



Knowsley Metropolitan Borough Council

WINDY ARBOR ROAD PLAYING FIELDS CAR PARK

Phase 1 Geo-Environmental Assessment and
Coal Mining Risk Assessment





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Phase 1 Geo-Environmental Assessment and Coal Mining Risk Assessment

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1 INTRODUCTION

1.1 TERMS OF REFERENCE

- 1.1.1. Knowsley Metropolitan Borough Council (the Client) instructed WSP UK Ltd (WSP) to undertake a Phase 1 Geo-Environmental Assessment to support a future outline planning application for the proposed redevelopment of an existing area of informal car parking located at Windy Arbor Road Playing Fields, Whiston, Prescot, L35 3PB (hereby referred to as 'the site').
- 1.1.2. Appendix A presents the following Drawings.
- Drawing 70057126_WSP_XX_XX_DR_LA_0002 Site Plan presents the proposed car parking and landscaping layout.
 - Drawing 70057126 Site Layout Plan details the current site layout and pertinent features.
 - Drawing 70057126 Site Location Plan presents the site location.

1.2 CLIENT AIMS

- 1.2.1. The aims of this report are to identify potential geo-environmental constraints associated with ground conditions and contamination that could affect the redevelopment of the site and to support an application for outline planning permission. This report does not consider geotechnical constraints beyond a review of the potential for coal mining risk.

1.3 PROJECT SCOPE

- 1.3.1. The following scope of works was undertaken as part of this Phase I Geo-Environmental Assessment:
- Review of a Groundsure Enviro and Geo-Insight Report and relevant publicly available information relating to the hydrological features, hydrogeology, neighbouring land use and geology in order to establish the environmental setting of the site.
 - Review of contemporary and historical Ordnance Survey (OS) maps to identify former land uses and potential contaminative activities on and surrounding the site.
 - Review of third-party reports and assessments.
 - Site walkover visit, with photographic record to document the current land use and site setting.
 - Derivation of a preliminary site conceptual model following the source-pathway-receptor contaminant linkage approach in order to assess potential risks at the site based on future redevelopment of the site as a car park.
 - Recommendations for an intrusive ground investigation if required.

1.4 LEGISLATIVE CONTEXT AND GUIDANCE

- 1.4.1. The assessment was undertaken in the legislative context of:
- Part 2A of The Environmental Protection Act (1990);
 - The National Planning Policy Framework (2019).
- 1.4.2. The following good practice and statutory guidance was considered, and the assessment was undertaken in general accordance with:
- Environment Agency 'Land Contamination Risk Management', LCRM (2020);

- Defra 'Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance', PB13735 (2012);
- British Standard 'Investigation of Potentially Contaminated Sites – Code of Practice', BS EN 10175:2011;

1.5 SOURCES OF INFORMATION

1.5.1. The following sources of information have been used for production of this report:-

Source	Report
WSP investigations	■ WSP site walkover on 18 June 2021. Photographs and an accompanying site map are presented in Appendix B.
Third Party Data	■ Groundsure Enviro and Geo-Insight Report, reference: 70057126, dated June 2021 (referred to as the 'Groundsure report') (presented in Appendix C); ■ Coal Authority Cole Mining Consultants Report, dated June 2021, reference: 51002556236001 (presented in Appendix D); ■ Zetica Unexploded Bomb Risk Map, accessed June 2021. Available via: https://zeticauxo.com/downloads-and-resources/risk-maps/ (presented in Appendix E alongside the Pre-Desk Study Assessment also undertaken by Zetica); and ■ MATtest Midlands Ltd test certificate 4633/20 including Erda Associates Ltd borehole and trial pits logs (presented in Appendix F).
Public Information	■ British Geological Survey (BGS) mapping (BGS Geoindex), accessed June 2021. Available via http://mapapps.bgs.ac.uk/geologyofbritain/home.html. Reviewed BGS borehole logs are presented in Appendix G; ■ DEFRA MAGIC online portal, accessed June 2021. Available via: https://magic.defra.gov.uk/; ■ The Coal Authority Interactive Map Viewer accessed: June 2021. Available via http://mapapps2.bgs.ac.uk/coalauthority/home.html. ■ The Governments Interactive Flood Risk Map accessed: June 2021. Available via https://flood-warning-information.service.gov.uk/long-term-flood-risk
Regulatory Responses	■ No Regulatory liaison undertaken.

1.6 CONFIDENTIALITY STATEMENT AND LIMITATIONS

- 1.6.1. This report is addressed to and may be relied upon by Knowsley Metropolitan Borough Council.
- 1.6.2. This assessment has been prepared for the sole use of the above-named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of WSP. No responsibility will be accepted where this report is used in its entirety, on in part, by any other party.
- 1.6.3. Information provided by others is taken in good faith as being accurate. WSP cannot and will not accept liability for any deficiencies in third party information. General limitations are presented in Appendix H.

2 SITE INFORMATION

2.1 SITE DESCRIPTION AND CURRENT USE

2.1.1. Pertinent site details are presented in Table 2-1 below.

Table 2-1 - Summary of Site Details

Item	Detail
Site address and access	Windy Arbor Road Playing Fields, Whiston, Prescott, L35 3PB. Vehicular and pedestrian access is via a locked gate off Windy Arbor Road.
National Grid Coordinates	346885 390498
Area	0.2 ha
Site location and setting	Located on the edge of Whiston Cross, adjacent to Windy Arbor Playing Fields and Halsnead Park, approximately 1.2km north east of the M62/M57 motorway junction.
Topography	The site is flat although surrounding ground level rises approximately 2m up to the junction of Windy Arbor Road and Lickers Lane to the north west.
General Site description and current use	The site is currently covered with gravel hard standing and is in use as a car park for the adjacent playing fields. A Cadent Gas Ltd gas governor building is present in the south west corner, adjacent to the site entrance.
Radon	The GroundSure report indicates the site is within an area with less than 1% of dwellings exceeding the Radon Action Level. However, www.ukradon.org indicates the site is within an area where 1-3% of dwellings exceed the Radon Action Level
Unexploded Ordnance	The Zetica Ltd unexploded bomb risk map indicates a low risk of unexploded ordnance for the site.

2.2 PREVIOUS REPORTS

2.2.1. WSP has been provided with factual ground investigation from a phase of works undertaken in July 2020 by MAT Test Midlands Ltd. Factual information is presented in Appendix F.

2.2.2. The works comprised the following:-

- Two rotary boreholes to a maximum 10.1m depth (BH01 and BH02),
- Two machine excavated trial pits to a maximum 4.5m depth (TP101 and TP102),
- Six shallow machine excavated trial pits to a maximum 1.1m depth (TP1 to TP4, TBCBR and TPsoakaway),
- Insitu tests including Californian Bearing Ratio (CBR), dynamic cone penetrometer (DCP), soakaway and hand shear vane,
- Installation of groundwater monitoring wells in BH101 and BH102.

2.2.3. No contamination testing was undertaken.

- 2.2.4. Made ground was encountered at each location and generally comprised sandy gravel with varying proportions of brick, tarmac, ash, clinker and pottery. The thickness of made ground generally varied from 0.4m to 0.7m. However, BH101 recorded made ground to 1.5m depth (from 1.0m to 1.5m and recorded as reworked clay).
- 2.2.5. Glacial Till as silty sandy clay was recorded at each location underlying the made ground.
- 2.2.6. TP101, TP102, BH101 and BH102 encountered bedrock comprising mudstone of the Pennine Middle Coal Measures Formation underlying the Glacial Till. The depth bedrock was encountered varied between 2.1m and 4.0m. Occasional layers of clay are recorded, interbedded with mudstone. Coal was recorded in BH101 from 10.0m to at least 10.10m and in BH102 from 6.4m-6.9m depth.
- 2.2.7. No core recovery was recorded at the following locations/depths:
 - BH101 – 2.3m to 2.7m, 3.1m to 3.5m and 6.5m to 7.0m,
 - BH102 – 9.5m to 10.0m.
- 2.2.8. No details are recorded on the borehole logs to suggest that the zones of no recovery are anything other than zones of core loss (i.e. no recorded loss of flush, voiding, soft ground or other notes that could indicate below ground voiding).
- 2.2.9. Apart from the man-made detritus within the made ground, the only other evidence of potential contamination was an organic odour in TP101 at 2.4m depth.
- 2.2.10. It is not known if a programme of gas and groundwater monitoring was undertaken.

3 ENVIRONMENTAL SETTING

3.1 GEOLOGY

SUPERFICIAL GEOLOGY

- 3.1.1. According to British Geological Survey (BGS) published geological mapping, the superficial geology comprises Glacial Till across the site.

BEDROCK GEOLOGY

- 3.1.2. The underlying solid geology comprises mudstone, siltstone and sandstone of the Pennine Middle Coal Measures Formation.

BGS BOREHOLES

- 3.1.3. The BGS website (<https://www.bgs.ac.uk/map-viewers/geology-of-britain-viewer/>) indicates there no BGS boreholes within 300m of the site. The closest BGS boreholes are within the Stadt Moers Country Park to the west, a former landfill and therefore the logs are unlikely to provide an indication of likely ground conditions at the site.

3.2 HYDROGEOLOGY

- 3.2.1. The superficial Till deposits, which underlie the Site, are classified as a Secondary (Undifferentiated) Aquifer. The Coal Measures Formation bedrock underlying the site is classified as a Secondary A Aquifer.
- 3.2.2. The site soils, superficial deposits and bedrock have a low leaching potential.
- 3.2.3. BGS Groundwater Flooding Susceptibility records indicate there is a low risk of groundwater flooding across the Site.
- 3.2.4. There are no groundwater abstractions on-site or within 500m of the site.
- 3.2.5. The Groundsure Report indicates that the Site is not located within a Source Protection Zone and there are no potable water abstractions on site or within 500m of the site.

3.3 HYDROLOGY

- 3.3.1. There are no surface water features on site but there is a pond located approximately 160m to the south.
- 3.3.2. There are no surface water abstractions on-site.
- 3.3.3. The Site is located within a Nitrate Vulnerable Zone, relating to Dittton Brook (Halewood to Mersey Estuary).
- 3.3.4. The site is within the Water Framework Directive (WFD) Surface water body catchment zone of influence for Prescott Brook (Logwood Mill Brook), located approximately 900m to the west.
- 3.3.5. No entries relating to Water Network (rivers, streams, lakes, canals) are recorded within 0.25km of the Site.
- 3.3.6. The Site is at negligible risk of flooding from surface water and there are no flooding records within at least 50m of the site.

3.4 SENSITIVE LAND USES

- 3.4.1. The site is approximately 260m east of the Merseyside and Greater Manchester green belt.
- 3.4.2. No other sensitive land uses are recorded within 500m of Site.

3.5 GROUND STABILITY

- 3.5.1. Ground stability hazards identified within the Groundsure Report are summarised in Table 3-1 below.

Table 3-1 - Ground Stability Information

Stability hazard	Risk level (on site)	Risk level (off site, if greater)
Potential for collapsible deposits	Very Low	-
Potential for compressible deposits	Negligible	-
Potential for dissolution	Negligible	-
Potential for landslides	Very Low	-
Potential for running sands	Very Low	-
Potential for swelling / shrinking clay	Very Low	-

3.6 LANDFILLS, WASTE MANAGEMENT & POLLUTION INCIDENTS

- 3.6.1. The Groundsure report does not record any landfills or waste management sites within 250m of the site.
- 3.6.2. Only one pollution incident is recorded, 160m to the south dated July 2002. The incident relates to a not identified pollutant resulting in the following impacts;-
- Water Impact: Category 3 (Minor),
 - Land Impact: Category 4 (No Impact),
 - Air Impact: Category 4 (No Impact).

4 SITE HISTORY

- 4.1.1. A review of historical data and maps from the Groundsure Report has been undertaken with a summary provided below in Table 4-1. The historical maps are presented as part of the Groundsure Report in Appendix C.

Table 4-1 - Historical Map Review

Location	Historical Data Review
On-Site	The earliest available historical Ordnance Survey mapping provided by GroundSure from 1850 shows the Site is part of the Halsnead Park estate grounds and is undeveloped, occupied by trees. No significant changes occur until the 1947 map which shows the site as part of a recreation ground with a similar layout to the current day.
Off-Site	The earliest available historical Ordnance Survey mapping provided by GroundSure from 1850 shows the site is in the north west corner of the Halsnead Park estate with parkland and trees to the east and south. The site is bound to the north and west by Lickers Lane and Tarbock Road respectively. A pond is located 120m to the south east and Prince's House is approximately 200m to the south east. Land to the north and west outside of Halsnead Park is predominantly agricultural with a network of lanes. The village of Whiston is approximately 350m to the north. Several coal pits and collieries are recorded within 750m of the site, predominantly to the west, with mineral railway lines linking them. The closest two are a coal pit approximately 230m south east of the site and Hig Hey Colliery approximately 310m to the west of the site. The 1891 map shows St Nicholas's Church and church yard approximately 150m to the south west. Several shafts are noted to the west in 1891 however, the majority of surrounding collieries and pits are noted as 'disused' between 1891 and 1906. By 1906, Whiston Metallic Brick Works is marked approximately 250m to the west. In 1925 Cronton Colliery is present 1.2km south east of the site until 1989, when its size is considerably reduced and from 2001 it is no longer labelled. By 1937, residential development has started to occur to the north west and continues to occur. The 1947 map shows a football field within Halsnead Park, immediately to the south east of the site. This layout remains until the present day. By 1977/78 all the land immediately to the north east, north and west has been developed with residential properties.

5 COAL MINING RISK ASSESSMENT

5.1 INTRODUCTION

5.1.1. The site lies within a Coal Authority (CA) defined '*Development High Risk Area*'. This is in relation to '*coal outcrops*' and '*probable shallow coal mine workings*' recorded within the site boundaries, as discussed further within this chapter. As such, this Coal Mining Risk Assessment (CMRA) has been undertaken to:

- Present a desk-based review of available information on the coal mining issues which are relevant to the site;
- Use the information reviewed to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues; and,
- Set out appropriate mitigation measures, where required, to address the coal mining legacy issues affecting the site, including necessary remedial works and/or to demonstrate how coal mining issues have influenced the proposed development.

5.2 SOURCES OF INFORMATION

5.2.1. The following relevant sources of information have been used in the assessment of the potential mining risk of the proposed development area:

- British Geological Survey (BGS) '*Geology of Britain*' online viewer accessed on 18 June 2021 (available via: <https://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>);
- BGS 1:50,000 geological map Sheet 97 (Runcorn), solid and drift;
- Coal Authority Interactive Map accessed on 18 June 2021 (available at: <http://mapapps2.bgs.ac.uk/coalauthority/home.html>);
- Coal Authority Consultants Coal Mining Report, ref 51002556236001, dated 17 June 2021, presented in Appendix C; and,
- Groundsure Enviro+Geo Insight Report, 16 June 2021 (Order ref. WSP-7961075), presented in Appendix C.

5.2.2. The following historical reports relevant to the site were made available:

- MATtest Midlands Ltd test certificate 4633/20 including Erda Associates Ltd borehole and trial pits logs (presented in Appendix F).

5.3 IDENTIFICATION AND ASSESSMENT OF SITE SPECIFIC COAL MINING RISKS

BGS DATA

5.3.1. BGS mapping for the area shows the following geological conditions below the site:

- Drift deposits noted as Glacial Till.
- Solid geology noted as Pennine Middle Coal Measures Formation. The structural geology of the site and wider area is characterised by numerous fault lines, with one bisecting the site in a north to south orientation, downthrown to the west. A further fault, also trending north to south, is noted approximately 150m to the east of the site, downthrown to the east. The regional dip of the strata is recorded to the south/south west at an inclination of approximately 12 degrees (although this is likely to vary locally given the faulting in the area).

- 5.3.2. There are numerous coal subcrops shown within close proximity to the site boundary, as shown in **Figure 5-1** (and annotated for clarity). The coal seam subcrops are shown as conjectured, meaning there is some uncertainty as to their exact location.

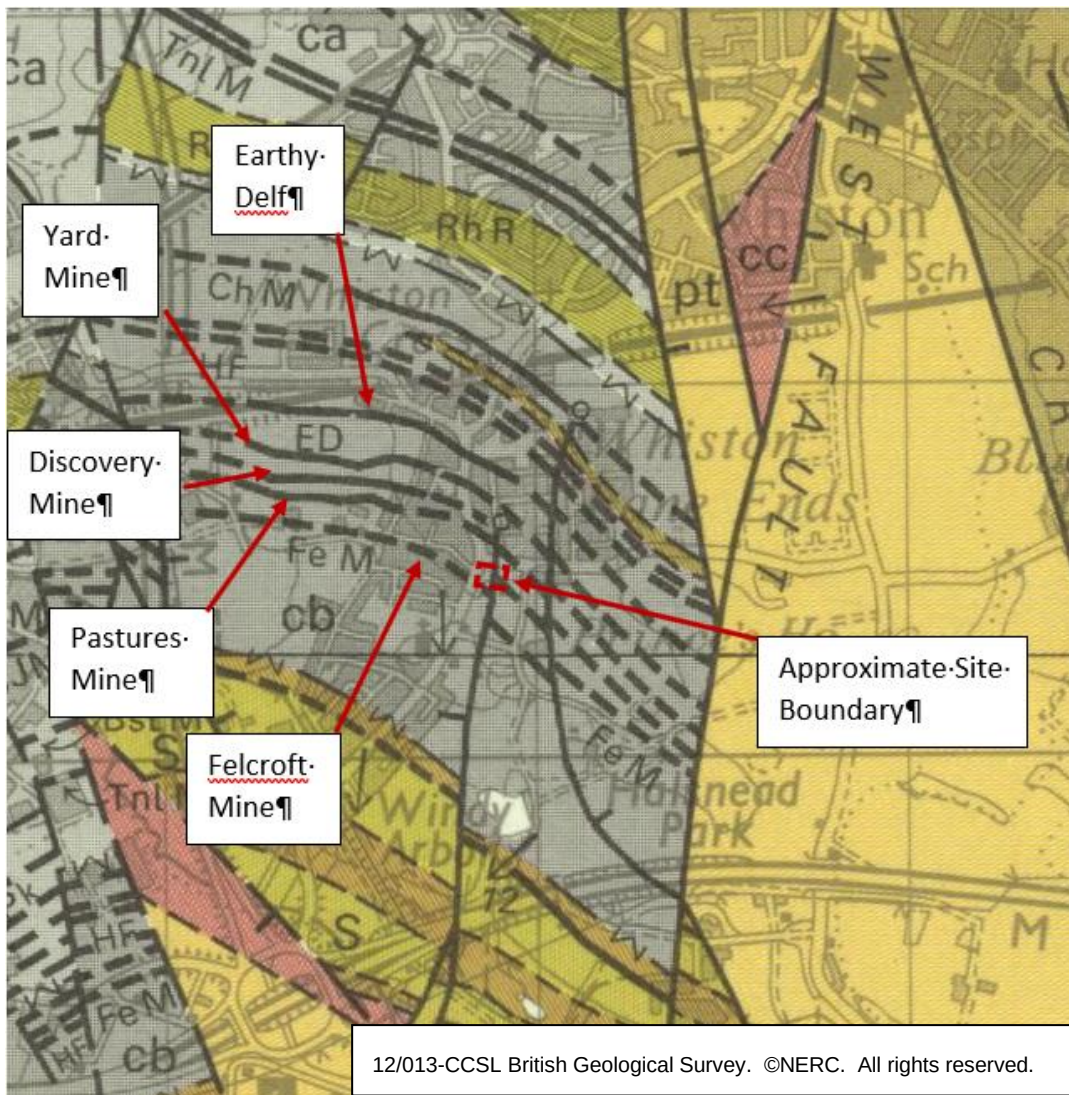


Figure 5-1 - Extract from BGS Mapping (Sheet 97)

- 5.3.3. No historical borehole records are available within the site boundaries, or within 250m, from the BGS.

COAL AUTHORITY DATA

- 5.3.4. The following summarises the key comments from the CA Consultants Coal Mining Report:
Past underground mining in three coal seams is recorded beneath the site (as summarised in **Table 5-1**). The colliery these relate to is noted as 'unknown'.

Table 5-1 - Summary of Past Underground Mining

Seam	Mineral	Maximum Depth (m)	Maximum Thickness (m)	Year Last Mined
Wigan Two Feet	Coal	193	0.8	1903
Plodder	Coal	237	2.4	1880
Rushy Park	Coal	379	1.3	1895

- The site is within an area of '*probable unrecorded shallow mine workings*'.
- There are no recorded spine roadways recorded at shallow depth.
- A mine entry is recorded approximately 90m south west of the site and was investigated and treated in 1972, with the works carried out to specifications set and monitored by the National Coal Board. [Note: This was likely undertaken during the development of residential properties along Long Hey and Halton Hey, which is shown to have occurred between 1958 and 1973 on historical mapping presented within the Groundsure Report]. The Coal Authority Interactive Map also notes several additional shafts located approximately 150m east of the northern boundary and 250m south east of the site.
- Two workable seams are recorded to outcrop to the north and north east of the site boundary, namely the Crombouke and Roger coal seams respectively. The seams are interpreted to correlate with the mapped outcrops on the BGS geological maps, named as the Pastures Mine and Discovery Mine coal seams on BGS mapping (**Figure 5-1**).
- A geological fault is noted running beneath the eastern part of the site, trending in a north to south orientation.
- An area of unlicensed opencast workings is noted approximately 50m to the west of the site. This ties in with the numerous recorded coal pits and collieries noted to the west of the site on historical mapping, as discussed within Section 4 and further below within this chapter.
- No Coal Authority managed tips are recorded within 500 m of the site boundary.
- No remediated sites are recorded within 50 m of the site boundary.
- No coal mining subsidence claims have been made for properties within 50 m of the site boundary.
- There is no record of a mine gas emission requiring action by the Coal Authority within 500 m of the site boundary.
- No mine water treatment schemes are recorded within 500m of the site boundary.
- There is no record of licencing applications for future underground mining within the site boundary.
- No Section 46 notices stating that the land is at risk of subsidence have been given.
- There is no record of coal mining licensing within 200 m of the boundary.
- The site is not in an area where a notice to withdraw support has been given.
- The site is not in an area where a relevant notice has been published under the Coal Industry Act 1975 / Coal Industry Act 1994.

5.3.5. Given the depth of the recorded worked seams beneath the site (and the proposed development plans being limited to the reconfiguration of an existing car park) a review of abandonment plans for the underground mine workings is not considered necessary for this assessment.

- 5.3.6. Abandonment plan/s for the unlicensed opencast workings to the west of site were requested from the Coal Authority. However, the Coal Authority do not have any plans of the workings.

HISTORICAL MAPPING

- 5.3.7. The earliest mapping (1850) shows several coal pits and collieries within 750m of the site, predominantly to the west, with mineral railway lines linking them. The closest coal pit is noted approximately 230m south east of the site, with the Hig Hey Colliery approximately 310m to the west of the site.
- 5.3.8. The majority of surrounding collieries and pits are noted as '*disused*' by 1906. Cronton Colliery is shown around 1.2km south east of the site between 1925 and 1989, when its size is considerably reduced and is no longer shown from 2001.
- 5.3.9. No direct evidence of the unlicensed opencast workings is shown on any of the maps. However, indirect evidence suggests that the workings probably occurred around the 1960s. Tarbock Road, which separates the site from the area of the reported unlicensed opencast workings, is shown on all the maps from 1850 onwards in its current alignment. Residential housing which is shown on the Coal Authority viewer to be at the edge of the opencast workings is shown on the opposite side of Tarbock Road from the site from 1938. A farm track leading to Paradise Farm which crosses the area of the unlicensed opencast is shown from 1850 until the map dated 1966-67 when Paradise Farm is no longer shown. The area of the unlicensed opencast is shown as being residential from the map of 1977-78.
- 5.3.10. A full review of the available historical mapping is provided within **Section 4**.

HISTORICAL REPORTS

- 5.3.11. The ground investigation report produced in 2020 by MATtest Midlands Ltd records up to 1.5m of Made Ground overlying the superficial deposits (recorded as Glacial Till). The top of the Pennine Middle Coal Measures are recorded between 2.0m to 4.0m bgl and are typically described as extremely weak to very weak '*thinly laminated black mudstone with extremely closely spaced horizontal to subhorizontal fractures, undulating, rough, along bedding planes*' and '*very stiff dark grey silty sandy clay*'.
- 5.3.12. The borehole in the north west corner (BH101) records three zones of '*no recovery*' within the Pennine Middle Coal Measures, all being 0.5m thick. Given this material is described on the logs as heavily fractured, these zones are considered likely to be due to core loss rather than voiding due to mining activity (as discussed in **Section 2.2**). The borehole log also notes '*very weak black coal*' from 9.9m below ground level (bgl). The thickness of this seam is unknown as the borehole was terminated at 10.0m bgl.
- 5.3.13. The borehole in the south west corner (BH102) records coal between 6.3m and 6.9m bgl (0.6m thick). One trial pit (TP102), located between BH101 and BH102, notes "*traces of coal 150mm thick*" between 4.0m and 4.5m bgl.
- 5.3.14. Based on interpretation of the geological mapping, it is possible that the coal recorded in BH101 and BH102 represents the Discovery Mine and Pastures Mine coal seams respectively.

COAL MINING RISK SUMMARY

- 5.3.15. Based on the above information, significant mining activity has occurred within the surrounding area, although no firm evidence of mining activity within the site boundaries has been identified.

5.3.16. **Table 5-2** provides a summary of the identified coal mining risks to the site.

Table 5-2 - Coal Mining Risk Summary

Coal Mining Hazard	Recorded		Risk Assessment	
	Yes	No	Rating	Comment
Underground coal mining (recorded at shallow depths)		X	Low Risk	Underground mine workings are noted at depths in excess of 150m.
Underground coal mining (probable at shallow depths)	X		Medium to High Risk	The site is recorded to be within an area of probable shallow coal mining workings. No evidence of below ground coal workings is recorded from the limited previous ground investigation.
Mine entries (shafts and adits)		X	Low to Medium Risk	The nearest recorded shaft is approximately 90m to the west of the site and is recorded as having been treated. However, unrecorded shallow workings may be present beneath the site and the potential for unrecorded shafts cannot be discounted.
Coal mining geology (fissures)		X	Low Risk	There are no recorded coal mining induced fissures within the vicinity of the site.
Record of past mining gas emissions or potential		X	Low Risk	No records of mining gas emissions have been identified. However, unrecorded shallow workings may be present beneath the site which may be potential sources of hazardous ground gas.
Recorded coal mining surface hazard		X	Low Risk	None recorded in site boundary.
Surface mining (opencast workings)		X	Low Risk	No record of surface mining has been identified. The site is adjacent to an area of known opencast mining workings, albeit that evidence suggests that the workings did not extend onto the site.

5.3.17. The following interpretation is based on the proposed end use of the site remaining unchanged from its current use and that no enclosed spaces (such as security offices etc.) form part of the development plans.

5.3.18. The ground investigation undertaken in 2020 recorded shallow coal seams beneath the site, that are interpreted to be the Discovery Mine and Pastures Mine coal seams (as named by the BGS).

- 5.3.19. No evidence of shallow mining is recorded from the ground investigation. However, the number of deeper exploratory holes is limited; the ones undertaken are confined to the western edge of the site; and the thickness of the seam recorded in BH101 was unproven. As such, it is considered that the ground investigation provides only limited data on which to base an interpretation of coal mining risk and the risk of shallow mine workings being present beneath the site cannot be definitively ruled out.
- 5.3.20. BH101 records 7.7m of rock cover above the recorded coal seam. As the borehole is located along the northern edge of the site and the regional dip is recorded to be in a southerly direction, this coal seam is anticipated to be deeper beneath the rest of the site. Without knowing the seam thickness, it is not possible to confirm whether sufficient rock cover is present above the seam to suitably reduce the risk of crown hole collapse causing surface instability if the seam has been worked. However, given that the seam is anticipated to be deeper beneath the rest of the site, the potential that sufficient rock cover exists above this seam is likely to increase.
- 5.3.21. BH102 records 4.3m of rock cover above the 0.6m thick recorded coal seam, which is less than the commonly referenced '10t' rock cover ratio criterion (referenced in CIRIA C758D). Table 5.1 of CIRIA C758D provides a list of circumstances where the cover ratio criterion can be reduced from 10t, which does include roads and infrastructure where the impacts of ground movement are considered to present no risk to safety or serviceability. However, as BH102 is located towards the south of the site, it is anticipated that this coal seam becomes shallower to the north and may even subcrop on site.
- 5.3.22. As such, it is interpreted that there are likely to be areas of the site where there is insufficient rock cover above the seams to mitigate against the risk of surface movement if the seams have been worked and there is a future collapse. As a result, it is considered that further consideration of the mining risk is required. This could include:
- Additional ground investigation to greater depths than those scheduled in the 2020 investigation (and covering a larger area of the site) to confirm the thickness of the coal seams and to provide further evidence as to whether they have been worked. The findings of this investigation would be used to further assess the requirement for treatment in relation to shallow coal mining risk; and/or,
 - The inclusion of a 'soft cap' (i.e. incorporating high strength geogrid layer/s into the new pavement build up across the site) as part of the car park reconstruction works to limit the effects of any potential future subsidence beneath the site.
- 5.3.23. If the first approach is adopted and no evidence of shallow workings are encountered, this should close out the risk and no further action would be anticipated. If coal workings are identified that pose a risk of surface instability, mitigation measures would be required, which might include the soft cap. A Permit to enter or disturb Coal Authority mining interests would be required in advance of any intrusive investigation works.
- 5.3.24. If the second approach is to be adopted without undertaking the additional ground investigation, agreement will be required from the Coal Authority that the approach is acceptable for the relatively low risk end use that is being proposed. This approach would not remove the potential for a future collapse occurring beneath the car park but should minimise its impact at the surface. However, any collapse would likely require treatment and there may be an ongoing maintenance cost with this approach.

6 PRELIMINARY CONCEPTUAL SITE MODEL

6.1 INTRODUCTION

- 6.1.1. The potential risks from contamination within soil and groundwater are assessed according to the environmental setting / ground model, the likely presence of potential sources of contamination and the proposed use of the Site.
- 6.1.2. The source-pathway-receptor model forms the basis of the risk assessment. Potential risks are only considered to exist if there is a credible source (e.g. a chemical substance capable of causing harm); a pathway for migration of the source to a receptor; and a sensitive receptor that could be affected (e.g. nearby river or future resident). A source-pathway-receptor contaminant linkage assessment is termed a conceptual site model (CSM). A preliminary CSM is produced in consideration of available desk-based information prior to intrusive ground investigation and is refined following collection of site-specific intrusive data.
- 6.1.3. This CSM has been produced on the basis of the proposed car park end use, with associated soft landscaped areas.

6.2 PRELIMINARY GROUND MODEL

- 6.2.1. The ground conditions have been indicated to comprise localised Made Ground, (potentially containing perched groundwater in the wetter months). This is underlain by superficial Glacial Till comprising mainly low-permeability clays. Bedrock has been proven from 2.1m depth and comprises Pennine Middle Coal Measures mudstone with layers of clay and coal.

6.3 SOURCES, PATHWAYS AND RECEPTORS

- 6.3.1. The potential sources, pathways, and receptors relevant to the proposed car park end use are presented below. The assessment assumes that no remedial measures are implemented to mitigate risks during or within any redevelopment.

POTENTIAL CONTAMINANT SOURCES

- 6.3.2. In consideration of the Site history, current use and surrounding area, the potential contaminant sources are considered to include:
- Contaminated made ground, predominantly heavy metals, polycyclic aromatic hydrocarbons and asbestos – the 2020 ground investigation identified ashy made ground across the site which could be potentially contaminated
 - Hazardous ground gases within the made ground and mine gas within the underlying Coal Measures, particularly where coal or voids were encountered.

POTENTIAL PATHWAYS

- 6.3.3. Relevant potential pathways are considered to include:
- Direct contact, ingestion or inhalation of soil bound contaminants / dust including asbestos,
 - Migration, accumulation and inhalation / ignition of vapours / ground gases associated with made ground or Coal Measures,
 - Migration of leachable / mobile contamination through permeable strata to controlled waters,

POTENTIAL RECEPTORS

6.3.4. Given the relatively low sensitivity of the Site's proposed future use (i.e. car park and soft landscaping) and the environmental site setting, the most viable potential receptors are considered to be:

- Construction workers during any redevelopment,
- Adjacent site users during any redevelopment,
- Future site users,
- Future maintenance workers,
- Down-gradient surface water,
- Groundwater (Secondary A Aquifer within the Coal Measures).

6.4 CONTAMINANT LINKAGE ASSESSMENT

- 6.4.1. Details on the potentially complete contaminant linkages are provided below in Table 6-1.
- 6.4.2. A qualitative risk ranking has been applied to the potentially complete contaminant linkages, based on the UK CIRIA report C552 (Contaminated Land Risk Assessment: A Guide to Good practice, 2001), which considers a combination of the potential severity of the risk and the likelihood of the risk occurring.
- 6.4.3. The CIRIA risk classification matrices (presented in Appendix I) were used to determine the probability, consequence and level of risk related to each potential linkage.
- 6.4.4. The overall soil/groundwater contamination risk ranking for the Site, based on the proposed car park end use is generally **moderate to moderate / low** although risks to future site users from contaminated soils and future site users and maintenance workers from inhalation of vapours or volatile chemicals are considered to be **low**.
- 6.4.5. If complete contaminant linkages are present, these could be mitigated by undertaking remedial works such as; removal of contamination hotspots and provision of a cover system in landscaping areas.

Table 6-1 – Summary of Potential Contaminant Linkages

Potential sources	Potential pathways	Potential receptors	Potential for complete contaminant linkage	Qualitative Risk Ranking
Contaminated made ground, including possible asbestos.	Direct contact, ingestion, or inhalation of soil bound contaminants / dust.	Workers during construction.	Possible if contaminated soils present	MODERATE
		Adjacent site users and residents (during construction if dust generation occurs).	Possible if contaminated soils present	MODERATE / LOW
		Future site users	Possible if contaminated soils present.	LOW
		Future maintenance workers	Possible if contaminated soils present.	MODERATE
	Inhalation of vapours associated with volatile	Workers during construction (if deep excavations are proposed).	Possible if contaminated soils present	MODERATE

Potential sources	Potential pathways	Potential receptors	Potential for complete contaminant linkage	Qualitative Risk Ranking
	chemicals within made ground.	Future site users and maintenance workers.	Possible if contaminated soils present	LOW
	Leaching / mobilisation contamination to the wider environment.	Secondary A Aquifer	Possible if contaminated soils present and soakaway drainage is proposed	MODERATE
		Surface waters	Possible if contaminated soils present and soakaway drainage is proposed	MODERATE
Hazardous ground or mine gases	Migration and inhalation (asphyxiation) or explosion.	Workers during construction (if deep excavations are proposed).	Made Ground or Coal Measures could generate hazardous ground / mine gas.	MODERATE
		Adjacent residential properties	Possible alteration to underlying gas regime following construction of permeable surfacing. Both scenarios are unlikely but cannot be ruled out.	MODERATE / LOW

* WSP's approach to the assessment of potential asbestos issues on a subject site takes into account the current guidance which recommends that there is no safe threshold of exposure to asbestos fibres. Consequently, WSP's findings present an assessment of the potential likelihood of exposure to asbestos based on our understanding of the prevalent site conditions. This should not be taken as an assessment of the associated potential risks to human health which may subsequently arise should such exposure occur; the presence, or suspected presence of an asbestos containing materials should be fully assessed by a qualified asbestos surveyor.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 RISKS FROM SOIL AND GROUNDWATER CONTAMINATION

- 7.1.1. Historical maps indicate the Site has predominantly been park land until the 1950's when the site was developed as a car park and the immediately surrounding land to the east and south was developed as a playing field. No potentially significant sources of contamination have been identified within the immediate surrounding land.
- 7.1.2. Ground investigation works have identified the presence of ashy made ground at each location across the site which could be contaminated. However, no assessment of the soils chemical or geotechnical properties was undertaken.
- 7.1.3. There is therefore the possibility of contamination to be present in the made ground and a risk of hazardous gas, although thick made ground was not recorded in the ground investigation.
- 7.1.4. Bedrock comprises Middle Coal Measures and coal seams and voids were recorded in the two boreholes drilled on site. A potential risk from mine gas exists although no gas monitoring was undertaken. Changing the site surfacing from the current permeable hard core to impermeable tarmac could affect the ability of any underlying mine gas to vent harmlessly to atmosphere.
- 7.1.5. It is understood that soakaway drainage is proposed into the shallow made ground soils which could result in the generation of contaminated leachate.
- 7.1.6. A number of potentially complete contaminant linkages have been identified and these have been generally moderate to moderate / low risk although risks to future site users from contaminated soils and future site users and maintenance workers from inhalation of vapours or volatile chemicals are considered to be low.

7.2 RISKS FROM COAL MINING

- 7.2.1. No evidence has been identified to show the presence of shallow coal mining beneath the site. However, the site is located within a development high risk area and the limited ground investigation undertaken in 2020 encountered shallow coal seams.
- 7.2.2. Insufficient rock cover to mitigate against the risk of surface instability if the seam has been worked was recorded within one of the boreholes.
- 7.2.3. Based on the information reviewed the risk of shallow mining is considered to be low to medium.

7.3 RECOMMENDATIONS

GAS GOVERNOR AND BURIED SERVICES

- 7.3.1. Any works that take place must take into account the gas governor building and any buried services that are present on site including high pressure gas mains. It would be prudent to ensure discussions are had with the owner of the gas governor structure and any buried services as they may have requirements that could influence the design and / or construction methodology.

GAS AND GROUNDWATER MONITORING

- 7.3.2. The site is currently surfaced with a permeable layer of compacted gravel hard core. Formal tarmac surfacing is likely to be significantly less permeable which could lead to changes in any mine gas

regime present beneath the site. It is therefore recommended to undertake a programme of gas and groundwater monitoring of the borehole installations in accordance with the frequency and monitoring period recommended in CIRIA 665 - Assessing Risks Posed By Hazardous Ground Gases to Buildings, (2007). Whilst no buildings are proposed, the purpose is to determine if mine gas is present in the underlying strata and if so, could formal surfacing of the site change the regime and impact nearby properties (including the existing gas governor building).

FURTHER SAMPLING AND TESTING

- 7.3.3. It may be beneficial to undertake further sampling and chemical testing (including asbestos) of the made ground beneath the site to assess whether any of the soils are suitable for re-use within the scheme and to determine likely waste disposal classification for any surplus materials that require offsite disposal.

RE-USE OF SITE WON SOILS

- 7.3.4. Re-use of any site won soils derived from the construction works should be undertaken in accordance with an appropriate soil re-use strategy such as a Materials Management Plan (prepared in accordance with the CL:AIRE Definition of Waste Code of Practice).
- 7.3.5. It may not be possible to re-use some or all of the site won soils within any landscaping areas due to its chemical constituents and it may not be possible to re-use it under hard standing due to its geotechnical properties. If this is the case, offsite disposal would need to be undertaken to a suitably licensed disposal or recycling facility.

LANDSCAPING CAPPING LAYER

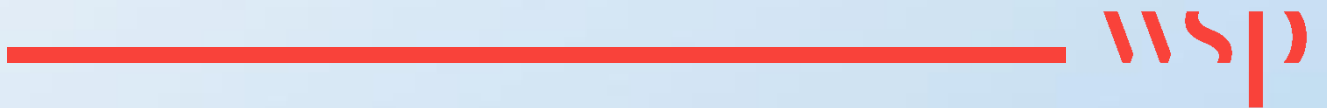
- 7.3.6. Should site won soils prove unsuitable for re-use within the landscaping areas (shrub planter areas and the grassed area), a suitable capping layer of imported inert soils is likely to be required. The likely depth of this capping layer and the need for a geotextile layer beneath to minimise soil mixing would need to be agreed with the Local Authority Environmental Health Department.

