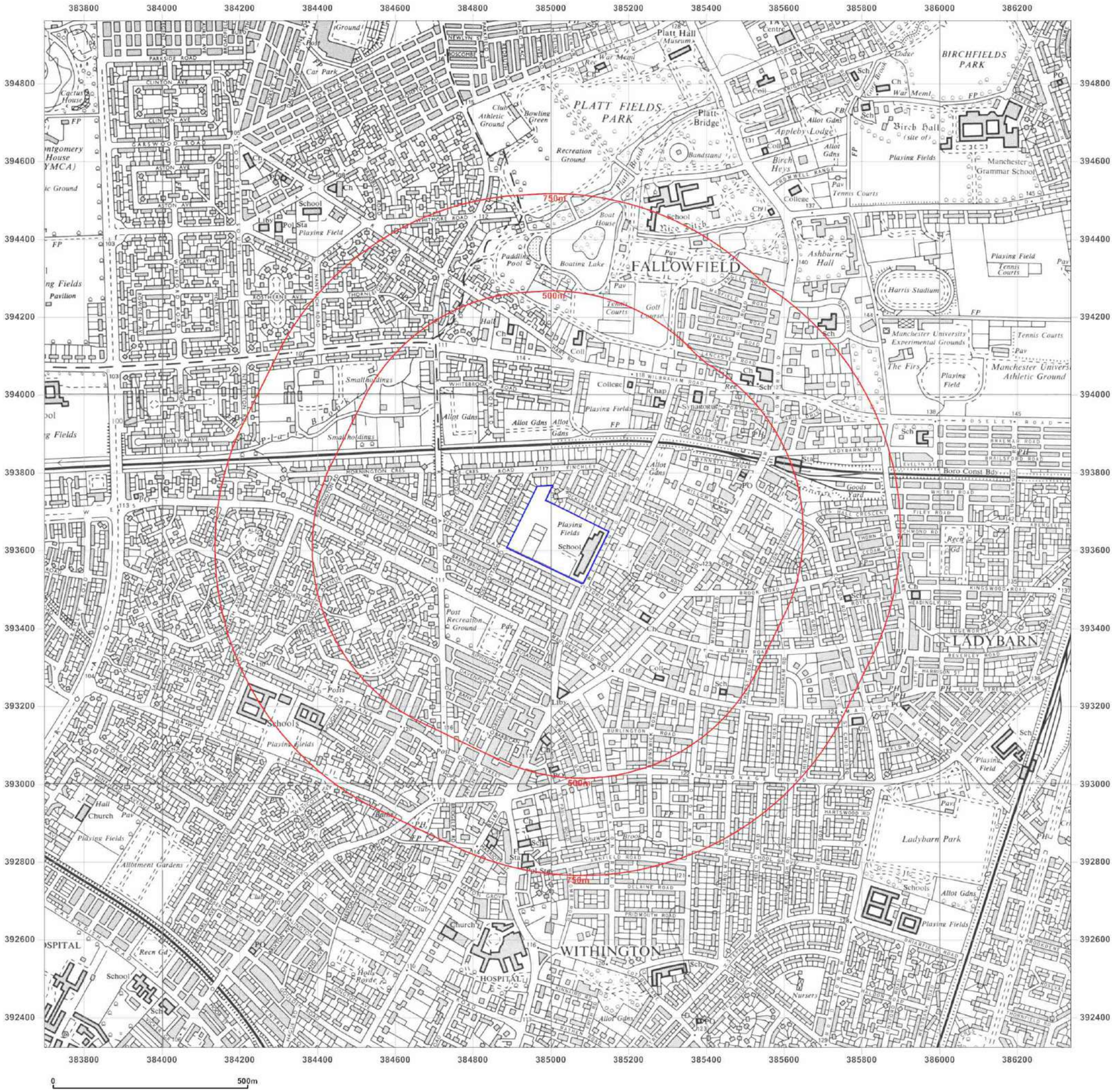
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: Provisional

Map date: **1965-1966**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1966
Levelled N/A

Surveyed 1965
Revised 1965
Edition N/A
Copyright 1965
Levelled N/A

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1974-1978**

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	Surveyed N/A Revised N/A Edition N/A Copyright 1978 Levelled 1958
	Surveyed 1957 Revised 1973 Edition N/A Copyright 1974 Levelled 1958

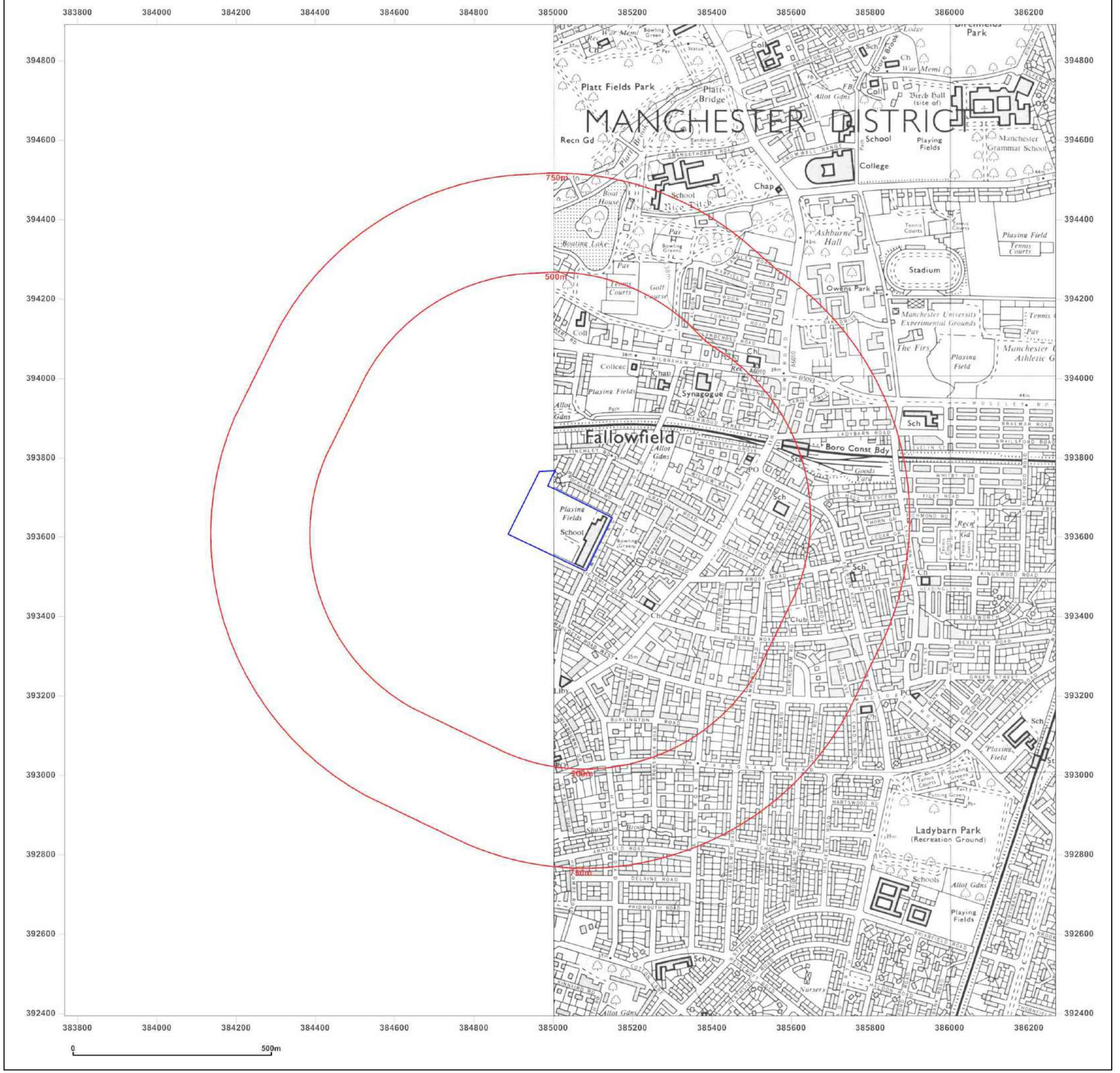
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1976**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1974
Revised 1975
Edition N/A
Copyright 1976
Levelled 1964

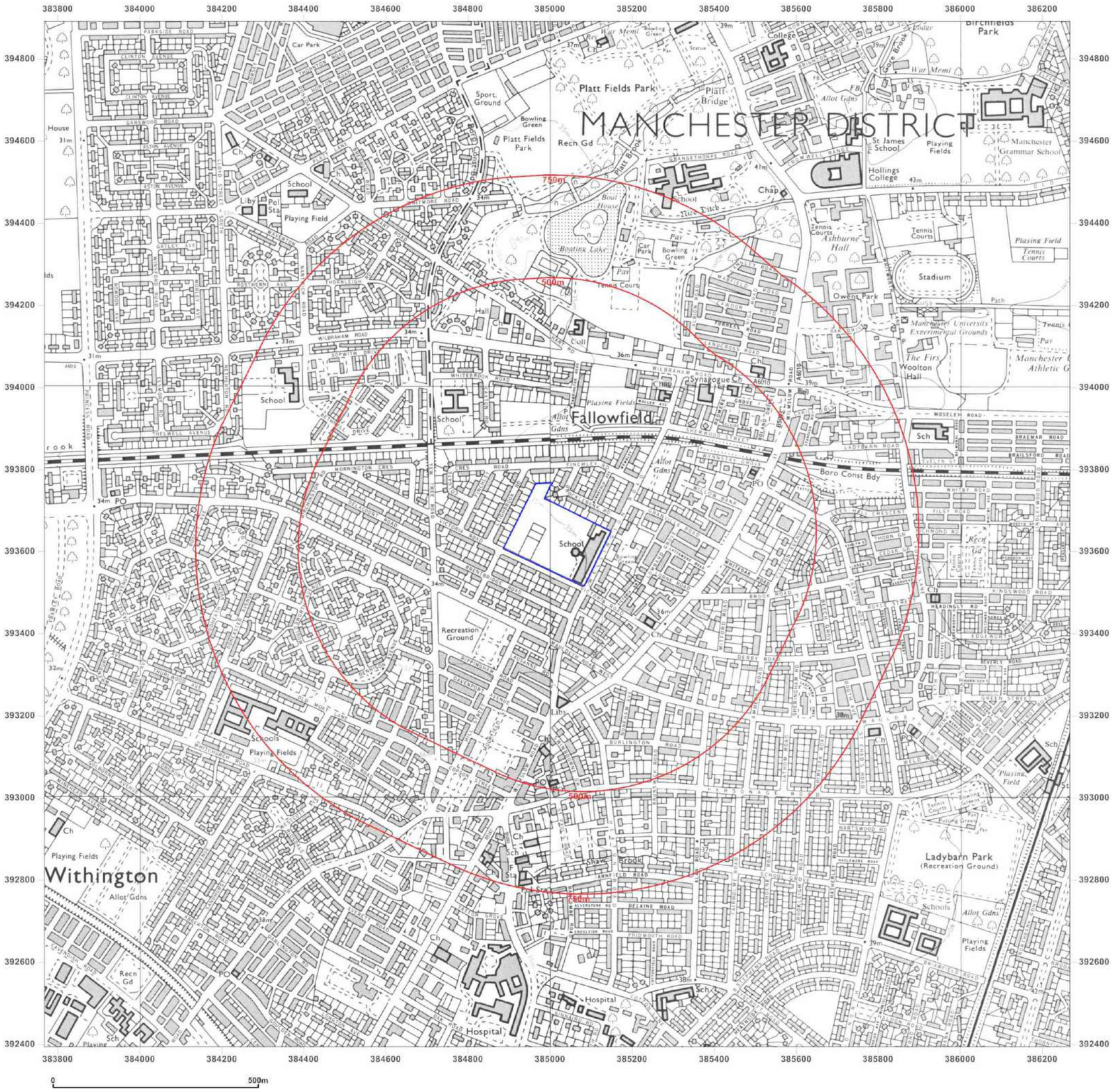
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1981-1983**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1977
Revised 1981
Edition N/A
Copyright 1981
Levelled 1976

Surveyed 1981
Revised 1983
Edition N/A
Copyright 1983
Levelled 1981

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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1982-1984**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1958 Revised 1983 Edition N/A Copyright 1983 Levelled 1958		Surveyed 1958 Revised 1984 Edition N/A Copyright 1984 Levelled 1958
Surveyed 1958 Revised 1982 Edition N/A Copyright 1982 Levelled 1958		Surveyed N/A Revised N/A Edition N/A Copyright 1984 Levelled 1957

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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1956 Revised 1985 Edition N/A Copyright 1987 Levelled 1958		Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A
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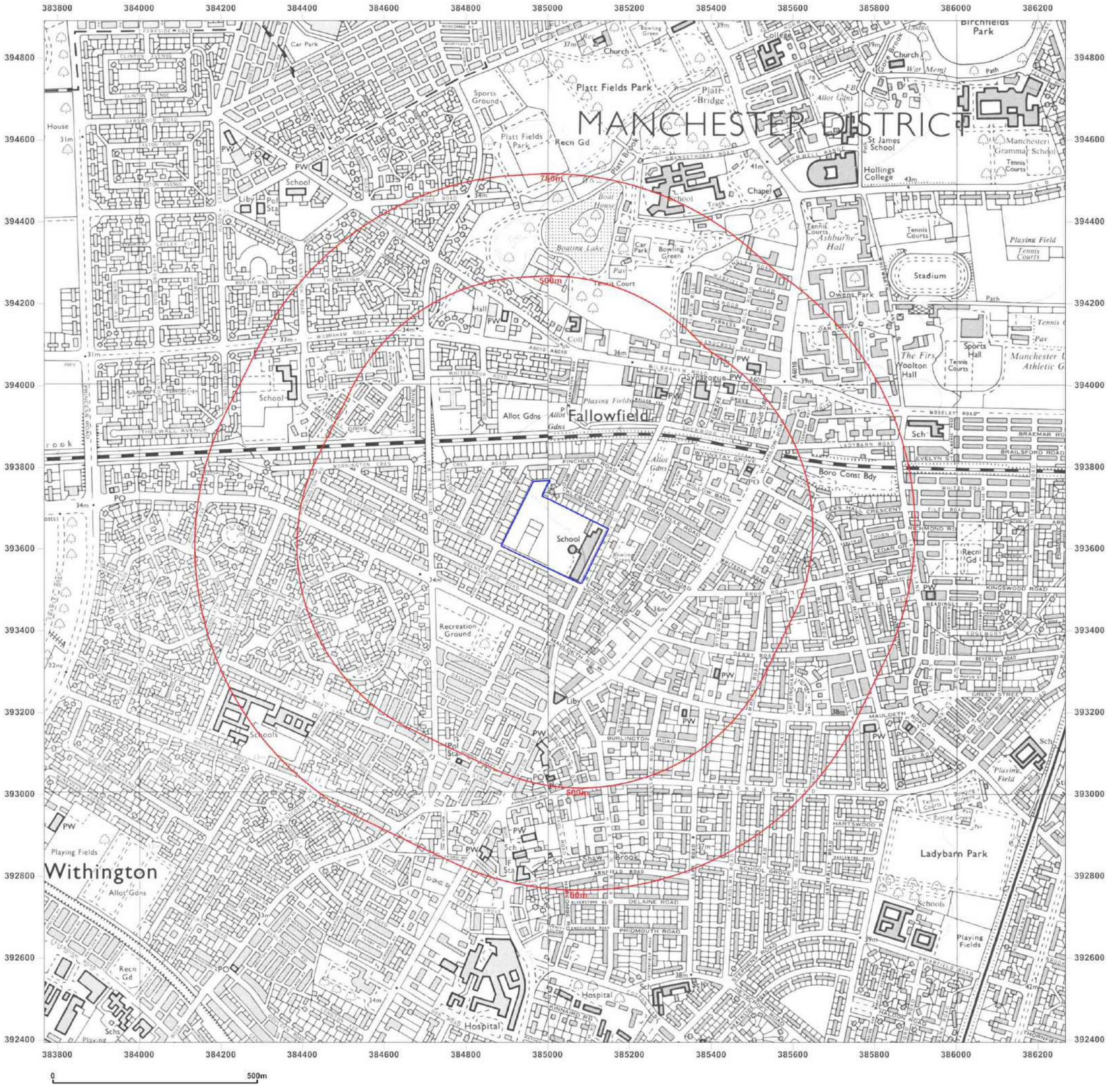
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1988-1989**

Scale: 1:10,000

Printed at: 1:10,000

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Revised 1988
Edition N/A
Copyright 1988
Levelled 1981

Surveyed 1986
Revised 1989
Edition N/A
Copyright 1989
Levelled 1981

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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A		Surveyed 1995 Revised 1995 Edition N/A Copyright 1995 Levelled N/A
Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A		Surveyed 1994 Revised 1994 Edition N/A Copyright 1994 Levelled N/A

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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A		Surveyed 1995 Revised 1995 Edition N/A Copyright 1995 Levelled N/A
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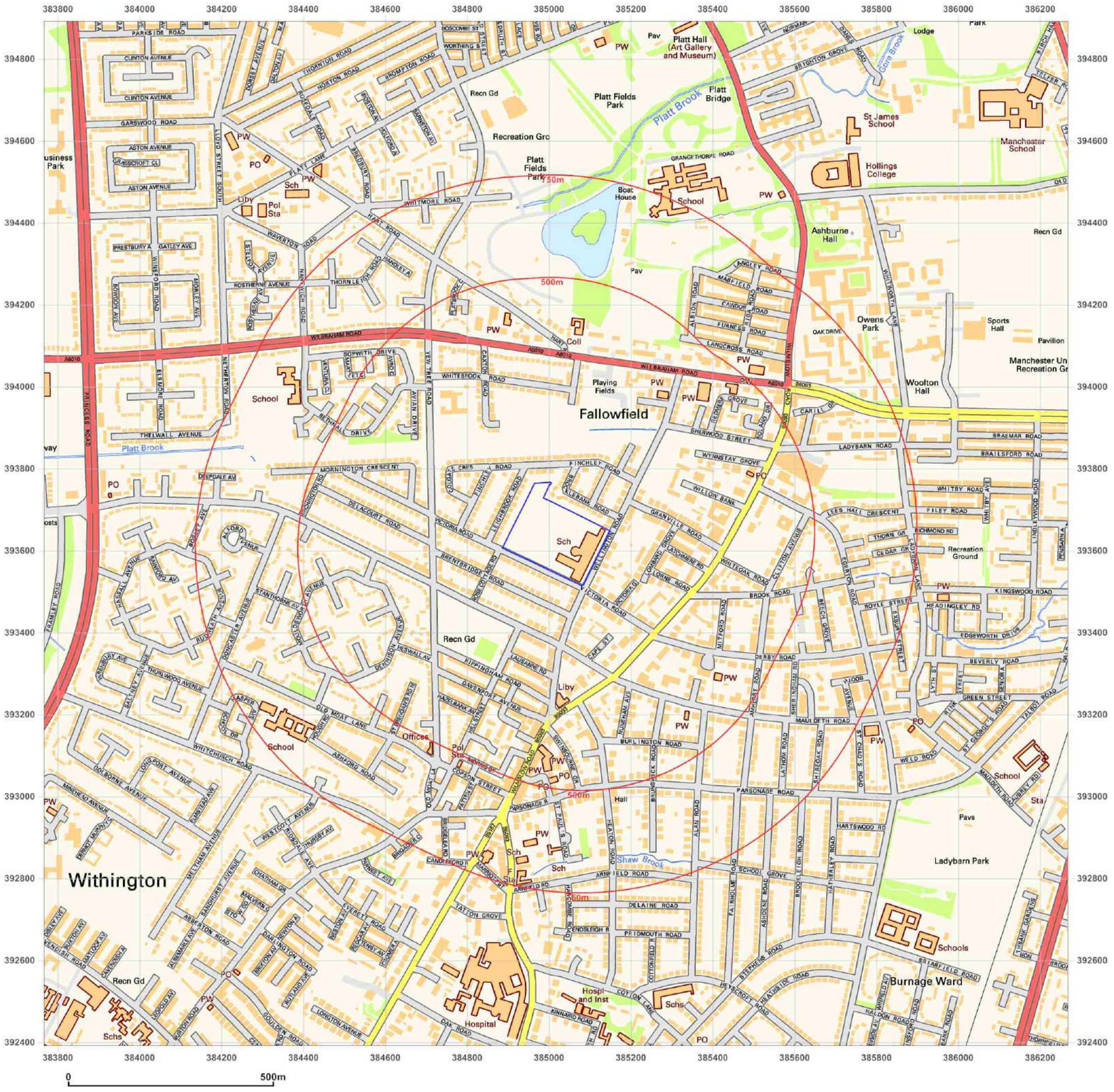
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

Withington Girl's School, 100 Wellington Rd, Fallowfield, Manchester M14 6BL

Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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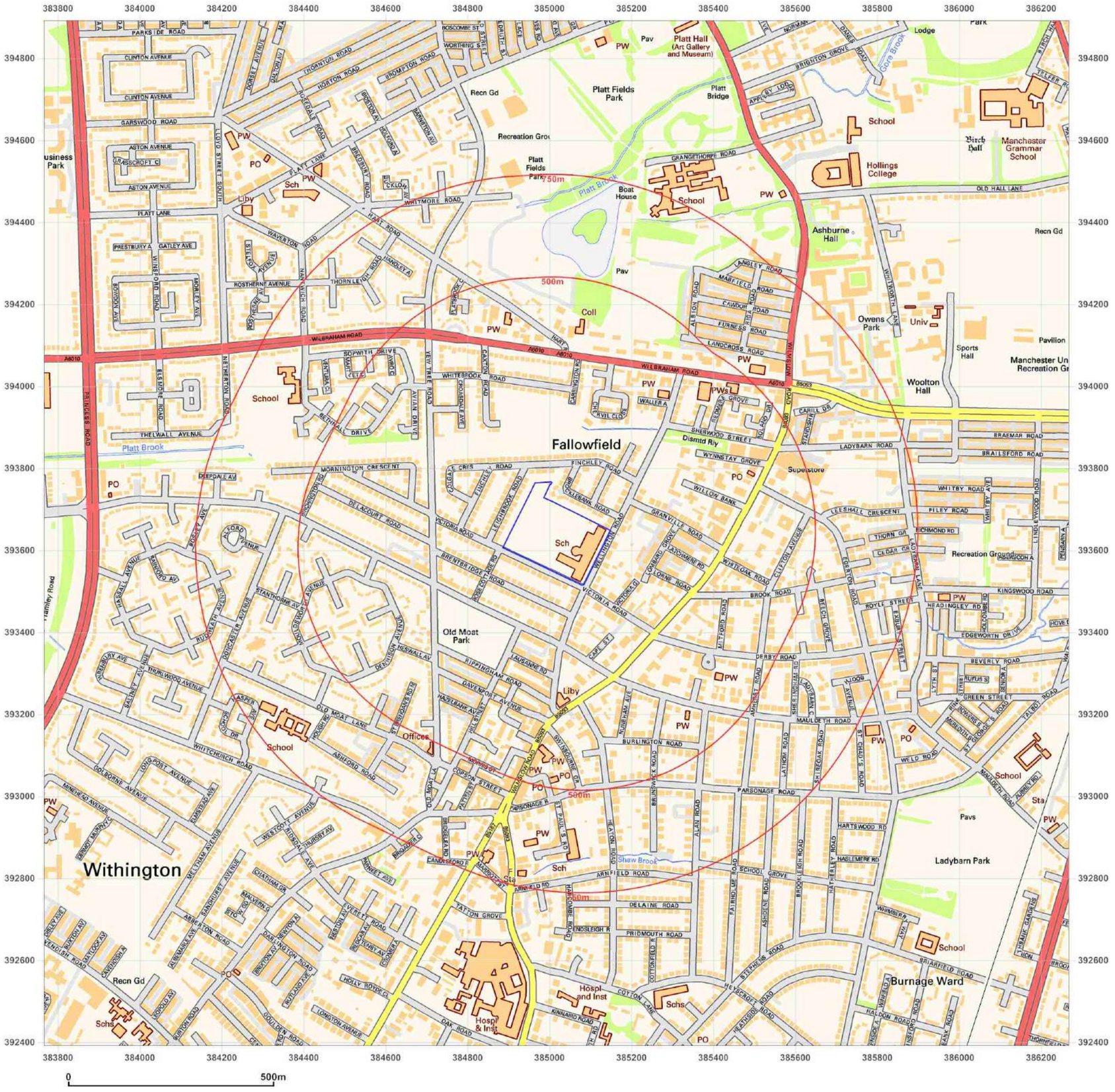
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Site Details:

Withington Girl's School, 100 Wellington Rd, Fallowfield, Manchester M14 6BL

Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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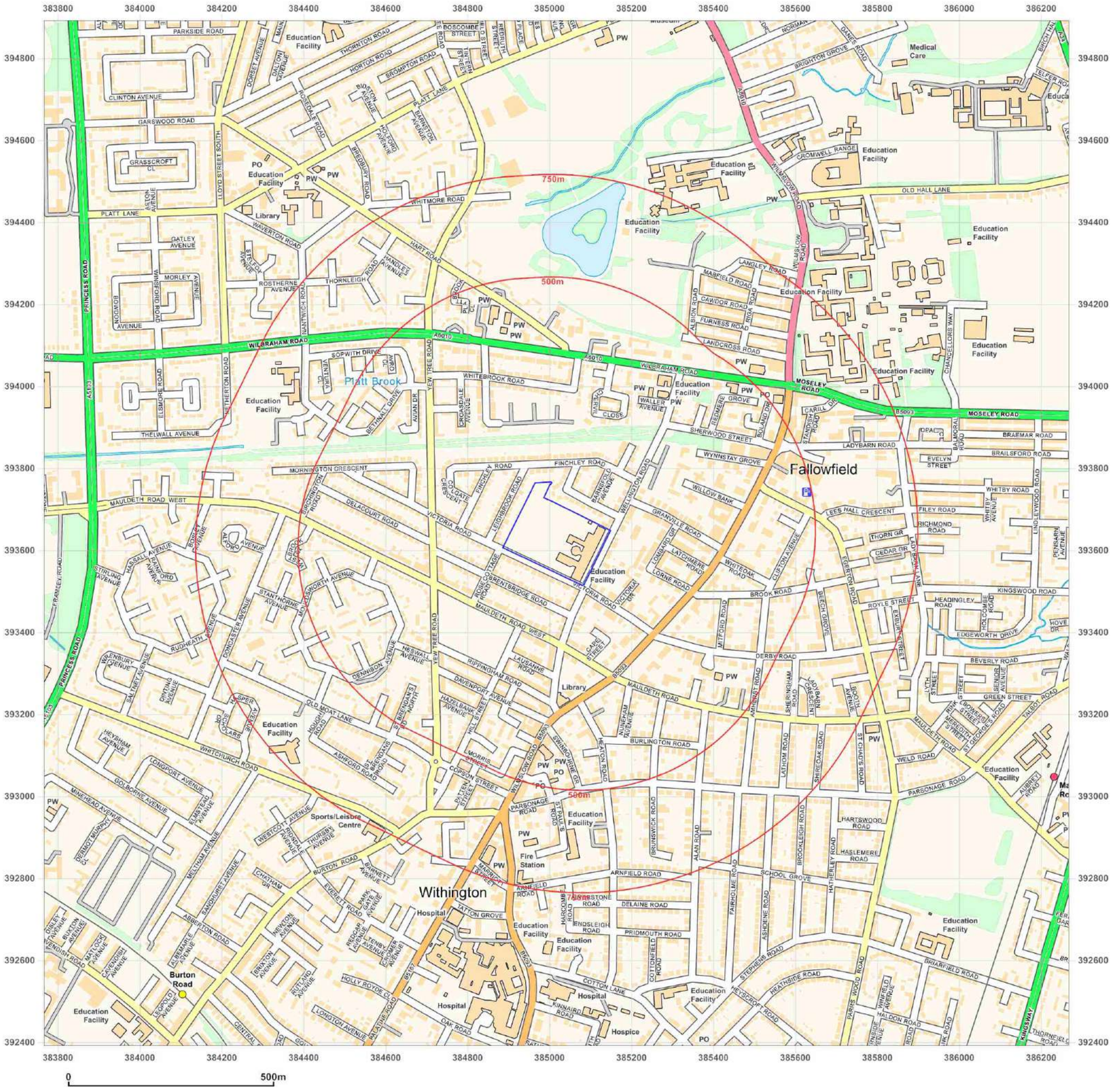
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Site Details:

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Client Ref: 1226
Report Ref: G7GEO-6612803
Grid Ref: 385017, 393642

Map Name: National Grid

Map date: **2020**

Scale: 1:10,000

Printed at: 1:10,000

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APPENDIX C

ENVIRONMENTAL DATABASE

GROUNDSURE ENVIRO+GEO INSIGHT G7GEO-6612804: 11 / 02 / 2020

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

Withington Girl's School, 100 Wellington Rd, Fallowfield, Manchester M14 6BL

Order Details

Date: 11/02/2020

Your ref: 1226

Our Ref: G7GEO-6612804

Client: G7 Geotech Ltd

Site Details

Location: 385089 393627

Area: 3.42 ha



Summary of findings p. 2

OS MasterMap site plan p.12

Aerial image p. 8

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Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	1	0	9	32	-
15	1.2	Historical tanks	0	0	0	0	-
15	1.3	Historical energy features	0	1	8	9	-
16	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	13	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
18	2.1	Historical industrial land uses	2	0	18	59	-
21	2.2	Historical tanks	0	0	0	0	-
22	2.3	Historical energy features	0	2	17	21	-
23	2.4	Historical petrol stations	0	0	0	0	-
24	2.5	Historical garages	0	0	0	19	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
25	3.1	Active or recent landfill	0	0	0	0	-
25	3.2	Historical landfill (BGS records)	0	0	0	0	-
26	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
26	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
26	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	8	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
28	4.1	Recent industrial land uses	0	1	11	-	-
29	4.2	Current or recent petrol stations	0	0	0	2	-
30	4.3	Electricity cables	0	0	0	0	-
30	4.4	Gas pipelines	0	0	0	0	-
30	4.5	Sites determined as Contaminated Land	0	0	0	0	-

30	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
30	4.7	Regulated explosive sites	0	0	0	0	-
31	4.8	Hazardous substance storage/usage	0	0	0	0	-
31	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
31	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
31	**4.11**	**Licensed pollutant release (Part A(2)/B)**	0	0	0	5	-
32	4.12	Radioactive Substance Authorisations	0	0	0	0	-
32	**4.13**	**Licensed Discharges to controlled waters**	2	0	3	0	-
33	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
33	4.15	Pollutant release to public sewer	0	0	0	0	-
34	4.16	List 1 Dangerous Substances	0	0	0	0	-
34	4.17	List 2 Dangerous Substances	0	0	0	0	-
34	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
34	4.19	Pollution inventory substances	0	0	0	0	-
34	4.20	Pollution inventory waste transfers	0	0	0	0	-
35	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
36	**5.1**	**Superficial aquifer**	Identified (within 500m)				
38	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
40	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
41	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
41	5.5	Groundwater vulnerability- local information	None (within 0m)				
42	**5.6**	**Groundwater abstractions**	0	0	0	0	1
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	1	-
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)**	2	0	3	-	-

46	6.2	Surface water features	0	0	0	-	-
46	**6.3**	**WFD Surface water body catchments**	1	-	-	-	-
47	**6.4**	**WFD Surface water bodies**	1	0	0	-	-
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 Sea (RoFRaS)**	High (within 50m)				
49	7.2	Historical Flood Events	0	0	0	-	-
49	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**	Identified (within 50m)				
51	**7.7**	**Flood Zone 3**	Identified (within 50m)				
Page	Section	Surface water flooding					
52	**8.1**	**Surface water flooding**	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
54	**9.1**	**Groundwater flooding**	High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
55	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
55	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
55	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
55	10.4	Special Protection Areas (SPA)	0	0	0	0	0
56	10.5	National Nature Reserves (NNR)	0	0	0	0	0
56	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
56	10.7	Designated Ancient Woodland	0	0	0	0	0
56	10.8	Biosphere Reserves	0	0	0	0	0
57	10.9	Forest Parks	0	0	0	0	0
57	10.10	Marine Conservation Zones	0	0	0	0	0
57	10.11	Green Belt	0	0	0	0	0
57	10.12	Proposed Ramsar sites	0	0	0	0	0

57	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
58	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
58	10.15	Nitrate Sensitive Areas	0	0	0	0	0
58	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
59	**10.17**	**SSSI Impact Risk Zones**	1	-	-	-	-
60	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
61	11.1	World Heritage Sites	0	0	0	-	-
61	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
61	11.3	National Parks	0	0	0	-	-
61	11.4	Listed Buildings	0	0	0	-	-
62	11.5	Conservation Areas	0	0	0	-	-
62	11.6	Scheduled Ancient Monuments	0	0	0	-	-
62	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
63	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
64	12.2	Open Access Land	0	0	0	-	-
64	12.3	Tree Felling Licences	0	0	0	-	-
64	12.4	Environmental Stewardship Schemes	0	0	0	-	-
64	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
65	**13.1**	**Priority Habitat Inventory**	0	0	1	-	-
66	13.2	Habitat Networks	0	0	0	-	-
66	13.3	Open Mosaic Habitat	0	0	0	-	-
66	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
67	**14.1**	**10k Availability**	Identified (within 500m)				
68	**14.2**	**Artificial and made ground (10k)**	0	1	6	6	-
70	**14.3**	**Superficial geology (10k)**	2	0	0	1	-

