

**PHASE 1 DESK STUDY &
PHASE 2 GROUND INVESTIGATION REPORT**

**Proposed cycleway between A61/Bar Lane and Lee
Lane, Mapplewell, Barnsley**

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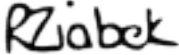
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PHASE 1 DESK STUDY & PHASE 2 GROUND INVESTIGATION REPORT

Proposed cycleway A61/Bar Lane and Lee Lane, Mapplewell

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SUMMARY

Grid Ref: 434196 (E), 410030(N) **Elevation:** 79 to 93 mAOD **Site Area:** 1.27 ha

Development proposals: Improvement of the existing footpath into a cycleway.

Past site development: Old railway line, dismantled during 1960's.

Made Ground: Encountered along entire site. Thickness varies from 0.20m to 2.60m bgl.

Natural Soils: Residual soils encountered.

Ground Conditions

Bedrock:	Weathered siltstone and sandstone of PMCM.
Groundwater:	Encountered in monitoring wells between 0.25m and 4.94m bgl.

Shallow mining: Low risk of any shallow mine workings.

Environmental Assessment: No landscaping areas proposed.

Ground gases: Any excavations will need to be monitored.

Remediation: Not required.

Drainage: Attenuation and off-site drainage required.

Geotechnical Considerations: Stability of the existing cutting sides will need to be maintained during any development works.

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1. INTRODUCTION

On the instruction of Barnsley Metropolitan Borough Council, a Phase 1 Desk Study & Phase 2 Ground Investigation was carried out by Abbeydale Building Environment Consultants Ltd (Abbeydale BEC) on the public right of way between the A61 Bar Lane and Lee Lane, in Mapplewell, Barnsley, South Yorkshire.

The site is situated on the eastern side of the town of Mapplewell, north of Barnsley, centred on National Grid Reference 434196, 410030 with a site area of around 1.27 ha. See Figure 1.

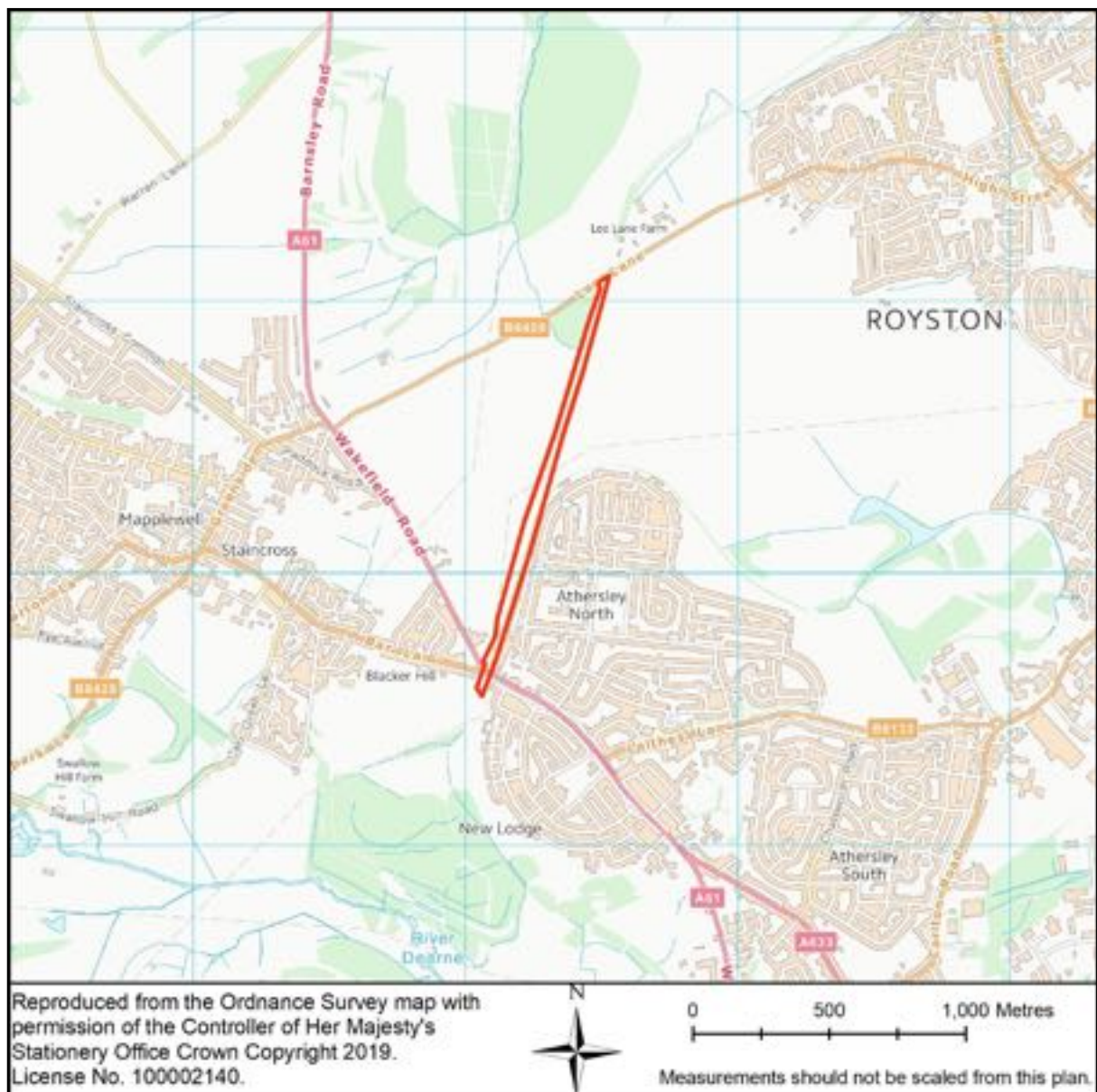


FIGURE 1 - LOCATION PLAN

This report was produced for our client, Barnsley Metropolitan Borough Council, and their advisors and financiers; it should not be relied upon or transferred to any other parties without the express written authorisation of Abbeydale BEC and our client. If any other unauthorised third party comes into possession of this report they rely on it at their own risk and the authors owe them no duty of care or skill.

The comments and recommendations presented in this report are based on the findings of a review of available information; including ground conditions encountered during the intrusive investigation work and the associated laboratory testing results. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have therefore not been taken in to account by this report. Responsibility cannot be accepted for conditions not revealed by this investigation.

When writing this report the proposed plan was for the improvement of an existing footway and development into a cycleway. Localised areas of cut and fill are included in the proposals to create the necessary gradients for finished ground levels. The proposed cycleway will only affect the floor of the cutting; no works are proposed that will encroach into the sides of the existing cutting. If there are changes to these proposals then some modification to the comments and recommendations given may be required. The proposed site plans and sections are included in Appendix A.

2. OBJECTIVES

This report has been undertaken to evaluate current or former uses of the site and surrounding areas to determine the presence of any potential contaminative sources that could affect future receptors.

As part of this evaluation the potential impact on the identified receptors has been assessed to determine if a potential significant pollution linkage is present between each source and receptor. Where appropriate, the report gives recommendations for further investigations and / or remediation options to mitigate any potential risks to future receptors.

The report also evaluates the current site proposals with regard to geotechnical and engineering considerations to determine what impact the anticipated ground conditions will have on the integrity of any structures or buildings included in the development proposals. As part of this evaluation the report gives highway, drainage and general geotechnical recommendations.

3. THE SITE

As part of the assessment, a site walkover was undertaken on 20 December 2021 to determine the presence of any visually identifiable features that may pose a potential risk to future receptors or warrant targeted investigation.

The site is a linear parcel of land which is currently used as a public right of way footway. The site follows the line of a former railway, with the southern and middle parts of the site is located within a cutting with the northern parts of the site built up on an embankment. The site slopes generally from 93.00m AOD in the south, down to 79.00m AOD in the north, with some undulations in ground level along the course of the route where the former railway was part in cutting and part on embankment. The current site layout is shown on Figure 2.

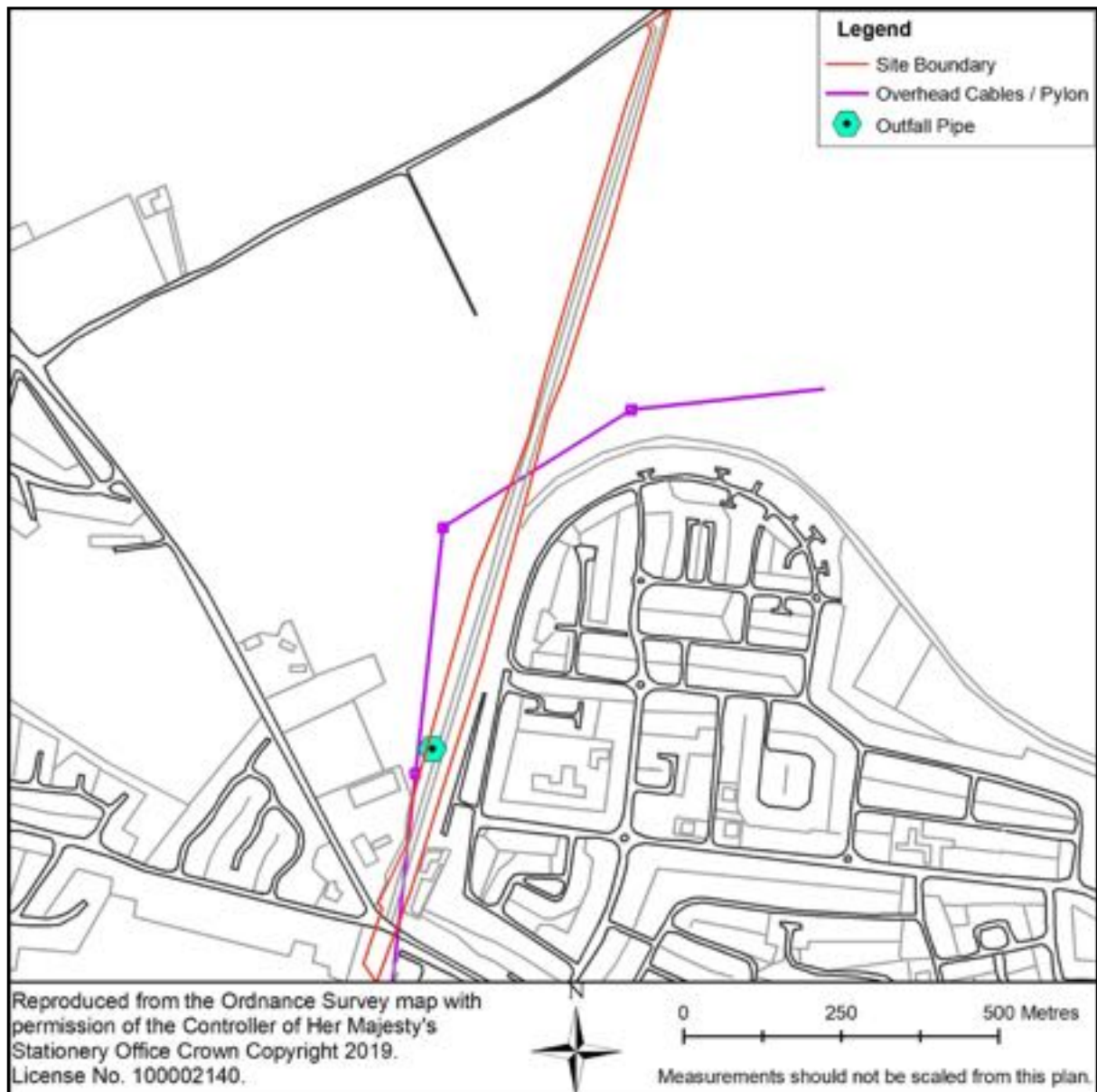


FIGURE 2 - SITE PLAN

We understand that some re-profiling and raising of ground levels has been undertaken in the vicinity of the road bridge which supports A61 / Bar Lane over the cutting, to reduce the potential for surface water erosion of the bridge.

The surface of the site is currently unmade, and surface water had ponded in areas of the cutting within the southern and central parts of the site and the ground was very boggy underfoot. An outfall pipe was noted from the western embankment in the southern part of the site, and it is understood that this is for surface water discharges from the former William Freemans site, located immediately west of the southern part of the site.

Drainage ditches, running parallel to the former railway track, and a manhole chamber were noted within the southern part of the site at the base of the eastern embankment. It is assumed these were installed during the construction of the railway as toe drains for the bankings.

Sections of rock exposure were noted along the cutting sides in the central part of the site, with near vertical cuts through the sandstone bedrock. Vegetation has occurred along the top of the cutting sides, as well as along the floor of the cutting.

Electricity pylons are present in the fields to the east and west of the site, with the overhead cables crossing the site in two locations.

Some general fly-tipped household waste was noted along the path; however, there was no visual or olfactory signs of potential contamination at the surface, distressed vegetation or any potentially contaminative sources noted on the site.

The site is currently accessed from the south via Bar Lane, and also from the northern boundary of the site from Lee Lane. Access can also be gained towards the centre of the site from an adjoining footway, that was previously part of a colliery railway system which then loops around the northern extent of the housing estate to the east of the site.

The site is bound by fields to the north, north-west, and north-east; by residential housing to the east and south-east and by some light industrial and commercial buildings to the west, fronting the A61 and Bar Lane.

4. HISTORY

The historic Ordnance Survey (OS) maps of the site and surrounding area have been obtained from GroundSure, dated 24 November 2021; included in Appendix C. All measurements stated are approximate distances from the site boundaries to the recorded features.

4.1. The Site

The earliest OS map of 1854 shows the site to comprise undeveloped land containing fields and woodland. Lee Lane bounds the north and Blacker Lane bounds the south (later renamed A61/Bar Lane).

The subsequent OS map of 1890-1891 shows that a railway line, named as Barnsley Coal Railway Extension, has been constructed along the length of the site with Staincross Station shown within the southern part of the site.

By the map of 1970-1971, the railway line is shown as dismantled and the site appears to have remained unchanged since, having been used as a public right of way since.

4.2. Surrounding Area

The earliest map of 1854 shows that the site is located in a predominantly rural setting, with the village of Mapplewell around 1km to the west. A sandstone quarry is shown 250m west of the site, and two gravel pits are located 50m north and 200m west of the site.

By the next map of 1890-1891 the quarry and gravel pits are no longer shown. A second railway, named Wharnccliffe Woodmoor Colliery Branch, has been constructed immediately east of the site, merging with the track running through the site towards the centre of the site.

The map of 1918 shows a Tank located roughly 10m east of the site, associated with Staincross Station.

On the map of 1960, a small rectangular pond is shown immediately east of the railway tracks, to the north of the rail junction. During the 1960's residential development increases in the area surrounding the site. Staincross Station is shown as a works and a garage has been constructed 10m west of the site, along the A61.

A large moulded rubber works building is shown on the 1970 map 30m west of the southern part of the site. By 1990 it has extended in size and several tanks are shown adjacent to the building, within 20m west of the site. The works appears to have been demolished some time between 2010 and 2021.

No other significant changes are discernible on the subsequent historical maps to present day.

5. GEOLOGY

The geological survey maps of the area, 1:10,000 scale sheets SE31SW and SE30NW, BGS 1:50,000 scale sheet 87 (Barnsley) and Yorkshire County Series sheet 262SE have been examined, along with the memoir of the area.

The site is shown to be underlain by strata of the Pennine Middle Coal Measures (PMCM), of Late Carboniferous age; dipping 6° to the north-east from an assessment of outcrop patterns and dip indicators on the geological maps. Due to the presence of a geological fault which cuts through the site on a south-west to north-east axis, downthrowing strata to the south-east, the site is underlain by the same sequence of strata on both sides of the fault, at varying levels.

On the south side of the fault, the Woolley Edge Rock sandstone is recorded to outcrop in the south of the site, followed by a succession of undifferentiated Pennine Middle Coal Measures (PMCM) above the Woolley Edge Rock, which includes the

Newhill Coal and Swinton Pottery Coal seams. The overlying Oaks Rock sandstone is then shown to outcrop in the central part of the site, up to the geological fault.

On the north side of the geological fault the strata under the site are recorded to be PMCM at a stratigraphical level just below the Newhill Coal seam which outcrops just to the north of the fault. The base of the overlying Oaks Rock sandstone is shown to outcrop around 150m south of Lee Lane.

Superficial drift deposits of glacial till, are recorded to overlie the solid geology in the southern third of the site and towards the northern part.

An area of made ground (mainly colliery spoil and landfill) is shown immediately west of the southern part of the site, and an area of infilled ground immediately west of the northern part of the site. The 1:10,000 scale geological maps show parts of the railway cutting to be worked ground and parts of the former railway line to be underlain by made ground, where embankments have been created or ground levels raised to form a suitable gradient for the railway.

6. HYDROGEOLOGY AND HYDROLOGY

6.1. Hydrogeology

Information on the hydrological setting of the site has been obtained from a Groundsure Enviro Insight report, dated 24 November 2021, included in Appendix D. The Environment Agency (EA) classify the solid geology as a Secondary A (formerly minor) aquifer; permeable layers that can support local water supplies, and may form an important source of base flow to rivers.

The superficial soils are classified as being a Secondary Undifferentiated aquifer. These layer have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the strata.

No potable drinking water abstractions, surface water abstractions or groundwater abstraction licenses have been highlighted within 250m of the site and the site is not recorded to be within a groundwater Source Protection Zone (SPZ).

6.2. Hydrology

The closest recorded surface water feature is an unnamed inland river located 15m west of the site. The watercourse is recorded to flow towards the north-west and north on the historical mapping of the area.

An outfall is known to be present from the former William Freeman's site, which we understand has a legal right to discharge water into the existing cutting. The outfall comes through the western banking of the cutting and discharges water along the floor of the cutting, which currently runs in a south-westerly direction along the cutting floor.

6.3. Flood Risk

The Enviro Insight includes information obtained from the Environment Agency regarding the potential for flooding across the area. The site is not shown to lie within an area deemed to be at risk from flooding from rivers and seas, and is shown to be at a low or negligible risk of groundwater flooding.

7. MINING RISK ASSESSMENT & QUARRYING

The presence of rock and mineral seams, including coal, which may have been mined or quarried in the area has been determined by the published geological maps and memoirs of the area, and the appended South Yorkshire Mining Advisory Service (SYMAS) report included in Appendix E.

The SYMAS report notes that there are no recorded shallow mine workings under the site. However, two areas of probable shallow mine workings in the Newhill Coal have been identified, situated towards the north and south of the site which are also defined High Risk Development Areas, where there is deemed to be the potential for unrecorded shallow mine workings to exist. The Newhill Coal seam is recorded to be up to 0.9m in thickness by the SYMAS report.

A second named coal seam, the younger Swinton Pottery Coal recorded to be up to 0.30m thick is conjectured to outcrop to the north of the Newhill Coal seam in both the south and the north of the site.

The geological memoir states that both these seams were of poor quality and unimportant, and were only worked locally in this region.

A former opencast mine has been highlighted to the west of the northern part of the site, on the south side of Lee Lane, where the Newhill Coal seam was extracted. The report states that associated backfill material and the quarry highways would be anticipated adjacent to the site.

Based on the above information the risk of unrecorded shallow mine workings beneath the site is deemed to be **moderate**, however the SYMAS report concludes that given the nature of the development proposals, it is unlikely that the risk of collapse of any shallow mine workings would significantly affect the proposed cycleway. Consequently SYMAS do not consider it necessary to carry out an intrusive investigation to confirm the presence of any potential shallow mine workings under the site.

Deep mining activities are known to have occurred beneath the site in various coal seams according to the SYMAS report, who concluded that the area can be regarded as stable in regards to any ground movements related to former deep coal mining activities.

No recorded mine entries have been highlighted in, or adjacent to, the site by either the SYMAS report or Coal Authority online interactive map viewer, or from a review of historical OS maps of the area.

The closest recorded quarry to the site was a sandstone quarry located 250m west of the site. There is no evidence of on-site quarrying from the historical maps, therefore the resultant risk of unrecorded quarrying affecting the site is considered to be **low**.

8. FIELDWORK

8.1. General

Fieldwork was undertaken between 5 and 7 January 2022 in general accordance with Eurocode 7, BS5930:2015 and BS10175:2011(+A2:2017). The findings of the Phase 1 Desk Study assessment and anticipated ground conditions guided the scope of investigation undertaken, to provide further information on the ground conditions present and refine the potential risks to future receptors.

Detailed descriptions of the strata encountered are recorded in the exploratory hole logs in Appendix F.

8.2. Exploratory Hole Locations

The relative ground levels and positions of the exploratory holes undertaken were assessed relative to existing features using a tape measure; the approximate locations are shown on Figure 3.

As no specific source of potential contamination was identified from the Phase 1 Desk Study information, generally non-targeted exploratory hole locations were employed to confirm the ground conditions across the site and allow representative samples to be taken for geotechnical and environmental laboratory testing. Exploratory holes were generally spread across the areas where cut or fill were to be undertaken as part of the proposed development works.

The locations of the window sample holes were restricted between WS1 and WS9 due to the presence of a large area of ponded surface water which was too deep to work within at the time of the intrusive investigation works. In order to gain access past this part of the cutting a mini-excavator was used to create an access path for the window sample rig.

8.3. Sampling Strategy

Representative disturbed samples of the soils and weathered bedrock encountered were taken throughout the course of the intrusive investigation works to facilitate subsequent geotechnical and environmental laboratory testing.

The sampling depths were taken based on professional judgement, the ground conditions encountered or at regular depths through the soil profile, or a combination of all three. Where known, the sampling depths took account of proposed finished ground levels post-development, as shown indicated by the

cut and fill areas on Figure 3, the likely source of potential contamination and the likely receptors.

As part of the scope of investigation works samples of the water from the outfall were taken for chemical analysis, during the initial ground investigation and then again during subsequent post-investigation monitoring.

On completion of fieldwork the samples were returned to Abbeydale BEC's office for scheduling of subsequent laboratory testing.

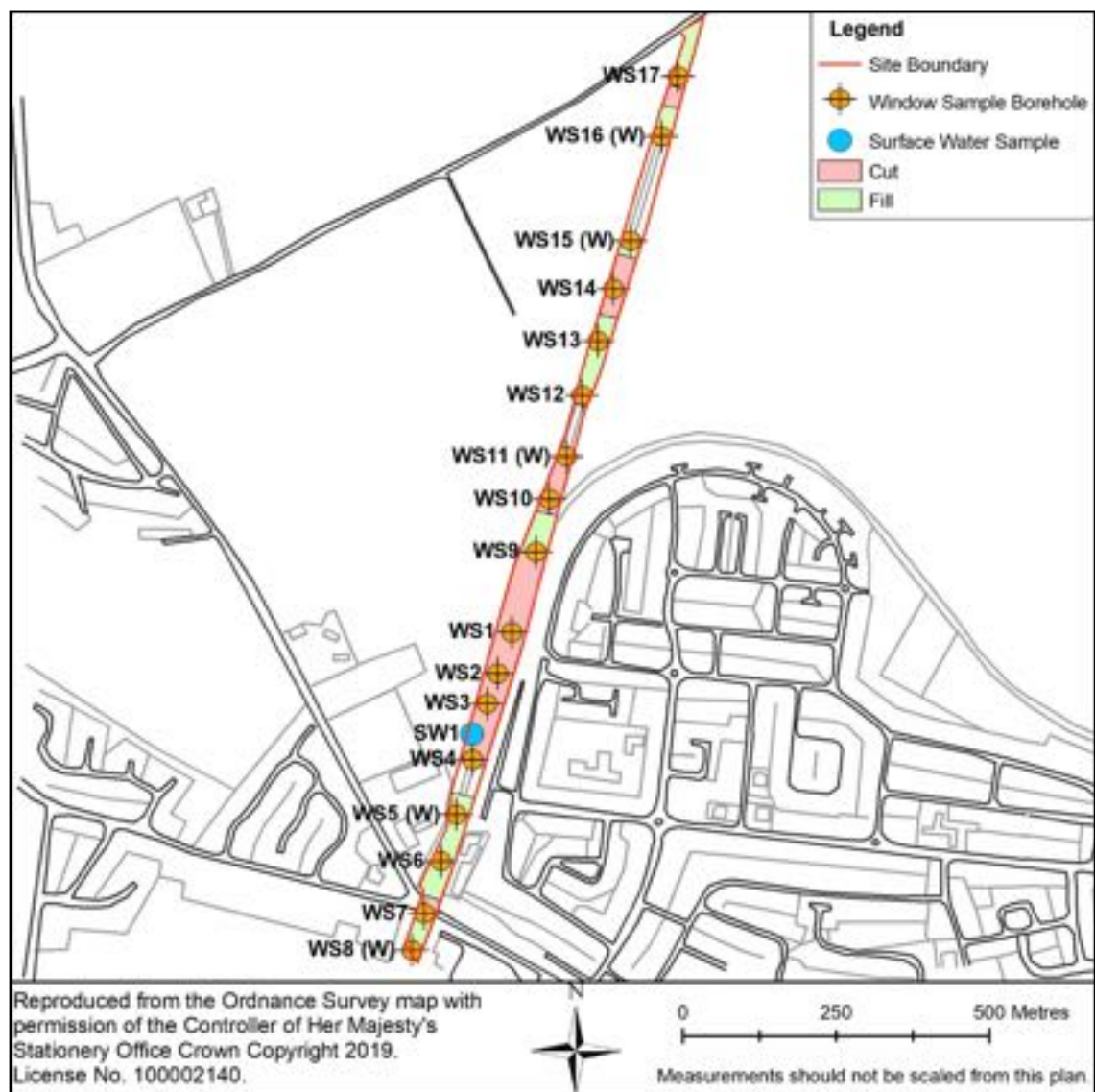


FIGURE 3 - EXPLORATORY HOLE PLAN

8.4. Window Sample Holes

A total of seventeen window sample holes (WS1 to WS17) were carried out across the site, ranging in depth from 0.47m bgl and 5.45m bgl, using a tracked window sample rig.

As part of the window sampling in situ Standard Penetration Tests (SPTs) or Cone Penetration Tests (CPTs) were undertaken based on the ground conditions encountered, to provide in situ relative strength information. The SPTs utilised a 50mm split spoon sampler with a 70° taper, with the CPTs using a solid cone with a 90° taper, driven using a 63.5kg hammer dropping 750mm.

The blow counts are recorded for every 75mm driven, as detailed on the appended exploratory logs along with the resultant N values for each test. Where a refusal ($N > 50$) was encountered the total number of blows over the total penetration distance is recorded.

8.5. Monitoring Installations

To facilitate post-investigation monitoring of the underlying ground gas and groundwater regimes, gas monitoring standpipes were installed in WS5, WS8, WS11, WS15 and WS16. The individual installation details are shown on the relevant logs for each exploratory hole.

Gas monitoring using a Gas Data GFM436 gas monitor was undertaken on six post-investigation visits, the results are summarised on Table 3 in Appendix B.

9. LABORATORY TESTING

Geotechnical laboratory testing was undertaken by Professional Soils Laboratory Ltd (PSL) in accordance with BS1377. To assess the geotechnical characteristics of the natural soils a total of six samples were sent to PSL for Plasticity Index (Atterberg Limits) testing, with natural moisture content testing carried out on the remainder of samples of natural soils obtained for comparison with the plasticity index testing results. The geotechnical testing results are summarised on Table 1 and shown graphically on Figures 4 and 5.

Samples were also sent to Chemtech Environmental Ltd for chemical analysis. See Tables 2A to 2C.

All of the testing results certificates for both the geotechnical and chemical testing are included in Appendix G.

10. GROUND CONDITIONS

The ground conditions encountered are recorded in detail in the exploratory logs appended to this report (Appendix F) and summarised on a geological section, Figure 4. Any diagram of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance purposes only. If deemed critical confirmation of intermediate ground conditions should be sought.

All the boreholes encountered made ground from the surface, to depths of between 0.20m bgl to 2.60m bgl. The made ground largely comprised clayey gravelly sand, with gravel of sandstone, clinker, siltstone, brick and coal. The base of the made ground was not proven in boreholes WS1, WS5, WS7 and WS9.

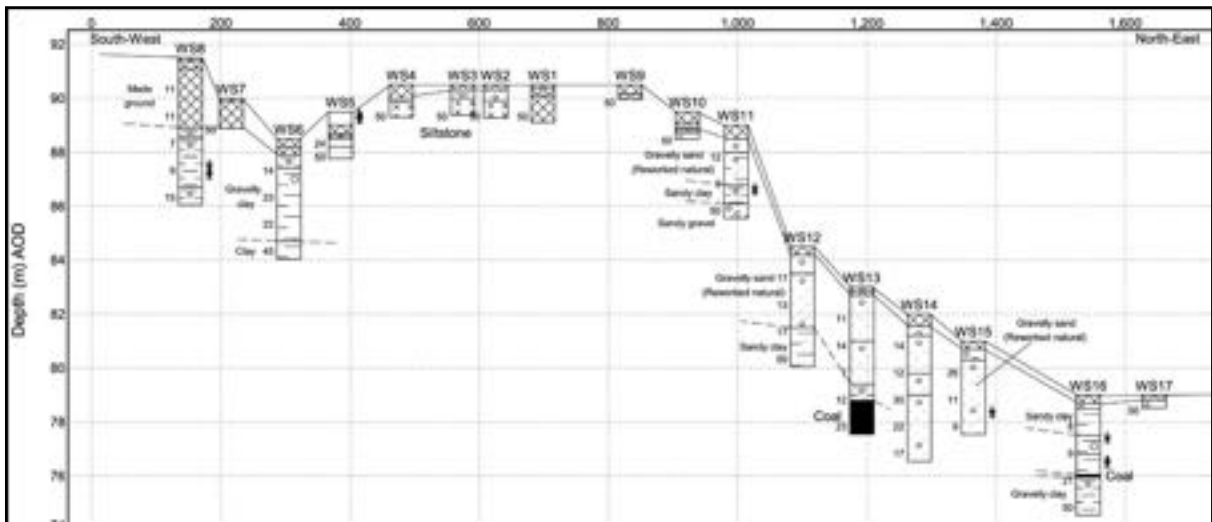


FIGURE 4 - GEOLOGICAL SECTION

Boreholes WS2 to WS4 encountered extremely weak siltstone recovered as sandy siltstone gravel beneath the made ground, to a maximum depth of 1.23m bgl.