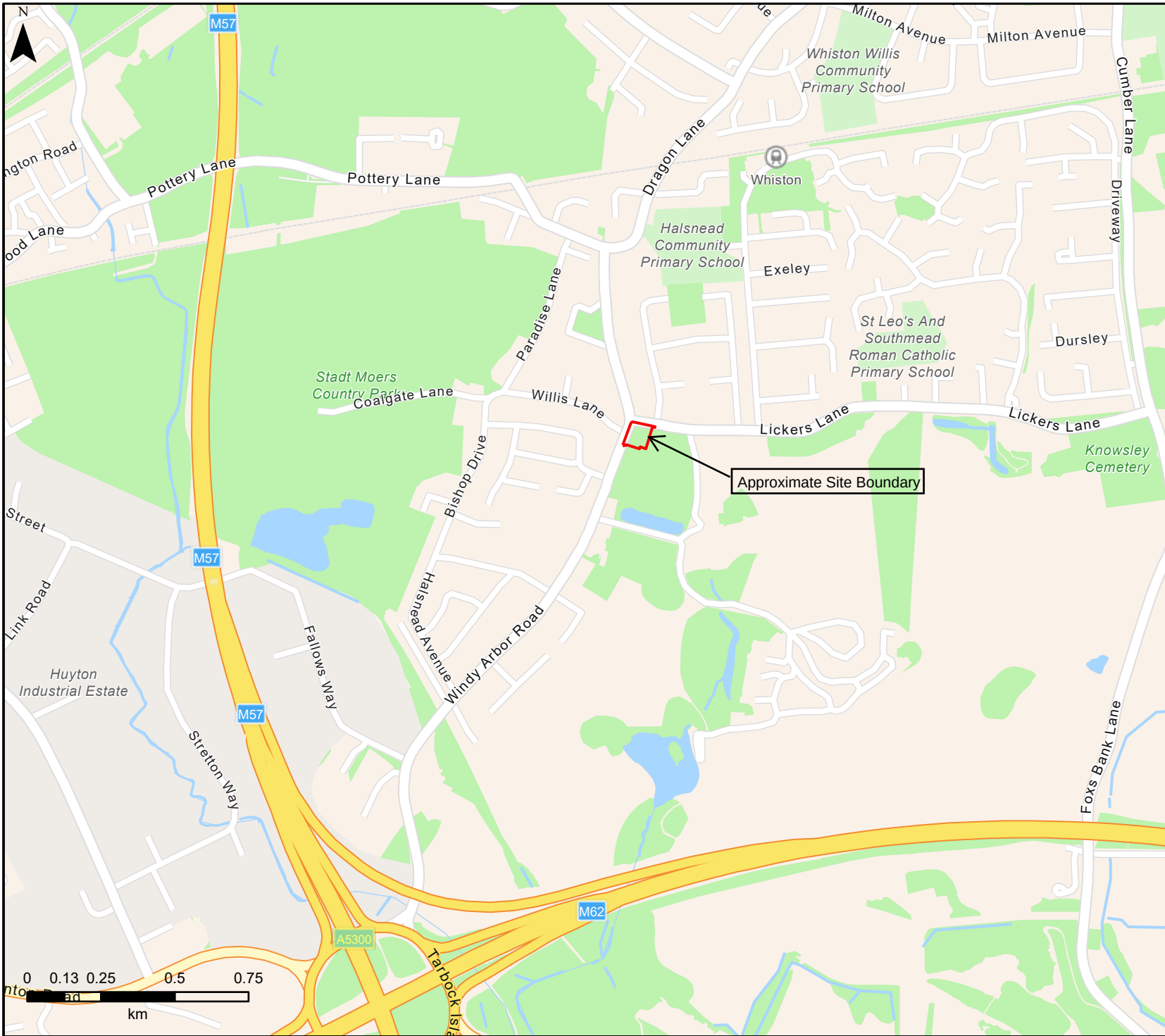
COAL MINING RISKS

- 7.3.7. Additional ground investigation could be undertaken to investigate the potential shallow coal mining risk and better establish the shallow mining risk at the site. This may allow the site to be de-risked and no further action to be undertaken if no evidence of workings is identified. Alternatively, an approach could be adopted to include a soft cap as part of the car park reconstruction works to mitigate the effects of any potential future subsidence beneath the site. However, this approach would need approval from the Coal Authority and may require maintenance over its design life should evidence of subsidence be observed.

Appendix A

DRAWINGS





DO NOT SCALE

Information Classification:
INTERNAL

Information that is only intended for internal distribution among
WSP employees, independent consultants, contractors,
sub-contractors, clients and authorised third parties.

Legend :



Approximate Site Boundary

Title: 70057126 - Site Location Plan
Author : @WSP Enterprise
Scale : 1:18,056
Layout : WSP A4 Landscape
Current Time : 18/06/2021 13:55



© WSP UK Ltd



Ordnance Survey

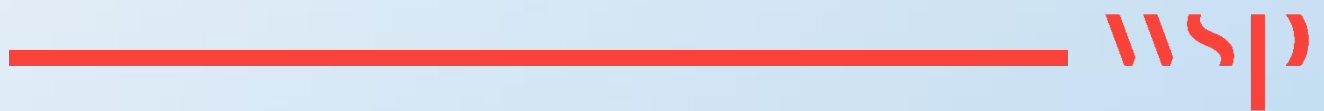
Refer to drawings:

- Location Plan**
70057126_WSP_XX_XX_DR_LA_0001
- Planting Plan**
70057126_WSP_XX_XX_DR_LA_0003
- Levels**
70057126_WSP_XX_XX_DR_LA_0004
- Boundary Treatments**
70057126_WSP_XX_XX_DR_LA_0005
- Construction Details**
70057126_WSP_XX_XX_DR_LA_0006
- Tracking and Visibility Splays**
70057126_WSP_XX_XX_DR_LA_0007

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Appendix B

SITE WALKOVER PHOTOSHEET AND MAP





DO NOT SCALE

Information Classification:

INTERNAL

Information that is only intended for internal distribution among WSP employees, independent consultants, contractors, sub-contractors, clients and authorised third parties.

Legend :



Approximate Site Boundary

Title: 70057126 - Site Photomap
Author : @WSP Enterprise
Scale : 1:564
Layout : WSP A4 Landscape
Current Time : 18/06/2021 13:55

Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2021. All Rights Reserved.



© WSP UK Ltd



Photo 1: Existing car park off Windy Arbor Road in the foreground with offsite Whiston Juniors Football Club in background. Site slopes gently to the east (photograph taken facing southeast).

wsp



Photo 2: Asphalt footpath running alongside the car park, from the gated access point at Windy Arbor Road to the offsite Whiston Juniors Football Club. Site slopes gently to the south (photograph taken facing northwest).

wsp



Photo 3: Asphalt footpath as per Photo 2, with overgrown and sloping grassy verge adjacent and recreational ground of the Whiston Juniors Football Club beyond (photograph taken facing northwest).

wsp



Photo 4: Gated vehicle access from Windy Arbor Road. Evidence of scarring presented by asphalt surface indicating past repair (photograph taken facing west).

wsp



Photo 5: Onsite gas governor (potentially a pressure reduction station) owned by Cadent Gas according to signage. Station is secured by metal fencing and locked gate (photograph taken facing northwest).

wsp



Photo 6: Stanton Plc ductile iron manhole cover adjacent to the gated vehicle access point from Windy Arbor Road.

wsp



Photo 7: Existing car park in foreground with onsite gas service station and overgrown grassland in the background (photograph taken facing northwest).

wsp



Photo 8: Existing car park to the right, with mature trees and overgrown grassland to the left including nettles, weeds and elderflower (photograph taken facing east).

wsp



Photo 9: Existing car park with overgrown grassland and a low wooden post fence (0.4m in height) along the eastern boundary (photograph taken facing north).



Photo 10: Car park surface composed of fine to coarse gravel of granite and limestone. Surface is uneven and is in poor condition.





Photo 11: Car park surface composed of fine to coarse gravel of granite and limestone.

wsp



Photo 12: Asphalt surfacing along the eastern car park boundary (photograph taken facing south).

wsp

Appendix C

GROUNDSURE INSIGHT REPORT



Car Park off Windy Arbor Road, Whiston, Prescot, L35 3PB

Order Details

Date: 16/06/2021
Your ref: 70057126
Our Ref: WSP-7961075
Client: WSP UK LIMITED

Site Details

Location: 346885 390498
Area: 0.2 ha
Authority: [Knowsley Metropolitan Borough Council](#)



Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.13 groundsure.com/insightuserguide

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
14	1.1	<u>Historical industrial land uses</u>	0	0	1	77	-
17	1.2	<u>Historical tanks</u>	0	0	4	3	-
18	1.3	<u>Historical energy features</u>	0	0	5	10	-
19	1.4	Historical petrol stations	0	0	0	0	-
19	1.5	Historical garages	0	0	0	0	-
19	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
20	2.1	<u>Historical industrial land uses</u>	0	0	1	91	-
24	2.2	<u>Historical tanks</u>	0	0	5	3	-
24	2.3	<u>Historical energy features</u>	0	0	8	20	-
26	2.4	Historical petrol stations	0	0	0	0	-
26	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
27	3.1	Active or recent landfill	0	0	0	0	-
27	3.2	<u>Historical landfill (BGS records)</u>	0	0	0	1	-
28	3.3	<u>Historical landfill (LA/mapping records)</u>	0	0	0	2	-
28	3.4	<u>Historical landfill (EA/NRW records)</u>	0	0	0	4	-
29	3.5	Historical waste sites	0	0	0	0	-
29	3.6	Licensed waste sites	0	0	0	0	-
29	3.7	<u>Waste exemptions</u>	0	0	0	1	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
31	4.1	<u>Recent industrial land uses</u>	1	0	2	-	-
32	4.2	Current or recent petrol stations	0	0	0	0	-
32	4.3	Electricity cables	0	0	0	0	-
32	4.4	Gas pipelines	0	0	0	0	-
32	4.5	Sites determined as Contaminated Land	0	0	0	0	-



32	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
33	4.7	Regulated explosive sites	0	0	0	0	-
33	4.8	Hazardous substance storage/usage	0	0	0	0	-
33	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
33	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
33	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
34	4.12	Radioactive Substance Authorisations	0	0	0	0	-
34	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
34	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
34	4.15	Pollutant release to public sewer	0	0	0	0	-
34	4.16	List 1 Dangerous Substances	0	0	0	0	-
35	4.17	List 2 Dangerous Substances	0	0	0	0	-
35	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	1	1	-
35	4.19	Pollution inventory substances	0	0	0	0	-
36	4.20	Pollution inventory waste transfers	0	0	0	0	-
36	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
37	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
39	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
41	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
42	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
42	5.5	Groundwater vulnerability- local information	None (within 0m)				
43	5.6	<u>Groundwater abstractions</u>	0	0	0	0	11
46	5.7	<u>Surface water abstractions</u>	0	0	0	0	4
48	5.8	<u>Potable abstractions</u>	0	0	0	0	5
49	5.9	Source Protection Zones	0	0	0	0	-
49	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
50	6.1	Water Network (OS MasterMap)	0	0	0	-	-

50	6.2	<u>Surface water features</u>	0	0	1	-	-
51	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
51	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
52	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
53	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
53	7.2	Historical Flood Events	0	0	0	-	-
53	7.3	Flood Defences	0	0	0	-	-
53	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
54	7.5	Flood Storage Areas	0	0	0	-	-
55	7.6	Flood Zone 2	None (within 50m)				
55	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
56	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding					
57	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
58	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
59	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
59	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
59	10.4	Special Protection Areas (SPA)	0	0	0	0	0
59	10.5	National Nature Reserves (NNR)	0	0	0	0	0
60	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
60	10.7	<u>Designated Ancient Woodland</u>	0	0	0	0	2
60	10.8	Biosphere Reserves	0	0	0	0	0
60	10.9	Forest Parks	0	0	0	0	0
61	10.10	Marine Conservation Zones	0	0	0	0	0
61	10.11	<u>Green Belt</u>	0	0	0	1	2
61	10.12	Proposed Ramsar sites	0	0	0	0	0



61	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
62	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
62	10.15	Nitrate Sensitive Areas	0	0	0	0	0
62	10.16	<u>Nitrate Vulnerable Zones</u>	1	0	0	0	2
63	10.17	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
64	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
65	11.1	World Heritage Sites	0	0	0	-	-
66	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
66	11.3	National Parks	0	0	0	-	-
66	11.4	<u>Listed Buildings</u>	0	0	1	-	-
67	11.5	Conservation Areas	0	0	0	-	-
67	11.6	Scheduled Ancient Monuments	0	0	0	-	-
67	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
68	12.1	<u>Agricultural Land Classification</u>	Grade 2 (within 250m)				
69	12.2	Open Access Land	0	0	0	-	-
69	12.3	<u>Tree Felling Licences</u>	0	0	1	-	-
69	12.4	Environmental Stewardship Schemes	0	0	0	-	-
70	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
71	13.1	<u>Priority Habitat Inventory</u>	0	0	2	-	-
72	13.2	Habitat Networks	0	0	0	-	-
72	13.3	Open Mosaic Habitat	0	0	0	-	-
72	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
73	14.1	<u>10k Availability</u>	Identified (within 500m)				
74	14.2	Artificial and made ground (10k)	0	0	0	0	-
75	14.3	<u>Superficial geology (10k)</u>	0	0	0	1	-

76	14.4	Landslip (10k)	0	0	0	0	-
77	14.5	<u>Bedrock geology (10k)</u>	0	0	0	2	-
78	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	0	0	1	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
79	15.1	<u>50k Availability</u>	Identified (within 500m)				
80	15.2	Artificial and made ground (50k)	0	0	0	0	-
80	15.3	Artificial ground permeability (50k)	0	0	-	-	-
81	15.4	<u>Superficial geology (50k)</u>	1	0	0	0	-
82	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
82	15.6	Landslip (50k)	0	0	0	0	-
82	15.7	Landslip permeability (50k)	None (within 50m)				
83	15.8	<u>Bedrock geology (50k)</u>	1	0	1	3	-
84	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
84	15.10	<u>Bedrock faults and other linear features (50k)</u>	2	2	11	5	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
86	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
87	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
88	17.2	<u>Running sands</u>	Very low (within 50m)				
89	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
90	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
91	17.5	<u>Landslides</u>	Very low (within 50m)				
92	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
93	18.1	Natural cavities	0	0	0	0	-
94	18.2	<u>BritPits</u>	0	0	0	9	-
96	18.3	<u>Surface ground workings</u>	0	0	11	-	-
96	18.4	<u>Underground workings</u>	0	0	0	16	57
99	18.5	<u>Historical Mineral Planning Areas</u>	0	0	1	1	-



100	18.6	<u>Non-coal mining</u>	0	0	0	0	1
100	18.7	Mining cavities	0	0	0	0	0
100	18.8	JPB mining areas	None (within 0m)				
100	18.9	<u>Coal mining</u>	Identified (within 0m)				
101	18.10	Brine areas	None (within 0m)				
101	18.11	Gypsum areas	None (within 0m)				
101	18.12	Tin mining	None (within 0m)				
101	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
102	19.1	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
103	20.1	<u>BGS Estimated Background Soil Chemistry</u>	2	0	-	-	-
103	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
103	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
104	21.1	Underground railways (London)	0	0	0	-	-
104	21.2	Underground railways (Non-London)	0	0	0	-	-
104	21.3	Railway tunnels	0	0	0	-	-
104	21.4	Historical railway and tunnel features	0	0	0	-	-
104	21.5	Royal Mail tunnels	0	0	0	-	-
105	21.6	Historical railways	0	0	0	-	-
105	21.7	Railways	0	0	0	-	-
105	21.8	Crossrail 1	0	0	0	0	-
105	21.9	Crossrail 2	0	0	0	0	-
105	21.10	HS2	0	0	0	0	-

Recent aerial photograph



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Capture Date: 22/04/2019

Site Area: 0.2ha



Recent site history - 2015 aerial photograph



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Capture Date: 11/06/2015

Site Area: 0.2ha



Recent site history - 2009 aerial photograph



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Capture Date: 24/06/2009

Site Area: 0.2ha



Recent site history - 2005 aerial photograph



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Capture Date: 02/09/2005

Site Area: 0.2ha



Recent site history - 2000 aerial photograph



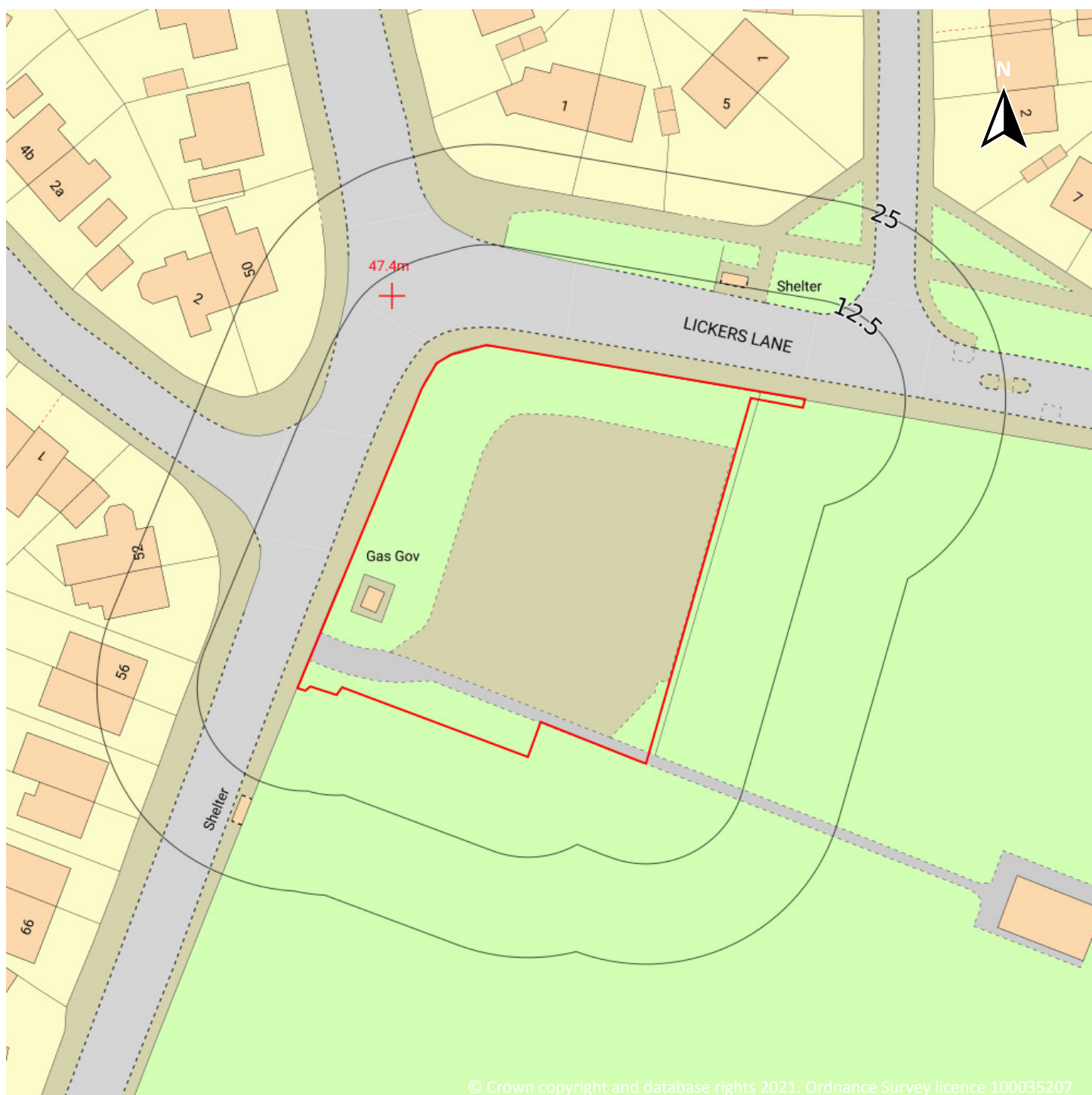
Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2021. All Rights Reserved.

Capture Date: 21/07/2000

Site Area: 0.2ha



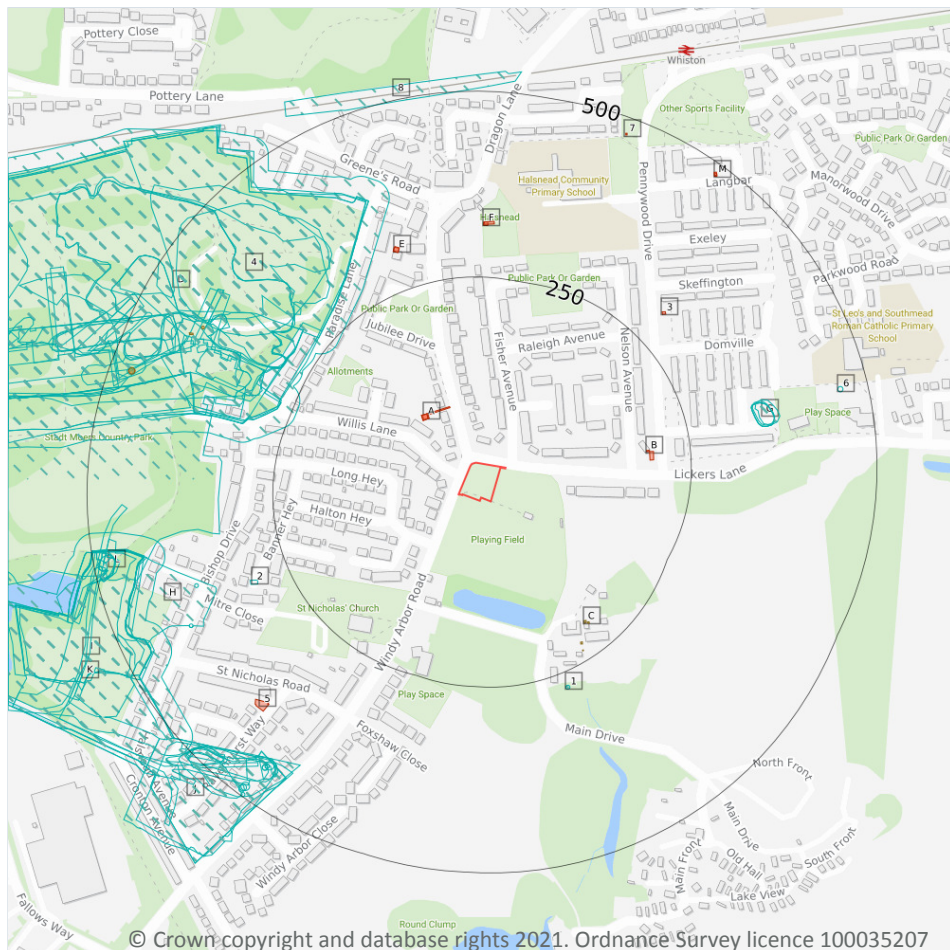
OS MasterMap site plan



Site Area: 0.2ha



1 Past land use



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

1.1 Historical industrial land uses

Records within 500m

78

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 14**

ID	Location	Land use	Dates present	Group ID
D	242m NW	Brick Works	1955	850733



ID	Location	Land use	Dates present	Group ID
D	261m NW	Brick Works	1925	971266
D	266m NW	Unspecified Works	1966	938571
D	267m NW	Brick Works	1947	857105
1	268m SE	Coal Pit	1851	808449
D	269m W	Metallic Brick Works	1938	802234
D	270m NW	Refuse Heap	1990	962218
D	283m NW	Brick Works	1906	960091
D	284m NW	Unspecified Pits	1925	811211
D	284m NW	Unspecified Ground Workings	1947 - 1955	927003
D	286m NW	Unspecified Pit	1906	895881
D	286m NW	Unspecified Pit	1938	966306
2	294m SW	Weighing Machine	1851	810041
D	299m W	Mineral Railway Sidings	1925	834016
D	306m NW	Unspecified Ground Workings	1966	907411
D	306m NW	Railway Sidings	1938	895504
4	311m NW	Unspecified Disused Pit	1975	822427
D	311m W	Unspecified Disused Works	1975	813349
D	317m W	Railway Sidings	1906	972574
D	331m NW	Railway Sidings	1955	856324
G	340m E	Unspecified Old Quarry	1891	832928
G	340m E	Unspecified Pit	1906 - 1925	863063
G	340m E	Unspecified Pit	1947	873586
G	342m E	Unspecified Pit	1938	912597
G	345m E	Unspecified Pit	1955	857515
H	350m W	Colliery	1851	798248
H	371m W	Coal Pit	1851	808450
D	386m NW	Unspecified Kilns	1947 - 1955	933882
H	398m SW	Coal Pit	1851	808451



ID	Location	Land use	Dates present	Group ID
D	403m W	Colliery	1891	798243
D	403m W	Railway Sidings	1891	853428
I	403m W	Disused Colliery	1955	946509
D	406m NW	Unspecified Kilns	1947 - 1955	891923
J	422m SW	Old Colliery	1891 - 1906	943828
I	428m W	Unspecified Disused Mine	1966	810940
D	429m W	Unspecified Ground Workings	1906	945029
I	431m W	Disused Colliery	1938	947601
I	431m W	Disused Colliery	1938	956293
I	432m W	Disused Colliery	1906	921785
K	432m W	Disused Colliery	1925	879683
K	432m W	Disused Colliery	1947	956965
D	434m NW	Unspecified Heap	1891	909880
J	435m SW	Colliery	1851	798249
J	436m SW	Unspecified Ground Workings	1906	971379
J	437m SW	Unspecified Ground Workings	1925	920783
J	438m SW	Unspecified Heap	1955	886581
J	439m SW	Unspecified Disused Shafts	1966	835394
J	439m SW	Unspecified Ground Workings	1947 - 1955	918600
I	442m W	Colliery	1851 - 1891	873412
J	445m SW	Unspecified Old Shaft	1955	806152
J	445m SW	Unspecified Heap	1891	865998
K	446m W	Railway Sidings	1851	959646
J	447m SW	Unspecified Old Shafts	1947	951254
J	447m SW	Unspecified Old Shafts	1925	971251
D	454m W	Gravel Pit	1906	807785
6	459m E	Sandstone Quarry	1851	837894
L	464m W	Unspecified Ground Workings	1966	917231

ID	Location	Land use	Dates present	Group ID
D	468m W	Unspecified Tank	1891	824610
L	470m W	Unspecified Ground Workings	1955	946702
L	471m W	Unspecified Ground Workings	1925	951240
L	471m W	Unspecified Ground Workings	1947	966237
L	471m W	Unspecified Ground Workings	1938	976666
J	471m SW	Unspecified Heap	1966	917620
L	471m W	Unspecified Ground Workings	1906	900026
D	472m W	Railway Sidings	1955	904167
J	473m SW	Unspecified Ground Workings	1925	961857
J	476m SW	Unspecified Heap	1938	892612
D	479m W	Railway Sidings	1947	868791
J	481m SW	Unspecified Disused Shafts	1966	835393
L	483m W	Unspecified Heap	1891	926719
J	483m SW	Unspecified Heap	1891	867572
J	485m SW	Unspecified Old Shaft	1955	806147
I	485m SW	Unspecified Ground Workings	1891	799829
J	487m SW	Unspecified Old Shafts	1925 - 1947	940194
I	490m W	Mineral Railway Sidings	1891	834013
J	495m SW	Coal Pit	1851	808448
J	495m SW	Magazine	1891	827279
8	497m N	Cuttings	1851	858559

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

7

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



Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
C	204m SE	Unspecified Tank	1958	112551
C	208m SE	Unspecified Tank	1927 - 1937	131758
C	225m SE	Unspecified Tank	1958	112553
C	235m SE	Unspecified Tank	1937	112552
D	403m NW	Unspecified Tank	1927	113274
D	413m NW	Unspecified Tank	1937	113275
D	466m W	Gasometer	1892	108456

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

15

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

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	81m N	Electricity Substation	1973	77181
A	84m NW	Electricity Substation	1984	70864
A	85m NW	Electricity Substation	1994	80937
B	191m E	Electricity Substation	1974	61504
B	195m E	Electricity Substation	1995 - 1999	84169
3	295m NE	Electricity Substation	1995 - 1999	83008
E	301m N	Electricity Substation	1994	80453
E	302m N	Electricity Substation	1973 - 1984	69587
F	320m N	Electricity Substation	1984 - 1994	84347
F	321m N	Electricity Substation	1973	84983



ID	Location	Land use	Dates present	Group ID
5	379m SW	Electricity Substation	1973 - 1997	73218
D	466m W	Gasometer	1892	59649
7	476m N	Gas Substation	1974	63701
M	483m NE	Electricity Substation	1995 - 1999	67717
M	484m NE	Electricity Substation	1974	70448

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

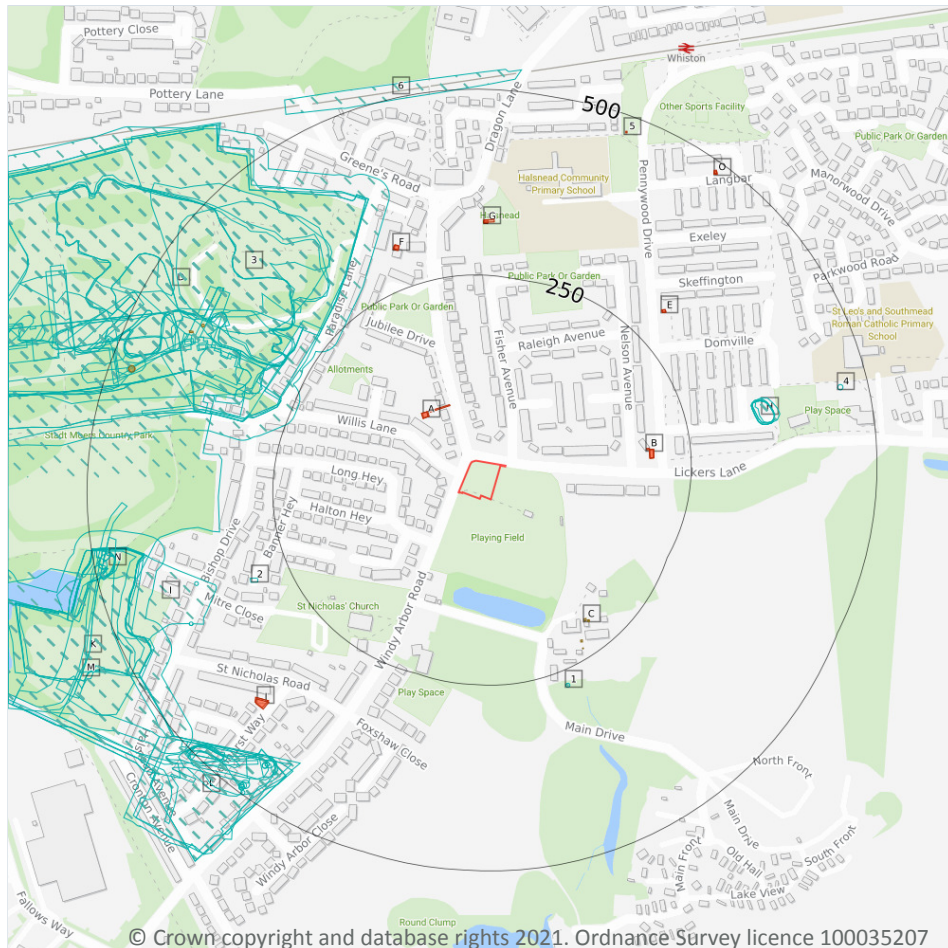
0

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

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



2 Past land use - un-grouped



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

2.1 Historical industrial land uses

Records within 500m

92

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

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

ID	Location	Land Use	Date	Group ID
D	242m NW	Brick Works	1955	850733
D	261m NW	Brick Works	1925	971266
D	266m NW	Unspecified Works	1966	938571



ID	Location	Land Use	Date	Group ID
D	267m NW	Brick Works	1947	857105
1	268m SE	Coal Pit	1851	808449
D	269m W	Metallic Brick Works	1938	802234
D	270m NW	Refuse Heap	1990	962218
D	283m NW	Brick Works	1906	960091
D	284m NW	Unspecified Pits	1925	811211
D	284m NW	Unspecified Ground Workings	1955	927003
D	286m NW	Unspecified Pit	1906	895881
D	286m NW	Unspecified Pit	1938	966306
D	286m NW	Unspecified Pit	1938	966306
D	286m NW	Unspecified Ground Workings	1947	927003
2	294m SW	Weighing Machine	1851	810041
D	299m W	Mineral Railway Sidings	1925	834016
D	306m NW	Unspecified Ground Workings	1966	907411
D	306m NW	Railway Sidings	1938	895504
3	311m NW	Unspecified Disused Pit	1975	822427
D	311m W	Unspecified Disused Works	1975	813349
D	317m W	Railway Sidings	1906	972574
D	331m NW	Railway Sidings	1955	856324
H	340m E	Unspecified Pit	1947	873586
H	340m E	Unspecified Pit	1925	863063
H	340m E	Unspecified Pit	1906	863063
H	340m E	Unspecified Old Quarry	1891	832928
H	342m E	Unspecified Pit	1938	912597
H	342m E	Unspecified Pit	1938	912597
H	345m E	Unspecified Pit	1955	857515
I	350m W	Colliery	1851	798248
I	371m W	Coal Pit	1851	808450



ID	Location	Land Use	Date	Group ID
D	386m NW	Unspecified Kilns	1955	933882
D	388m NW	Unspecified Kilns	1947	933882
I	398m SW	Coal Pit	1851	808451
D	403m W	Colliery	1891	798243
D	403m W	Railway Sidings	1891	853428
K	403m W	Disused Colliery	1955	946509
D	406m NW	Unspecified Kilns	1955	891923
D	407m NW	Unspecified Kilns	1947	891923
L	422m SW	Old Colliery	1906	943828
K	428m W	Unspecified Disused Mine	1966	810940
D	429m W	Unspecified Ground Workings	1906	945029
L	430m SW	Old Colliery	1891	943828
K	431m W	Disused Colliery	1938	947601
K	431m W	Disused Colliery	1938	956293
K	432m W	Disused Colliery	1906	921785
M	432m W	Disused Colliery	1947	956965
M	432m W	Disused Colliery	1925	879683
D	434m NW	Unspecified Heap	1891	909880
L	435m SW	Colliery	1851	798249
L	436m SW	Unspecified Ground Workings	1906	971379
L	437m SW	Unspecified Ground Workings	1925	920783
L	438m SW	Unspecified Heap	1955	886581
L	439m SW	Unspecified Disused Shafts	1966	835394
L	439m SW	Unspecified Ground Workings	1947	918600
K	442m W	Colliery	1891	873412
L	445m SW	Unspecified Old Shaft	1955	806152
L	445m SW	Unspecified Heap	1891	865998
M	446m W	Railway Sidings	1851	959646



ID	Location	Land Use	Date	Group ID
L	447m SW	Unspecified Old Shafts	1947	951254
L	447m SW	Unspecified Old Shafts	1925	971251
D	454m W	Gravel Pit	1906	807785
4	459m E	Sandstone Quarry	1851	837894
N	464m W	Unspecified Ground Workings	1966	917231
K	465m W	Colliery	1851	873412
D	468m W	Unspecified Tank	1891	824610
L	470m SW	Unspecified Ground Workings	1955	918600
N	470m W	Unspecified Ground Workings	1955	946702
N	471m W	Unspecified Ground Workings	1947	966237
N	471m W	Unspecified Ground Workings	1925	951240
N	471m W	Unspecified Ground Workings	1938	976666
N	471m W	Unspecified Ground Workings	1938	976666
L	471m SW	Unspecified Heap	1966	917620
N	471m W	Unspecified Ground Workings	1906	900026
D	472m W	Railway Sidings	1955	904167
L	473m SW	Unspecified Ground Workings	1925	961857
L	476m SW	Unspecified Heap	1938	892612
L	476m SW	Unspecified Heap	1938	892612
D	479m W	Railway Sidings	1947	868791
L	481m SW	Unspecified Disused Shafts	1966	835393
N	483m W	Unspecified Heap	1891	926719
L	483m SW	Unspecified Heap	1891	867572
L	485m SW	Unspecified Old Shaft	1955	806147
K	485m SW	Unspecified Ground Workings	1891	799829
L	487m SW	Unspecified Old Shafts	1938	940194
L	487m SW	Unspecified Old Shafts	1938	940194
L	489m SW	Unspecified Old Shafts	1947	940194



ID	Location	Land Use	Date	Group ID
L	489m SW	Unspecified Old Shafts	1925	940194
K	490m W	Mineral Railway Sidings	1891	834013
L	495m SW	Coal Pit	1851	808448
L	495m SW	Magazine	1891	827279
6	497m N	Cuttings	1851	858559

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

8

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

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

ID	Location	Land Use	Date	Group ID
C	204m SE	Unspecified Tank	1958	112551
C	208m SE	Unspecified Tank	1927	131758
C	208m SE	Unspecified Tank	1937	131758
C	225m SE	Unspecified Tank	1958	112553
C	235m SE	Unspecified Tank	1937	112552
D	403m NW	Unspecified Tank	1927	113274
D	413m NW	Unspecified Tank	1937	113275
D	466m W	Gasometer	1892	108456

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

28

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



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

ID	Location	Land Use	Date	Group ID
A	81m N	Electricity Substation	1973	77181
A	84m NW	Electricity Substation	1984	70864
A	85m NW	Electricity Substation	1994	80937
B	191m E	Electricity Substation	1974	61504
B	195m E	Electricity Substation	1996	84169
B	195m E	Electricity Substation	1995	84169
B	195m E	Electricity Substation	1996	84169
B	195m E	Electricity Substation	1999	84169
E	295m NE	Electricity Substation	1996	83008
E	295m NE	Electricity Substation	1995	83008
E	295m NE	Electricity Substation	1996	83008
E	295m NE	Electricity Substation	1999	83008
F	301m N	Electricity Substation	1994	80453
F	302m N	Electricity Substation	1973	69587
F	302m N	Electricity Substation	1984	69587
G	320m N	Electricity Substation	1994	84347
G	321m N	Electricity Substation	1984	84347
G	321m N	Electricity Substation	1973	84983
J	379m SW	Electricity Substation	1973	73218
J	380m SW	Electricity Substation	1984	73218
J	381m SW	Electricity Substation	1997	73218
D	466m W	Gasometer	1892	59649
5	476m N	Gas Substation	1974	63701
O	483m NE	Electricity Substation	1996	67717
O	483m NE	Electricity Substation	1995	67717
O	483m NE	Electricity Substation	1996	67717
O	483m NE	Electricity Substation	1999	67717

ID	Location	Land Use	Date	Group ID
O	484m NE	Electricity Substation	1974	70448

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

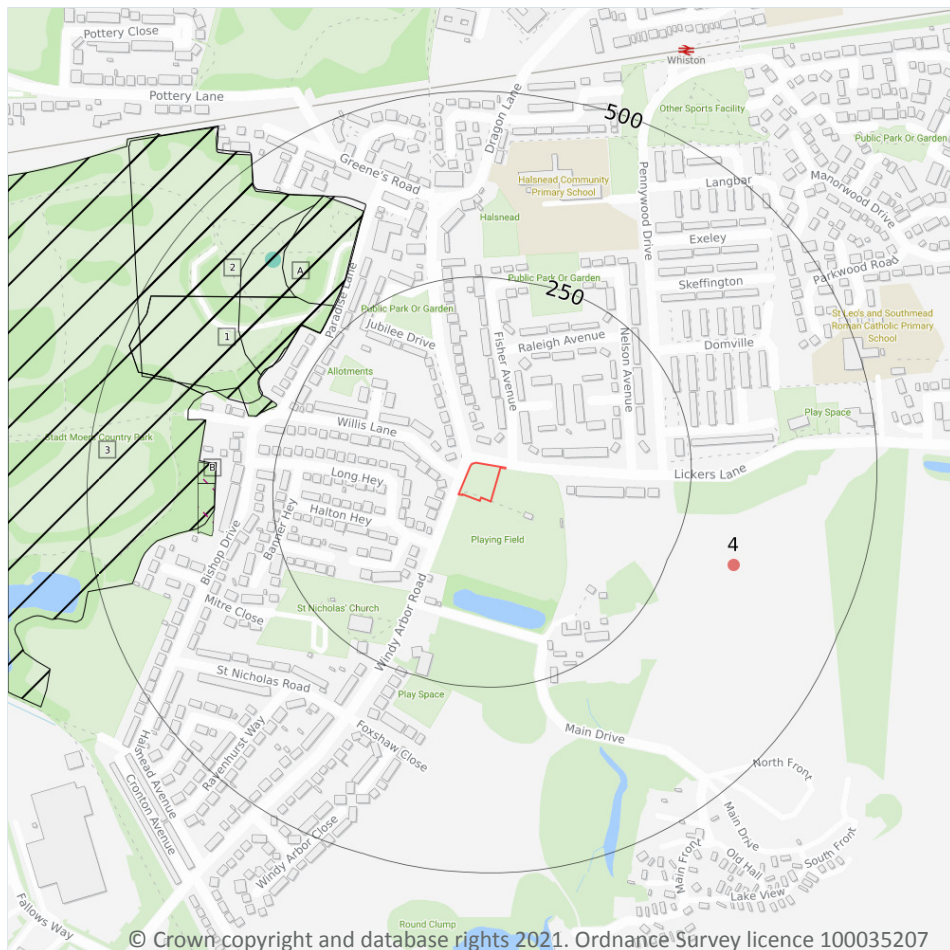
0

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

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Historical landfill (EA/NRW)
- Historical landfill (BGS)
- Historical landfill (LA/OS)
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

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

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

3.2 Historical landfill (BGS records)

Records within 500m

1

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.