71	14.4	Landslip (10k)	0	0	0	0	-
72	**14.5**	**Bedrock geology (10k)**	2	0	1	1	-
73	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
74	**15.1**	**50k Availability**	Identified (within 500m)				
75	15.2	Artificial and made ground (50k)	0	0	0	0	-
75	15.3	Artificial ground permeability (50k)	0	0	-	-	-
76	**15.4**	**Superficial geology (50k)**	1	0	1	1	-
77	**15.5**	**Superficial permeability (50k)**	Identified (within 50m)				
77	15.6	Landslip (50k)	0	0	0	0	-
77	15.7	Landslip permeability (50k)	None (within 50m)				
78	**15.8**	**Bedrock geology (50k)**	1	1	1	1	-
79	**15.9**	**Bedrock permeability (50k)**	Identified (within 50m)				
79	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
80	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
81	**17.1**	**Shrink swell clays**	Very low (within 50m)				
82	**17.2**	**Running sands**	Very low (within 50m)				
83	**17.3**	**Compressible deposits**	Negligible (within 50m)				
84	**17.4**	**Collapsible deposits**	Very low (within 50m)				
85	**17.5**	**Landslides**	Very low (within 50m)				
86	**17.6**	**Ground dissolution of soluble rocks**	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
87	18.1	Natural cavities	0	0	0	0	-
88	18.2	BritPits	0	0	0	0	-
88	**18.3**	**Surface ground workings**	0	1	19	-	-
89	18.4	Underground workings	0	0	0	0	0
89	18.5	Historical Mineral Planning Areas	0	0	0	0	-

89	18.6	Non-coal mining	0	0	0	0	0
89	18.7	Mining cavities	0	0	0	0	0
90	**18.8**	**JPB mining areas**	Identified (within 0m)				
90	18.9	Coal mining	None (within 0m)				
90	18.10	Brine areas	None (within 0m)				
90	18.11	Gypsum areas	None (within 0m)				
91	18.12	Tin mining	None (within 0m)				
91	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
92	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
93	**20.1**	**BGS Estimated Background Soil Chemistry**	3	4	-	-	-
93	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
94	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
95	21.1	Underground railways (London)	0	0	0	-	-
95	21.2	Underground railways (Non-London)	0	0	0	-	-
96	21.3	Railway tunnels	0	0	0	-	-
96	**21.4**	**Historical railway and tunnel features**	0	0	2	-	-
96	21.5	Royal Mail tunnels	0	0	0	-	-
96	**21.6**	**Historical railways**	0	0	2	-	-
97	21.7	Railways	0	0	0	-	-
97	21.8	Crossrail 1	0	0	0	0	-
97	21.9	Crossrail 2	0	0	0	0	-
97	21.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 22/04/2019

Site Area: 3.42ha

Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 3.42ha

Recent site history - 2009 aerial photograph



Capture Date: 02/06/2009

Site Area: 3.42ha

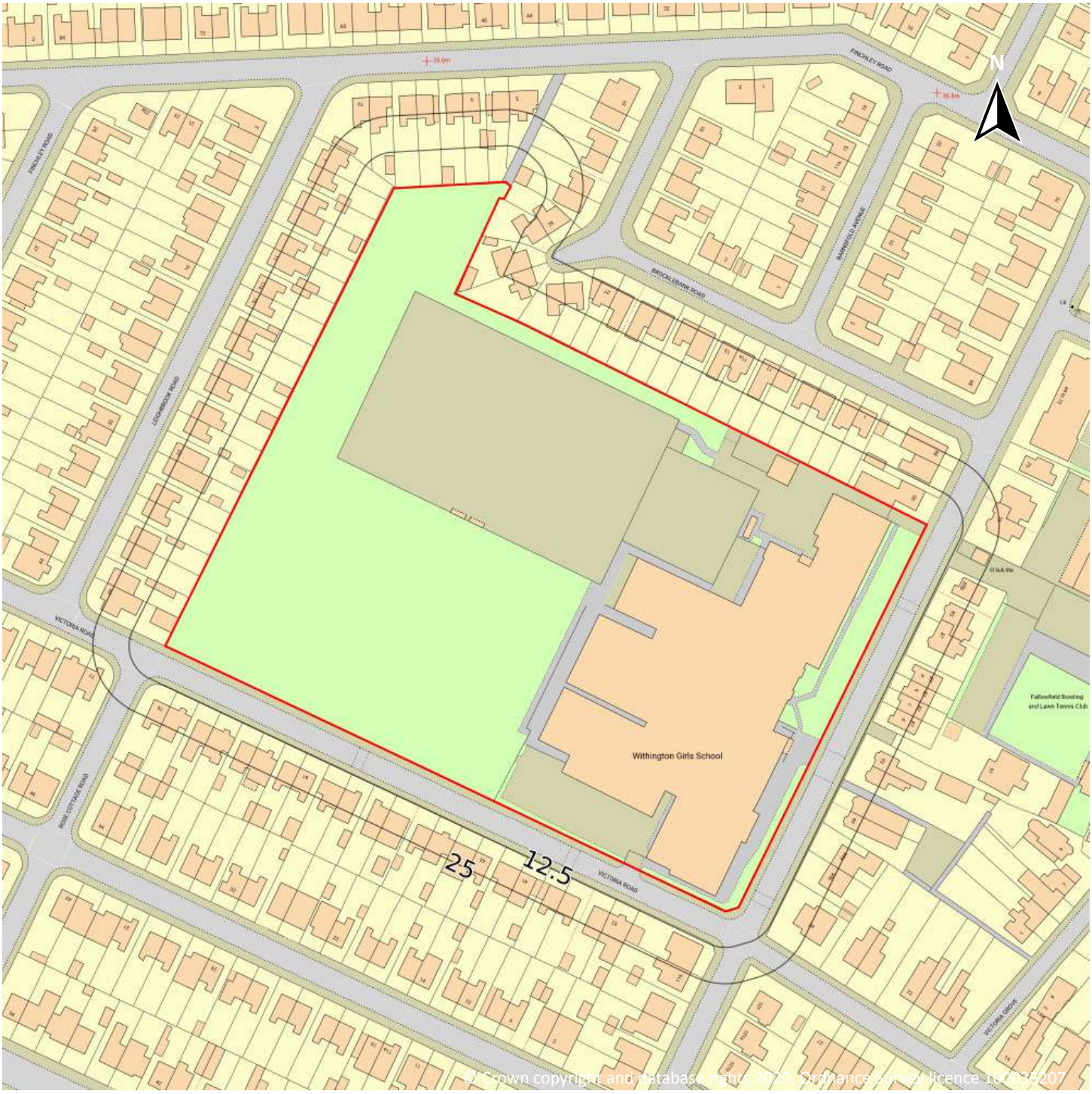
Recent site history - 2000 aerial photograph



Capture Date: 19/06/2000

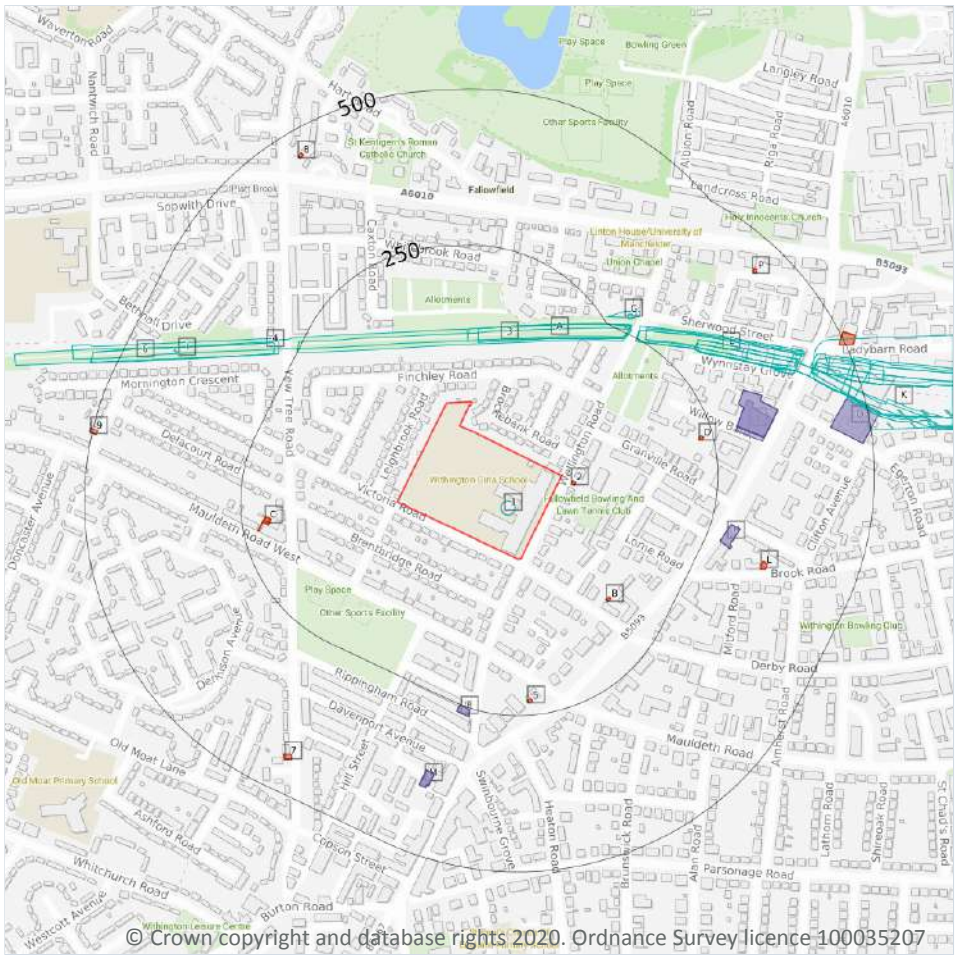
Site Area: 3.42ha

OS MasterMap site plan



Site Area: 3.42ha

1 Past land use



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Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	42

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

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

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Unspecified Tank**	**1983 - 1989**	**848929**

ID	Location	Land use	Dates present	Group ID
3	92m N	Cuttings	1892 - 1938	879919
A	96m N	Cuttings	1965	937633
A	96m N	Cuttings	1983 - 1989	942118
A	96m N	Cuttings	1974	986931
A	97m N	Cuttings	1955	991709
4	97m N	Cuttings	1955	878995
E	245m NE	Cuttings	1923 - 1974	849473
E	245m NE	Cuttings	1892 - 1905	883393
E	245m NE	Cuttings	1916	950800
E	255m NE	Cuttings	1983	961261
E	255m NE	Cuttings	1989	944822
G	257m NE	Valve House	1916 - 1923	961098
G	272m NE	Valve House	1938	957942
6	276m NW	Cuttings	1923	931844
I	282m NW	Cuttings	1934 - 1938	953052
I	282m NW	Cuttings	1892 - 1916	962827
K	294m NE	Railway Sidings	1905	881542
K	294m NE	Railway Sidings	1916	887932
K	294m NE	Railway Sidings	1923 - 1938	985805
E	298m NE	Railway Sidings	1974	878123
E	298m NE	Railway Sidings	1965	896404
E	298m NE	Railway Sidings	1955	976259
E	369m NE	Railway Building	1934 - 1938	890721
E	380m NE	Railway Building	1905 - 1923	915480
E	383m NE	Railway Building	1934 - 1938	859914
E	393m NE	Railway Building	1934 - 1938	962211
E	418m NE	Railway Building	1934 - 1938	893946
E	421m NE	Railway Building	1905 - 1923	844893

ID	Location	Land use	Dates present	Group ID
N	427m E	Railway Sidings	1892	916607
K	432m NE	Railway Station	1892 - 1938	943476
N	432m NE	Railway Sidings	1965	874077
N	433m E	Goods Yard	1965 - 1974	858676
K	434m NE	Railway Station	1955	896302
N	439m NE	Railway Sidings	1974	884850
N	441m NE	Railway Sidings	1955	897675
K	458m E	Railway Station	1965 - 1974	979556
N	466m E	Cuttings	1955	991834
N	473m E	Cuttings	1892	896241
N	473m E	Cuttings	1934 - 1938	907483
N	482m E	Cuttings	1983 - 1989	874699
K	484m E	Railway Building	1934 - 1938	850402

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	0

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'.

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	18

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 13**

ID	Location	Land use	Dates present	Group ID
2	19m SE	Electricity Substation	1984 - 1995	78606
B	150m SE	Electricity Substation	1984 - 1997	80667
B	152m SE	Electricity Transformer	1974	63757
C	203m W	Electricity Substation	1956 - 1992	70186
C	204m W	Electricity Substation	1983	66990
C	205m W	Electricity Substation	1956	83287
5	224m S	Electricity Substation	1974 - 1997	75451
D	227m E	Electricity Substation	1995	62149
D	228m E	Electricity Transformer	1958 - 1984	70853
L	350m SE	Electricity Substation	1978 - 1984	82710
L	350m SE	Electricity Substation	1958 - 1995	66237
7	437m SW	Electricity Substation	1982 - 1992	66428
P	446m NE	Electricity Substation	1958 - 1984	81401
P	447m NE	Electricity Substation	1995	74977
8	456m NW	Electricity Substation	1983 - 1992	73010
K	491m NE	Electricity Substation	1988	83256
K	491m NE	Electricity Substation	1994 - 1996	84462
9	492m W	Electricity Substation	1986 - 1992	68724

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	13

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 13**

ID	Location	Land use	Dates present	Group ID
F	251m S	Garage	1956 - 1992	25532
F	251m S	Garage	1982	23426
H	274m E	Garage	1978 - 1984	25367
H	275m E	Garage	1958	21149
J	288m E	Garage	1957	22902
J	290m E	Garage	1957	20786
J	291m E	Garage	1958	23100
J	292m E	Garage	1978 - 1984	24819
M	367m SW	Garage	1982	20697
M	368m SW	Garage	1987	21412
M	368m SW	Garage	1992	23071
O	437m E	Garage	1957	23288
O	437m E	Garage	1957 - 1971	27185

This data is sourced from Ordnance Survey / Groundsure.

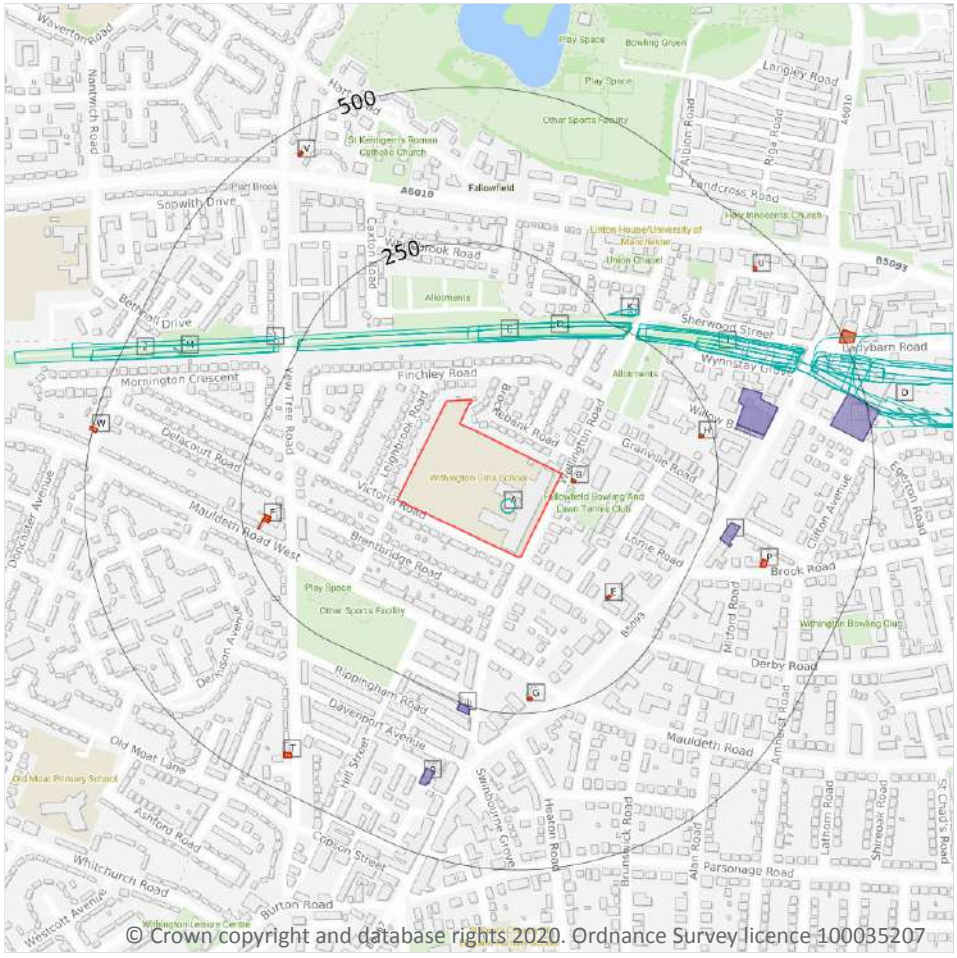
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



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2.1 Historical industrial land uses

Records within 500m	79

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 18**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Tank**	**1983**	**848929**
A	**On site**	**Unspecified Tank**	**1989**	**848929**
C	92m N	Cuttings	1938	879919

ID	Location	Land Use	Date	Group ID
C	92m N	Cuttings	1934	879919
C	92m N	Cuttings	1916	879919
C	92m N	Cuttings	1905	879919
C	92m N	Cuttings	1892	879919
C	92m N	Cuttings	1923	879919
D	96m N	Cuttings	1974	986931
D	96m N	Cuttings	1983	942118
D	96m N	Cuttings	1989	942118
D	96m N	Cuttings	1965	937633
D	97m N	Cuttings	1955	991709
1	97m N	Cuttings	1955	878995
I	245m NE	Cuttings	1938	849473
I	245m NE	Cuttings	1934	849473
I	245m NE	Cuttings	1916	950800
I	245m NE	Cuttings	1905	883393
I	245m NE	Cuttings	1892	883393
I	245m NE	Cuttings	1923	849473
I	251m NE	Cuttings	1974	849473
I	251m NE	Cuttings	1955	849473
I	251m NE	Cuttings	1965	849473
I	255m NE	Cuttings	1983	961261
I	255m NE	Cuttings	1989	944822
K	257m NE	Valve House	1916	961098
K	262m NE	Valve House	1923	961098
K	272m NE	Valve House	1938	957942
2	276m NW	Cuttings	1923	931844
M	282m NW	Cuttings	1938	953052
M	282m NW	Cuttings	1934	953052

ID	Location	Land Use	Date	Group ID
M	282m NW	Cuttings	1916	962827
M	282m NW	Cuttings	1905	962827
M	282m NW	Cuttings	1892	962827
O	294m NE	Railway Sidings	1938	985805
O	294m NE	Railway Sidings	1934	985805
O	294m NE	Railway Sidings	1916	887932
O	294m NE	Railway Sidings	1905	881542
O	294m NE	Railway Sidings	1923	985805
I	298m NE	Railway Sidings	1974	878123
I	298m NE	Railway Sidings	1955	976259
I	298m NE	Railway Sidings	1965	896404
I	369m NE	Railway Building	1938	890721
I	369m NE	Railway Building	1934	890721
I	380m NE	Railway Building	1916	915480
I	380m NE	Railway Building	1905	915480
I	380m NE	Railway Building	1923	915480
I	383m NE	Railway Building	1938	859914
I	383m NE	Railway Building	1934	859914
I	393m NE	Railway Building	1938	962211
I	393m NE	Railway Building	1934	962211
I	418m NE	Railway Building	1938	893946
I	418m NE	Railway Building	1934	893946
I	421m NE	Railway Building	1916	844893
I	421m NE	Railway Building	1905	844893
I	421m NE	Railway Building	1923	844893
R	427m E	Railway Sidings	1892	916607
O	432m NE	Railway Station	1938	943476
O	432m NE	Railway Station	1934	943476

ID	Location	Land Use	Date	Group ID
O	432m NE	Railway Station	1916	943476
O	432m NE	Railway Station	1905	943476
O	432m NE	Railway Station	1892	943476
O	432m NE	Railway Station	1923	943476
R	432m NE	Railway Sidings	1965	874077
R	433m E	Goods Yard	1965	858676
O	434m NE	Railway Station	1955	896302
R	439m NE	Railway Sidings	1974	884850
R	441m NE	Railway Sidings	1955	897675
O	458m E	Railway Station	1974	979556
O	458m E	Railway Station	1965	979556
R	466m E	Cuttings	1955	991834
R	473m E	Cuttings	1938	907483
R	473m E	Cuttings	1934	907483
R	473m E	Cuttings	1892	896241
R	482m E	Cuttings	1983	874699
R	482m E	Cuttings	1989	874699
O	484m E	Railway Building	1938	850402
O	484m E	Railway Building	1934	850402
R	488m E	Goods Yard	1974	858676

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	0

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'.

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**40**

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 18**

ID	Location	Land Use	Date	Group ID
B	19m SE	Electricity Substation	1995	78606
B	19m SE	Electricity Substation	1984	78606
E	150m SE	Electricity Substation	1984	80667
E	152m SE	Electricity Substation	1994	80667
E	152m SE	Electricity Substation	1997	80667
E	152m SE	Electricity Transformer	1974	63757
F	203m W	Electricity Substation	1992	70186
F	203m W	Electricity Substation	1987	70186
F	203m W	Electricity Substation	1956	70186
F	204m W	Electricity Substation	1983	66990
F	205m W	Electricity Substation	1956	83287
G	224m S	Electricity Substation	1984	75451
G	225m S	Electricity Substation	1974	75451
G	225m S	Electricity Substation	1994	75451
G	225m S	Electricity Substation	1997	75451
H	227m E	Electricity Substation	1995	62149
H	228m E	Electricity Transformer	1958	70853
H	228m E	Electricity Transformer	1984	70853
H	228m E	Electricity Transformer	1978	70853
P	350m SE	Electricity Substation	1984	82710
P	350m SE	Electricity Substation	1978	82710
P	350m SE	Electricity Substation	1995	66237
P	350m SE	Electricity Substation	1958	66237

ID	Location	Land Use	Date	Group ID
T	437m SW	Electricity Substation	1982	66428
T	438m SW	Electricity Substation	1987	66428
T	438m SW	Electricity Substation	1992	66428
U	446m NE	Electricity Substation	1984	81401
U	446m NE	Electricity Substation	1978	81401
U	447m NE	Electricity Substation	1958	81401
U	447m NE	Electricity Substation	1995	74977
V	456m NW	Electricity Substation	1992	73010
V	456m NW	Electricity Substation	1992	73010
V	458m NW	Electricity Substation	1983	73010
V	458m NW	Electricity Substation	1988	73010
O	491m NE	Electricity Substation	1988	83256
O	491m NE	Electricity Substation	1996	84462
O	491m NE	Electricity Substation	1995	84462
O	491m NE	Electricity Substation	1994	84462
W	492m W	Electricity Substation	1986	68724
W	492m W	Electricity Substation	1992	68724

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	**19**

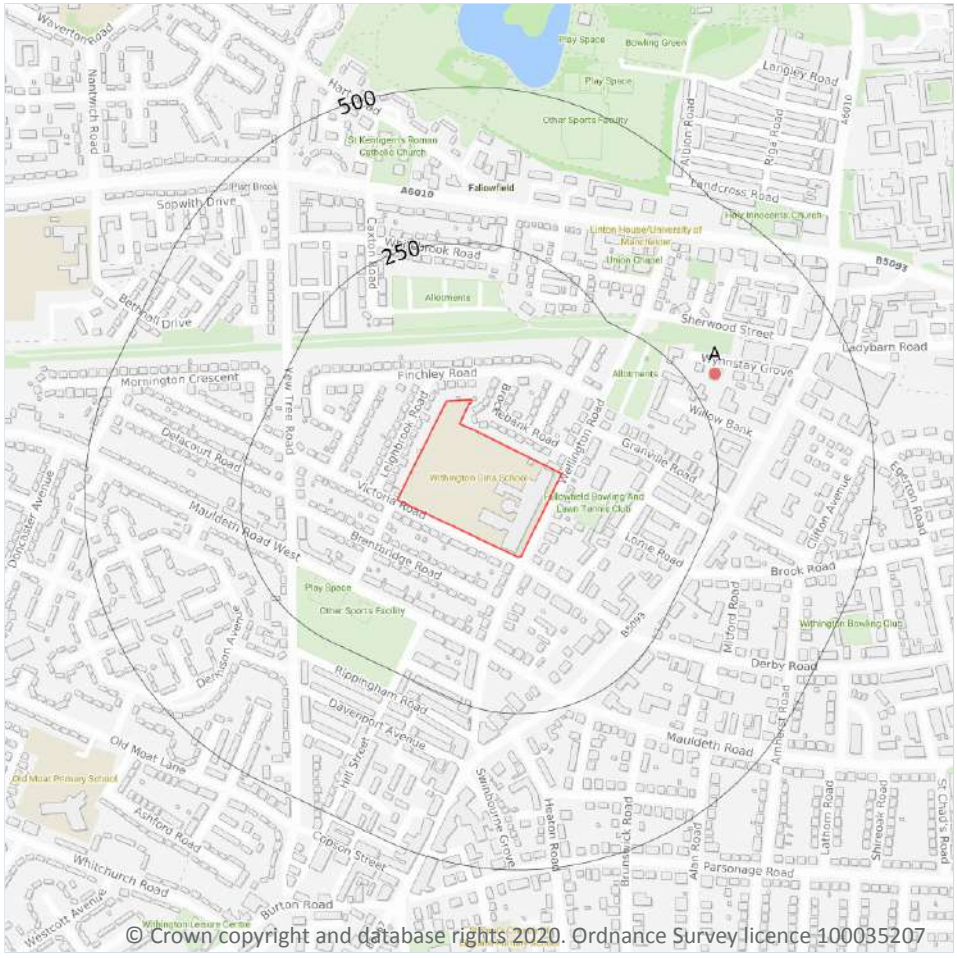
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 18**

ID	Location	Land Use	Date	Group ID
J	251m S	Garage	1992	25532
J	251m S	Garage	1987	25532
J	251m S	Garage	1956	25532
J	251m S	Garage	1982	23426
J	252m S	Garage	1956	25532
L	274m E	Garage	1984	25367
L	274m E	Garage	1978	25367
L	275m E	Garage	1958	21149
N	288m E	Garage	1957	22902
N	290m E	Garage	1957	20786
N	291m E	Garage	1958	23100
N	292m E	Garage	1984	24819
N	292m E	Garage	1978	24819
Q	367m SW	Garage	1982	20697
Q	368m SW	Garage	1987	21412
Q	368m SW	Garage	1992	23071
S	437m E	Garage	1957	23288
S	437m E	Garage	1957	27185
S	437m E	Garage	1971	27185

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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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	8

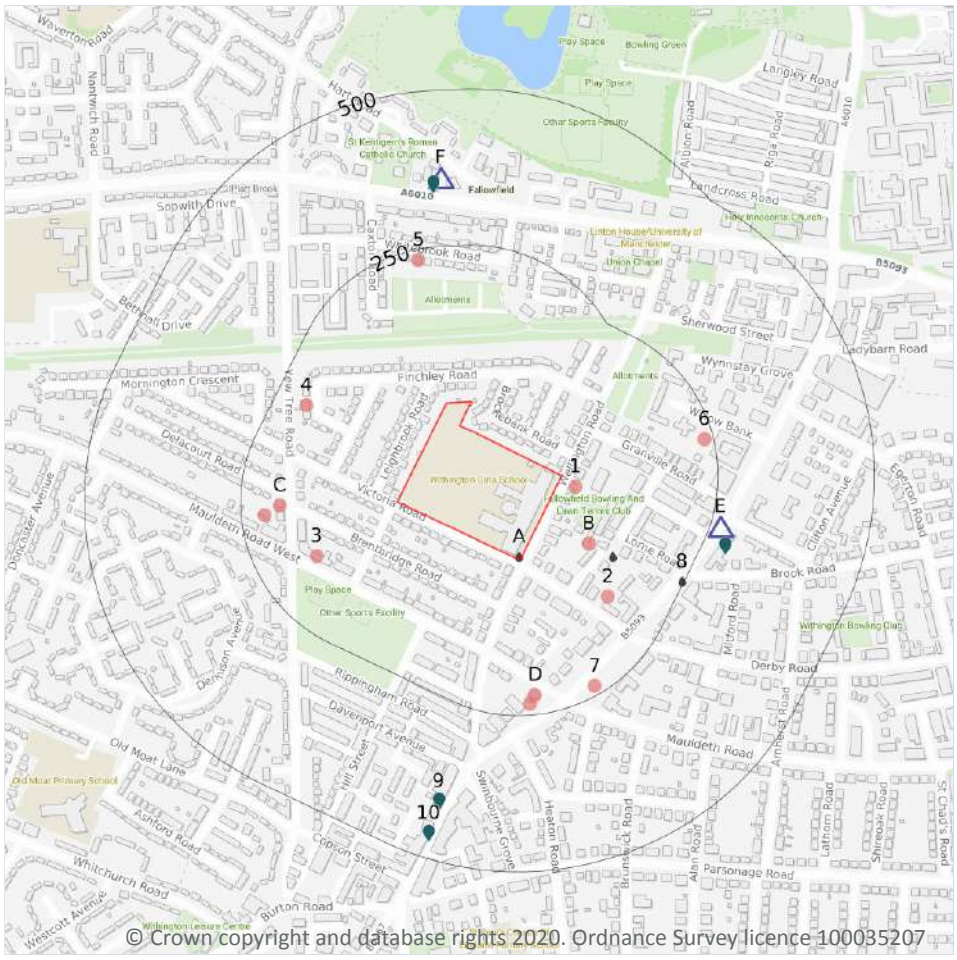
Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 25**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	292m NE	5, WYNNSTAY GROVE, MANCHESTER, M14 6XG	WEX125378	Disposing of waste exemption	Not on a farm	Disposal by incineration
A	292m NE	5, WYNNSTAY GROVE, MANCHESTER, M14 6XG	WEX125378	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	292m NE	5, WYNNSTAY GROVE, MANCHESTER, M14 6XG	WEX125378	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	292m NE	5, WYNNSTAY GROVE, MANCHESTER, M14 6XG	WEX125378	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	292m NE	5, WYNNSTAY GROVE, MANCHESTER, M14 6XG	WEX137223	Disposing of waste exemption	Not on a farm	Disposal by incineration
A	292m NE	5, WYNNSTAY GROVE, MANCHESTER, M14 6XG	WEX137223	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	292m NE	5, WYNNSTAY GROVE, MANCHESTER, M14 6XG	WEX137223	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	292m NE	5, WYNNSTAY GROVE, MANCHESTER, M14 6XG	WEX137223	Storing waste exemption	Not on a farm	Storage of waste in a secure place

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	12

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 28**

ID	Location	Company	Address	Activity	Category
1	27m SE	Electricity Sub Station	Greater Manchester, M14	Electrical Features	Infrastructure and Facilities
B	87m SE	K H Design & Developme nt	9, Victoria Grove, Manchester, Greater Manchester, M14 6BF	Civil Engineers	Engineering Services

ID	Location	Company	Address	Activity	Category
2	151m SE	Electricity Sub Station	Greater Manchester, M14	Electrical Features	Infrastructure and Facilities
3	155m SW	Just Vision	70, Mauldeth Road West, Withington, Manchester, Greater Manchester, M20 3FQ	Electrical Equipment Repair and Servicing	Repair and Servicing
C	188m W	Videogem	272, Yew Tree Road, Manchester, Greater Manchester, M14 6BT	Electrical Equipment Repair and Servicing	Repair and Servicing
4	199m NW	Cahill Developme nt Ltd	36, Colgate Crescent, Manchester, Greater Manchester, M14 6FN	Distribution and Haulage	Transport, Storage and Delivery
C	212m W	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities
D	218m S	Led Distribution Ltd	396, Wilmslow Road, Manchester, Greater Manchester, M20 3BN	Construction Completion Services	Construction Services
D	232m S	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities
5	233m N	Mirwin Civil Engineering & Building Contractors Ltd	27, Whitebrook Road, Manchester, Greater Manchester, M14 6EH	Civil Engineers	Engineering Services
6	235m E	Electricity Sub Station	Greater Manchester, M14	Electrical Features	Infrastructure and Facilities
7	235m SE	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m **2**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 28**

ID	Location	Company	Address	LPG	Status
E	266m E	SHELL	385, Wilmslow Road, Fallowfield, Manchester, Greater Manchester, M14 6AH	No	Open
F	360m N	ESSO	32, Wilbraham Road, Fallowfield, Manchester, Greater Manchester, M14 7DW	No	Open

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	5

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

Features are displayed on the Current industrial land use map on **page 28**

ID	Location	Address	Details	
E	283m SE	Total Convenience Store (Fallowfield), 377-385 Wilmslow Road, Fallowfield, M20 4WA	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
F	349m N	Shinning Star Service Station, 32 Wilbraham Road, Fallowfield, M14 7DW	Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