Boreholes WS11 to WS15 countered a gravelly sand, with gravel of sandstone, beneath the made ground and is interpreted as being reworked natural material. This material depths of between 2.20m bgl and 5.45m bgl.

In borehole WS13, natural gravelly sand was encountered from 3.60m bgl to 4.20m bgl, and beneath this, a layer of coal was found from 4.20m bgl to 5.45m bgl. This is interpreted to be the Newhill Coal Seam.

In the northernmost window sample holes, a thin layer (0.20m to 0.27m thick) of sandy gravel was encountered beneath the made ground. WS16 then encountered sandy clay to a depth of 2.95m bgl. Beneath this was a thin coal seam, from 2.95m bgl to 3.05m bgl. Sandy gravel was then encountered to a final depth of 4.43m bgl.

As shown on Figure 5 the SPT N values varied through the soil profile. The refusal values ($N > 50$) identified between 0.50m and 1.50m bgl are interpreted to be caused by large cobbles / boulders within the made ground soils.

The plasticity index and moisture content testing are summarised graphically on Figure 6. The testing results show that the moisture contents of the samples increase with depth and that the majority of the moisture content values are below the plastic limit, with the exception of sample WS16/0.90m bgl where the moisture content values was just above the plastic limit.

The samples generally classified as high plasticity apart from WS6/1.40m bgl and WS6/1.80m bgl which were intermediate plasticity. Accounting for the fines content of the samples, modified plasticity index values ranged from 18% to 33%, classifying as low to medium volume change potential in accordance with NHBC Ch.4.2.

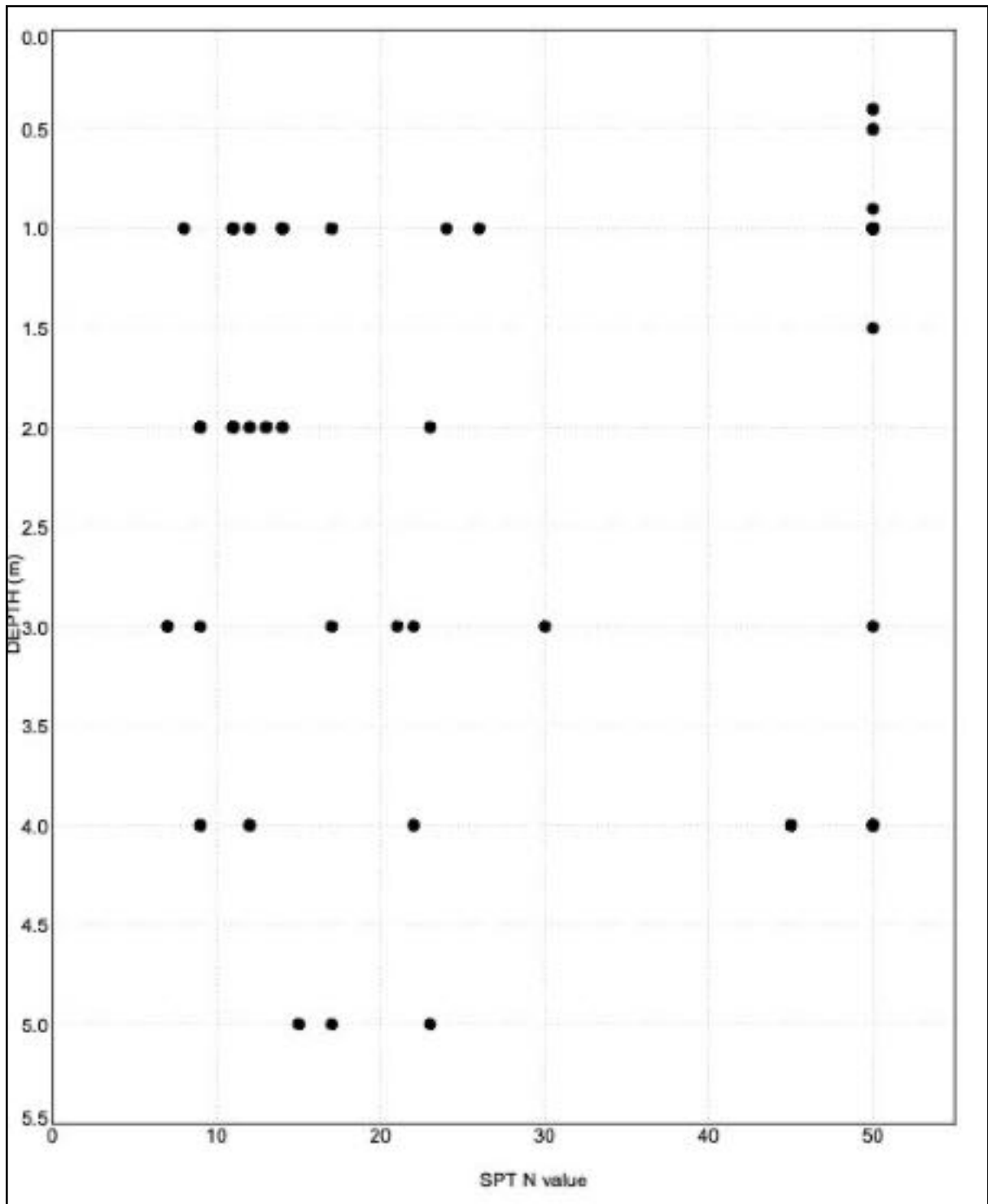


FIGURE 5 - N VALUE VS DEPTH GRAPH

No groundwater was encountered during the intrusive ground investigation works. Post-investigation monitoring since completion of the intrusive investigation works noted standing water levels in the monitoring installations.

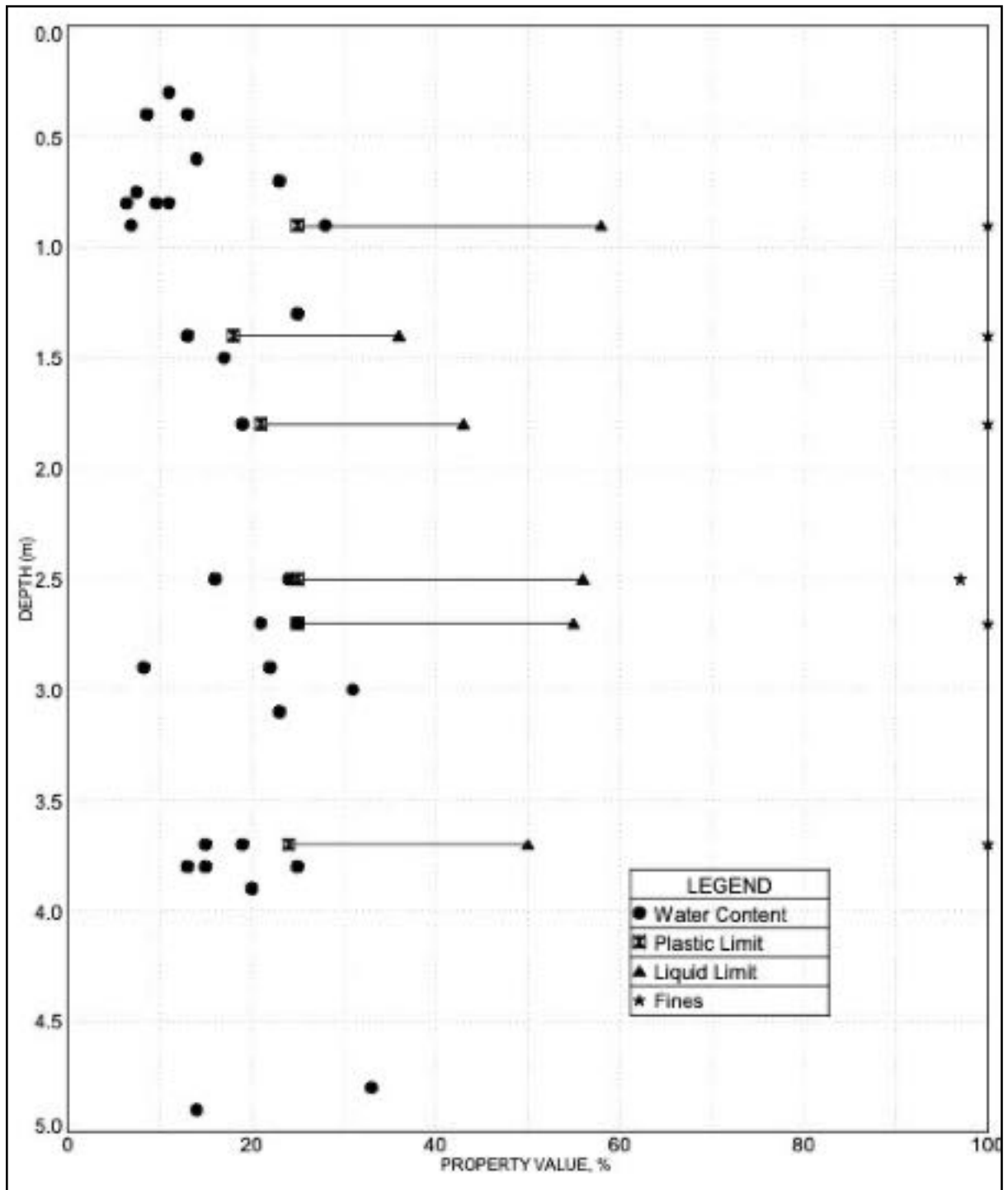


FIGURE 6 - INDEX PROPERTIES VS DEPTH GRAPH

11. GEOTECHNICAL CONSIDERATIONS

11.1. General

Localised areas of cut and fill are included in the proposals to create the required gradients and ground levels from existing ground levels. No new buildings or structures are proposed. If there are changes to these proposals

then some modification to the comments and recommendations given may be required.

11.2. Mining Precautions

As noted by the appended SYMAS report, although there is potential for unrecorded shallow workings in the Newhill Coal seam under parts of the site, the development proposals are not considered to be significantly at risk should collapse of any unrecorded shallow mine workings occur. Also, the geological memoir of the area notes that both the Newhill Coal and younger Swinton Pottery Coal were of poor quality in the area and not of economic value.

As such it is not considered necessary to undertake any further investigation works to determine the depth and state of shallow depth coal seams where they would be expected within the underlying geological sequence to the north of their respective outcrops.

A former opencast site, which worked the Newhill Coal seam, has been highlighted adjacent to the northern part of the site, on the south side of Lee Land. The SYMAS report states that associated backfill material and the quarry highways would be anticipated adjacent to the site.

No recorded mine entries have been identified within 100m of the site boundaries. However, as noted in the SYMAS report, the potential for unrecorded mine entries cannot be ruled out at this stage. SYMAS have recommended that a watching brief is maintained during any groundworks in areas where shallow coal is anticipated, for the presence of any unrecorded mine entries that could impact the proposed development. Should any suspected unrecorded mine entries be identified, both SYMAS and The Coal Authority should be informed and further geotechnical advice sought.

11.3. Proposed Cycleway Construction

The proposed cycleway will be constructed partly on areas of cut into the existing ground, and partly on fill where ground levels need to be raised for the required gradients and to meet proposed finished ground levels.

From the proposed layout drawing the cycleway will be approximately 3m wide. Where ground levels are to be raised it is indicated that the cycleway will be sat on filled ground that will extend beyond the 3m width of the cycleway, and then slope down at a 45° angle from the crest of the filled ground, until it meets the sides of the existing cutting.

The cycleway will need to be constructed on re-engineered material. For design purposes a CBR of 2.5% may be assumed provided that the formation is proof rolled and any soft spots are removed. In-situ plate load testing should be undertaken at proposed formation level to confirm that a suitable California Bearing Ratio (CBR) value is available to support the cycleway construction.

11.4. Drainage & Excavatability

Some difficulties in excavations in the made ground and bedrock should be anticipated. Consideration should be given to providing safe temporary support of excavations within made ground or where greater than 1.2m depth.

Due to the ground conditions encountered soakaways are not suitable for this site. We understand that it is being proposed to install a drainage swale, or series of swales, down the western side of the proposed new cycleway. It is proposed that the swales will channel surface waters in a north-easterly direction, away from the existing A61 / Bar Lane road bridge, with a swale gradient of around 1(v) in 500(h) indicated on the proposed layout plan in Appendix A.

All drainage measures will need to be designed in accordance with Sustainable Urban Drainage Systems (SUDS) requirements.

The flow rate from the existing outfall was noted to mirror the general precipitation trend; decreasing as rainfall reduced. This would suggest that it is not a constant flow from the former landfill site. However, this additional flow will need to be considered within the overall drainage strategy for the site as we understand that there is a legal agreement for Barnsley MBC to accept this outflow into the railway cutting.

11.5. Slope Stability & Embankments

No areas of potential instability of the existing railway cutting sides was noted during the ground investigation works.

We understand that no excavations will be undertaken into the existing cutting sides, or no adjustments to the slope angles will be made.

Similarly, we understand that no works will be undertaken that will affect the existing embankment slopes in the north of the site.

For any new slopes or inclines, if the face gradient can be kept below 1(v) in 3(h) then consideration can be given to reusing any site won soils. However, if steeper slopes are required then internal slope stability assessment would need to be undertaken to confirm that the slopes will remain stable, and select fill materials may need to be used to construct the slope(s).

11.6. Chemical Precautions

To assess the potential for chemical attack of any buried concrete substructures by the existing soils, sulphate and pH testing was undertaken on the ten samples of the made ground as part of the chemical analysis suite. The chemical results indicate that Class DS-2 (ACEC Class AC-2) can be used on this site in accordance with BRE Special Digest 1:2005.

As noted in the SYMAS report, if any coal is exposed during earthworks it will need to be sealed to prevent potential spontaneous combustion from occurring, and also to protect any materials against potential sulphate attack.

12. ENVIRONMENTAL SEARCHES

As part of the Phase 1 Desk Study assessment a Groundsure Enviro Insight report was obtained, dated 24 November 2021, to provide environmental search information on potentially contaminative sources and sensitive receptors across the site and surrounding area. The relevant findings of the Enviro Insight report are summarised below; the full report is included in the Appendix D.

12.1. Current Land Uses

A total of fourteen current industrial sites have been highlighted within 250m of the site. The nearest is for electricity pylons 24m west of the site, as noted during the ground investigation works.

No licensed Integrated Pollution Control (IPC) activities are recorded by the Groundsure report within 500m of the site.

Four entries for historical licensed pollutant release are recorded within 250m of the site. The nearest is recorded 41m east of the site at Walter Franks & Son Ltd, associated with non-ferrous metal foundry processes. The Groundsure report states that no enforcements were undertaken on the licensed pollutant release.

No sites determined as Contaminated Land under Part 2A of the Environmental Protection Act 1990 have been highlighted within 500m of the site.

12.2. Historical Industrial Sites

The Enviro Insight report has identified several potentially contaminative past industrial land uses within 100m of the site including numerous entries for cuttings and a railway station located on the site.

Numerous records for historical tanks are recorded within 250m of the site. The entries are recorded 43m east and between 77m and 89m west of the site.

No historical petrol station sites have been highlighted within 250m of the site.

Four entries for historical garages have been identified within 250m of the site boundaries with the entries recorded 16m west, 23m west, 24m west and 219m east of the site.

12.3. Landfills and Waste Sites

The Enviro Insight records a single historical landfill site within 250m of the site. The record is shown 16m west of the site at Sunseal Works and is recorded to have accepted waste between December 1962 and December 1994. This is also noted in the SYMAS report provided by BMBC.

There are no records of any waste treatment sites or waste disposal sites within 250m of the site.

12.4. Potentially Infilled Land

Infilled ground is recorded along the length of the site, including areas of worked ground and areas of made ground.

12.5. Environmental Permits, Incidents and Registers

There are no recorded discharge consents, pollution incidents or permitted activities within 250m of the site.

As highlighted previously, there is a legal consent for discharge of surface waters from the adjacent former landfill to the west of the site.

12.6. Environmentally Sensitive Receptors

No potable drinking water abstractions, surface water abstractions or groundwater abstraction licenses have been highlighted within 500m of the site and the site is not recorded to be within a groundwater Source Protection Zone (SPZ).

Groundwater vulnerability under the site is classified as **medium** by the Groundsure report.

The central and northern parts of the site are recorded within Green Belt land. No designated environmentally sensitive receptors have been identified within 250m of the site.

13. ENVIRONMENTAL RISK ASSESSMENT

Contaminated Land is defined under Part 2A of the Environmental Protection Act 1990, implemented through Section 57 of the Environment Act 1995. This supports a 'suitable for use' based approach to the risk assessment of contaminated land. The evaluation is based on an assessment of plausible pollutant linkages, referred to as the **source - pathway - receptor** model, based on the current or proposed use of the site.

A **pollutant linkage** is the relationship between a contaminant, a pathway and a receptor. Unless all three elements are present there is not considered to be a potential pollutant linkage.

However, where a potential pollutant linkage is deemed to be present, the resultant risk is based on the consequence should the event occur, and the probability that the event will occur, as outlined in CIRIA C552. A tabulated summary of the resultant risk matrix is provided below for contextual purposes.

		Consequence (C)			
		Severe	Medium	Mild	Minor
Probability (P)	High Likelihood	Very high risk	High risk	Moderate risk	Moderate / low risk
	Likely	High risk	Moderate risk	Moderate / low risk	Low risk
	Low likelihood	Moderate risk	Moderate / low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	Very low risk	Very low risk

RISK MATRIX FOR ENVIRONMENTAL RISK ASSESSMENT (BASED ON CIRIA C552)

Part 2A states that for land to be defined as Contaminated Land by the Local Authority it needs to be in such a condition that:

- Significant harm is being caused, or there is significant possibility of such harm being caused.
- Pollution of controlled waters is being caused, or is likely to be caused.

13.1. Proposed Site Use

We understand that the current development proposal is to improve the existing footway into a shared pedestrian and cycleway. Proposed layout plans are included in Appendix A.

The site will be surfaced with hardstanding and future site users won't be able to come into contact with any underlying soils.

There is a potential for construction workers to come into contact with existing soils, for the short duration of the construction works. The use of standard precautionary measures should reduce the potential for dermal contact and/or inhalation of dust or vapours to a satisfactory level to mitigate any potential risks. Good hygiene practises and facilities should also be provided as a standard precautionary measure.

Based on the proposed end use of the site, chemical testing results were compared against Soil Guideline Values for a public open space (park) (POS_{park}) land use scenario when carrying out a Generic Quantitative Risk Assessment (GQRA) of risks to human health receptors.

13.2. Potential Pathways

- Dermal contact (indoor and outdoor).
- Ingestion of soil and indoor dust.
- Indirect ingestion (indoor and outdoor).

- Inhalation of dust (indoor and outdoor).
- Inhalation of vapours (indoor and outdoor).
- Leaching to groundwater
- Surface water run-off.
- Direct contact with concrete substructures.
- Migration through the ground (vertical and horizontal).

13.3. On Site Contamination

The historic OS maps show the site to have been previously occupied by a railway line, with a subsequent **medium** risk of potential contamination resulting from this usage.

No obvious visual or olfactory signs of potential contamination were identified during the walkover survey or during the intrusive investigation undertaken.

As is common with brownfield sites, there is the potential for contaminants such as heavy metals and Polycyclic Aromatic Hydrocarbons (PAH) to be present in any made ground present across the site. However, the only foreseeable receptor would be construction workers who may come into limited and short-term contact with any such contaminants during construction works. However, because the end use of the site is for a public shared footway and cycleway, more conservative Soil Guideline Values have been used for the GQRA assessment.

Although no obvious evidence of potential contamination was noted during the intrusive Ground Investigation works, the made ground has been highlighted as the most likely source of any contamination. Chemical testing therefore focused on these soils, to determine the chemical suitability of the made ground for reuse close to the surface in any proposed garden or soft landscaping areas.

Soils chemical testing, summarised on Tables 2A and 2B , indicate that all values are below current GQRA threshold values for a public open space (park) land use scenario and are unlikely to pose a significant risk to future receptors.

Soil hydrocarbon testing results (see Table 2C) found all levels are below current Suitable 4 Use Levels (S4ULs) for a public open space (park) land use scenario and likewise not of potential concern to future receptors.

13.4. Off Site Contamination

As part of the ground investigation works, samples of the water outflowing from the adjacent site to the west were taken on two occasions to assess the presence of any water-borne contamination from this off-site source. A sample was initially taken during the ground investigation on 7 January 2022,

designated as SW01, with two further samples, SW02 and SW03, taken during the post-investigation monitoring visit undertaken on 8 February 2022.

The results of the water sampling are summarised on Tables 2D and 2E. Where available the concentrations have been compared against guideline values for both Environmental Quality Standards (EQS) and Water Supply Regulations (WSR) drinking water standards guideline values. It should be noted that the compliance point for these guideline values are at the point of entering a river or other watercourse, or at a consumer's tap respectively.

Most chemical concentrations of metals and inorganic (see Table 2D) within the water samples were below the guideline values for both EQS and WSR. Although the recorded concentrations of cadmium and chromium in SW02 and SW03 are shown to be above the EQS guideline values, it is noted that the laboratory detection limits are above the EQS guideline value, and them chemicals were all recorded at levels below the laboratory's limit of detection.

Concentrations of zinc in all three samples were above EQS guideline value, but below the WSR threshold values. Consequently the water outfalling into the railway cutting are deemed to pose a **very low** risk to future receptors.

With all soils chemical levels found to be below current GQRA threshold values for a POS_(park) the risk of potential contamination from off-site sources is deemed to be **very low**.

13.5. Ground Gases

According to the Enviro Insight report the site is not within a radon affected area as defined by the Health Protection Agency (HPA) and no radon protection measures are required to be installed in any new buildings in accordance with Building Research Establishment (BRE) document BR211.

A single recorded historical landfill site has been identified within 250m, located 16m west of the site. The landfill is recorded to have ceased in 1994. No other recorded active or former landfill sites have been highlighted within 250m of the site.

As part of the scope of ground investigation works six post investigation monitoring visits were undertaken to assess the potential risk to future site users from ground gases. The monitoring data is summarised on Table 3 in Appendix B. As no buildings or confined spaces will be built as part of the proposed scheme, any ground gases will be allowed to naturally ventilate to the atmosphere and there are not considered to be any receptors to any ground gases present.

However, if personnel entry into any trenches or confined spaces is required as part of construction works, gas monitoring and standard precautionary measures should be employed by construction workers to protect against any ground gas emissions.

13.6. Conceptual Site Model

Using the information presented above and the **source - pathway - receptor** model, a Conceptual Site Model (CSM) has been formulated to determine whether a potentially significant pollutant linkage is perceivable and what potential risks are posed to the identified future receptor from each potential contaminant source.

The CSM is tabulated and shown graphically in Appendix H. Where required the CSM should be updated as further investigation and/or development works progress to reflect the potential risks to future receptors, especially if any previously unidentified ground conditions are encountered.

13.7. Remediation Requirements

The chemical test results and Conceptual Site Model indicate that remediation is not required to reduce the risk to future receptors. Also, as no soft landscaping areas are proposed there will not be the potential for site end users to come into contact with the underlying soils.

13.8. Imported Soils

If any imported soils are required to be brought to site to facilitate the proposed development where future receptors may come into contact with them, they would need to be validated to confirm their chemical suitability and that they do not pose a risk to future receptors. The soils should be validated in accordance with Yorkshire And Lincolnshire Pollution Advisory Group (YALPAG) guidance "*Verification Requirements for Cover Systems*" version 4.1, dated June 2021.

The scope and frequency of analysis required to validate any imported soils will be dependent on the source and/or historical setting of the source site and the volume of soils imported to site.

14. WASTE DISPOSAL

Any waste arising from development of the site, such as excess soil or material deemed unsuitable for retention on site, should be disposed of in accordance with the Duty of Care Regulations. If any soils are being disposed directly to a landfill site Waste Acceptance Criteria (WAC) analysis may be required in addition to basic environmental screen testing to determine the most appropriate disposal facility for the waste, in accordance with the requirements of the current Landfill Directive.

15. REGULATORY APPROVAL

The conclusions and recommendations in this report are based on a review of available information and observations made during the site walkover survey undertaken. The conclusions cannot be guaranteed to gain regulatory approval if

this report is required as part of a planning application. If it is required as such it should be passed to the relevant regulatory bodies for their comment and approval.

16. FURTHER INVESTIGATION

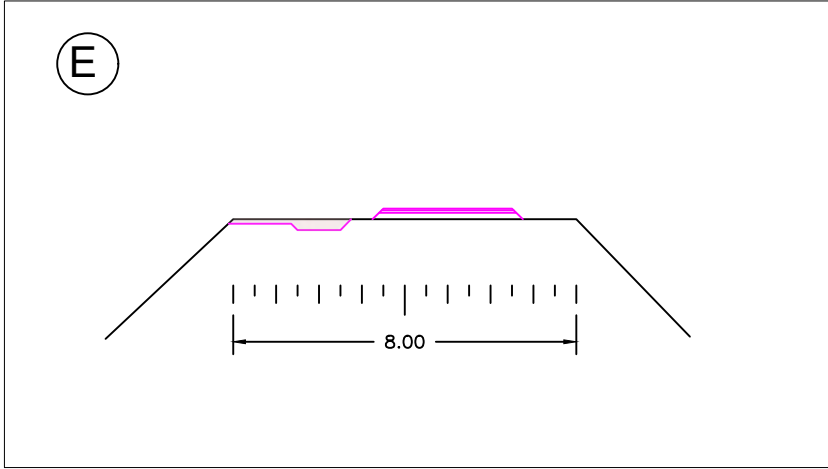
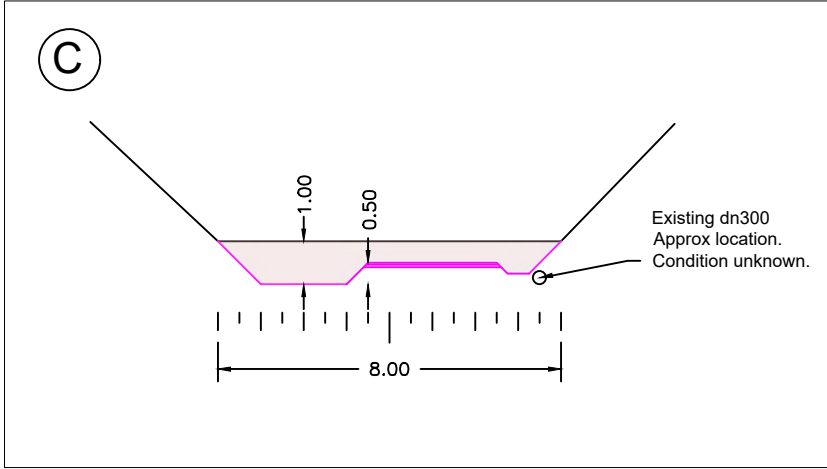
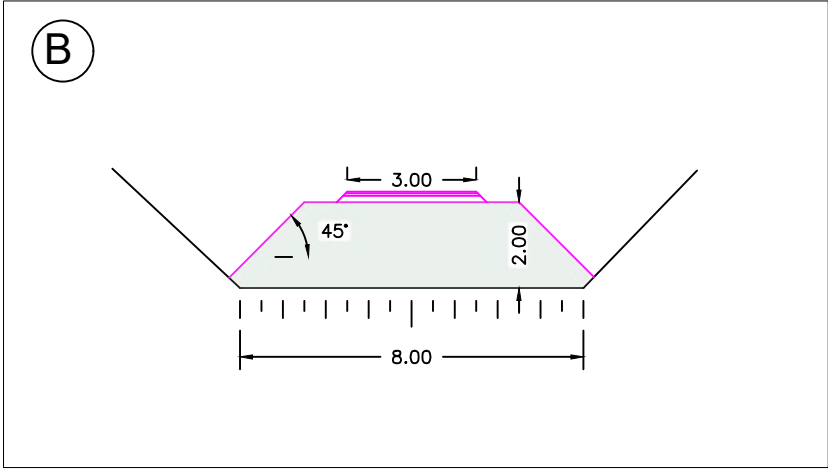
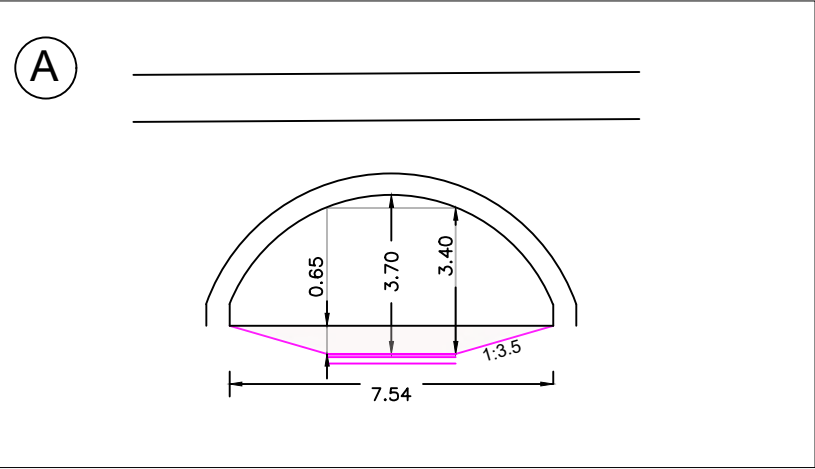
The information obtained during the intrusive ground investigation undertaken and associated Conceptual Site Model would suggest that it is not necessary to undertake any further ground investigation for geo-environmental purposes prior to redevelopment of the site as a shared footway and cycleway.