Features are displayed on the Waste and landfill map on **page 27**



ID	Location	Address	BGS Number	Risk	Waste Type
A	383m NW	Whiston Tip, St Helens, Lancs	2786	No risk to aquifer	N/A

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	2
----------------------------	----------

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

Features are displayed on the Waste and landfill map on **page 27**

ID	Location	Site address	Source	Data type
B	328m W	Refuse Tip	1994 mapping	Polygon
B	328m W	Refuse Tip	1997 mapping	Polygon

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	4
----------------------------	----------

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

Features are displayed on the Waste and landfill map on **page 27**

ID	Location	Details		
1	269m NW	Site Address: Coalgate Lane Wimpeym, Tushinghams Quarry, Paradise Lane, Stadt-Moers Park, Knowsley, Merseyside Licence Holder Address: Bridle Road, Bootle	Waste Licence: - Site Reference: GDO M017, 026/01 Waste Type: Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: G Wimpey and Company Limited Licence Holder: G Wimpey and Company Limited First Recorded 31/12/1976 Last Recorded: 01/01/1979
A	269m NW	Site Address: Tushinghams Quarry, Coalgate Lane, Paradise Lane, Stadt-Moers Park, Whiston, Merseyside, Knowsley Licence Holder Address: Bridle Road, Bootle, Merseyside	Waste Licence: Yes Site Reference: 026/01,GDO 020 Waste Type: Commercial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 27/05/1977 Licence Surrender: -	Operator: W F Doyle and Company Limited Licence Holder: George Wimpey and Company Limited First Recorded 01/04/1976 Last Recorded: 31/12/1979

ID	Location	Details		
2	269m NW	Site Address: Whiston Tip, St Helens, Lancashire Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Central Electricity Generating Board - North Western Region Licence Holder: - First Recorded 07/01/1967 Last Recorded: -
3	324m NW	Site Address: Coalgate Lane Landfill Site, Ellis Ashton Street, Huyton, Knowsley, Merseyside Licence Holder Address: -	Waste Licence: - Site Reference: R13/01, GDO 017, GDO M019, GDO 020 Waste Type: Inert, Industrial, Commercial, Household, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Huyton Urban District Council and Merseyside County Council Licence Holder: Huyton Urban District Council and Merseyside County Council First Recorded 01/01/1972 Last Recorded: 01/01/1983

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	1
----------------------------	----------

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 27**

ID	Location	Site	Reference	Category	Sub-Category	Description
4	333m SE	Norlands Farm Norlands Lane Widnes WA8 5AT	EPR/FE5748CS /A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of sludge

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



4 Current industrial land use



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

4.1 Recent industrial land uses

Records within 250m

3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 31**

ID	Location	Company	Address	Activity	Category
1	On site	Gas Governor	Merseyside, L35	Gas Features	Infrastructure and Facilities
2	90m NW	Electricity Sub Station	Merseyside, L35	Electrical Features	Infrastructure and Facilities
4	192m E	Electricity Sub Station	Merseyside, L35	Electrical Features	Infrastructure and Facilities



This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m

0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m

0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m**0**

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m**0**

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m**0**

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m**0**

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

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

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

Records within 500m**0**

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

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m**0**

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

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m**0**

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

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

4.15 Pollutant release to public sewer

Records within 500m**0**

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m**0**

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

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

4.17 List 2 Dangerous Substances

Records within 500m

0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m

2

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

Features are displayed on the Current industrial land use map on **page 31**

ID	Location	Details	
3	160m S	Incident Date: 15/07/2002 Incident Identification: 91608 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
5	309m S	Incident Date: 20/05/2002 Incident Identification: 79877 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m

0

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

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

4.20 Pollution inventory waste transfers

Records within 500m

0

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

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

4.21 Pollution inventory radioactive waste

Records within 500m

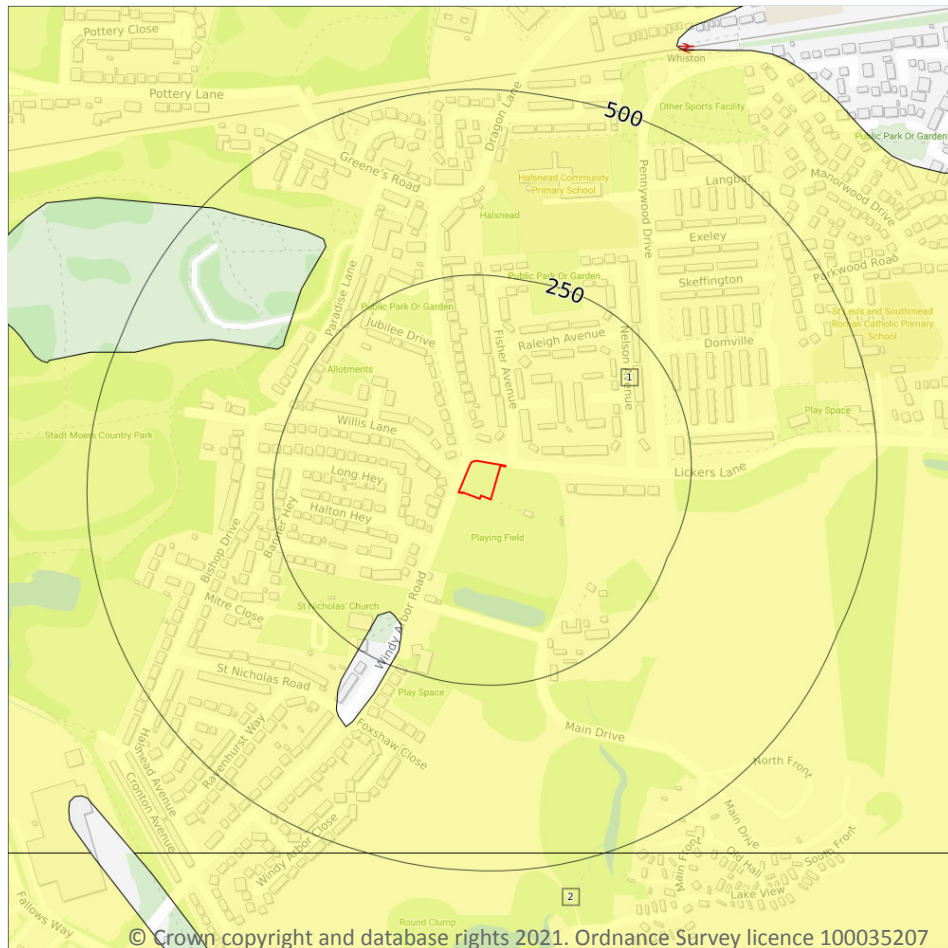
0

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

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



5 Hydrogeology - Superficial aquifer



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

5.1 Superficial aquifer

Records within 500m

2

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 37**

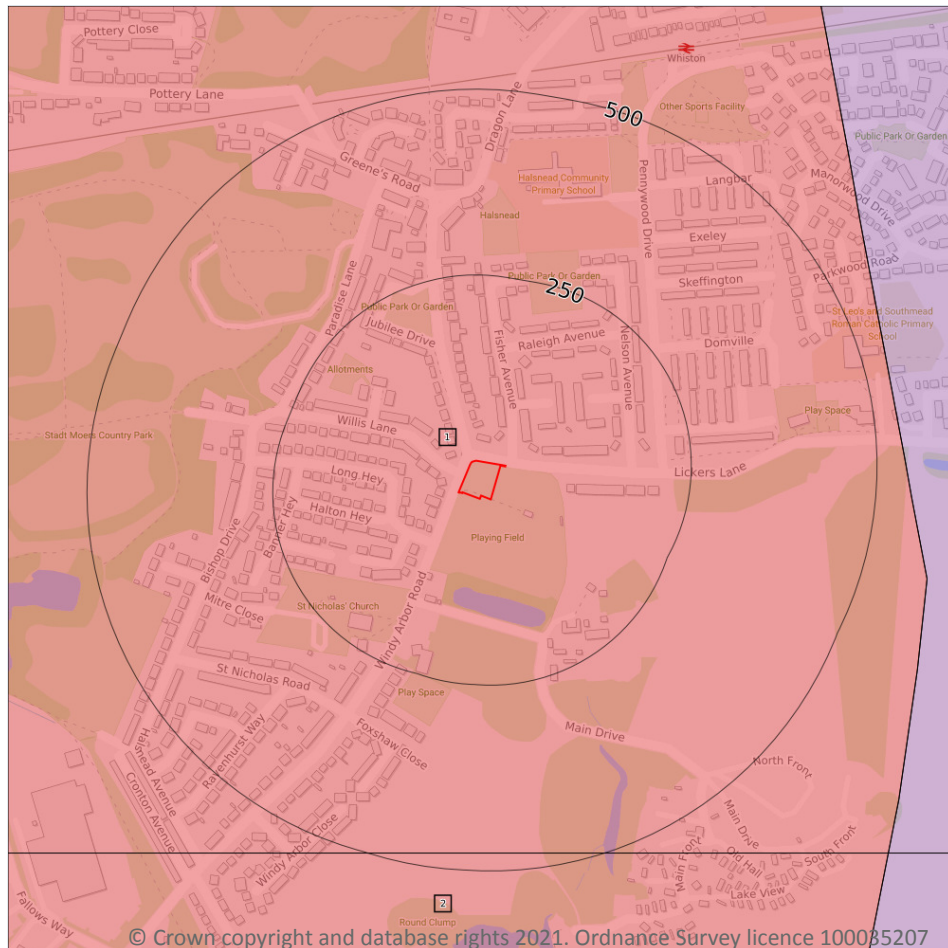
ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	476m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type



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 39**

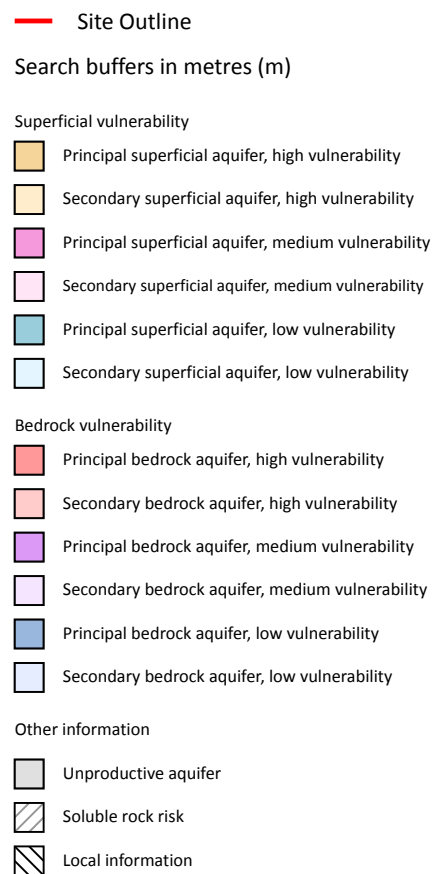
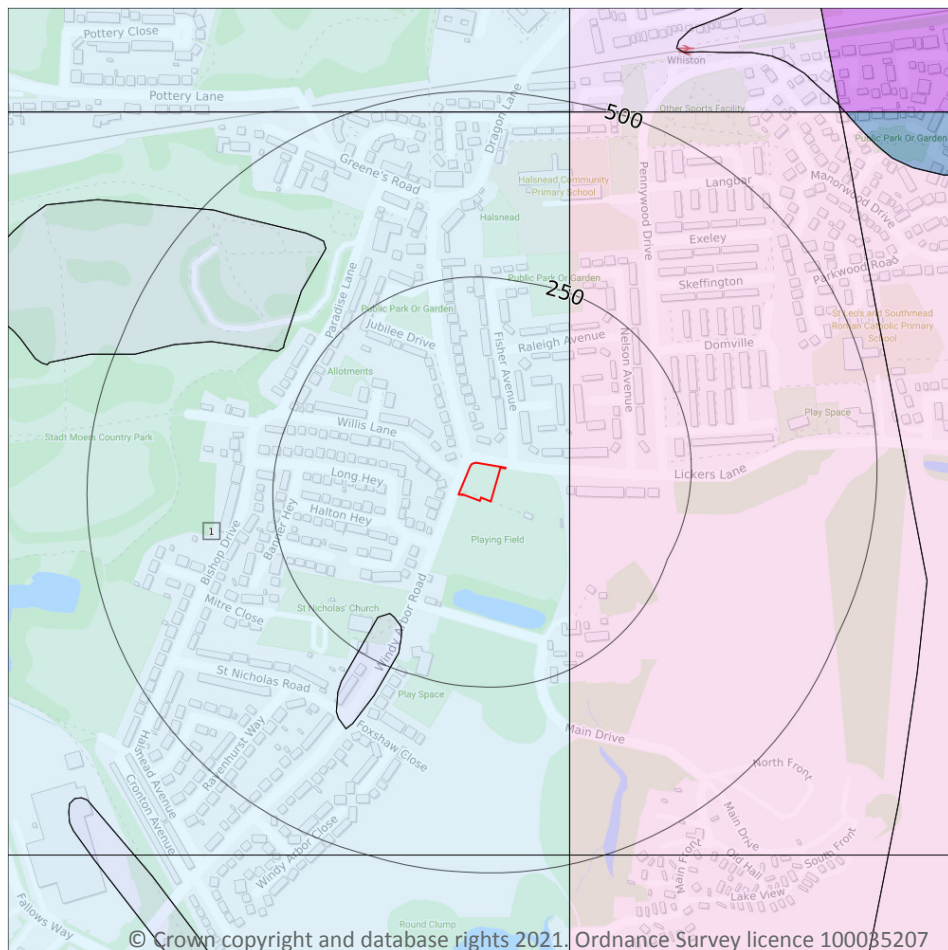
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	476m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers



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



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

1

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 41**

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: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site

0

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

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

5.5 Groundwater vulnerability- local information

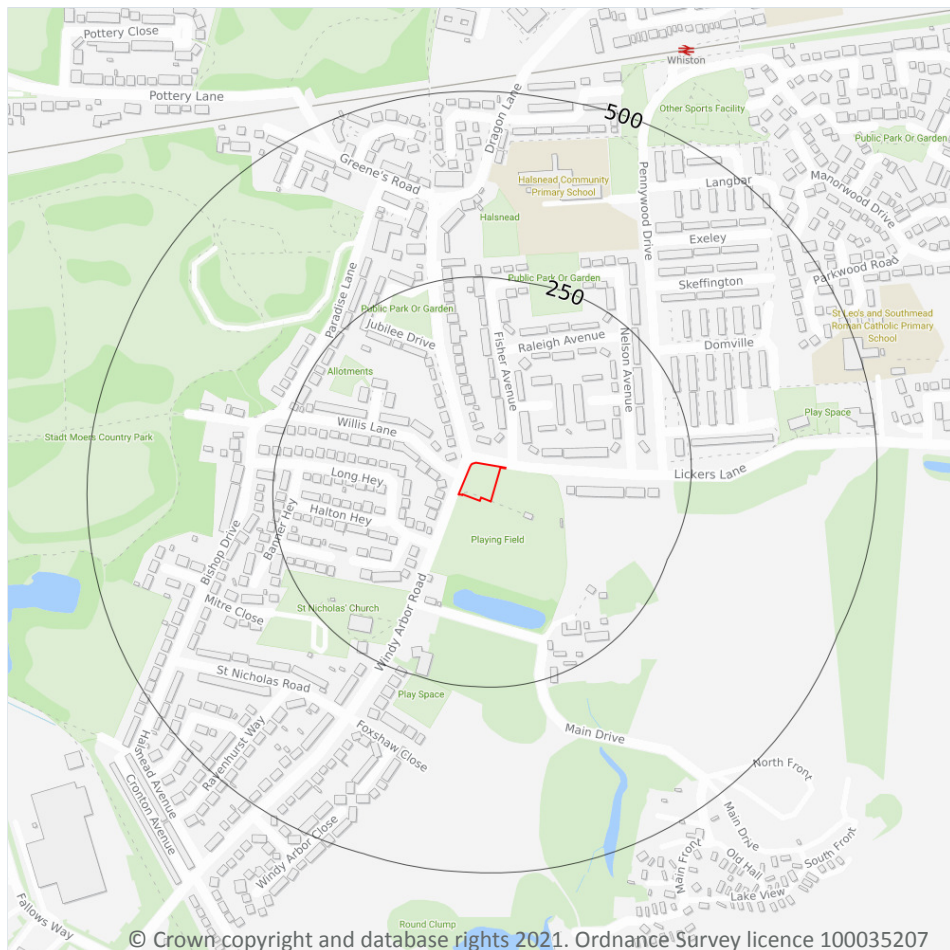
Records on site

0

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

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

Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)**
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

11

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 43**

ID	Location	Details	
-	1419m NE	Status: Historical Licence No: 2569028008 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: 2 WELLS + CONNECTING B/HOLES, CUMBER LA, WHISTON, MERSEYSIDE Data Type: Point Name: NORTH WEST WATER LTD Easting: 348100 Northing: 391300	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 16/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/1966 Version End Date: -
-	1476m NE	Status: Historical Licence No: 2569028020 Details: Laundry Use Direct Source: Ground Water - North West Region Point: "BOREHOLE AT STONEY LANE, RAINHILL" Data Type: Point Name: THE SUNLIGHT SERVICES GROUP LTD Easting: 348100 Northing: 391400	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/06/1993 Expiry Date: - Issue No: 101 Version Start Date: 24/10/1996 Version End Date: -
-	1476m NE	Status: Active Licence No: 2569028020 Details: Laundry Use Direct Source: Ground Water - North West Region Point: BOREHOLE AT STONEY LANE, RAINHILL Data Type: Point Name: Elis UK Limited Easting: 348100 Northing: 391400	Annual Volume (m ³): 118,181.82 Max Daily Volume (m ³): 545.46 Original Application No: - Original Start Date: 01/06/1993 Expiry Date: - Issue No: 103 Version Start Date: 20/01/2021 Version End Date: -
-	1646m E	Status: Historical Licence No: 2569028021 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "B/HOLE AT BLUNDELLS HILL GOLF CLUB, BLUNDELLS LANE, RAINHILL" Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD Easting: 348550 Northing: 390340	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 06/09/1994 Expiry Date: - Issue No: 101 Version Start Date: 19/02/2001 Version End Date: -

ID	Location	Details	
-	1646m E	Status: Historical Licence No: 2569028021 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "B/HOLE AT BLUNDELLS HILL GOLF CLUB, BLUNDELLS LANE, RAINHILL" Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD Easting: 348550 Northing: 390340	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 06/09/1994 Expiry Date: - Issue No: 101 Version Start Date: 19/02/2001 Version End Date: -
-	1646m E	Status: Active Licence No: 2569028021 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: B/HOLE AT BLUNDELLS HILL GOLF CLUB, BLUNDELLS LANE, RAINHILL Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD Easting: 348550 Northing: 390340	Annual Volume (m ³): 21,966.87 Max Daily Volume (m ³): 191.81 Original Application No: - Original Start Date: 06/09/1994 Expiry Date: - Issue No: 103 Version Start Date: 07/11/2018 Version End Date: -
-	1646m E	Status: Active Licence No: 2569028021 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: B/HOLE AT BLUNDELLS HILL GOLF CLUB, BLUNDELLS LANE, RAINHILL Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD Easting: 348550 Northing: 390340	Annual Volume (m ³): 21,966.87 Max Daily Volume (m ³): 191.81 Original Application No: - Original Start Date: 06/09/1994 Expiry Date: - Issue No: 103 Version Start Date: 07/11/2018 Version End Date: -
-	1916m NE	Status: Historical Licence No: 2569025072 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "TWO BOREHOLES AT WHISTON HOSPITAL, PRESCOT, MERSEYSIDE" Data Type: Point Name: ST HELENS AND KNOWSLEY HOSPITALS Easting: 348000 Northing: 392100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/08/1992 Expiry Date: - Issue No: 100 Version Start Date: 13/08/1992 Version End Date: -

ID	Location	Details	
-	1916m NE	Status: Historical Licence No: 2569025072 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "TWO BOREHOLES AT WHISTON HOSPITAL, PRESCOT, MERSEYSIDE" Data Type: Point Name: ST HELENS AND KNOWSLEY HOSPITALS Easting: 348000 Northing: 392100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/08/1992 Expiry Date: - Issue No: 100 Version Start Date: 13/08/1992 Version End Date: -
-	1916m NE	Status: Historical Licence No: 2569025072 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: TWO BOREHOLES AT WHISTON HOSPITAL, PRESCOT, MERSEYSIDE Data Type: Point Name: ST HELENS AND KNOWSLEY HOSPITALS Easting: 348000 Northing: 392100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/08/1992 Expiry Date: - Issue No: 100 Version Start Date: 13/08/1992 Version End Date: -
-	1916m NE	Status: Historical Licence No: 2569025072 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: TWO BOREHOLES AT WHISTON HOSPITAL, PRESCOT, MERSEYSIDE Data Type: Point Name: ST HELENS AND KNOWSLEY HOSPITALS Easting: 348000 Northing: 392100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/08/1992 Expiry Date: - Issue No: 100 Version Start Date: 13/08/1992 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m

4

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 43**



ID	Location	Details	
-	1404m S	Status: Historical Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: "Surface, Non-Tidal - North West Region" Point: "OCHRE & DOG CLOG BRKS, TARBOCK HALL FARM, TARBOCK, PRESCOT" Data Type: Line Name: T H CRITCHLEY & SON Easting: 346600 Northing: 389100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/05/1976 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1993 Version End Date: -
-	1404m S	Status: Historical Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: OCHRE & DOG CLOG BRKS, TARBOCK HALL FARM, TARBOCK, PRESCOT Data Type: Line Name: T H CRITCHLEY & SON Easting: 346600 Northing: 389100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/05/1976 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1993 Version End Date: -
-	1404m S	Status: Historical Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: OCHRE AND DOG CLOG BROOKS TARBOCK HALL FARM PRESCOT Data Type: Line Name: T H CRITCHLEY & SON Easting: 346600 Northing: 389100	Annual Volume (m ³): 2098 Max Daily Volume (m ³): 636 Original Application No: - Original Start Date: 13/05/1976 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1993 Version End Date: -
-	1936m S	Status: Active Licence No: 2569028018 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: OCHRE AND DOG CLOG BROOKS TARBOCK HALL FARM PRESCOT Data Type: Line Name: BELPOOL DEVELOPMENTS LTD Easting: 346400 Northing: 388600	Annual Volume (m ³): 2,098 Max Daily Volume (m ³): 636 Original Application No: - Original Start Date: 13/05/1976 Expiry Date: - Issue No: 102 Version Start Date: 31/01/2011 Version End Date: -

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



5.8 Potable abstractions

Records within 2000m

5

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 43**

ID	Location	Details	
-	1419m NE	Status: Historical Licence No: 2569028008 Details: Potable Water Supply - Direct Direct Source: Ground Water - North West Region Point: 2 WELLS + CONNECTING B/HOLES, CUMBER LA, WHISTON, MERSEYSIDE Data Type: Point Name: NORTH WEST WATER LTD Easting: 348100 Northing: 391300	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 16/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/1966 Version End Date: -
-	1646m E	Status: Historical Licence No: 2569028021 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "B/HOLE AT BLUNDELLS HILL GOLF CLUB, BLUNDELLS LANE, RAINHILL" Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD Easting: 348550 Northing: 390340	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 06/09/1994 Expiry Date: - Issue No: 101 Version Start Date: 19/02/2001 Version End Date: -
-	1646m E	Status: Active Licence No: 2569028021 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: B/HOLE AT BLUNDELLS HILL GOLF CLUB, BLUNDELLS LANE, RAINHILL Data Type: Point Name: BLUNDELLS HILL GOLF CLUB LTD Easting: 348550 Northing: 390340	Annual Volume (m ³): 21,966.87 Max Daily Volume (m ³): 191.81 Original Application No: - Original Start Date: 06/09/1994 Expiry Date: - Issue No: 103 Version Start Date: 07/11/2018 Version End Date: -

ID	Location	Details	
-	1916m NE	Status: Historical Licence No: 2569025072 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "TWO BOREHOLES AT WHISTON HOSPITAL, PRESCOT, MERSEYSIDE" Data Type: Point Name: ST HELENS AND KNOWSLEY HOSPITALS Easting: 348000 Northing: 392100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/08/1992 Expiry Date: - Issue No: 100 Version Start Date: 13/08/1992 Version End Date: -
-	1916m NE	Status: Historical Licence No: 2569025072 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: TWO BOREHOLES AT WHISTON HOSPITAL, PRESCOT, MERSEYSIDE Data Type: Point Name: ST HELENS AND KNOWSLEY HOSPITALS Easting: 348000 Northing: 392100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/08/1992 Expiry Date: - Issue No: 100 Version Start Date: 13/08/1992 Version End Date: -

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

5.9 Source Protection Zones

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

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

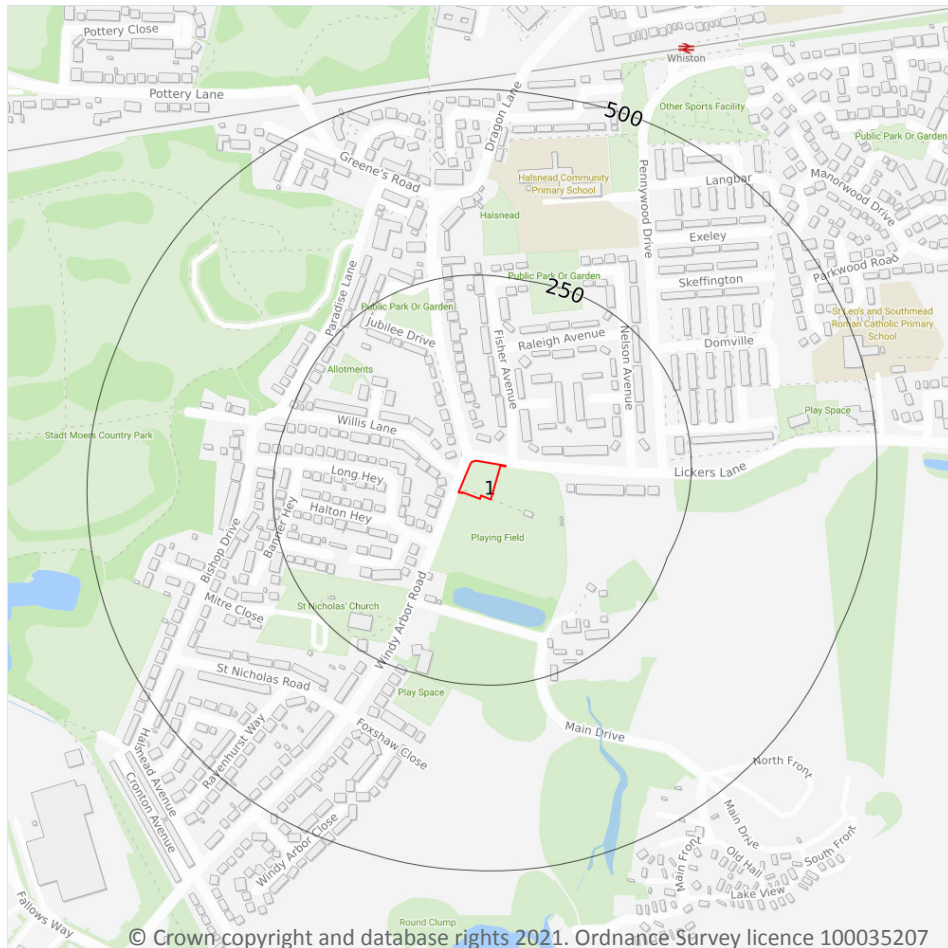
5.10 Source Protection Zones (confined aquifer)

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

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

6 Hydrology



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

6.1 Water Network (OS MasterMap)

Records within 250m

0

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

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

1

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

Features are displayed on the Hydrology map on **page 50**

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 50**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River WB catchment	Prescot Brook (Logwood Mill Brook)	GB112069060710	Ditton	Lower 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 50**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	905m W	River	Prescot Brook (Logwood Mill Brook)	GB112069060710	Poor	Good	Poor	2016

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

6.5 WFD Groundwater bodies

Records on site

0

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.

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



7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

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).

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

7.2 Historical Flood Events

Records within 250m

0

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

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

7.3 Flood Defences

Records within 250m

0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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

7.5 Flood Storage Areas

Records within 250m

0

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

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

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

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

7.7 Flood Zone 3

Records within 50m	0
--------------------	---

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

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

8 Surface water flooding

8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

Negligible

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

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

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.



9 Groundwater flooding



— Site Outline
Search buffers in metres (m)

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

9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

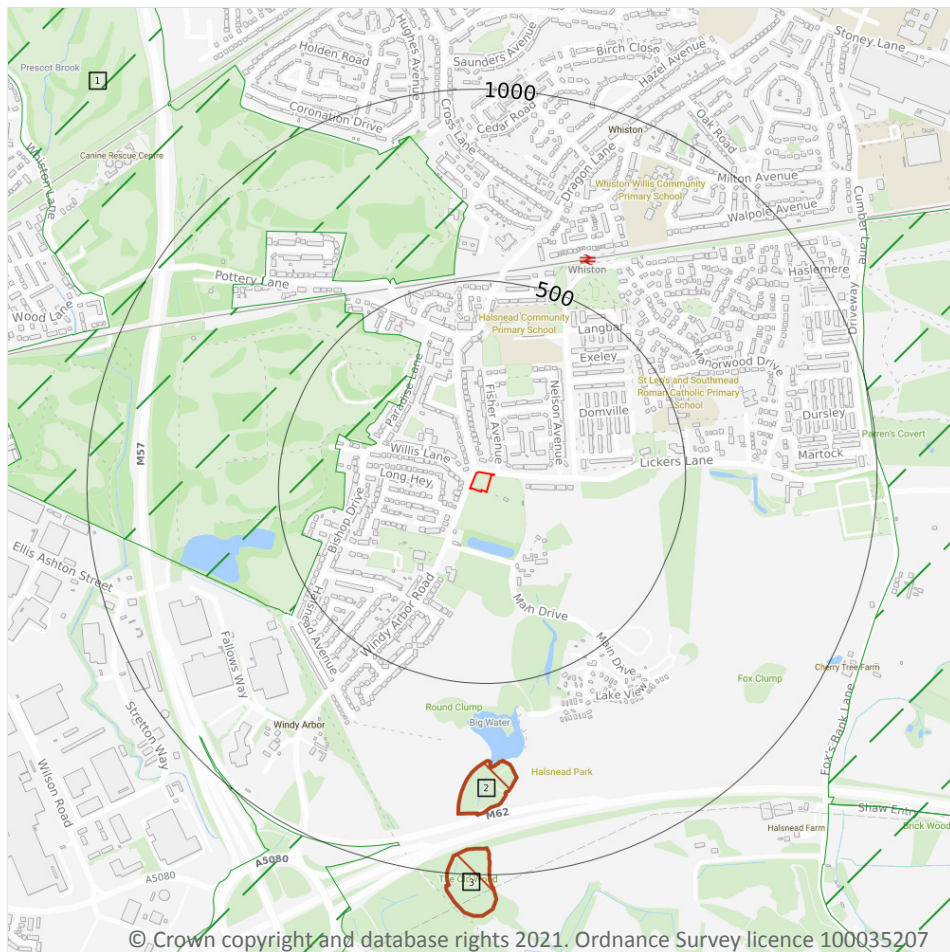
Low

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

Features are displayed on the Groundwater flooding map on **page 57**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Designated Ancient Woodland
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m**0**

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m**0**

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

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

10.7 Designated Ancient Woodland

Records within 2000m**2**

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

Features are displayed on the Environmental designations map on **page 58**

ID	Location	Name	Woodland Type
2	702m S	The Old Wood	Ancient & Semi-Natural Woodland
3	930m S	The Old Wood	Ancient & Semi-Natural Woodland

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

10.8 Biosphere Reserves

Records within 2000m**0**

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

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

10.9 Forest Parks

Records within 2000m**0**

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

This data is sourced from the Forestry Commission.



10.10 Marine Conservation Zones

Records within 2000m

0

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

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

10.11 Green Belt

Records within 2000m

3

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

Features are displayed on the Environmental designations map on **page 58**

ID	Location	Name	Local Authority name
1	266m NW	Merseyside and Greater Manchester	Knowsley
4	942m S	Merseyside and Greater Manchester	Knowsley
5	994m E	Merseyside and Greater Manchester	St. Helens

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

3

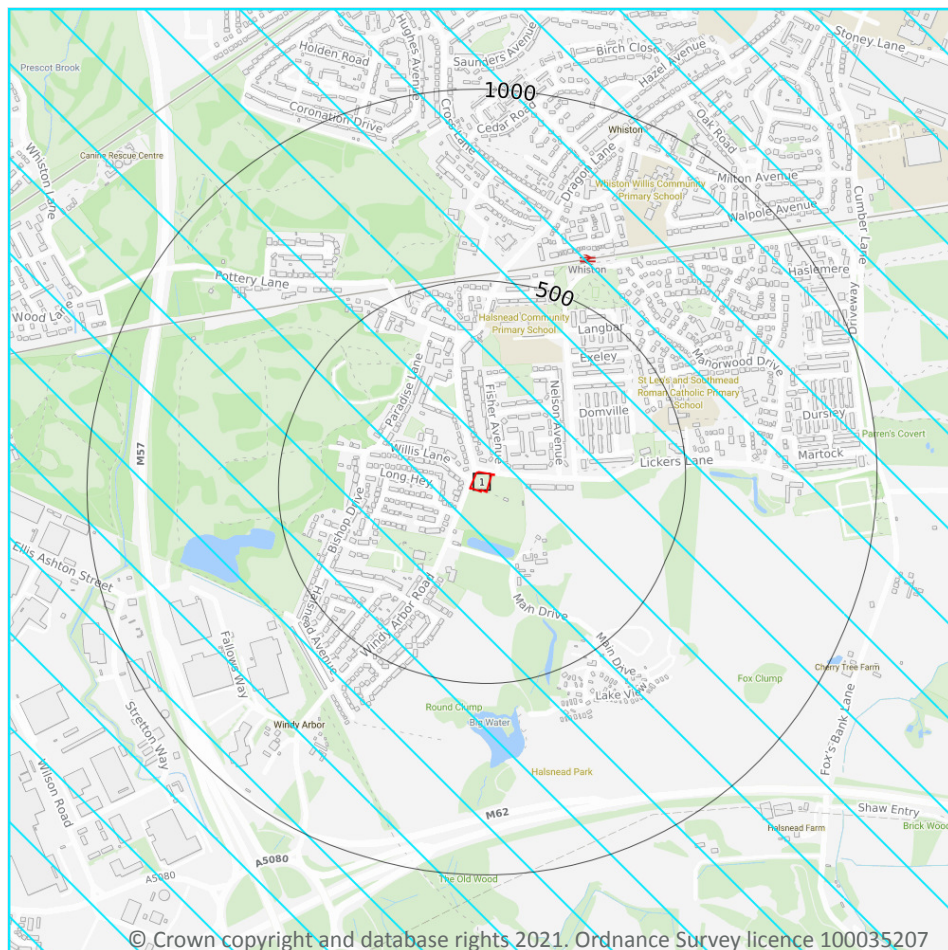
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	Dittton Brook (Halewood to Mersey Estuary) NVZ	Surface Water	S640	Existing
1509m NW	ALT NVZ	Surface Water	S642	Existing
1993m NE	Sankey Brook (Black Bk to Mersey) NVZ	Surface Water	S639	Existing

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 63**

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Airports, helipads and other aviation proposals. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines 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 Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location)

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0
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Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

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

11 Visual and cultural designations



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

11.1 World Heritage Sites

Records within 250m

0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

11.3 National Parks

Records within 250m

0

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

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

11.4 Listed Buildings

Records within 250m

1

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

Features are displayed on the Visual and cultural designations map on **page 65**

ID	Location	Name	Grade	Reference Number	Listed date
1	217m SW	Church Of St Nicholas, Whiston, Knowsley, L35	II	1261894	28/01/1971

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

11.5 Conservation Areas

Records within 250m

0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m

0

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

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

11.7 Registered Parks and Gardens

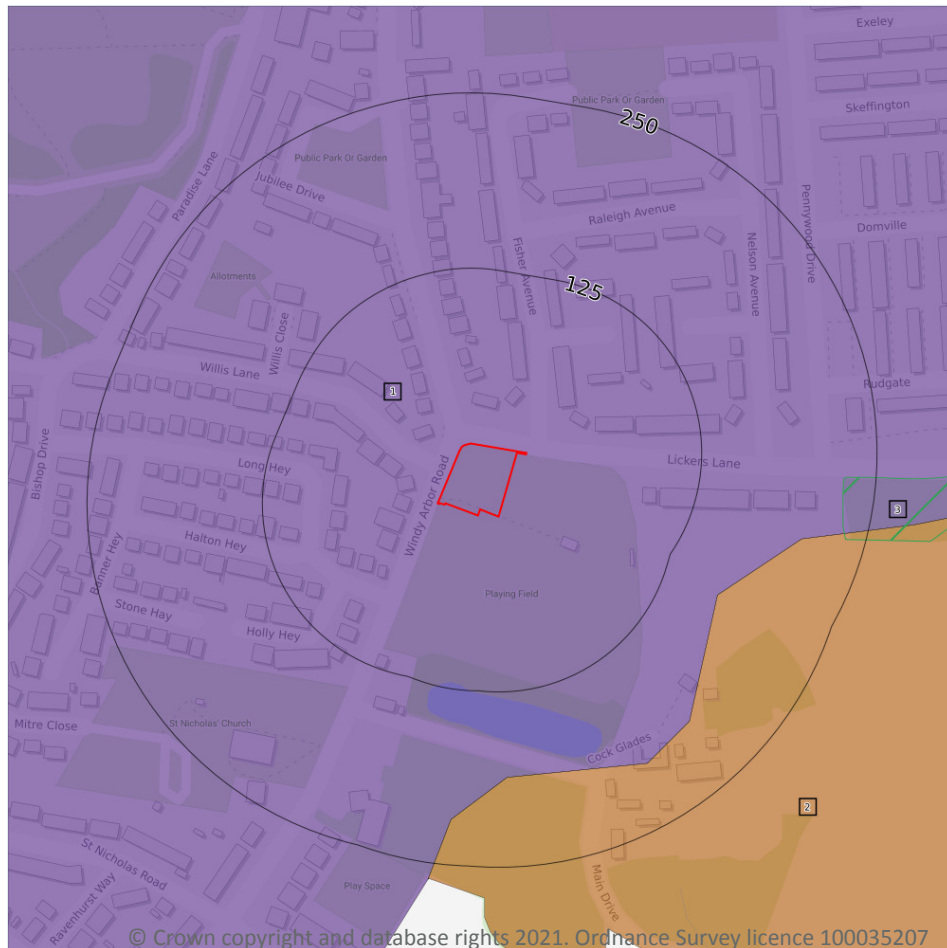
Records within 250m

0

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

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

12 Agricultural designations



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

12.1 Agricultural Land Classification

Records within 250m

2

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

Features are displayed on the Agricultural designations map on **page 68**

ID	Location	Classification	Description
1	On site	Urban	-



ID	Location	Classification	Description
2	166m E	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

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

1

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.