ID	Location	Address	Details	
F	351m N	Wilbraham Road Service Station, 32 Wilbraham Road, Fallowfield, M14 7LW	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
9	407m S	Johnsons Cleaners UK Ltd, 440-442 Wilslow Road, Withington, Manchester M14 5AG	Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
10	460m S	Gregory's Laundry And Drycleaners, 465 Wilmslow Road, Withington, Manchester, M20 3BG	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	**5**

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 28**

ID	Location	Address	Details	
A	**On site**	**WELLINGTON ROAD, NORTH OF VICTORIA ROAD, FALLOWFIELD**	**Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY** **Permit Number: 016982732** **Permit Version: 1** **Receiving Water: LEIGH BROOK**	**Status: SURRENDERED UNDER EPR 2010** **Issue date: -** **Effective Date: 30/09/1994** **Revocation Date: 12/12/2014**

ID	Location	Address	Details	
A	**On site**	**WELLINGTON ROAD, NORTH OF VICTORIA ROAD, FALLOWFIELD**	**Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY** **Permit Number: 01MAN0314** **Permit Version: 1** **Receiving Water: LEIGH BROOK**	**Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1))** **Issue date: -** **Effective Date: 01/01/1995** **Revocation Date: 01/01/1995**
B	130m SE	LOMBARD GR/LORNE RD, FALLOWFIELD	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982821 Permit Version: 1 Receiving Water: CRINGLE BROOK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 30/09/1994 Revocation Date: -
B	130m SE	LOMBARD GR/LORNE RD, FALLOWFIELD	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0344 Permit Version: 1 Receiving Water: CRINGLE BROOK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/01/1995
8	246m SE	WILMSLOW RD/BROOK RD CSO, FALLOWFIELD	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982985 Permit Version: 1 Receiving Water: LEIGH BROOK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 22/06/1995 Revocation Date: -

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	**0**

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

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

4.15 Pollutant release to public sewer

Records within 500m	**0**

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	0

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

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

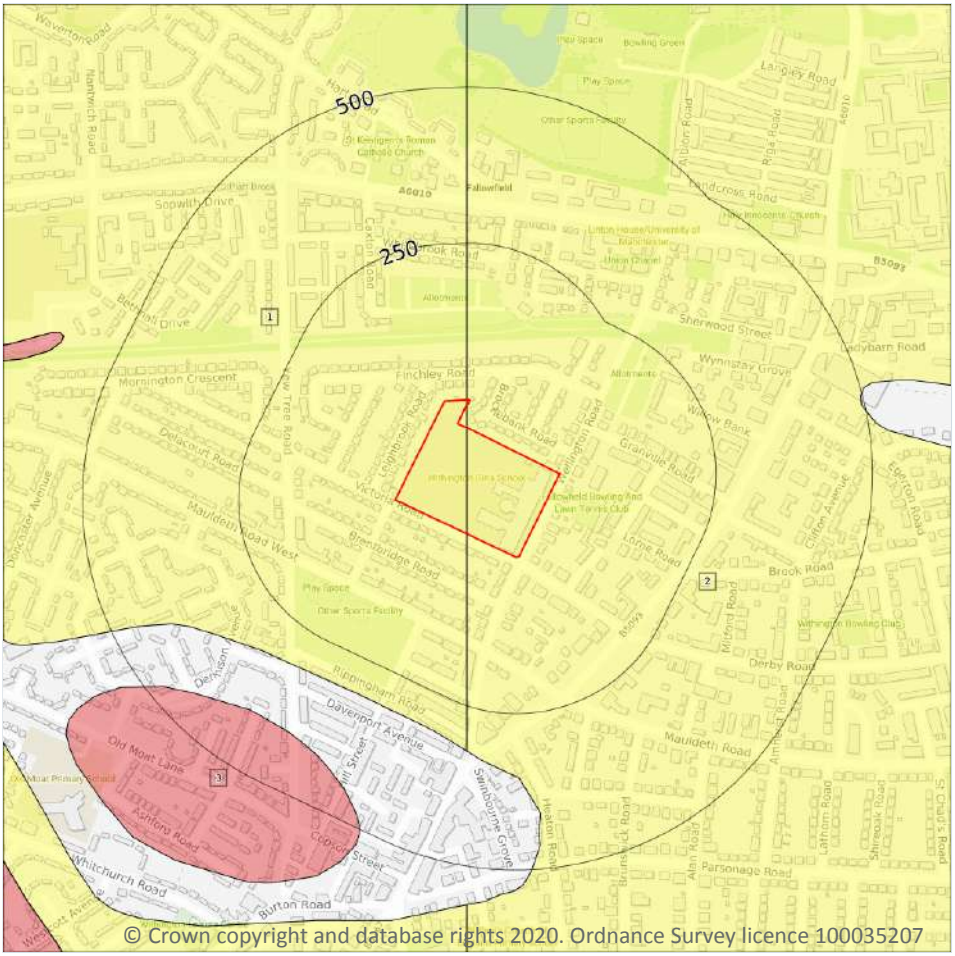
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



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5.1 Superficial aquifer

Records within 500m	3

Aquifer status of groundwater held within superficial geology.

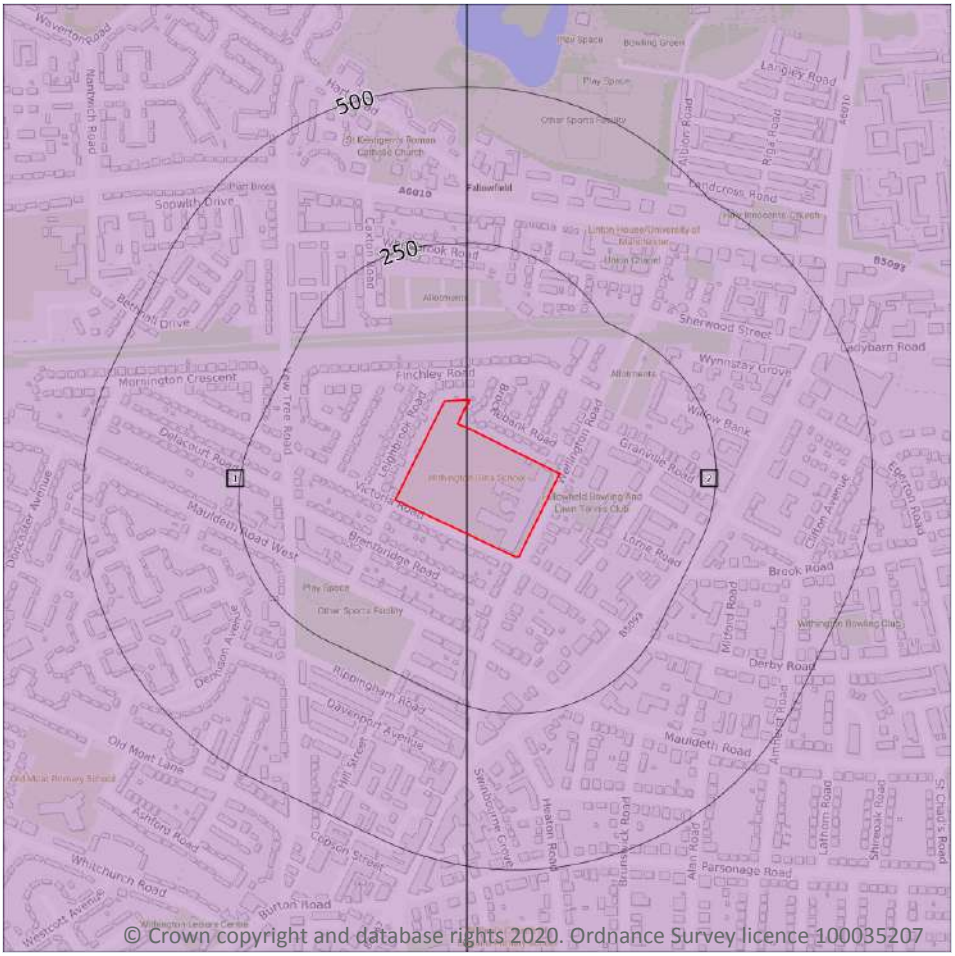
Features are displayed on the Hydrogeology map on **page 36**

ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	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

ID	Location	Designation	Description
3	406m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

Bedrock aquifer



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	2

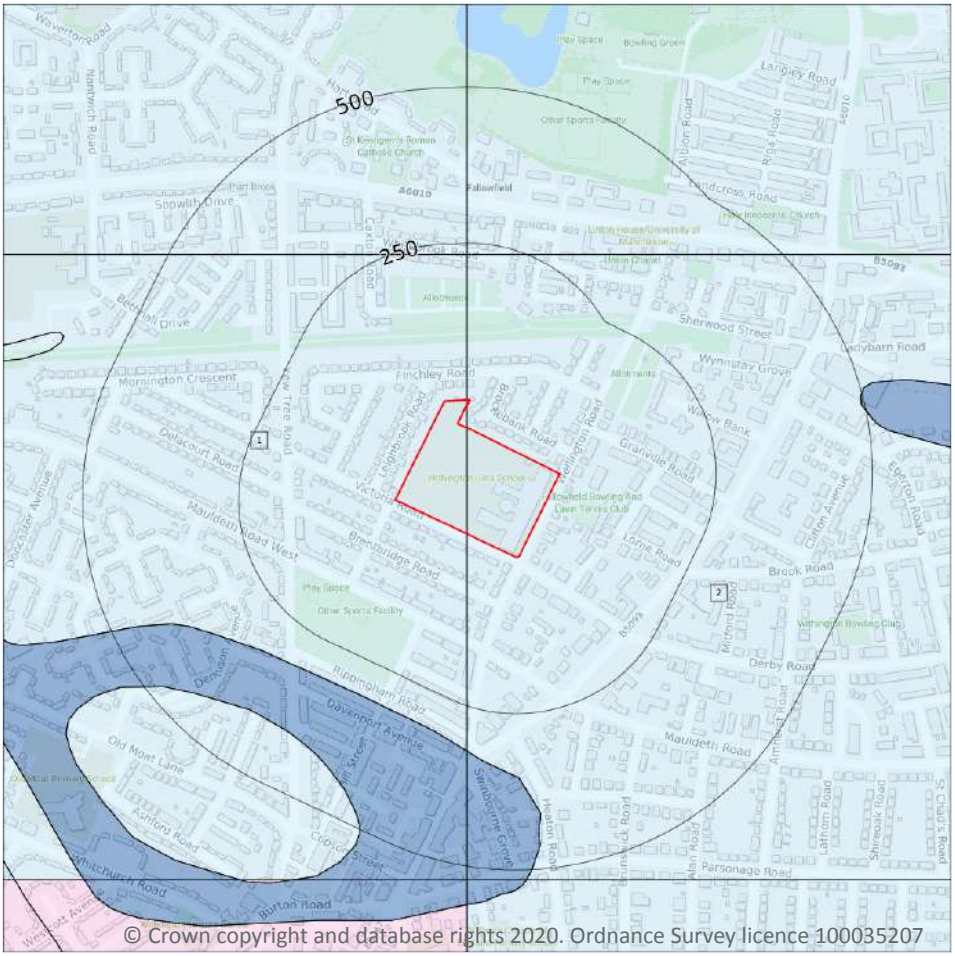
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 38**

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	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

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

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

Bedrock vulnerability

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

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	2

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

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

Features are displayed on the Groundwater vulnerability map on **page 40**

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: <3m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Principal Flow mechanism: Mixed
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: Low	Vulnerability: Low Aquifer type: Principal Flow mechanism: Mixed

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.

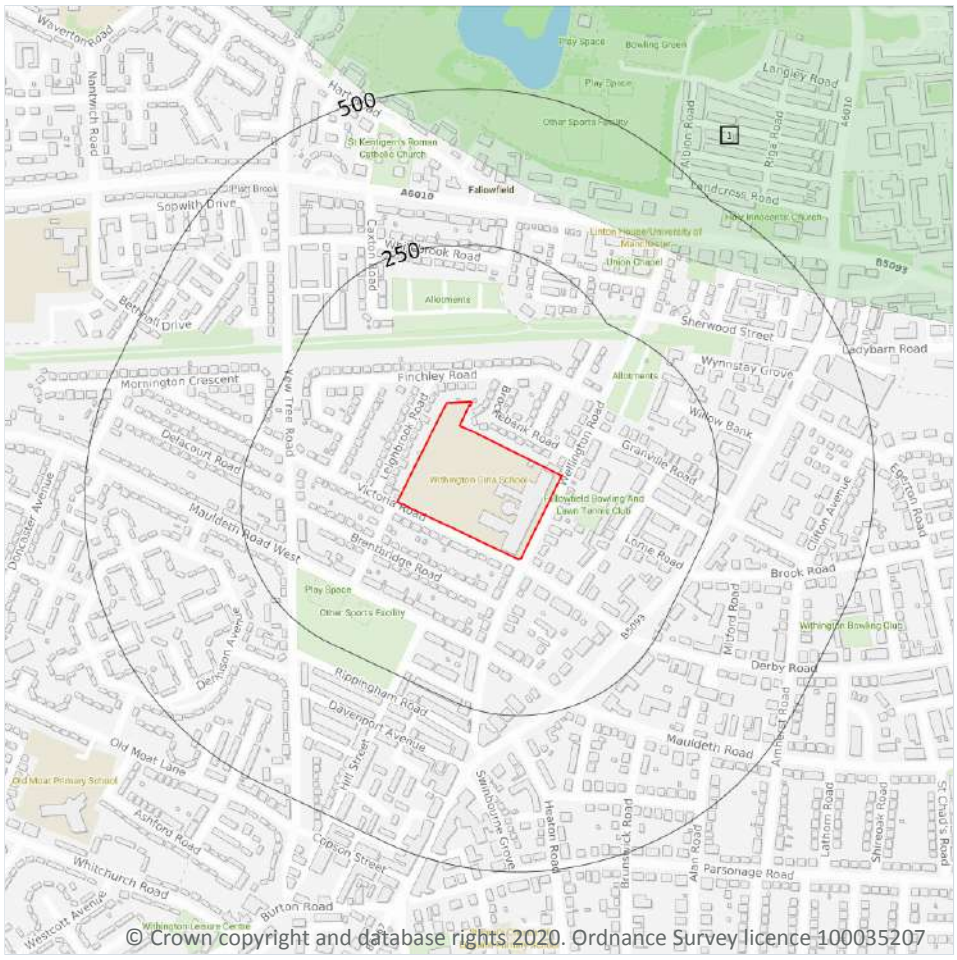
5.5 Groundwater vulnerability- local information

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



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Site Outline

Search buffers in metres (m)

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

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 42**

ID	Location	Details	
-	1771m SE	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): 91,000 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: -

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	**1**

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on **page 42**

ID	Location	Type	Description
1	346m NE	3	Total catchment

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

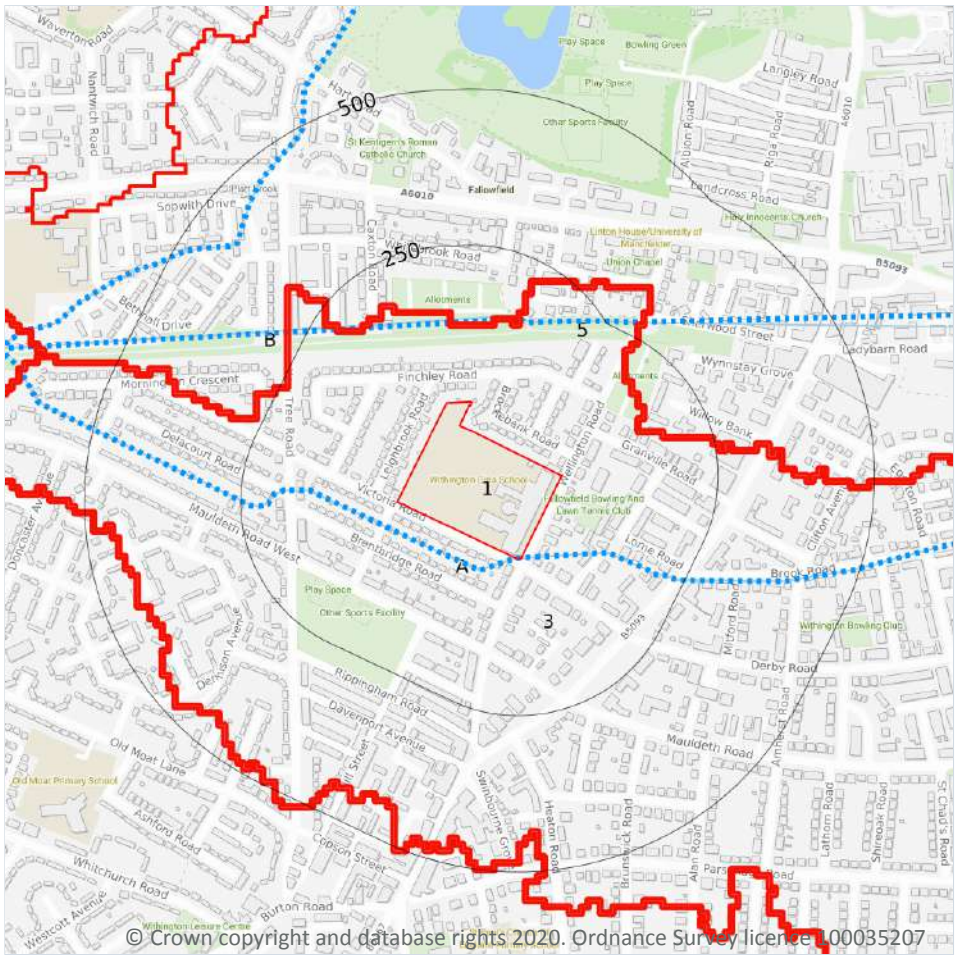
5.10 Source Protection Zones (confined aquifer)

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



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6.1 Water Network (OS MasterMap)

Records within 250m	5

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
A	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**Cringle Brook**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**Cringle Brook**
B	132m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Fallowfield Brook
B	132m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Fallowfield Brook
5	155m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Fallowfield 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
3	**On site**	**River WB catchment**	**Fallowfield Brook**	**GB112069061410**	**Bollin, Dean, Upper Mersey**	**Upper Mersey**

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	Biological rating	Year
2	**On site**	**River**	**Fallowfield Brook**	**GB112069061410**	**Moderate**	**Good**	**Moderate**	**2016**

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

6.5 WFD Groundwater bodies

Records on site	1

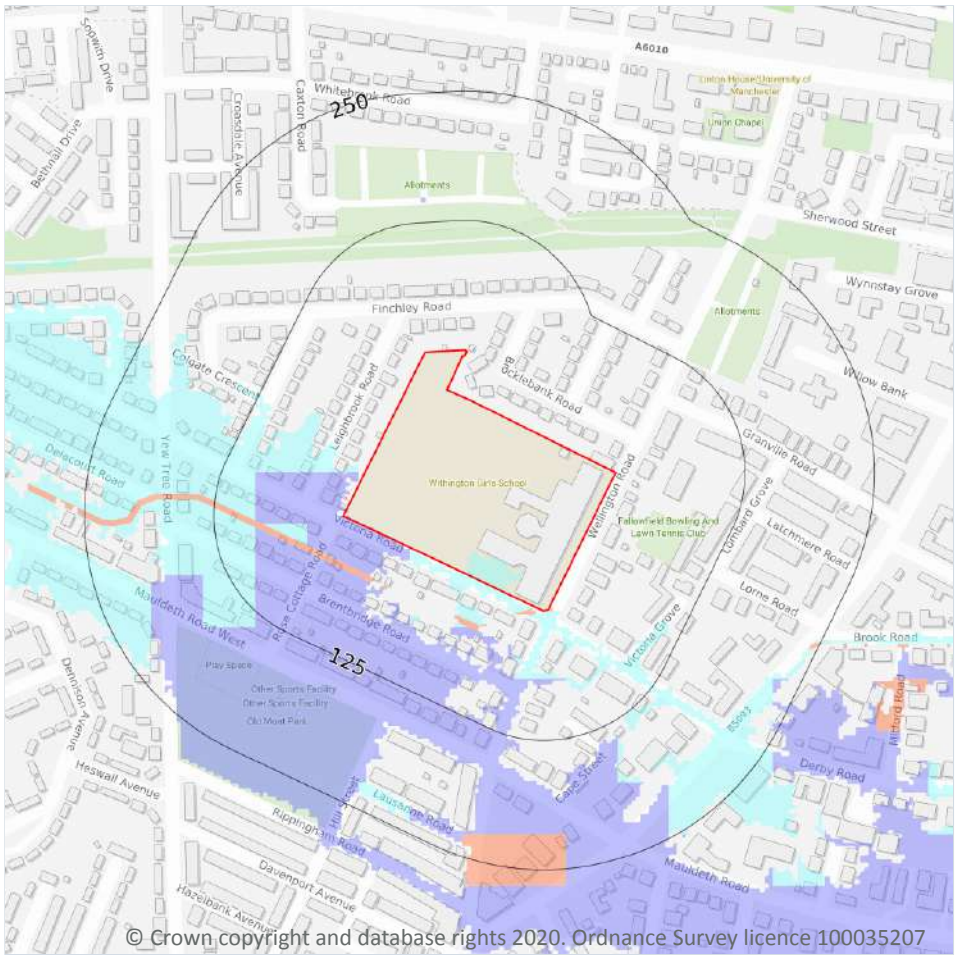
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

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

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	**On site**	**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**GB41201G101100**	**Poor**	**Poor**	**Poor**	**2015**

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

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

Environment Agency river and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Proposed Flood Defence Scheme
- Flood Defences

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m	16

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; 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).

Features are displayed on the River and coastal flooding map on **page 48**

Distance	RoFRaS flood risk
On site	**Medium**
0 - 50m	High

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.

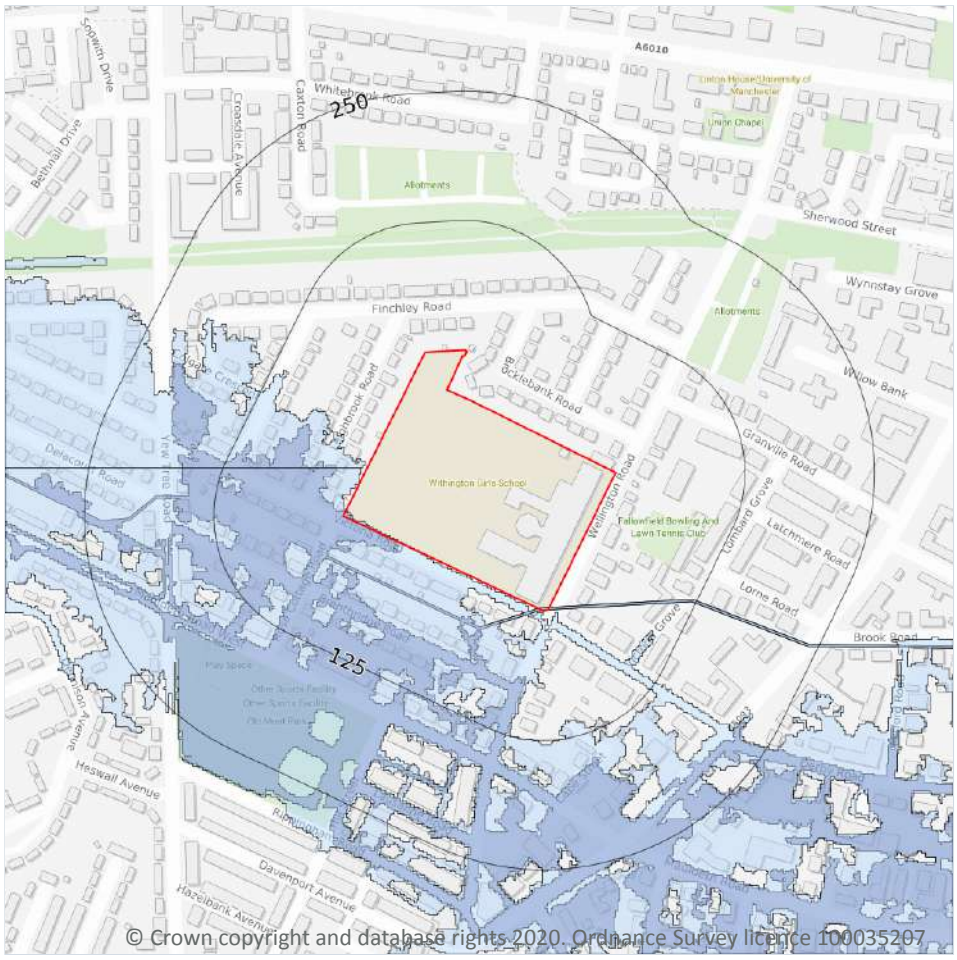
7.5 Flood Storage Areas

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



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

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.

Features are displayed on the River and coastal flooding map on **page 48**

Location	Type
On site	**Zone 2 - (Fluvial /Tidal Models)**

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

7.7 Flood Zone 3

Records within 50m	1

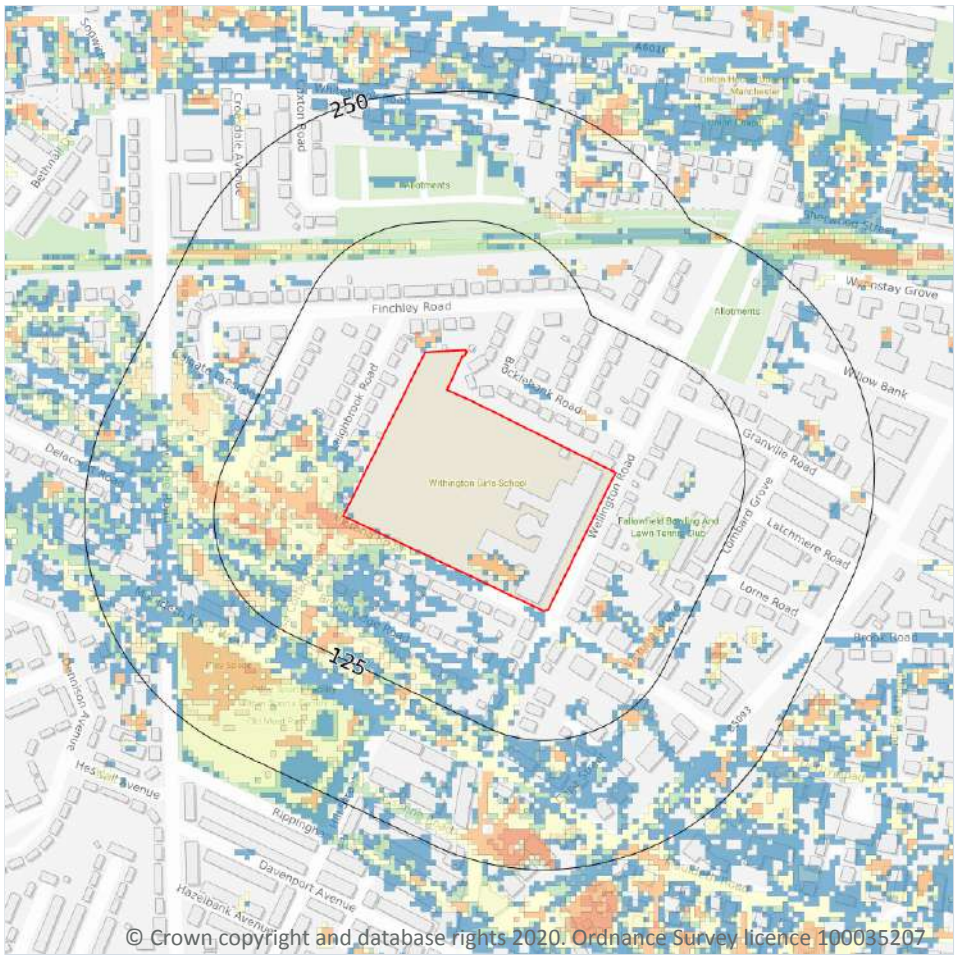
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 48**

Location	Type
On site	**Zone 3 - (Fluvial Models)**

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

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

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

Features are displayed on the Surface water flooding map on **page 52**

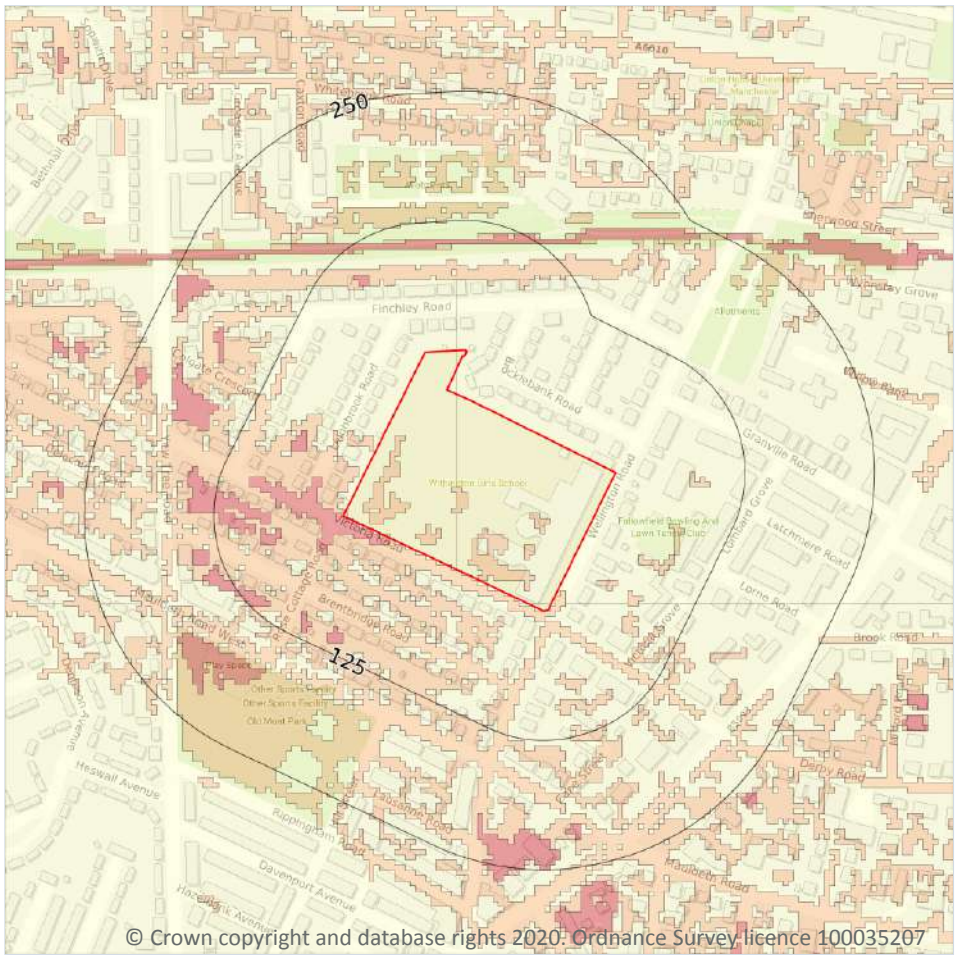
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



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9.1 Groundwater flooding

Highest risk on site	**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 54**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	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.

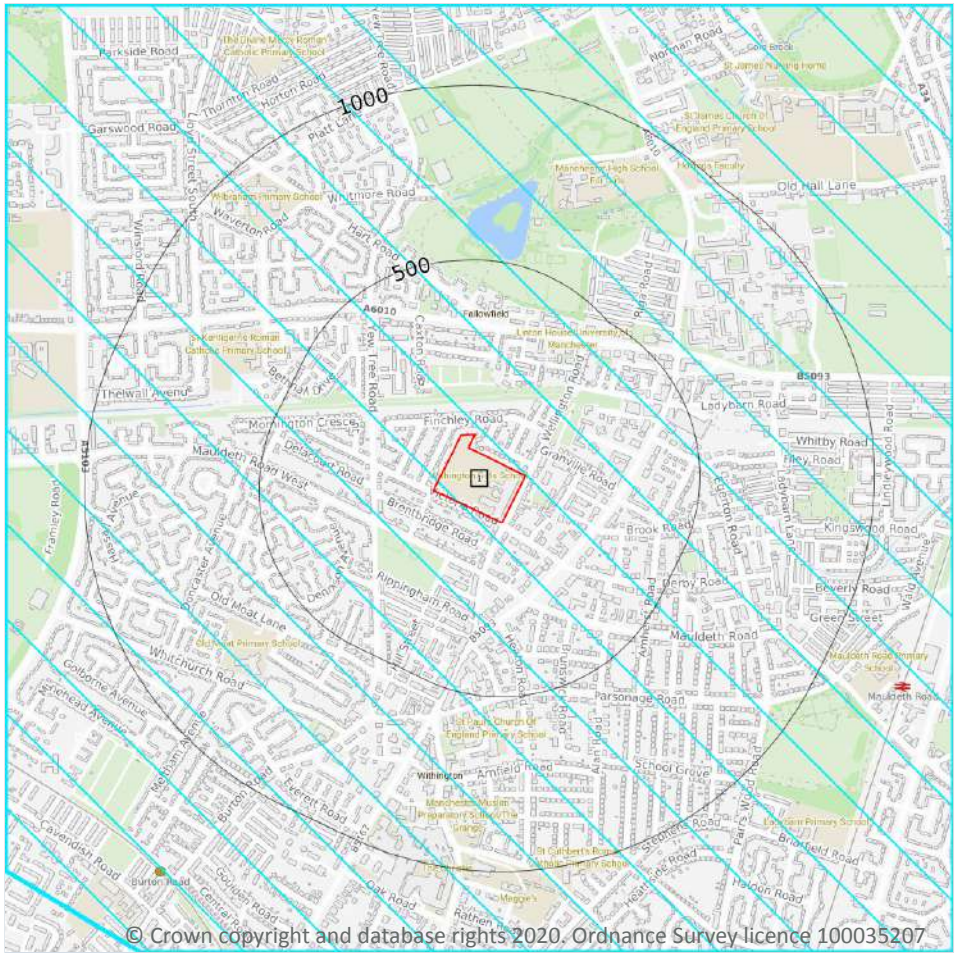
10.16 Nitrate Vulnerable Zones

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



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 59**

ID	Location	Type of developments requiring consultation
1	**On site**	**Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 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 English Heritage, 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 English Heritage, 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 English Heritage, Cadw and Historic Environment Scotland.