If any unexpected ground conditions or signs of potential unidentified contamination are encountered during earthworks then further geo-environmental advice should be sought and any additional risk assessment undertaken as required to assess the potential risks to future receptors.

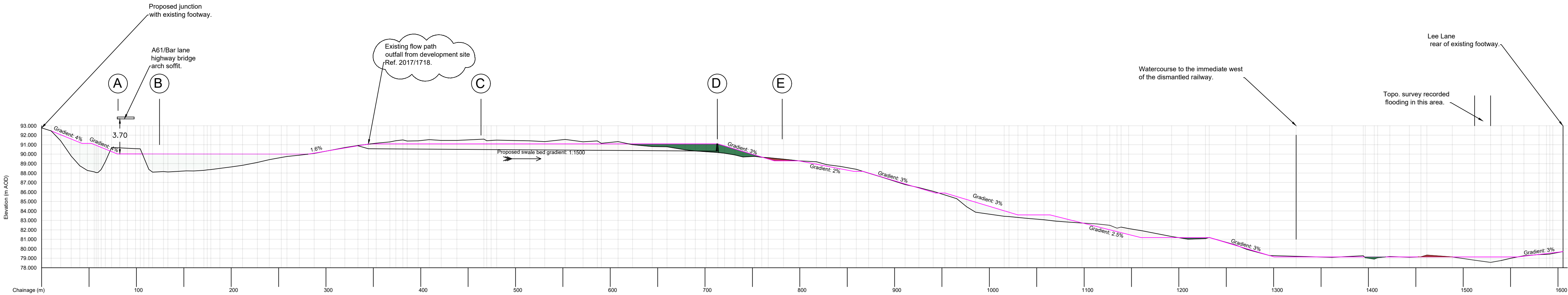
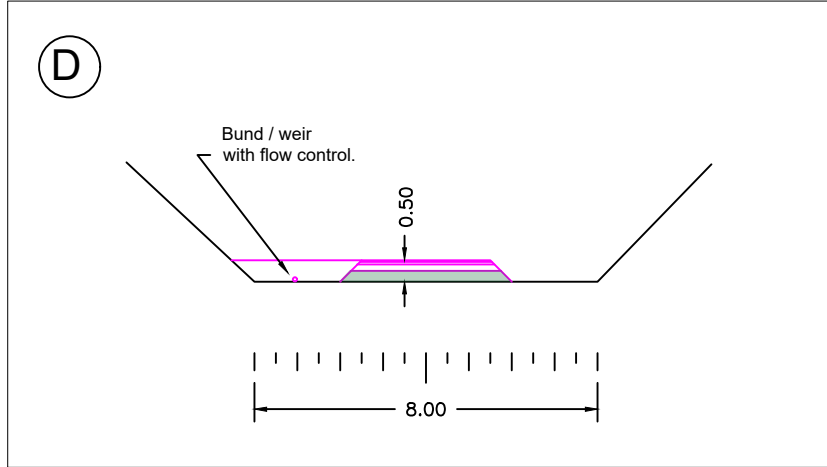
As noted in the SYMAS report, if any signs of potential unrecorded mine entries are identified during construction works both SYMAS and The Coal Authority should be notified, and appropriate geotechnical advice should be sought to propose a suitable scope of investigation and treatment works for any unrecorded mine entries.

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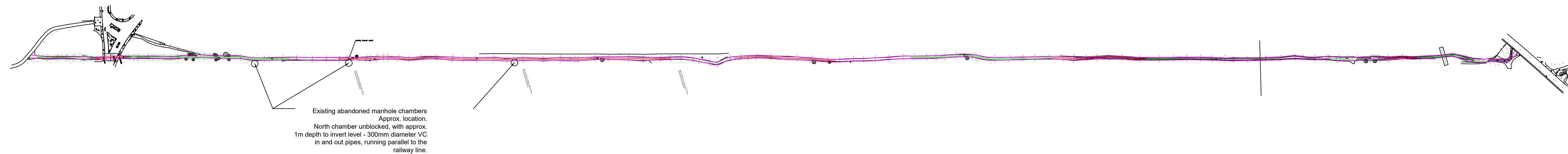
APPENDIX A - PROPOSED LAYOUT DRAWINGS



PROPOSED CROSS-SECTIONS



PROPOSED LONGSECTION



- Notes:
- Width of existing track assumed.
 - Topographic survey to confirm available width



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Rev.	By	Amendments	Date
P1	NGF	Preliminary - For information only	14/10/21



Project
**A61 TOWN CENTRE TO ROYSTON
ACTIVE TRAVEL SCHEME**

Drawing title
**A61/BAR LANE TO LEE LANE
OUTLINE PROPOSAL**

Scale	Drawn	Checked	Date
NTS	NGF		14/10/2021
Drawing No.			File
ATS-BAR LN-LEE LN-004			FILE

Kathy McArdle Service Director Place Directorate
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Barnsley. S70 9FH
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APPENDIX B - TESTING SUMMARY TABLES

Exploratory Hole	Depth (m bgl)	Water Content (%)	Liquid Limit - LL (%)	Plastic Limit - PL (%)	Plasticity Index - IP (%)	Passing 0.425mm (%)	Modified Plasticity - IP* (%)	PSD D ₆₀	PSD D ₁₀	Dry Density (Mg/m ³)	Bulk Density (Mg/m ³)
WS10	0.75	7.5									
WS11	2.50	24	56	25	31	97	30.07				
WS11	2.90	8.3									
WS12	3.70	19	50	24	26	100	26				
WS13	3.80	25									
WS13	4.80	33									
WS16	0.90	28	58	25	33	100	33				
WS16	2.70	21									
WS16	3.00	31									
WS16	3.80	13									
WS17	0.30	11									
WS2	0.40	8.6									
WS2	0.90	6.9									
WS3	0.40	13									
WS3	0.80	11									
WS4	0.60	14									
WS4	0.80	6.4									
WS5	1.30	25									
WS6	0.80	9.6									
WS6	1.40	13	36	18	18	100	18				
WS6	1.80	19	43	21	22	100	22				
WS6	2.50	16									
WS6	2.90	22									
WS6	3.10	23									
WS6	3.70	15									
WS6	3.90	20									
WS8	0.70	23									
WS8	1.50	17									
WS8	2.70	25	55	25	30	100	30				
WS8	3.80	15									
WS8	4.90	14									

**GEOTECHNICAL RESULTS SUMMARY**

Client: Barnsley Metropolitan Borough Council

Project: A61 Bar Lane Cycleway

Number: 151116

TABLE 1

Public Open Space Public Park

Sheet 1 of 1

			Toxic										Phytotoxic			Organics		Other			
Exploratory Hole	Depth (m)	Date	Arsenic As	Beryllium Be	Cadmium Cd	Chromium (III) Cr	Chromium (VI) Cr	Lead Pb	Mercury Hg	Selenium Se	Nickel Ni	Vanadium V	Copper Cu	Boron B	Zinc Zn	SOM	Phenols	Cyanide (total) Cn	Asbestos	Sulphate g/l	pH (units)
WS03	0.10	05/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	15.4	-	-	N.D	-	8.1
WS04	0.30	05/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	14.8	-	-	N.D	-	8.6
WS05	0.60	05/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	23.6	-	-	N.D	0.54	8.5
WS07	0.60	06/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	N.D	-	9.9
WS09	0.20	06/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	50.5	-	-	N.D	-	8.6
WS13	0.20	07/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	-	-	N.D	-	6.7
WS14	0.30	07/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	-	-	N.D	-	7.3
WS16	0.20	07/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	33.2	-	-	N.D	-	7.5

Number	8	8	8		8	8	8	8	8	8	8	8	8	8	8		8	8
Average	16.06	2.41	0.64		1.00	42.59	0.54	2.35	27.50	53.63	73.38	1.75	63.50	18.36	0.50	1.00	0.19	8.15
Minimum	6	1	0.2		1	8.7	0.5	1	18	25	18	0.7	12	1.9	0.5	1	0.016	6.7
Maximum	36	6.1	3.5		1	65	0.8	4.6	40	162	180	3.3	96	50.5	0.5	1	0.537	9.9
Standard Dev	9.80	1.74	1.16		0.00	17.61	0.11	1.22	7.91	45.46	51.12	0.87	28.92	16.90	0.00	0.00	0.17	0.99
US95	22.6		1.4			54.4	0.6	3.2	32.8		107.6	2.3	82.9		0.5	1.0	0.3	8.8
Source: LQM S4UL 2015	170	63	532	33000	210	1300	240	1800	3400	5000	44000	46000	17000	%	8600	50	0.5	5 to 9
	168		880		250	1400											DUTCH	BRE

Notes:

1. Levels expressed as mg/kg (ppm) unless stated.
2. Soil guideline values are for POS(park).
3. Tested levels below S4UL are shown as -
For actual result see certificate sheet.

CHEMICAL RESULTS ASSESSMENT

Client: Barnsley Metropolitan Borough Council

Project: A61 Bar Lane Cycleway

Number: 151116

TABLE 2A



4 Neville Street, Wakefield, WF1 5EF | Tel: 01924 376622 | E-mail: info@abbeydalebec.com

Public Open Space Public Park

Sheet 1 of 1

Exploratory Hole	Depth (m)	Soil Organic Matter (%)	Probable carcinogens ⁽²⁾			Possible carcinogens ⁽²⁾			Fluorene	Phenanthrene	Pyrene	Acenaphthylene	Benzo (g,h,i) Perylene	Acenaphthene	Anthracene	Naphthalene	Fluoranthene	Carcinogenic PAH Total	PAH 16 Total
			Benzo (a) Anthracene	Dibenzo (a,h) Anthracene	Benzo (a) Pyrene	Chrysene	Benzo (b&k) Fluoranthene	Indeno (1,2,3-cd) Pyrene											
WS03	0.10	15.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.84	1.86
WS04	0.30	14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.28	18.6
WS05	0.60	23.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.12	18.6
WS07	0.60	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.32	8.31
WS09	0.20	50.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.47	10.2
WS13	0.20	3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.38	3.15
WS14	0.30	4.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	1.79
WS16	0.20	33.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.33	18.5

Number	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8		8
Average		0.12	0.68	0.61	1.16	0.58	0.10	1.78	1.17	0.07	0.51	0.09	0.42	0.88	1.31		10.13
Minimum	0.11	0.02	0.03	0.11	0.09	0.02	0.02	0.2	0.13	0.02	0.04	0.02	0.04	0.05	0.16		1.79
Maximum	1.4	0.23	1.42	1.25	2.72	1.23	0.38	4.78	2.83	0.3	1.11	0.34	0.9	2.11	3.49		8.31
Standard Dev	0.53	0.09	0.54	0.47	0.92	0.46	0.12	1.66	1.01	0.10	0.40	0.11	0.30	0.95	1.20		7.59
US95		0.2	1.0	0.9	1.8	0.9	0.2	2.9	1.8	0.1	0.8	0.2	0.6	1.5	2.1		15.2
Source: LQM S4UL 2015	49	1.1	11 21	93	13	150	20000	6200	15000	29000	1400	29000	150000	1200	6300		

Notes:

1. Levels expressed as mg/kg (ppm) unless stated.
2. International Agency for Research on Cancer (IARC) classifications
3. Soil guideline values are for POS(park).
4. Tested levels below S4UL are shown as -
For actual result see certificate sheet.
5. Levels presented for SOM 1% -
Higher concentrations may be permissible

PAH RESULTS ASSESSMENT

Client: Barnsley Metropolitan Borough Council

Project: A61 Bar Lane Cycleway

Number: 151116

TABLE 2B



4 Neville Street, Wakefield, WF1 5EF | Tel: 01924 376622 | E-mail: info@abbeydalebec.com

Public Open Space Public Park

Sheet 1 of 1

Exploratory Hole	Depth (m)	Date	Aliphatic							Aromatic						
			Aliphatic C5-C6 mg/kg	Aliphatic C6-C8 mg/kg	Aliphatic C8-C10 mg/kg	Aliphatic C10-C12 mg/kg	Aliphatic C12-C16 mg/kg	Aliphatic C16-C21 mg/kg	Aliphatic C21-C35 mg/kg	Aromatic C6-C7 mg/kg	Aromatic C7-C8 mg/kg	Aromatic C8-C10 mg/kg	Aromatic C10-C12 mg/kg	Aromatic C12-C16 mg/kg	Aromatic C16-C21 mg/kg	Aromatic C21-C35 mg/kg
WS03	0.10	05/01/2022		-	-	-	-	-	-	-	-	-	-	-	-	-
WS04	0.30	05/01/2022		-	-	-	-	-	-	-	-	-	-	-	-	-

Number	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Average	0.10	0.10	5.05	4.00	6.50	132.00	132.00	0.01	0.01	0.01	1.00	1.00	6.50	4.00		
Minimum	0.1	0.1	0.1	4	5	190	190	0.01	0.01	0.01	1	1	1	1		
Maximum	0.1	0.1	10	4	8	74	74	0.01	0.01	0.01	1		12	7		
Standard Dev US95	0.00	0.00	7.00	0.00	2.12	82.02	82.02	0.00	0.00	0.00	0.00	0.00	7.78	4.24		
Source: LQM S4UL 2015	95000 (304)	150000 (144)	14000 (78)	21000 (48)	25000 (24)	450000*	450000*	76000 (1220)	87000 (869)v	7200 (613)v	9200 (364)	10000	7600	7800		



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Notes:

1. Levels expressed as mg/kg (ppm) unless stated.
2. Soil guideline values are for POS(park).
3. Tested levels below S4UL are shown as -
For actual result see certificate sheet.
4. Levels presented for SOM 1% -
Higher concentrations may be permissible
5. * Combined analysis for C16 to C35 < 450000 mg/kg

TPH RESULTS ASSESSMENT

Client: Barnsley Metropolitan Borough Council

Project: A61 Bar Lane Cycleway

Number: 151116

TABLE 2C

Exploratory Hole	Depth (m)	Date	Class	Arsenic As	Beryllium Be	Boron B	Cadmium Cd	Chromium (total) Cr	Copper Cu	Lead Pb	Mercury Hg	Nickel Ni	Selenium Se	Vanadium V	Zinc Zn	Cyanide (tot) Cn (mg/l)	Phenols (mg/l)	Sulphate (mg/l)	pH (units)	PAH (Total)
SW01	0.05	07/01/2022		-	-	-	-	-	-	-	-	-	-	-	125	0.20	-	-	8.70	1.6
SW02	0.05	08/02/2022		-	-	-	0.11	20	-	-	-	-	-	-	89	-	-	-	8.20	2
SW03	0.05	08/02/2022		-	-	-	0.11	20	-	-	-	-	-	-	90	-	-	-	8.30	2

Number	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3
Average	0.9	0.7	45.00	0.097	13.433	3.53	0.4	0.0	1.10	0.5	0.5	101.3	0.10	0.02	0	8.4	1.87		
Minimum	0.77	0.06	39	0.07	0.3	3.4	0.2	0.008	0.5	0.5	0.52	89	0.05	0.01	0.064	8.2	1.6		
Maximum	1.03	1	51	0.11	20	3.6	0.5	0.05	1.4	0.57	0.52	125	0.2	0.03	0.067	8.7	2		
Standard Dev	0.1	0.5	6.00	0.023	11.374	0.12	0.2	0.0	0.52	0.0	0.0	20.5	0.09	0.01	0	0.3	0.23		
US95	1.1		55.12	0.136	32.608	3.73	0.7	0.1	1.98	0.6		135.9	0.25	0.04	0	8.8	2.26		
⁴ Water Supply Regulations (2000)	10		1000	5	50	2000	25	1	20	10	50	250	50		250				
⁴ Environmental Quality Standard	50	12	2000	0.09	4.7	6	7.2	0.05	20	250	20*	50	1000	0.1**	400	6-9	0.1		



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Notes:

1. Levels expressed as ug/l (ppb) unless stated.
2. * Assuming <100mg CaCO₃/l
3. ** 0.1 = LOD, EQS limits = 0.03 mg/l
4. Elevations assessed against WSR and EQS whichever is lowest limit value. Concentrations below limit values given as -.

LEACHATE RESULTS ASSESSMENT

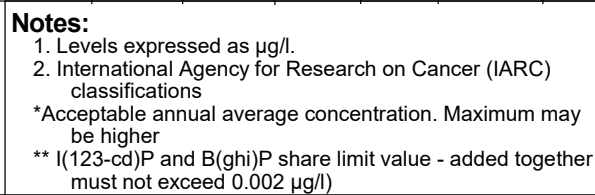
Client: Barnsley Metropolitan Borough Council

Project: A61 Bar Lane Cycleway

Number: 151116

TABLE 2D

 4 Neville Street, Wakefield, WF1 5EF Tel: 01924 376622 E-mail: info@abbeydalebec.com	Notes: 1. Levels expressed as µg/l. 2. International Agency for Research on Cancer (IARC) classifications *Acceptable annual average concentration. Maximum may be higher ** I(123-cd)P and B(ghi)P share limit value - added together must not exceed 0.002 µg/l)	LEACHABLE SPECIATED PAH RESULTS
		Client: Barnsley Metropolitan Borough Council Project: A61 Bar Lane Cycleway Number: 151116 TABLE 2E



Client: Barnsley Metropolitan Borough Council	
Project: A61 Bar Lane Cycleway	
Number: 151116	TABLE 2E

Exploratory Hole	Date/Time	Flow Rate l/h	Methane Peak CH ₄ %	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H ₂ S (%)	Carbon Dioxide CO ₂ (%)	Oxygen O ₂ (%)	VOCs ppm	Water Level / mBGL	Pressure (mbars)	Pressure Rise/Fall /Steady	Remarks
WS05 (W)	13/01/2021	0.4	0.0	36.0	<<<	0.2	18.7	1.0	0.28	1027	R	Dry, sunny, slight breeze, 6°C.
WS05 (W)	20/01/2022	1.0	0.2	0.0	<<<	1.5	18.7	1.0	0.3	1024	R	Dry, sunny, slight breeze, 3°C.
WS05 (W)	27/01/2022	0.1	0.0	20.0	<<<	0.2	18.3	1.0	0.3	1011	S	Dry, breezy, cloudy, 8°C.
WS05 (W)	03/02/2022	1.6	0.1	0.0	0.0	0.3	17.3	1.0	0.35	998	S	Dry, cloudy, slight breeze, 9°C.
WS05 (W)	08/02/2022	0.6	0.0	0.0	0.0	0.3	19.0	1.0	0.25	1009	S	Dry, sunny intervals, breezy, 12°C.
WS05 (W)	17/02/2022	2.8	0.0	0.0	0.0	0.3	17.9	1.0	0.22	992	S	Dry, cloudy, windy, 7°C.
WS08 (W)	13/01/2021	0.6	0.0	20.0	<<<	14.0	3.1	1.0	4.11	1026	R	Dry, sunny, slight breeze, 6°C.
WS08 (W)	20/01/2022	-13.0	0.0	0.0	<<<	16.6	0.5	1.0	4.3	1023	R	Dry, sunny, slight breeze, 3°C.
WS08 (W)	27/01/2022	-9.0	0.0	80.0	<<<	16.9	0.6	1.0	4.38	1011	S	Dry, breezy, cloudy, 8°C.
WS08 (W)	03/02/2022	4.4	0.0	0.0	0.0	17.5	0.7	1.0	4.4	998	S	Dry, cloudy, slight breeze, 9°C.
WS08 (W)	08/02/2022	-2.6	0.0	0.0	0.0	17.8	0.1	1.0	4.43	1009	S	Dry, sunny intervals, breezy, 12°C.
WS08 (W)	17/02/2022	-15.0	0.0	10.0	0.0	18.0	0.2	1.0	4.42	992	S	Dry, cloudy, windy, 7°C.
WS11 (W)	13/01/2021								DRY			Bung / tap removed from pipe.
WS11 (W)	20/01/2022	1.0	0.0	0.0	<<<	0.6	18.1	1.0	DRY	1024	R	Dry, sunny, slight breeze, 3°C.
WS11 (W)	27/01/2022	0.1	0.0	0.0	<<<	0.8	18.5	1.0	DRY	1011	S	Dry, breezy, cloudy, 8°C.
WS11 (W)	03/02/2022	1.5	0.0	0.0	0.0	0.4	19.3	1.0	DRY	998	S	Dry, cloudy, slight breeze, 9°C.
WS11 (W)	08/02/2022	0.4	0.0	0.0	0.0	0.3	19.6	1.0	2.48	1009	S	Dry, sunny intervals, breezy, 12°C.
WS11 (W)	17/02/2022	3.2	0.0	0.0	0.0	0.5	17.6	1.0	2.1	993	R	Dry, cloudy, windy, 7°C.
WS15 (W)	13/01/2021								DRY			Bung / tap removed from pipe.
WS15 (W)	20/01/2022	1.6	0.0	0.0	<<<	0.0	18.7	1.0	2.75	1025	R	Dry, sunny, slight breeze, 3°C.
WS15 (W)	27/01/2022	0.9	0.0	0.0	<<<	0.0	19.2	1.0	2.75	1012	R	Dry, breezy, cloudy, 8°C.
WS15 (W)	03/02/2022	1.6	0.0	0.0	0.0	0.0	19.5	1.0	2.75	998	S	Dry, cloudy, slight breeze, 9°C.



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NR = Not recorded

GAS MONITORING RESULTS

Client: Barnsley Metropolitan Borough Council

Project: A61 Bar Lane Cycleway

Number: 151116

TABLE 3

Exploratory Hole	Date/Time	Flow Rate l/h	Methane Peak CH ₄ %	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H ₂ S (%)	Carbon Dioxide CO ₂ (%)	Oxygen O ₂ (%)	VOCs ppm	Water Level / mBGL	Pressure (mbars)	Pressure Rise/Fall /Steady	Remarks
WS15 (W)	08/02/2022	0.7	0.0	0.0	0.0	0.0	19.7	1.0	2.75	1010	R	Dry, sunny intervals, breezy, 12°C.
WS15 (W)	17/02/2022	3.4	0.0	0.0	0.0	0.0	19.1	1.0	2.75	993	S	Dry, cloudy, windy, 7°C.
WS16 (W)	13/01/2021								2.6			Bung / tap removed from pipe.
WS16 (W)	20/01/2022	1.2	0.0	0.0	<<<	0.0	18.9	1.0	2.4	1.25	R	Dry, sunny, slight breeze, 3°C.
WS16 (W)	27/01/2022	0.0	0.0	0.0	<<<	0.4	19.4	1.0	2.25	1012	S	Dry, breezy, cloudy, 8°C.
WS16 (W)	03/02/2022	1.2	0.0	0.0	0.0	0.8	19.1	1.0	2.34	998	S	Dry, cloudy, slight breeze, 9°C.
WS16 (W)	08/02/2022	1.3	0.0	0.0	0.0	0.6	19.6	1.0	1.7	1010	S	Dry, sunny intervals, breezy, 12°C.
WS16 (W)	17/02/2022	2.3	0.0	0.0	0.0	0.0	19.0	1.0	0.38	993	S	Dry, cloudy, windy, 7°C.



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NR = Not recorded

GAS MONITORING RESULTS

Client: Barnsley Metropolitan Borough Council

Project: A61 Bar Lane Cycleway

Number: 151116

TABLE 3

APPENDIX C - HISTORICAL MAPS

Site Details:

BAR LANE, STAINCROSS,
BARNLEY, S75 6DJ

Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: County Series

Map date: 1854

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1851
Revised N/A
Edition 1854
Copyright N/A
Levelled N/A

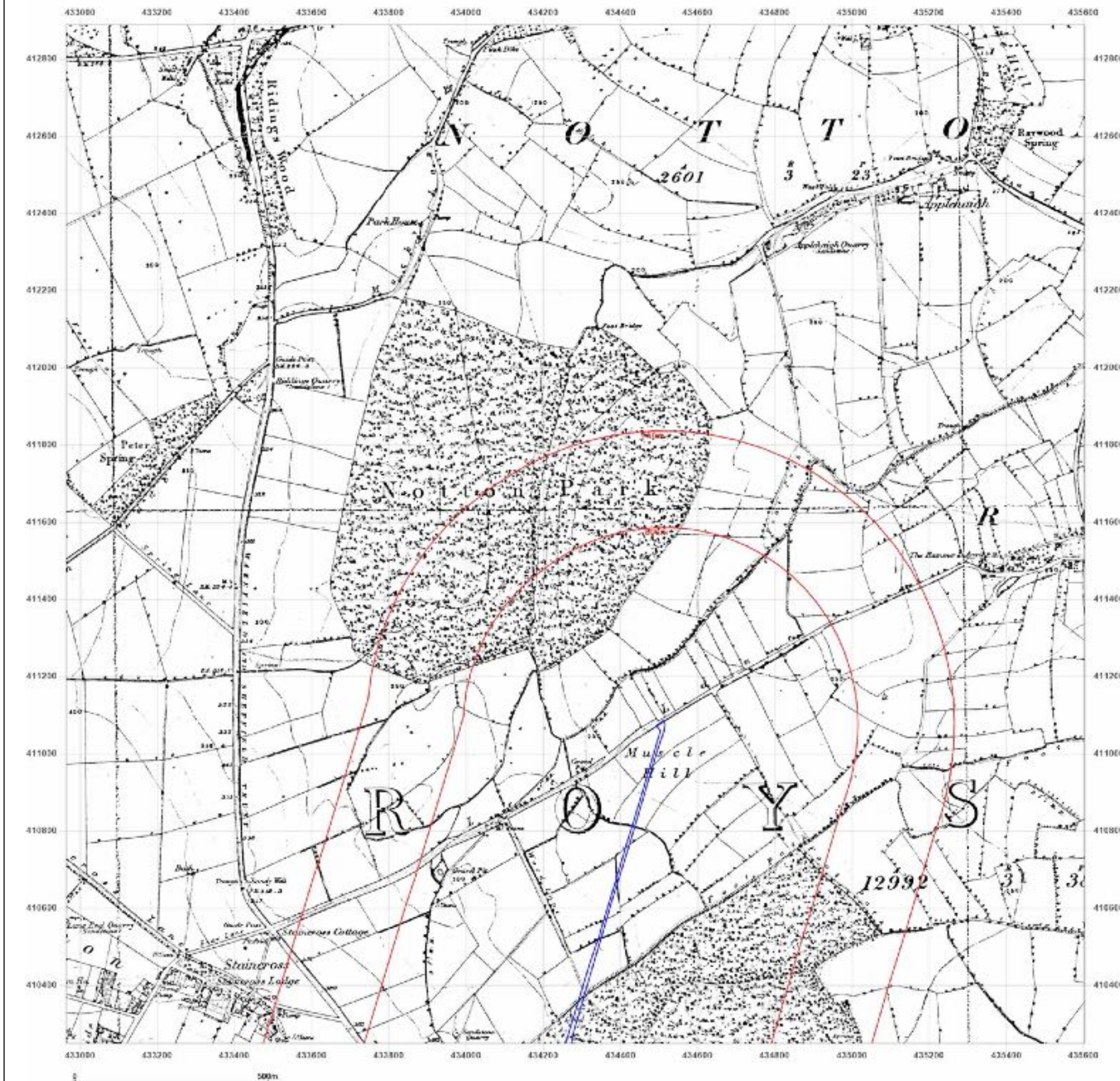


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Site Details:

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Client Ref: 151116_-3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: County Series