Features are displayed on the Agricultural designations map on **page 68**

ID	Location	Description	Reference	Application date
3	227m E	Selective Fell/Thin (Unconditional)	010/120/09-10	17/12/2009

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

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

This data is sourced from Natural England.



12.5 Countryside Stewardship Schemes

Records within 250m

0

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

This data is sourced from Natural England.



13 Habitat designations



- Site Outline
- Search buffers in metres (m)
- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders
- Habitat Networks
- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m

2

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 71**

ID	Location	Main Habitat	Other habitats
1	227m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	231m S	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

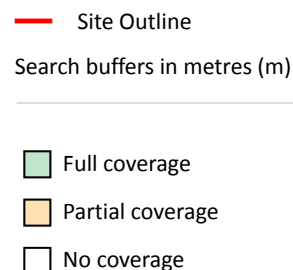
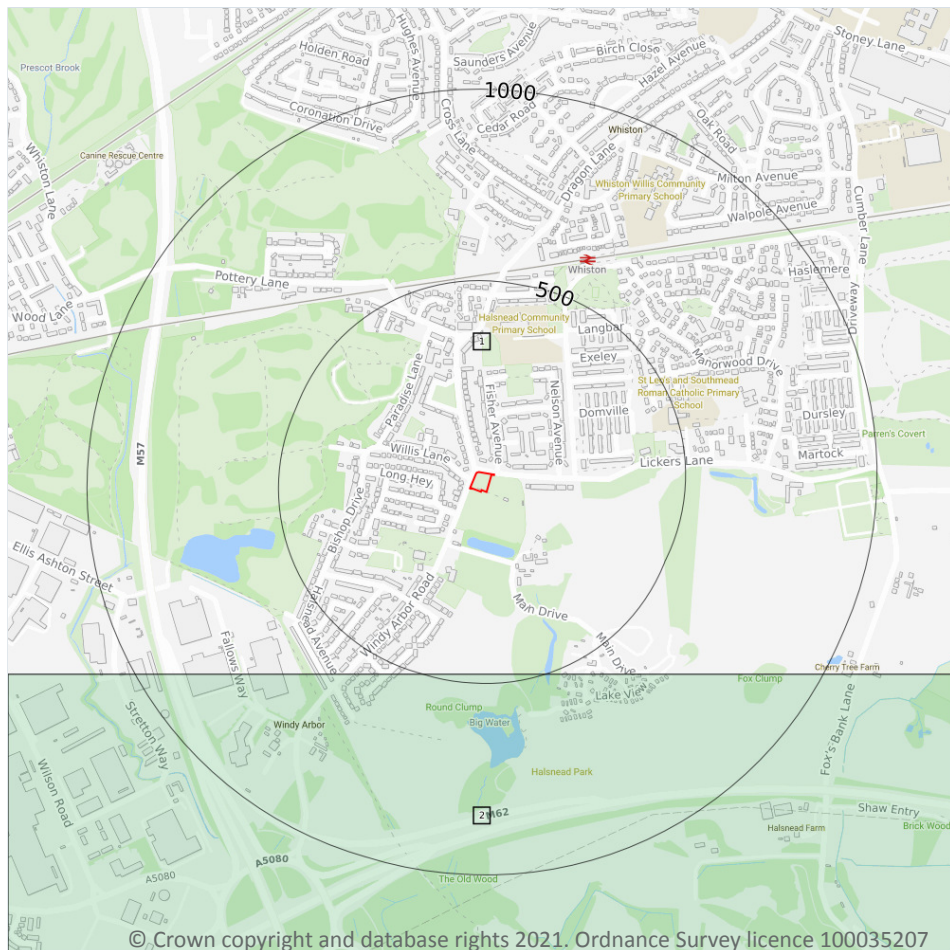
0

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



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 73**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	No coverage	No coverage	No coverage	NoCov
2	476m S	No coverage	Full	Full	No coverage	SJ48NE

This data is sourced from the British Geological Survey.



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

14.2 Artificial and made ground (10k)

Records within 500m

0

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.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



— Site Outline

Search buffers in metres (m)

▣ Landlip (10k)

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

14.3 Superficial geology (10k)

Records within 500m

1

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 75**

ID	Location	LEX Code	Description	Rock description
1	476m S	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton

This data is sourced from the British Geological Survey.



14.4 Landslip (10k)

Records within 500m

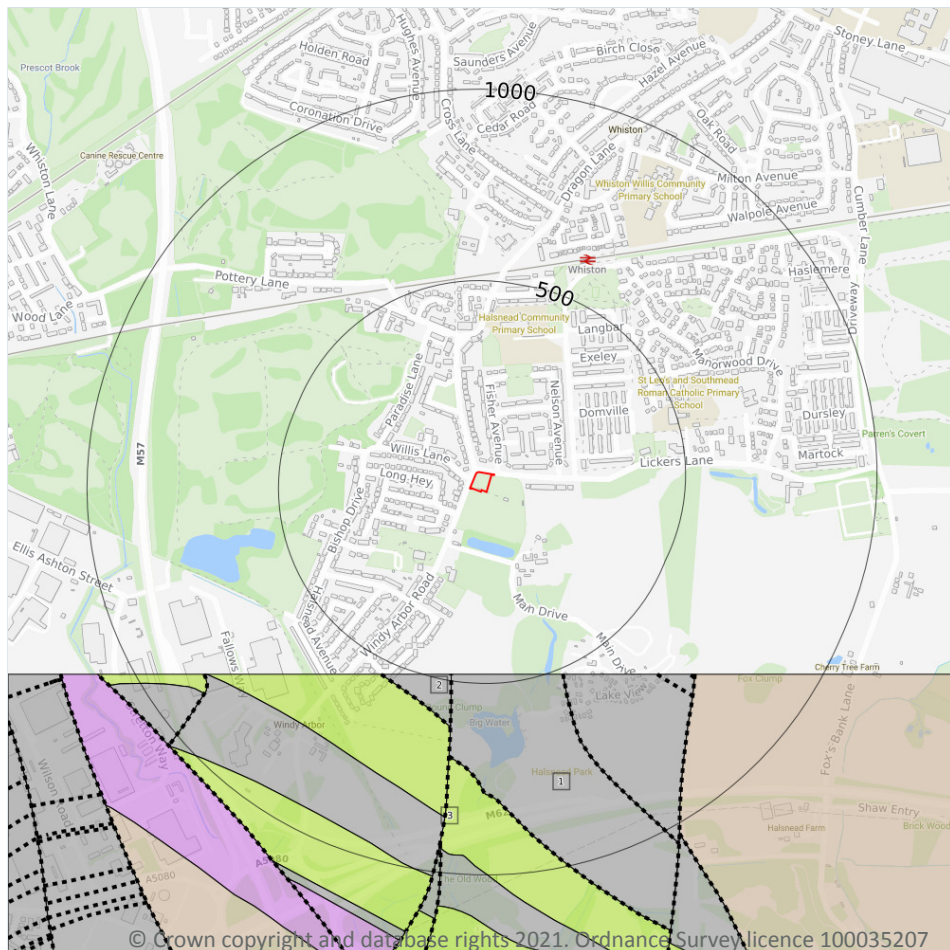
0

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

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

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

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

14.5 Bedrock geology (10k)

Records within 500m

2

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 77**

ID	Location	LEX Code	Description	Rock age
1	476m S	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
2	483m S	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age

This data is sourced from the British Geological Survey.



14.6 Bedrock faults and other linear features (10k)

Records within 500m

1

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

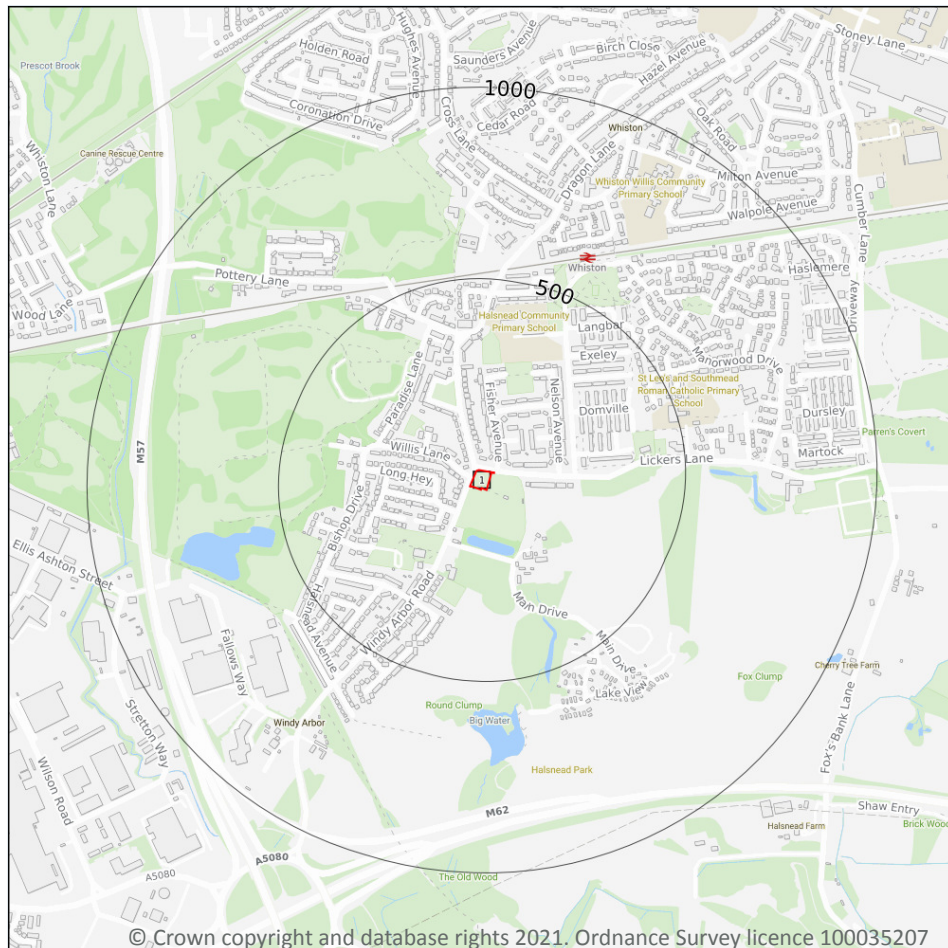
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 77**

ID	Location	Category	Description
3	483m S	FAULT	Normal fault, observed; crossmark on downthrow side

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline
Search buffers in metres (m)

□ Geological map tile

15.1 50k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 79**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	No coverage	EW097_runcorn_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.



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

81

15.5 Superficial permeability (50k)

Records within 50m

1

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

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

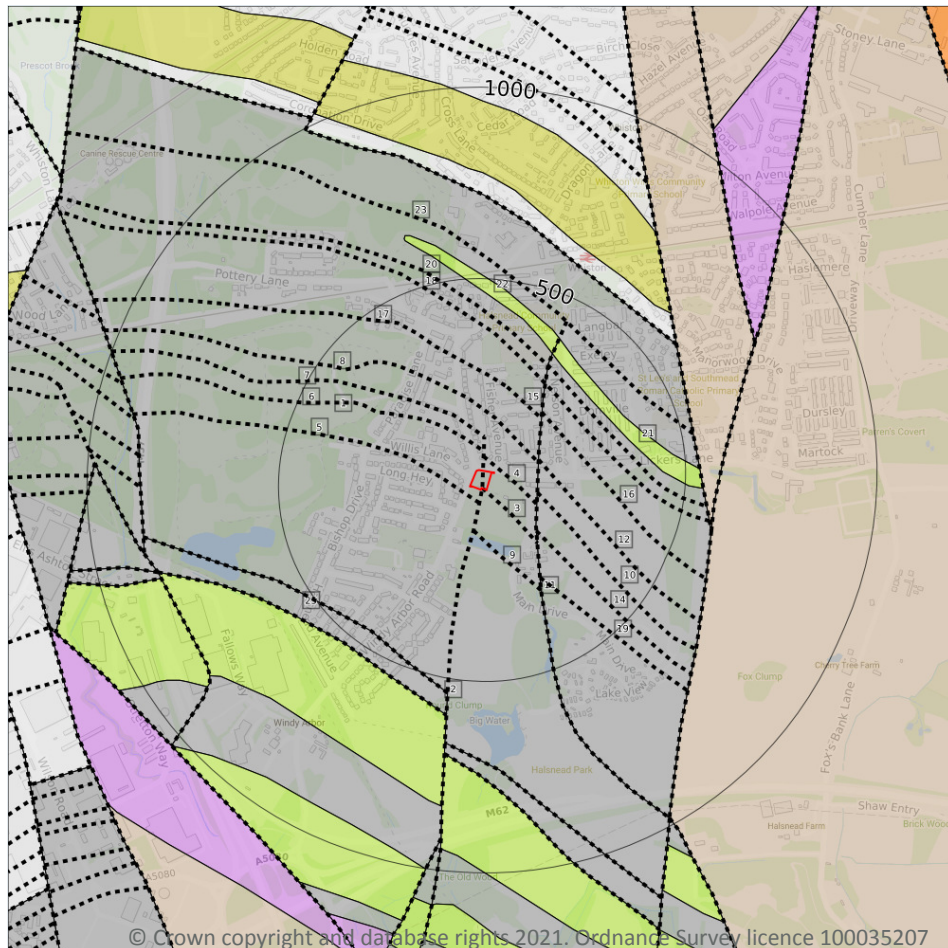
Records within 50m

0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

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

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

15.8 Bedrock geology (50k)

Records within 500m

5

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 83**

ID	Location	LEX Code	Description	Rock age
1	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10	115m E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
21	316m NE	PMR-SDST	PEMBERTON ROCK - SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
22	346m NE	PMR-SDST	PEMBERTON ROCK - SANDSTONE	WESTPHALIAN
25	457m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

1

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

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

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

20

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 83**

ID	Location	Category	Description
2	On site	FAULT	Fault, observed
3	On site	ROCK	Coal seam, inferred
4	15m NE	ROCK	Coal seam, inferred
5	22m SW	ROCK	Coal seam, inferred
6	50m N	ROCK	Coal seam, inferred
7	88m N	ROCK	Coal seam, inferred
8	102m NE	ROCK	Coal seam, inferred
9	108m S	ROCK	Coal seam, inferred
11	115m E	FAULT	Fault, observed



ID	Location	Category	Description
12	121m E	ROCK	Coal seam, inferred
13	125m SE	ROCK	Coal seam, inferred
14	168m SE	ROCK	Coal seam, inferred
15	188m NE	ROCK	Coal seam, inferred
16	198m NE	ROCK	Coal seam, inferred
17	226m N	ROCK	Coal seam, inferred
18	255m NE	ROCK	Coal seam, inferred
19	268m SE	ROCK	Coal seam, inferred
20	292m NE	ROCK	Coal seam, inferred
23	415m NE	ROCK	Coal seam, inferred
24	457m SW	FOSSIL_HORIZON	Marine band

This data is sourced from the British Geological Survey.



16 Boreholes

16.1 BGS Boreholes

Records within 250m

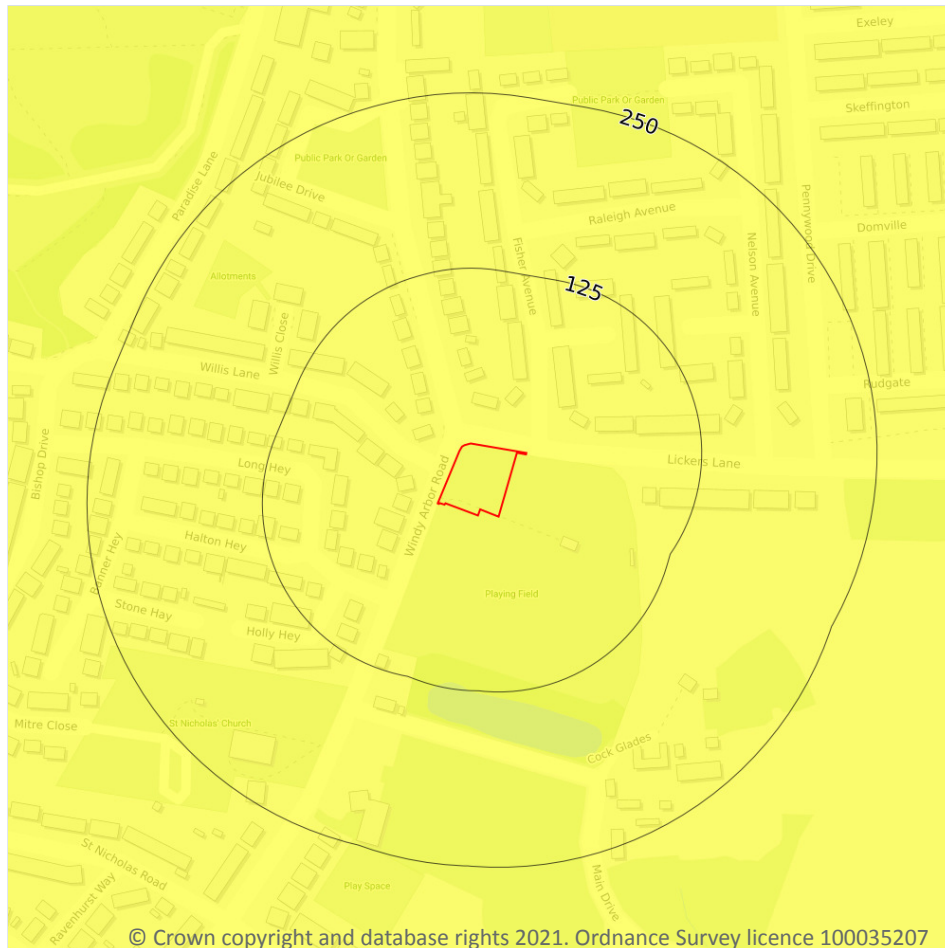
0

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).

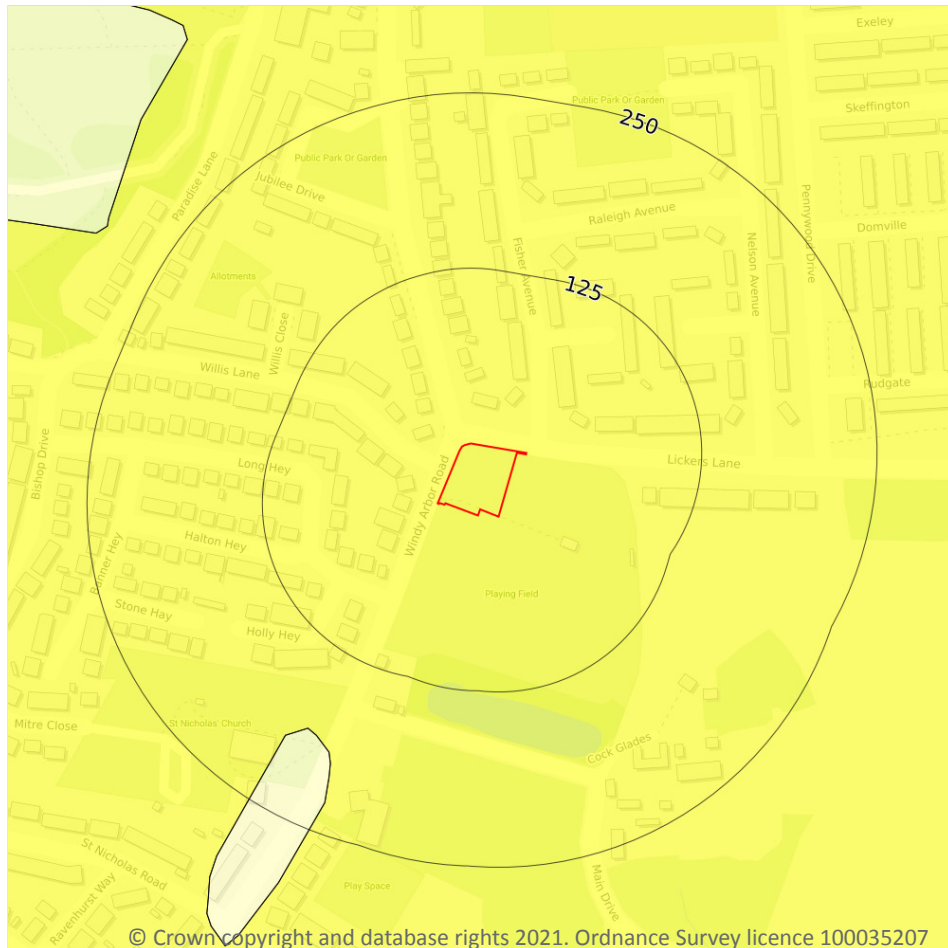
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 87**

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.

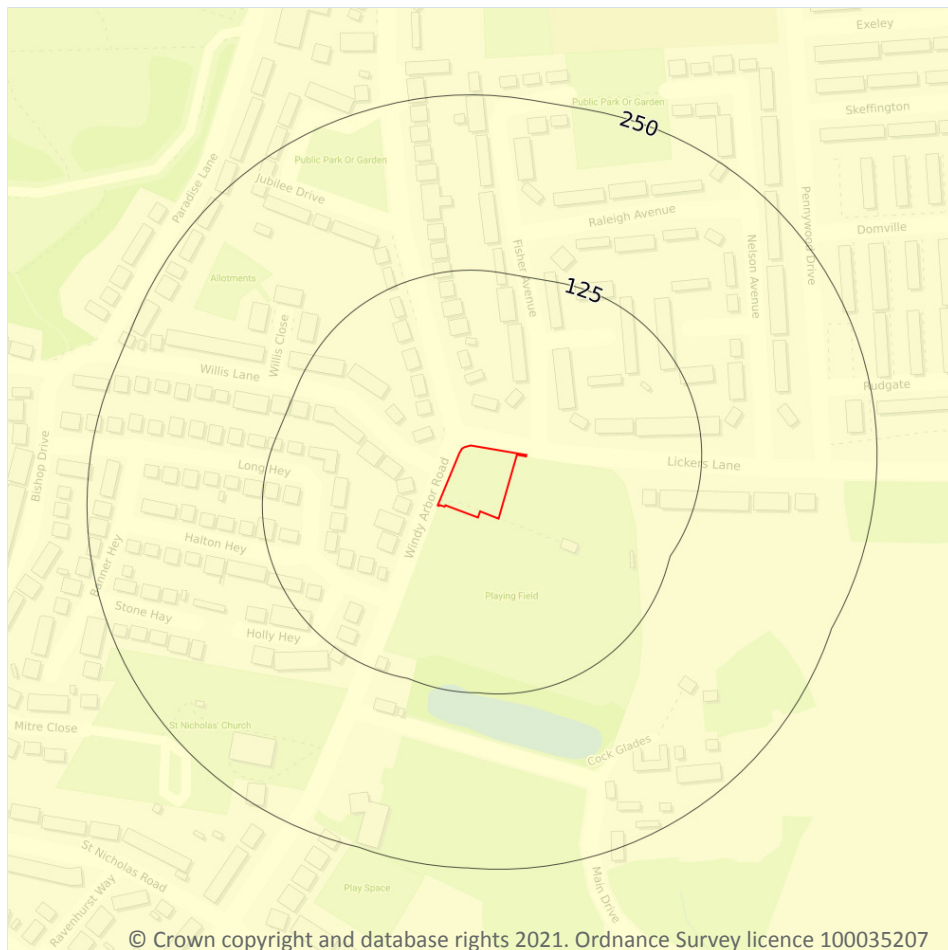
Features are displayed on the Natural ground subsidence - Running sands map on **page 88**

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.

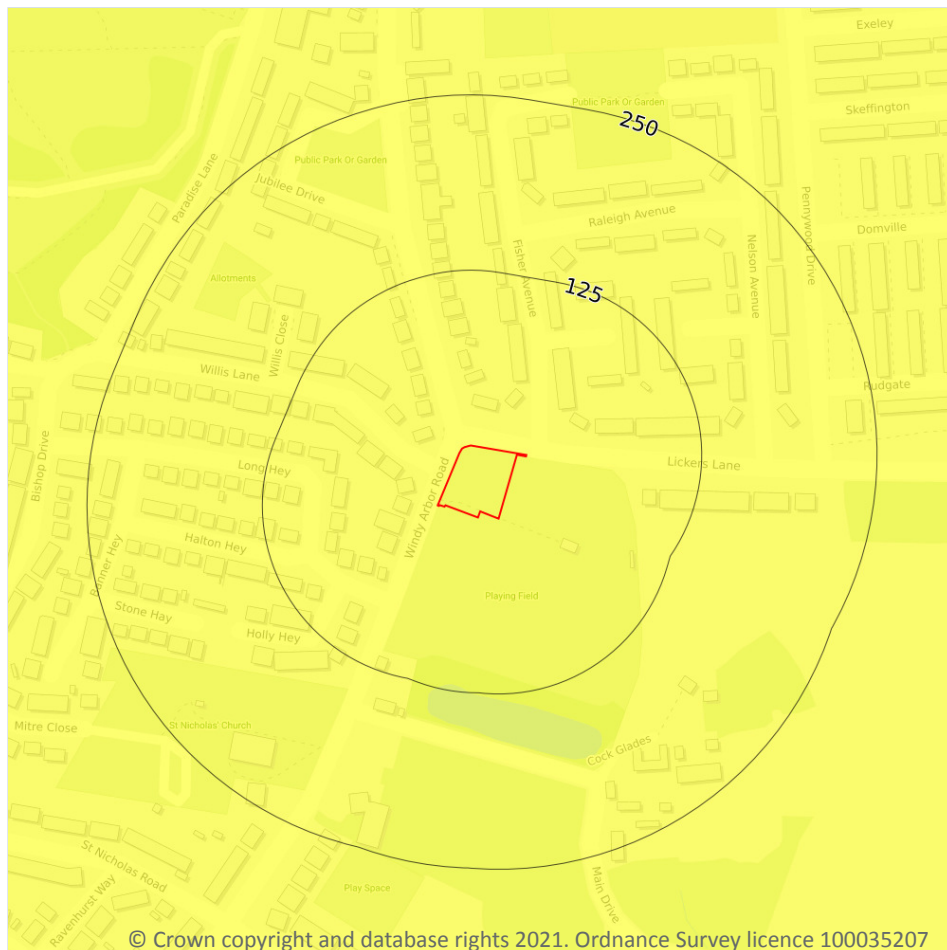
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 89**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



— Site Outline
Search buffers in metres (m)

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

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17.4 Collapsible deposits

Records within 50m

1

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

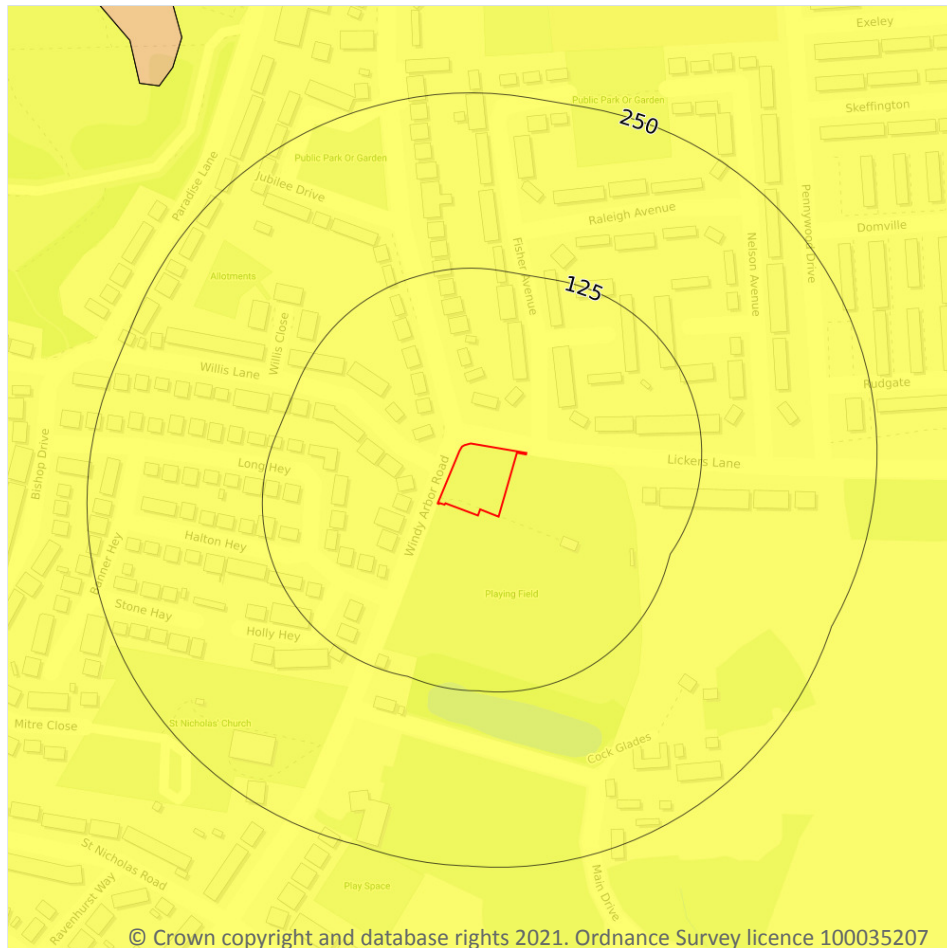
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 90**

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.

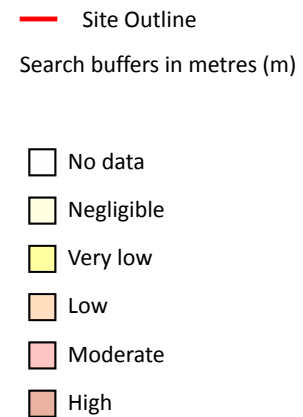
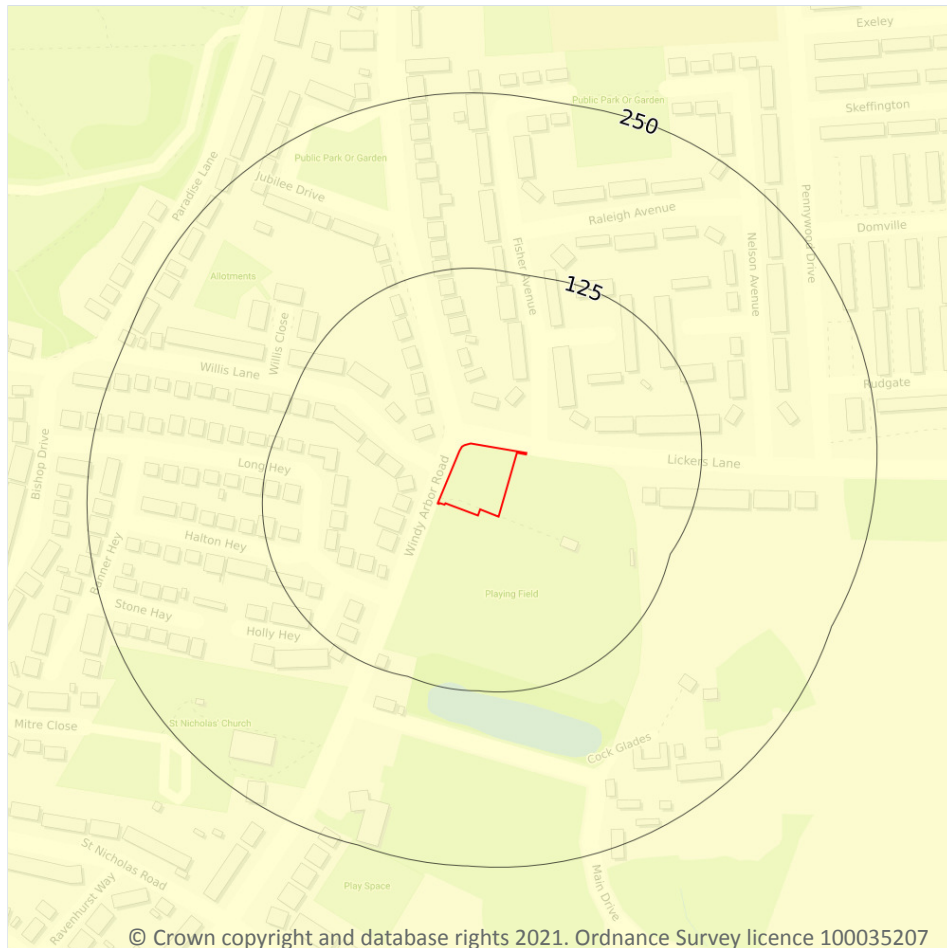
Features are displayed on the Natural ground subsidence - Landslides map on **page 91**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

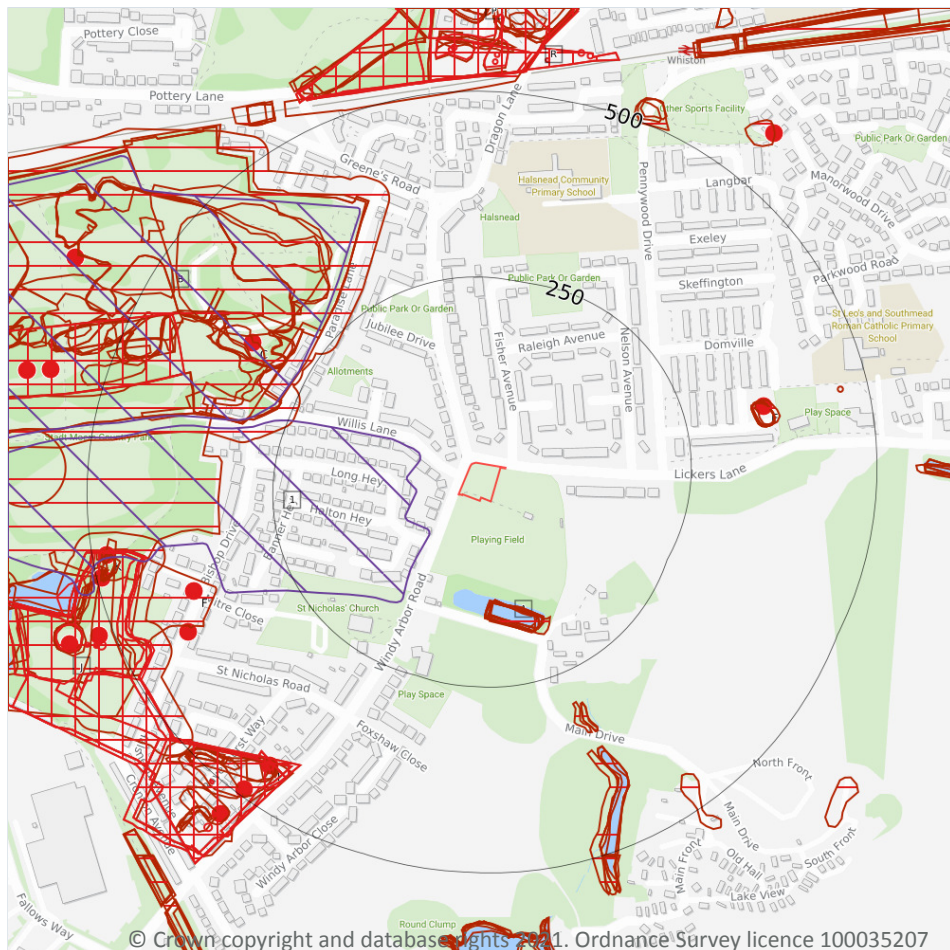
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 92**

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

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



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

18.1 Natural cavities

Records within 500m

0

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

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m

9

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 93**

ID	Location	Details	Description
C	337m NW	Name: Whiston Metallic Brick Works Address: Whiston Lane Ends, Whiston, PRESCOT, Merseyside Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
E	357m E	Name: Stone Quarry Plantation Address: Whiston, PRESCOT, Merseyside Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
F	379m W	Name: Hig Hey Colliery Coal Pit Address: Whiston Lane Ends, Whiston, PRESCOT, Merseyside Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
F	408m SW	Name: Hig Hey Colliery Coal Pit Address: Whiston Lane Ends, Whiston, PRESCOT, Merseyside Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority



ID	Location	Details	Description
I	444m SW	Name: Halsnead Colliery, No. 3 Pit Address: Whiston Lane Ends, Whiston, PRESCOT, Merseyside Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
K	480m W	Name: Hig Hey Colliery Shaft Address: Whiston Lane Ends, Whiston, PRESCOT, Merseyside Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
I	490m SW	Name: Halsnead Colliery, No. 2 Pit Address: Whiston Lane Ends, Whiston, PRESCOT, Merseyside Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
K	492m W	Name: Hig Hey Colliery Shaft Address: Whiston Lane Ends, Whiston, PRESCOT, Merseyside Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
K	496m W	Name: Hig Hey Colliery Shaft Address: Whiston Lane Ends, Whiston, PRESCOT, Merseyside Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.