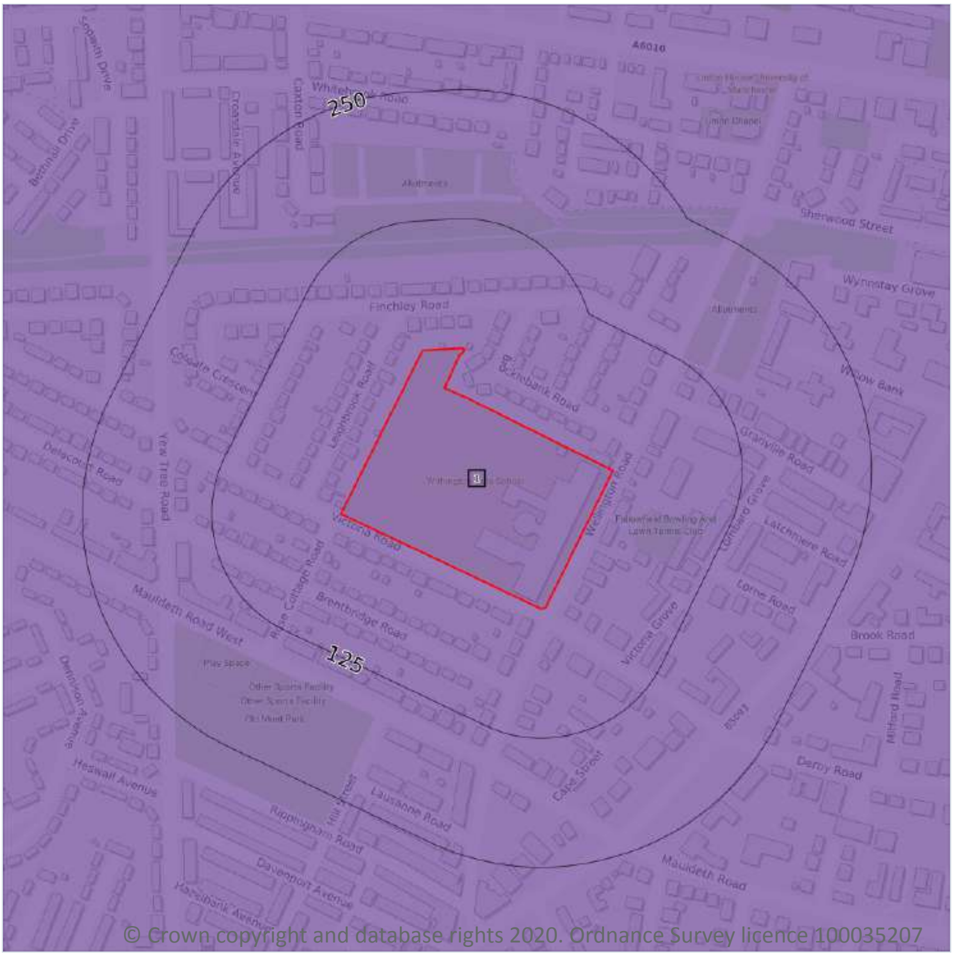
11.7 Registered Parks and Gardens

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 English Heritage, 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 63**

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.

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	1

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 65**

ID	Location	Main Habitat	Other habitats
1	246m NE	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.

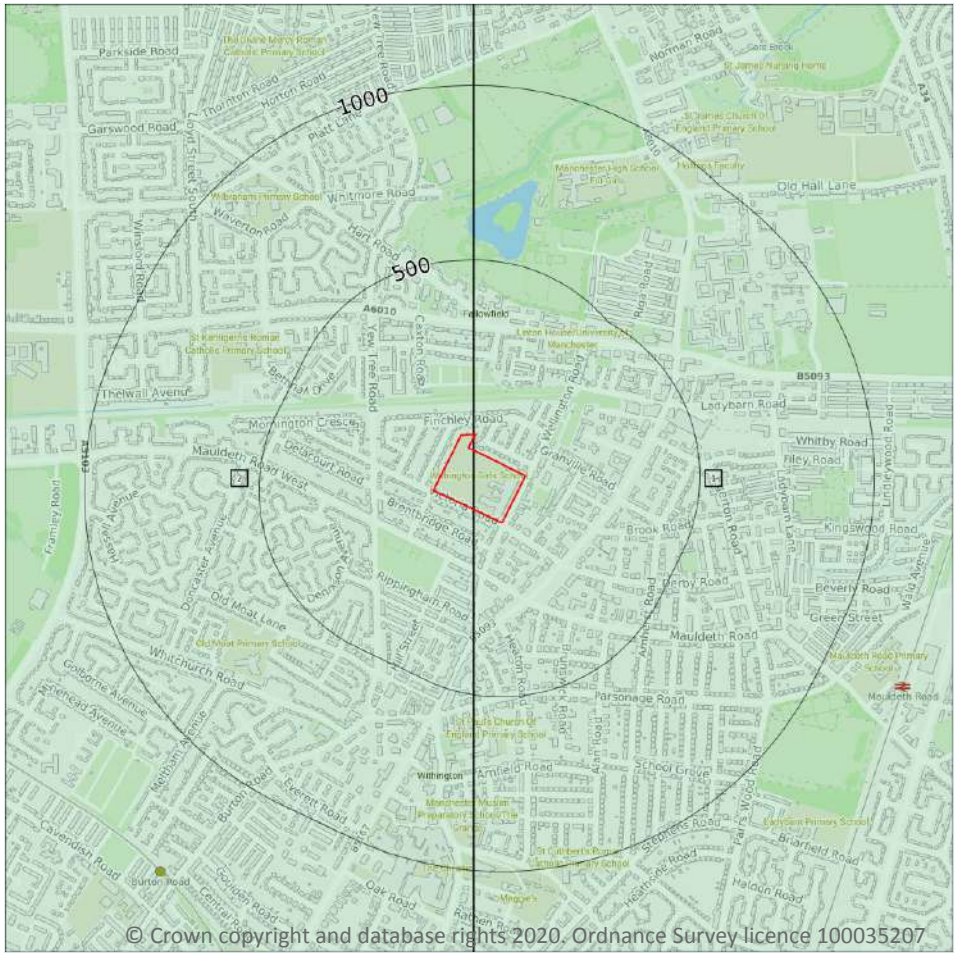
13.4 Limestone Pavement Orders

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	2

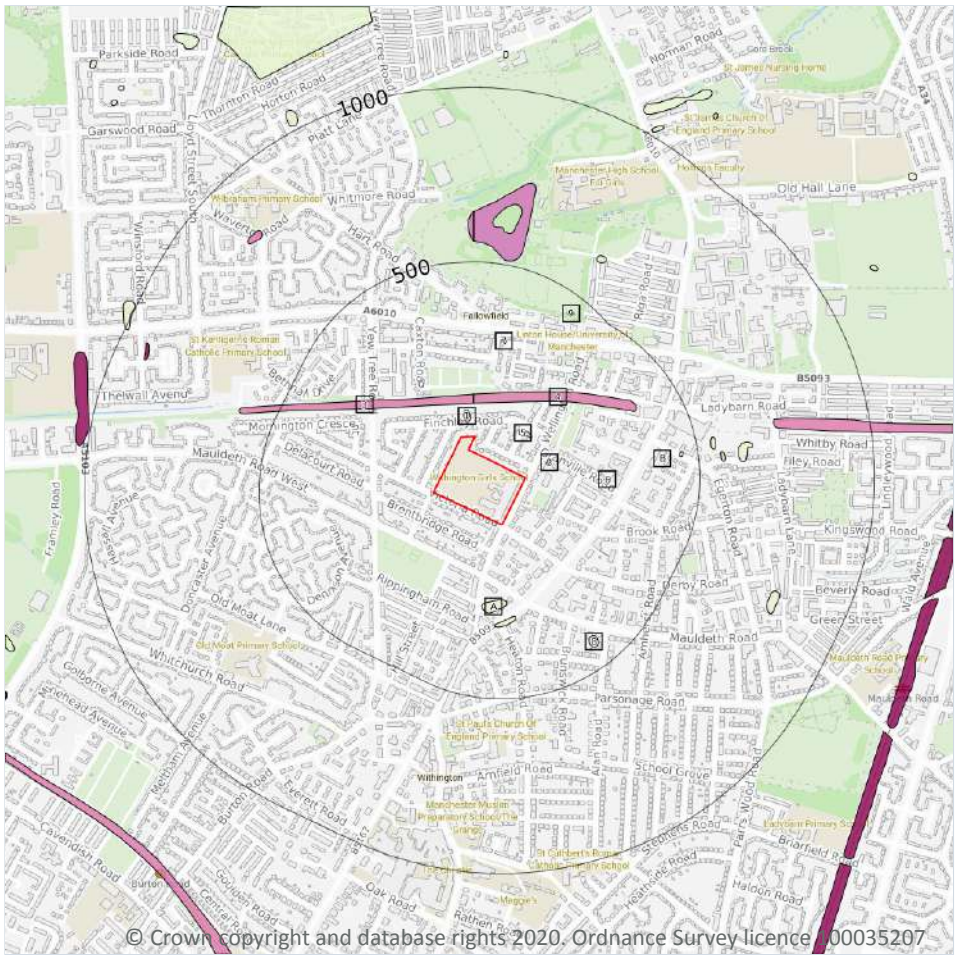
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 67**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SJ89SE**
2	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SJ89SW**

This data is sourced from the British Geological Survey.

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



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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	13

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.

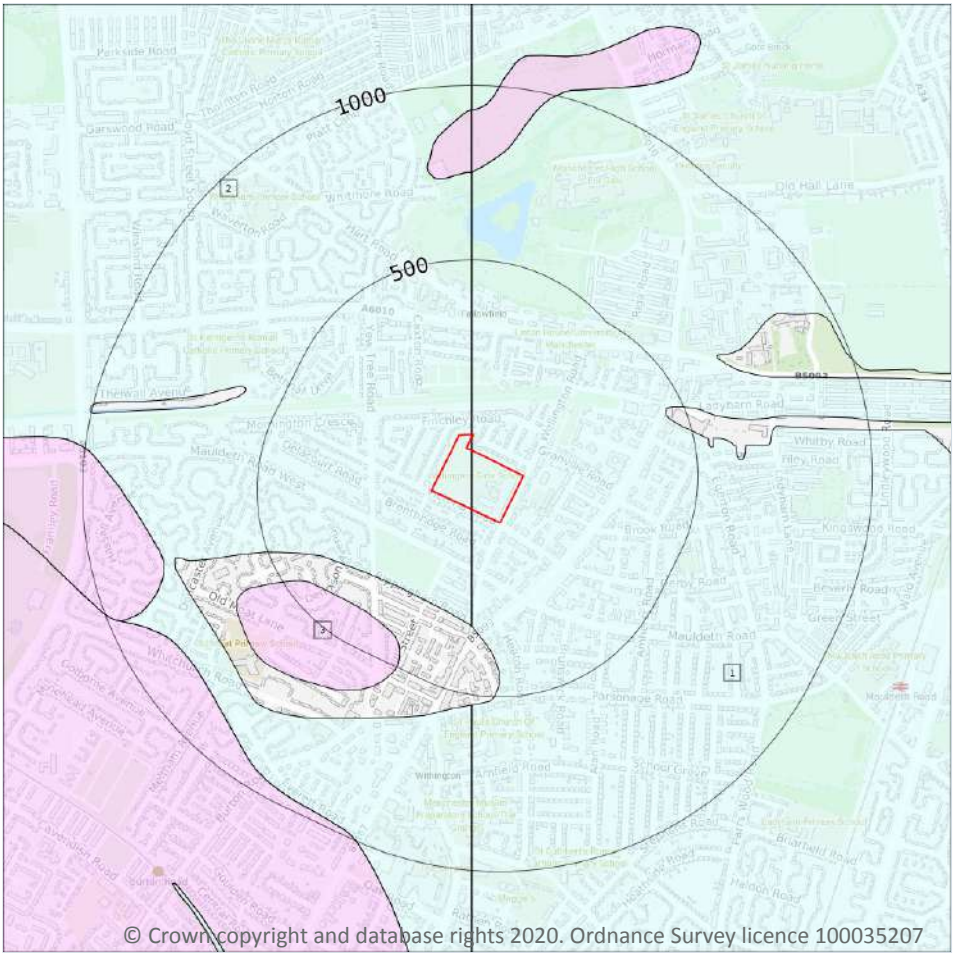
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 68**

ID	Location	LEX Code	Description	Rock description
1	46m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
2	72m NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	95m N	WGR-VOID	Worked Ground (Undivided)	Void
4	96m N	WGR-VOID	Worked Ground (Undivided)	Void

ID	Location	LEX Code	Description	Rock description
5	104m NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	216m S	WMGR-ARTDP	Infilled Ground	Artificial Deposit
6	227m E	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	266m S	WMGR-ARTDP	Infilled Ground	Artificial Deposit
7	278m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
B	391m E	WMGR-ARTDP	Infilled Ground	Artificial Deposit
8	409m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
9	440m NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
B	446m E	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 **3**

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 70**

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

ID	Location	LEX Code	Description	Rock description
3	394m SW	GFICD-XSV	Glaciofluvial Ice Contact Deposits, Devensian - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

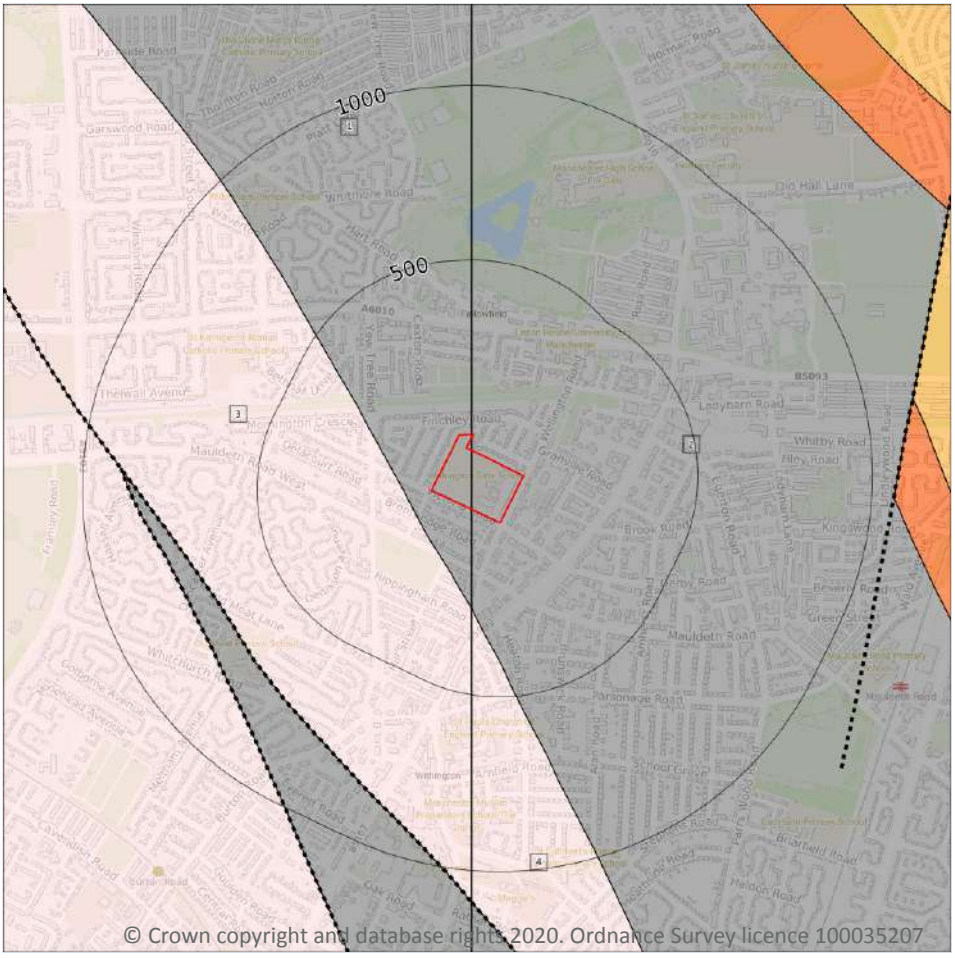
14.4 Landslip (10k)

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 **4**

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 72**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CPB-SDST**	**Chester Pebble Beds Formation - Sandstone**	**Early Triassic Epoch**
2	**On site**	**CPB-SDST**	**Chester Pebble Beds Formation - Sandstone**	**Early Triassic Epoch**
3	71m SW	WLSF-SDST	Wilmslow Sandstone Formation - Sandstone	Early Triassic Epoch
4	259m S	WLSF-SDST	Wilmslow Sandstone Formation - Sandstone	Early Triassic Epoch

This data is sourced from the British Geological Survey.

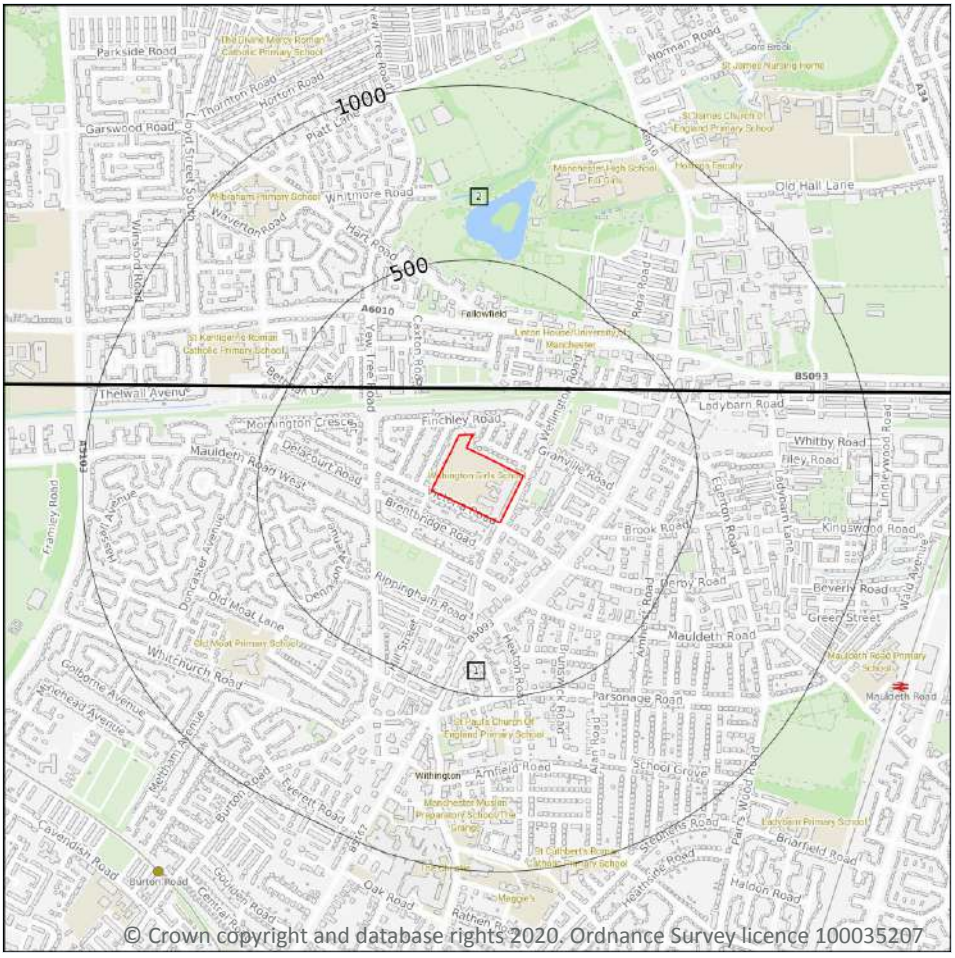
14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

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.

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 74**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW098_stockport_v4**
2	132m 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.

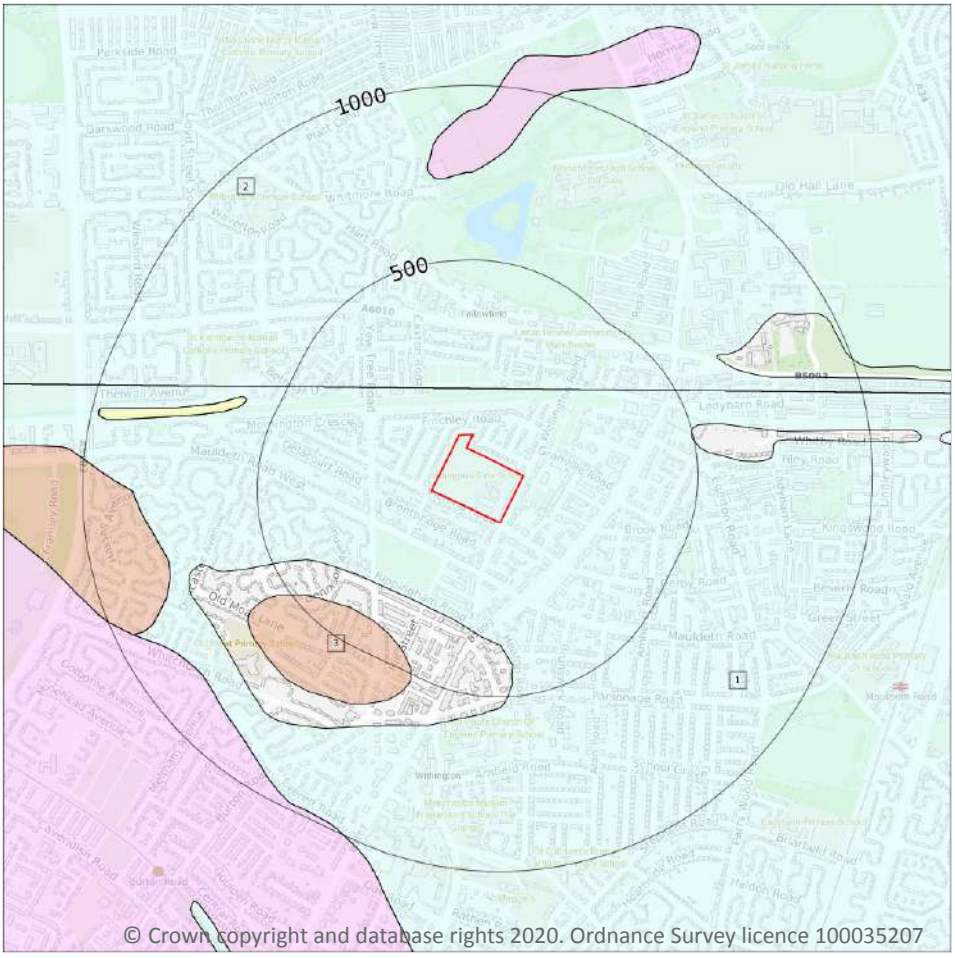
15.3 Artificial ground permeability (50k)

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 **3**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 76**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	131m N	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	406m SW	SSA-S	SHIRDLEY HILL SAND FORMATION	SAND

This data is sourced from the British Geological Survey.

15.5 Superficial 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 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**
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.

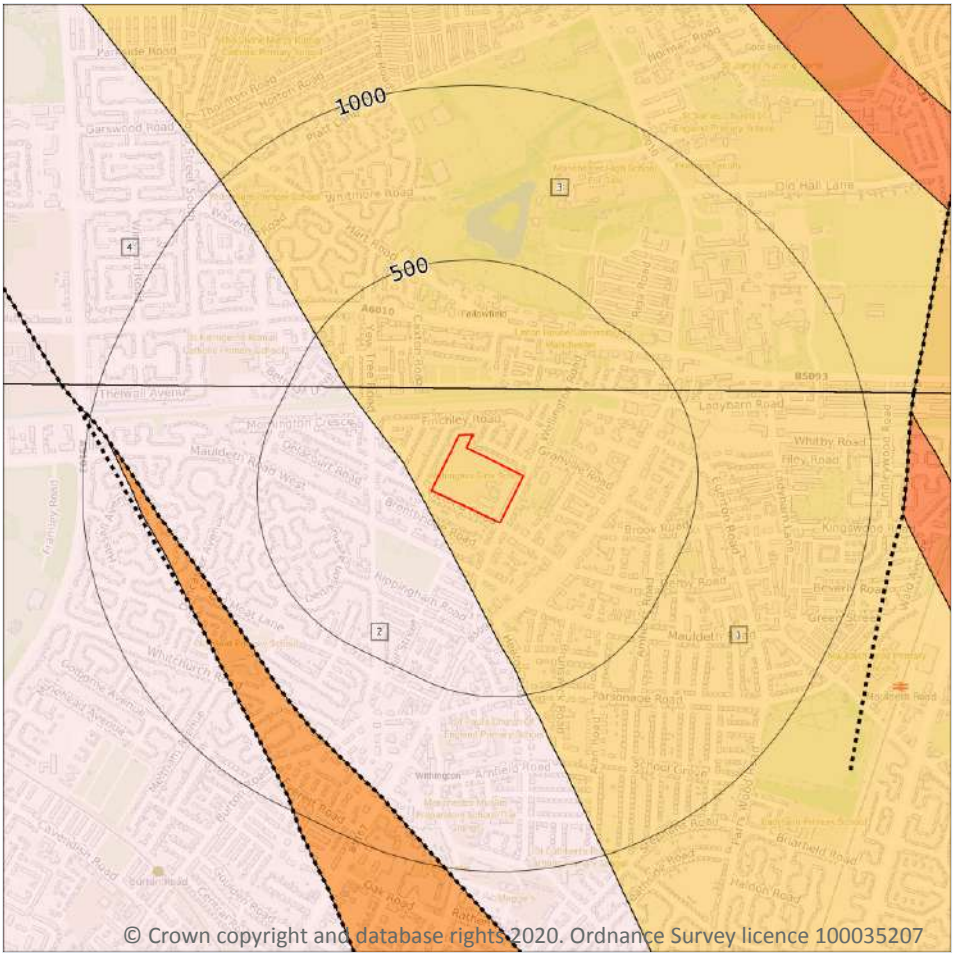
15.7 Landslip permeability (50k)

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 **4**

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 78**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CHES-SDST**	**CHESTER FORMATION - SANDSTONE**	**OLENEKIAN**
2	34m SW	WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE	-
3	131m N	CHES-SDST	CHESTER FORMATION - SANDSTONE	OLENEKIAN
4	351m NW	WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**3**

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Moderate**
On site	**Mixed**	**High**	**Moderate**
34m W	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

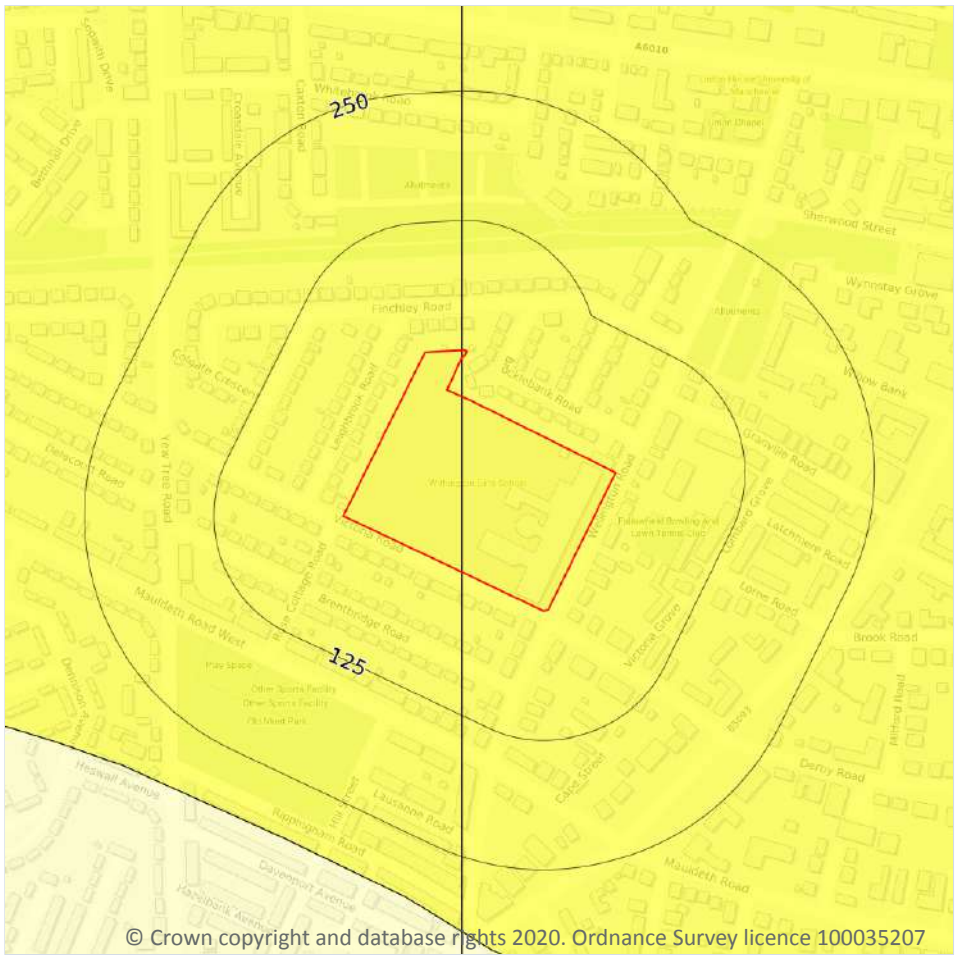
16.1 BGS Boreholes

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



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	1

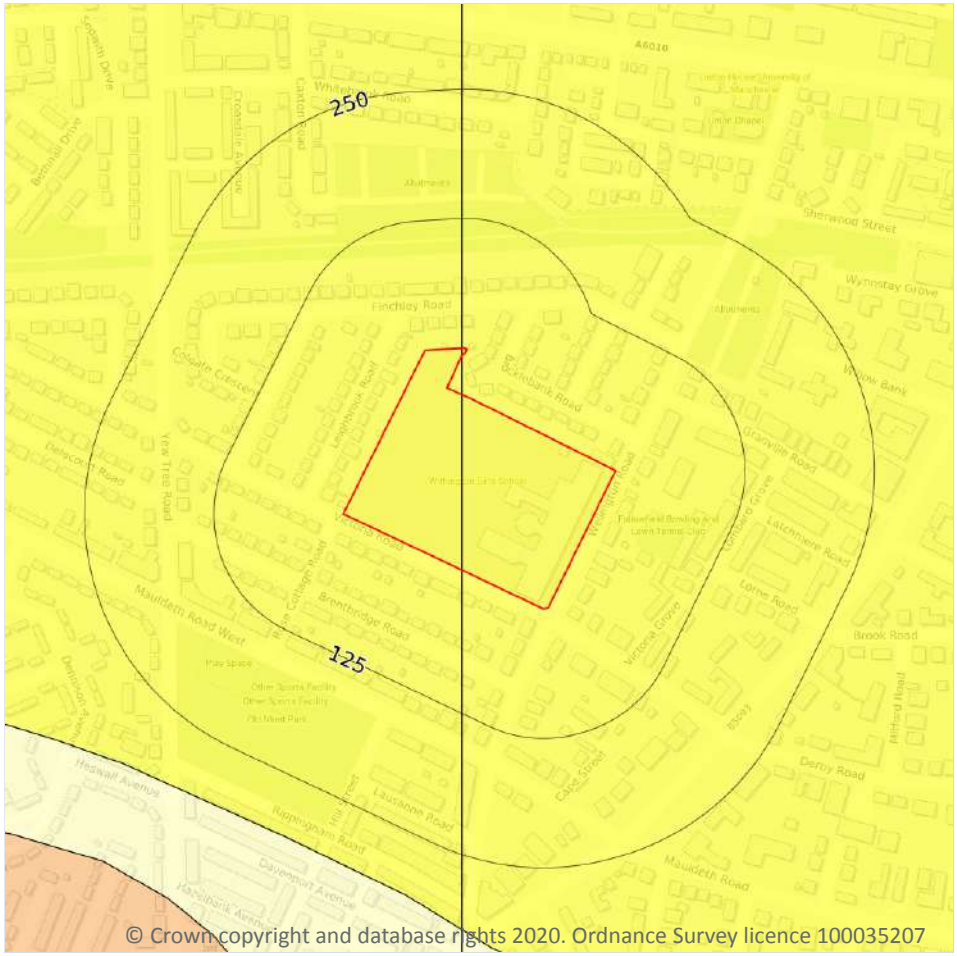
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 81**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