Map date: 1850-1854

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1851
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Edition 1850
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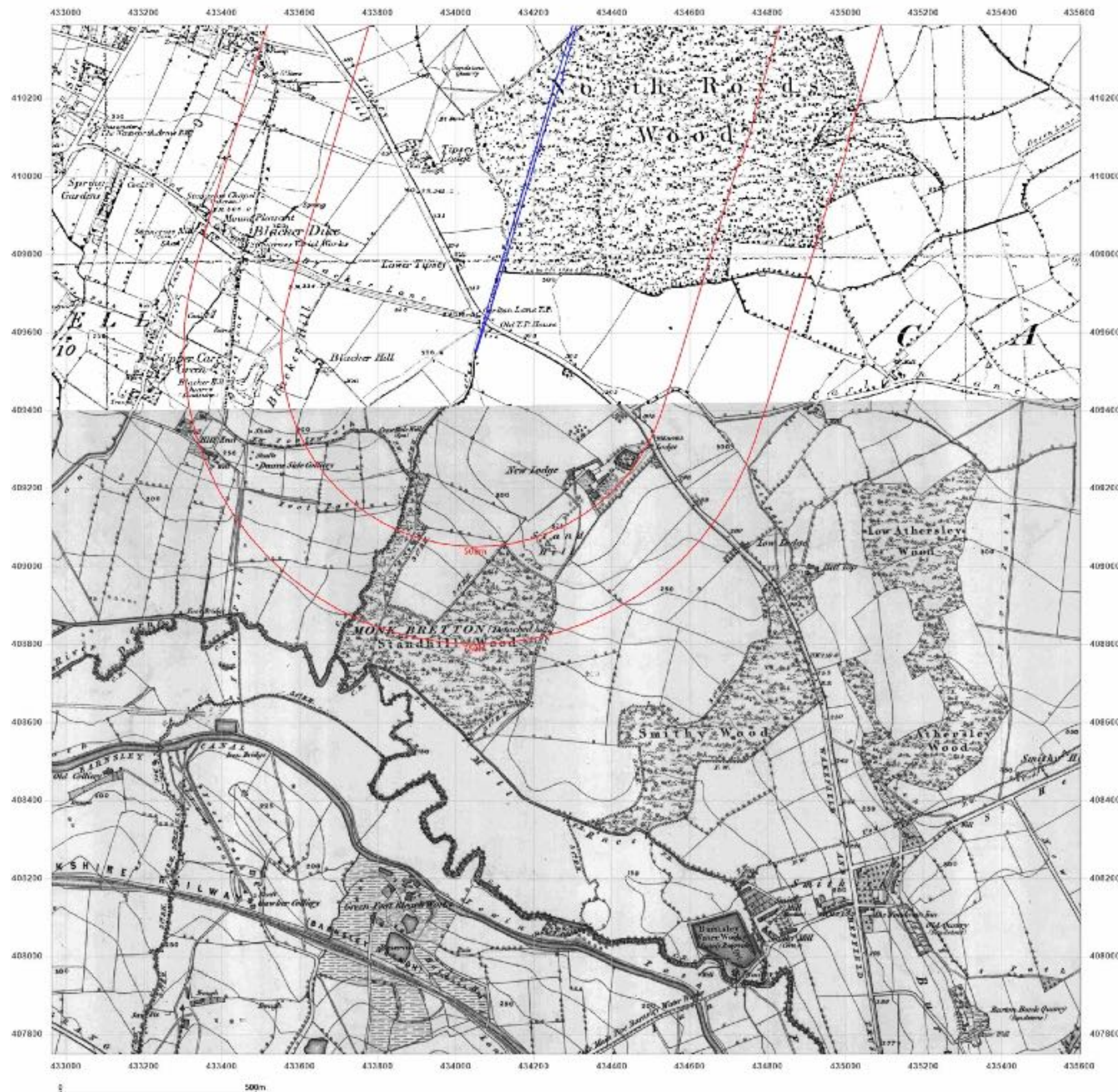


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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: County Series

Map date: 1891

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1891
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Edition 1891
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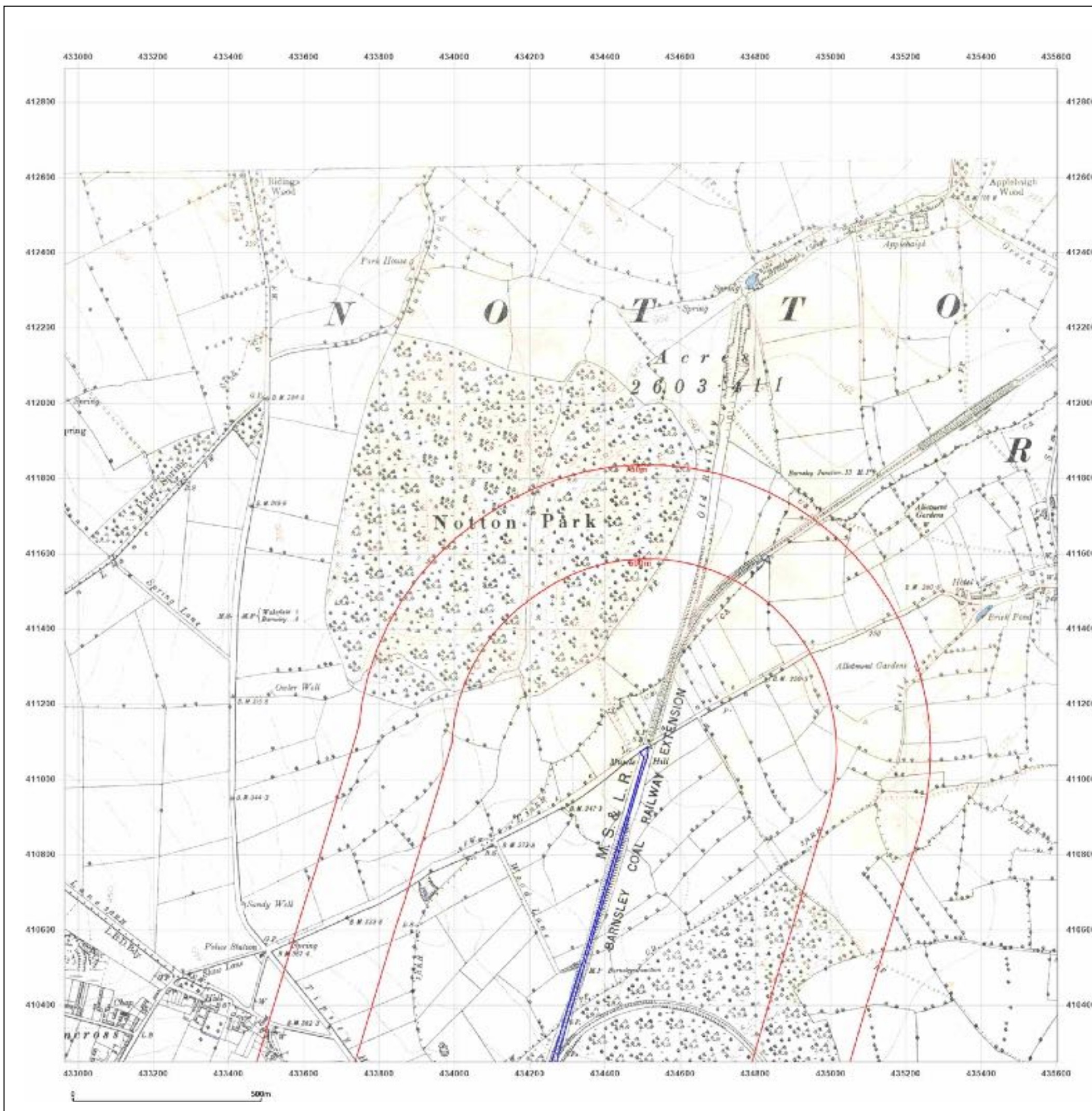


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Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: County Series

Map date: 1890-1891

Scale: 1:10,560

Printed at: 1:10,560



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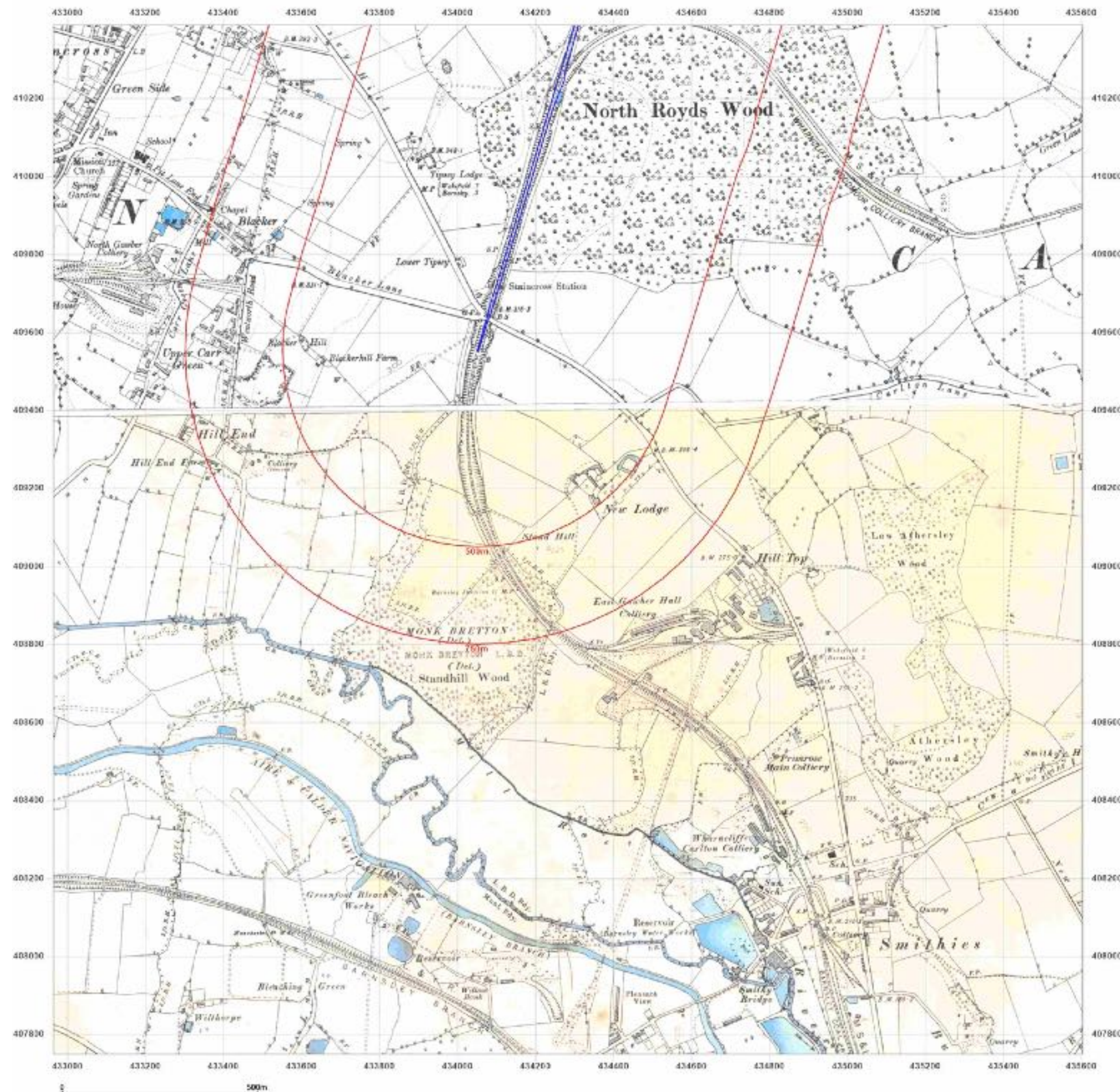


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Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: County Series

Map date: 1904

Scale: 1:10,560

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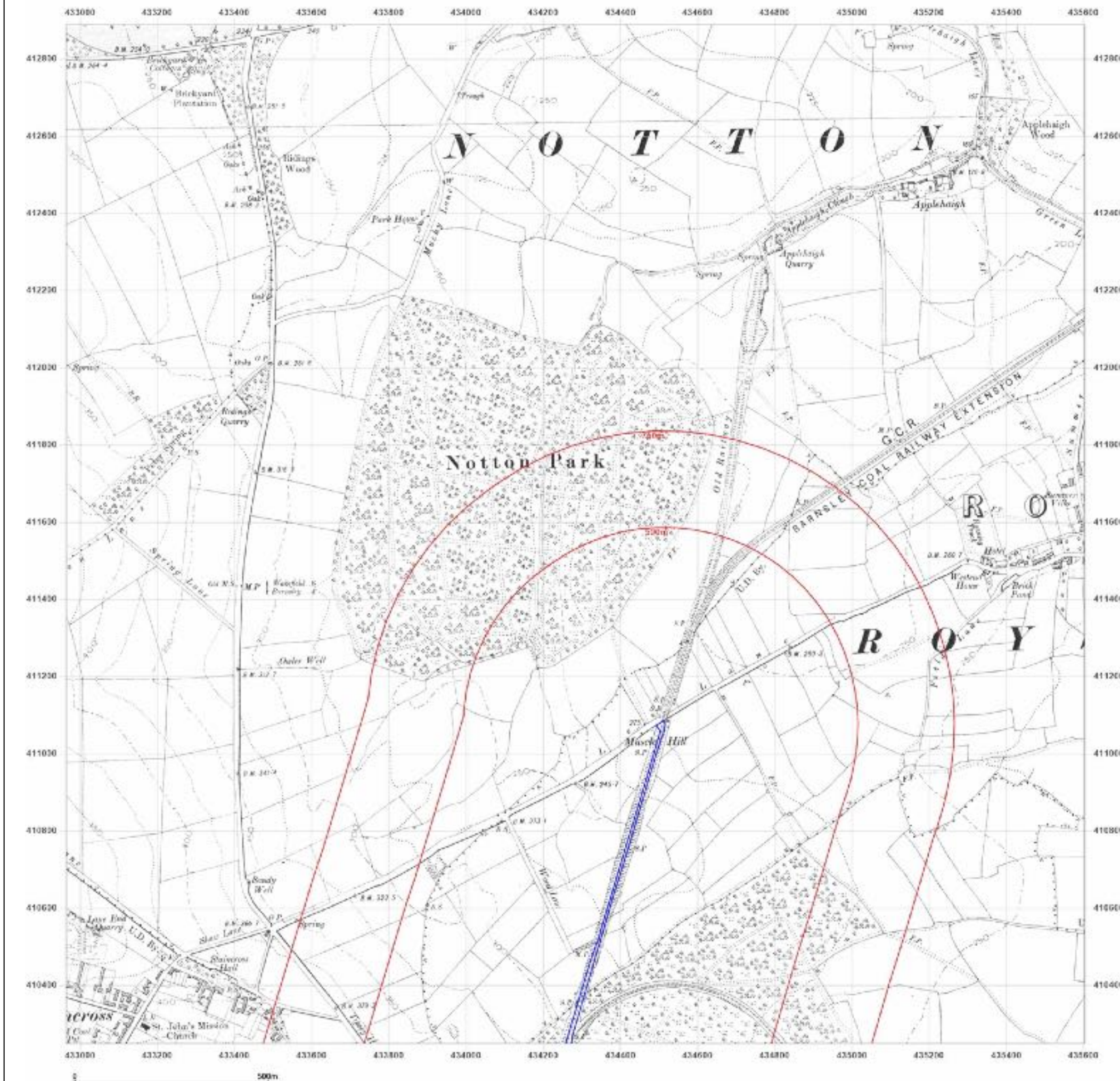


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Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: County Series

Map date: 1904

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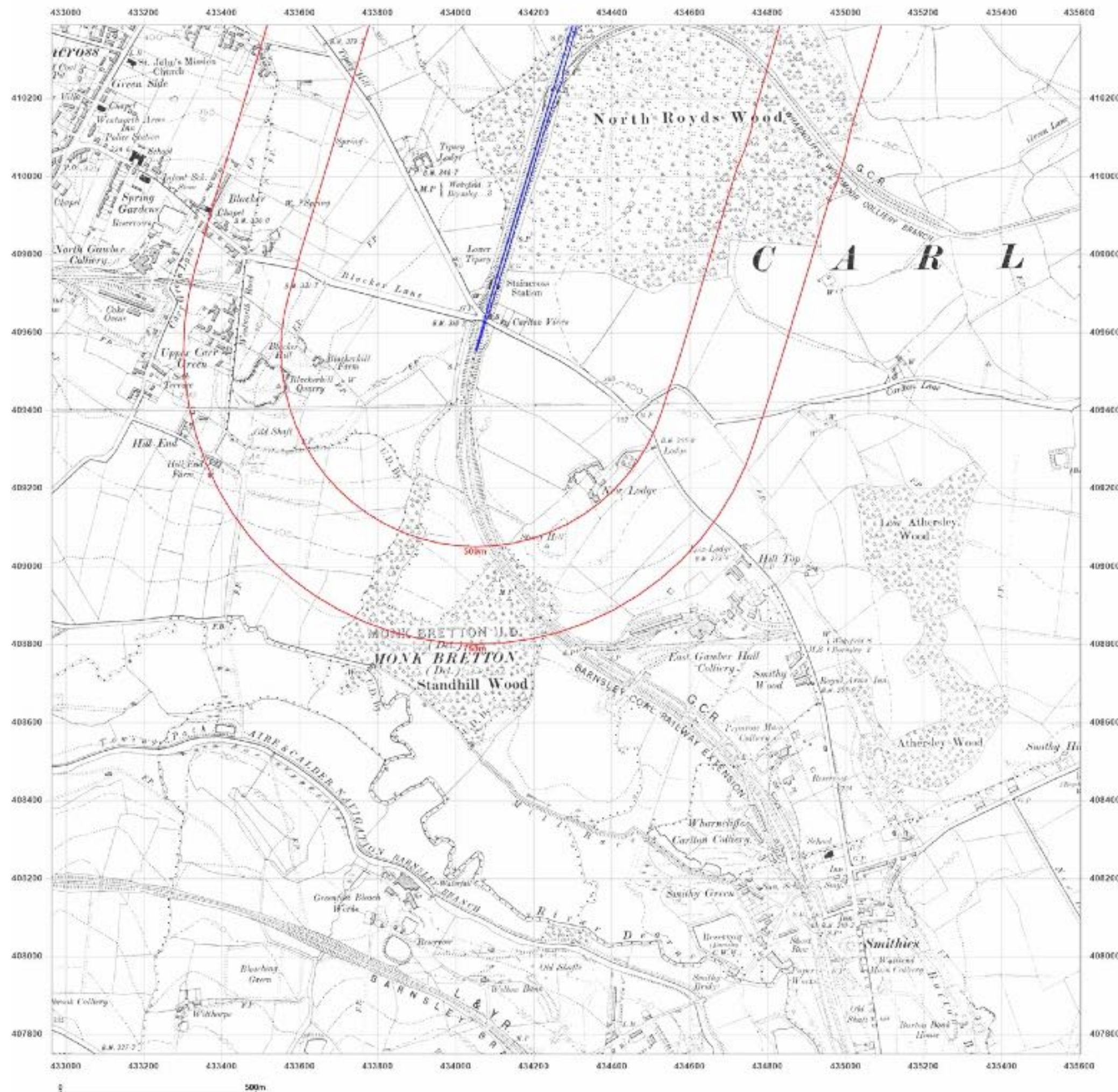


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Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: County Series

Map date: 1930

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1930
Edition 1930
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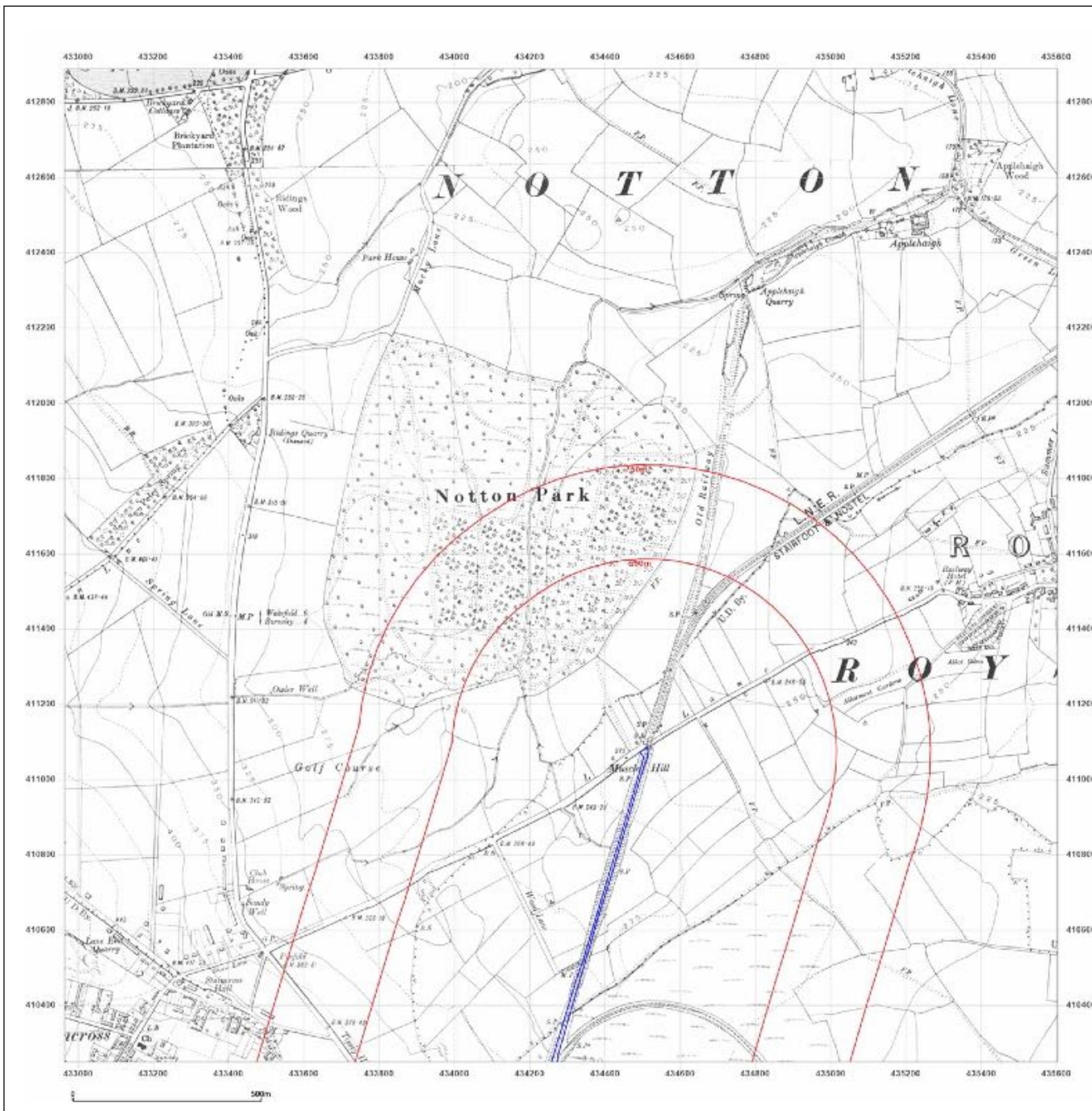


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Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: County Series

Map date: 1929-1930

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1929
Edition 1929
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Levelled 1915

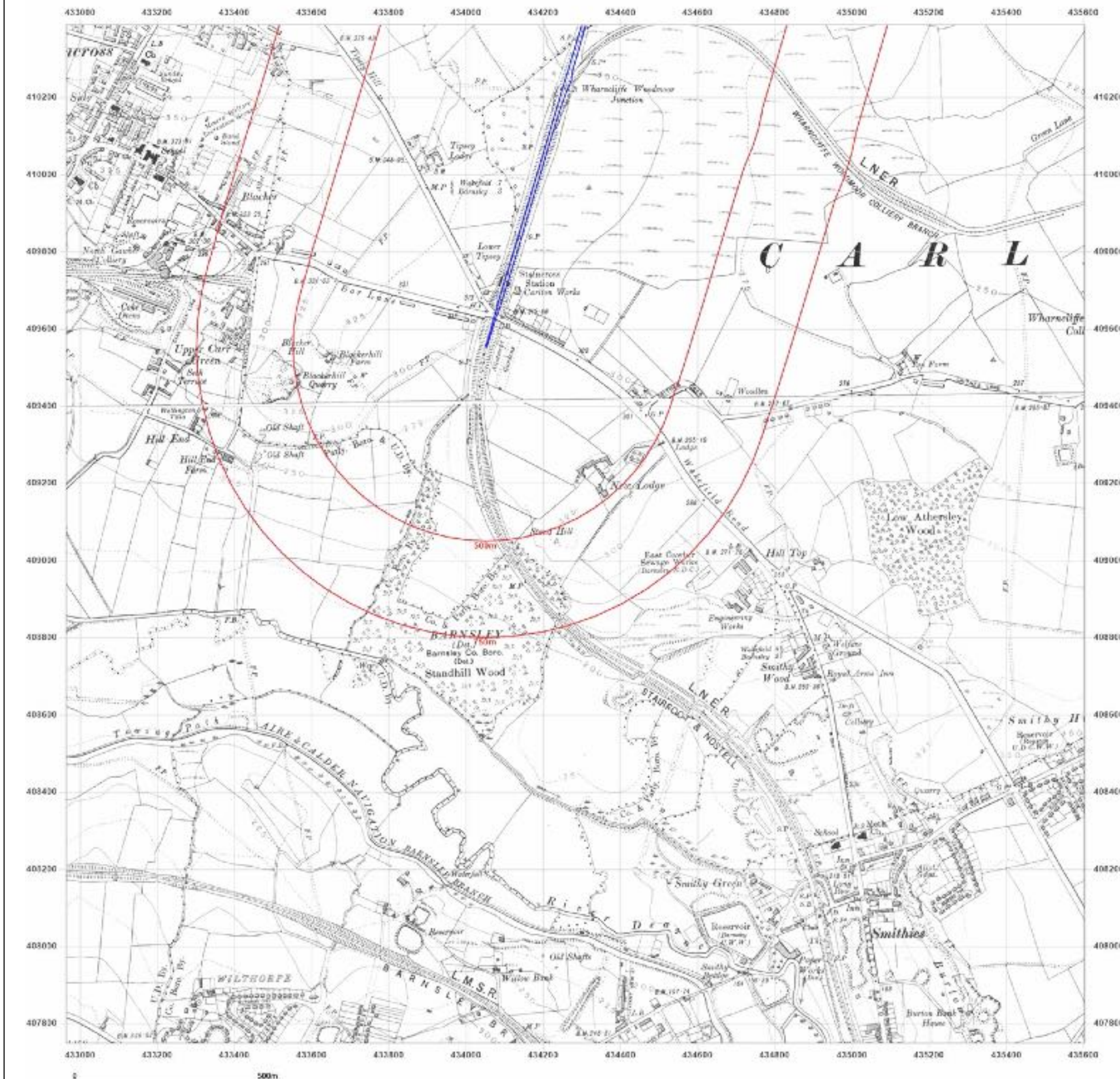


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Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: County Series

Map date: 1930

Scale: 1:10,560

Printed at: 1:10,560



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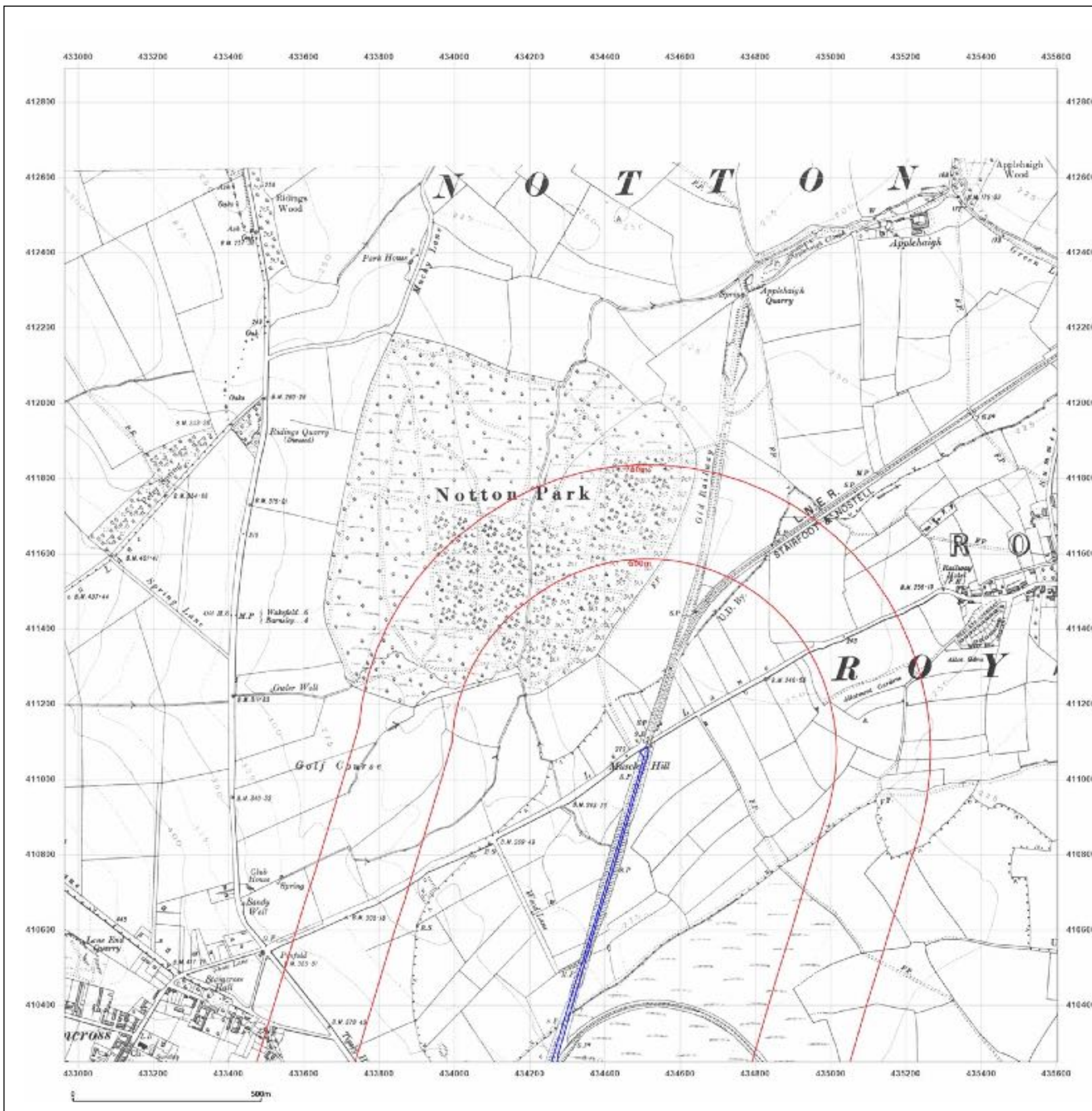