18.3 Surface ground workings

Records within 250m

11

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 93**

ID	Location	Land Use	Year of mapping	Mapping scale
A	133m S	Pond	1975	1:10000
A	133m S	Pond	1990	1:10000
A	133m S	Pond	1966	1:10560
A	133m S	Pond	1938	1:10560
A	134m S	Pond	1955	1:10560
A	135m S	Pond	1851	1:10560
A	135m S	Pond	1906	1:10560
A	136m S	Pond	1947	1:10560
A	136m S	Pond	1925	1:10560
A	136m S	Pond	1891	1:10560
B	242m NW	Brick Works	1955	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

73

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 93**

ID	Location	Land Use	Year of mapping	Mapping scale
B	403m W	Colliery	1891	1:10560
I	422m SW	Old Colliery	1906	1:10560
H	428m W	Unspecified Disused Mine	1966	1:10560
I	430m SW	Old Colliery	1891	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
H	432m W	Disused Colliery	1906	1:10560
J	432m W	Disused Colliery	1947	1:10560
J	432m W	Disused Colliery	1925	1:10560
I	439m SW	Unspecified Disused Shafts	1966	1:10560
H	442m W	Colliery	1891	1:10560
I	445m SW	Unspecified Old Shaft	1947	1:10560
I	447m SW	Unspecified Old Shafts	1947	1:10560
I	447m SW	Unspecified Old Shafts	1925	1:10560
I	481m SW	Unspecified Disused Shafts	1966	1:10560
I	485m SW	Unspecified Old Shaft	1947	1:10560
I	489m SW	Unspecified Old Shafts	1947	1:10560
I	489m SW	Unspecified Old Shafts	1925	1:10560
I	508m SW	Unspecified Old Shaft	1947	1:10560
H	510m W	Unspecified Disused Shaft	1966	1:10560
H	516m SW	Unspecified Disused Shaft	1966	1:10560
N	516m N	Disused Colliery	1906	1:10560
H	516m W	Unspecified Old Shaft	1947	1:10560
P	516m N	Disused Colliery	1925	1:10560
P	518m N	Colliery	1891	1:10560
H	518m W	Unspecified Old Shafts	1947	1:10560
H	518m W	Unspecified Old Shafts	1925	1:10560
H	523m SW	Unspecified Old Shaft	1947	1:10560
H	525m SW	Unspecified Old Shafts	1947	1:10560
H	525m SW	Unspecified Old Shafts	1925	1:10560
I	528m SW	Unspecified Disused Shafts	1966	1:10560
P	529m N	Disused Colliery	1906	1:10560
I	532m SW	Unspecified Old Shaft	1947	1:10560
P	532m N	Unspecified Disused Shafts	1990	1:10000



ID	Location	Land Use	Year of mapping	Mapping scale
I	536m SW	Unspecified Old Shafts	1947	1:10560
I	536m SW	Unspecified Old Shafts	1925	1:10560
H	536m W	Unspecified Shafts	1891	1:10560
P	537m N	Unspecified Old Shafts	1925	1:10560
H	540m W	Unspecified Old Shaft	1947	1:10560
P	543m N	Unspecified Disused Shafts	1990	1:10000
P	547m N	Unspecified Old Shafts	1925	1:10560
R	548m N	Unspecified Old Shafts	1947	1:10560
P	554m N	Unspecified Old Shafts	1947	1:10560
P	554m N	Unspecified Old Shafts	1925	1:10560
I	555m SW	Unspecified Disused Shafts	1966	1:10560
P	556m N	Unspecified Old Shafts	1947	1:10560
R	562m N	Unspecified Old Shafts	1947	1:10560
R	563m N	Unspecified Old Shafts	1947	1:10560
B	577m W	Unspecified Old Shaft	1925	1:10560
-	658m N	Colliery	1925	1:10560
-	661m W	Disused Colliery	1906	1:10560
-	707m N	Colliery	1891	1:10560
-	760m W	Old Colliery	1947	1:10560
-	763m W	Old Colliery	1947	1:10560
-	763m W	Old Colliery	1925	1:10560
-	763m W	Old Colliery	1906	1:10560
-	763m W	Old Colliery	1891	1:10560
-	763m W	Unspecified Disused Mine	1966	1:10560
-	797m W	Unspecified Disused Shaft	1966	1:10560
-	797m N	Unspecified Old Shafts	1947	1:10560
-	797m N	Unspecified Old Shafts	1925	1:10560
-	799m W	Unspecified Old Shaft	1947	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
-	799m N	Unspecified Disused Shaft	1975	1:10000
-	799m N	Unspecified Disused Shaft	1990	1:10000
-	801m N	Unspecified Old Shafts	1947	1:10560
-	801m N	Unspecified Disused Shaft	1966	1:10560
-	803m W	Unspecified Old Shaft	1947	1:10560
-	803m W	Unspecified Old Shaft	1925	1:10560
-	812m N	Unspecified Old Shafts	1947	1:10560
-	812m N	Unspecified Old Shafts	1925	1:10560
-	815m N	Unspecified Disused Shaft	1966	1:10560
-	816m N	Unspecified Old Shafts	1947	1:10560
-	818m N	Unspecified Old Shafts	1947	1:10560
-	851m N	Unspecified Old Shafts	1947	1:10560
-	977m W	Unspecified Old Shaft	1891	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

2

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.

Features are displayed on the Mining, ground workings and natural cavities map on **page 93**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
1	57m W	Whiston	Clay, shale, bricks	Surface mineral working	Valid	7/7/47,25/9/52
B	263m NW	Whiston	Clay, shale, bricks	Surface mineral working	Valid	7/7/47,25/9/52

This data is sourced from the British Geological Survey.



18.6 Non-coal mining

Records within 1000m

1

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 93**

ID	Location	Name	Commodity	Class	Likelihood
-	762m NE	Not available	Vein Mineral	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

0

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

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site

0

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

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site

1

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



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

This data is sourced from the Coal Authority.

18.10 Brine areas

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

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

18.11 Gypsum areas

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

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

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

This data is sourced from Mining Searches UK.

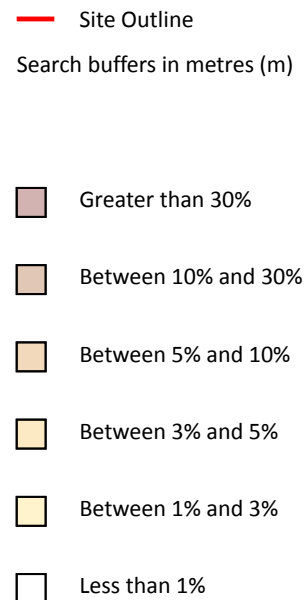
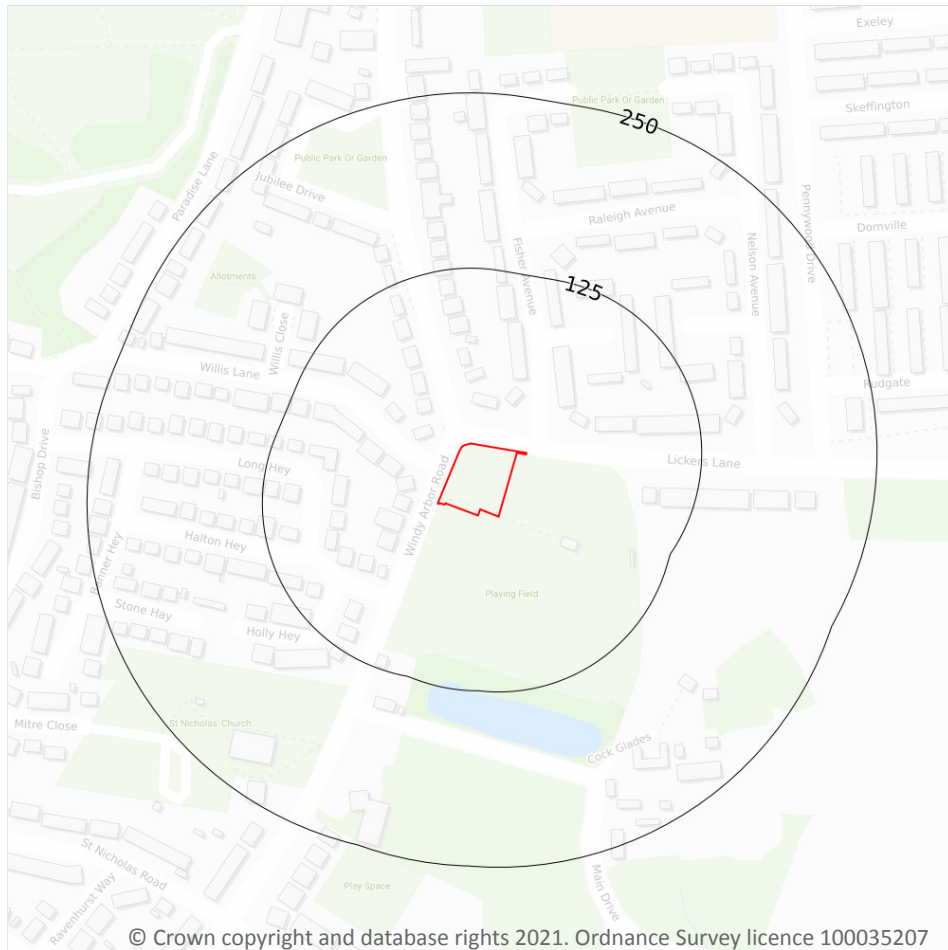
18.13 Clay mining

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



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 102**

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

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



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 - 2.2 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	2.2 - 3.0 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

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

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

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

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects

21.1 Underground railways (London)

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

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

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

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

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

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

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

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

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

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

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



This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m

0

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.



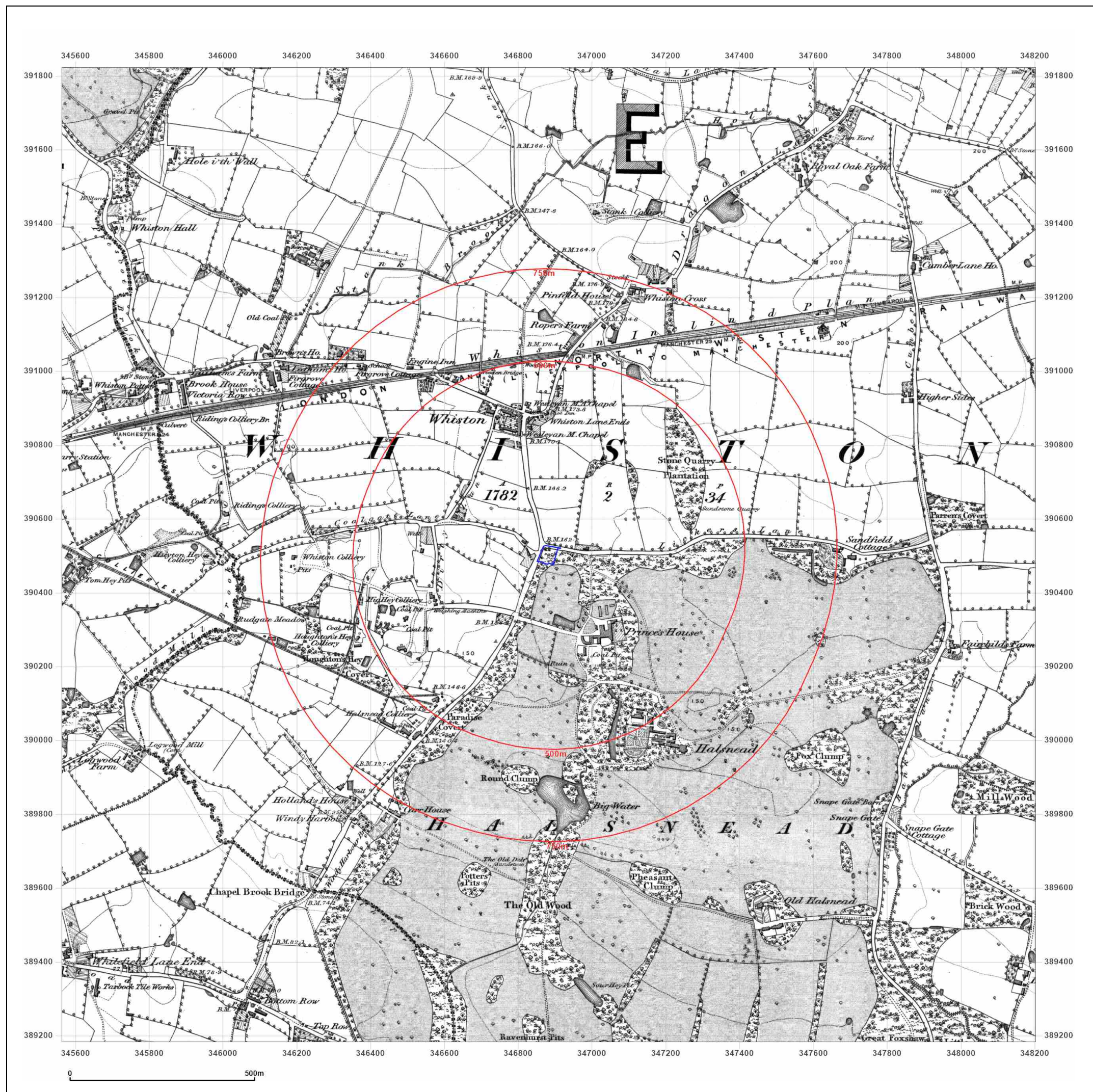
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Site Details:

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Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: County Series

Map date: 1850

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1847
Revised N/A
Edition 1850
Copyright N/A
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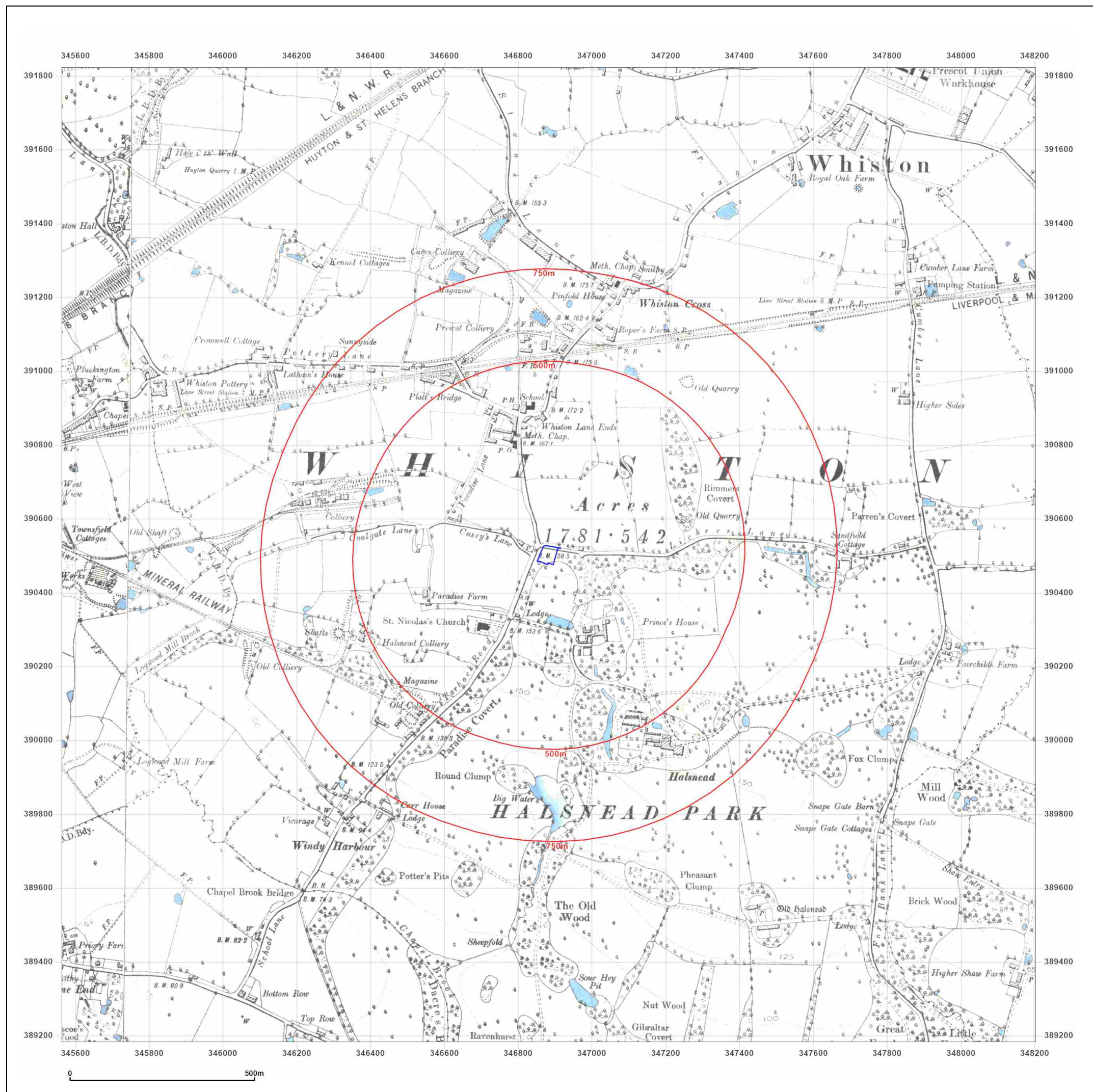


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Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: County Series

Map date: 1891

Scale: 1:10,560

Printed at: 1:10,560



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Edition N/A
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Surveyed 1891
Revised 1891
Edition N/A
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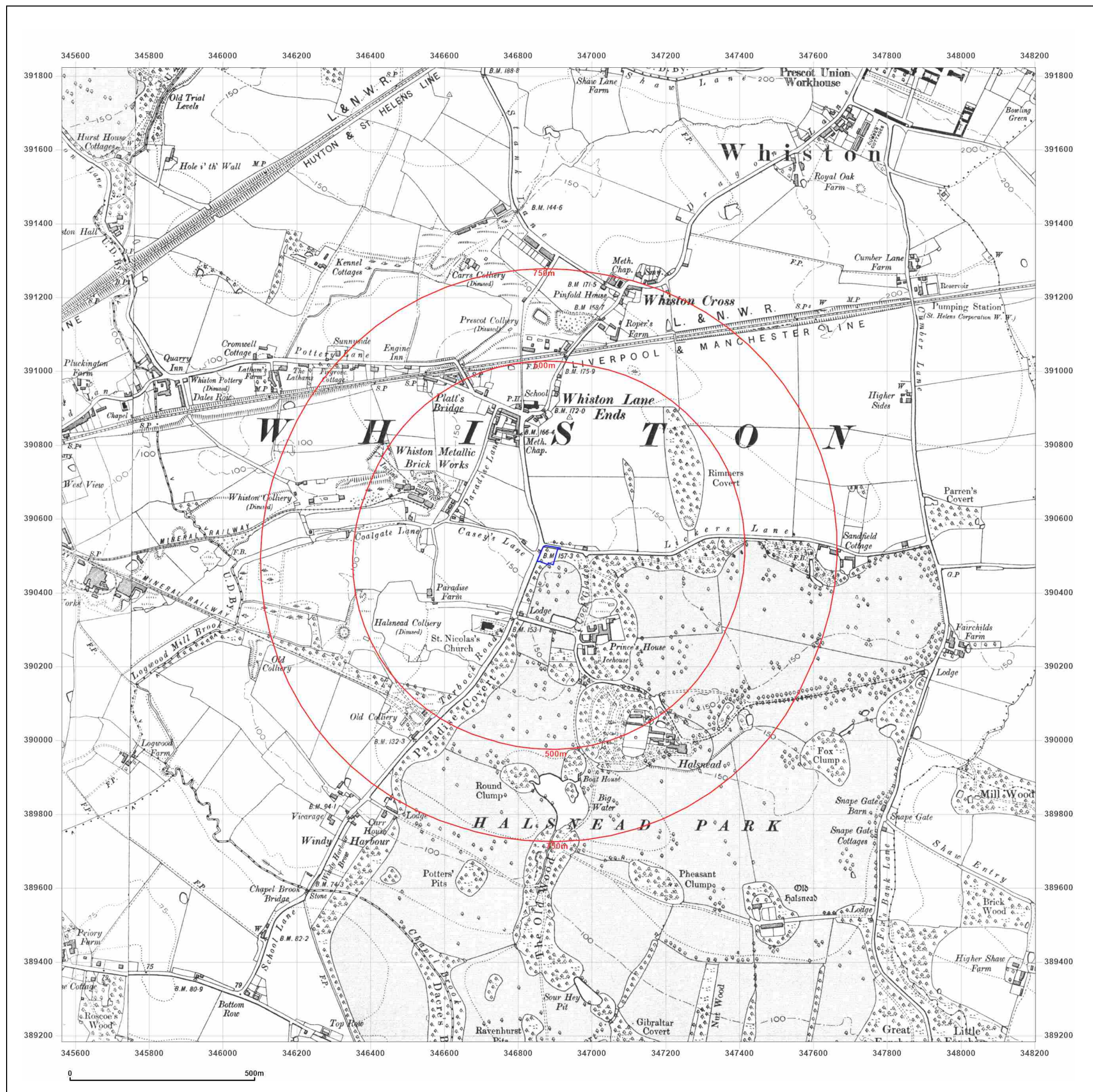


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Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: County Series

Map date: 1906

Scale: 1:10,560

Printed at: 1:10,560



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Grid Ref: 346882, 390502

Map Name: County Series

Map date: 1925

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1848
Revised 1925
Edition N/A
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Surveyed 1846
Revised 1925
Edition N/A
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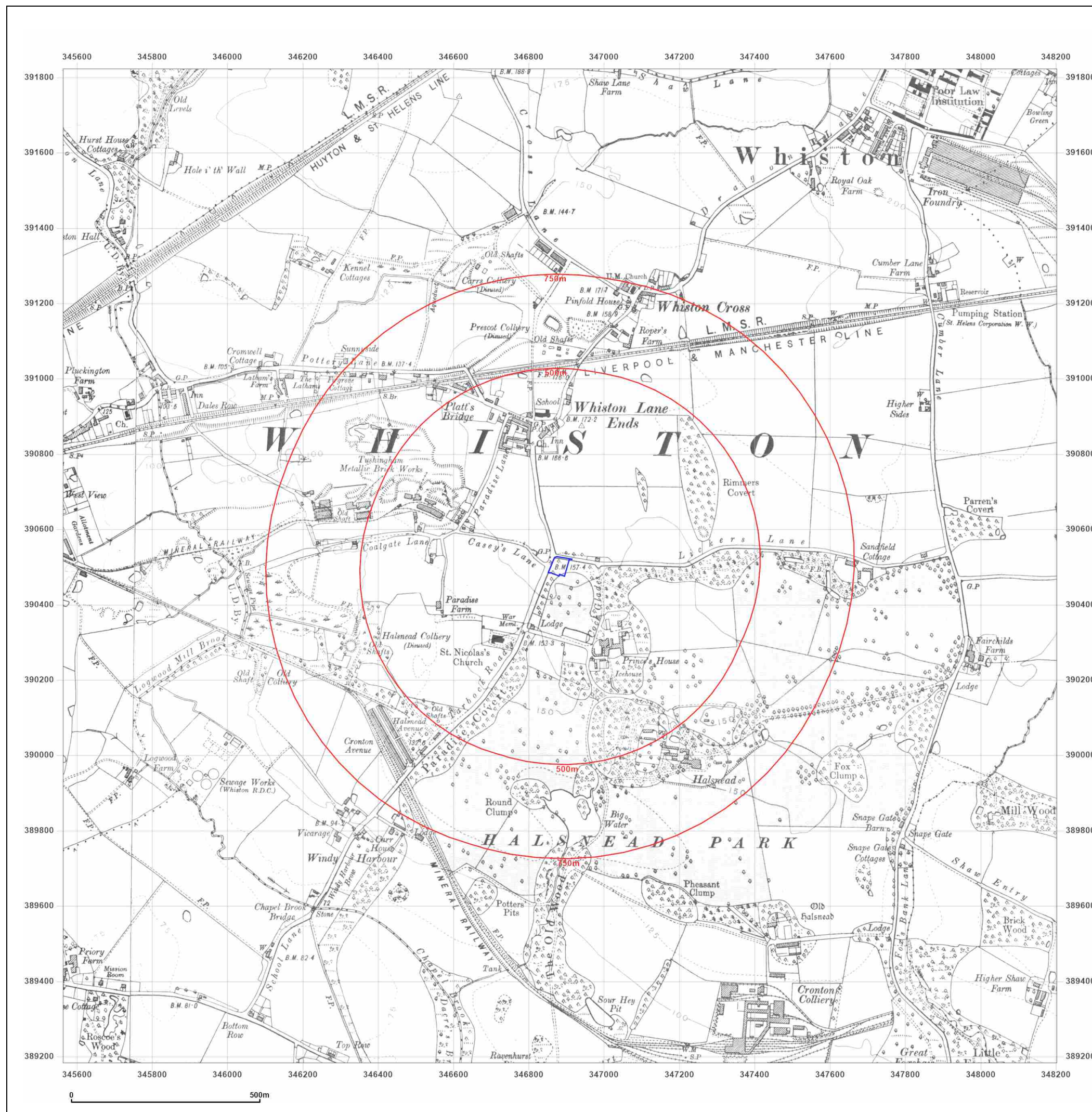


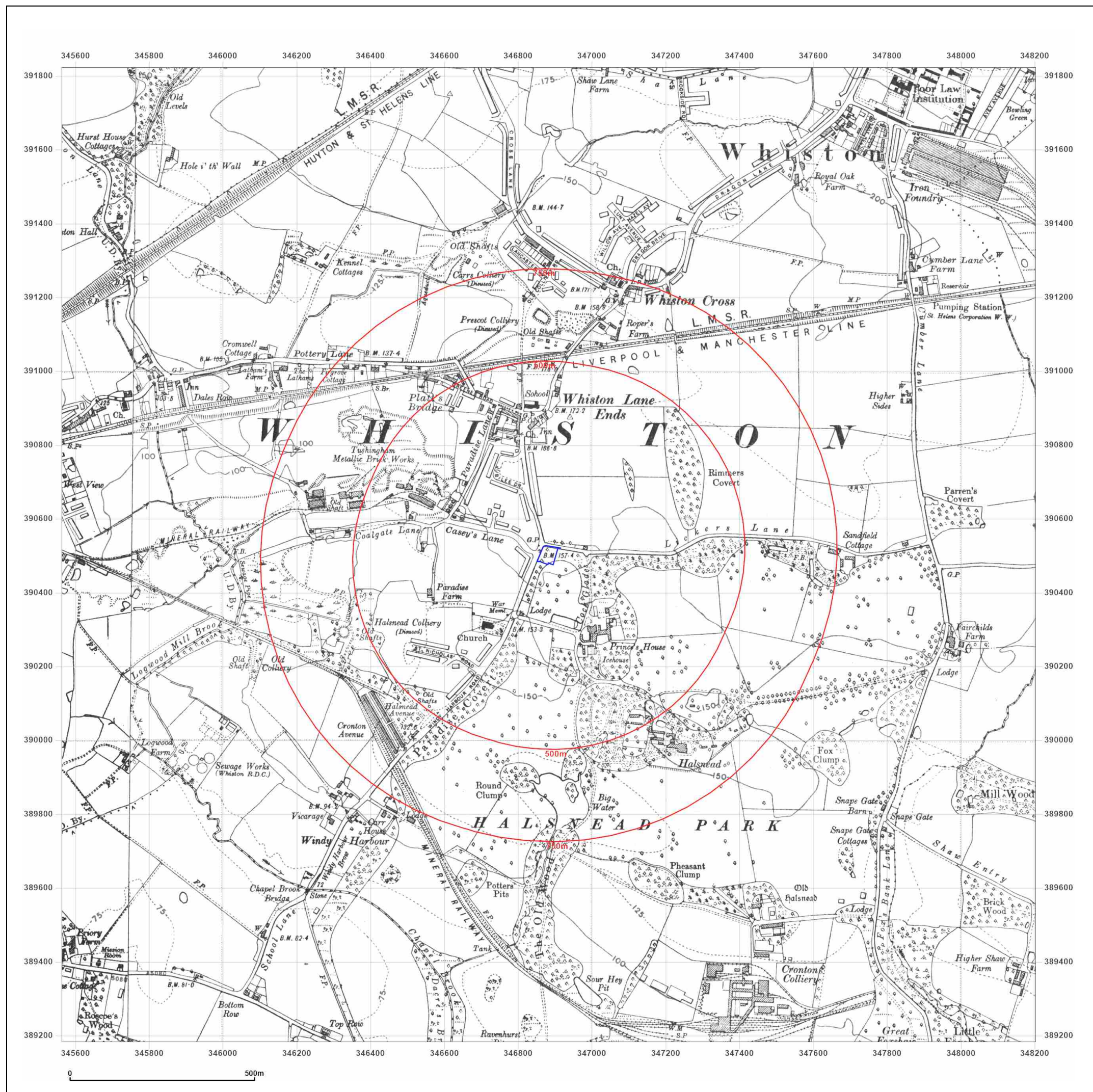
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Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1846
Revised 1938
Edition 1938
Copyright N/A
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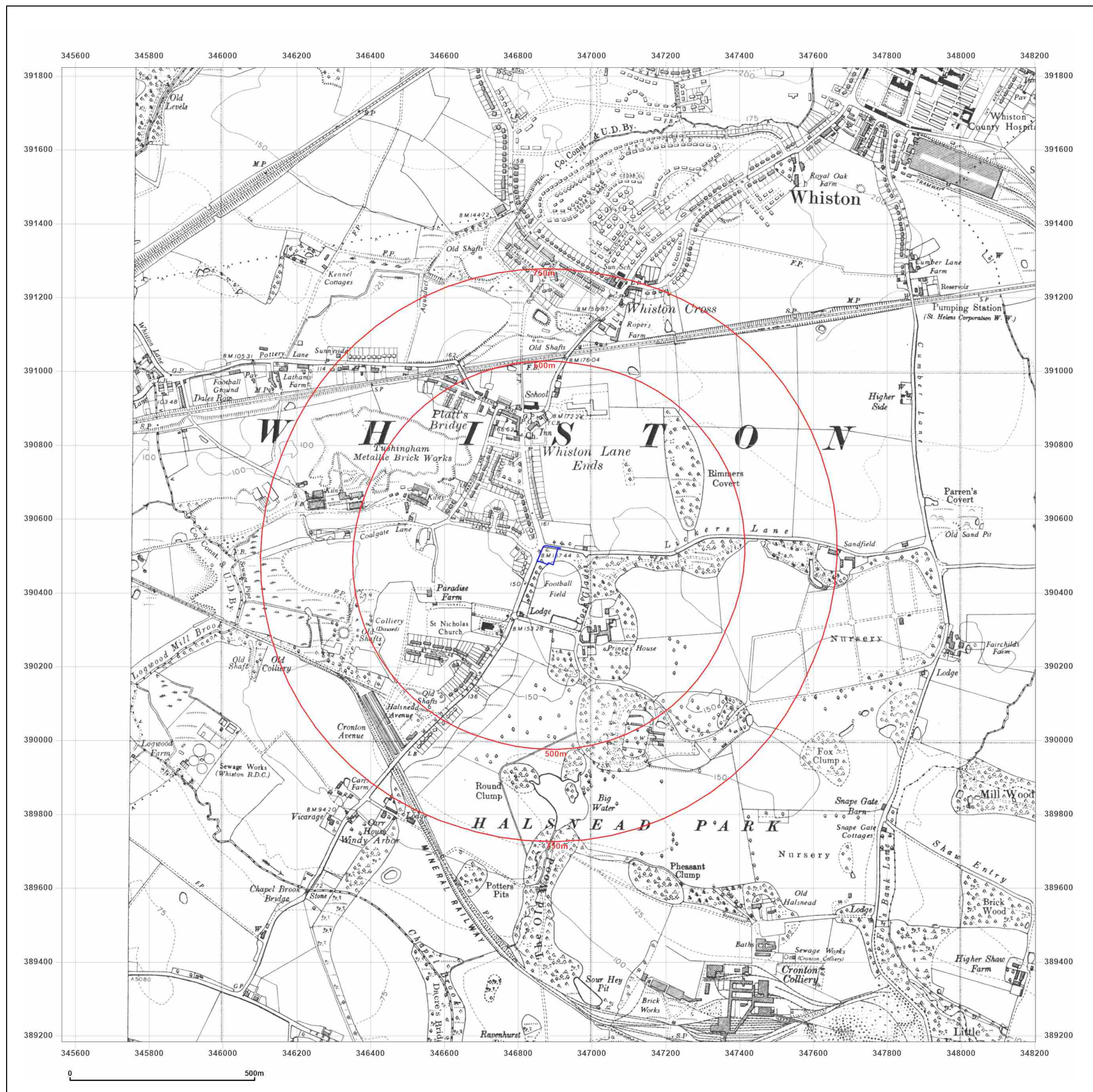


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Grid Ref: 346882, 390502

Map Name: County Series

Map date: 1947

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1846
Revised 1947
Edition N/A
Copyright N/A
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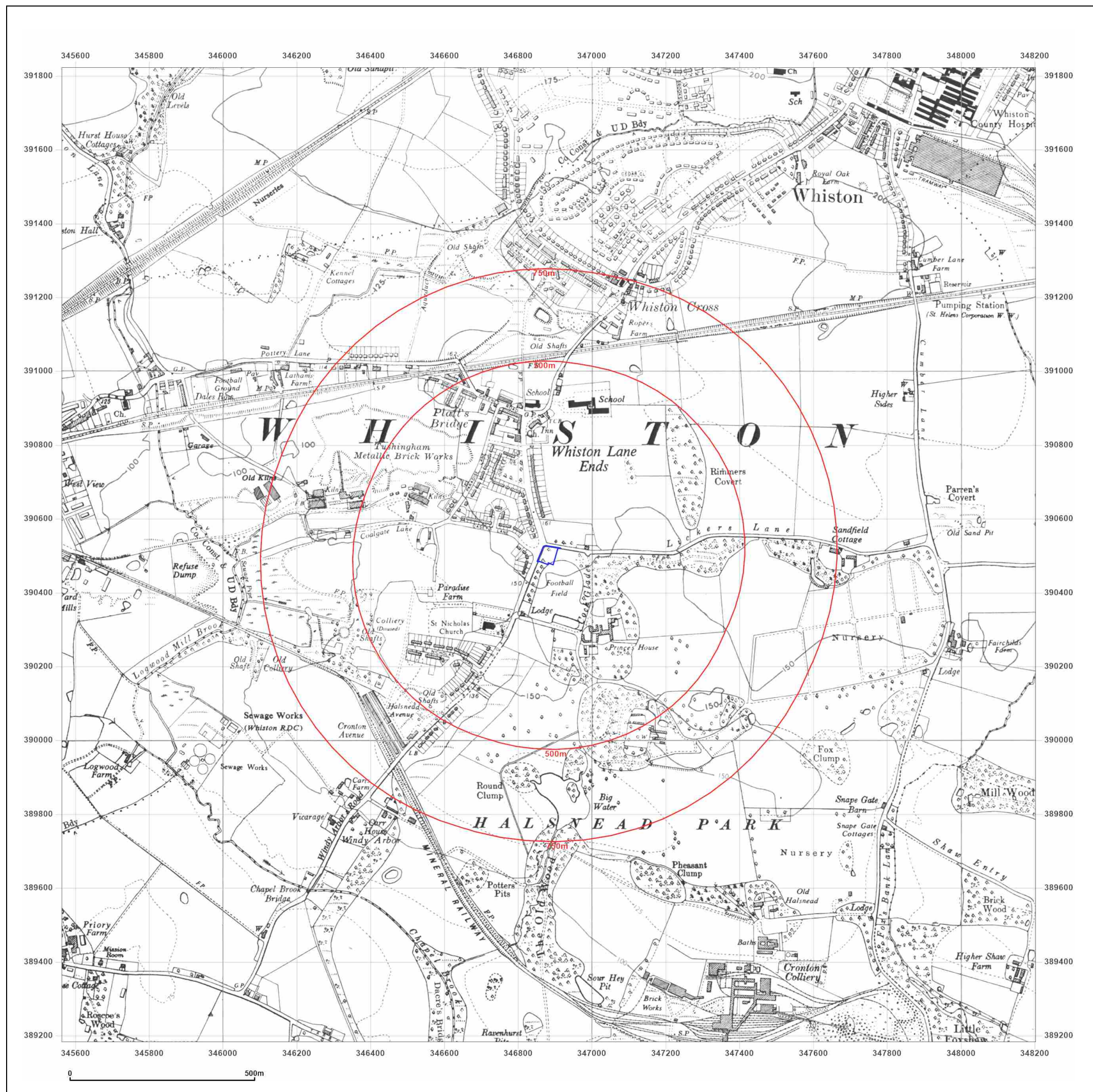


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Grid Ref: 346882, 390502

Map Name: Provisional

Map date: 1955-1956

Scale: 1:10,560

Printed at: 1:10,560



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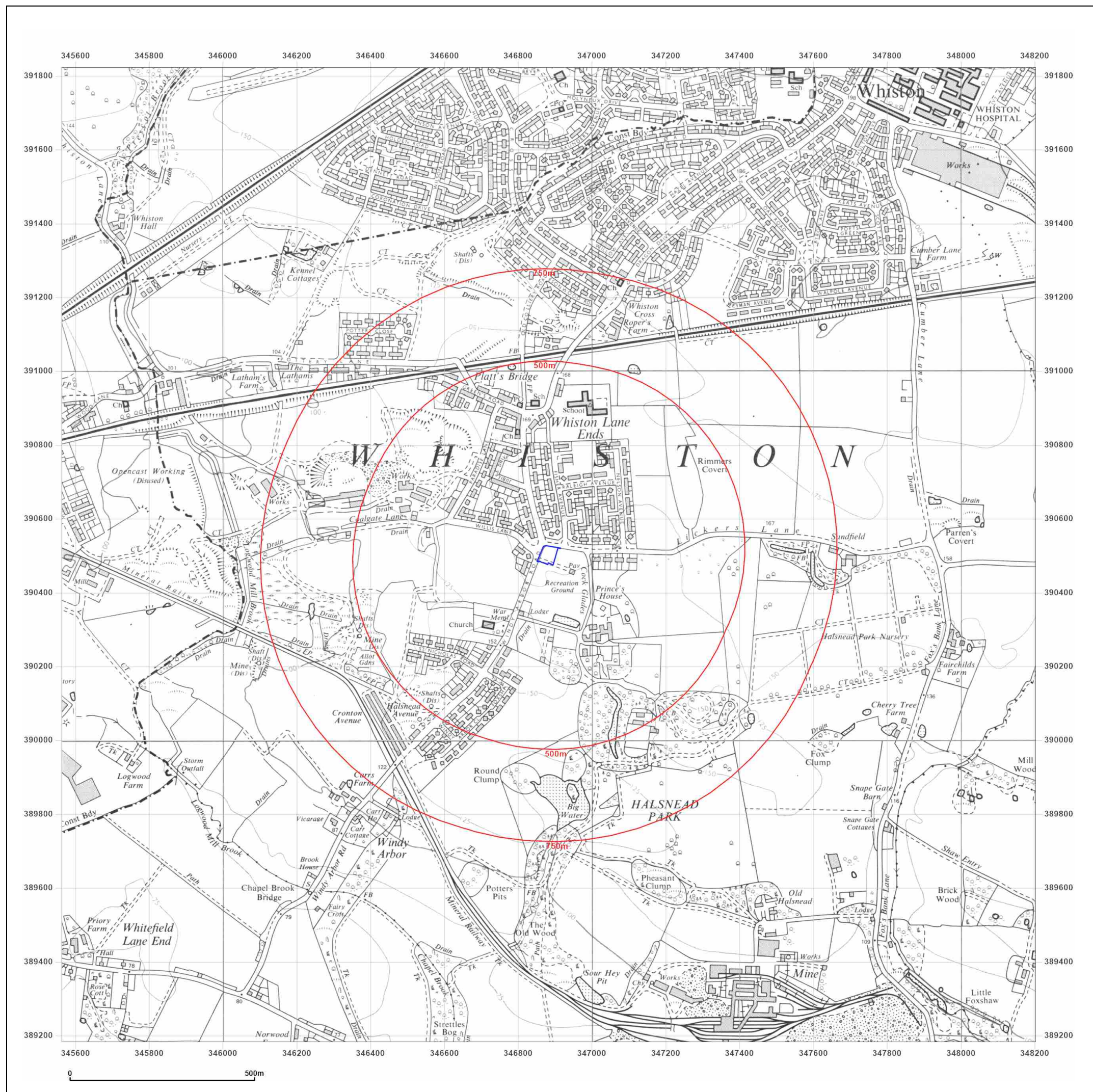