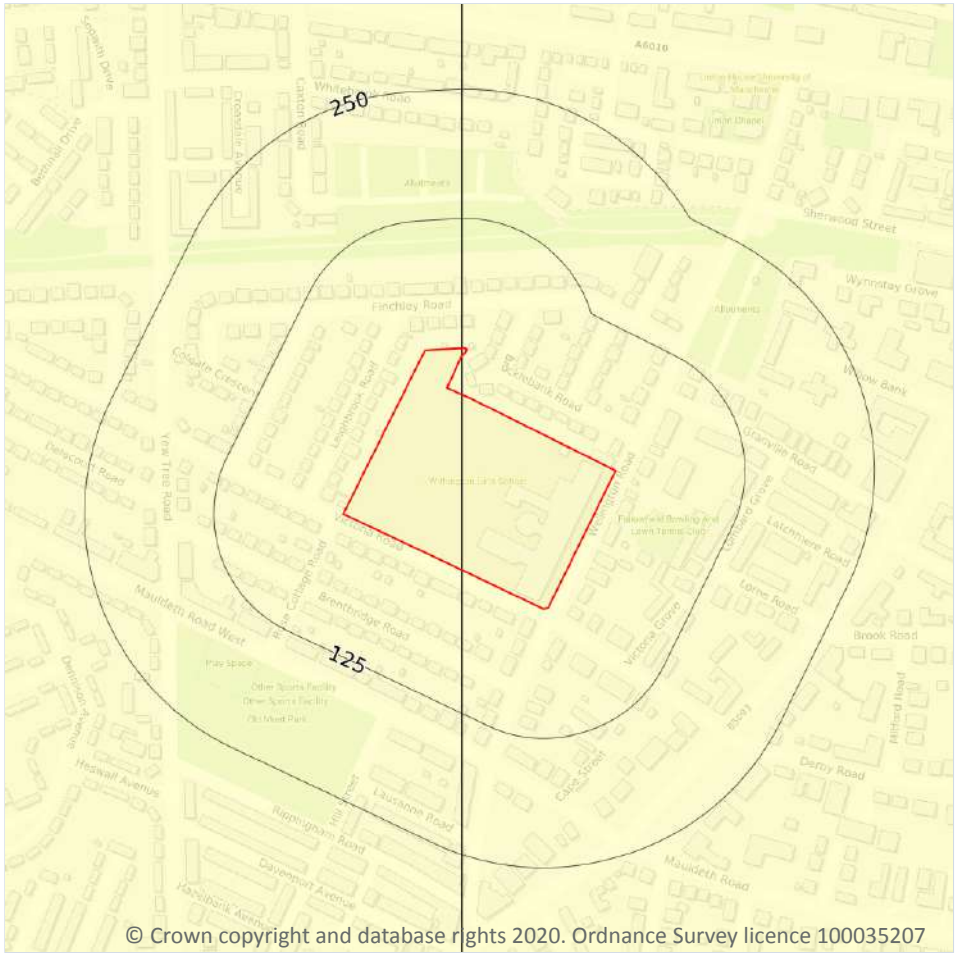
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 82**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

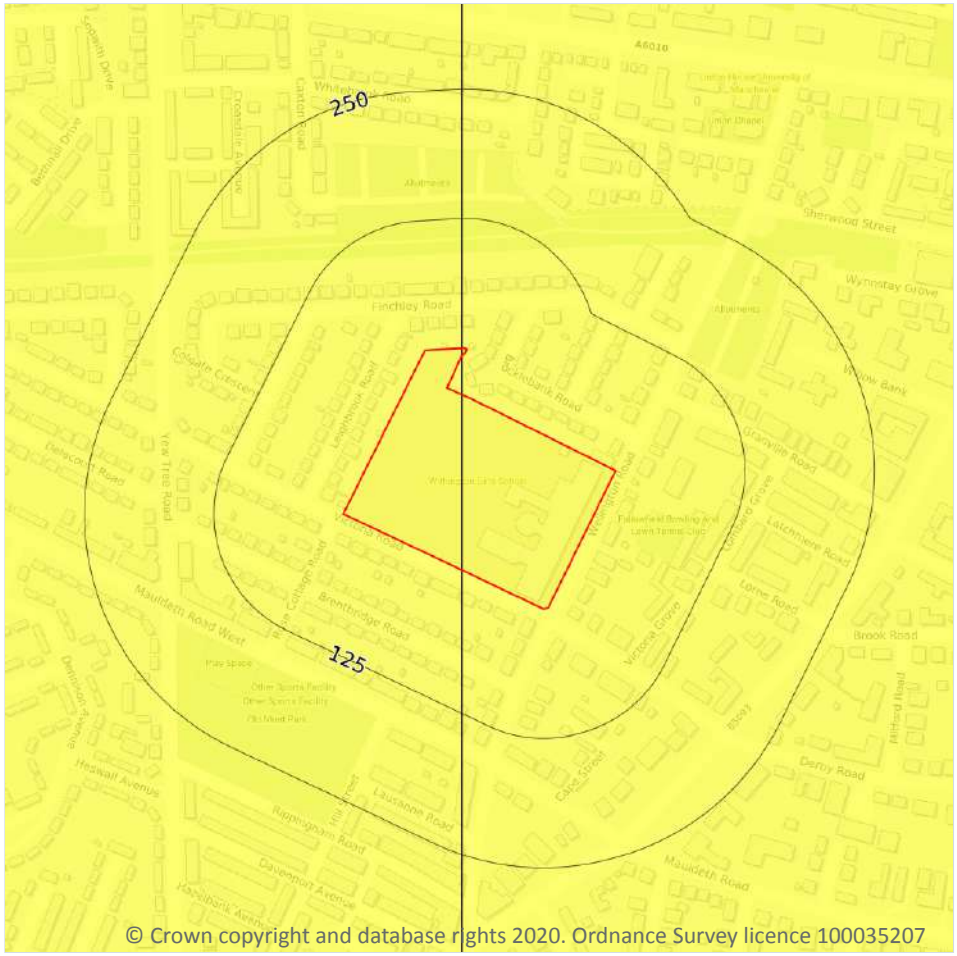
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 83**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

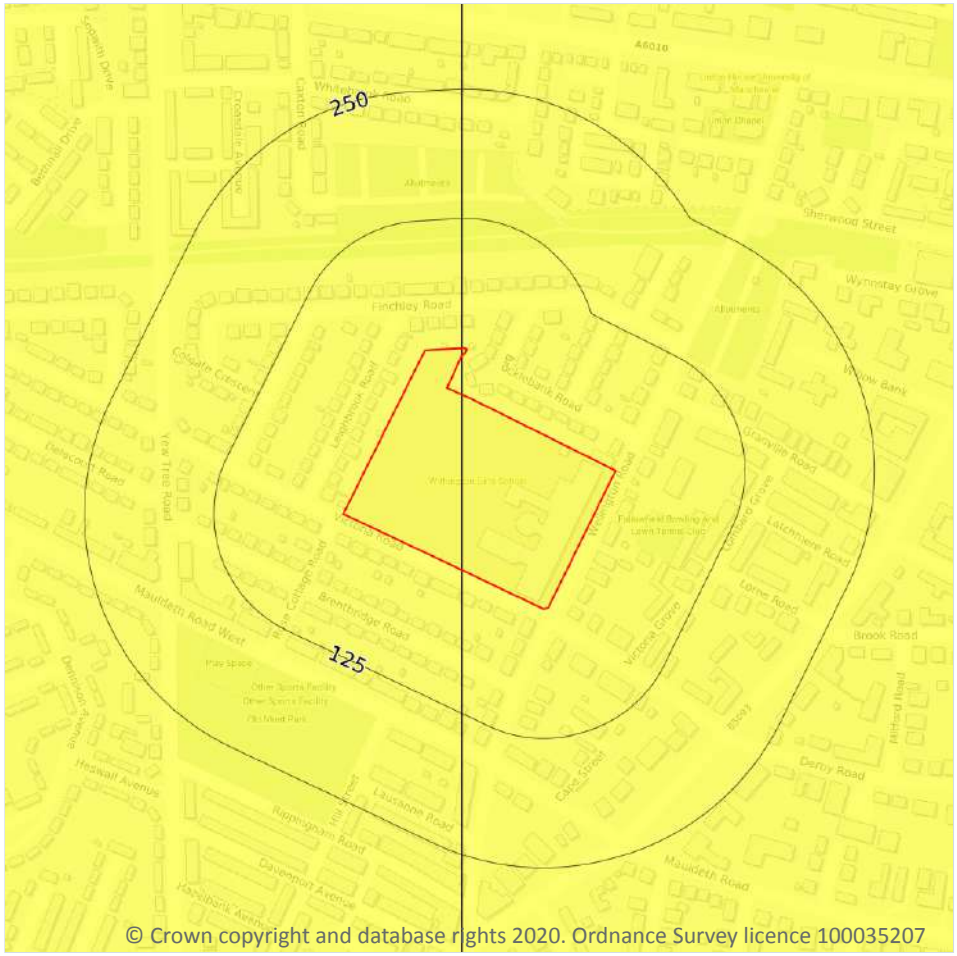
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 84**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	1

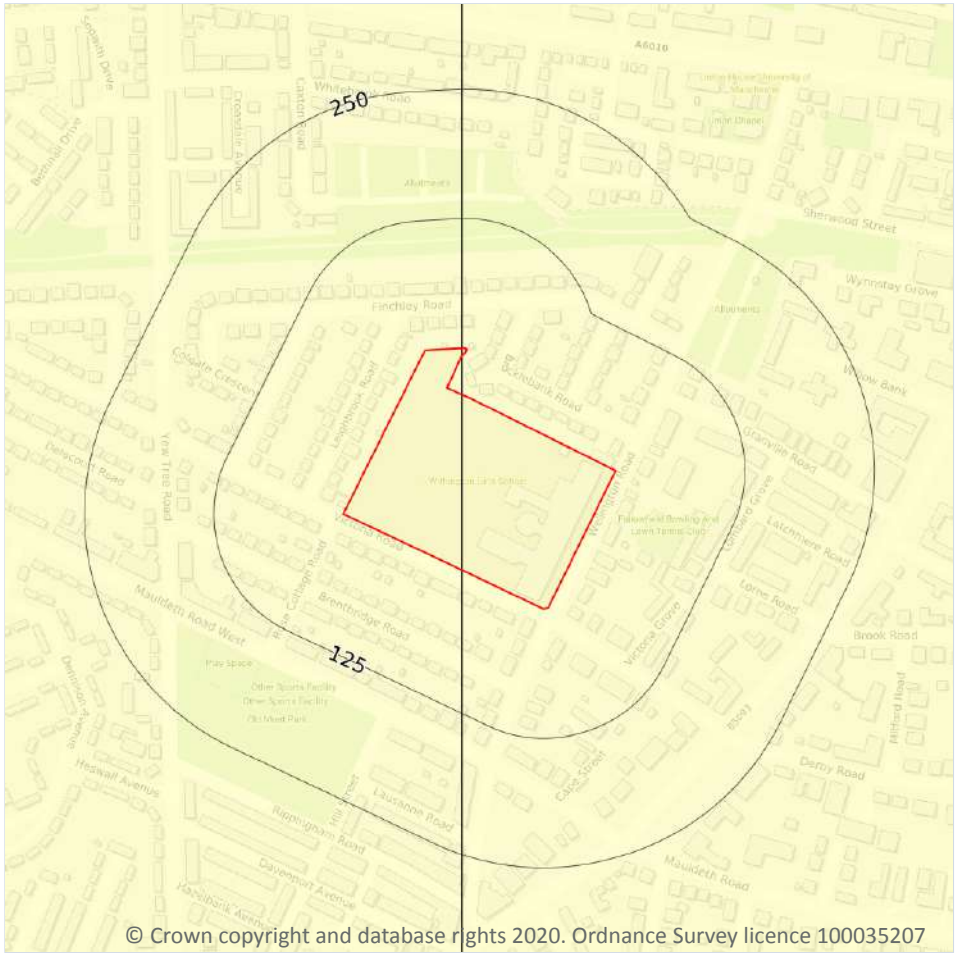
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 85**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

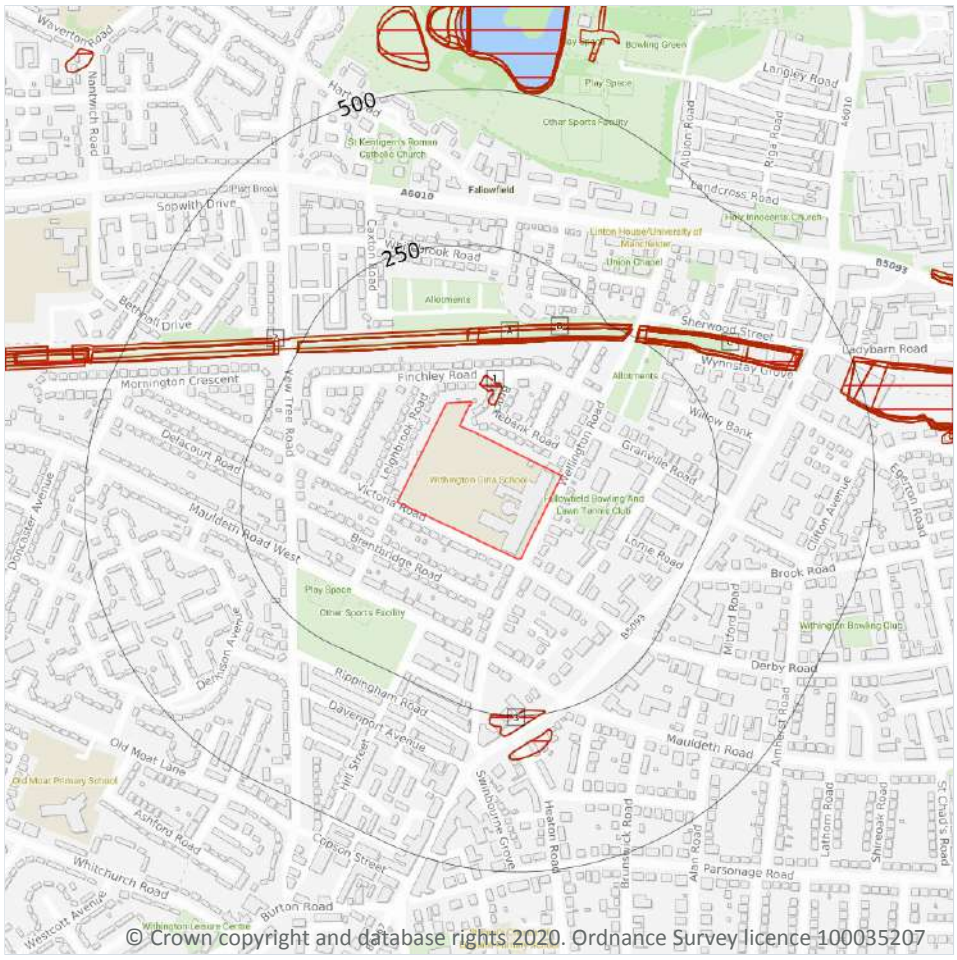
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 86**

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

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



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18.1 Natural cavities

Records within 500m	0

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

This data is sourced from Peter Brett Associates (PBA).

18.2 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.

18.3 Surface ground workings

Records within 250m	20

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 87**

ID	Location	Land Use	Year of mapping	Mapping scale
1	27m E	Pond	1851	1:10560
A	92m N	Cuttings	1938	1:10560
A	92m N	Cuttings	1934	1:10560
A	92m N	Cuttings	1916	1:10560
A	92m N	Cuttings	1905	1:10560
A	92m N	Cuttings	1892	1:10560
A	92m N	Cuttings	1923	1:10560
B	96m N	Cuttings	1974	1:10000
B	96m N	Cuttings	1983	1:10000
B	96m N	Cuttings	1989	1:10000
B	96m N	Cuttings	1965	1:10560
B	97m N	Cuttings	1955	1:10560
2	97m N	Cuttings	1955	1:10560
3	242m S	Ponds	1851	1:10560
C	245m NE	Cuttings	1938	1:10560
C	245m NE	Cuttings	1934	1:10560
C	245m NE	Cuttings	1916	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
C	245m NE	Cuttings	1905	1:10560
C	245m NE	Cuttings	1892	1:10560
C	245m NE	Cuttings	1923	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

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

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

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

This data is sourced from Peter Brett Associates (PBA).

18.8 JPB mining areas

Records on site	1

Areas which could be affected by former coal 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) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property. Further details and a quote for services can be obtained by emailing this report to enquiries.gs@jpb.co.uk.**

This data is sourced from Johnson Poole and Bloomer.

18.9 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.

18.10 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.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

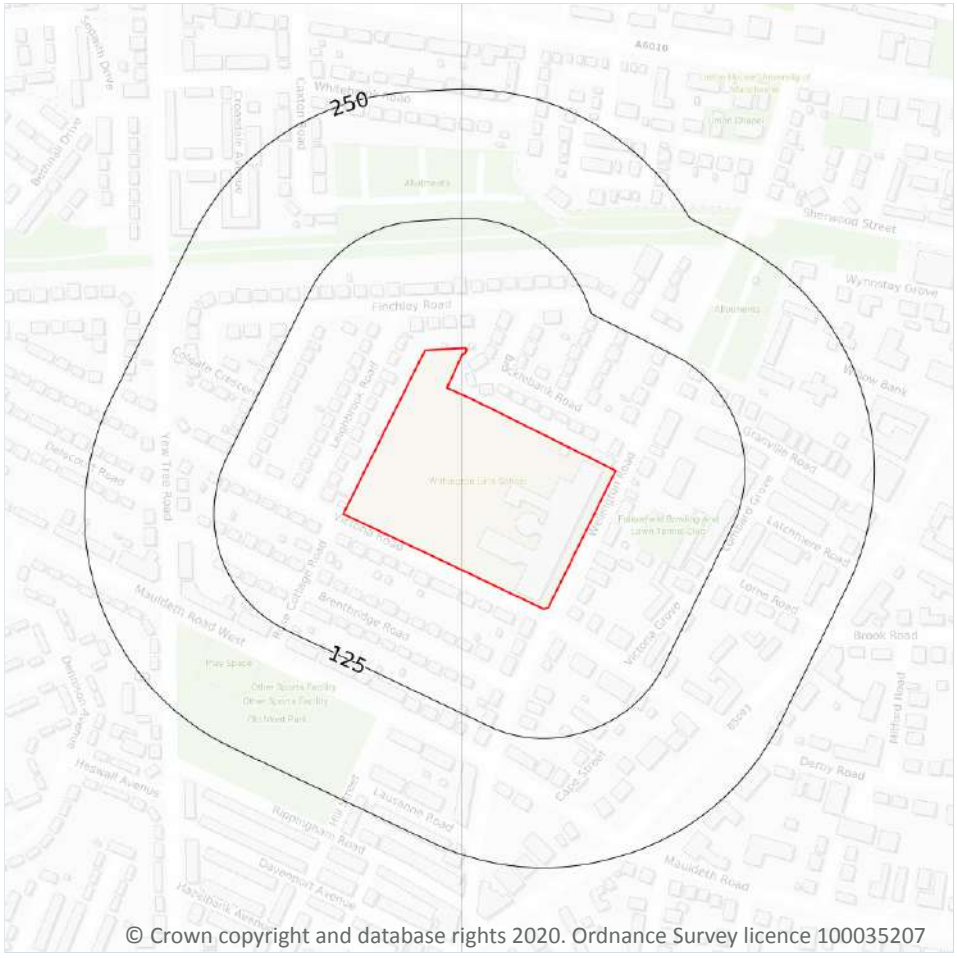
18.13 Clay mining

Records on site	0

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

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

19 Radon



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19.1 Radon

Records on site	1

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

Features are displayed on the Radon map on **page 92**

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

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

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m **7**

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	**15 - 25 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
16m SE	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
34m W	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
48m S	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
48m S	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m **0**

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

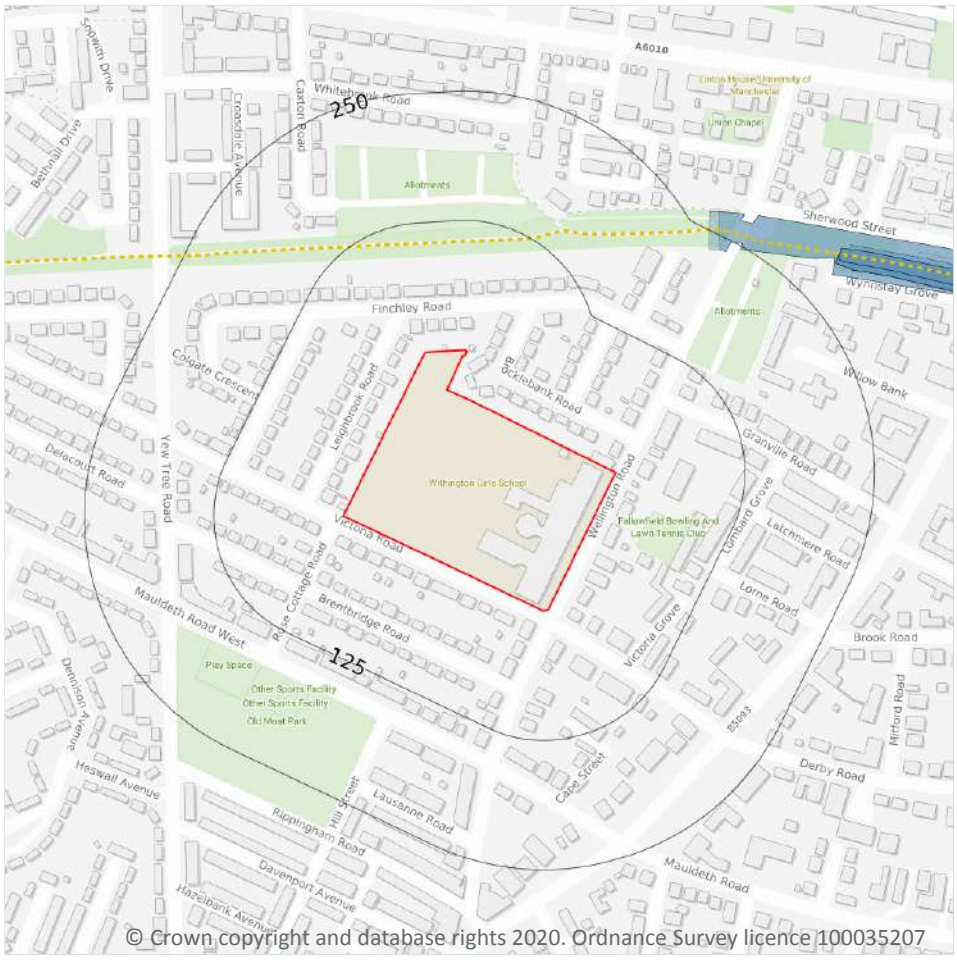
20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- 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

21.1 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.

21.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	2

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 95**

Location	Land Use	Year of mapping	Mapping scale
233m NE	Railway	1907	-
238m NE	Railway	1892	-

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	2

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

Features are displayed on the Railway infrastructure and projects map on **page 95**

Location	Description
105m N	Razed
105m N	Abandoned

This data is sourced from OpenStreetMap.

21.7 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.

21.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

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

APPENDIX D

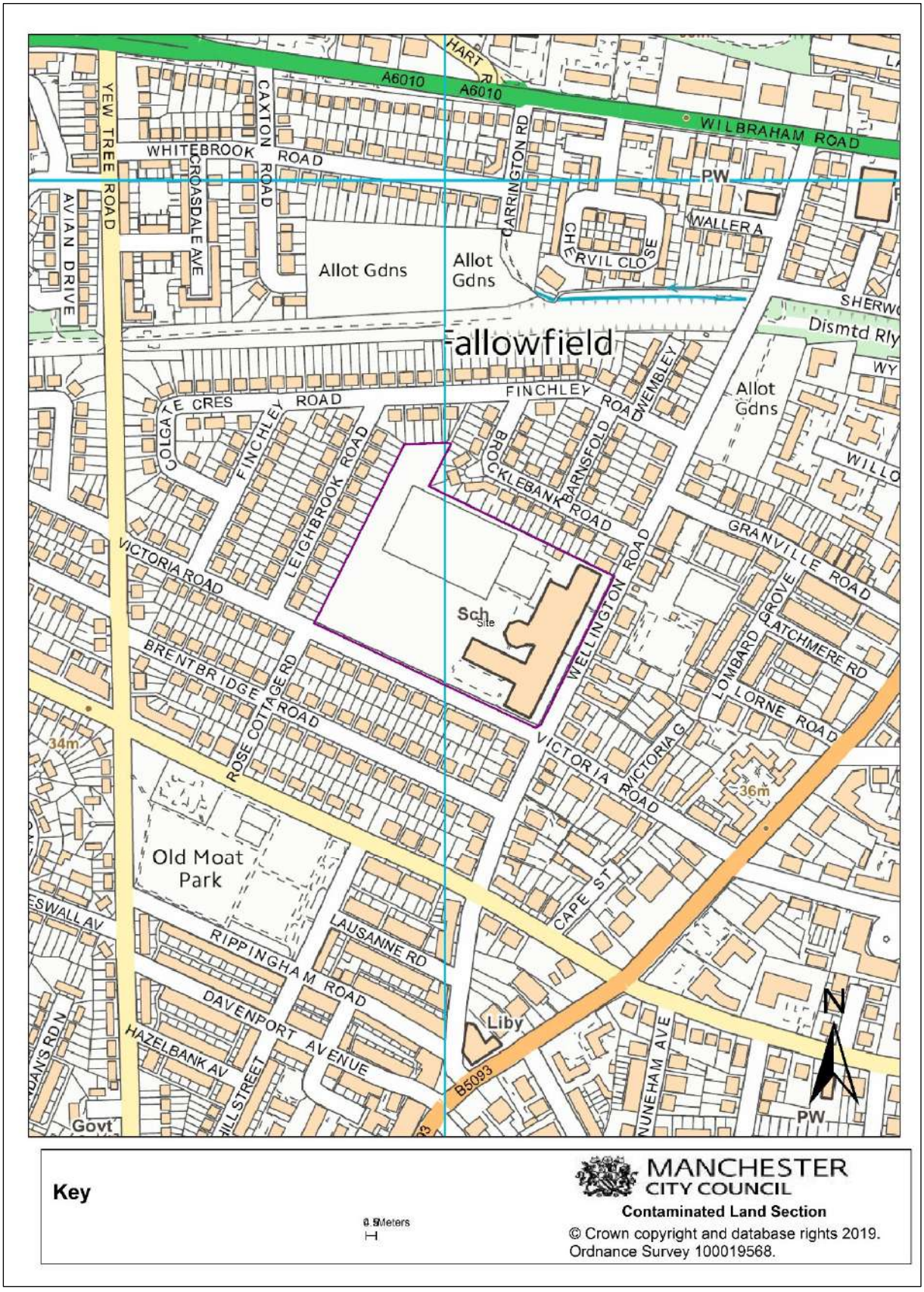
MANCHESTER CITY COUNCIL ENVIRONMENTAL INFORMATION

1. Environmental Information Data

DATE: 03 March 2020 TIME: 15:09

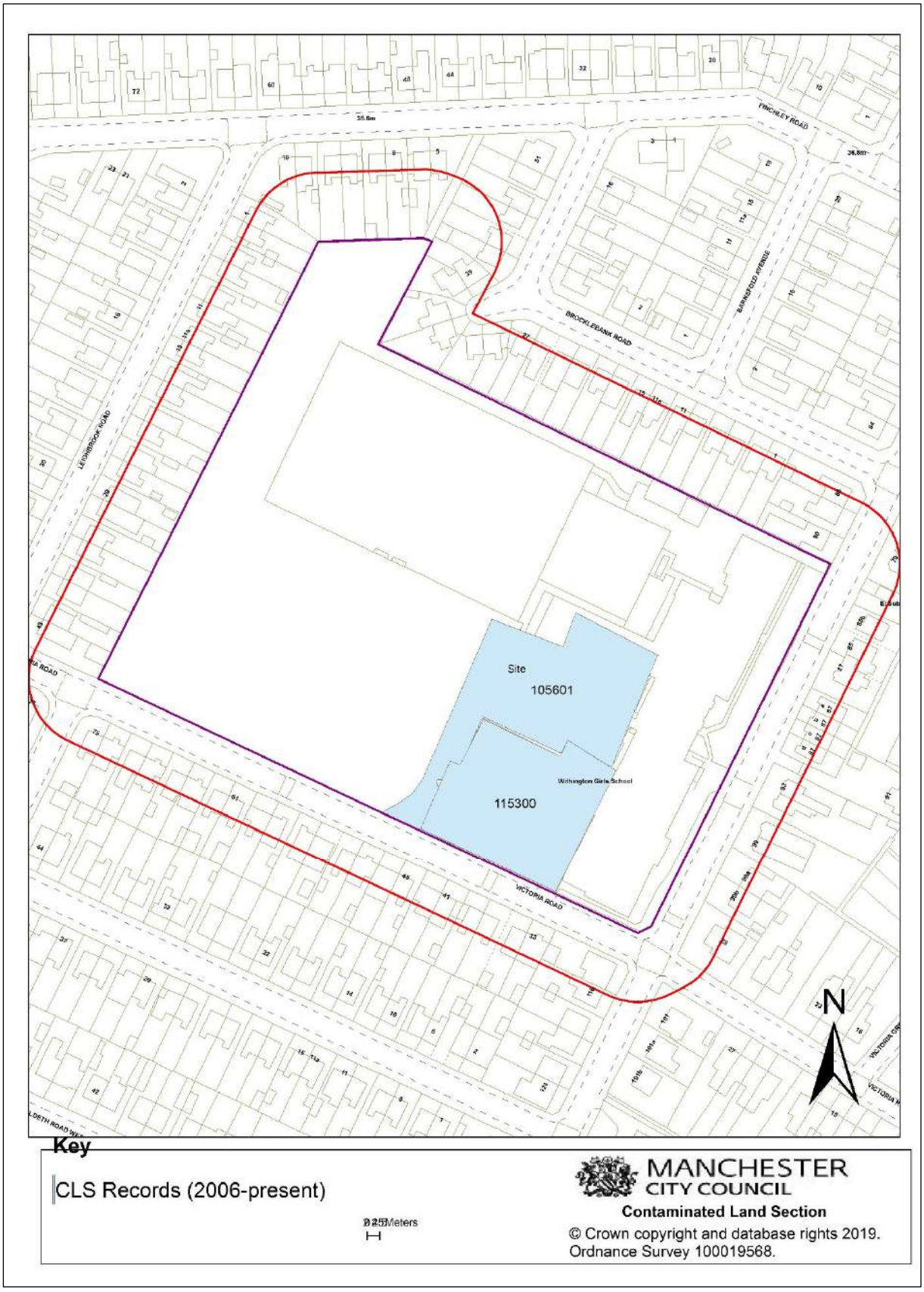
Buffer Search Radius: 25, 100, 250, 2000 metres
Site Centre Coordinates (British National Grid): 385015, 393633
Approx. area of search feature: 34,243m^2
Polygon buffer search
Selection Summary: A total of 2 features were selected on 1 out of 12 target layers.

2. Site Location Map



3. CLS Records (2006-present)

Contaminated Land Section records of contamination issues at the site and land adjacent to the site (2006-present):



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3.1 GIS Attribute Data for CLS Records (2006-present)

Selection Summary for layer
2 feature(s) identified on site.
0 feature(s) identified off site within 25 metres

PLANNING	Status	Address	DD_MM_YYYY	Reports	Grid Ref.
On Site					
105601	Pending	Withington Girls School, 100 Wellington Road, Manchester, m146BL	00:00:00		385043, 393599
115300	Discharged	Withington Girls School", 100 Wellington Road, Old Moat, Manchester	24/07/2019	Y (DS)	385036, 393562
Identified Off-site - Within 25m					
None					

The search has identified that the Contaminated Land Section may hold some information pertaining to ground conditions at or adjacent to this site, as shown on the above plan. Please contact us to arrange access to any available reports.