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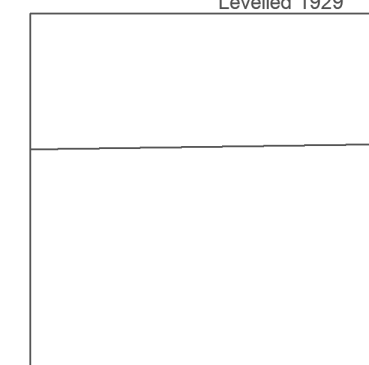
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Edition 1930
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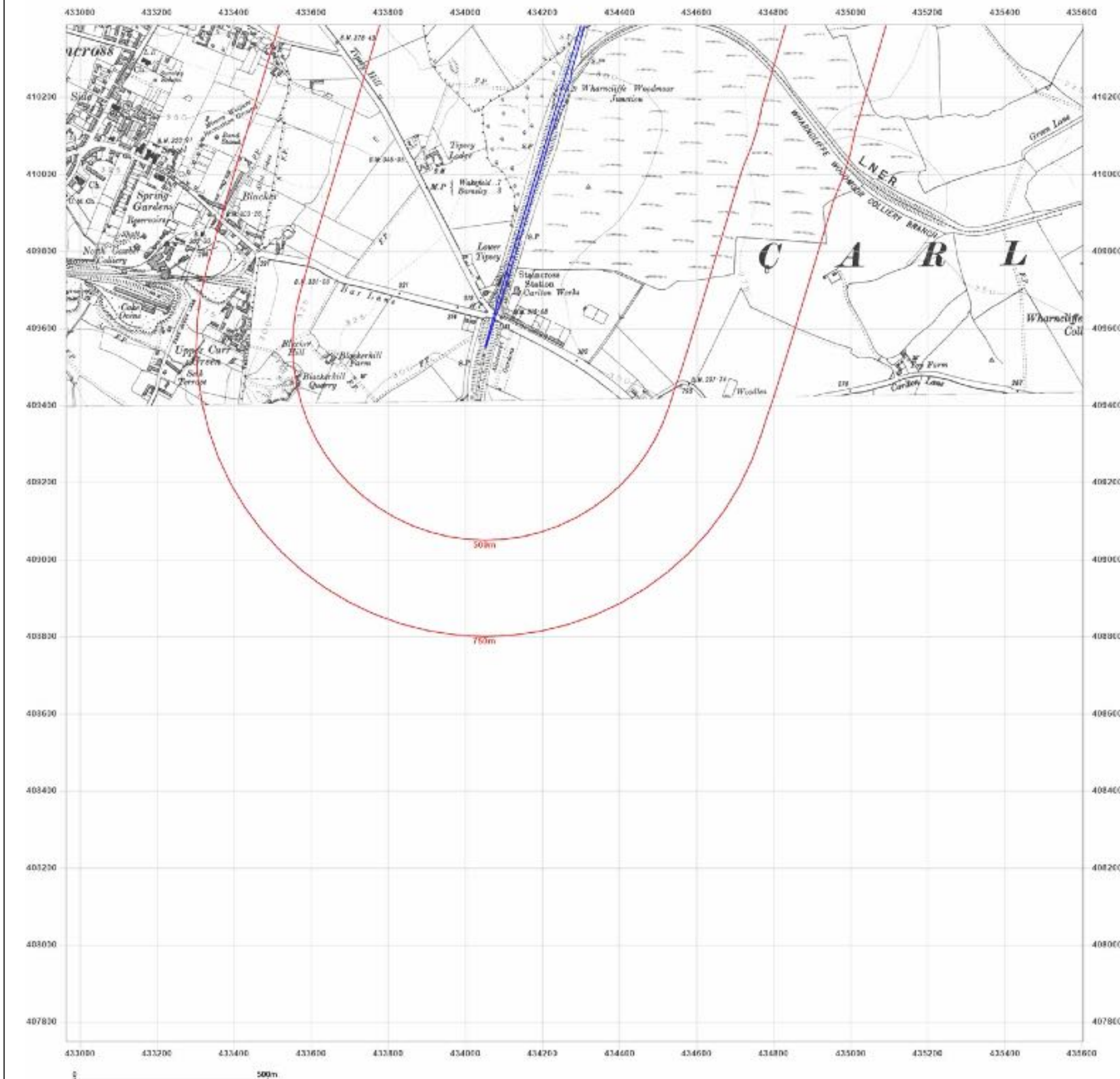


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Map Name: County Series

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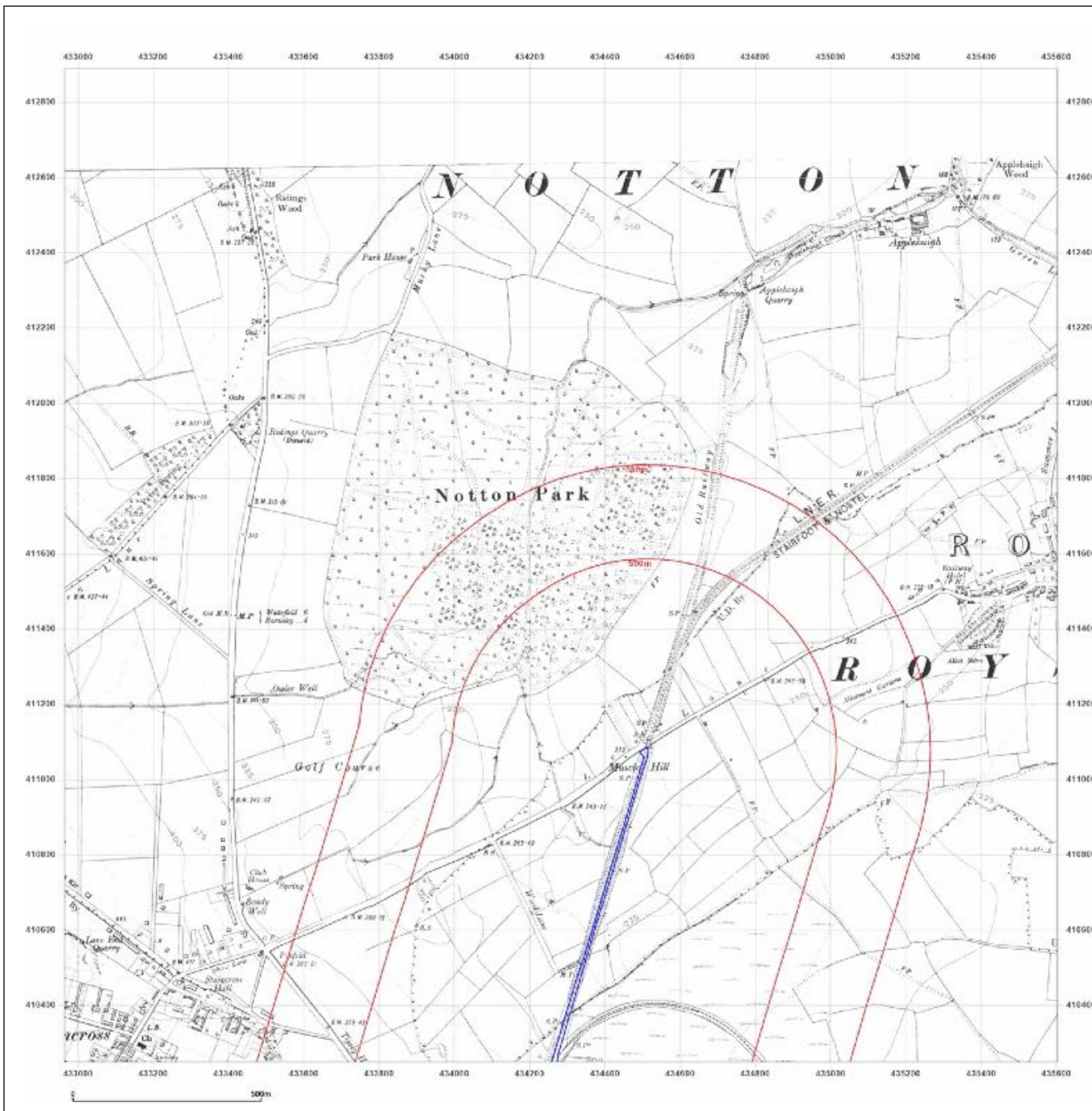


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Report Ref: GS-8358274_SS_1_1
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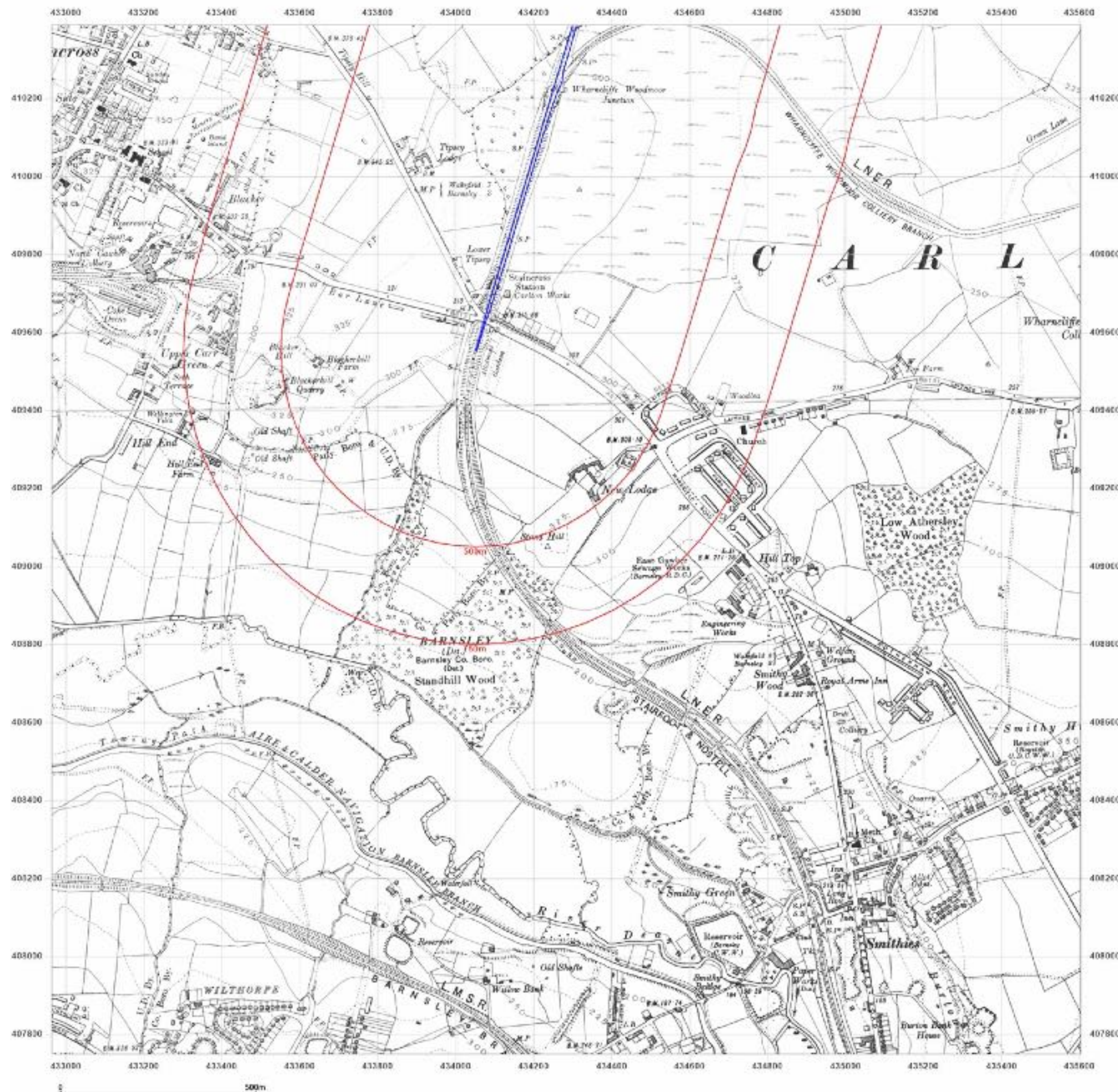


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Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: County Series

Map date: 1948

Scale: 1:10,560

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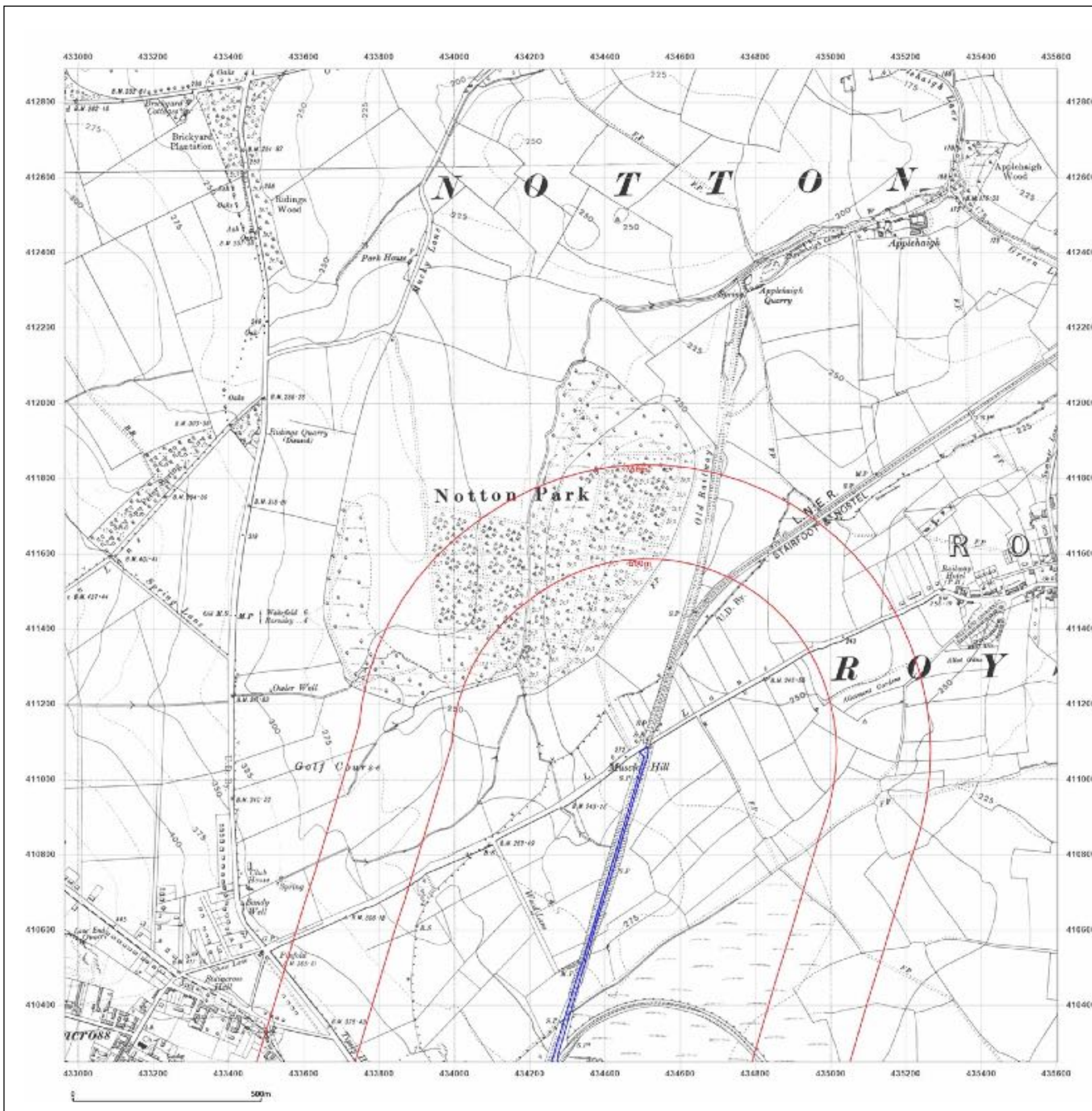


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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: County Series

Map date: 1948

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Revised 1948
Edition 1948
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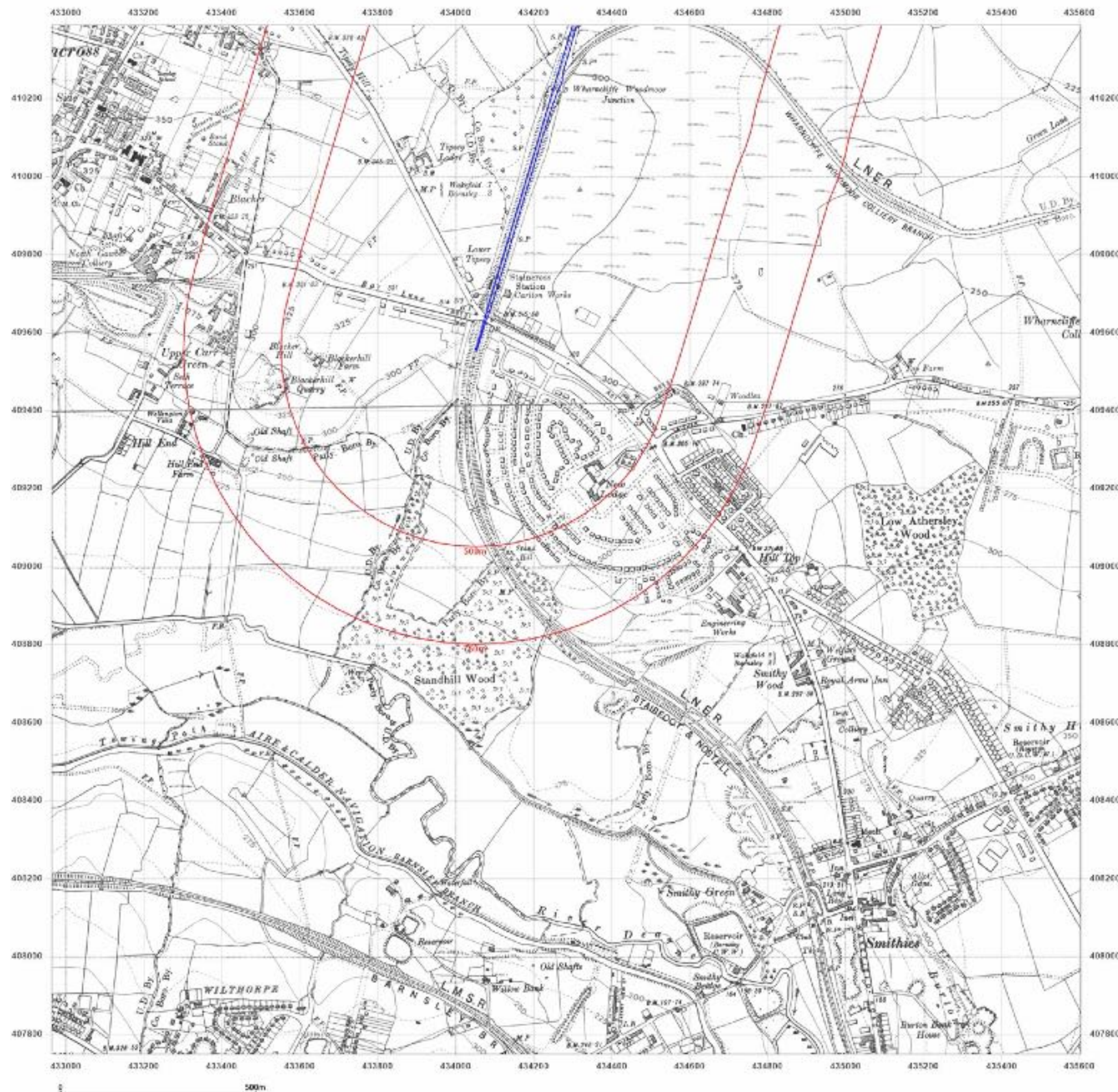


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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: Provisional

Map date: 1951

Scale: 1:10,560

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Edition N/A
Copyright 1951
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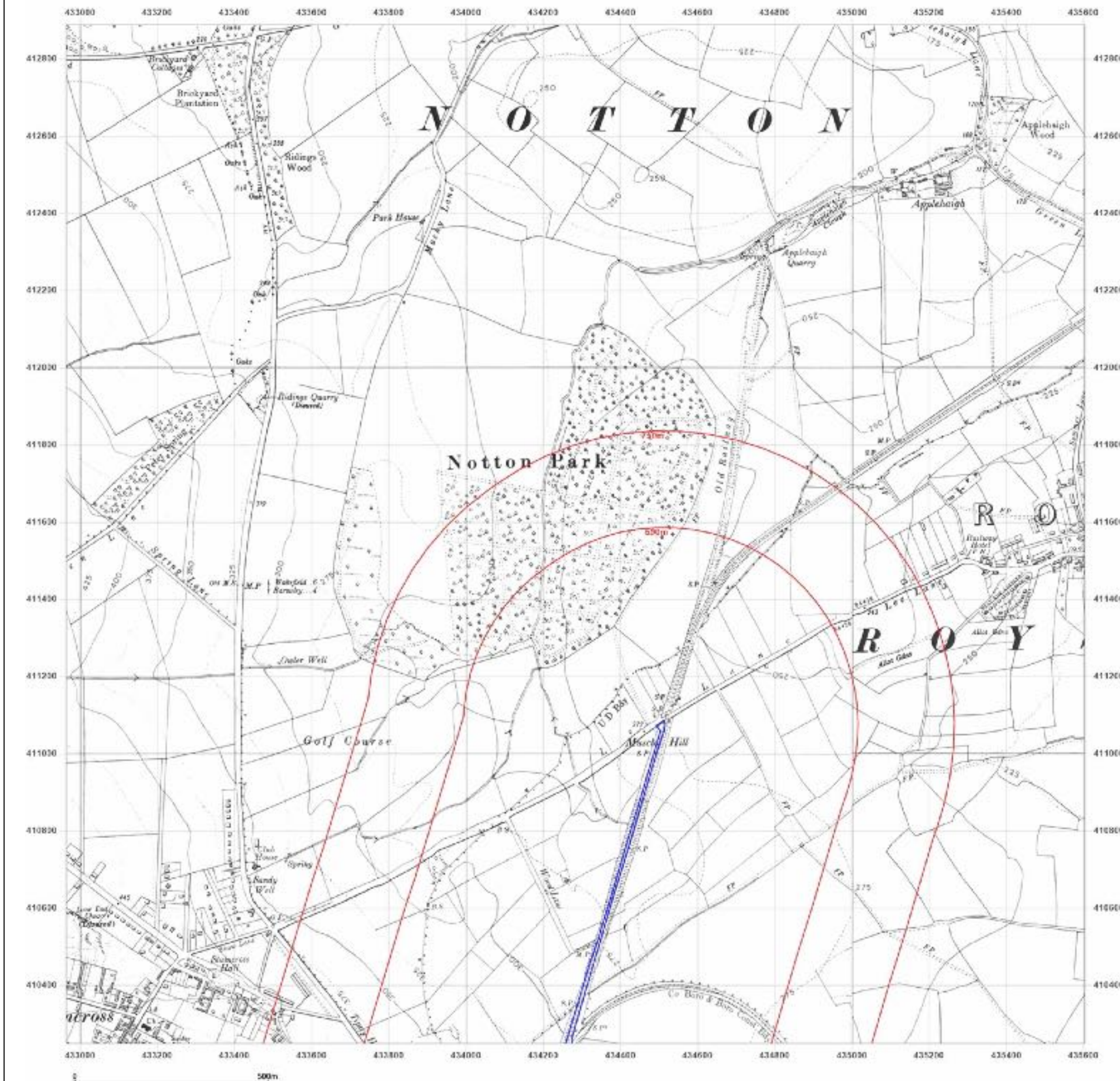


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Site Details:

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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: Provisional

Map date: 1951-1956

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1955
Edition N/A
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Revised 1955
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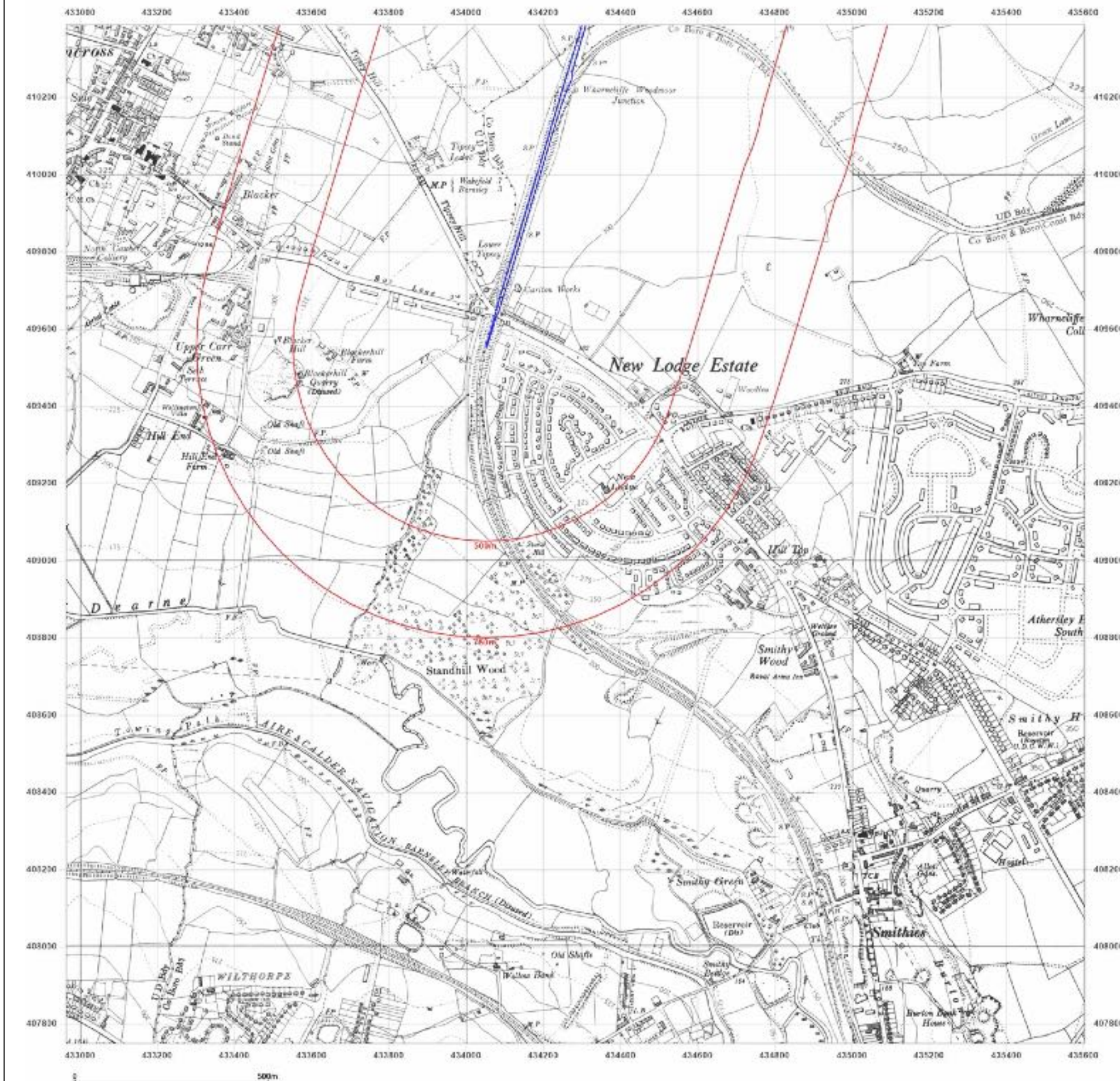


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Site Details:

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BARNLEY, S75 6DJ

Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: Provisional

Map date: 1965-1966

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1965
Revised 1965
Edition N/A
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Surveyed 1966
Revised 1966
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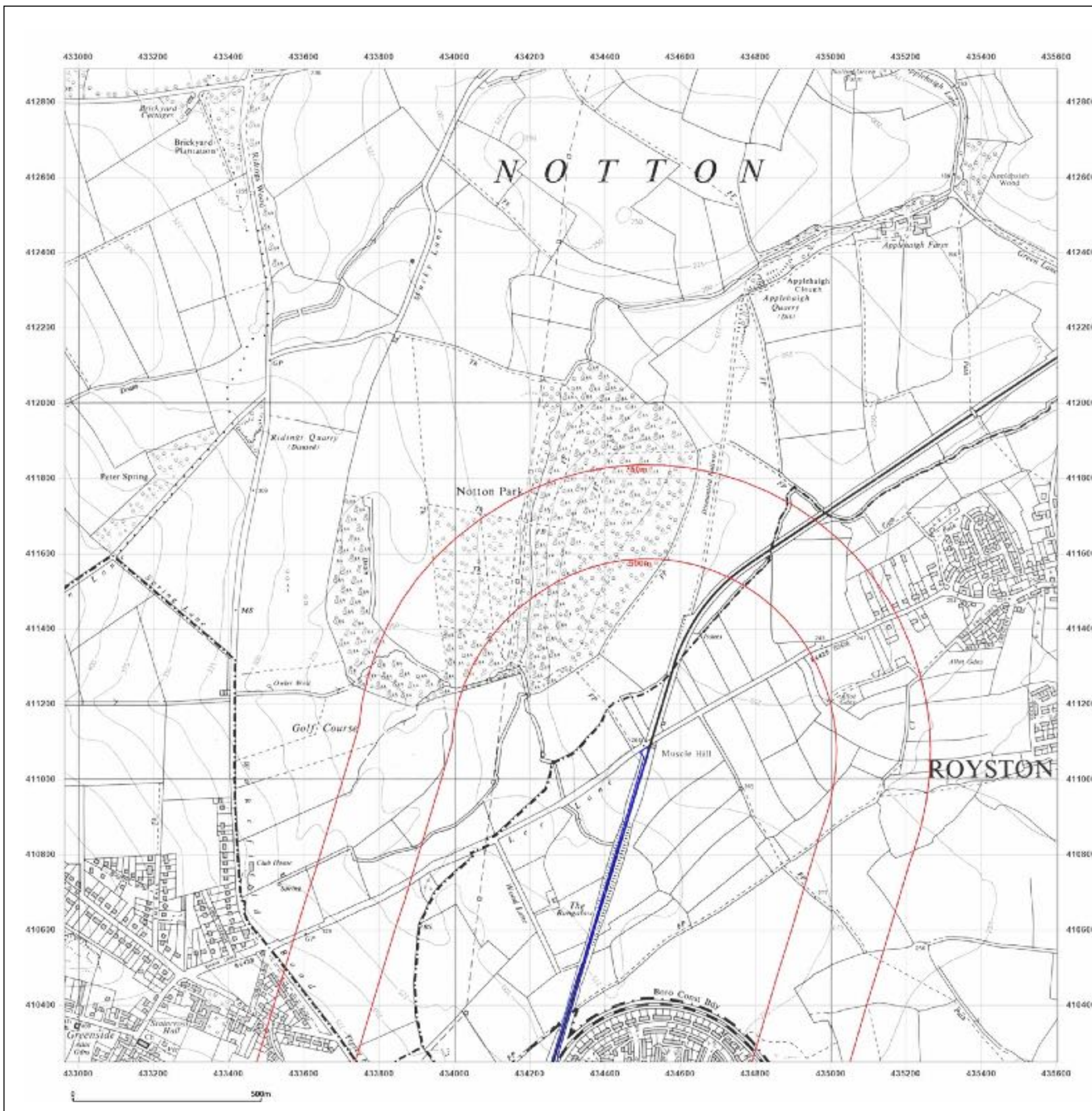


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Site Details:

BAR LANE, STAINCROSS,
BARNSELY, S75 6DJ

Client Ref: 151116_-3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: Provisional

Map date: 1965-1966

Scale: 1:10,560

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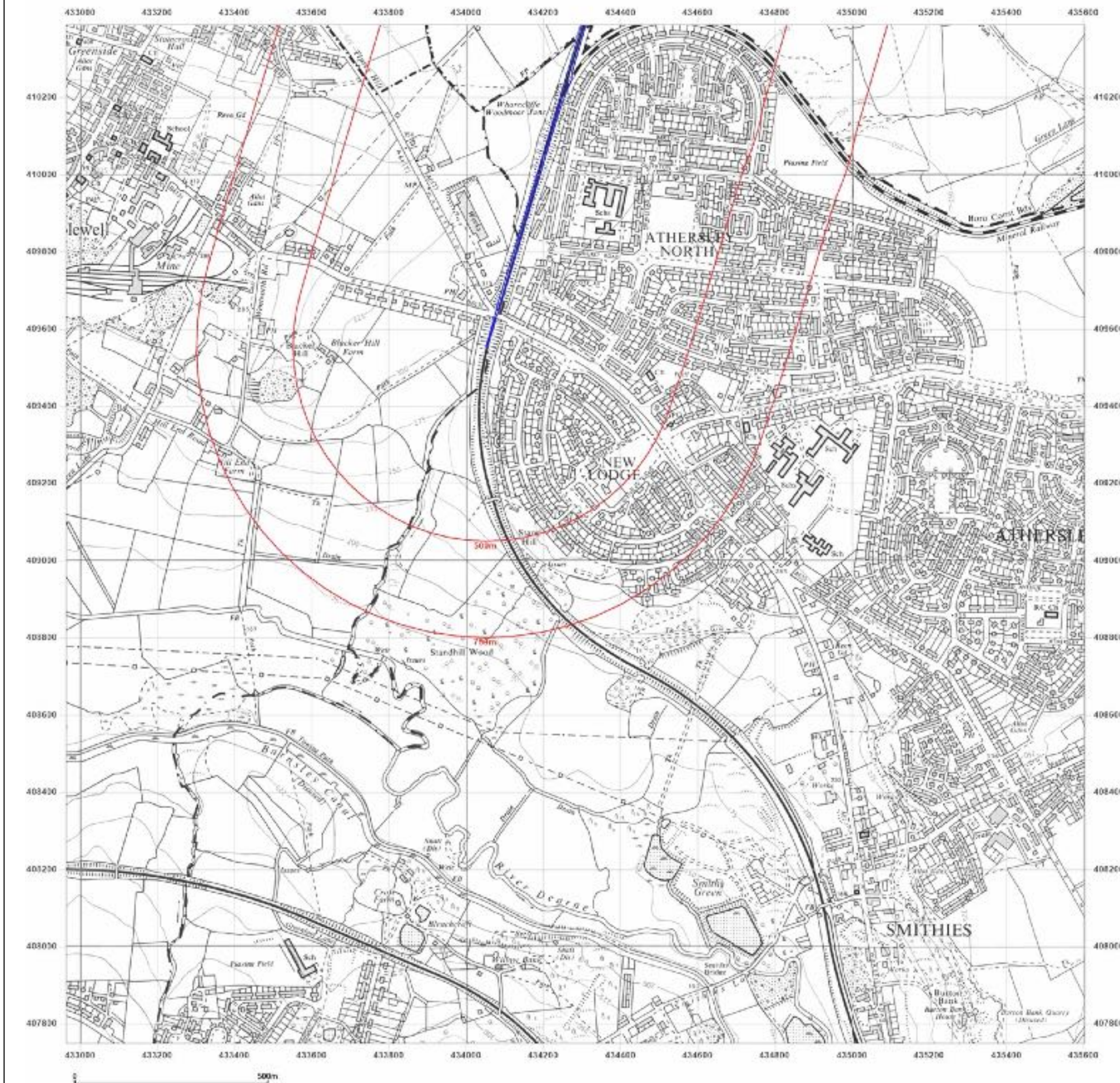


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Site Details:

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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: National Grid

Map date: 1978

Scale: 1:10,000

Printed at: 1:10,000



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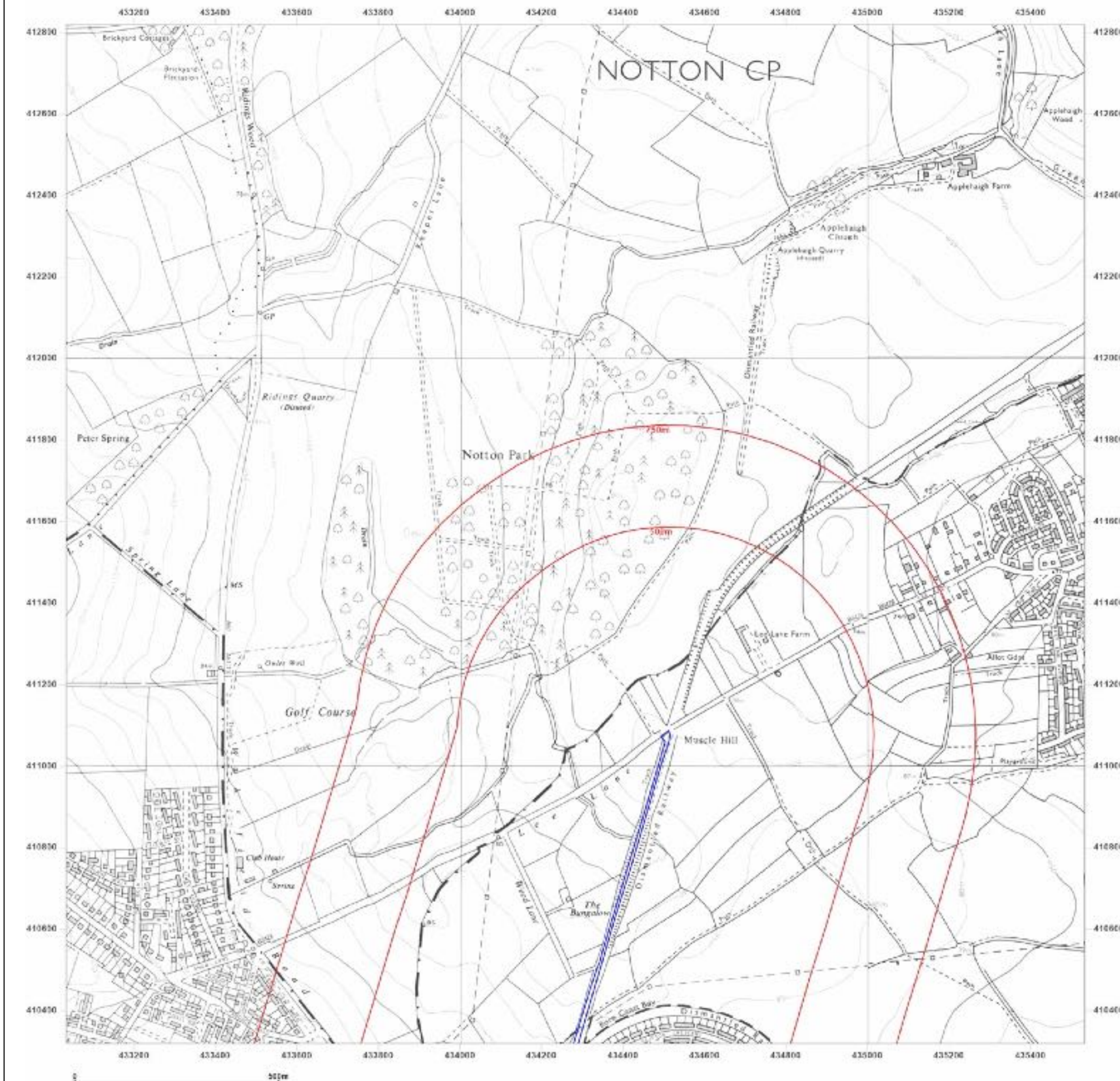


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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: National Grid

Map date: 1973-1978

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: National Grid

Map date: 1982

Scale: 1:10,000

Printed at: 1:10,000



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Edition N/A
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Revised 1982
Edition N/A
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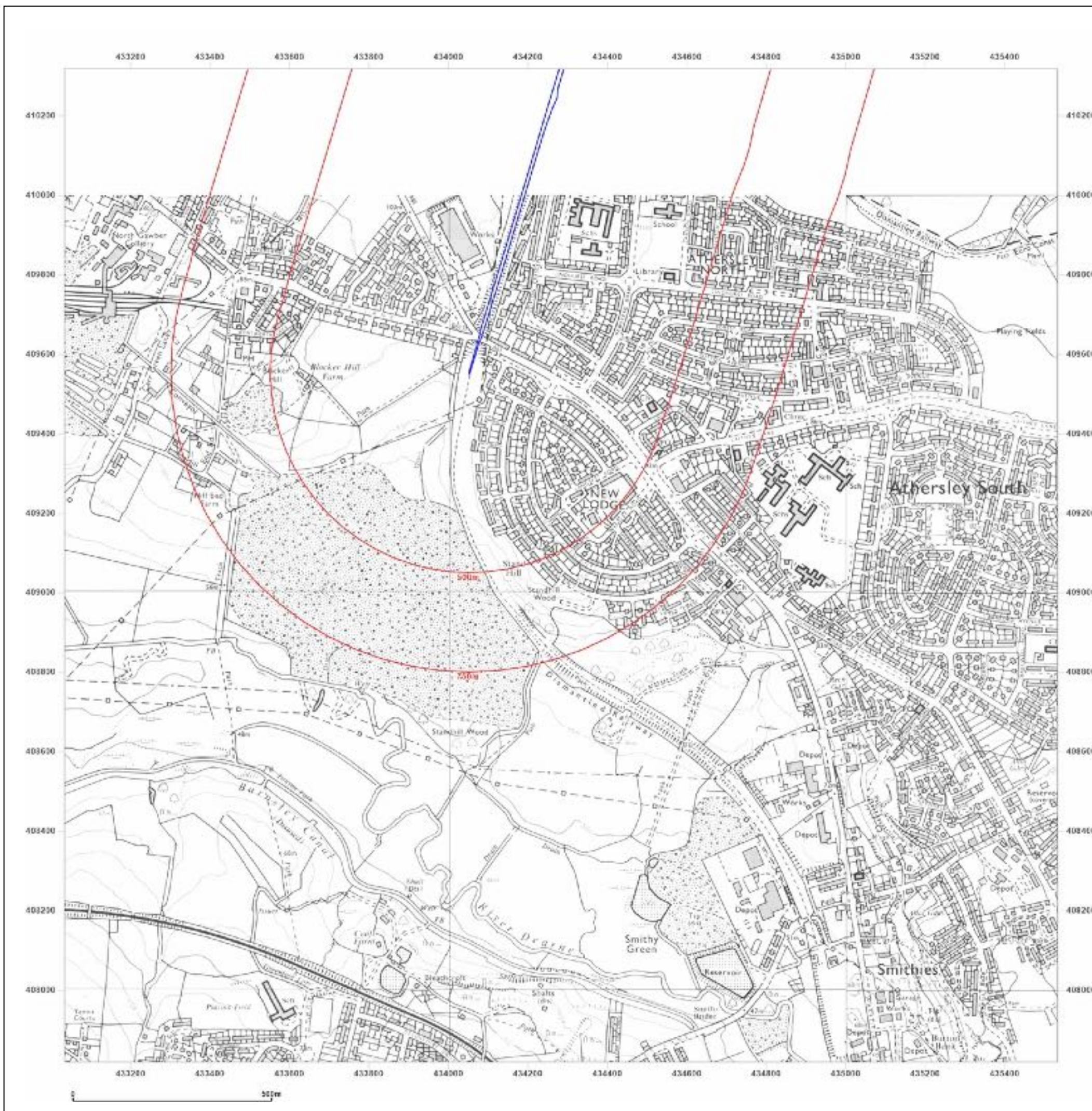


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Client Ref: 151116_-3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: National Grid

Map date: 1989-1993

Scale: 1:10,000

Printed at: 1:10,000



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Surveyed 1992
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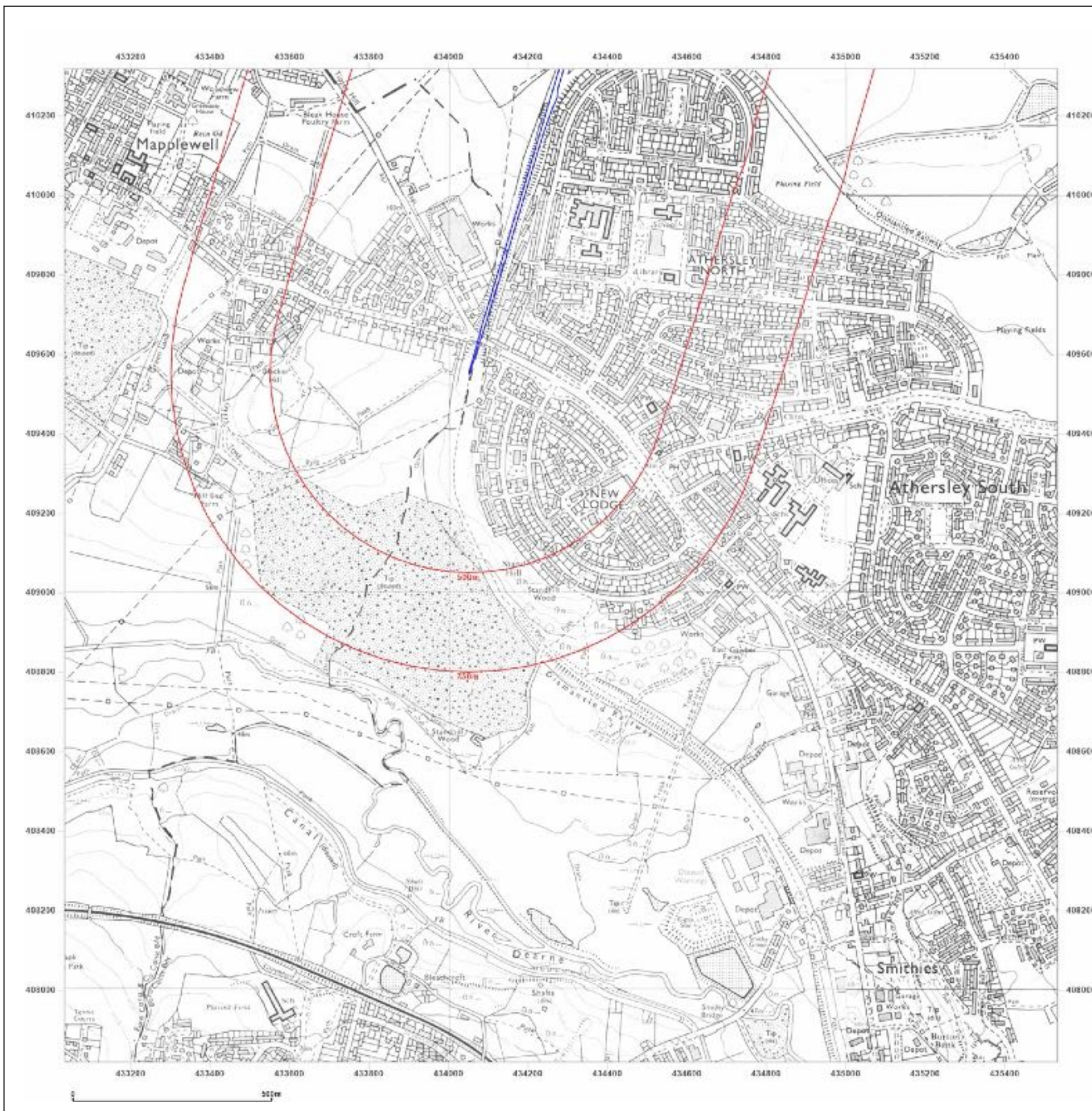


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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: National Grid

Map date: 1989-1990

Scale: 1:10,000

Printed at: 1:10,000



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Edition N/A
Copyright 1990
Levelled 1978

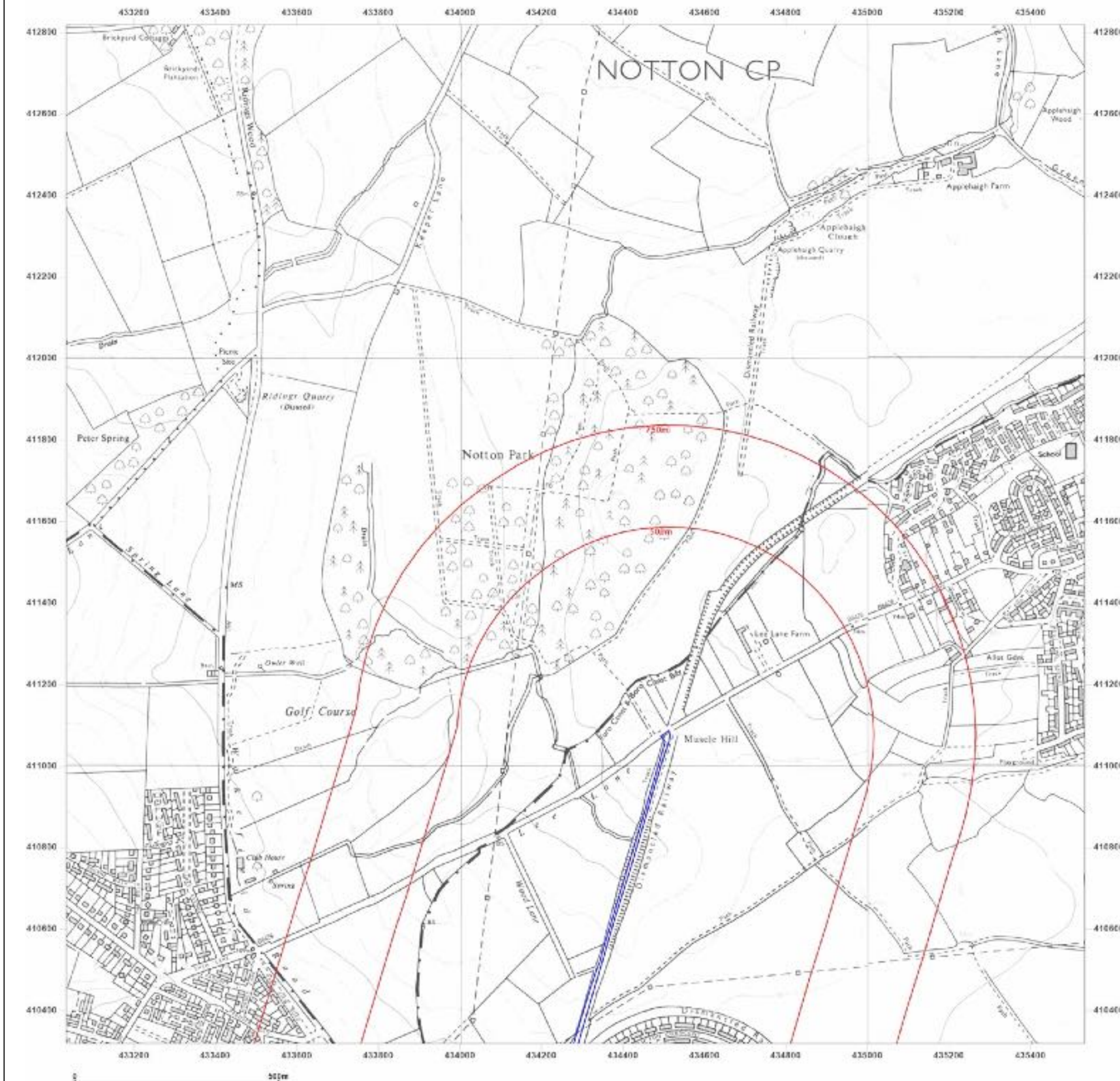


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Site Details:

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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001

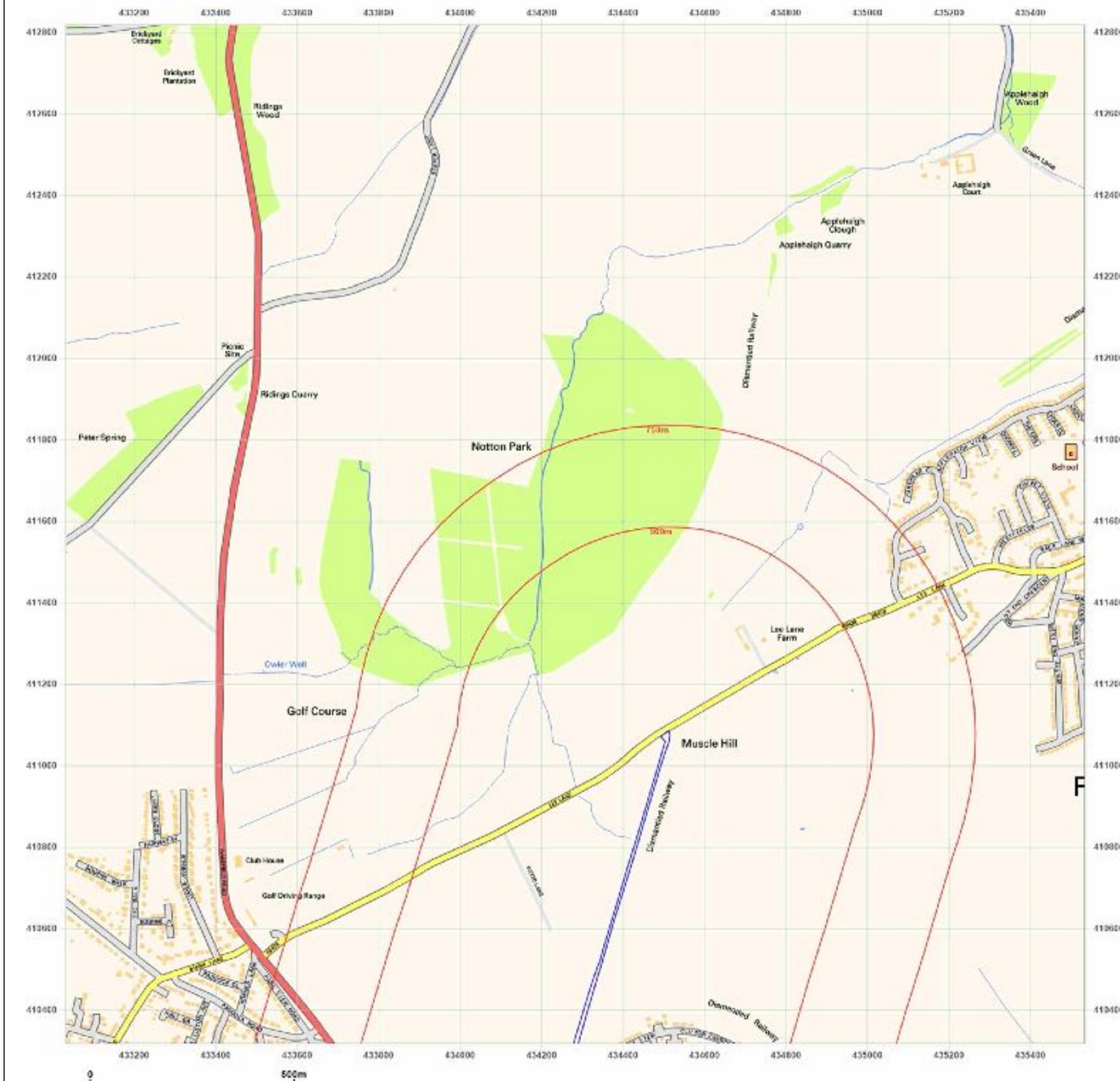


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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001

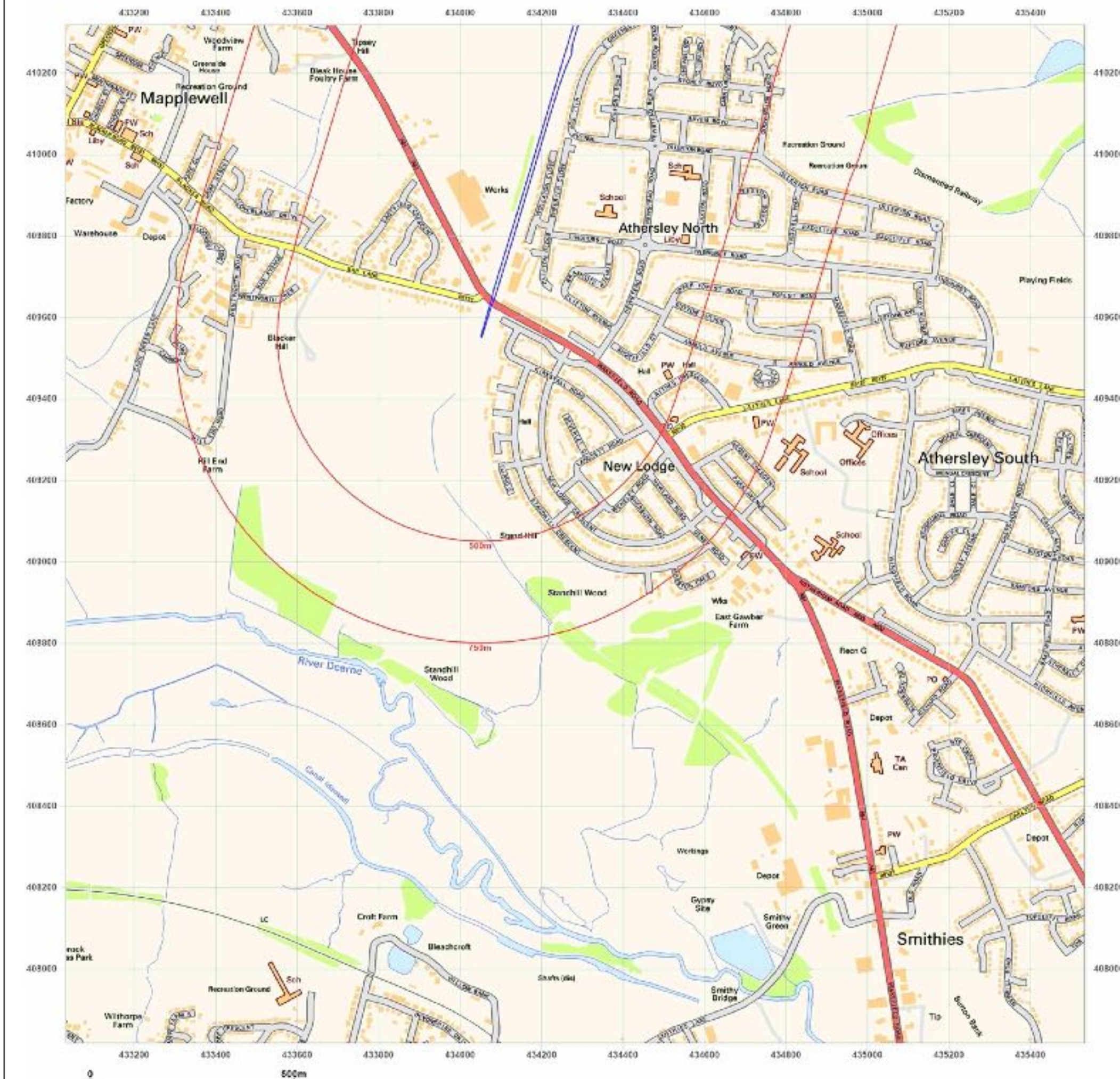


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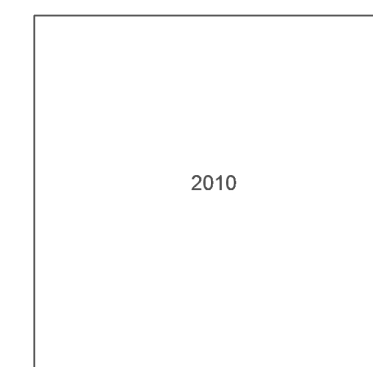
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Grid Ref: 434283, 411568