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Grid Ref: 346882, 390502

Map Name: Provisional

Map date: 1966-1967

Scale: 1:10,560

Printed at: 1:10,560



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Edition N/A
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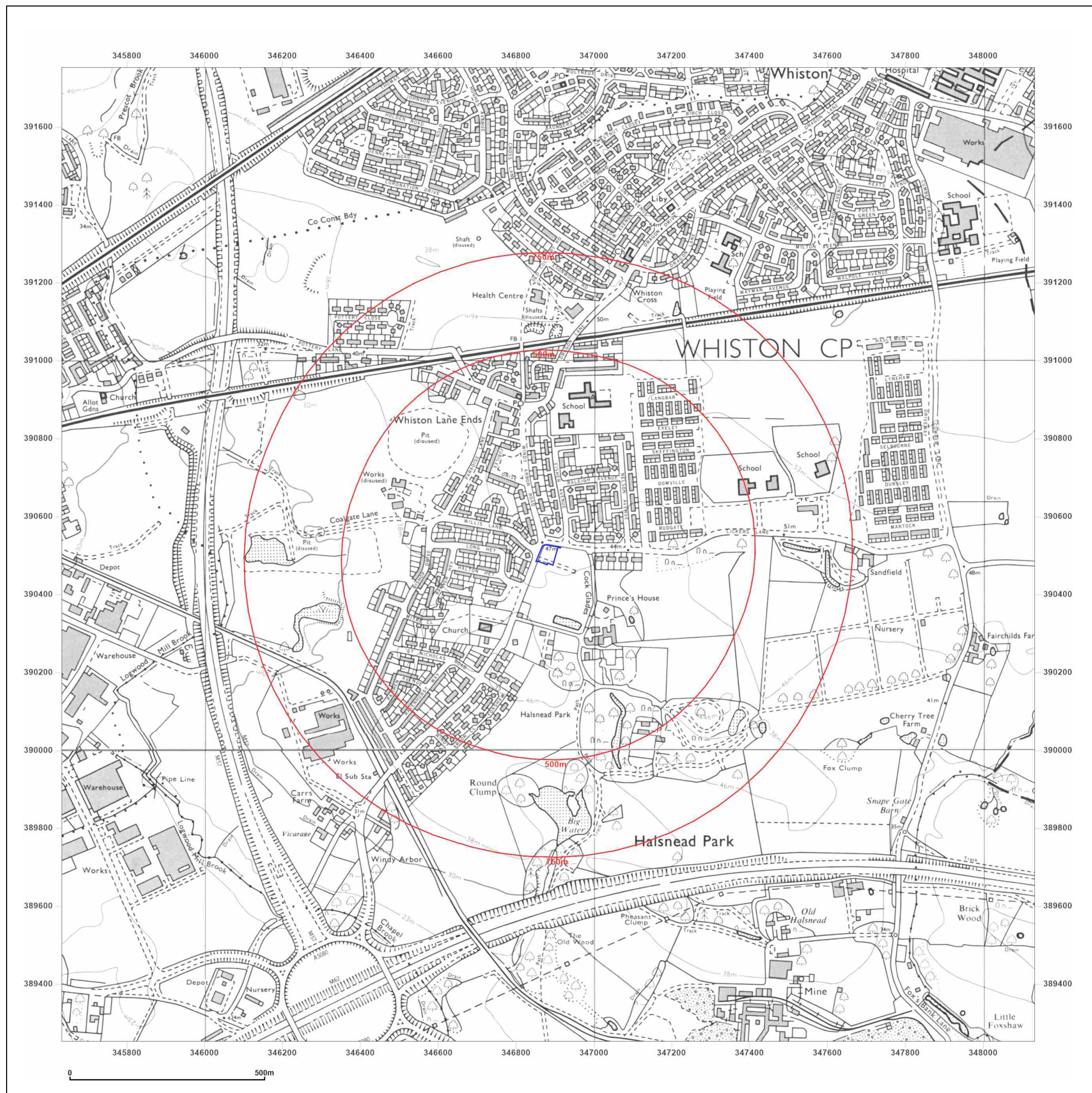


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Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1977-1978

Scale: 1:10,000

Printed at: 1:10,000



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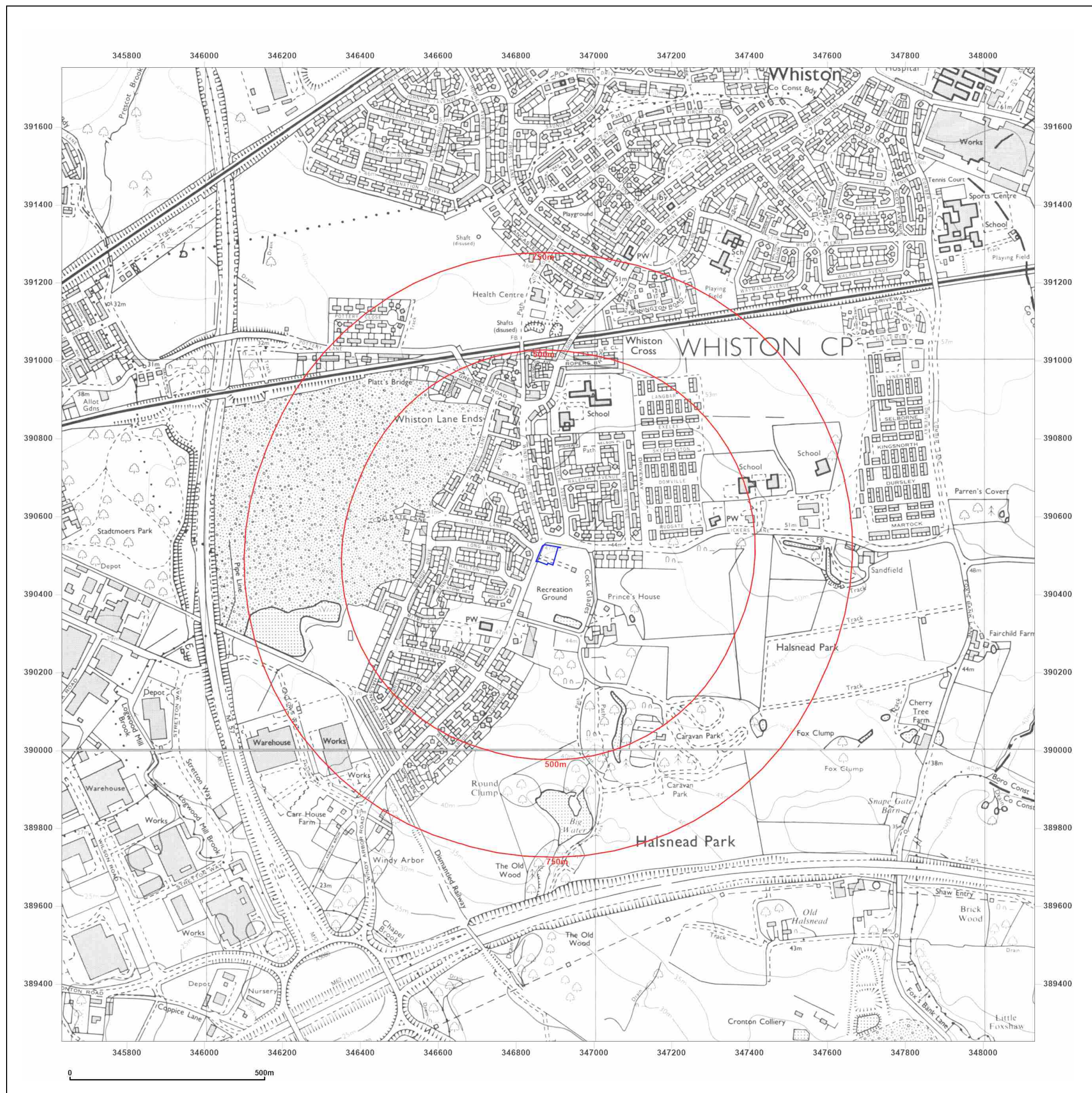


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Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1989-1990

Scale: 1:10,000

Printed at: 1:10,000



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Edition N/A
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Surveyed 1986
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Edition N/A
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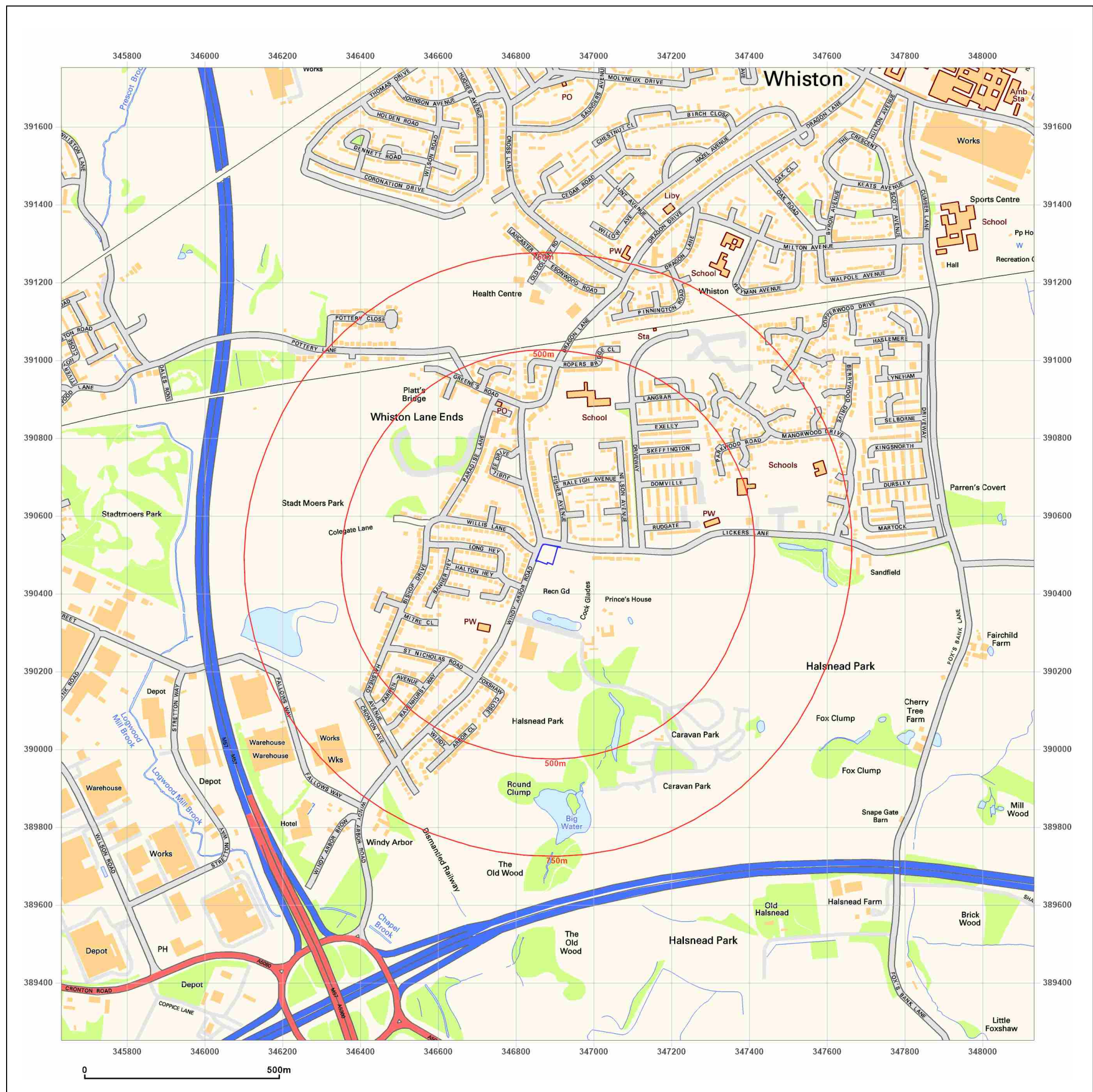


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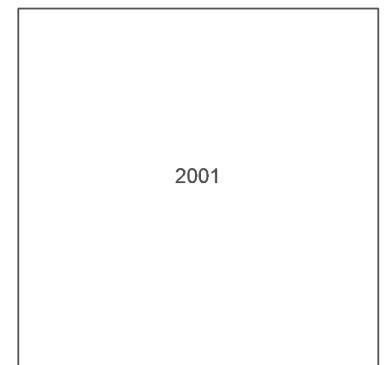
Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

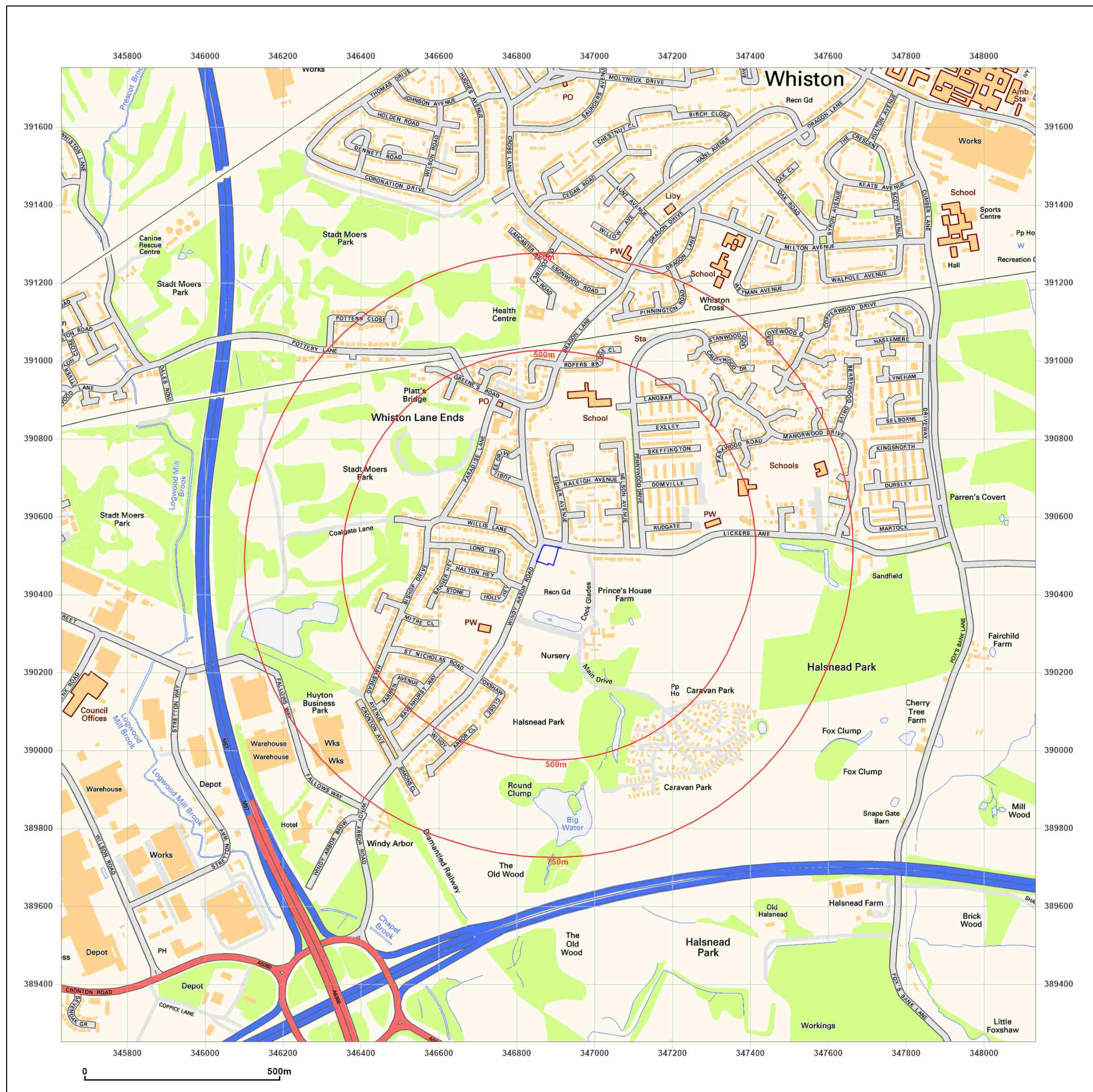


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Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

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Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 2021

Scale: 1:10,000

Printed at: 1:10,000



2021

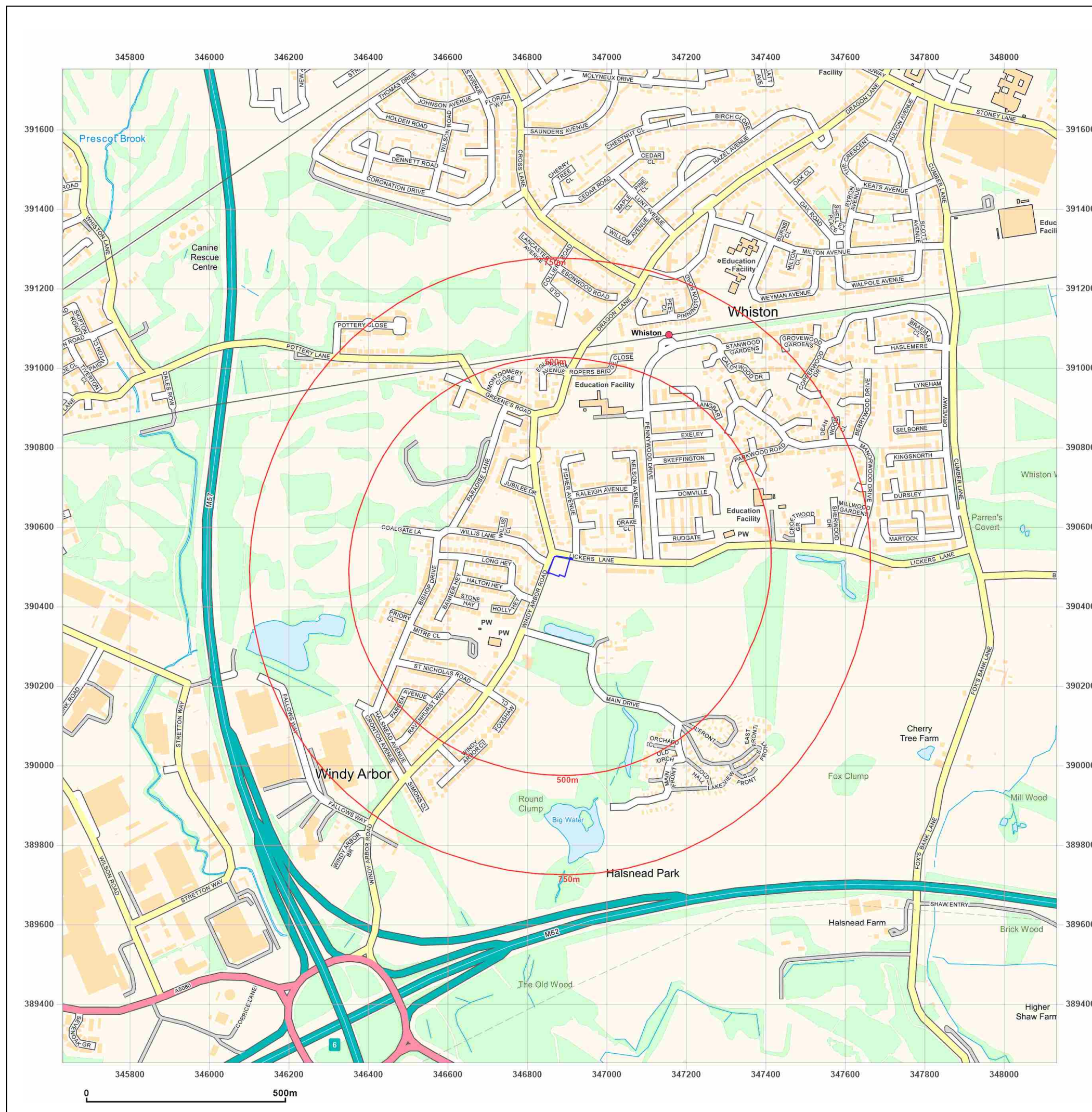


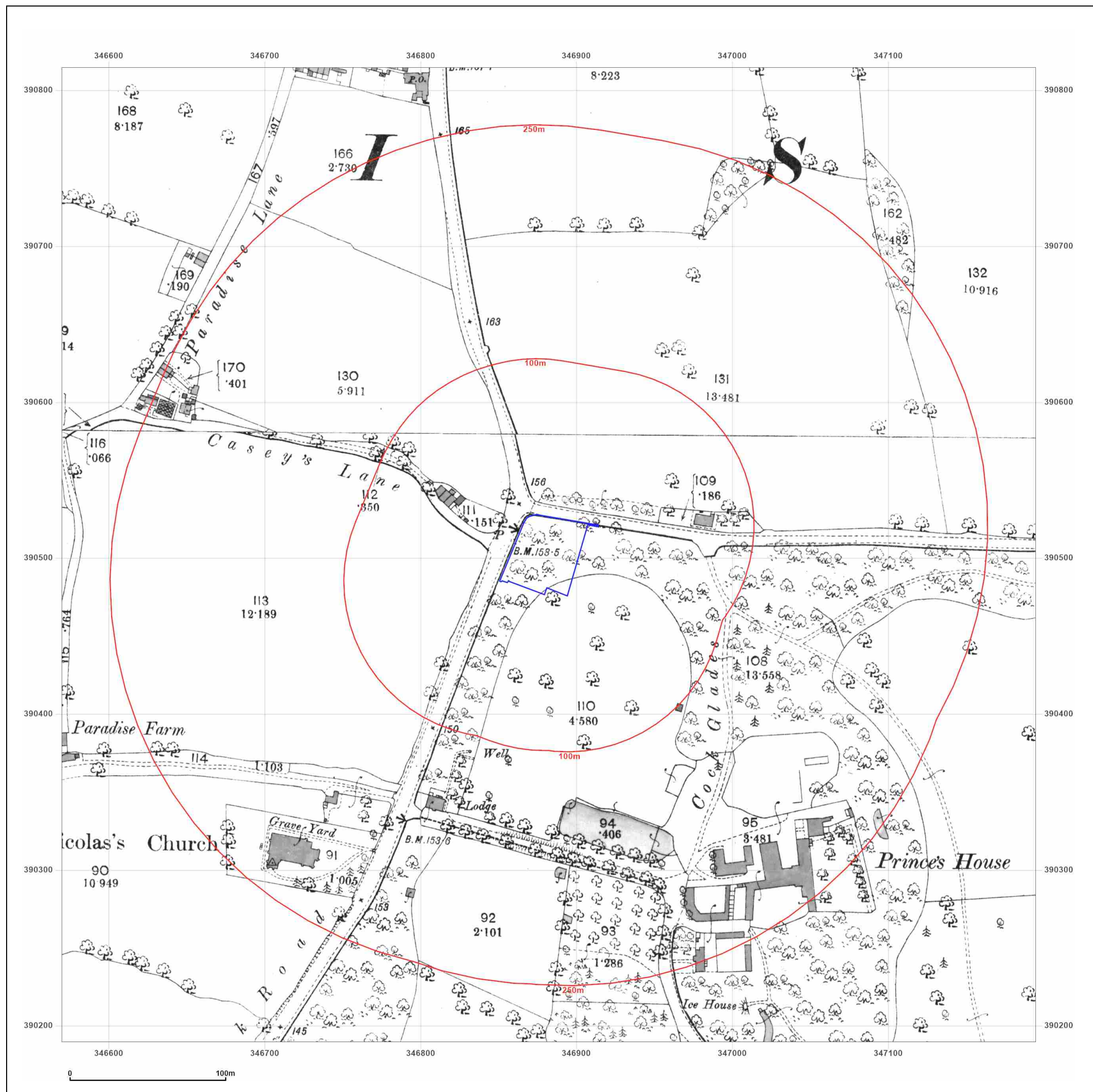
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Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: County Series

Map date: 1892

Scale: 1:2,500

Printed at: 1:2,500



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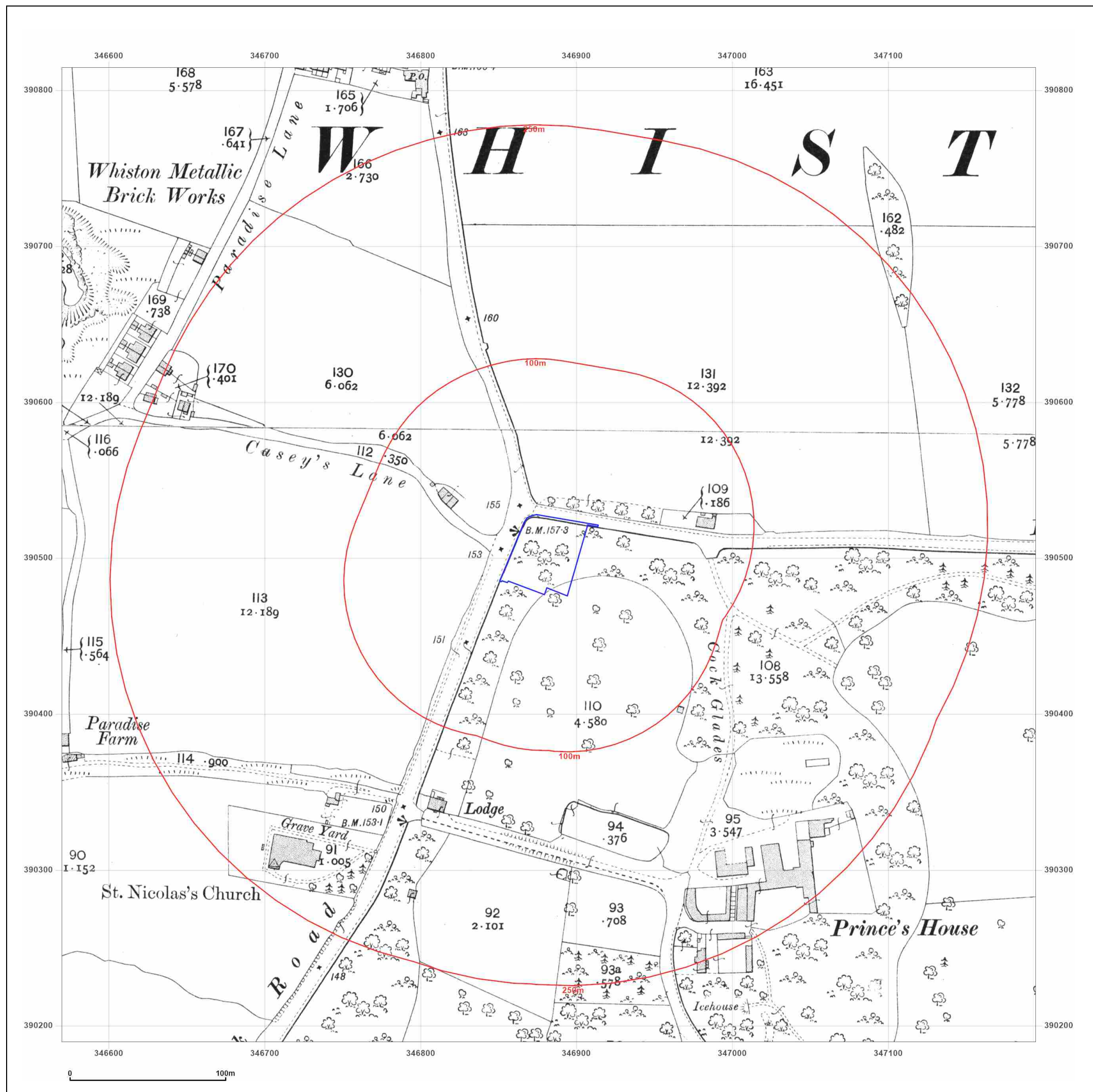


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Map Name: County Series

Map date: 1907

Scale: 1:2,500

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Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: County Series

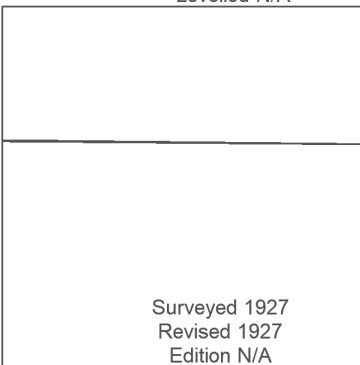
Map date: 1927

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1927
Edition N/A
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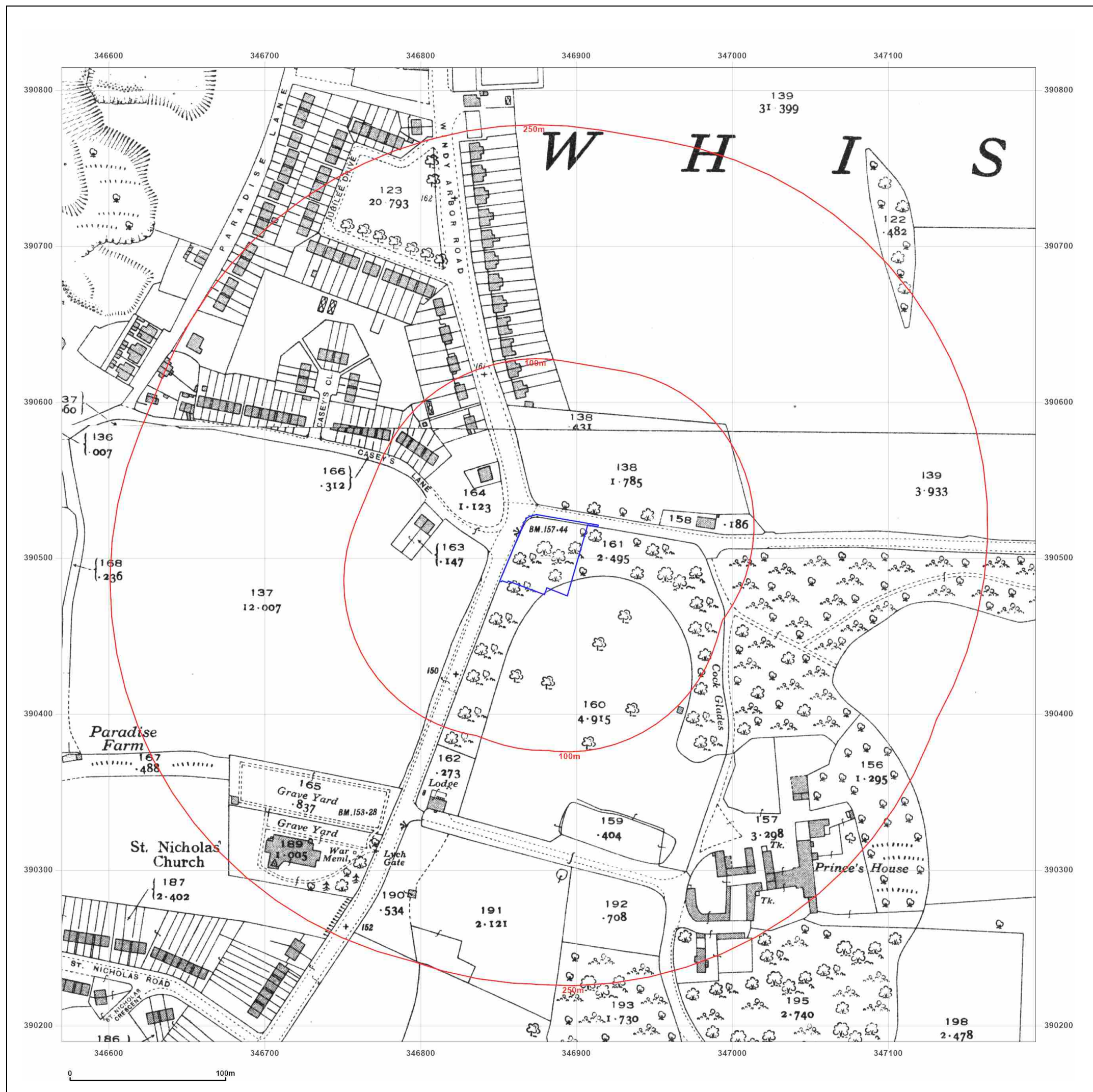


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Grid Ref: 346882, 390502

Map Name: County Series

Map date: 1937

Scale: 1:2,500

Printed at: 1:2,500



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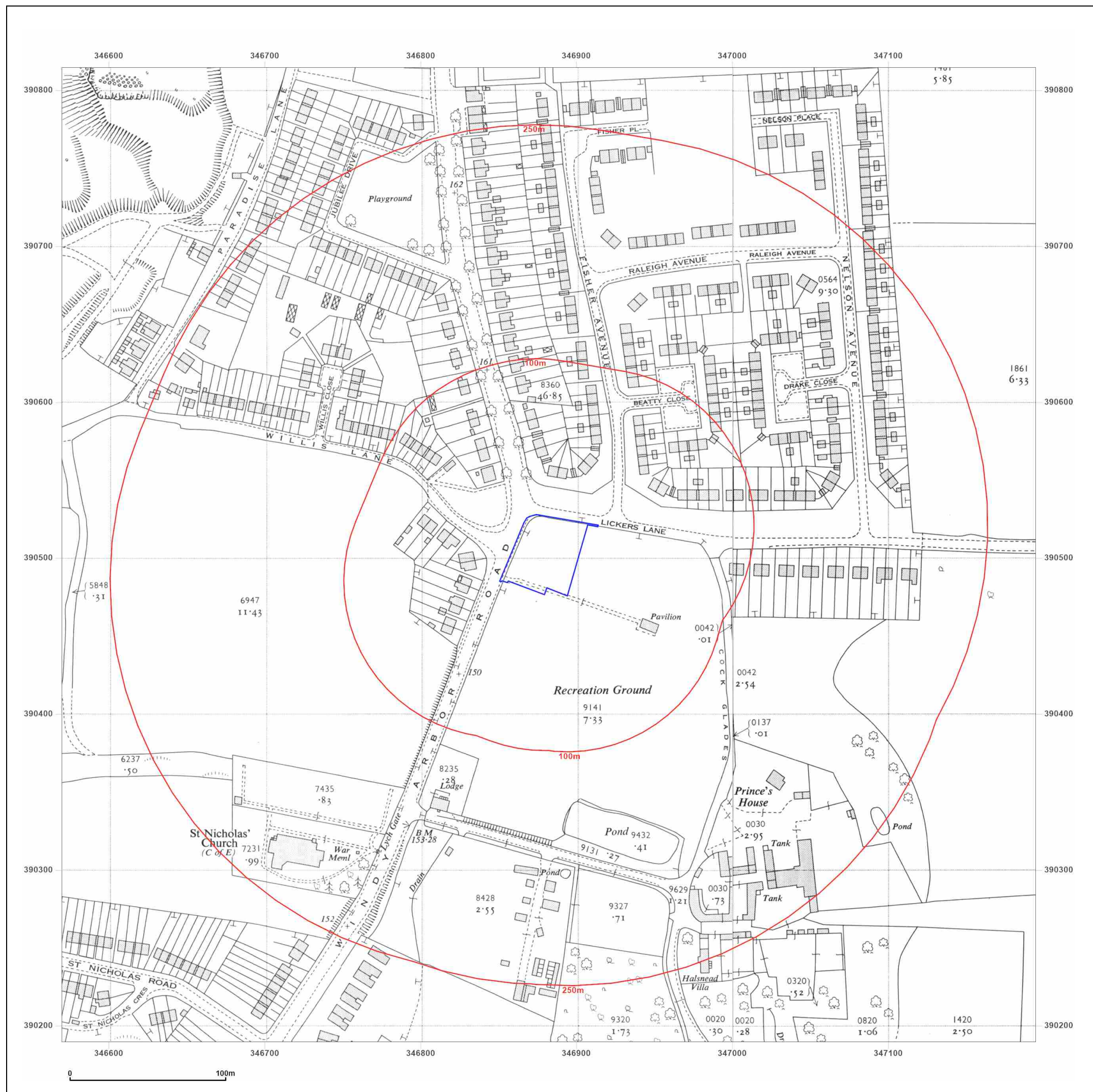


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Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1958

Scale: 1:2,500

Printed at: 1:2,500



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Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1973-1974

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1984

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1984
Levelled 1963

Surveyed 1963
Revised 1984
Edition N/A
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Levelled 1963

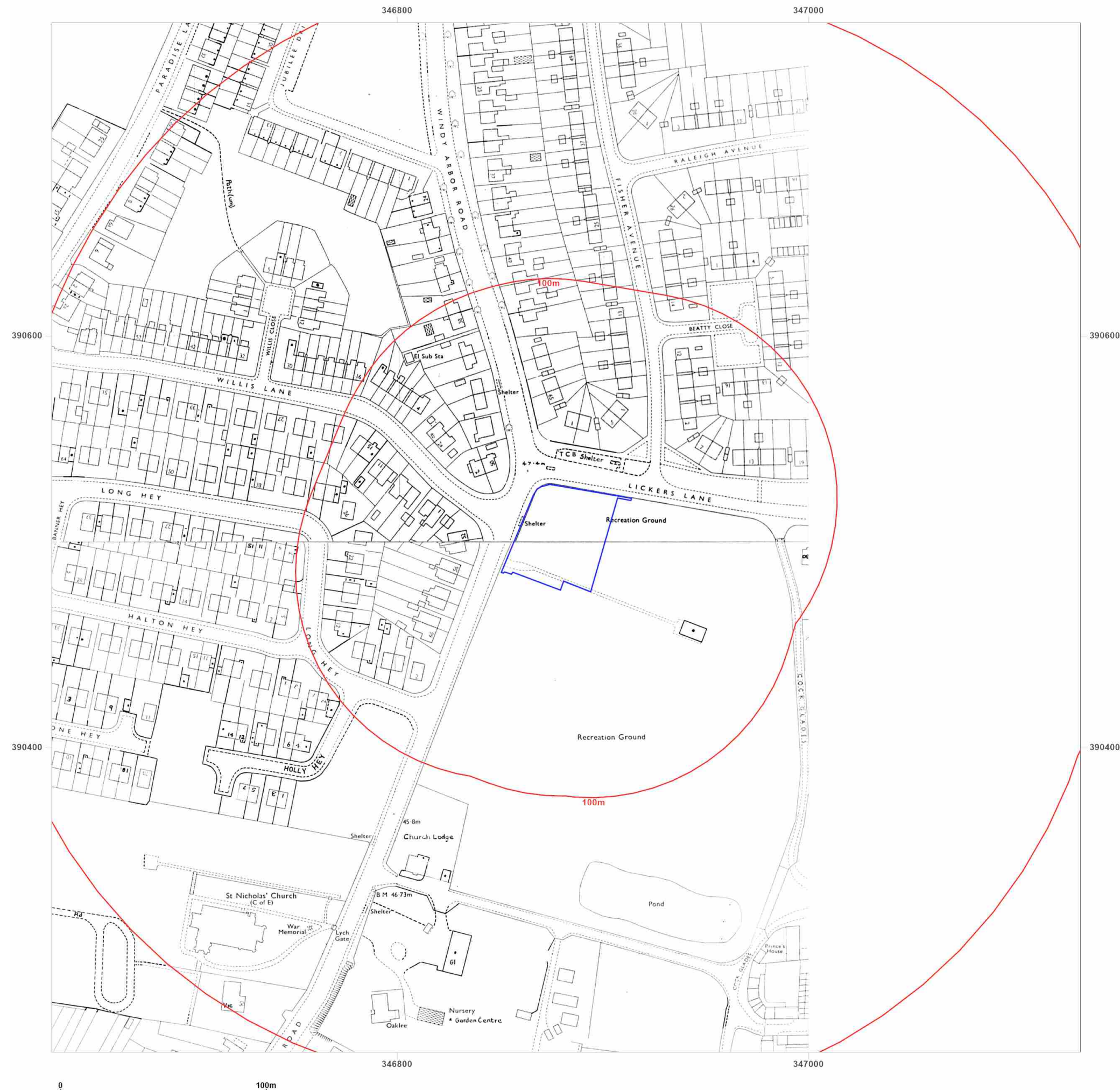


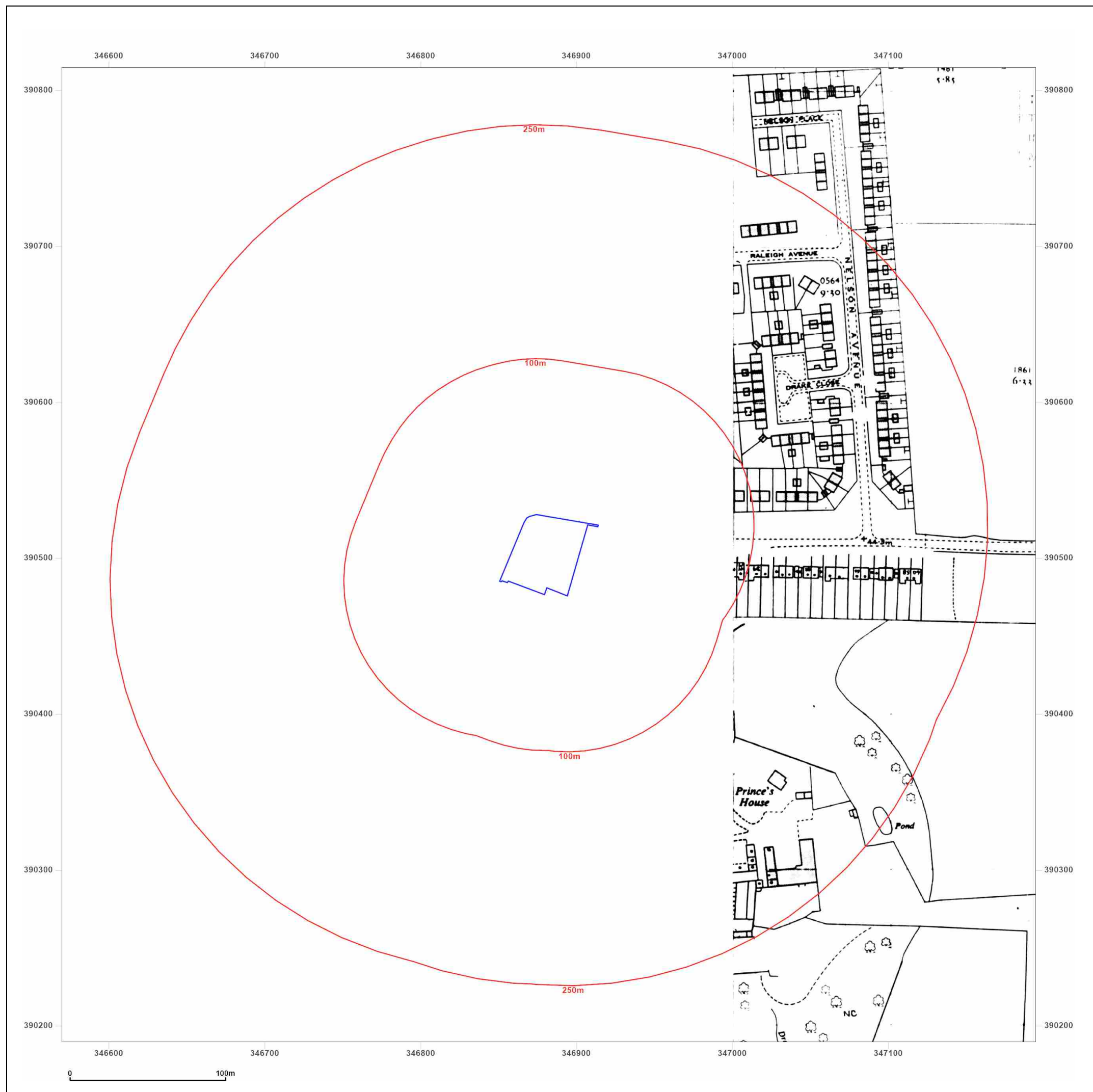
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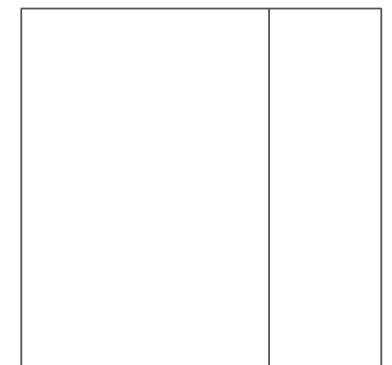
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Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1985