4. CLS Records (pre-2006)

Contaminated Land Section records of contamination issues at the site and land adjacent to the site (pre-2006):
No records were identified within 25m

5. Landfill sites

Landfill sites within 250 metres:
No records were identified within 250m

6. Part 2A Determined Land

Environmental Protection Act 1990 Part 2A, sites determined to be statutory contaminated land within 250 metres:

NOTE ON MANCHESTER CITY COUNCIL'S CONTAMINATED LAND INSPECTION STRATEGY

As set out in its Contaminated Land Inspection Strategy, the Council is now carrying out detailed inspections of potentially contaminated sites. A copy of the strategy is available on request. This can also be downloaded from the Council's website.
No records were identified within 250m

7. Waste Management Licences

Environmental Permitting (England & Wales) Regulations 2010, Waste Management Licences within 250 metres (MCC current and historic):
No records were identified within 250m

8. Waste Management Licences

Environmental Permitting (England & Wales) Regulations 2016, Waste Management Licences within 250 metres (EA current):
No records were identified within 250m

9. Part A(1) Permitted Processes

Environmental Permitting (England & Wales) Regulation 2016, Part A(1) Permitted Processes within 250 metres (MCC current and historic):
No records were identified within 250m

10. Part A(1) Permitted Processes

Environmental Permitting (England & Wales) Regulations 2016, Part A(1) Permitted Process within 250 metres (EA Current):
No records were identified within 250m

11. Part A(2) Permitted Processes

Environmental Permitting (England & Wales) Regulations 2016, Part A2 Permitted Processes within 250 metres:
No records were identified within 250m

12. Part B Permitted Processes

Environmental Permitting (England & Wales) Regulations 2016, Part B Permitted Processes within 250 metres of the site:
No records were identified within 250m

13. Private Water Supplies

Private Water Supplies Regulations 2016, registered abstractions within 2000 metres:
No records were identified within 2000m

14. Radioactive Substances Registrations

Radioactive Substances Act 1993, current registrations at or adjacent to the site:
No records were identified within 25m

End of Report.

APPENDIX E

HISTORICAL RECORDS

BOREHOLE RECORDS (NORTHERN FOUNDATIONS LTD REF GI 9162 MAY 2007)

FOUNDATION DRAWING (SWF CONSULTING LTD REF 7362/F/001 REV B NOV 2007)

Borehole Log

Site	Withington Girls School, Manchester	Job No	9162
Client	SWF Consulting	Date	April 2007
Trialhole No	WS5	Diameter	
Grid Ref		Method	Window Sampling Rig
Ground Level	Existing level at time of investigation	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests: Depth m	Type	Vane kN/m²	Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
	0.00								
MADE GROUND: tarmac 80mm	0.10								
MADE GROUND: loose grey, crushed limestone, gravel, becoming clayey with increasing depth	0.40			0.40	J				
MADE GROUND: soft, orange brown, grey brown, sandy, silty clay, disturbed with grey sandy silt veins	0.70			0.50 0.70	V D	33			
Firm, orange brown, mottled grey, sandy, silty CLAY, occasional weathered rock fragments, gravel	1.20			0.80 1.10 1.20	V V D	54 69			
Firm to stiff, brown, with grey veining, sandy, silty CLAY, with occasional gravel, weathered rock fragments with grey sandy veining	1.40								
Firm, brown, mottled grey, red brown, very sandy, very silty CLAY, with sandy and silty pockets, with weathered rock fragments, gravel, weathered sandstone fragments	1.90			1.50 1.60 1.80	V U W V	55 37	55		Final 1.80
Medium dense, red brown, slightly silty, fine to medium SAND	2.10								
Dense, red brown, slightly silty, fine to medium SAND	2.30			2.30	D				
Very dense to dense, yellow brown, slightly silty, fine to medium SAND (possibly tending to highly weathered sandstone towards base)	2.80			2.60	D				
Window sampling total depth 2.80m (refusal)									

Remarks
No observed water entries
Standing water level 1.80m after 0.5 hrs
Super Heavy Dynamic Probe to 3.30m
Hole collapsed to 2.66m

Key U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Withington Girls School, Manchester	Job No	9162
Client	SWF Consulting	Date	April 2007
Trialhole No	WS6	Diameter	
Grid Ref		Method	Window Sampling Rig
Ground Level	Existing level at time of investigation	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests: Depth m	Type	Vane kN/m²	Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
	0.00								
MADE GROUND: tarmac 80mm	0.10								
MADE GROUND: crushed limestone with fines	0.50								
MADE GROUND: loose, brown grey, clayey, crushed limestone with fines, wet	0.70								
MADE GROUND: soft, yellow brown, light grey, sandy, silty clay, occasional gravel	0.90			0.80	J				
Firm, orange brown, light grey, very sandy, very silty CLAY, occasional weathered rock fragments, occasional gravel	1.40			1.00 1.20 1.30 1.40	V D V V	55 57 94			
Firm to stiff, red brown, brown, with light grey veining, very sandy, very silty CLAY, with weathered rock fragments, gravel	1.80			1.50 1.70	U V	 79	65		
Medium dense, red brown, fine to medium SAND	2.00			2.00	D				
Dense, red grey brown, silty, fine to medium SAND, [92.5% sand, 7.5% silt]	2.20								
Dense, red grey brown, slightly silty, fine to medium SAND, with brown grey silt banding (possibly tending to weathered sandstone)	2.40								
Very dense, red brown, highly weathered, fine to medium SANDSTONE	2.55								
Window sampling total depth 2.55m (refusal)									

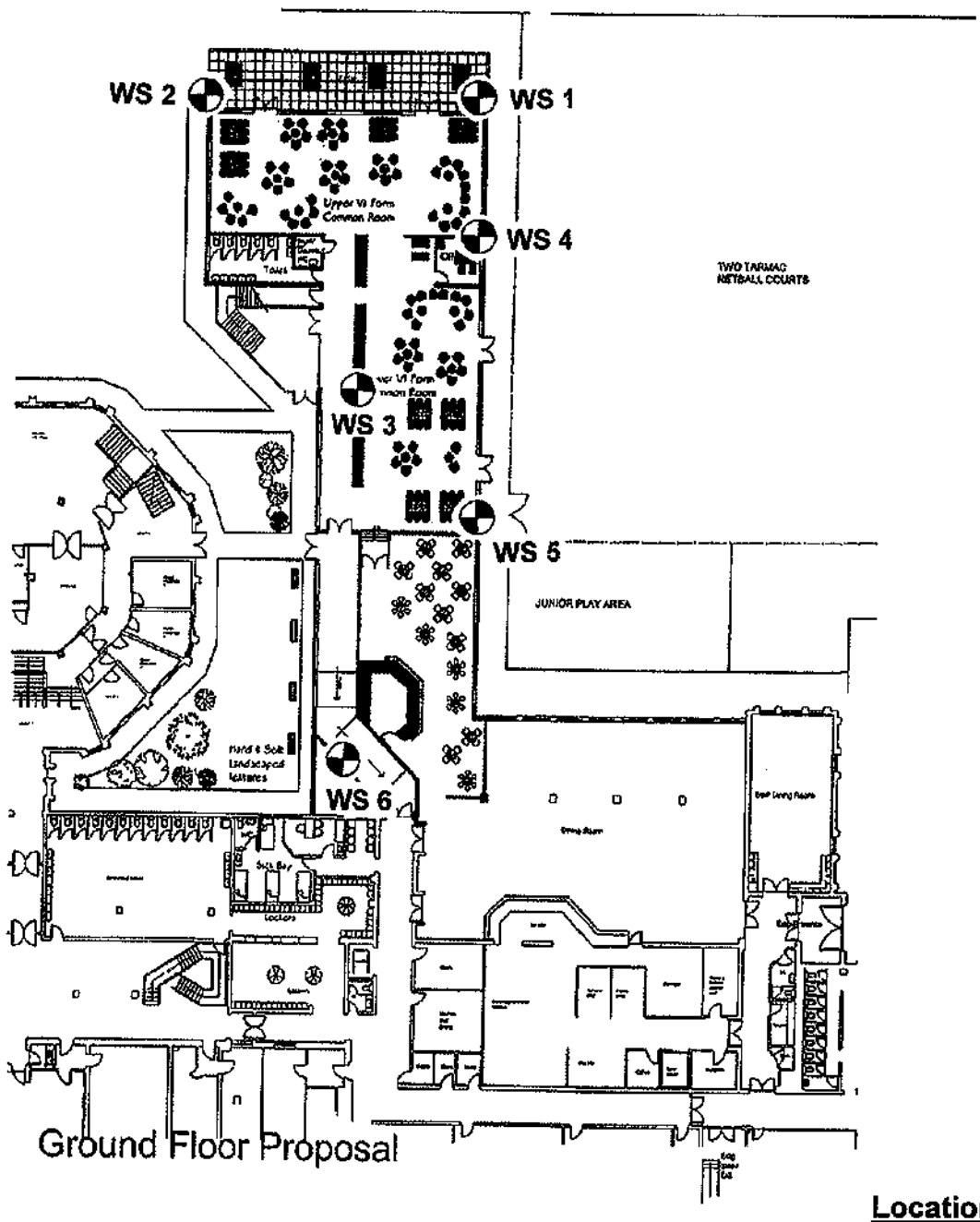
Remarks
No observed water entries
No observed standing water
Super Heavy Dynamic Probe to 2.60m
Loose made ground required casing
Hole collapsed to 2.35m after lifting casing

Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

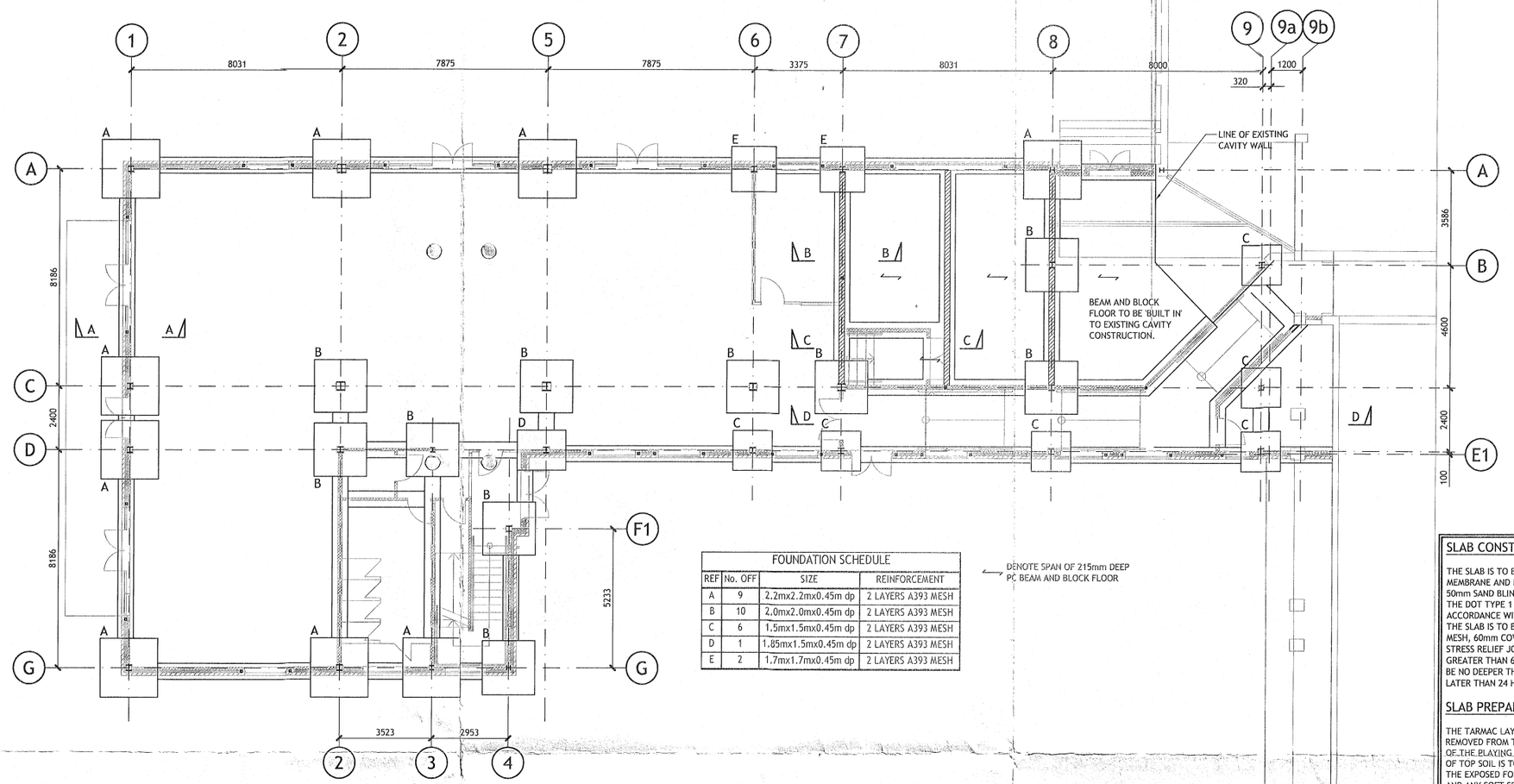
Northern Foundations Ltd

Site	Withington Girls School, Manchester	**Job No**	9162
Client	SWF Consulting	**Date**	May 2007

LOCATION PLAN



Location Plan
(not to scale)



FOUNDATION SCHEDULE			
REF	No. OFF	SIZE	REINFORCEMENT
A	9	2.2mx2.2mx0.45m dp	2 LAYERS A393 MESH
B	10	2.0mx2.0mx0.45m dp	2 LAYERS A393 MESH
C	6	1.5mx1.5mx0.45m dp	2 LAYERS A393 MESH
D	1	1.85mx1.5mx0.45m dp	2 LAYERS A393 MESH
E	2	1.7mx1.7mx0.45m dp	2 LAYERS A393 MESH

DENOTE SPAN OF 215mm DEEP PC BEAM AND BLOCK FLOOR

NOTE
FOUNDATIONS TO BE FORMED IN THE MEDIUM DENSE SANDS APPROXIMATELY 1.8m TO 2.2m BELOW EXISTING GROUND LEVELS.

NOTE
ALLOWABLE BEARING PRESSURES:
PADS: 150kN/m²
STRIPS: 125kN/m²

NOTE
INSTALLATION OF THE BASE AT B9 WILL REQUIRE THE EXISTING BEAM & BLOCK FLOOR TO BE OPENED UP TO ALLOW EXCAVATIONS.

NOTE
INSTALLATION OF THE BASE AT B8/9 WILL REQUIRE THE EXISTING WALL TO BE TAKEN DOWN TO ALLOW CONNECTION TO THE EXISTING FOUNDATIONS

SLAB CONSTRUCTION

THE SLAB IS TO BE 175mmTHICK LAID ON DAMP PROOF MEMBRANE AND INSULATION (TO ARCHITECTS DETAILS) ON 50mm SAND BLINDING ON 150mm DOT TYPE 1.
THE DOT TYPE 1 IS TO BE INTRODUCED AND COMPACTED IN ACCORDANCE WITH TABLE 6/1 OF Dtp SPECIFICATION.
THE SLAB IS TO BE REINFORCED WITH A SINGLE LAYER OF A193 MESH, 60mm COVER.
STRESS RELIEF JOINTS ARE TO BE SAW CUT AT CENTRES NO GREATER THAN 6.0m IN BOTH DIRECTIONS, THE SAW CUT IS TO BE NO DEEPER THAN 45mm AND IS TO BE UNDERTAKEN NO LATER THAN 24 HOURS AFTER CASTING.

SLAB PREPARATION

THE TARMAC LAYER AND A DEPTH OF HARDCORE IS TO BE REMOVED FROM THE AREA OF THE PLAYGROUND. IN THE AREA OF THE PLAYING FIELD AN APPROXIMATE DEPTH, SAY 250mm, OF TOP SOIL IS TO BE REMOVED.
THE EXPOSED FORMATION LEVEL IS THEN TO BE PROOF ROLLED AND ANY SOFT SPOTS REMOVED AND REPLACED WITH 6F2 HARDCORE, INTRODUCED AND COMPACTED IN MAXIMUM 150mm LAYER. AS NOTED ON SECTIONS.
THE SLAB PREPARATION WORKS ARE TO BE WITNESSED AND APPROVED BY S.W.F.

GENERAL

1. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION
2. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL AND STRUCTURAL DRAWINGS.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
4. ALL LEVELS ARE IN METRES RELATIVE TO BUILDING DATUM OF ±0.000m = +35.540m FFL.
5. ALL DIMENSIONS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION

FOUNDATIONS

1. ALL BASES TO BE CAST WITH THEIR TOPS AT A LEVEL OF -0.600m BELOW FFL UNLESS NOTED OTHERWISE
2. FOR DETAILS OF HOLDING DOWN BOLTS SEE RELEVANT STEEL MANUFACTURERS DRAWINGS.
3. BASES TO BE POSITIONED CENTRALLY BELOW STANCHIONS UNO.
4. CONCRETE IN BASES TO ATTAIN A CUBE CRUSHING STRENGTH OF 35N/mm²
5. GEN1 CONCRETE TO BE USED BETWEEN APPROVED FORMATION AND UNDERSIDE OF MASS CONCRETE BASE
6. MINIMUM CEMENT CONTENT 300 kg/m³
7. MAXIMUM WATER CEMENT RATIO 0.55

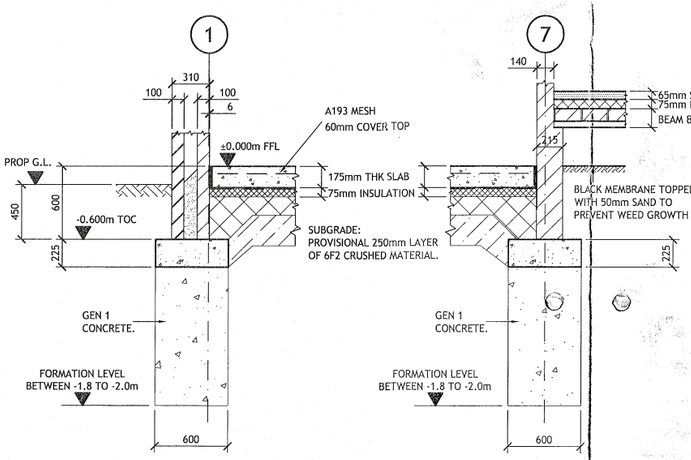
SLABS

1. CONCRETE MIX AS FOUNDATIONS.

NOTE
THE ARCHITECTURAL BACKGROUNDS ARE A VISUAL REPRESENTATION OF THE PROPOSED BUILDING BUT ARE NOT NECESSARILY DIMENSIONALLY ACCURATE AND THUS MAY NOT RELATE TO THE LOCATION OF THE STRUCTURAL MEMBERS

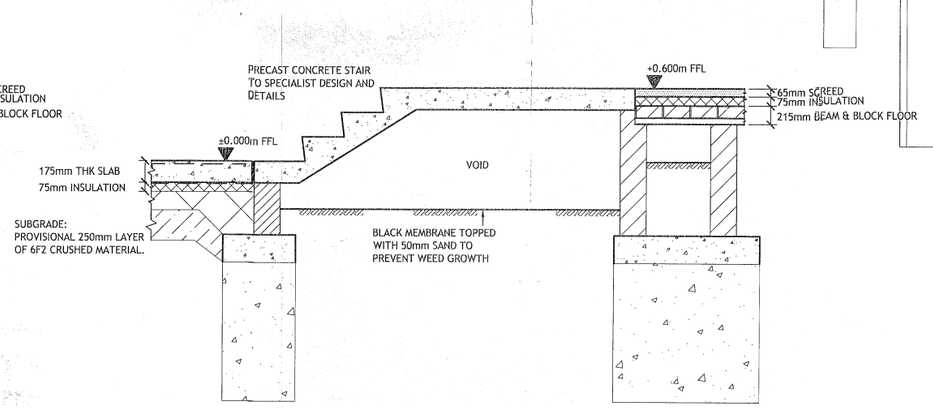
ABBREVIATIONS

FFL - FINISHED FLOOR LEVEL
SSL - STRUCTURAL SLAB LEVEL
TOC - TOP OF CONCRETE.
TOS - TOP OF STEEL.
UOS - UNDERSIDE OF STEEL.
WP - WIND POST
DL - DEAD LOAD
IL - IMPOSED LOAD

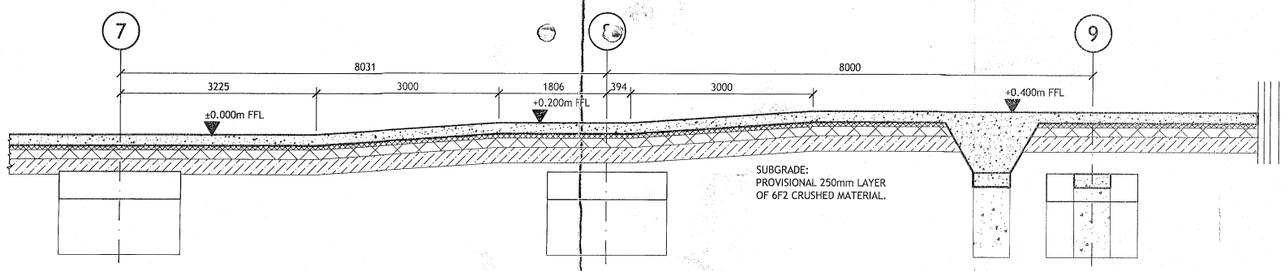


SECTION A-A
SCALE 1:25

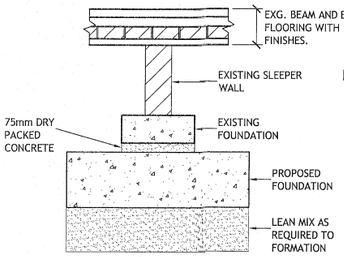
SECTION B-B
SCALE 1:25



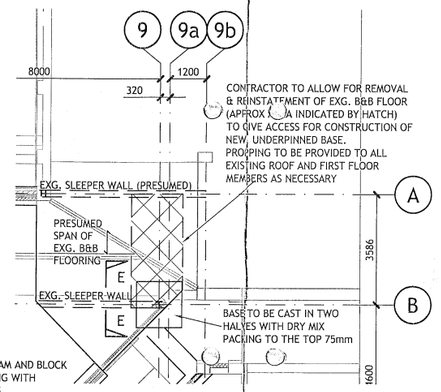
SECTION C-C
SCALE 1:25



SECTION D-D
SCALE 1:50



SECTION E-E
SCALE 1:25



PART FLOOR PLAN
INDICATING OPENING UP WORKS TO B9
SCALE 1:100

AS BUILT

Rev	Date	Description	By	Chkd
B	24/02/09	AS BUILT ISSUE	PSS	PSS
A	20/03/08	ISSUED FOR COINSTRUCTION	SO	

Project
WITHINGTON GIRLS SCHOOL
6TH FORM BLOCK
MANCHESTER

Client
THOMAS WORTHINGTON DESIGN

Job No. Drawing No.	Revision	Scale 1:100 UNO @ A1
7362/F/001	B	Date NOVEMBER 2007
		By SCP
		Chkd PSS
		A1

Drawing Title
FOUNDATIONS
GENERAL ARRANGEMENT

147 London Road South,
Poynton, Cheshire. SK12 1LG.
Tel: 01625 876040
Fax: 01625 850104
email: mail@swf.uk.com
www.swf.uk.com
SWF CONSULTING
CONSULTING CIVIL & STRUCTURAL ENGINEERS

APPENDIX F

EXPLORATORY RECORDS

FOREWORD TO DYNAMIC SAMPLING

DYNAMIC SAMPLE BOREHOLE RECORDS

DYNAMIC PROBE RECORDS

HAMMER CALIBRATION CERTIFICATE

TRIAL PIT RECORDS

FOREWORD TO DYNAMIC SAMPLING, WINDOW SAMPLING AND DYNAMIC PROBING

Mini boreholes can be constructed by either window sampling or dynamic sampling, the relative merits depending on the requirements of the project, access arrangements and health and safety considerations.

Window sampling involves driving steel tubes into the ground under percussive action of a hand held jack-hammer and the tubes include long slots to enable description, testing and sampling of the soils recovered. Successive tubes reduce in diameter from 100mm to about 70mm. Whilst this technique has a role in restricted access areas, there are limitations of the equipment. The hand held jack-hammers can only be used for very short periods in accordance with health and safety guidance so there may only be limited penetration in hard strata. This method is also uncased so in loose granular soils, particularly with high groundwater, the hole side can collapse thereby limiting penetration.

Dynamic sampling involves the use of a tracked mini-rig with a percussive hammer driving steel tubes of gradually reducing diameter. The samples are recovered in plastic liners which are cut open to enable description, testing and sampling. The tracked mini-rig can enable casing to be installed for instance in loose granular soils with a high water table but this slows progress and may impact on the number of exploratory positions achievable in the allotted time.

Where a tracked mini-rig is deployed for dynamic sampling, this also allows Standard Penetration Testing (SPTs) in accordance with BS EN ISO 22476-3 : 2005. Tests are normally undertaken at 1m intervals prior to each drill run. The test length can be up to 450mm, so a substantial part of the upper half of each 1m run is disturbed by the test. In fine grained soils (clay and silt), this upper half of each run is not thereafter suitable for field testing by hand vane or hand penetrometer. The use of the SPT in fine grained soils has been questioned in the context of Eurocode 7, EN-1997 (2007) due to the uncertainties in the factors required to convert SPT 'N' values to undrained shear strength. In fine soils G7 Geotech Ltd tend to focus on direct measurement of strength by field tests including hand vane and hand penetrometer. SPTs are more appropriately used in granular soils (sand and gravel) thereby enabling estimations of relative density.

A tracked mini-rig also enables dynamic probing which involves driving steel rods and end cone into the ground under the action of a 63.5kg hammer falling through a mast height difference of 750mm. This is DPSH-B in accordance with BS EN ISO 22476-2 : 2005. The number of blows of the hammer are recorded for each 100mm penetration.

In difficult access areas where hand held window sampling has been used, dynamic probing can also be undertaken by portable electric rigs, or hand portable probes, but this normally involves a lighter hammer and amended drop height. The hammer and drop height are reported on the records.

Hand shear vane and hand penetrometers results are reported in kPa on the appended exploratory records.

Hand shear vane results are reported in kPa based on a direct reading from the test equipment.

Hand penetrometer results are measured in kg/cm^2 (7mm tip) or for soft / very soft soils kg converted to kg/cm^2 (10mm tip). The hand penetrometer measurements are reported in kPa on the basis of:

a) Assumption of undrained shear strength (Cu) = 0.50 x unconfined compressive strength (UCS)

b) In-house correction for the influence of plasticity

c) Site specific correlations with hand vane results

Readings from a Photoionization Detector (PID) are given in parts per million (ppm).

G7 Geotech Ltd
49, Church Rd
Leyland
Lancashire PR25 3AA

t : 01772 435206
m: 07752 197426
e : alan.w@g7geotech.co.uk
w : www.g7geotech.co.uk

G7 Geotech Ltd is Registered in England & Wales : Registration No: 9652069
Registered address : 107 – 109, Towngate, Leyland, Lancs PR25 2LQ
VAT Registration No : 217 5587 88

G7 Geotech

G7 Geotech Ltd
Church Rd
Leyland PR25 3AA

BOREHOLE RECORD

Borehole No.
BHA
Sheet 1 of 1

Project Name:	Proposed Dining Room Extension Withington Girls School	Job No 1226	Co-ords:	385082E - 393634N	Hole Type WLS
Location:	100, Wellington Road, Fallowfield, Manchester M14 6BL		Level:	35.50	Scale 1:25
Client:	Withington Girls School		Dates:	14/02/2020	Logged By AW

Drilling Progress by Time	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Well	Water Strikes
	Depth (m)	Type	Results						
14/02/20 0900hrs	0.15	ES		0.03	35.47		MADE GROUND : Dark grey fabric matting.		
				0.30	35.20		MADE GROUND : Dark grey gravelly clayey silt. Gravel comprises fine to coarse sandstone and tarmac fragments.		
	0.45 0.45	D	HVP=156	0.50	35.00		Dark grey silty CLAY with natural organic deposits. (Possible relict topsoil)		
	0.70 0.70	ES	HVP=100				Medium strength locally high strength dark orange brown and blue grey silty CLAY with ancient decaying rootlets. (Devensian Till)		
	0.90 0.90 1.00	D SPT	PP=95 N=9 (2,2/2,2,2,3)					1	
	1.20		PP=103	1.20	34.30		Medium strength locally high strength dark brown occasionally blue grey slightly gravelly silty CLAY. With ancient decaying rootlets seen to 1.90m depth BGL. (Devensian Till)		
	1.65 1.65 1.75	D	PP=71 HVP=49						
	2.00	SPT	N=28 (5,7/5,6,7,10)	1.90	33.60		Medium dense rapidly becoming dense then very dense, red silty fine to medium SAND, slightly cemented. Occasional very thin yellow brown cemented layers. (Highly weathered sandstone)	2	
	2.50	D							
	3.00	SPT	50 (25 for 30mm/50 for 65mm)					3	
	3.10	D		3.10	32.40		End of Borehole at 3.10m		
								4	
								5	

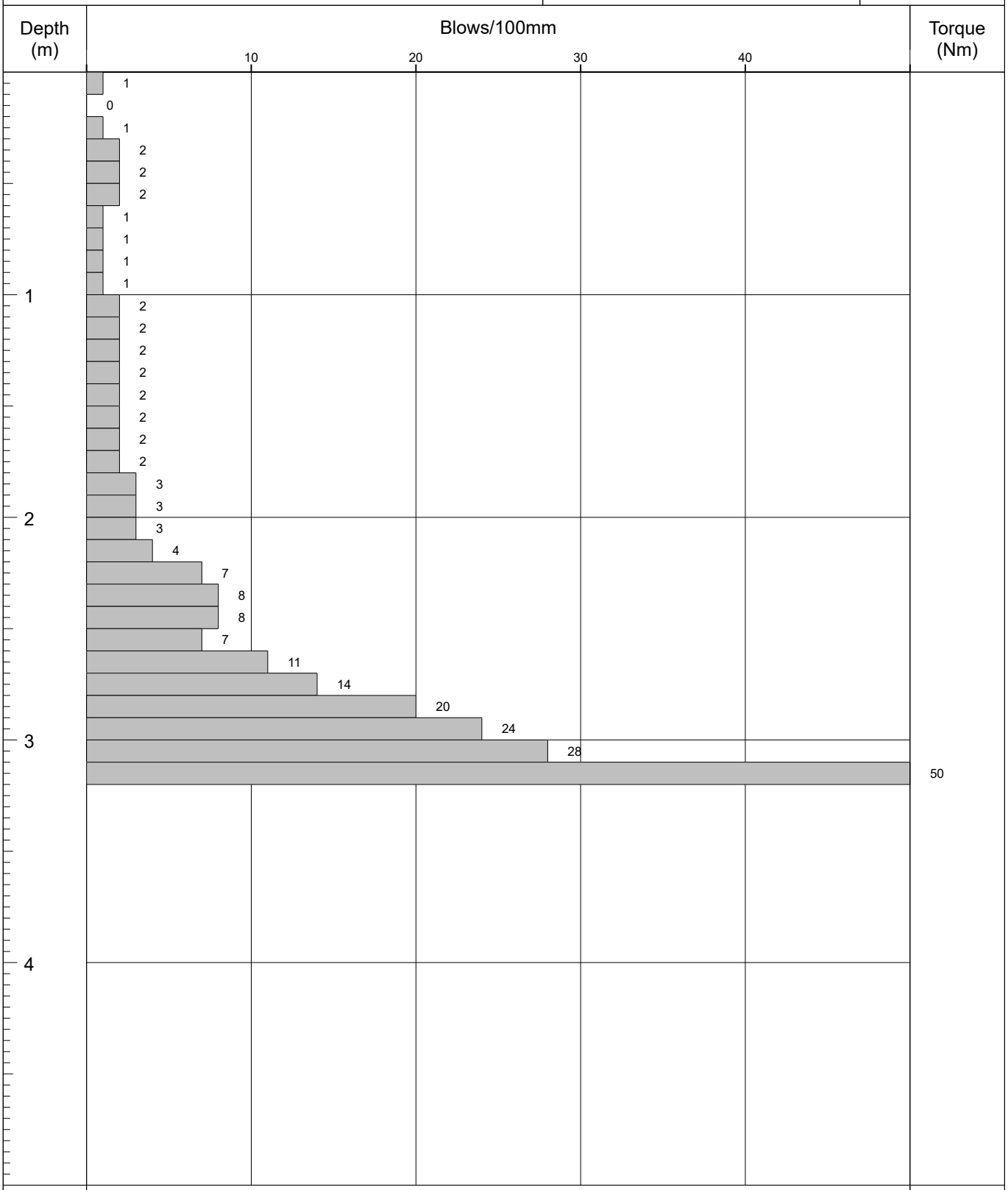
Remarks

Dynamic sample borehole by tracked mini-rig. Groundwater encountered at 0.60m depth BGL after first drill run. Very hard drilling below 2.60m depth BGL and sampler refused at 3.10m depth BGL. Standpipe installed, 50mm diameter slotted with gravel filter 1.00m to 3.00m depth and plain pipe with bentonite seal GL to 1.00m depth BGL, gas valve fitted and flush cover. Groundwater standing at 0.25m depth BGL on completion.