Map Name: National Grid

Map date: 2010

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Printed at: 1:10,000

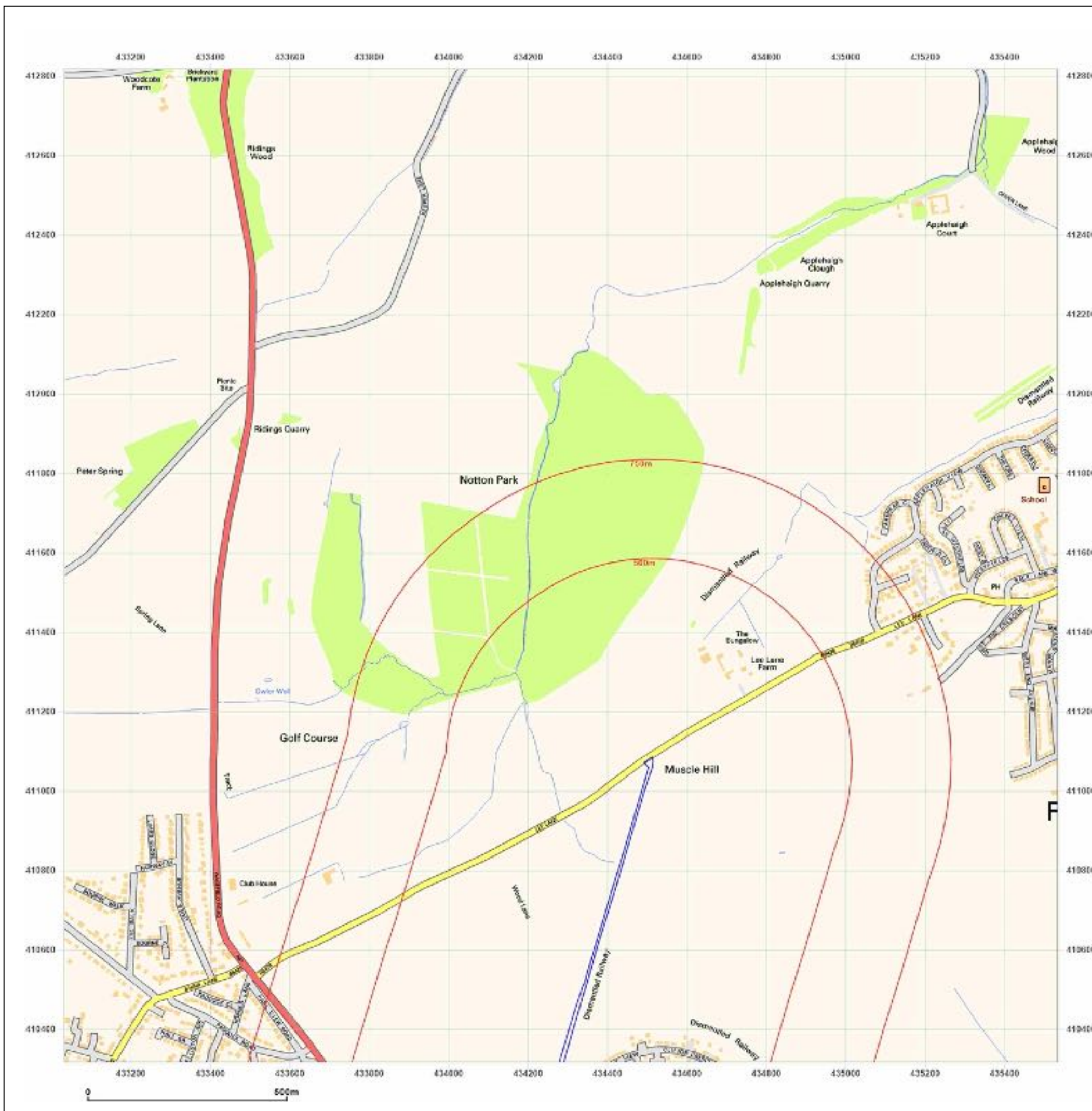


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Site Details:

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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010

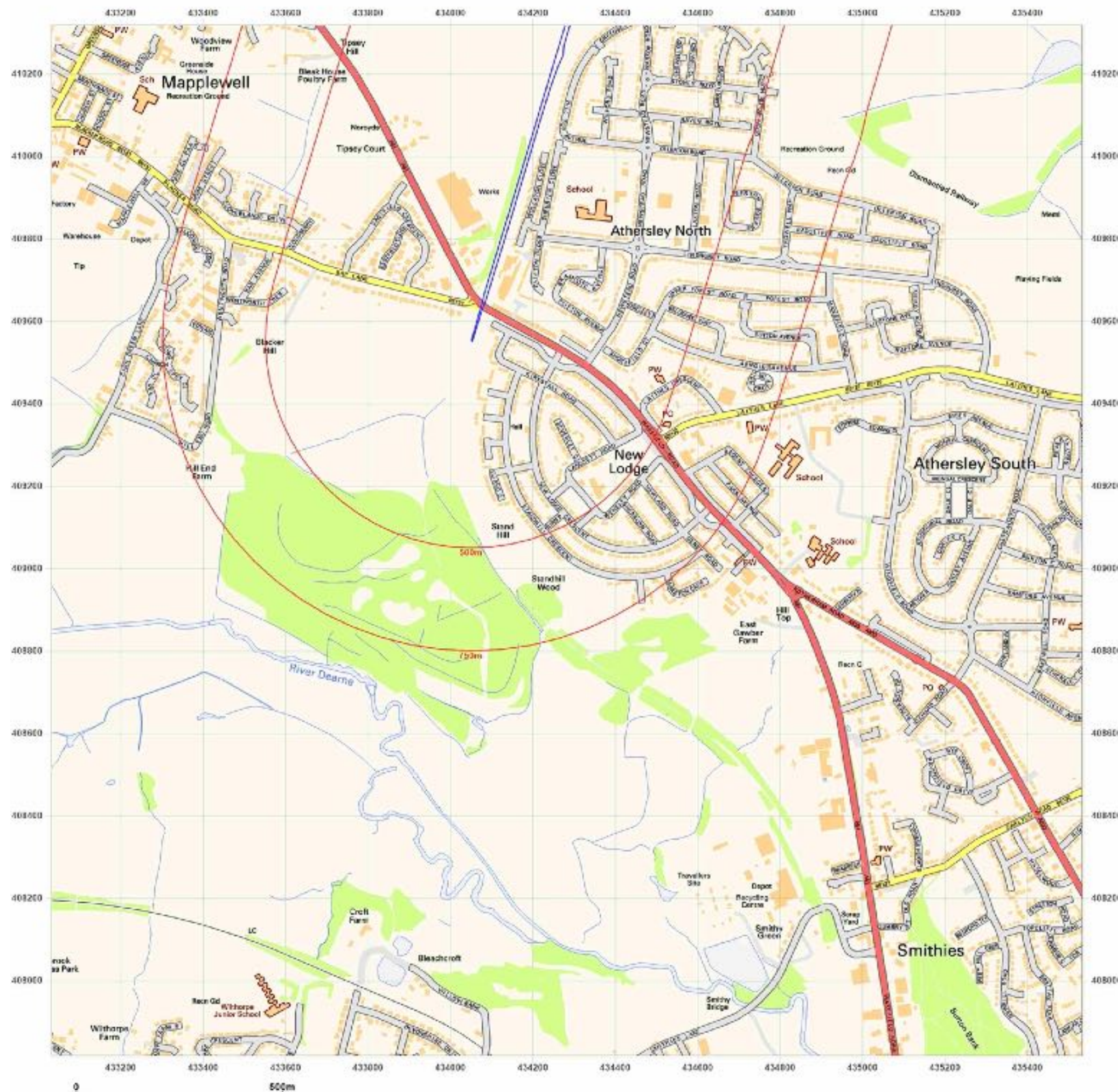


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Site Details:

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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_2
Grid Ref: 434283, 411568

Map Name: National Grid

Map date: 2021

Scale: 1:10,000

Printed at: 1:10,000



2021

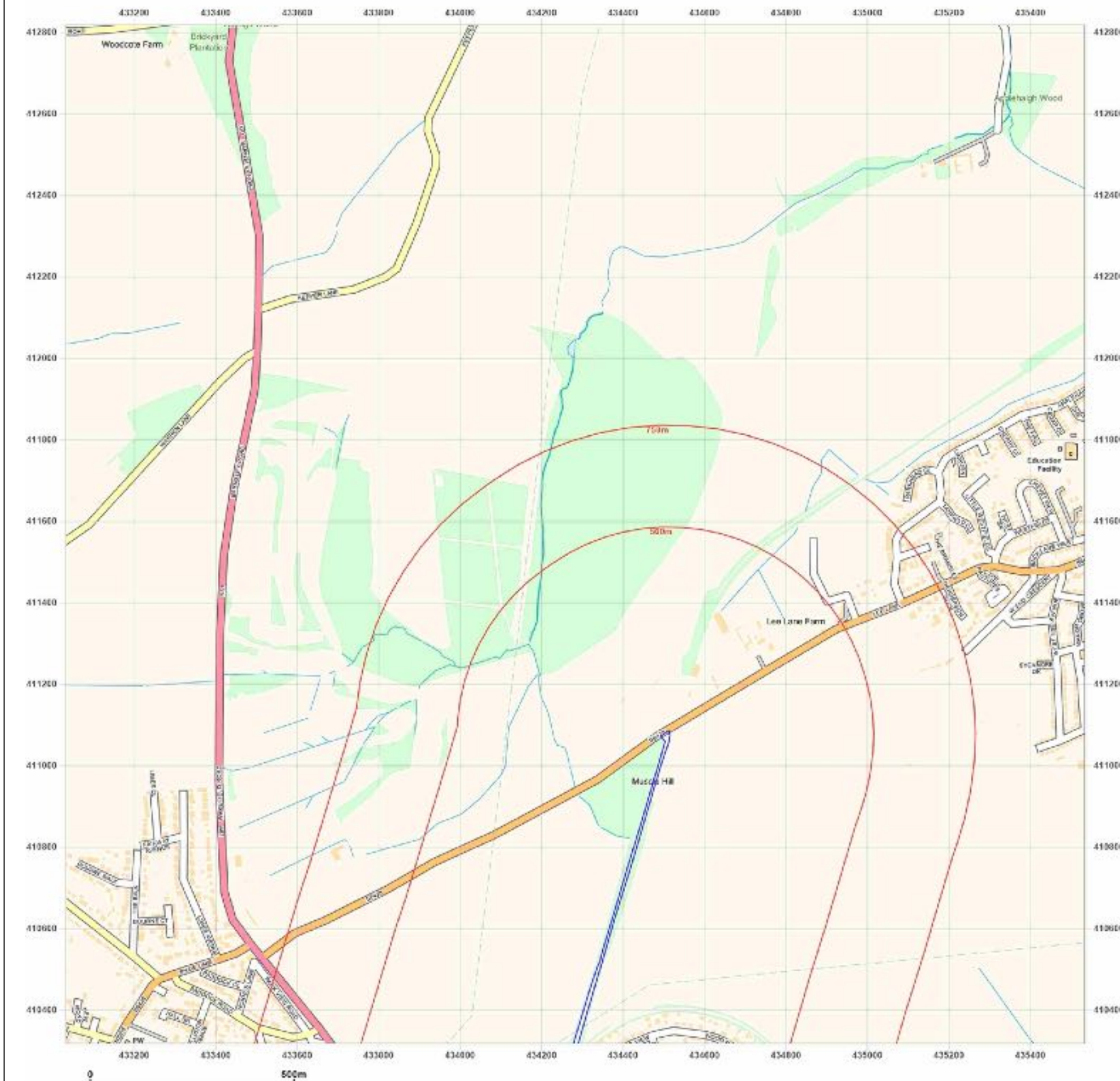


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Site Details:

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Client Ref: 151116_-_3882
Report Ref: GS-8358274_SS_1_1
Grid Ref: 434283, 409068

Map Name: National Grid

Map date: 2021

Scale: 1:10,000

Printed at: 1:10,000



2021

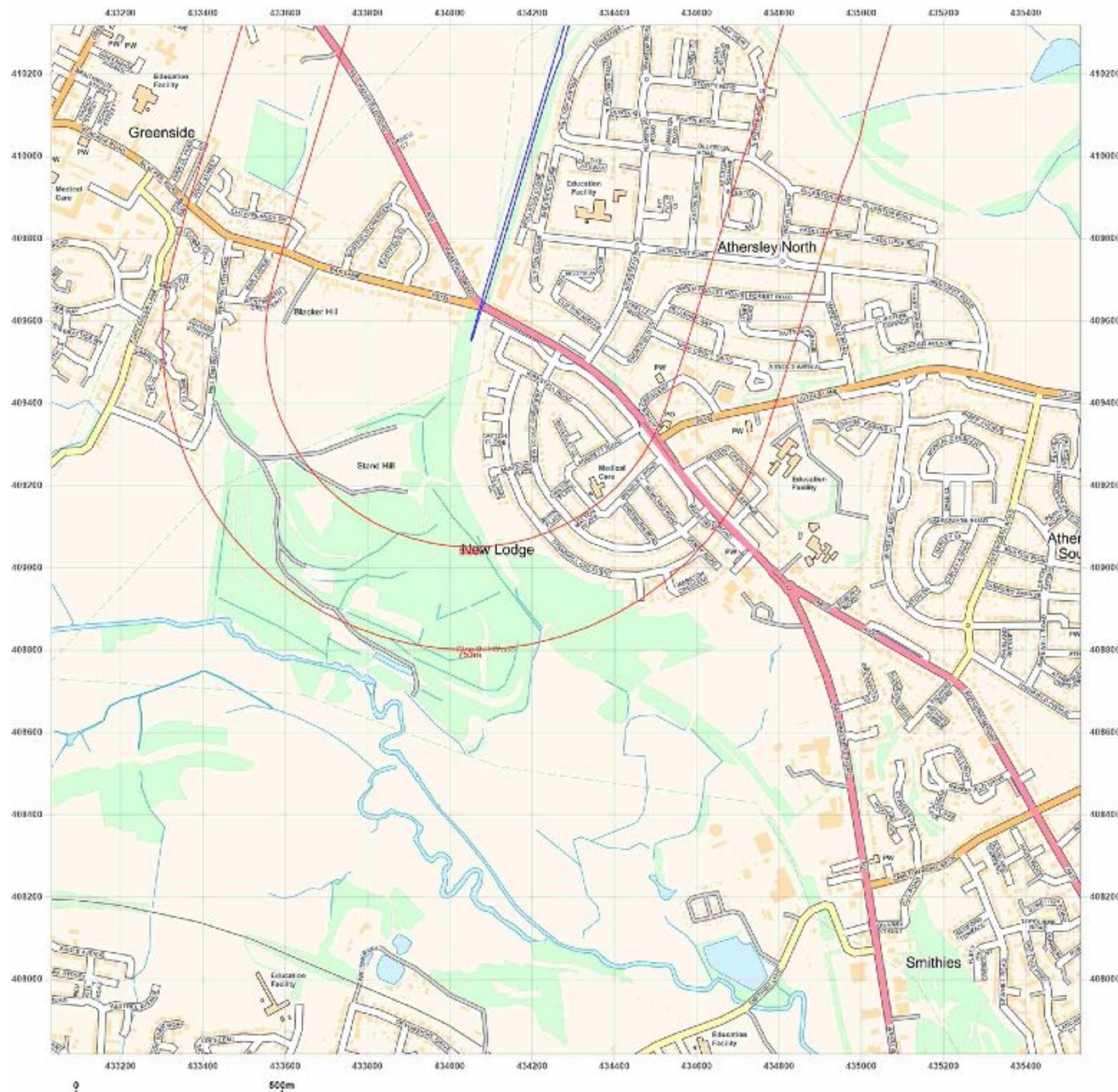


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APPENDIX D - GROUNDSURE ENVIRO INSIGHT REPORT

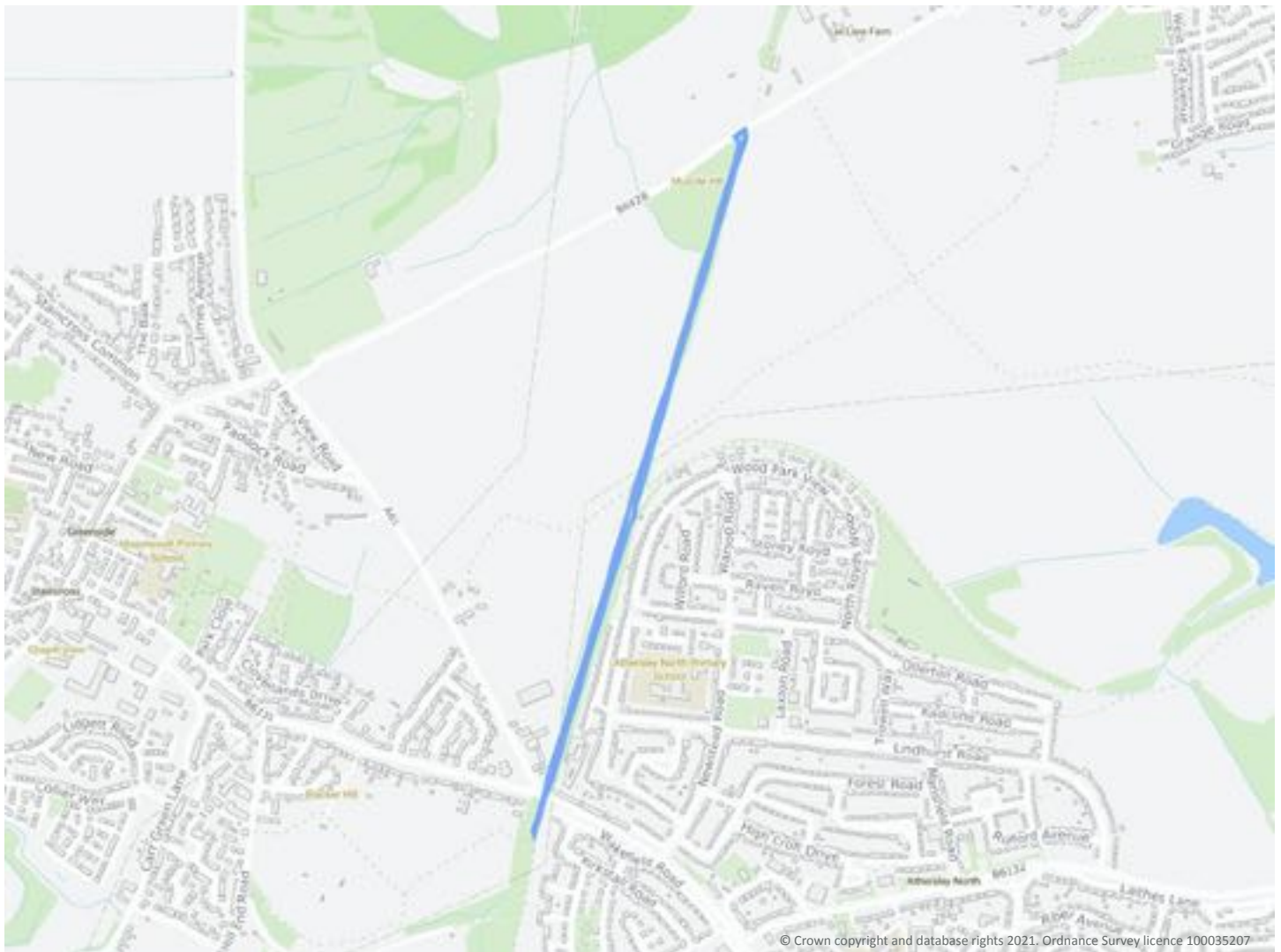
BAR LANE, STAINCROSS, BARNSELEY, S75 6DJ

Order Details

Date: 24/11/2021
Your ref: 151116_-_3882
Our Ref: GS-8358275
Client: Abbeydale BEC

Site Details

Location: 434196 410030
Area: 1.27 ha
Authority: [Barnsley Metropolitan Borough Council](#)



Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.12 groundsure.com/insightuserguide

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	<u>Historical industrial land uses</u>	23	6	5	23	-
16	1.2	<u>Historical tanks</u>	0	1	11	3	-
16	1.3	<u>Historical energy features</u>	0	2	5	5	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	<u>Historical garages</u>	0	3	1	0	-
18	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
19	2.1	<u>Historical industrial land uses</u>	41	13	8	40	-
23	2.2	<u>Historical tanks</u>	0	2	12	5	-
24	2.3	<u>Historical energy features</u>	0	3	10	12	-
25	2.4	Historical petrol stations	0	0	0	0	-
26	2.5	<u>Historical garages</u>	0	5	2	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	Historical landfill (BGS records)	0	0	0	0	-
28	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
28	3.4	<u>Historical landfill (EA/NRW records)</u>	0	1	0	1	-
28	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	10	3	-
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>	0	5	12	-	-
33	4.2	<u>Current or recent petrol stations</u>	0	0	1	0	-
33	4.3	Electricity cables	0	0	0	0	-
33	4.4	Gas pipelines	0	0	0	0	-
33	4.5	Sites determined as Contaminated Land	0	0	0	0	-



33	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
34	4.7	Regulated explosive sites	0	0	0	0	-
34	4.8	Hazardous substance storage/usage	0	0	0	0	-
34	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
34	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
34	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	1	3	1	-
35	4.12	Radioactive Substance Authorisations	0	0	0	0	-
35	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	0	1	-
36	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
36	4.15	Pollutant release to public sewer	0	0	0	0	-
36	4.16	List 1 Dangerous Substances	0	0	0	0	-
36	4.17	List 2 Dangerous Substances	0	0	0	0	-
37	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
37	4.19	Pollution inventory substances	0	0	0	0	-
37	4.20	Pollution inventory waste transfers	0	0	0	0	-
37	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
38	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
40	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
42	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
43	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
44	5.5	Groundwater vulnerability- local information	None (within 0m)				
45	5.6	Groundwater abstractions	0	0	0	0	0
45	5.7	Surface water abstractions	0	0	0	0	0
45	5.8	Potable abstractions	0	0	0	0	0
45	5.9	Source Protection Zones	0	0	0	0	-
46	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
47	6.1	<u>Water Network (OS MasterMap)</u>	0	1	5	-	-



48	6.2	<u>Surface water features</u>	0	1	6	-	-
48	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
49	6.4	<u>WFD Surface water bodies</u>	0	1	0	-	-
49	6.5	<u>WFD Groundwater bodies</u>	2	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
51	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
51	7.2	Historical Flood Events	0	0	0	-	-
51	7.3	Flood Defences	0	0	0	-	-
52	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
52	7.5	Flood Storage Areas	0	0	0	-	-
53	7.6	Flood Zone 2	None (within 50m)				
53	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
54	8.1	<u>Surface water flooding</u>	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding					
56	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
57	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
58	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
58	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
58	10.4	Special Protection Areas (SPA)	0	0	0	0	0
58	10.5	National Nature Reserves (NNR)	0	0	0	0	0
59	10.6	<u>Local Nature Reserves (LNR)</u>	0	0	0	1	0
59	10.7	<u>Designated Ancient Woodland</u>	0	0	0	2	1
59	10.8	Biosphere Reserves	0	0	0	0	0
60	10.9	Forest Parks	0	0	0	0	0
60	10.10	Marine Conservation Zones	0	0	0	0	0
60	10.11	<u>Green Belt</u>	1	0	1	0	0
60	10.12	Proposed Ramsar sites	0	0	0	0	0



61	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
61	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
61	10.15	Nitrate Sensitive Areas	0	0	0	0	0
61	10.16	<u>Nitrate Vulnerable Zones</u>	3	0	1	0	0
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	-	-
65	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
65	11.3	National Parks	0	0	0	-	-
65	11.4	Listed Buildings	0	0	0	-	-
66	11.5	Conservation Areas	0	0	0	-	-
66	11.6	Scheduled Ancient Monuments	0	0	0	-	-
66	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
67	12.1	<u>Agricultural Land Classification</u>	Grade 3 (within 250m)				
68	12.2	Open Access Land	0	0	0	-	-
68	12.3	Tree Felling Licences	0	0	0	-	-
68	12.4	Environmental Stewardship Schemes	0	0	0	-	-
68	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
69	13.1	<u>Priority Habitat Inventory</u>	5	1	1	-	-
70	13.2	Habitat Networks	0	0	0	-	-
70	13.3	<u>Open Mosaic Habitat</u>	0	0	1	-	-
70	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
72	14.1	<u>10k Availability</u>	Identified (within 500m)				
73	14.2	<u>Artificial and made ground (10k)</u>	5	4	2	10	-
75	14.3	<u>Superficial geology (10k)</u>	2	0	0	3	-



76	14.4	Landslip (10k)	0	0	0	0	-
77	14.5	<u>Bedrock geology (10k)</u>	6	1	9	14	-
79	14.6	<u>Bedrock faults and other linear features (10k)</u>	6	6	6	38	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
82	15.1	<u>50k Availability</u>	Identified (within 500m)				
83	15.2	<u>Artificial and made ground (50k)</u>	0	3	1	4	-
84	15.3	<u>Artificial ground permeability (50k)</u>	0	3	-	-	-
85	15.4	<u>Superficial geology (50k)</u>	1	0	0	2	-
86	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
86	15.6	Landslip (50k)	0	0	0	0	-
86	15.7	Landslip permeability (50k)	None (within 50m)				
87	15.8	<u>Bedrock geology (50k)</u>	5	1	7	10	-
89	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
89	15.10	<u>Bedrock faults and other linear features (50k)</u>	5	5	6	18	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
91	16.1	<u>BGS Boreholes</u>	0	1	9	-	-
Page	Section	Natural ground subsidence					
93	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
94	17.2	<u>Running sands</u>	Very low (within 50m)				
96	17.3	<u>Compressible deposits</u>	Moderate (within 50m)				
98	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
99	17.5	<u>Landslides</u>	Low (within 50m)				
101	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
103	18.1	Natural cavities	0	0	0	0	-
104	18.2	<u>BritPits</u>	0	0	1	6	-
105	18.3	<u>Surface ground workings</u>	33	0	8	-	-
107	18.4	<u>Underground workings</u>	0	0	0	0	17
108	18.5	Historical Mineral Planning Areas	0	0	0	0	-



<u>108</u>	<u>18.6</u>	<u>Non-coal mining</u>	6	0	0	2	6
109	18.7	Mining cavities	0	0	0	0	0
110	18.8	JPB mining areas	None (within 0m)				
<u>110</u>	<u>18.9</u>	<u>Coal mining</u>	Identified (within 0m)				
110	18.10	Brine areas	None (within 0m)				
110	18.11	Gypsum areas	None (within 0m)				
110	18.12	Tin mining	None (within 0m)				
111	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<u>112</u>	<u>19.1</u>	<u>Radon</u>	Between 5% and 10% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<u>114</u>	<u>20.1</u>	<u>BGS Estimated Background Soil Chemistry</u>	14	10	-	-	-
115	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
116	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
117	21.1	Underground railways (London)	0	0	0	-	-
117	21.2	Underground railways (Non-London)	0	0	0	-	-
118	21.3	Railway tunnels	0	0	0	-	-
<u>118</u>	<u>21.4</u>	<u>Historical railway and tunnel features</u>	2	1	0	-	-
118	21.5	Royal Mail tunnels	0	0	0	-	-
<u>118</u>	<u>21.6</u>	<u>Historical railways</u>	1	1	0	-	-
119	21.7	Railways	0	0	0	-	-
119	21.8	Crossrail 1	0	0	0	0	-
119	21.9	Crossrail 2	0	0	0	0	-
119	21.10	HS2	0	0	0	0	-



Recent aerial photograph



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Capture Date: 01/07/2018

Site Area: 1.27ha



Recent site history - 2012 aerial photograph



Capture Date: 26/03/2012

Site Area: 1.27ha



Recent site history - 2009 aerial photograph



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Capture Date: 11/09/2009

Site Area: 1.27ha



Recent site history - 1999 aerial photograph



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Capture Date: 10/07/1999

Site Area: 1.27ha



OS MasterMap site plan



Site Area: 1.27ha



1 Past land use



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

1.1 Historical industrial land uses

Records within 500m

57

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

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

ID	Location	Land use	Dates present	Group ID
1	On site	Cuttings	1982	1457969



ID	Location	Land use	Dates present	Group ID
2	On site	Cuttings	1938	1490281
A	On site	Cuttings	1930	1494442
A	On site	Cuttings	1930	1499690
A	On site	Cuttings	1930	1503417
A	On site	Railway Station	1948	1509369
A	On site	Railway Station	1891 - 1904	1521893
A	On site	Railway Station	1930	1531710
A	On site	Cuttings	1930	1532995
A	On site	Railway Station	1938	1551706
B	On site	Cuttings	1930	1479944
B	On site	Cuttings	1951	1480944
B	On site	Cuttings	1891 - 1904	1530004
B	On site	Cuttings	1948	1532120
C	On site	Cuttings	1891 - 1904	1487269
C	On site	Cuttings	1930	1534863
C	On site	Cuttings	1948	1553171
D	On site	Cuttings	1993	1467094
D	On site	Cuttings	1982	1505360
E	On site	Cuttings	1951	1469007
E	On site	Cuttings	1966 - 1973	1517551
F	On site	Cuttings	1990 - 1993	1461348
F	On site	Cuttings	1965 - 1978	1530717
3	2m E	Railway Sidings	1904	1409328
4	7m E	Railway Building	1965	1430417
A	8m E	Unspecified Works	1948 - 1951	1522460
A	12m E	Unspecified Works	1930	1458988
H	17m W	Unspecified Works	1966 - 1993	1535574
A	21m E	Unspecified Works	1938	1468614



ID	Location	Land use	Dates present	Group ID
I	143m S	Cuttings	1938 - 1948	1503614
I	148m S	Cuttings	1904	1485303
I	152m S	Cuttings	1890	1553143
5	159m W	Gravel Pit	1854	1536203
6	211m W	Sandstone Quarry	1854	1488993
L	265m W	Unspecified Pit	1965	1525090
L	267m W	Unspecified Pit	1951	1464127
L	268m W	Unspecified Pit	1891 - 1930	1479072
L	268m W	Unspecified Pit	1948	1535474
L	271m W	Unspecified Pit	1938	1533320
N	333m SW	Refuse Heap	1982	1535594
N	338m S	Unspecified Disused Tip	1993	1420276
O	396m S	Cuttings	1966 - 1973	1533024
O	398m S	Cuttings	1951	1535306
P	422m W	Gravel Pit	1854	1518627
P	426m W	Unspecified Pit	1948	1455277
P	427m W	Unspecified Ground Workings	1951	1468498
P	429m W	Unspecified Ground Workings	1938	1527404
P	430m W	Unspecified Ground Workings	1930	1555874
11	432m W	Unspecified Pit	1891 - 1904	1487159
Q	477m W	Refuse Heap	1982	1506177
Q	477m W	Unspecified Disused Quarry	1951	1449501
Q	478m W	Unspecified Quarry	1891 - 1904	1460647
Q	478m W	Unspecified Quarry	1948	1525157
Q	484m W	Unspecified Disused Tip	1973	1420277
Q	484m W	Refuse Heap	1966	1504387
Q	485m W	Unspecified Quarry	1930	1499035
Q	487m W	Unspecified Quarry	1938	1541615

This data is sourced from Ordnance Survey / Groundsure.