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1963
Revised 1985
Edition N/A
Copyright 1985
Levelled 1963

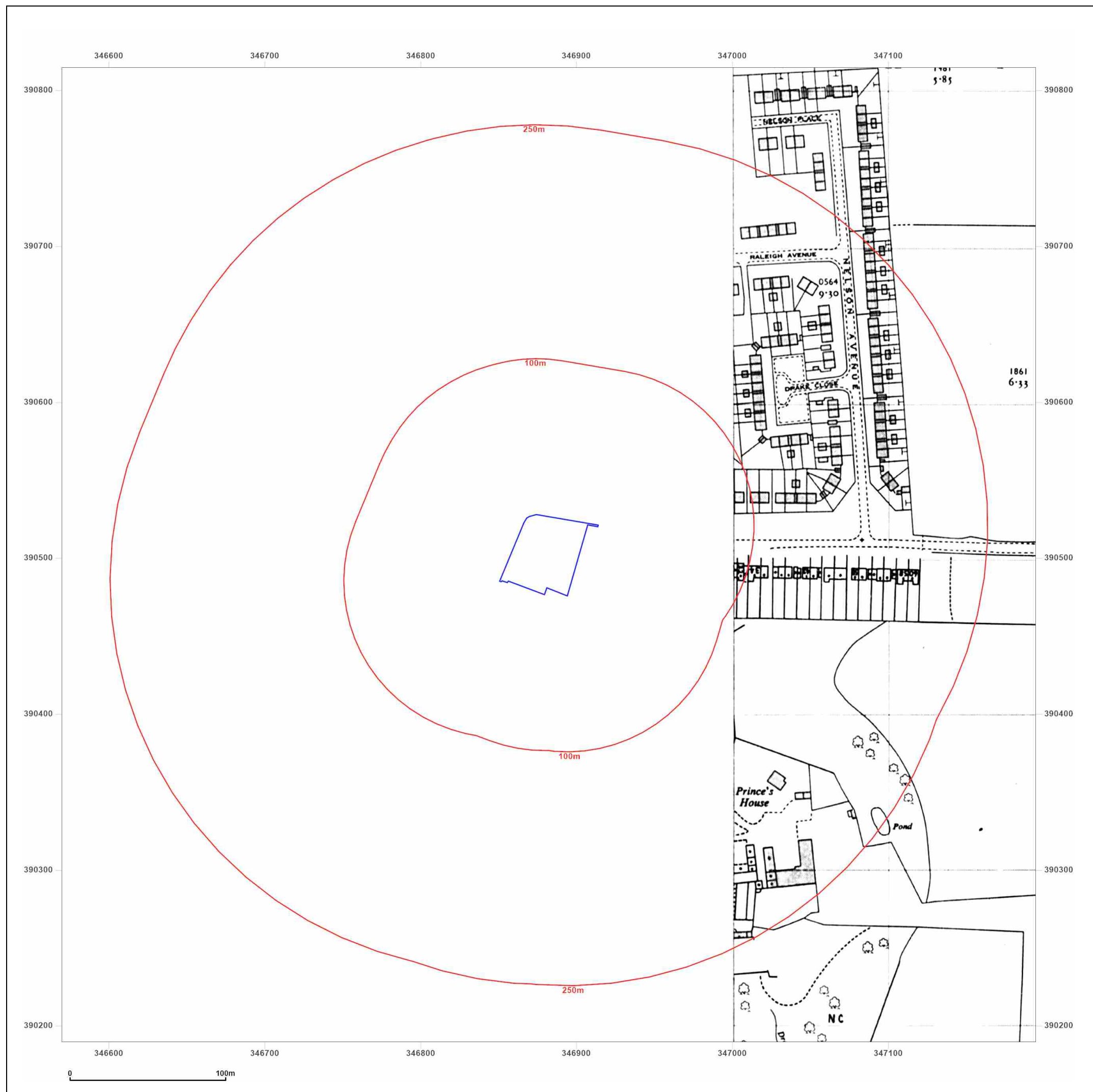


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Car Park off Windy Arbor Road,
Whiston, Prescot, L35 3PB

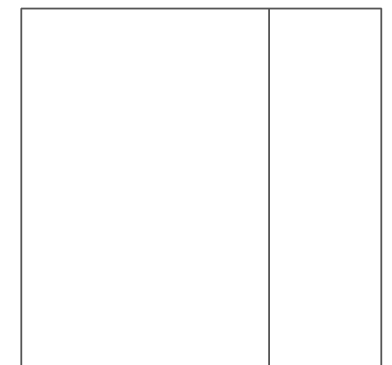
Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1986

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1963
Revised 1986
Edition N/A
Copyright 1986
Levelled 1963



Produced by
Groundsure Insights
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E: info@groundsure.com
W: www.groundsure.com

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Production date: 16 June 2021

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



Site Details:

Car Park off Windy Arbor Road,
Whiston, Prescott, L35 3PB

Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1993

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised 1993
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Production date: 16 June 2021

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





Site Details:

Car Park off Windy Arbor Road,
Whiston, Prescott, L35 3PB

Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1994-1995

Scale: 1:1,250

Printed at: 1:2,000



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

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

Car Park off Windy Arbor Road,
Whiston, Prescott, L35 3PB

Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: National Grid

Map date: 1994-1995

Scale: 1:1,250

Printed at: 1:2,000



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

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



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Production date: 16 June 2021

Map legend available at:
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Site Details:

Car Park off Windy Arbor Road,
Whiston, Prescott, L35 3PB

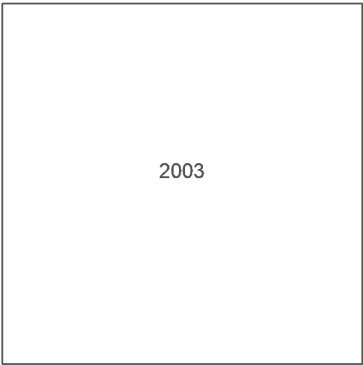
Client Ref: 70057126
Report Ref: WSP-7961073
Grid Ref: 346882, 390502

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



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Production date: 16 June 2021

Map legend available at:
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Appendix D

COAL AUTHORITY REPORT





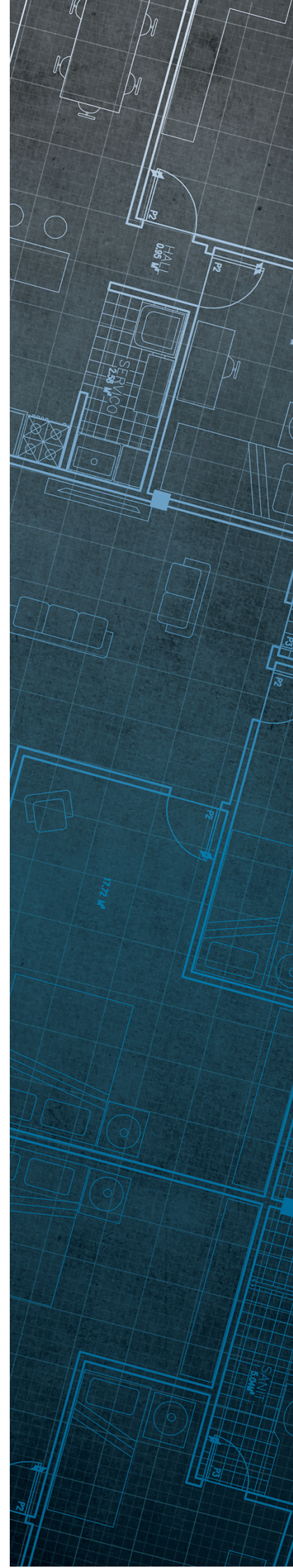
The Coal
Authority

Consultants Coal Mining Report

Car Park Off Windy Arbor Road,
Whiston, Prescot, L35 3pb
Lancashire

Date of enquiry:	17 June 2021
Date enquiry received:	17 June 2021
Issue date:	17 June 2021

Our reference:	51002556236001
Your reference:	WSP-7961074



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

Car Park Off Windy Arbor Road, Whiston, Prescot,
L35 3pb
Lancashire

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	WIGAN FOUR FEET	Coal	3002	157	North	11.2	South	160	1900
unnamed	WIGAN FOUR FEET	Coal	3001	159	North-West	11.2	South-West	160	1900
unnamed	WIGAN FOUR FEET	Coal	3040	169	North-East	11.2	South	160	1902
unnamed	WIGAN TWO FEET	Coal	3007	182	North	11.5	South	80	1903
unnamed	WIGAN TWO FEET	Coal	3005	183	North-West	11.5	South	80	1903
unnamed	WIGAN FOUR FEET	Coal	3041	185	East	11.2	South	160	1900
unnamed	WIGAN FOUR FEET	Coal	303W	191	North-West	11.2	South	160	1900
unnamed	WIGAN TWO FEET	Coal	3045	193	Beneath Property	11.5	South-West	80	1903
unnamed	WIGAN TWO FEET	Coal	3044	198	North-West	11.5	South	80	1903
unnamed	TRENCHERB ONE	Coal	3047	210	North-West	9.5	South-West	80	1892
unnamed	WIGAN TWO FEET	Coal	3043	219	West	11.5	South	80	1903
unnamed	TRENCHERB ONE	Coal	3008	221	North-West	9.5	South-West	80	1896
unnamed	PLODDER	Coal	304B	237	Beneath Property	9.5	South-West	240	1880
unnamed	PLODDER	Coal	304A	239	North-West	9.5	South-West	240	1894
unnamed	PLODDER	Coal	300B	255	North	9.5	South-West	240	1880
unnamed	PLODDER	Coal	300A	264	North-West	9.5	South-West	240	1893
unnamed	RUSHY PARK	Coal	300F	369	North	9.4	South	130	1883
unnamed	RUSHY PARK	Coal	304L	372	East	13.4	South-West	130	1895
unnamed	RUSHY PARK	Coal	304I	379	Beneath Property	9.5	South	130	1895

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	346390-035	346772 390434	This shaft was investigated and treated by GCT Construction Ltd in 1972. The works were carried out to specifications set and monitored by the National Coal Board	Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NW803	3671	NW638
NW849	4441	13866
NW822	NW847	NW832

Our records show we have more plans than those shown above which could affect the enquiry boundary.

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
CROMBOUKE	Coal	Yes	23.5	North	131
ROGER	Coal	Yes	17.7	North-East	136

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property recorded.

Opencast mines

Please refer to the "Summary of findings" map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

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

Withdrawal of support notices

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

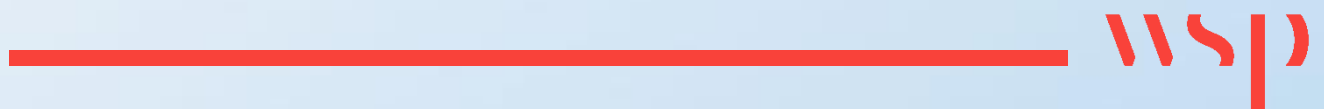
- Approximate position of the enquiry boundary shown 
- Disused mine shaft 
- Outcrop (Conjectured) 
- Geological faults 
- Unlicensed opencast site 

How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com



Appendix E

ZETICA UXO REPORTING



UNEXPLODED BOMB RISK MAP



SITE LOCATION

Map Centre: 346901,390476



LEGEND

- High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- Low:** Areas indicated as having 15 bombs per 1000acre or less.

- military**
- industry**
- UXO find**
- transport**
- dock**
- Luftwaffe targets**
- utilities**
- Bombing decoy**
- other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

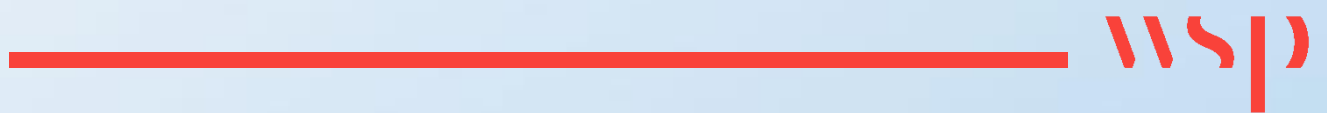
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It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Appendix F

MAT TEST MIDLAND LTD 2020 GI



**LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY**



Certificate No: 4633/20

To : Stuart Sidebottom

Client : Knowsley Contractors Ltd
King Construction
1A Prestwood Place, Skelmersdale
Lancashire, WN8 9QE

Date: 18/08/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to site testing undertaken on Windy Arbour/ Lickers Lane Playing Field.

Tested By : C. Salmon & K. Bescoby

Sample Reference : N/A

Description : See attached

Date Sampled : N/A

Date Tested : 13th July 2020

Source : N/A

Weather : Sunny

Test Results : Please see attached:
BH & TP Location Plan (from Client)
BH Logs and Core Photos
TP logs and Photo
Dynamic Cone Penetration (DCP) Reports
Soakaway Data and Soil Infiltration information

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate
When a statement of conformity is requested for a test result against limits set out in a standard or specification (e.g. BS EN ISO, SHW) that already considers measurement uncertainty, MATtest Midlands decision rule is to follow conformity requirements of the applicable standard or specification.
Results reported only relate to the items tested/ received.

Remarks;

Approved for Issue:

Position: Operations Manager

Issuing Office:



Head Office & Central

Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

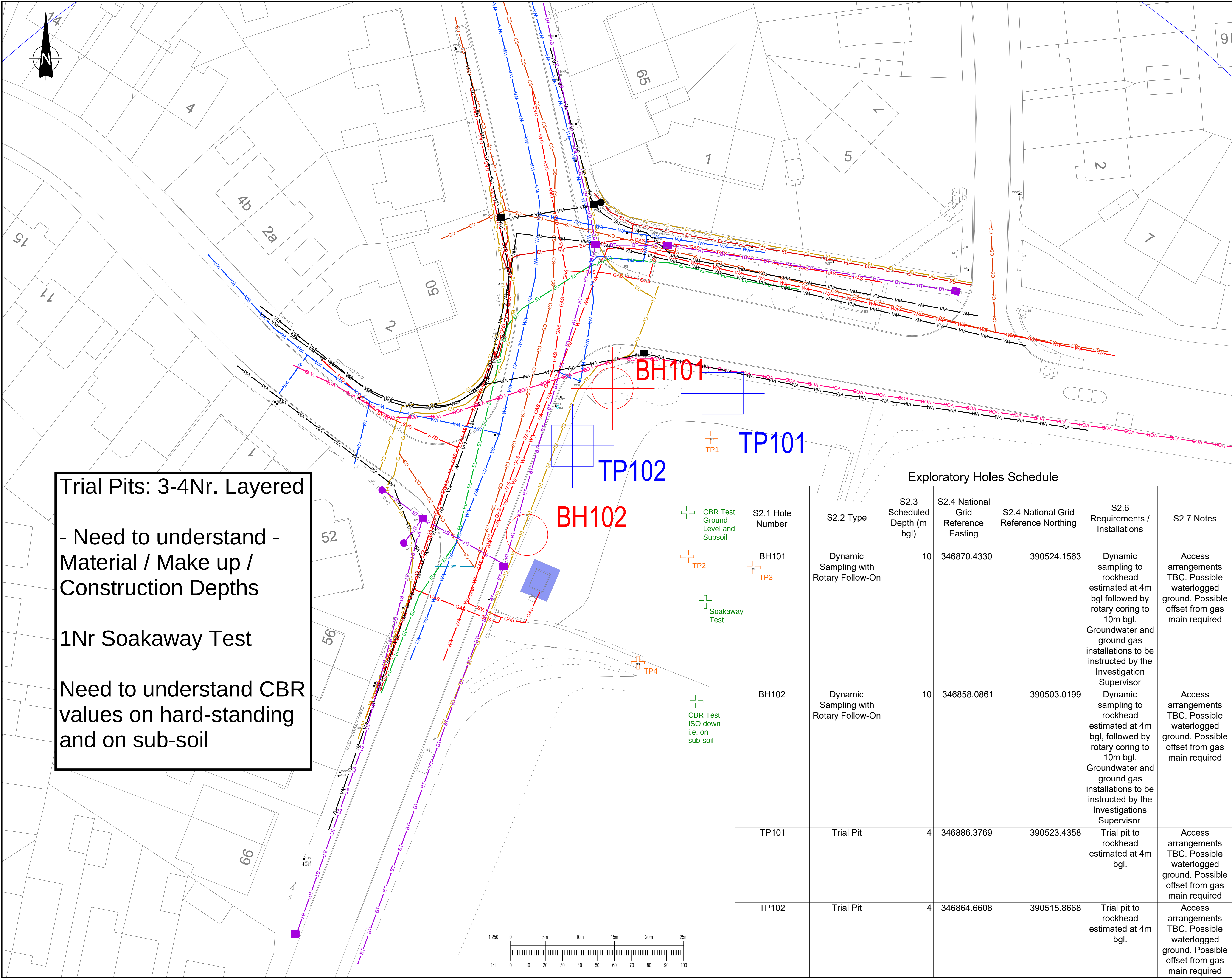


North West

Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk





KEY:

BH Proposed Bore Hole Location

TP Proposed Trial Pit Location

Rev	Date	Description	By
B01	10.02.20	First Design Issue	JB

Amendments	
Project	Title
Halsnead Garden Village	Windy Arbor Road / Lickers Lane Exploratory Holes OS Only
Client	Knowsley Council

2nd Floor South Central 11 Peter Street Manchester M2 5GR
t 0161 839 8392 f 0161 839 8394
mail@watermargroup.com www.watermargroup.com

DESIGN				
Designed by	AM	Checked by	RB	Project No.
Drawn by	JB	Date	FEB 2020	WIE 13628
Scales @ A1 work to figured dimensions only		Computer File No		
Publisher	Zone	Category	Number	Revision
WIE	0	95	0002EHB	B01

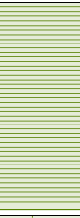
Exploratory Holes Schedule							
S2.1 Hole Number	S2.2 Type	S2.3 Scheduled Depth (m bgl)	S2.4 National Grid Reference Easting	S2.4 National Grid Reference Northing	S2.6 Requirements / Installations	S2.7 Notes	
BH101 TP3	Dynamic Sampling with Rotary Follow-On	10	346870.4330	390524.1563	Dynamic sampling to rockhead estimated at 4m bgl followed by rotary coring to 10m bgl. Groundwater and ground gas installations to be instructed by the Investigation Supervisor	Access arrangements TBC. Possible waterlogged ground. Possible offset from gas main required	
BH102	Dynamic Sampling with Rotary Follow-On	10	346858.0861	390503.0199	Dynamic sampling to rockhead estimated at 4m bgl, followed by rotary coring to 10m bgl. Groundwater and ground gas installations to be instructed by the Investigations Supervisor.	Access arrangements TBC. Possible waterlogged ground. Possible offset from gas main required	
TP101	Trial Pit	4	346886.3769	390523.4358	Trial pit to rockhead estimated at 4m bgl.	Access arrangements TBC. Possible waterlogged ground. Possible offset from gas main required	
TP102	Trial Pit	4	346864.6608	390515.8668	Trial pit to rockhead estimated at 4m bgl.	Access arrangements TBC. Possible waterlogged ground. Possible offset from gas main required	

Trial Pits: 3-4Nr. Layered

- Need to understand -
Material / Make up /
Construction Depths

1Nr Soakaway Test

Need to understand CBR
values on hard-standing
and on sub-soil

			Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197			Date: 13th August 2020			BOREHOLE NO. BH101								
CLIENT MATtest Midlands Ltd						Ground Level:			Sheet No. 1 of 2								
SITE LOCATION Lickers Lane, Whiston						Orientation:			Job No. EAL.17.20								
						Coordinates:											
						Plant: Massenza MI3 Rotary Rig											
						Dimensions:											
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Core Records			Test Sample Details
				Depth	No	Type	Seating	Test Drive						TCR	SCR	RQD	
MADE GROUND comprising black sandy gravel. Gravel is fine to coarse sub-angular to angular granite and tarmac fragments. Hardstanding.	0.10		0.10 (0.10)	0.5	1	D											
MADE GROUND comprising dark brown slightly gravelly fine to coarse sand. Gravel is fine to medium sub-angular to angular brick and tarmac.	0.20		1.00 (0.90)														
	0.30																
	0.40																
	0.50																
	0.60																
	0.70																
	0.80																
	0.90																
	1.00																
MADE GROUND comprising dark grey mottled yellow and black slightly gravelly sandy clay. Gravel is fine to coarse sub-angular to angular coal fragments. (Reworked natural).	1.10		1.50 (0.50)	1.0 - 1.5	2	B											
	1.20																
	1.30																
	1.40																
	1.50																
Very stiff yellowish brown mottled orange silty sandy CLAY. GLACIAL TILL.	1.60		2.10 (0.60)	1.5 - 2.0	3	B											
	1.70																
	1.80																
	1.90																
	2.00																
	2.10																
Extremely weak dark grey MUDSTONE. Recovered as gravelly sand. PENNINE MIDDLE COAL MEASURES.	2.20		2.20 (0.10)	2.2	4	D											
Borehole continued with rotary coring. No recovery from 2.10m to 2.70mbgl.	2.30		2.70 (0.50)														
	2.40																
	2.50																
	2.60																
	2.70																
Very weak thinly laminated black MUDSTONE. Extremely closely to very closely spaced horizontal to subhorizontal fractures, undulating, rough, along bedding planes. Weathered to clay penetrating 1mm along fracture planes. Recovered as non intact gravel sized fragments. PENNINE MIDDLE COAL MEASURES.	2.80		3.00 (0.30)														
	2.90		3.50 (0.50)														
No recovery from 3.00 to 3.50mbgl.	3.10																
	3.20																
	3.30																
	3.40																
	3.50																
Very stiff dark grey silty sandy CLAY. Occasional sub-angular to angular mudstone lithorelicts. PENNINE MIDDLE COAL MEASURES.	3.60		3.70 (0.20)														
	3.70		4.50 (0.80)														
Very weak thinly laminated black MUDSTONE. Extremely closely to very closely spaced horizontal to subhorizontal fractures, undulating, rough, along bedding planes. Weathered to clay penetrating 1mm along fracture planes. Recovered as non intact gravel sized fragments. PENNINE MIDDLE COAL MEASURES.	3.80																
	3.90																
	4.00																
	4.10																
	4.20																
	4.30																
	4.40																
	4.50																
Very stiff dark grey silty sandy CLAY. Occasional sub-angular to angular mudstone lithorelicts. PENNINE MIDDLE COAL MEASURES.	4.60		5.30 (0.80)														
	4.70																
	4.80																
	4.90																
	5.00																

Borehole record continued on Page 2

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
13.08.20	100	9.00									
Remarks:						Logged By:	Checked By:	Date		Scale	
1. Gas/groundwater monitoring standpipe installed to 10.0m (GL to 1.0m plain/bentonite, 1.0m to 10.0m slotted/gravel).						PD	PD	16.08.20		NTS	
2. No groundwater encountered.											
3. Borehole remained stable throughout drilling.											



Date: 14th August 2020

Ground Level:

Orientation:

Coordinates:

Plant: Massenza M13 Rotary Rig

Dimensions:

BOREHOLE NO.

BH101

Sheet No. 2 of 2

Job No. _____

EAL.17.20

CLIENT
MATtest Midlands Ltd

SITE LOCATION

Lickers Lane, Whiston

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results						Core Records			Test Sample Details	
				Depth	No	Type	Seating		Test Drive			N Value	Installation	TCR	SCR		ROD
							From	To	From	To	From						
... Continued from page 1.	5.10 5.20 5.30		5.30 (0.80)														
Very weak thinly laminated black MUDSTONE. Extremely closely to very closely spaced horizontal to subhorizontal fractures, undulating, rough, along bedding planes. Weathered to clay penetrating 1mm along fracture planes. PENNINE MIDDLE COAL MEASURES.	5.40 5.50 5.60 5.70 5.80 5.90 6.00		6.00 (0.70)										97	29	29		
Very stiff dark grey silty sandy CLAY. Occasional sub-angular to angular mudstone lithorelicts. PENNINE MIDDLE COAL MEASURES.	6.10 6.20 6.30 6.40 6.50		6.50 (0.50)														
No recovery from 6.50m to 7.00mbgl.	6.60 6.70 6.80 6.90 7.00		7.00 (0.50)										44	27	0		
Very stiff dark grey silty sandy CLAY. Occasional sub-angular to angular mudstone lithorelicts. PENNINE MIDDLE COAL MEASURES.	7.10 7.20 7.30 7.40 7.50		7.50 (0.50)														
Very weak thinly laminated black MUDSTONE. Extremely closely to very closely spaced horizontal to subhorizontal fractures, undulating, rough, along bedding planes. Weathered to clay penetrating 1mm along fracture planes. Recovered as non intact gravel sized fragments. PENNINE MIDDLE COAL MEASURES.	7.60 7.70 7.80 7.90 8.00 8.10 8.20 8.30 8.40 8.50 8.60 8.70 8.80 8.90 9.00 9.10 9.20 9.30 9.40 9.50 9.60 9.70 9.80 9.90		9.90 (2.40)										93	11	7		
... 8.30m to 8.40m solid core.																	
Very weak black coal.	10.00		10.0 (0.10)										92	15	0		

Borehole terminated at 10.00mbgl.

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
13.08.20	100	9.00									
Remarks: 1. Gas/groundwater monitoring standpipe installed to 10.0m (GL to 1.0m plain/bentonite, 1.0m to 10.0m slotted/gravel). 2. No groundwater encountered. 3. Borehole remained stable throughout drilling.							Logged By:	Checked By:	Date	Scale	
							PD	PD	16.08.20	NTS	

 Web: www.erdaltd.co.uk Email: p.devitt@erdaltd.co.uk Mob: 07531 051197				Date: 15th August 2020				BOREHOLE NO. BH102 Sheet No. 1 of 2 Job No. EAL.17.20										
CLIENT MATtest Midlands Ltd				Ground Level:														
SITE LOCATION Lickers Lane, Whiston				Orientation: Coordinates: Plant: Massenza MI3 Rotary Rig Dimensions:														
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Core Records			Test Sample Details	
				Depth	No	Type	Seating	Test Drive						TCR	SCR	RQD		
MADE GROUND comprising dark brown slightly gravelly fine to coarse sand. Gravel is fine to medium sub-angular to angular brick and tarmac.	0.10 0.20 0.30 0.40 0.50 0.60		0.60 (0.60)															
Very stiff yellowish brown mottled light grey silty sandy CLAY. GLACIAL TILL.	0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00		2.00 (1.40)					3	4	5	5	5	6	21				
Very weak thinly laminated black MUDSTONE. Extremely closely to very closely spaced horizontal to subhorizontal fractures, undulating, rough, along bedding planes. Weathered to clay and Iron Oxide staining penetrating 1mm along fracture planes. Recovered as non intact gravel sized fragments. PENNINE MIDDLE COAL MEASURES.	2.10 2.20 2.30 2.40 2.50 2.60 2.70 2.80 2.90 3.00 3.10 3.20 3.30 3.40 3.50 3.60 3.70 3.80 3.90 4.00		4.00 (2.00)				4	5	6	6	8	8	28			88	0	0
Very stiff dark grey silty sandy gravelly CLAY. Gravel is fine to coarse sub-angular to angular mudstone lithorelicts. PENNINE MIDDLE COAL MEASURES.	4.10 4.20 4.30 4.40 4.50		4.50 (0.50)													96	0	0
Very weak thinly laminated dark grey MUDSTONE. Very closely horizontal to sub horizontal fractures, undulating, rough, along bedding planes. Weathered to clay and Iron Oxide staining penetrating 1mm along fracture planes. PENNINE MIDDLE COAL MEASURES.	4.60 4.70 4.80		4.80 (0.30)															
Very weak thinly laminated dark grey MUDSTONE. Very closely horizontal to sub horizontal fractures, undulating, rough, along bedding planes. Weathered to clay penetrating 1mm along	4.90 5.00																	
HSV @ 1.60m = 120																		

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
15.08.20	100	9.00									
Remarks: 1. Gas/groundwater monitoring standpipe installed to 10.0m (GL to 1.0m plain/bentonite, 1.0m to 10.0m slotted/gravel). 2. No groundwater encountered. 3. Borehole remained stable throughout drilling.						Logged By:	Checked By:	Date		Scale	
						PD	PD	17.08.20		NTS	



Ground Level:

Orientation:

Coordinates:

Plant: Massenza M13 Rotary Rig

Dimensions:

BOREHOLE NO.

BH102

Sheet No. 2 of 2

Job No. _____

EAL.17.20

CLIENT
MATtest Midlands Ltd

SITE LOCATION

Lickers Lane, Whiston

Borehole terminated at 10.0mbgl.

Casing record			Chiselling records									
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks	
15.08.20	100	9.00										
Remarks: 1. Gas/groundwater monitoring standpipe installed to 10.0m (GL to 1.0m plain/bentonite, 1.0m to 10.0m slotted/gravel). 2. No groundwater encountered. 3. Borehole remained stable throughout drilling.									Logged By:	Checked By:	Date	Scale
									PD	PD	17.08.20	NTS

KEY:

DO NOT SCALE



TITLE:

Borehole Core Photos – BH01

PROJECT:

Lickers Lane, Whiston

PROJECT No:

EAL.17.20

DATE:

08/2020

SCALE :

NTS

DRAWN :

PD

DWG No:

Figure 1

Left to right - 2.00m to 3.00m



Left to right - 3.00m to 4.50m

Left to right – 4.50m to 5.50m

KEY:

DO NOT SCALE



TITLE:

Borehole Core Photos – BH01

PROJECT:

Lickers Lane, Whiston

PROJECT No:

EAL.17.20

DATE:

08/2020

SCALE :

NTS

DRAWN :

PD

DWG No:

Figure 1

Left to right - 6.00m to 7.00m



Left to right - 7.00m to 8.00m

Left to right – 8.00m to 9.00m

KEY:

DO NOT SCALE



TITLE:

Borehole Core Photos – BH01

PROJECT:

Lickers Lane, Whiston

PROJECT No:

EAL.17.20

DATE:

08/2020

SCALE :

NTS

DRAWN :

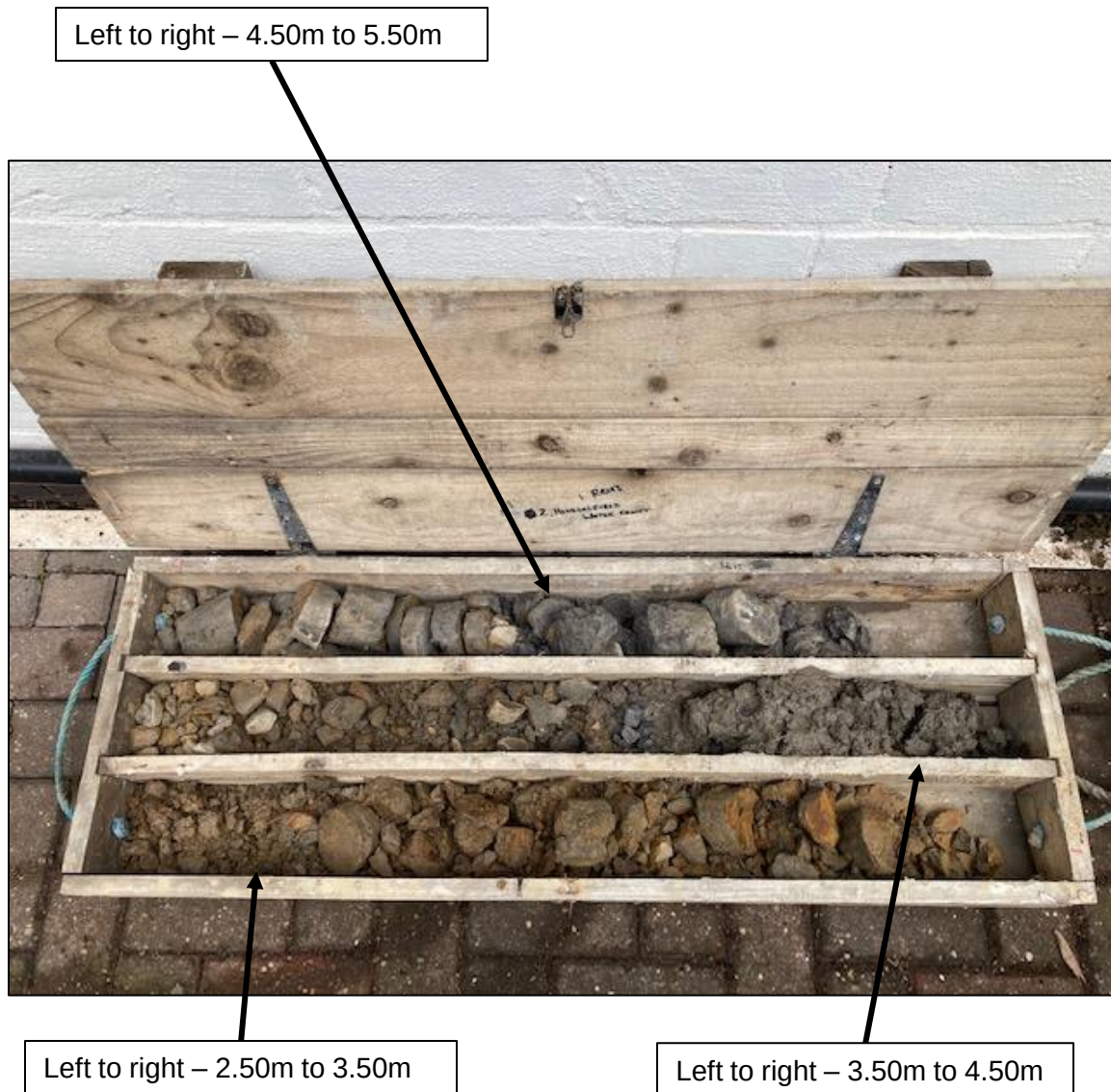
PD

DWG No:

Figure 1

Left to right - 9.00m to 10.00m





KEY:

DO NOT SCALE



TITLE:

Borehole Core Photos – BH02

PROJECT:

Lickers Lane, Whiston

PROJECT No:

EAL.17.20

DATE:

08/2020

SCALE :

NTS

DRAWN :

PD

DWG No:

Figure 1

KEY:

DO NOT SCALE



TITLE:

Borehole Core Photos – BH02

PROJECT:

Lickers Lane, Whiston

PROJECT No:

EAL.17.20

DATE:

08/2020

SCALE :

NTS

DRAWN :

PD

DWG No:

Figure 1

Left to right – 7.50m to 8.50m



Left to right – 5.50m to 6.50m

Left to right – 6.50m to 7.50m



Left to right – 8.50m to 9.50m

KEY:

DO NOT SCALE



TITLE:

Borehole Core Photos – BH02

PROJECT:

Lickers Lane, Whiston

PROJECT No:

EAL.17.20

DATE:

08/2020

SCALE :

NTS

DRAWN :

PD

DWG No:

Figure 1

BOREHOLE-/ TRIAL PIT LOG

CLIENT **KING CONSTRUCTION**
 JOB REF: **4633/20**
 CONTRACT: **WINDY ARBOR/LICKERS LANE**
(Whiston Juniors Playing Fields)
 LOCATION: **SEE TP LOCATION PLAN**
 PLAN SIZE: **3.00m x 2.20m**

TP REF: **TP101**
 DATE: **13/08/20**
 WEATHER: **SUNNY**
 LOGGED BY: **CS**
 EASTING: **53.40887333**
 NORTHING: **-2.80045152**

Depth (m)	Thickness (m)	Sample No. & Type	Sample Interval	Description	CBR %	MC %	Comments
0.50	0.50	1B 2SB 3D	0.00 to 0.50	Black, sandy, silty, occ gravel, occ cobble of house brick, occ pottery -TOPSOIL/MADE GROUND			See Also DCP Report
1.20	0.70	4B 5SB 6D	0.50 to 1.20	Orangey brown, slightly sandy, sl silty, firm/stiff consistency CLAY/BOULDER CLAY			
2.50	1.30	7B 8SB 9D	1.20 to 2.50	Grey, silty, firm/stiff consistency CLAY/BOULDER CLAY - organic odour at around 2.40m			
4.30	1.80	10B 11SB 12D	2.50 to 4.30	Black, grey, thinly laminated, highly weathered MUDSTONE			
				End of TP at 4.30m bgl			TP DRY

TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields) 5DT	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 101		