AGS

G7 Geotech	G7 Geotech Ltd Church Rd Leyland PR25 3AA	**DYNAMIC PROBE RECORD**	Probe No **DPA** Sheet 1 of 1

Project Name:	Proposed Dining Room Extension Withington Girls School	Job No 1226	Co-ords: 385082.00 - 393634.00	Hole Type DP
Location:	100, Wellington Road, Fallowfield, Manchester M14 6BL		Level: 35.50	Scale 1:25
Client:	Withington Girls School		Dates: 14/02/2020	Logged By HH



Remarks: DPA adjacent to BHA	Fall Height 750	Cone Base Diameter 50	AGS
	Hammer Wt 64	Final Depth 3.20	
	Probe Type DPSH- B		

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Church Rd
Leyland PR25 3AA

BOREHOLE RECORD

Borehole No.
BHB
Sheet 1 of 1

Project Name:	Proposed Dining Room Extension Withington Girls School	Job No 1226	Co-ords: 385088E - 393644N	Hole Type WLS
Location:	100, Wellington Road, Fallowfield, Manchester M14 6BL		Level: 35.65	Scale 1:25
Client:	Withington Girls School		Dates: 14/02/2020	Logged By AW

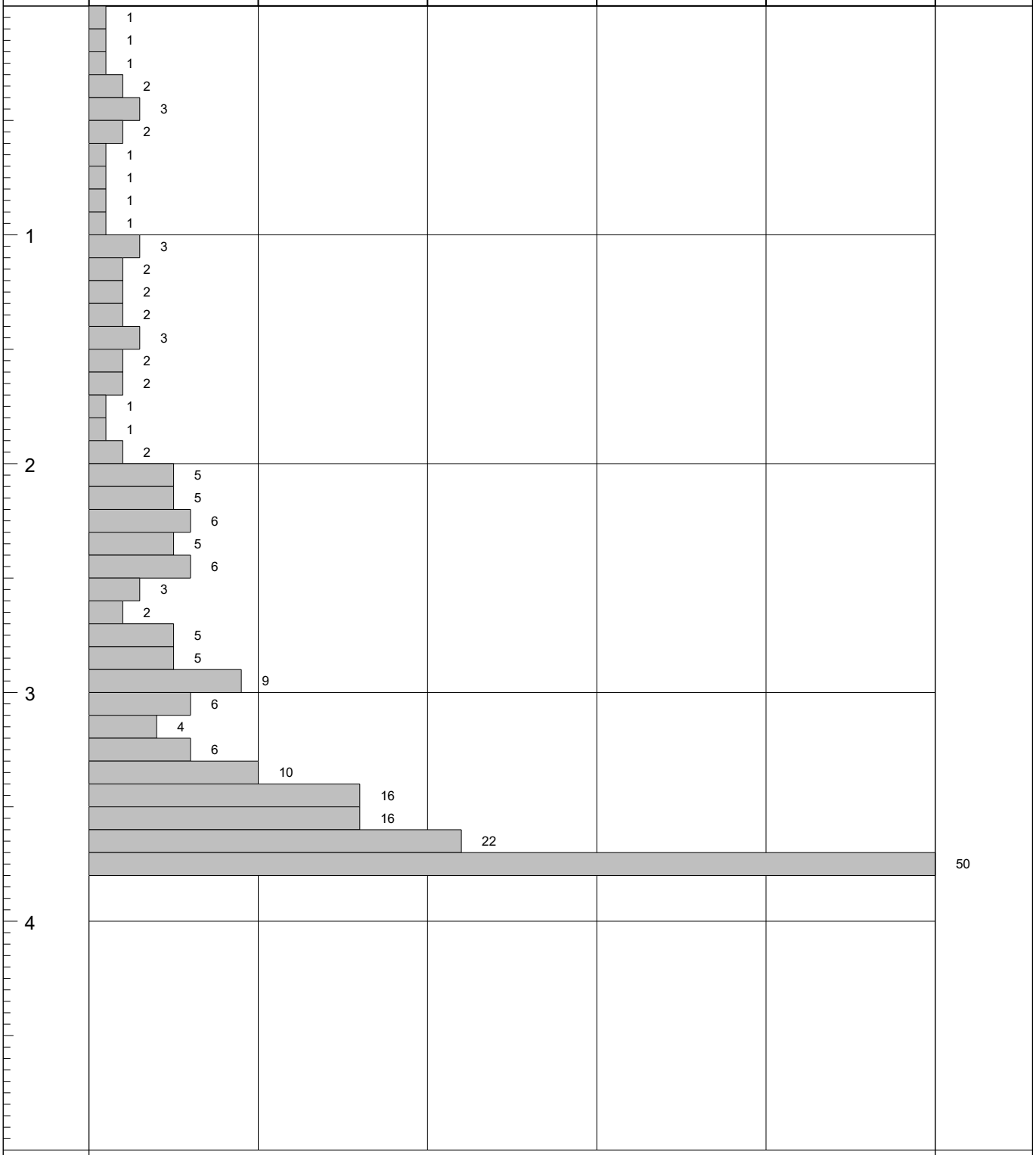
Drilling Progress by Time	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	Well	Water Strikes
	Depth (m)	Type	Results						
14/02/20 1100hrs				0.03	35.62		MADE GROUND : Dark grey fabric matting.		
				0.25	35.40		MADE GROUND : Dark grey gravelly clayey silt. Gravel comprises fine to coarse sandstone fragments.		
	0.35	ES					Dark grey silty CLAY with natural organic deposits. (Possible relict topsoil)		
	0.35		PP=154						
	0.40		HVP=104	0.50	35.15				
	0.65		PP=74				Medium strength locally high strength light orange brown, blue grey and red brown sandy silty CLAY with ancient decaying rootlets. (Devensian Till)		
	0.75	D							
	0.75		HVP=84						
	0.90		PP=70						
	1.00	SPT	N=10 (2,2/2,2,3,3)					1	
	1.20	D		1.20	34.45		Medium strength locally high strength dark brown occasionally blue grey slightly gravelly sandy silty CLAY. With ancient decaying rootlets seen to 2.30m depth BGL. (Devensian Till)		
	1.50		PP=76						
	1.65		HVP=80						
	1.80	D							
	1.80		PP=119						
	2.00	SPT	N=29 (4,4/5,7,8,9)					2	
	2.20	D							
	2.20		PP=169	2.30	33.35		Medium dense rapidly becoming dense then very dense, red silty fine to medium SAND, very slightly cemented. (Highly weathered sandstone)		
	2.50	D							
	3.00	D						3	
	3.00	SPT	50 (10,10/50 for 210mm)						
				3.40	32.25		End of Borehole at 3.40m		
								4	
								5	

Remarks

Dynamic sample borehole by tracked mini-rig. Groundwater not encountered. Very hard drilling below 3.30m depth BGL and sampler refused at 3.40m depth BGL. Borehole dipped 'dry' to 3.40m depth on completion. Borehole backfilled with arisings on completion.

AGS

G7 Geotech G7 Geotech Ltd Church Rd Leyland PR25 3AA	**DYNAMIC PROBE RECORD**		Probe No **DPB** Sheet 1 of 1
Project Name: Proposed Dining Room Extension Withington Girls School	Job No 1226	Co-ords: 385088.00 - 393644.00	Hole Type DP
Location: 100, Wellington Road, Fallowfield, Manchester M14 6BL		Level: 35.65	Scale 1:25
Client: Withington Girls School		Dates: 14/02/2020	Logged By HH



Remarks: DPB adjacent to BHB	Fall Height	750	Cone Base Diameter	50	AGS
	Hammer Wt	64	Final Depth	3.80	
	Probe Type	DPSH- B			

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref:	DART399
Test Date:	06/02/2020
Report Date:	07/02/2020
File Name:	DART399.spt
Test Operator:	JL

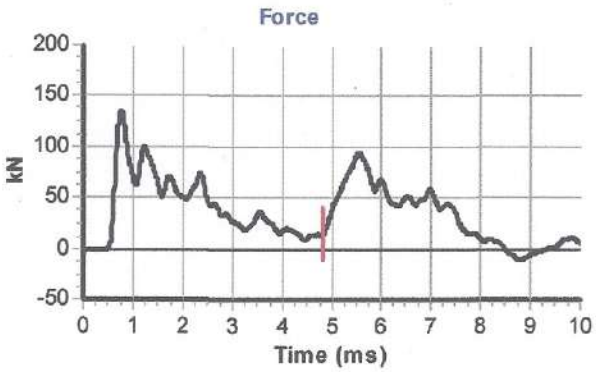
Instrumented Rod Data

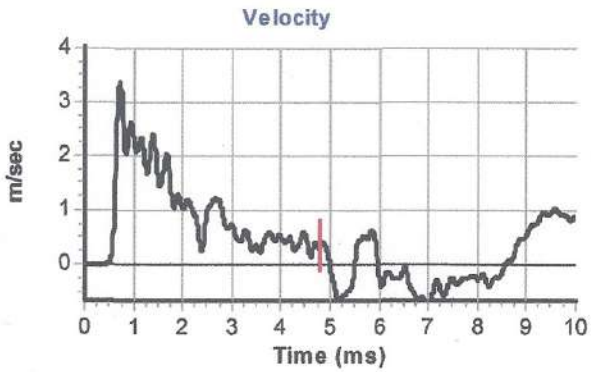
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.5
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	7080
Accelerometer No.2:	11609

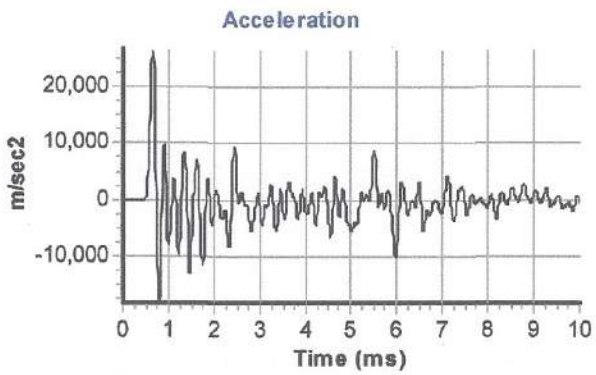
SPT Hammer Information

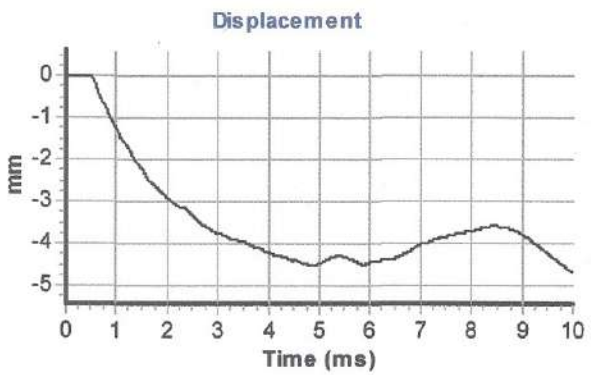
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	10.0

Comments / Location









Calculations

Area of Rod A (mm2):	970
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	298

Energy Ratio E_r (%): **63**

Signed: S. HOWARTH
Title: FITTER

The recommended calibration interval is 12 months

SPTMAN ver.1.93 All rights reserved, Testconsult ©2010

G7 Geotech

G7 Geotech Ltd
49, Church Rd
Leyland PR25 3AA

TRIAL PIT RECORD

Trial Pit No

TH1

Sheet 1 of 1

Project Name:	Proposed Dining Room Extension Withington Girls School	Job No 1226
Location:	100, Wellington Road, Fallowfield, Manchester M14 6BL	
Client:	Withington Girls School	

Trial Pit TH1 excavated by hand tools on 13/02/20

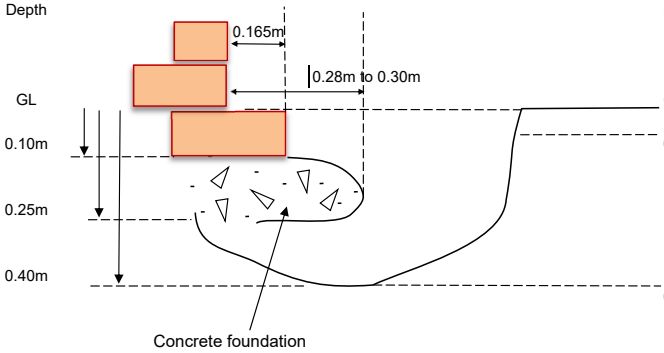
Trial pit located on NW wall of dining room below window between columns

Groundwater not encountered

Trial Pit backfilled with arisings on completion

Trial Pit Section

North west wall of dining room



Strata Descriptions

Depth	
GL	Concrete paving slabs over weak grey cemented gravelly sand
0.07m	MADE GROUND : Grey and brown slity sand, gravel and cobbles of brick, concrete, breeze block, sandstone and black tile fragments.
0.40m	end of trial pit

Samples

Depth	Type
0.25m	D

Brickwork wall constructed off concrete foundation resting at 0.25m depth BGL
Total step out of foundation is 0.28m to 0.30m

Photographs



Trial Pit TH1 arisings



Trial Pit TH1

Concrete foundation steps out 0.28m to 0.30m directly below single layer of brick.
Probed under but found no lower brickwork.

G7 Geotech

G7 Geotech Ltd
49, Church Rd
Leyland PR25 3AA

TRIAL PIT RECORD

Trial Pit No

TH2

Sheet 1 of 1

Project Name:	Proposed Dining Room Extension Withington Girls School	Job No 1226
Location:	100, Wellington Road, Fallowfield, Manchester M14 6BL	
Client:	Withington Girls School	

Trial Pit TH1 excavated by hand tools on 13/02/20

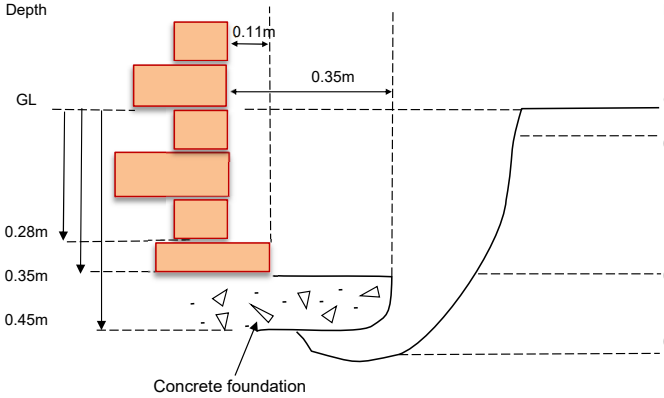
Trial pit located on NW wall of dining room below column between windows

Minor groundwater seepage at 0.45m depth BGL

Trial Pit backfilled with arisings on completion

Trial Pit Section

North west wall of dining room



Strata Descriptions

Depth	
GL	Concrete paving slabs over weak grey cemented gravelly sand
0.07m	MADE GROUND : Grey and brown slity sand, gravel and cobbles of brick, concrete, breeze block, sandstone and occasional plastic, wood and black tile fragments.
0.35m	Medium strength dark grey very silty CLAY with occasional natural organic deposits.
0.52m	end of trial pit

Samples & Tests

Depth	Type	Result
0.20m	ES	
0.45m	HV	60kPa
0.45m	D	

Brickwork wall constructed off concrete foundation resting at 0.45m depth BGL
Total step out of foundation is 0.35m
Trial pit extended sideways and concrete extends >0.40m from column

Photographs



Trial Pit TH2 arisings



Trial Pit TH2

Concrete foundation steps out 0.35m and founded at 0.45m depth BGL.

G7 Geotech

G7 Geotech Ltd
49, Church Rd
Leyland PR25 3AA

TRIAL PIT RECORD

Trial Pit No

TH3

Sheet 1 of 1

Project Name:	Proposed Dining Room Extension Withington Girls School	Job No 1226
Location:	100, Wellington Road, Fallowfield, Manchester M14 6BL	
Client:	Withington Girls School	

Trial Pit TH1 excavated by hand tools on 13/02/20

Trial pit located on W corner of staff dining room below corner column

Groundwater standing at 0.70m depth
Trial pit sides falling in, preventing further progress
Founding depth not proven
Trial Pit backfilled with arisings on completion

Trial Pit Section

West corner of staff dining room



Strata Descriptions

Depth	
GL	
	Concrete paving slabs over weak grey cemented gravelly sand
0.07m	
	MADE GROUND : Grey and brown slity sand, gravel and cobbles of brick, concrete, breeze block, sandstone and occasional pink polystyrene, plastic and black tile fragments.

Samples

Depth	Type
0.40m	D

Brickwork wall constructed off concrete foundation. Founding depth not proven due to groundwater preventing further progress.
Total step out of foundation is 0.28m
Trial pit extended sideways but drain surround preevnting exposure of western corner of footing.

Photographs



Trial Pit TH3 arisings



Trial Pit TH3 on west corner of staff dining room.

Foundation exposure obscured by standing groundwater.
Founding depth not proven

APPENDIX G

LABORATORY TEST RESULTS

JAMES FISHER TESTING SERVICES REPORT 14276/21: 11 / 03 / 2020

DETS REPORT 20-02059 : 25 / 02 / 2020

James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Withington Girls School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	28/02/2020
		Date Reported:	11/03/2020
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Sampled By:	Alan Watson	***Sample Type:***	Small Disturbed
Sampling Cert.:	Yes	***Location:***	BHA 0.45
Date Sampled:	13-14/02/2020		
Supplier/Source:	Site		
Material Type:	Stiff Greyish Brown Sandy CLAY		
Moisture Content (%):	20		

Tested in accordance with BS 1377: Part 2: 1990
Sample preperation by cone and quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

UKAS TESTING 0955

James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Withington Girls School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	28/02/2020
		Date Reported:	11/03/2020
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Sampled By:	Alan Watson	***Sample Type:***	Small Disturbed
Sampling Cert.:	Yes	***Location:***	BHA 0.90
Date Sampled:	13-14/02/2020		
Supplier/Source:	Site		
Material Type:	Stiff Light Brown Grey Fissured Sl.Sandy CLAY		
Moisture Content (%):	21		

Tested in accordance with BS 1377: Part 2: 1990
Sample preperation by cone and quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

UKAS TESTING 0955

James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Withington Girls School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	28/02/2020
		Date Reported:	11/03/2020
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Sampled By:	Alan Watson	***Sample Type:***	Small Disturbed
Sampling Cert.:	Yes	***Location:***	BHA 1.65
Date Sampled:	13-14/02/2020		
Supplier/Source:	Site		
Material Type:	Soft-Firm Brown CLAY		
Moisture Content (%):	19		

Tested in accordance with BS 1377: Part 2: 1990
Sample preperation by cone and quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

UKAS TESTING 0955

James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Withington Girls School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	28/02/2020
		Date Reported:	11/03/2020
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Sampled By:	Alan Watson	***Sample Type:***	Small Disturbed
Sampling Cert.:	Yes	***Location:***	BHB 0.75
Date Sampled:	13-14/02/2020		
Supplier/Source:	Site		
Material Type:	Firm-Stff Light Brown Mottled Grey Fissured CLAY		
Moisture Content (%):	24		

Tested in accordance with BS 1377: Part 2: 1990
Sample preperation by cone and quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

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James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Withington Girls School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	28/02/2020
		Date Reported:	11/03/2020
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Sampled By:	Alan Watson	***Sample Type:***	Small Disturbed
Sampling Cert.:	Yes	***Location:***	BHB 1.20
Date Sampled:	13-14/02/2020		
Supplier/Source:	Site		
Material Type:	Firm-Stff Light Brown Grey Veined Sl.Sandy CLAY		
Moisture Content (%):	18		

Tested in accordance with BS 1377: Part 2: 1990
Sample preperation by cone and quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

UKAS TESTING 0955

James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Withington Girls School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	28/02/2020
		Date Reported:	11/03/2020
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Sampled By:	Alan Watson	***Sample Type:***	Small Disturbed
Sampling Cert.:	Yes	***Location:***	BHB 1.80
Date Sampled:	13-14/02/2020		
Supplier/Source:	Site		
Material Type:	Stiff Brown Sl.Grey Veined CLAY		
Moisture Content (%):	21		

Tested in accordance with BS 1377: Part 2: 1990
Sample preperation by cone and quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

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James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Withington Girls School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	28/02/2020
		Date Reported:	11/03/2020
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Sampled By:	Alan Watson	***Sample Type:***	Small Disturbed
Sampling Cert.:	Yes	***Location:***	BHB 2.20
Date Sampled:	13-14/02/2020		
Supplier/Source:	Site		
Material Type:	Stiff Brown CLAY		
Moisture Content (%):	13		

Tested in accordance with BS 1377: Part 2: 1990
Sample preperation by cone and quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

UKAS TESTING 0955

James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT

MOISTURE CONTENT BS 1377 : Part 2 : 1990 Oven Drying Method cl 3.2

Site:	Withington Girls School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	28/02/2020
		Date Reported:	11/03/2020
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Sampled By:	Alan Watson	***Sample Type:***	Small Disturbed
Sampling Cert.:	Yes	***Location:***	TH2 0.45
Date Sampled:	13-14/02/2020		
Supplier/Source:	Site		
Material Type:	Stiif Brown CLAY		
Moisture Content (%):	18		

Tested in accordance with BS 1377: Part 2: 1990
Sample preperation by cone and quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

UKAS TESTING 0955

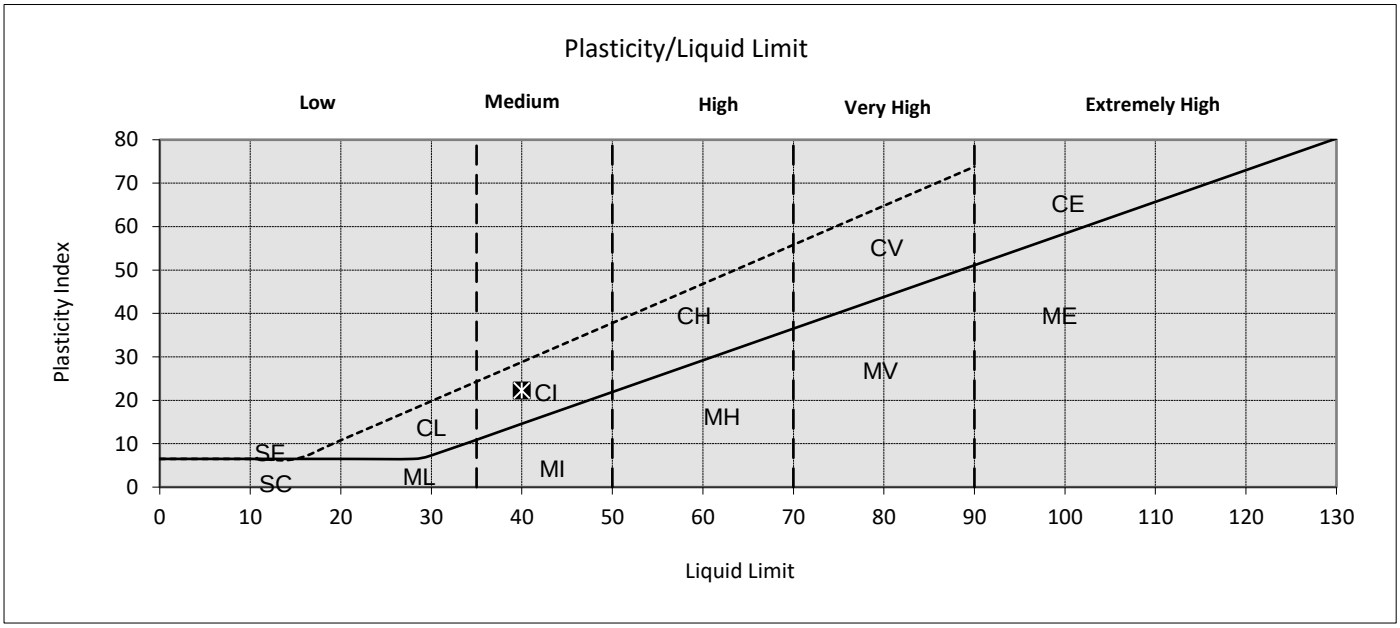
James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS BS 1377: Part 2: 1990 Cl 4.4,5.3

Site Ref.:	Withington Grils School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Sample Ref.:**	BHA 0.90
		Date Received:	14/02/2020
		Date Tested:	05/03/2020
Originator:	**Alan Watson**	**Date Reported:**	11/03/2020

Sampling Certificate	**Yes**
Sampled By	**Alan Watson**
Sample Type	**Small Disturbed**
Sample Preparation Method	**As Received**
MATERIAL	**Stiff Light Brown Grey Fissured Sl.Sandy CLAY**
Retained 425 micron (%)	**1.2**
Natural Moisture Content (%)	**22**
Liquid Limit (single point)(%)	**40**
Plastic Limit (%)	**17**
Plasticity Index	**22**



K.Monks

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James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

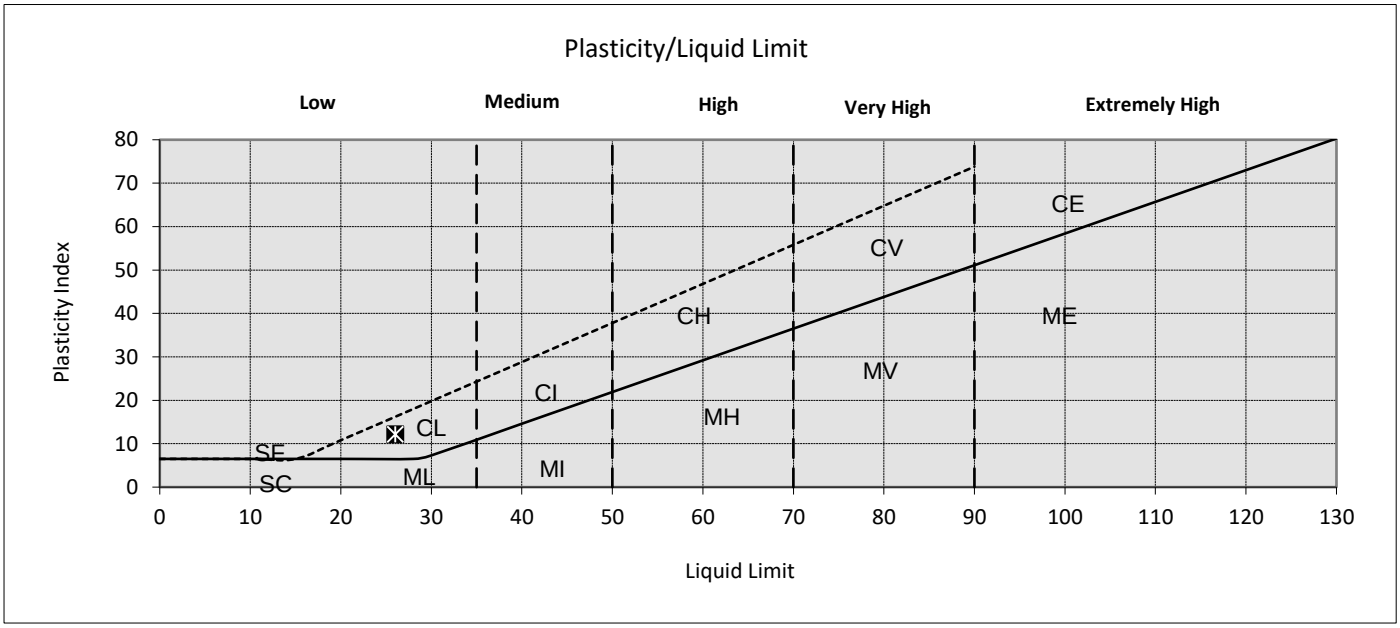
James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS BS 1377: Part 2: 1990 Cl 4.4,5.3

Site Ref.:	Withington Grils School	**Job No.:**	14276
		Lab Ref No.:	14276/21
Client:	G7 Geotech Ltd	**Sample Ref.:**	BHB 2.20
		Date Received:	14/02/2020
		Date Tested:	05/03/2020
Originator:	**Alan Watson**	**Date Reported:**	11/03/2020

Sampling Certificate	**Yes**
Sampled By	**Alan Watson**
Sample Type	**Small Disturbed**
Sample Preparation Method	**As Received**
MATERIAL	**Stiff Brown Sl.Sandy Sl.Gravelley CLAY**
Retained 425 micron (%)	**7.6**
Natural Moisture Content (%)	**12**
Liquid Limit (single point)(%)	**26**
Plastic Limit (%)	**13**
Plasticity Index	**12**



K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

James Fisher Testing Services Limited, a company registered in England and Wales with registration number: 01182561

Registered office: Fisher House, PO Box 4, Barrow-in-Furness, Cumbria, LA14 1HR

James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION - BS 1377: Part 2: 1990 - WET SIEVING

Project:	Withington Girls School	**Lab Ref No.:**	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	05/03/2020
		Date Reported:	11/03/2020
		Material:	Red Sand
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Client Sample Ref : BHA 2.50

Supplier: N/A

Location: BHA 2.50

Ticket No.: N/A

Date Sampled : 13-14/02/2020

Sample Type: Disturbed

Sampled By: Alan Watson

Sampling Cert.: Yes

Sample Preparation Method: Oven dried

Specification: SHW Series 600: Table 6/2

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
125mm	100	
90mm	100	
75mm	100	
37.5mm	100	
28mm	100	
20mm	100	
14mm	100	
10mm	100	
6.3mm	99	
5.0mm	99	
3.35mm	99	
2.0mm	99	
1.18mm	99	
600micron	98	
425micron	97	
300micron	91	
150micron	32	
63micron	14	

Particle Size Distribution tested in accordance with BS1377: Part 2: 1990

Sample preperation by Cone and Quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

James Fisher Testing Services Limited, a company registered in England and Wales with registration number: 01182561
Registered office: Fisher House, PO Box 4, Barrow-in-Furness, Cumbria, LA14 1HR

James Fisher Testing Services Ltd
Ruby House, 40A Hardwick Grange
Warrington, WA1 4RF
Tel: 01925286880

James Fisher Testing Services

LABORATORY TEST REPORT
PARTICLE SIZE DISTRIBUTION - BS 1377: Part 2: 1990 - WET SIEVING

Project:	Withington Girls School	**Lab Ref No.:**	14276/21
Client:	G7 Geotech Ltd	**Date Received:**	14/02/2020
		Date Tested:	05/03/2020
		Date Reported:	11/03/2020
		Material:	Red Sand and Weathered Sandstone
Originator:	**Alan Watson**	**Specification:**	SHW Series 600: Table 6/2

Client Sample Ref : BHB 2.50

Supplier: N/A

Location: BHB 2.50

Ticket No.: N/A

Date Sampled : 13-14/02/2020

Sample Type: Disturbed

Sampled By: Alan Watson

Sampling Cert.: Yes

Sample Preparation Method: Oven dried

Specification: SHW Series 600: Table 6/2

SIEVE ANALYSIS		
Sieve size	% Passing	Specification
125mm	100	
90mm	100	
75mm	100	
37.5mm	100	
28mm	100	
20mm	100	
14mm	100	
10mm	100	
6.3mm	100	
5.0mm	100	
3.35mm	100	
2.0mm	100	
1.18mm	100	
600micron	98	
425micron	97	
300micron	93	
150micron	36	
63micron	14	

Particle Size Distribution tested in accordance with BS1377: Part 2: 1990

Sample preperation by Cone and Quarter

K.Monks

Approved Signature
James Fisher Testing Services Ltd
Karl Monks, Lab Team Leader

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Registered office: Fisher House, PO Box 4, Barrow-in-Furness, Cumbria, LA14 1HR

UKAS TEST NO 0955

Karl Monks
James Fisher Testing Services
Ruby House
40A Hardwick Grange
Warrington
Cheshire
WA1 4RF

e: K.monks@james-fisher.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 20-89253

Project / Site name:	G7	**Samples received on:**	26/02/2020
Your job number:	WITHINGTON	**Samples instructed on:**	26/02/2020
Your order number:	11765	**Analysis completed by:**	06/03/2020
Report Issue Number:	1	**Report issued on:**	06/03/2020
Samples Analysed:	6 soil samples		

Signed:

Will Fardon

Technical Reviewer (CS Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 20-89253

Project / Site name: G7

Your Order No: 11765

Lab Sample Number				1454717	1454718	1454719	1454720	1454721
Sample Reference				14276/21 BHA	14276/21 BHA	14276/21 BHB	14276/21 BHB	14276/21 TH2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.45	1.65	1.80	3.00	0.45
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	25	35	24	15	33
Moisture Content	%	N/A	NONE	16	14	15	15	18
Total mass of sample received	kg	0.001	NONE	0.45	0.33	0.59	0.50	0.51
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.7	8.0	7.2	8.2	-
Total Sulphate as SO_4	mg/kg	50	MCERTS	390	210	220	130	-
Total Sulphate as SO_4	%	0.005	MCERTS	0.039	0.021	0.022	0.013	-
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	85	82	75	47	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.043	0.041	0.038	0.023	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	42.7	40.9	37.7	23.3	-
Water Soluble Sulphur	%	0.0001	NONE	0.0029	0.0027	0.0025	0.0016	-
Total Potential Sulphate	mg/kg	30	NONE	680	250	230	200	-
Oxidisable Sulphide (as SO_4)	%	0.002	NONE	0.029	0.004	< 0.002	0.007	-
Oxidisable Sulphide (as SO_4)	mg/kg	20	NONE	290	38	< 20	72	-
Total Sulphur	mg/kg	50	MCERTS	230	84	78	68	-
Organic Matter	%	0.1	MCERTS	2.7	1.0	0.9	< 0.1	2.6

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Analytical Report Number: 20-89253

Project / Site name: G7

Your Order No: 11765

Lab Sample Number				1454722				
Sample Reference				14276/21 TH3				
Sample Number				None Supplied				
Depth (m)				0.40				
Date Sampled				Deviating				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	81				
Moisture Content	%	N/A	NONE	6.3				
Total mass of sample received	kg	0.001	NONE	0.73				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.9				
Total Sulphate as SO_4	mg/kg	50	MCERTS	450				
Total Sulphate as SO_4	%	0.005	MCERTS	0.045				
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	150				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.077				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	76.8				
Water Soluble Sulphur	%	0.0001	NONE	0.0051				
Total Potential Sulphate	mg/kg	30	NONE	420				
Oxidisable Sulphide (as SO_4)	%	0.002	NONE	< 0.002				
Oxidisable Sulphide (as SO_4)	mg/kg	20	NONE	< 20				
Total Sulphur	mg/kg	50	MCERTS	140				
Organic Matter	%	0.1	MCERTS	0.3				

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Analytical Report Number : 20-89253

Project / Site name: G7

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1454717	14276/21 BHA	None Supplied	0.45	Brown clay and sand with gravel and vegetation.
1454718	14276/21 BHA	None Supplied	1.65	Brown clay and sand with gravel.
1454719	14276/21 BHB	None Supplied	1.80	Brown clay and sand with gravel.
1454720	14276/21 BHB	None Supplied	3.00	Brown loam and clay with gravel.
1454721	14276/21 TH2	None Supplied	0.45	Brown loam and clay with gravel.
1454722	14276/21 TH3	None Supplied	0.40	Brown sandy gravel.

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Analytical Report Number : 20-89253

Project / Site name: G7

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Oxidisable Sulphide in soil	Determination of oxidisable sulphide in soil by calculation from total sulphur and total sulphate.	In-house method based on TRL 447		D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total potential sulphate in soil	Determination of total potential sulphate in soil by calculation from total sulphur.	By calculation - In-house method based on TRL 447 report.	L038-PL	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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The results included within the report are representative of the samples submitted for analysis.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
14276/21 BHA		S	20-89253	1454717	a			
14276/21 BHA		S	20-89253	1454718	a			
14276/21 BHB		S	20-89253	1454719	a			
14276/21 BHB		S	20-89253	1454720	a			
14276/21 TH2		S	20-89253	1454721	a			
14276/21 TH3		S	20-89253	1454722	a			

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

FOREWORD TO LABORATORY CONTAMINATION TESTING

The following statements are designed to inform and guide the Client and other potential parties intending to rely upon this report, with the express intent of protecting them from misunderstanding as to the extent and thus the potential associated risks that may result from proceeding without further evaluations or guidance.

1 Unless otherwise stated in this report, the testing of soils and waters is based on a range of commonly occurring potential contaminants for the specific purpose of providing a general guidance evaluation for the proposed form of development. Thus, the range of potential contaminants is not intended to be exhaustive. Unless specifically stated in our report, the range of potential contaminants is not specifically targeted to any previous known uses or influences upon the site.

2 The amount and scope of the testing should not be assumed to be exhaustive but has been selected, at this stage, to provide a reasonable, general view of the site ground conditions. In many cases this situation is quite sufficient for the site to be characterised for the purposes of development and related Health and Safety matters for persons involved in or directly affected by the site development works. It must be understood, however, that in certain circumstances aspects or areas of the site may require further investigation and testing in order to fully clarify and characterise contamination issues, both for regulatory compliance and for commercial reasons.

3 The scope of the contamination testing must not automatically be regarded as being sufficient to fully formulate a remediation scheme. For such a scheme it may be necessary to consider further testing to fully define the extent of remediation. Verification / validation sampling and testing of the effectiveness of the remedial work may also be required after the site has been treated.

4 The scope of the environmental investigation and contamination testing must not be automatically regarded as sufficient to satisfy the requirements in the wider environmental setting. The risks to adjacent properties and to the water environment are assessed by the regulatory authorities and there may be a requirement to carry out further exploration, testing and, possibly monitoring in the short or long term. It is not possible to sensibly predict the nature and extent of such additional requirements as these are the direct result of submissions to and liaison with the regulatory authorities. It is imperative, therefore, that such submissions and contacts are made as soon as possible, especially if there are perceived to be critical features of the site and proposed scheme, in this context.

5 Testing criteria have been implemented by the Environment Agency to enable a waste disposal classification to be made. This Waste Acceptance Criteria (WAC) testing will be used by the waste regulatory authorities, including waste disposal sites, to designate soils for disposal in landfill sites. In certain circumstances, to satisfy the waste regulations, there may be the necessity to carry out additional testing to clarify and confirm the nature of any contamination that may be present. If commercial requirements are significant then this process may also necessitate further field operations to clarify the extent of certain features. Thus, the waste classification must be obtained from the waste regulation authorities or a licensed waste disposal site and we strongly recommend that this classification is obtained as soon as possible and certainly prior to establishing any costings or procedures for this or related aspects of the scheme.

6 Where our report states that soil or groundwater samples have been tested on an ‘as received basis’, this means that we have not undertaken our own soil or groundwater sampling on site. In this case the results of laboratory analyses shall give an indication of the concentrations of potential contaminants within the soil or groundwater sample as received. This may or may not be indicative of conditions within the wider site or between sampling positions.

G7 Geotech Ltd
49, Church Rd
Leyland
Lancashire PR25 3AA

t : 01772 435206
m: 07752 197426
e : alan.w@g7geotech.co.uk
w : www.g7geotech.co.uk

G7 Geotech Ltd is Registered in England & Wales : Registration No: 9652069
Registered address : 107 – 109, Towngate, Leyland, Lancs PR25 2LQ
VAT Registration No : 217 5587 88

Alan Watson
G7 Geotech Limited
49 Church Road
Leyland
Lancashire
PR25 3AA

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

DETS Report No: 20-02059

Site Reference:	Withington Girl's School
Project / Job Ref:	1226
Order No:	1226 / AW
Sample Receipt Date:	18/02/2020
Sample Scheduled Date:	18/02/2020
Report Issue Number:	1
Reporting Date:	25/02/2020

Authorised by:



Dave Ashworth
Technical Manager

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.

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

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Soil Analysis Certificate						
DETS Report No: 20-02059	**Date Sampled**	14/02/20	14/02/20			
G7 Geotech Limited	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Withington Girl's School	**TP / BH No**	BHA	BHB			
Project / Job Ref: 1226	**Additional Refs**	None Supplied	None Supplied			
Order No: 1226 / AW	**Depth (m)**	0.15	0.35			
Reporting Date: 25/02/2020	**DETS Sample No**	463421	463423			

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected			
pH	pH Units	N/a	**MCERTS**	8.3	6.6			
Electrical Conductivity	uS/cm	< 5	NONE	133	174			
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2			
Total Sulphate as SO_4	mg/kg	< 200	NONE	842	257			
Total Sulphate as SO_4	%	< 0.02	NONE	0.08	0.03			
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	90	17			
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.09	0.02			
Total Sulphur	%	< 0.02	NONE	0.04	0.02			
Organic Matter	%	< 0.1	**MCERTS**	1.9	1.9			
Total Organic Carbon (TOC)	%	< 0.1	**MCERTS**	1.1	1.1			
Arsenic (As)	mg/kg	< 2	**MCERTS**	8	5			
W/S Boron	mg/kg	< 1	NONE	< 1	< 1			
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	0.3	< 0.2			
Chromium (Cr)	mg/kg	< 2	**MCERTS**	12	13			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2			
Copper (Cu)	mg/kg	< 4	**MCERTS**	31	12			
Lead (Pb)	mg/kg	< 3	**MCERTS**	109	24			
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	**MCERTS**	11	11			
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3			
Zinc (Zn)	mg/kg	< 3	**MCERTS**	91	79			
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2			
EPH (C10 - C40)	mg/kg	< 6	**MCERTS**	151	16			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
Subcontracted analysis (S)

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

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 20-02059	**Date Sampled**	14/02/20	14/02/20			
G7 Geotech Limited	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Withington Girl's School	**TP / BH No**	BHA	BHB			
Project / Job Ref: 1226	**Additional Refs**	None Supplied	None Supplied			
Order No: 1226 / AW	**Depth (m)**	0.15	0.35			
Reporting Date: 25/02/2020	**DETS Sample No**	463421	463423			

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	0.27	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	0.19	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	0.45	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	0.47	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	4.14	0.84			
Anthracene	mg/kg	< 0.1	MCERTS	0.97	0.32			
Fluoranthene	mg/kg	< 0.1	MCERTS	5.82	1.31			
Pyrene	mg/kg	< 0.1	MCERTS	5.11	1.38			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	2.60	1.06			
Chrysene	mg/kg	< 0.1	MCERTS	2.43	0.57			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.99	0.50			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.73	0.36			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	1.57	0.27			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.93	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.17	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.86	0.19			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	28.7	6.8			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{0}C

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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

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Soil Analysis Certificate - TPH LQM Banded						
DETS Report No: 20-02059	**Date Sampled**	14/02/20	14/02/20			
G7 Geotech Limited	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Withington Girl's School	**TP / BH No**	BHA	BHB			
Project / Job Ref: 1226	**Additional Refs**	None Supplied	None Supplied			
Order No: 1226 / AW	**Depth (m)**	0.15	0.35			
Reporting Date: 25/02/2020	**DETS Sample No**	463421	463423			

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2			
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	< 3	< 3			
Aliphatic >C16 - C35	mg/kg	< 10	MCERTS	< 10	< 10			
Aliphatic >C35 - C44	mg/kg	< 10	NONE	< 10	< 10			
Aliphatic (C5 - C44)	mg/kg	< 30	NONE	< 30	< 30			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	< 2			
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	5	< 2			
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	34	< 3			
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	39	< 10			
Aromatic >C35 - C44	mg/kg	< 10	NONE	< 10	< 10			
Aromatic (>C5 - C44)	mg/kg	< 30	NONE	78	< 30			
Total >C5 - C44	mg/kg	< 60	NONE	78	< 60			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 20-02059	**Date Sampled**	14/02/20	14/02/20			
G7 Geotech Limited	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Withington Girl's School	**TP / BH No**	BHA	BHB			
Project / Job Ref: 1226	**Additional Refs**	None Supplied	None Supplied			
Order No: 1226 / AW	**Depth (m)**	0.15	0.35			
Reporting Date: 25/02/2020	**DETS Sample No**	463421	463423			

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

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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

4480

Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

DETS Report No: 20-02059	**Date Sampled**	13/02/20	
G7 Geotech Limited	**Time Sampled**	None Supplied	
Site Reference: Withington Girl's School	**TP / BH No**	TH2	
Project / Job Ref: 1226	**Additional Refs**	None Supplied	
Order No: 1226 / AW	**Depth (m)**	0.20	
Reporting Date: 25/02/2020	**DETS Sample No**	463420	

Determinand	**Unit**	**MDL**		**Landfill Waste Acceptance Criteria Limits**		
				Inert Waste Landfill	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
TOC[MU]	%	< 0.1	0.2	3%	5%	6%
Loss on Ignition	%	< 0.01	1	--	--	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	< 10	500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7	100	--	--
pH[MU]	pH Units	N/a	9.9	--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	3.3	--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 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]	< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]	< 0.02	< 0.02		0.2	20	100	300
Cadmium[U]	< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]	0.061	0.012		< 0.20	0.5	10	70
Copper[U]	0.01	0.02		< 0.5	2	50	100
Mercury[U]	< 0.0005	< 0.0005		< 0.005	0.01	0.2	2
Molybdenum[U]	0.011	0.002		< 0.1	0.5	10	30
Nickel[U]	< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]	< 0.005	0.010		< 0.2	0.5	10	50
Antimony[U]	< 0.005	< 0.005		< 0.05	0.06	0.7	5
Selenium[U]	< 0.005	< 0.005		< 0.05	0.1	0.5	7
Zinc[U]	< 0.005	0.007		< 0.2	4	50	200
Chloride[U]	4	1		15	800	15000	25000
Fluoride[U]	< 0.5	< 0.5		< 1	10	150	500
Sulphate[U]	35	13		157	1000	20000	50000
TDS	122	73		798	4000	60000	100000
Phenol Index	< 0.01	< 0.01		< 0.5	1	-	-
DOC	4.3	11.7		107	500	800	1000
Leach Test Information							
Sample Mass (kg)	0.19						
Dry Matter (%)	92.9						
Moisture (%)	7.6						
Stage 1							
Volume Eluate L2 (litres)	0.34						
Filtered Eluate VE1 (litres)	0.24						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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

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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

DETS Report No: 20-02059	**Date Sampled**	14/02/20	
G7 Geotech Limited	**Time Sampled**	None Supplied	
Site Reference: Withington Girl's School	**TP / BH No**	BHA	
Project / Job Ref: 1226	**Additional Refs**	None Supplied	
Order No: 1226 / AW	**Depth (m)**	0.70	
Reporting Date: 25/02/2020	**DETS Sample No**	463422	

Determinand	**Unit**	**MDL**		**Landfill Waste Acceptance Criteria Limits**		
				Inert Waste Landfill	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
TOC[MU]	%	< 0.1	0.4	3%	5%	6%
Loss on Ignition	%	< 0.01	2.20	--	--	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	< 10	500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7	100	--	--
pH[MU]	pH Units	N/a	6.3	--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1	--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 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]	< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]	< 0.02	< 0.02		< 0.1	20	100	300
Cadmium[U]	< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]	< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]	< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]	< 0.0005	< 0.0005		< 0.005	0.01	0.2	2
Molybdenum[U]	< 0.001	0.001		< 0.1	0.5	10	30
Nickel[U]	< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]	< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]	< 0.005	< 0.005		< 0.05	0.06	0.7	5
Selenium[U]	< 0.005	< 0.005		< 0.05	0.1	0.5	7
Zinc[U]	0.056	0.007		< 0.2	4	50	200
Chloride[U]	4	2		18	800	15000	25000
Fluoride[U]	< 0.5	< 0.5		< 1	10	150	500
Sulphate[U]	14	4		48	1000	20000	50000
TDS	51	31		324	4000	60000	100000
Phenol Index	< 0.01	< 0.01		< 0.5	1	-	-
DOC	8.2	14.5		140	500	800	1000
Leach Test Information							
Sample Mass (kg)	0.21						
Dry Matter (%)	83						
Moisture (%)	20.6						
Stage 1							
Volume Eluate L2 (litres)	0.31						
Filtered Eluate VE1 (litres)	0.12						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

DETS Report No: 20-02059	**Date Sampled**	14/02/20	
G7 Geotech Limited	**Time Sampled**	None Supplied	
Site Reference: Withington Girl's School	**TP / BH No**	BHB	
Project / Job Ref: 1226	**Additional Refs**	None Supplied	
Order No: 1226 / AW	**Depth (m)**	0.35	
Reporting Date: 25/02/2020	**DETS Sample No**	463424	

Determinand	**Unit**	**MDL**		**Landfill Waste Acceptance Criteria Limits**		
				Inert Waste Landfill	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
TOC[MU]	%	< 0.1	1.7	3%	5%	6%
Loss on Ignition	%	< 0.01	6.60	--	--	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	< 10	500	--	--
Total PAH[MU]	mg/kg	< 1.7	14.3	100	--	--
pH[MU]	pH Units	N/a	7.0	--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1	--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 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]	< 0.01	< 0.01	< 0.2	0.5	2	25
Barium[U]	0.07	0.03	0.3	20	100	300
Cadmium[U]	< 0.0005	< 0.0005	< 0.02	0.04	1	5
Chromium[U]	< 0.005	< 0.005	< 0.20	0.5	10	70
Copper[U]	0.03	0.02	< 0.5	2	50	100
Mercury[U]	< 0.0005	< 0.0005	< 0.005	0.01	0.2	2
Molybdenum[U]	0.033	0.015	0.2	0.5	10	30
Nickel[U]	< 0.007	< 0.007	< 0.2	0.4	10	40
Lead[U]	0.009	0.005	< 0.2	0.5	10	50
Antimony[U]	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium[U]	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc[U]	0.019	< 0.005	< 0.2	4	50	200
Chloride[U]	6	2	22	800	15000	25000
Fluoride[U]	0.6	0.6	6	10	150	500
Sulphate[U]	13	7	72	1000	20000	50000
TDS	141	85	881	4000	60000	100000
Phenol Index	< 0.01	< 0.01	< 0.5	1	-	-
DOC	55.4	36.9	379	500	800	1000
Leach Test Information						
Sample Mass (kg)	0.21					
Dry Matter (%)	84.3					
Moisture (%)	18.6					
Stage 1						
Volume Eluate L2 (litres)	0.32					
Filtered Eluate VE1 (litres)	0.10					

Results are expressed on a dry weight basis, after correction for moisture content where applicable
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DETS Ltd
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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 20-02059	
G7 Geotech Limited	
Site Reference: Withington Girl's School	
Project / Job Ref: 1226	
Order No: 1226 / AW	
Reporting Date: 25/02/2020	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
463420	TH2	None Supplied	0.20	7.1	Brown sandy gravel with stones and concrete
463421	BHA	None Supplied	0.15	15.1	Black loamy sand with stones and concrete
463422	BHA	None Supplied	0.70	17	Brown loamy clay
463423	BHB	None Supplied	0.35	14.4	Black loamy sand
463424	BHB	None Supplied	0.35	15.7	Black loamy sand

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

DETS Ltd
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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 20-02059
G7 Geotech Limited
Site Reference: Withington Girl's School
Project / Job Ref: 1226
Order No: 1226 / AW
Reporting Date: 25/02/2020

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	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

Parameter	Matrix Type	Suite Reference	Uncertainity Measurement	Unit
TOC	Soil	BS EN 12457	7	%
Loss on Ignition	Soil	BS EN 12457	17	%
BTEX	Soil	BS EN 12457	14	%
Sum of PCBs	Soil	BS EN 12457	23	%
Mineral Oil	Soil	BS EN 12457	9	%
Total PAH	Soil	BS EN 12457	20	%
pH	Soil	BS EN 12457	0.23	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18	%
Arsenic	Leachate	BS EN 12457	10	%
Barium	Leachate	BS EN 12457	10	%
Cadmium	Leachate	BS EN 12457	7	%
Chromium	Leachate	BS EN 12457	7	%
Copper	Leachate	BS EN 12457	12	%
Mercury	Leachate	BS EN 12457	12	%
Molybdenum	Leachate	BS EN 12457	9	%
Nickel	Leachate	BS EN 12457	10	%
Lead	Leachate	BS EN 12457	5	%
Antimony	Leachate	BS EN 12457	9	%
Selenium	Leachate	BS EN 12457	10	%
Zinc	Leachate	BS EN 12457	7	%
Chloride	Leachate	BS EN 12457	8	%
Fluoride	Leachate	BS EN 12457	9	%
Sulphate	Leachate	BS EN 12457	9	%
TDS	Leachate	BS EN 12457	12	%
Phenol Index	Leachate	BS EN 12457	14	%
DOC	Leachate	BS EN 12457	10	%
Clay Content	Soil	BS 3882: 2015	15	%
Silt Content	Soil	BS 3882: 2015	14	%
Sand Content	Soil	BS 3882: 2015	13	%
Loss on Ignition	Soil	BS 3882: 2015	17	%
pH	Soil	BS 3882: 2015	0.23	Units
Carbonate	Soil	BS 3882: 2015	16	%
Total Nitrogen	Soil	BS 3882: 2015	12	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24	%
Potassium (Extractable)	Soil	BS 3882: 2015	20	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26	%
Zinc	Soil	BS 3882: 2015	7	%
Copper	Soil	BS 3882: 2015	12	%
Nickel	Soil	BS 3882: 2015	10	%
Available Sodium	Soil	BS 3882: 2015	23	%
Available Calcium	Soil	BS 3882: 2015	23	%
Electrical Conductivity	Soil	BS 3882: 2015	10	%

APPENDIX H

SUMMARY TABLES AND PLOTS

LABORATORY PLASTICITY SUMMARY

G7 Geotech

G7 Geotech Ltd
49, Church Rd
Leyland PR25 3AA

LABORATORY INDEX SUMMARY

APPENDIX H

Table No 1

Project Name:	Proposed Dining Room Extension Withington Girls School	Job No 1225
Location:	100, Wellington Road, Fallowfield, Manchester M14 6BL	Laboratory results taken from James Fisher Testing Services Report 14276/21 (11/03/20)
Client:	Withington Girls School	

BH ID	Depth	Sample Type	MC %	LL %	PL %	PI %	<425µm %	Mod PI %	IL	BS Classification for Plasticity (NHBC Volume Change Potential)
BHA	0.90	D	22	40	17	23	98.8	23	0.22	Clay of Intermediate Plasticity (CI) (Medium Volume Change Potential)
BHB	2.20	D	12	26	13	13	92.4	12	-0.08	Clay of Low Plasticity (CL) (Low Volume Change Potential)

Notes

MC Moisture Content
LL Liquid Limit
PL Plastic Limit
PI Plasticity Index
Mod PI Modified Plasticity Index after allowing for stone content
LI Liquidity Index (LI = positive when MC > PL, negative when MC < PL, 0 when MC = PL and 1 when MC = LL)

APPENDIX I

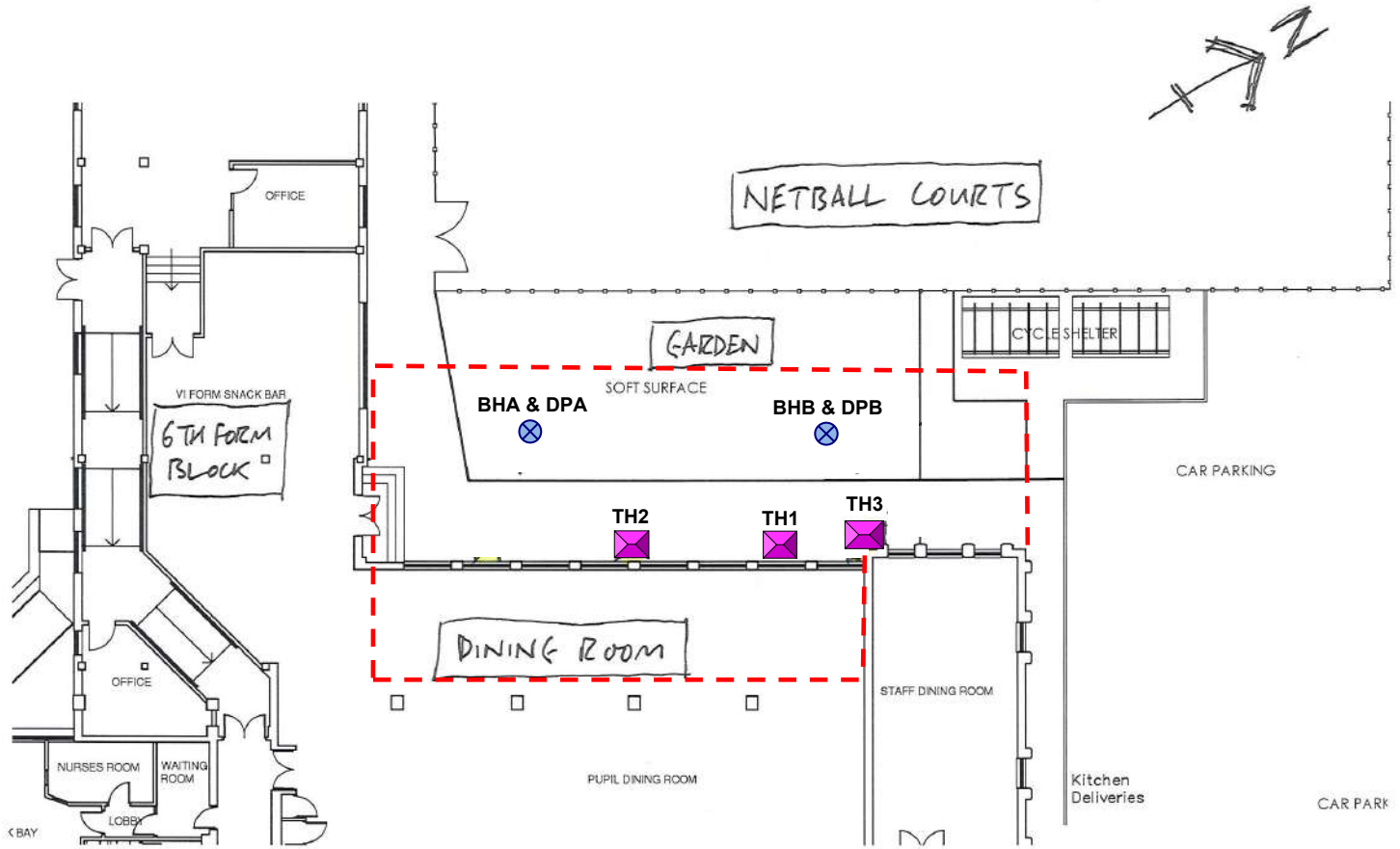
PLANS AND MAPS

EXPLORATORY HOLE LOCATION PLAN

SITE LOCATION PLANS

Site Location	WITHINGTON GIRLS SCHOOL 100, WELLINGTON ROAD, FALLOWFIELD, MANCHESTER M14 6BL	Report No	1226

EXPLORATORY HOLE LOCATION PLAN



GI LOCATION PLAN
(1:200 @ A4)

DINING ROOM EXTENSION
WITHINGTON GIRLS' SCHOOL
GJW - S&W - 12/02/20.

Legend

TH1 - TH3

13th February 2020

BHA & BHB

14th February 2020

Proposed

Not to Scale

G7 Geotech

N

SPORTS FILED

SYNTHETIC MULTI SPORT PITCH

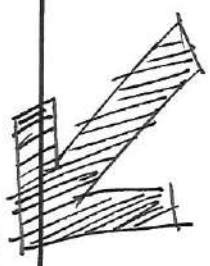
TWO TARMAC NETBALL COURTS

CAR PARK

6TH FORM BLOCK (BUILT 2009)

LOCATION OF TWO STOREY EXTENSION

3D VIEW



ZONE FOR POSSIBLE GROUND INVESTIGATIONS - AT THIS TIME OR WITHIN GARDEN

SINGLE STOREY BUILDING TO BE DEMOLISHED

VICTORIA ROAD.

BROCKLEBANK ROAD.

STAFF ACCESS

VISITOR ACCESS.

KITCHEN DELIVERIES (ACCESS TO LOCATION OF INVESTIGATIONS)

WELLINGTON ROAD

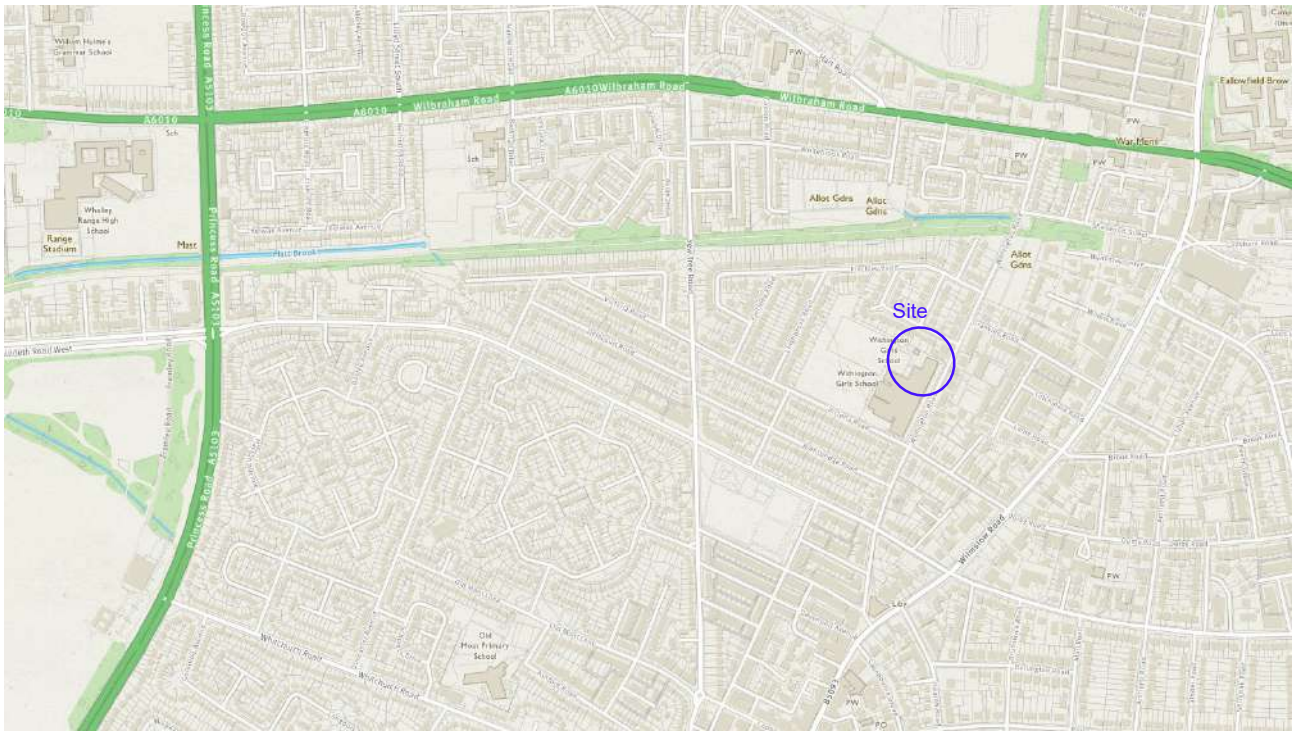
219/060

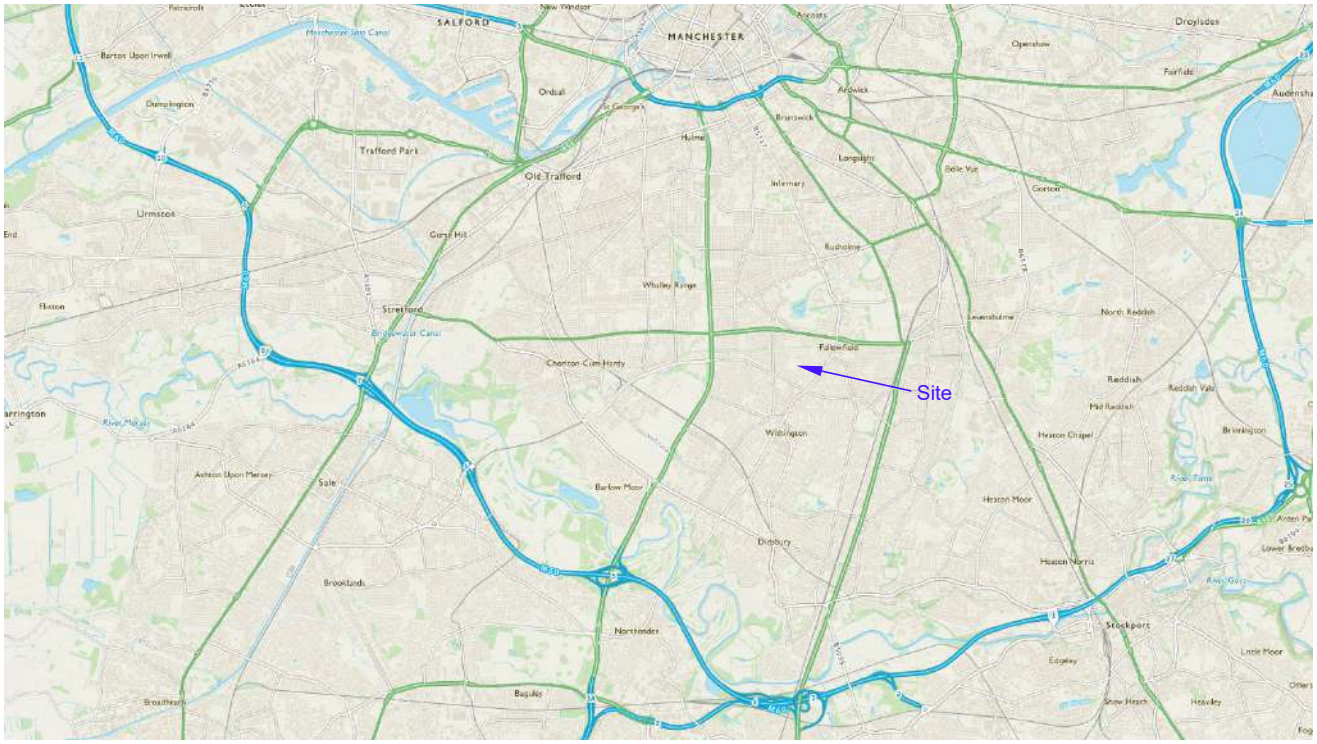
DINING ROOM EXTENSION,
WITHINGTON GIRLS' SCHOOL,
WELLINGTON ROAD,
FALLOWFIELD, M14 6BL.

REV. '4'
12/02/20.
GJW - SAW - 31/01/20.

Site Location	WITHINGTON GIRL'S SCHOOL 100, WELLINGTON ROAD, FALLOWFIELD, MANCHESTER M14 6BL	Report No	1226

LOCATION PLAN





Approx NGR of site 385090E 393630N

G7 Geotech