PHOTO 1 SHOWING GENERAL POSITION



PHOTO 2 SHOWING GENERAL POSITION



TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 101		

PHOTO 3 SHOWING GENERAL SOIL PROFILE



PHOTO 4 SHOWING NATURE OF ARISING



BOREHOLE-/ TRIAL PIT LOG

CLIENT **KING CONSTRUCTION**
 JOB REF: **4633/20**
 CONTRACT: **WINDY ARBOR/LICKERS LANE**
(Whiston Juniors Playing Fields)
 LOCATION: **SEE TP LOCATION PLAN**
 PLAN SIZE: **3.00m x 2.20m**

TP REF: **TP102**
 DATE: **14/08/20**
 WEATHER: **SUNNY**
 LOGGED BY: **CS**
 EASTING: **53.40878998**
 NORTHING: **-2.80077507**

Depth (m)	Thickness (m)	Sample No. & Type	Sample Interval	Description	CBR %	MC %	Comments
0.40	0.40	1B 2SB 3D	0.00 0.40	Black, sandy, silty, occasional gravel, occasional cobble of brick, occasional pottery TOPSOIL/MADE GROUND			See also DCP report
4.00	3.60	4B 5SB 6D	0.40 4.00	Orangey brown, slightly sandy, sl silty, stiff consistency CLAY/BOULDER CLAY localised pockets/lenses of sandy gravel			
4.50	0.50	7B 8SB 9D	4.00 to 4.50	Bluish grey, orangey brown thinly laminated, completely weathered MUDSTONE recovered as fine gravel and cobbles of mudstone with traces of coal 150mm thick			
				End of TP at 4.50m bgl			TP DRY

TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	14/02/20
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields) 5DT	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 102		

PHOTO 1 SHOWING GENERAL POSITION



PHOTO 2 SHOWING GENERAL POSITION



TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	14/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 102		

PHOTO 3 SHOWING GENERAL SOIL PROFILE



PHOTO 4 SHOWING NATURE OF ARISING



BOREHOLE / TRIAL PIT LOG

CLIENT: **KING CONSTRUCTION**
 JOB REF: **4633/20**
 CONTRACT: **WINDY ARBOR/LICKERS LANE**
(Whiston Juniors Playing Fields)
 LOCATION: **SEE TP LOCATION PLAN**
 PLAN SIZE: **1.40 x 1.20m**

TP REF: **TP1**
 DATE: **13/08/20**
 WEATHER: **SUNNY**
 LOGGED BY: **CS**
 EASTING: **53.40882336**
 NORTHING: **-2.80042838**

Depth (m)	Thickness (m)	Sample No. & Type	Sample Interval	Description	CBR %	MC %	Comments
0.70	0.70	1B 2SB 3D	0.00 to 0.70	Black, sandy, fmc gravel of ash, clinker, bituminous material, limestone, granite - MADE GROUND			See also soakaway report
1.00	0.30	4B 5SB 6D	0.70 to 1.00	Orangey brown, slightly sandy, sl silty, firm/stiff consistency CLAY/BOULDER CLAY			HAND SHEAR VANE AT 0.90m 94,120,120
1.00				End of TP at 1.00m bgl			TP DRY

TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 1		

PHOTO 1 SHOWING GENERAL POSITION AND NATURE OF ARISING



PHOTO 2 SHOWING GENERAL SOIL PROFILE



TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 1		

PHOTO 3 SHOWING GENERAL SOIL PROFILE



PHOTO 4 SHOWING SOAKAWAY LEVEL AT START OF 2nd DAY



BOREHOLE / TRIAL PIT LOG

CLIENT: **KING CONSTRUCTION**
 JOB REF: **4633/20**
 CONTRACT: **WINDY ARBOR/LICKERS LANE**
(Whiston Juniors Playing Fields)
 LOCATION: **SEE TP LOCATION PLAN**
 PLAN SIZE: **1.20 x 1.10m**

TP REF: **TP2**
 DATE: **13/08/20**
 WEATHER: **SUNNY**
 LOGGED BY: **CS**
 EASTING: **53.40885282**
 NORTHING: **-2.80058831**

Depth (m)	Thickness (m)	Sample No. & Type	Sample Interval	Description	CBR %	MC %	Comments
0.70	0.70	1B 2SB 3D	0.00 to 0.70	Black, sandy, fmc gravel of ash, clinker, bituminous material, limestone, granite - MADE GROUND			See also DCP report
1.10	0.40	4B 5SB 6D	0.70 to 1.00	Orangey brown, slightly sandy, sl silty, firm/stiff consistency CLAY/BOULDER CLAY			
				End of TP at 1.10m bgl			TP DRY

TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 2		

PHOTO 1 SHOWING GENERAL POSITION AND NATURE OF ARISING



PHOTO 2 SHOWING GENERAL SOIL PROFILE



TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 2		

PHOTO 3 SHOWING GENERAL SOIL PROFILE AND POSITION OF DCP



PHOTO 4 SHOWING CLOSE UP OF CLAY MATERIAL



BOREHOLE/ TRIAL PIT LOG

CLIENT: **KING CONSTRUCTION**
 JOB REF: **4633/20**
 CONTRACT: **WINDY ARBOR/LICKERS LANE**
(Whiston Juniors Playing Fields)
 LOCATION: **SEE TP LOCATION PLAN**
 PLAN SIZE: **1.40x1.20m**

TP REF: **TP3**
DATE: **13/08/20**
WEATHER: **SUNNY**
LOGGED BY: **CS**
EASTING: **53.40866008**
NORTHING: **-2.8003734**

Depth (m)	Thickness (m)	Sample No. & Type	Sample Interval	Description	CBR %	MC %	Comments
0.40	0.40	1B 2SB 3D	0.00 to 0.40	Black, sandy, fmc gravel of ash, clinker, bituminous material, limestone, granite large cobbles size pieces of of bound biuminous material - MADE GROUND			See also DCP Report and Soakaway Report
0.80	0.40	4B 5SB 6D	0.40 to 1.00	Orangey brown, slightly sandy, sl silty, firm/stiff consistency CLAY/BOULDER CLAY			
1.00				End of TP at 1.00m bgl			TP DRY

TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 3		

PHOTO 1 SHOWING GENERAL POSITION AND NATURE OF ARISING



PHOTO 2 SHOWING GENERAL SOIL PROFILE



TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 3		

PHOTO 3 SHOWING CLOSE UP OF MADE GROUND MATERIAL



PHOTO 4 SHOWING CLOSE UP OF CLAY MATERIAL



TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 3		

PHOTO 5 SHOWING GENERAL SOIL PROFILE AND POSITION OF DCP



PHOTO 6 SHOWING SOAKAWAY LEVEL ON 2nd DAY



BOREHOLE / TRIAL PIT LOG

CLIENT: **KING CONSTRUCTION**
 JOB REF: **4633/20**
 CONTRACT: **WINDY ARBOR/LICKERS LANE**
(Whiston Juniors Playing Fields)
 LOCATION: **SEE TP LOCATION PLAN**
 PLAN SIZE: **1.40x1.30m**

TP REF: **TP4**
 DATE: **13/08/20**
 WEATHER: **SUNNY**
 LOGGED BY: **CS**
 EASTING: **53.40851498**
 NORTHING: **-2.80060507**

Depth (m)	Thickness (m)	Sample No. & Type	Sample Interval	Description	CBR %	MC %	Comments
0.50	0.50	1B 2SB 3D	0.00 to 0.50	Black, sandy, fmc gravel of ash, clinker, bituminous material, limestone, granite occasional cobble of brick - MADE GROUND			
1.00	0.50	4B 5SB 6D	0.50 to 1.00	Orangey brown, blackish grey in part, slightly sandy, sl silty, firm/stiff consistency CLAY/BOULDER CLAY			
1.00				End of TP at 1.00m bgl			TP DRY

TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 4		

PHOTO 1 SHOWING GENERAL POSITION AND NATURE OF ARISING



PHOTO 2 SHOWING GENERAL SOIL PROFILE



TRIAL PIT PHOTOS

Client:	KING CONSTRUCTION	Date:	13/08/2020
Contract:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)	Job Ref:	4633/20
Location:	SEE PLAN	Source:	N/A
Trial Pit / Reference:	TP 4		

PHOTO 3 SHOWING CLOSE UP OF MADE GROUND MATERIAL



PHOTO 4 SHOWING CLOSE UP OF CLAY MATERIAL



BOREHOLE/ TRIAL PIT LOG

CLIENT: **KING CONSTRUCTION**
 JOB REF: **4633/20**
 CONTRACT: **WINDY ARBOR/LICKERS LANE**
(Whiston Juniors Playing Fields)
 LOCATION: **SEE TP LOCATION PLAN**
 PLAN SIZE: **1.30x1.10m**

TP REF: **TP 'CBR'**
DATE: **13/08/20**
WEATHER: **SUNNY**
LOGGED BY: **PD**
EASTING: **53.40860671**
NORTHING: **-2.80050986**

[illegible]

CLIENT	KING CONSTRUCTION
JOB REF:	4633/20
CONTRACT:	WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)
LOCATION:	SEE TP LOCATION PLAN
PLAN SIZE:	1.30x1.20m

TP REF: **TP 'SOAKAWAY'**
DATE: **13/08/20**
WEATHER: **SUNNY**
LOGGED BY: **CS**
EASTING: **53.40855835**
NORTHING: **-2.80048672**

[illegible]

**LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY**



Certificate No: 4633/20

To : Stuart Sidebottom

Client : Knowsley Contractors Ltd
King Construction
1A Prestwood Place, Skelmersdale
Lancashire, WN8 9QE

Date: 18/08/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to site testing undertaken on Windy Arbour/ Lickers Lane Playing Field.

Tested By : C. Salmon & K. Bescoby

Sample Reference : N/A

Description : See attached

Date Sampled : N/A

Date Tested : 13th July 2020

Source : N/A

Weather : N/A

Test Results;

Please see attached

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate
When a statement of conformity is requested for a test result against limits set out in a standard or specification (e.g. BS EN ISO, SHW) that already considers measurement uncertainty, MATtest Midlands decision rule is to follow conformity requirements of the applicable standard or specification.
Results reported only relate to the items tested/ received.

Remarks;

Approved for Issue:

Position: Operations Manager

Issuing Office:



Head Office & Central

Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB

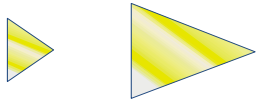


North West

Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk





DYNAMIC CONE PENETROMETER TESTING (DCP)

Windy Arbour/ Lickers Lane Playing Field

Test Ref : 1

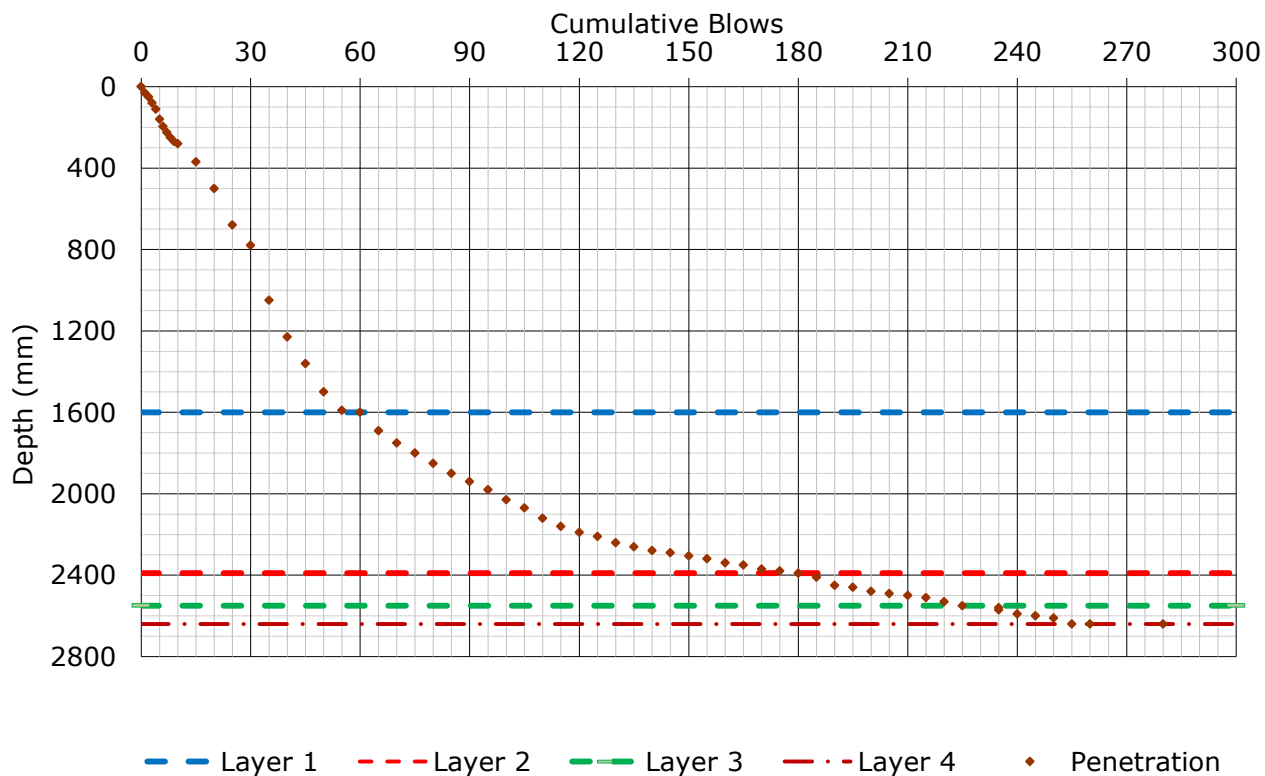
Date Tested : 13/08/2020

Job Ref : 4633/20

Location : TP 101

Description : TP Log 101

GRAPH DETAILING RESULTS



SUMMARY OF RESULTS

Layer	No. of Blows	Cumulative No. of Blows	CBR (%)	Layer Thickness (mm)	Total Depth (mm)
1	60	60	9	1600	1600
2	120	180	41	790	2390
3	45	225	79	160	2550
4	55	280	>100	90	2640

COMMENTS

NOTES

Test Procedure:

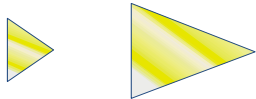
In House Method for Highways, based upon TRL Road Note 8

Interpretative Method :

TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{Strength})$

TEST CERTIFICATE

Form Ref MTM-REP 019



DYNAMIC CONE PENETROMETER TESTING (DCP)

Windy Arbour/ Lickers Lane Playing Field

Test Ref : 2

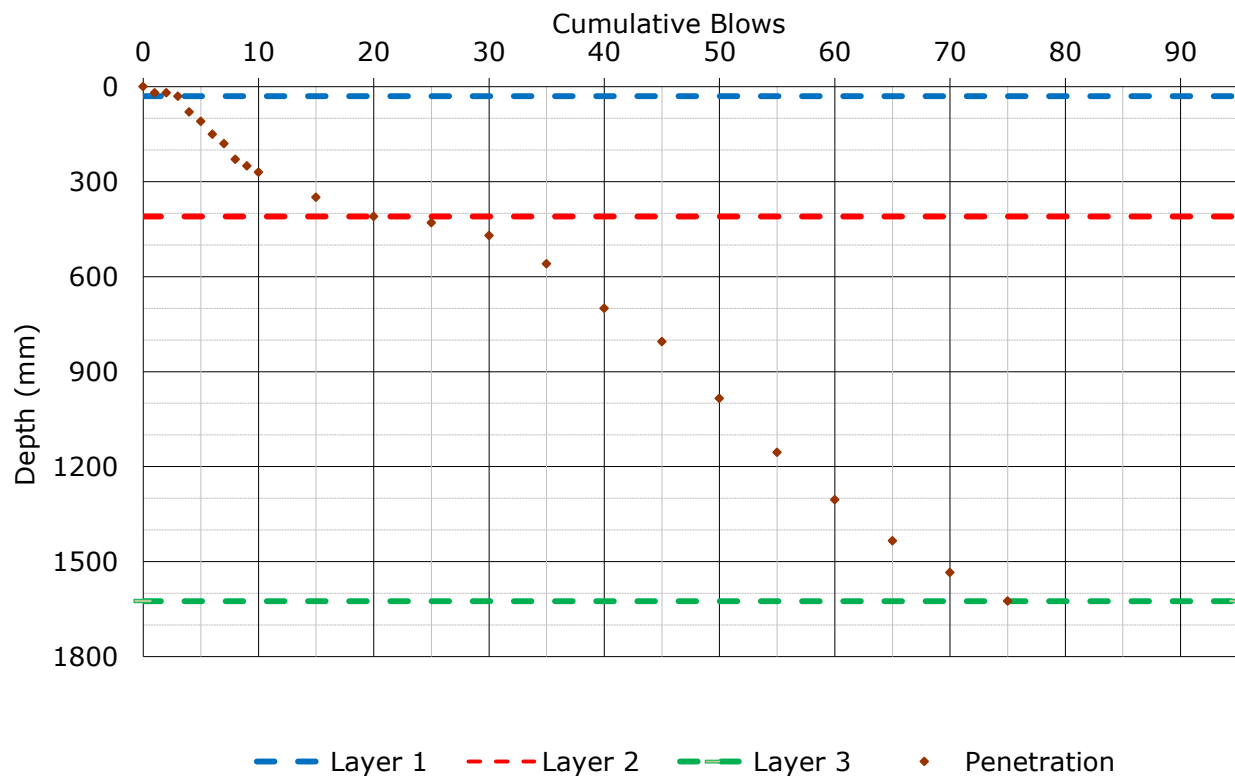
Date Tested : 13/08/2020

Job Ref : 4633/20

Location : TP 102

Description : TP Log 102

GRAPH DETAILING RESULTS



SUMMARY OF RESULTS

Layer	No. of Blows	Cumulative No. of Blows	CBR (%)	Layer Thickness (mm)	Total Depth (mm)
1	3	3	26	30	30
2	17	20	11	380	410
3	55	75	11	1215	1625

COMMENTS

NOTES

Test Procedure:

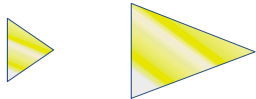
In House Method for Highways, based upon TRL Road Note 8

Interpretative Method :

TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{Strength})$

TEST CERTIFICATE

Form Ref MTM-REP 019



DYNAMIC CONE PENETROMETER TESTING (DCP)

Windy Arbour/ Lickers Lane Playing Field

Test Ref : 3

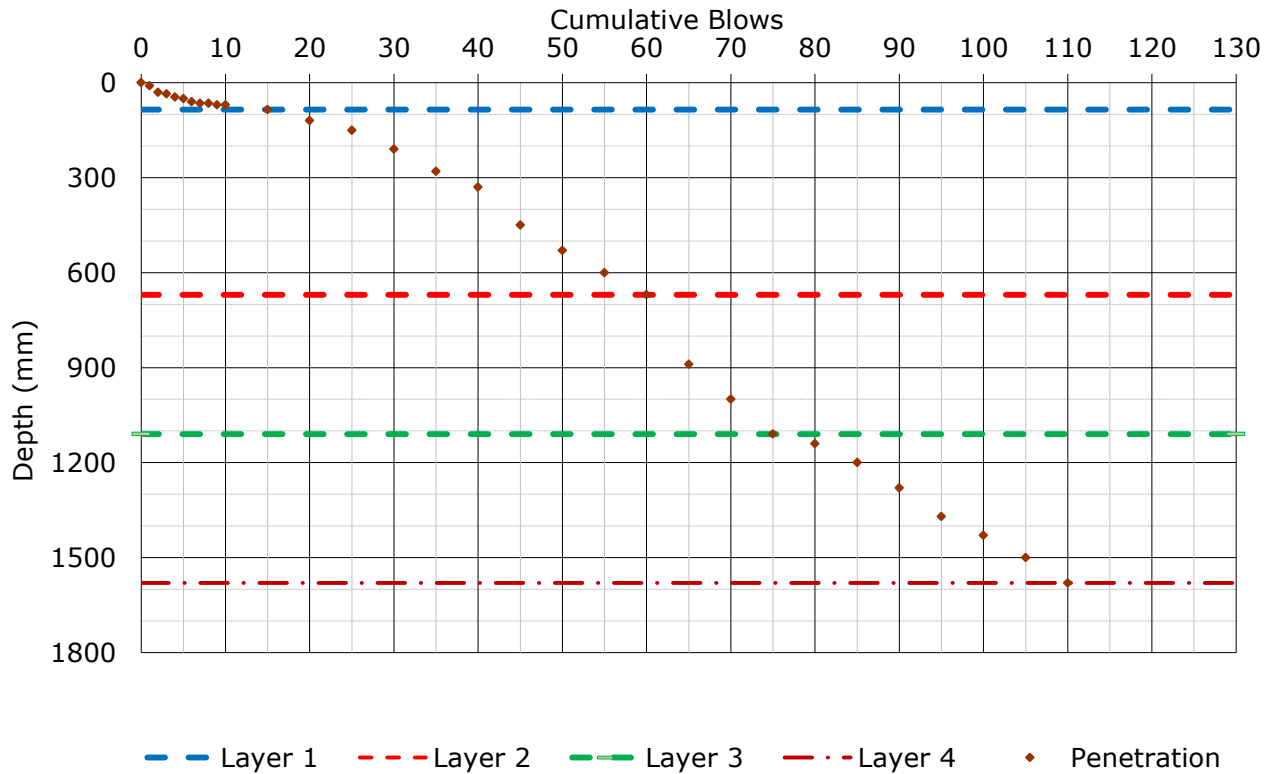
Date Tested : 13/08/2020

Job Ref : 4633/20

Location : TP 102

Description : TP Log 102

GRAPH DETAILING RESULTS



SUMMARY OF RESULTS

Layer	No. of Blows	Cumulative No. of Blows	CBR (%)	Layer Thickness (mm)	Total Depth (mm)
1	15	15	48	85	85
2	45	60	20	585	670
3	15	75	8	440	1110
4	35	110	19	470	1580

COMMENTS

NOTES

Test Procedure:

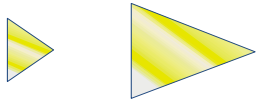
In House Method for Highways, based upon TRL Road Note 8

Interpretative Method :

TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{Strength})$

TEST CERTIFICATE

Form Ref MTM-REP 019



DYNAMIC CONE PENETROMETER TESTING (DCP)

Windy Arbour/ Lickers Lane Playing Field

Test Ref : 4

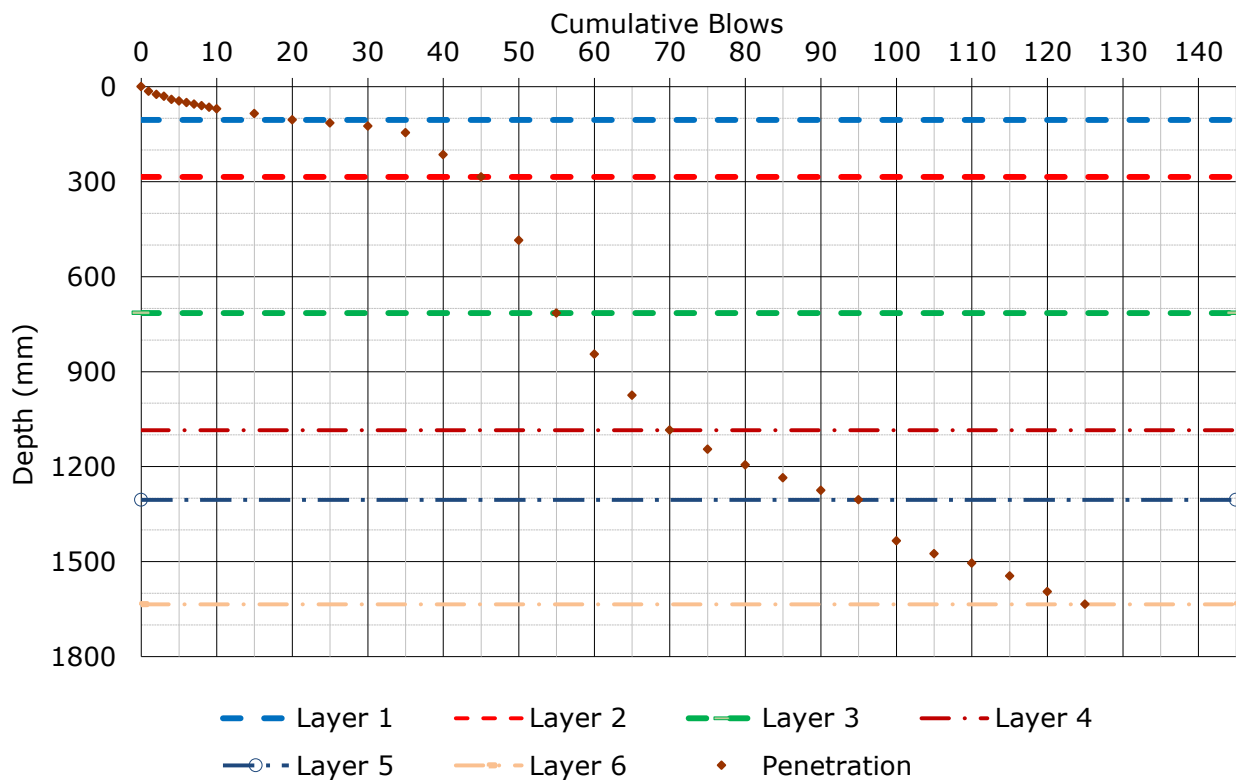
Date Tested : 13/08/2020

Job Ref : 4633/20

Location : TP 103

Description : TP Log 103

GRAPH DETAILING RESULTS



SUMMARY OF RESULTS

Layer	No. of Blows	Cumulative No. of Blows	CBR (%)	Layer Thickness (mm)	Total Depth (mm)
1	20	20	52	105	105
2	25	45	37	180	285
3	10	55	6	430	715
4	15	70	10	370	1085
5	25	95	30	220	1305
6	30	125	24	330	1635

COMMENTS

NOTES

Test Procedure:

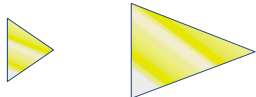
In House Method for Highways, based upon TRL Road Note 8

Interpretative Method :

TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{Strength})$

TEST CERTIFICATE

Form Ref MTM-REP 019



DYNAMIC CONE PENETROMETER TESTING (DCP)

Windy Arbour/ Lickers Lane Playing Field

Test Ref : 5

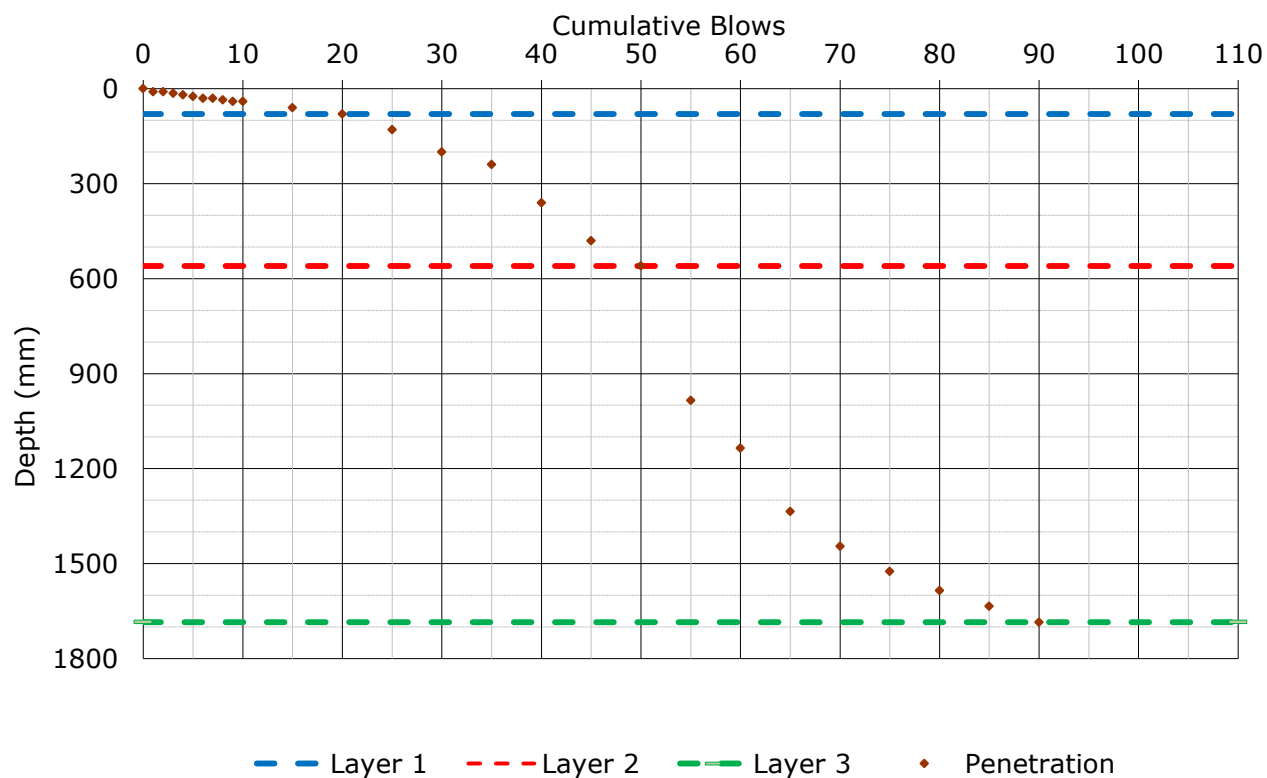
Date Tested : 13/08/2020

Job Ref : 4633/20

Location : DCP extra at TP CBR

Description : TP CBR Log

GRAPH DETAILING RESULTS



SUMMARY OF RESULTS

Layer	No. of Blows	Cumulative No. of Blows	CBR (%)	Layer Thickness (mm)	Total Depth (mm)
1	20	20	70	80	80
2	30	50	16	480	560
3	40	90	9	1125	1685

COMMENTS

NOTES

Test Procedure:

In House Method for Highways, based upon TRL Road Note 8

Interpretative Method :

TRL Equation : $\text{Log}_{10}(\text{CBR}) = 2.480 - 1.057 \times \text{Log}_{10}(\text{Strength})$

TEST CERTIFICATE

Form Ref MTM-REP 019

**LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY**



Certificate No: 4633/20

To : Stuart Sidebottom

Client : Knowsley Contractors Ltd
King Construction
1A Prestwood Place, Skelmersdale
Lancashire, WN8 9QE

Date: 18/08/2020

Dear Sirs,

FIELD & LABORATORY TESTING

Introduction

We refer to site testing undertaken on Windy Arbour/ Lickers Lane Playing Field.

Tested By : C. Salmon & K. Bescoby

Sample Reference : N/A

Description : See attached

Date Sampled : N/A

Date Tested : 13th July 2020

Source : N/A

Weather : Sunny

Test Results : Please see attached Soakaway and Soil infiltration Data

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate
When a statement of conformity is requested for a test result against limits set out in a standard or specification (e.g. BS EN ISO, SHW) that already considers measurement uncertainty, MATtest Midlands decision rule is to follow conformity requirements of the applicable standard or specification.
Results reported only relate to the items tested/ received.

Remarks;

Approved for Issue:

Position: Operations Manager

Issuing Office:



Head Office & Central

Unit 5 Draycott Mills, Off Market Street, Draycott, Derby, DE72 3NB



North West

Unit 15 Park Court, Sherdley Business Park, St. Helens, Merseyside, WA9 5GZ

Tel: 03333 202521 Web: www.mattestlaboratories.co.uk



Job Ref: 4633/20
 Client: KING CONSTRUCTION
 Scheme: WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)
 Date: 13/08/2020 TO 15/08/20

SOAKAWAY TEST DATA

Trial Pit Ref:	TP1
Pit Dimensions:	
L (mm):	1400
W (mm):	1200
D (mm):	1000
TOP OF WATER mmbgl	260
WATER DEPTH mm	740
75% FULL mmbgl =	445
50% FULL mmbgl =	630
25% FULL mmbgl =	815
TIME (at start of test):	14:00:00
DATE (at start of test):	13/08/2020
SOIL DESCRIPTION	DEPTH INTERVAL (m)
MADE GROUND	0.00-0.70m
CLAY	0.70-1.00
TOP OF WATER mmbgl	Time In Seconds
260	0
260	94
260	176
270	330
280	479
290	840
300	1338
320	1989
340	2576
350	3325
390	5400
410	6600
445	8175
490	10200
630	37428
780	66600
815	67388
820	67500
START TEST	13/08/2020 14:00
END TEST	14/08/2020 08:45
DURATION (HR/MINS)	18hrs 45mins
DURATION (Sec's)	67500

Trial Pit Ref:	TP3
Pit Dimensions:	
L (mm):	1400
W (mm):	1200
D (mm):	1000
TOP OF WATER mmbgl	200
WATER DEPTH mm	800
75% FULL mmbgl =	400
50% FULL mmbgl =	600
25% FULL mmbgl =	800
TIME (at start of test):	10:25:00
DATE (at start of test):	14/08/2020
SOIL DESCRIPTION	DEPTH INTERVAL (m)
MADE GROUND	0.00-0.40
CLAY	0.40-1.00
TOP OF WATER mmbgl	Time In Seconds
200	0
210	600
220	1200
230	2400
250	5700
270	9300
280	12900
290	16500
400	77700
600	155400
800	233100
START TEST	14/08/2020 10:25
END TEST	15/08/2020 08:00
DURATION (HR/MINS)	21hrs 35mins
DURATION (Sec's)	77700

Trial Pit Ref:	TP 'SOAKAWAY'
Pit Dimensions:	
L (mm):	1300
W (mm):	1200
D (mm):	1100
TOP OF WATER mmbgl	370
WATER DEPTH mm	730
75% FULL mmbgl =	553
50% FULL mmbgl =	735
25% FULL mmbgl =	918
TIME (at start of test):	08:50:00
DATE (at start of test):	14/08/2020
SOIL DESCRIPTION	DEPTH INTERVAL (m)
MADE GROUND	0.00-0.40
CLAY	0.40-1.10
TOP OF WATER mmbgl	Time In Seconds
370	0
400	1200
420	2100
430	3000
440	3600
450	4200
460	4800
460	6000
470	6900
480	8100
500	11400
510	15000
510	18600
510	22200
510	83400
553	115994
735	286544
918	563214
START TEST	14/08/2020 08:50
END TEST	15/08/2020 08:00
DURATION (HR/MINS)	23hrs 10mins
DURATION (Sec's)	83400

NOTE: VALUES IN GREEN ITALICS ARE EXTRAPOLATED/PROJECTED BETWEEN POINTS

Job Ref: 4633/20
 Client: KING CONSTRUCTION
 Scheme: WINDY ARBOR/LICKERS LANE (Whiston Juniors Playing Fields)
 Date: 13/08/2020 TO 15/08/20

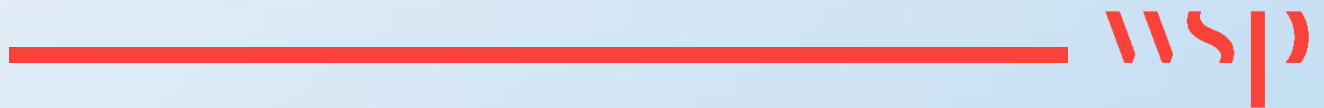
SOIL INFILTRATION RATES FOR SOAKAWAY TEST AREAS

Trial Hole 1 Attempt 1			Trial Hole 3 Attempt 1			Trial Hole 'SOAKWAY' Attempt 1		
Pit Dimensions			Pit Dimensions			Pit Dimensions		
L (m)	1.40		L (m)	1.40		L (m)	1.30	
W (m)	1.20		B (m)	1.20		B (m)	1.20	
D (m)	1.00		D (m)	1.00		D (m)	1.10	
Maximum effective depth	1.00		Maximum effective depth	1.00		Maximum effective depth	1.00	
Effective Storage Depth	1.00		Effective Storage Depth	1.00		Effective Storage Depth	1.00	
25% Effective Depth	0.25		25% Effective Depth	0.250		25% Effective Depth	0.350	
50% Effective Depth	0.50	0.500	50% Effective Depth	0.500	0.500	50% Effective Depth	0.600	0.500
75% Effective Depth	0.75		75% Effective Depth	0.750		75% Effective Depth	0.850	
Time for outflow between 75% and 25% effective depth (Seconds)	59213		Time for outflow between 75% and 25% effective depth	155400	Seconds	Time for outflow between 75% and 25% effective depth	447220	Seconds
Volume outflowing between 75% and 25% effective depth : $V_{p75-25} =$	0.840	m ³	Volume outflowing between 75% and 25% effective depth : $V_{p75-25} =$	0.840	m ³	Volume outflowing between 75% and 25% effective depth : $V_{p75-25} =$	0.780	m ³
The mean surface area through which the out flow occurs, taken to be the pit sides to 50% effective depth and including the base of the pit: $a_{p50} =$	4.28	m ²	The mean to 50% effective depth and including the base of the pit: a_{p50} surface area through which the out flow occurs, taken to be the pit sides =	4.28	m ²	The mean to 50% effective depth and including the base of the pit: a_{p50} surface area through which the out flow occurs, taken to be the pit sides =	4.06	m ²
From graph, the time for the outflow between 75% and 25% effective depth: $t_{p75-25} =$	59213	Seconds	From graph, the time for the outflow between 75% and 25% effective depth: $t_{p75-25} =$	155400	Seconds	From graph, the time for the outflow between 75% and 25% effective depth: $t_{p75-25} =$	447220	Seconds
Soil infiltration rate, $f =$	3.31E-06	3.31x10⁻⁶	Soil infiltration rate, $f =$	1.26E-06	1.26x 10⁻⁶	Soil infiltration rate, $f =$	4.30E-07	4.30 x 10⁻⁷

NOTE: VALUES IN **GREEN** ITALICS ARE EXTRAPOLATED/PROJECTED BETWEEN POINTS

Appendix G

CIRIA RISK CLASSIFICATION MATRIX



CIRIA RISK DEFINITIONS

Table A1– Classifications of Probability

Classification	Definition
High likelihood	There is a pollution linkage / identified geotechnical hazard and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term

Table A2 – Classifications of Consequence

Classification	Definition
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.
Medium	Chronic damage to Human Health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services (significant harm as defined in the Draft Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve, Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.). Easily repairable effects of damage to buildings, structures and services.

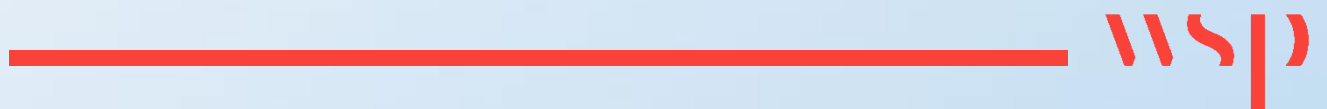
The risk categories presented in this reporting, taking into account both probability and severity, are based on the matrix presented in Table A3 below, following CIRIA C552.

Table A3- Adopted Risk Categories / Comparison of Consequence against Probability

Probability	Consequence			
	Severe	Medium	Mild	Minor
High Likelihood	Very High Risk	High Risk	Moderate Risk	Low to Moderate Risk
Likely	High Risk	Moderate Risk	Low to Moderate Risk	Low Risk
Low Likelihood	Moderate Risk	Low to Moderate Risk	Low Risk	Very Low Risk
Unlikely	Low to Moderate Risk	Low Risk	Very Low Risk	Very Low Risk

Appendix H

GENERAL LIMITATIONS



REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.
3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.
4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.
6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.
7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.
8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:
 - i. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
 - ii. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.
10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.
11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.
12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.
13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.
14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.
15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.
16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.
18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.
19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.
20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.
22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.



REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

- 24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.
- 25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

- 26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

- 27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.
- 28. The data is presented and will be compared with assessment criteria.



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