1.2 Historical tanks

Records within 500m

15

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

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

ID	Location	Land use	Dates present	Group ID
A	43m E	Unspecified Tank	1913	239676
H	77m W	Tanks	1996	232682
H	82m W	Tanks	1996	244107
H	82m W	Tanks	1991	248914
H	82m W	Unspecified Tank	1991	228881
H	85m W	Tanks	1996	236287
H	85m W	Unspecified Tank	1991	228875
H	86m W	Tanks	1996	234664
H	86m W	Tanks	1991	247325
H	88m W	Unspecified Tank	1991	228876
H	89m W	Tanks	1991 - 1996	233578
H	89m W	Tanks	1970	232683
M	293m W	Unspecified Tank	1977 - 1993	235975
M	314m W	Unspecified Tank	1977 - 1993	235039
10	405m SE	Unspecified Tank	1892	228870

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

12

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



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

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

ID	Location	Land use	Dates present	Group ID
A	15m E	Electricity Substation	1991 - 1996	139015
A	16m E	Electricity Substation	1970	137187
H	60m W	Electricity Substation	1970	131077
H	79m W	Electricity Substation	1991 - 1996	143164
8	238m E	Electricity Substation	1991 - 1998	143109
J	241m E	Electricity Substation	1991	142720
J	242m E	Electricity Substation	1970 - 1996	140655
K	256m W	Gas Governor	1977	142561
K	258m W	Gas Governor	1991	138151
K	266m W	Electricity Substation	1973 - 1991	141170
K	268m W	Electricity Substation	1977	140764
9	380m E	Electricity Substation	1970 - 1996	134550

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

4

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'.

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

ID	Location	Land use	Dates present	Group ID
G	16m W	Garage	1958	46124
G	23m W	Garage	1991	42161
G	24m W	Garage	1970 - 1996	46242
7	219m E	Garages	1958	45151

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
- Historical garages

2.1 Historical industrial land uses

Records within 500m

102

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

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
A	On site	Cuttings	1948	1532120
A	On site	Cuttings	1904	1530004
A	On site	Cuttings	1891	1530004



ID	Location	Land Use	Date	Group ID
A	On site	Cuttings	1930	1479944
A	On site	Cuttings	1930	1479944
A	On site	Cuttings	1930	1479944
A	On site	Cuttings	1930	1479944
B	On site	Cuttings	1993	1461348
B	On site	Cuttings	1973	1530717
B	On site	Cuttings	1966	1530717
B	On site	Cuttings	1982	1457969
B	On site	Cuttings	1951	1480944
B	On site	Cuttings	1938	1490281
C	On site	Cuttings	1973	1517551
C	On site	Cuttings	1966	1517551
C	On site	Cuttings	1951	1469007
D	On site	Cuttings	1993	1467094
D	On site	Cuttings	1982	1505360
E	On site	Cuttings	1990	1461348
E	On site	Cuttings	1965	1530717
E	On site	Cuttings	1978	1530717
E	On site	Cuttings	1951	1480944
F	On site	Cuttings	1948	1553171
F	On site	Cuttings	1904	1487269
F	On site	Cuttings	1891	1487269
F	On site	Cuttings	1930	1534863
F	On site	Cuttings	1930	1534863
F	On site	Cuttings	1930	1534863
F	On site	Cuttings	1930	1534863
G	On site	Railway Station	1930	1531710
G	On site	Cuttings	1930	1503417



ID	Location	Land Use	Date	Group ID
G	On site	Railway Station	1930	1531710
G	On site	Cuttings	1930	1532995
G	On site	Railway Station	1930	1531710
G	On site	Cuttings	1930	1494442
G	On site	Railway Station	1930	1531710
G	On site	Cuttings	1930	1499690
G	On site	Railway Station	1948	1509369
G	On site	Railway Station	1904	1521893
G	On site	Railway Station	1891	1521893
G	On site	Railway Station	1938	1551706
1	2m E	Railway Sidings	1904	1409328
2	7m E	Railway Building	1965	1430417
G	8m E	Unspecified Works	1951	1522460
G	12m E	Unspecified Works	1930	1458988
G	12m E	Unspecified Works	1930	1458988
G	12m E	Unspecified Works	1930	1458988
G	12m E	Unspecified Works	1930	1458988
G	13m E	Unspecified Works	1948	1522460
I	17m W	Unspecified Works	1993	1535574
I	17m W	Unspecified Works	1973	1535574
I	17m W	Unspecified Works	1966	1535574
I	17m W	Unspecified Works	1982	1535574
G	21m E	Unspecified Works	1938	1468614
J	143m S	Cuttings	1938	1503614
J	148m S	Cuttings	1948	1503614
J	148m S	Cuttings	1904	1485303
J	152m S	Cuttings	1890	1553143
K	159m W	Gravel Pit	1854	1536203



ID	Location	Land Use	Date	Group ID
K	159m W	Gravel Pit	1854	1536203
L	211m W	Sandstone Quarry	1854	1488993
L	211m W	Sandstone Quarry	1854	1488993
Q	265m W	Unspecified Pit	1965	1525090
Q	267m W	Unspecified Pit	1951	1464127
Q	268m W	Unspecified Pit	1948	1535474
Q	268m W	Unspecified Pit	1904	1479072
Q	268m W	Unspecified Pit	1891	1479072
Q	270m W	Unspecified Pit	1930	1479072
Q	270m W	Unspecified Pit	1930	1479072
Q	270m W	Unspecified Pit	1930	1479072
Q	270m W	Unspecified Pit	1930	1479072
Q	271m W	Unspecified Pit	1938	1533320
Q	271m W	Unspecified Pit	1938	1533320
S	333m SW	Refuse Heap	1982	1535594
S	338m S	Unspecified Disused Tip	1993	1420276
U	396m S	Cuttings	1973	1533024
U	396m S	Cuttings	1966	1533024
U	398m S	Cuttings	1951	1535306
V	422m W	Gravel Pit	1854	1518627
V	426m W	Unspecified Pit	1948	1455277
V	427m W	Unspecified Ground Workings	1951	1468498
V	429m W	Gravel Pit	1854	1518627
V	429m W	Unspecified Ground Workings	1938	1527404
V	429m W	Unspecified Ground Workings	1938	1527404
V	430m W	Unspecified Ground Workings	1930	1555874
V	430m W	Unspecified Ground Workings	1930	1555874
V	430m W	Unspecified Ground Workings	1930	1555874



ID	Location	Land Use	Date	Group ID
V	430m W	Unspecified Ground Workings	1930	1555874
W	432m W	Unspecified Pit	1904	1487159
W	432m W	Unspecified Pit	1891	1487159
X	477m W	Refuse Heap	1982	1506177
X	477m W	Unspecified Disused Quarry	1951	1449501
X	478m W	Unspecified Quarry	1948	1525157
X	478m W	Unspecified Quarry	1904	1460647
X	478m W	Unspecified Quarry	1891	1460647
X	484m W	Unspecified Disused Tip	1973	1420277
X	484m W	Refuse Heap	1966	1504387
X	485m W	Unspecified Quarry	1930	1499035
X	485m W	Unspecified Quarry	1930	1499035
X	485m W	Unspecified Quarry	1930	1499035
X	485m W	Unspecified Quarry	1930	1499035
X	487m W	Unspecified Quarry	1938	1541615

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

19

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

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
G	43m E	Unspecified Tank	1913	239676
G	43m E	Unspecified Tank	1913	239676
I	77m W	Tanks	1996	232682
I	82m W	Tanks	1996	244107
I	82m W	Tanks	1991	248914



ID	Location	Land Use	Date	Group ID
I	82m W	Unspecified Tank	1991	228881
I	85m W	Tanks	1996	236287
I	85m W	Unspecified Tank	1991	228875
I	86m W	Tanks	1996	234664
I	86m W	Tanks	1991	247325
I	88m W	Unspecified Tank	1991	228876
I	89m W	Tanks	1996	233578
I	89m W	Tanks	1991	233578
I	89m W	Tanks	1970	232683
R	293m W	Unspecified Tank	1977	235975
R	293m W	Unspecified Tank	1993	235975
R	314m W	Unspecified Tank	1977	235039
R	315m W	Unspecified Tank	1993	235039
3	405m SE	Unspecified Tank	1892	228870

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

25

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

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
G	15m E	Electricity Substation	1996	139015
G	15m E	Electricity Substation	1991	139015
G	16m E	Electricity Substation	1970	137187
I	60m W	Electricity Substation	1970	131077
I	79m W	Electricity Substation	1996	143164
I	79m W	Electricity Substation	1991	143164



ID	Location	Land Use	Date	Group ID
N	238m E	Electricity Substation	1991	143109
N	238m E	Electricity Substation	1994	143109
N	238m E	Electricity Substation	1998	143109
N	238m E	Electricity Substation	1995	143109
O	241m E	Electricity Substation	1991	142720
O	242m E	Electricity Substation	1996	140655
O	243m E	Electricity Substation	1970	140655
P	256m W	Gas Governor	1977	142561
P	258m W	Gas Governor	1991	138151
P	266m W	Electricity Substation	1973	141170
P	267m W	Electricity Substation	1991	141170
P	268m W	Electricity Substation	1977	140764
P	269m W	Electricity Substation	1988	141170
P	269m W	Electricity Substation	1988	141170
P	269m W	Electricity Substation	1989	141170
P	269m W	Electricity Substation	1989	141170
T	380m E	Electricity Substation	1991	134550
T	381m E	Electricity Substation	1996	134550
T	381m E	Electricity Substation	1970	134550

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

7

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

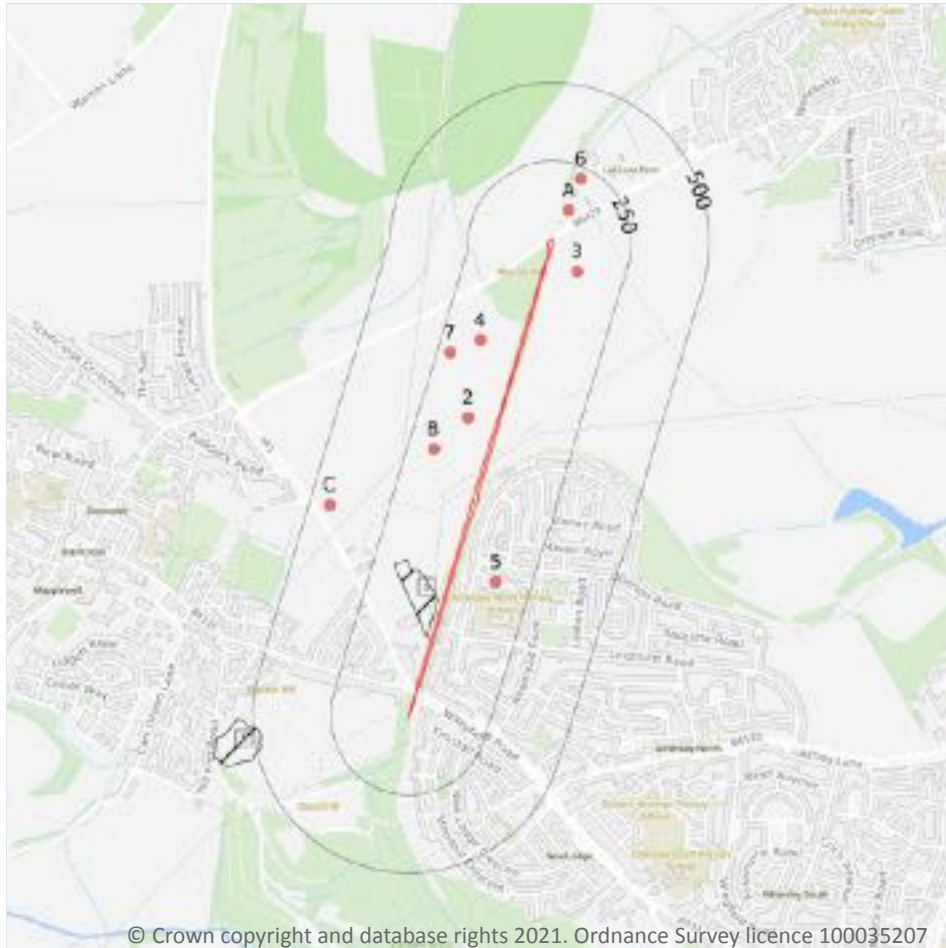
Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
H	16m W	Garage	1958	46124
H	16m W	Garage	1958	46124
H	23m W	Garage	1991	42161
H	24m W	Garage	1996	46242
H	30m W	Garage	1970	46242
M	219m E	Garages	1958	45151
M	233m E	Garages	1958	45151

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



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

3.1 Active or recent landfill

Records within 500m

0

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

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

3.2 Historical landfill (BGS records)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m

0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m

2

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	16m W	Site Address: On waste land to the rear of Subseal Works, Subseal Works, Wakefield Road, Staincross Licence Holder Address: -	Waste Licence: Yes Site Reference: WD20 B364, 4400/B364, 20B364(82) Waste Type: Inert, Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 14/04/1983 Licence Surrender: -	Operator: William Freeman and Company Limited Licence Holder: W Freeman and Company First Recorded 31/12/1962 Last Recorded: 31/12/1994
8	478m W	Site Address: Blacker Hill Quarry, Wentworth Road, Mapplewell, Barnsley Licence Holder Address: 114 Wentworth Road, Mapplewell, Barnsley	Waste Licence: Yes Site Reference: WD20 B278 Waste Type: Inert, Industrial, Commercial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 01/04/1980 Licence Surrender: 06/07/1984	Operator: Mr R Smith Licence Holder: Blacker Hill Quarry Limited First Recorded 01/04/1980 Last Recorded: 31/12/1984

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

13

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
2	93m W	White Gates Rigg Lane PONTEFRACT West Yorkshire WF8 3EF	EPR/HF0608L M/A001	Storing waste exemption	Non- Agricultura l Waste Only	Storage of sludge
3	99m E	-	WEX258051	Storing waste exemption	On a farm	Storage of sludge
A	103m NE	-	WEX265714	Using waste exemption	On a farm	Use of waste for a specified purpose
A	103m NE	-	WEX265714	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
4	128m W	-	WEX254655	Storing waste exemption	On a farm	Storage of sludge
5	137m E	Construction Site Sheerien Close Barnsley South Yorkshire S71 3NQ	EPR/TF0034NB /A001	Using waste exemption	Non- Agricultura l Waste Only	Use of waste in construction
B	169m W	-	WEX148434	Storing waste exemption	On a Farm	Storage of sludge
B	169m W	-	WEX254654	Storing waste exemption	On a farm	Storage of sludge
6	210m NE	The Bungalow Lee Lane Farm Lee Lane BARNSELY South Yorkshire S71 4RT	EPR/GF0308U X/A001	Using waste exemption	Non- Agricultura l Waste Only	Use of waste in construction

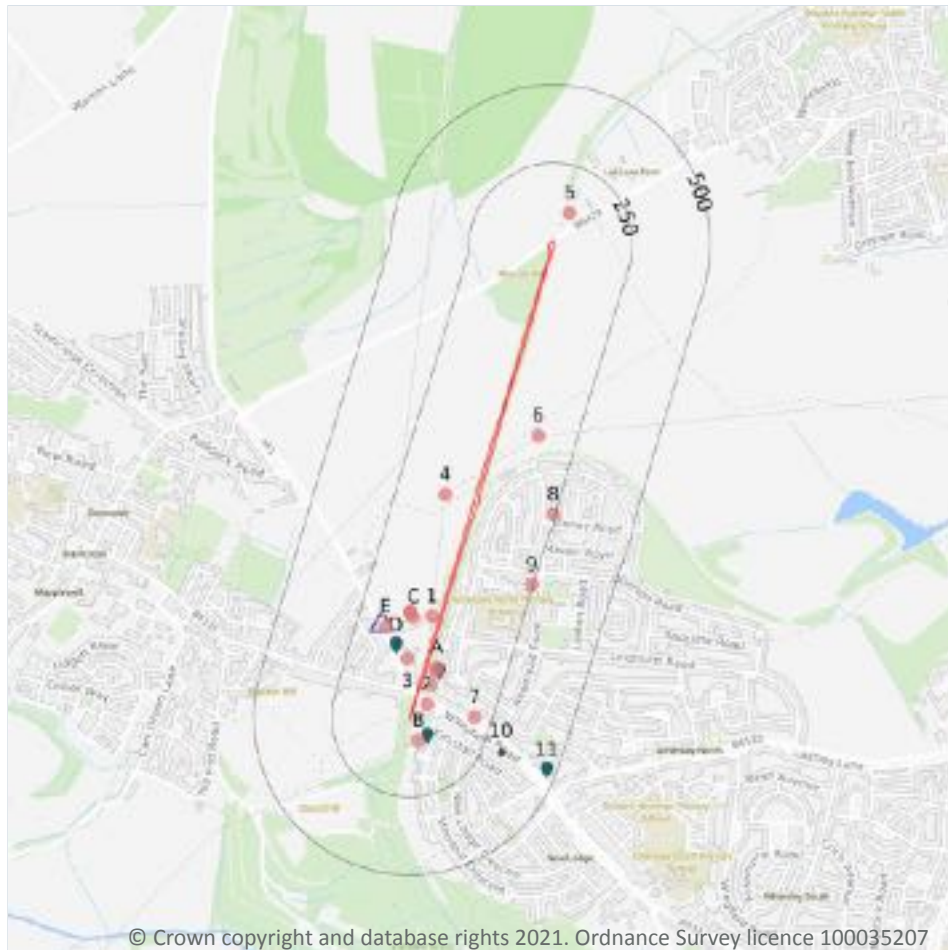


ID	Location	Site	Reference	Category	Sub-Category	Description
7	211m W	White Gates Rigg Lane PONTEFRACT West Yorkshire WF8 3EF	EPR/EH0570U L/A001	Storing waste exemption	Non- Agricultura l Waste Only	Storage of sludge
C	438m W	Mount Farm New Road WAKEFIELD West Yorkshire WF4 2JJ	EPR/PH0676R B/A001	Storing waste exemption	Non- Agricultura l Waste Only	Storage of sludge
C	438m W	Mount Farm New Road WAKEFIELD West Yorkshire WF4 2JJ	EPR/VF0339FF /A001	Storing waste exemption	Non- Agricultura l Waste Only	Storage of sludge
C	438m W	Mount Farm New Road WAKEFIELD West Yorkshire WF4 2JJ	EPR/EF0230V N/A001	Storing waste exemption	Non- Agricultura l 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
- △ Current or recent petrol stations
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters

4.1 Recent industrial land uses

Records within 250m

17

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	24m W	Pylon	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
A	30m E	Works	South Yorkshire, S71	Unspecified Works Or Factories	Industrial Features

ID	Location	Company	Address	Activity	Category
A	32m E	M & S Powder Coating Ltd	439, Wakefield Road, Barnsley, South Yorkshire, S71	Industrial Coatings and Finishings	Industrial Products
A	32m E	24 Hour Or Free	Unit 1 New Lodge Foundry 439, Wakefield Road, Barnsley, South Yorkshire, S71 3LT	Vehicle Repair, Testing and Servicing	Repair and Servicing
2	38m E	Electricity Sub Station	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
3	59m W	D Higgs Transport Ltd	Wakefield Road, Staincross, Barnsley, South Yorkshire, S75 6DJ	Vehicle Repair, Testing and Servicing	Repair and Servicing
B	73m S	Pylon	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
C	80m W	Tanks	South Yorkshire, S75	Tanks (Generic)	Industrial Features
4	94m W	Pylon	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
C	95m W	Tank	South Yorkshire, S75	Tanks (Generic)	Industrial Features
C	95m W	Tanks	South Yorkshire, S75	Tanks (Generic)	Industrial Features
5	104m NE	Muscle Hill Country Store	Lee Lane, Royston, Barnsley, South Yorkshire, S71 4RT	Animal Feeds, Pet Foods, Hay and Straw	Foodstuffs
6	127m E	Pylon	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
E	158m W	Electricity Sub Station	South Yorkshire, S75	Electrical Features	Infrastructure and Facilities
7	195m E	Gas Governor	South Yorkshire, S71	Gas Features	Infrastructure and Facilities
8	243m E	Electricity Sub Station	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
9	246m E	Electricity Sub Station	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.



4.2 Current or recent petrol stations

Records within 500m

1

Open, closed, under development and obsolete petrol stations.

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

ID	Location	Company	Address	LPG	Status
E	176m W	OBSOLETE	Wakefield Road, Mapplewell, Barnsley, South Yorkshire, S75 6DJ	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m

0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m

0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

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

This data is sourced from the Health and Safety Executive.



4.7 Regulated explosive sites

Records within 500m

0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

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

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

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

Records within 500m

5

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

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

ID	Location	Address	Details	
A	41m E	Walter Franks & Son Limited, Wakefield Road, Barnsley, S71 3LU	Process: Non-ferrous Metal Foundry Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
B	75m SE	Walter Franks & Son Ltd, Wakefield Rd, Barnsley, S71 3LU	Process: Non-ferrous Metal Foundry Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
D	108m W	William Freeman Limited, Wakefield Rd, Staincross, Barnsley, S75 6DH	Process: Rubber Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
D	108m W	William Freeman Limited, Wakefield Rd, Staincross, Barnsley, S75 6DH	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
11	467m E	Wakefield Road Dry Cleaners, 315 Wakefield Road, Barnsley, S71 3LR	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m

1

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

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



ID	Location	Address	Details	
10	309m E	TINGLEY CSO, THORPE LANE, TINGLEY, WAKEFIELD, SOUTH YORKSHIRE, WF3 1QY	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/8 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 29/05/1963 Effective Date: 29/05/1963 Revocation Date: 31/03/2005

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

4.14 Pollutant release to surface waters (Red List)

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

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

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

4.15 Pollutant release to public sewer

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

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

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

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

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

4.17 List 2 Dangerous Substances

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

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m**0**

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

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

4.19 Pollution inventory substances

Records within 500m**0**

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

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

4.20 Pollution inventory waste transfers

Records within 500m**0**

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

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

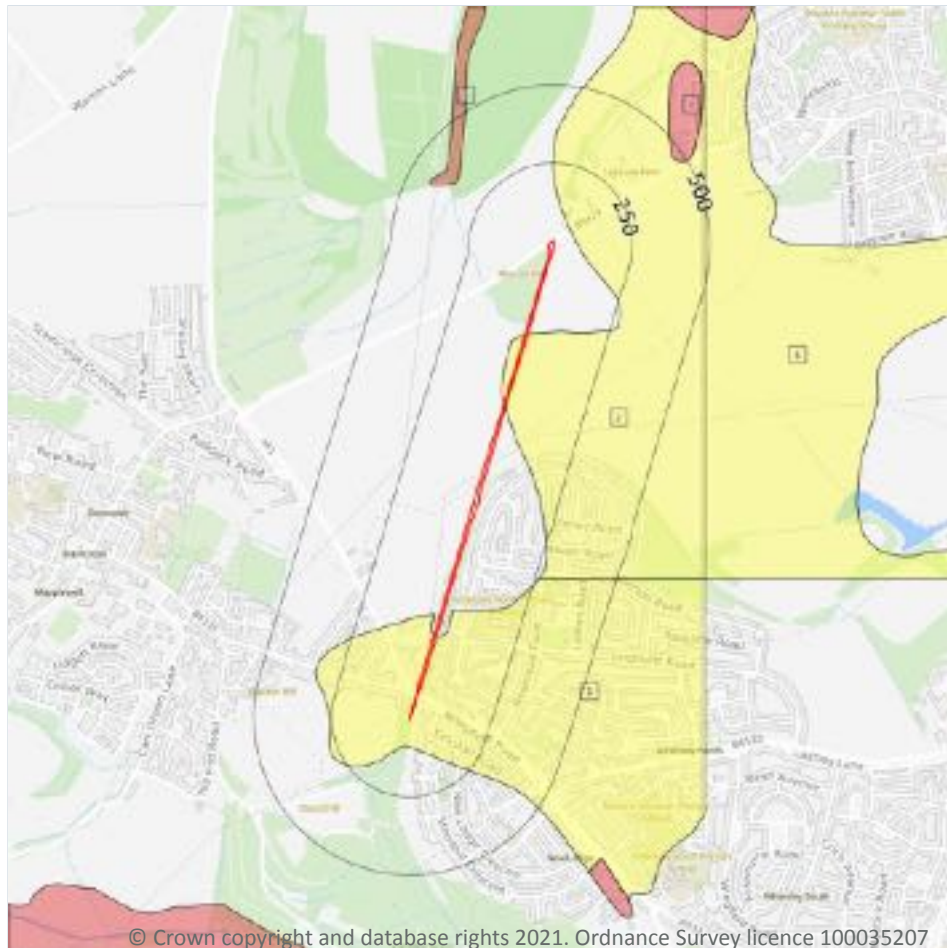
4.21 Pollution inventory radioactive waste

Records within 500m**0**

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

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

5 Hydrogeology - Superficial aquifer



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

5.1 Superficial aquifer

Records within 500m

5

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 38**

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



ID	Location	Designation	Description
3	353m NW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	468m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	485m E	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

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5.2 Bedrock aquifer

Records within 500m

3

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 40**

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

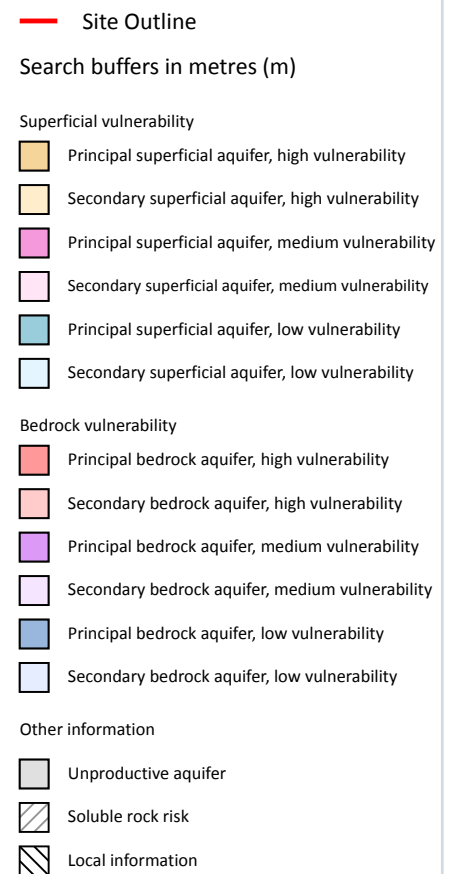


ID	Location	Designation	Description
3	485m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

5

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

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

Features are displayed on the Groundwater vulnerability map on **page 42**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: Low	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: Low	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: Low	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
4	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
5	On site	Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: Low	Vulnerability: Medium 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

5.6 Groundwater abstractions

Records within 2000m

0

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.

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

5.7 Surface water abstractions

Records within 2000m

0

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

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

5.8 Potable abstractions

Records within 2000m

0

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

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

5.9 Source Protection Zones

Records within 500m

0

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

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



5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

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

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



6 Hydrology



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6.1 Water Network (OS MasterMap)

Records within 250m

6

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

Features are displayed on the Hydrology map on **page 47**

ID	Location	Type of water feature	Ground level	Permanence	Name
B	15m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
B	90m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
5	97m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	150m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	219m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	220m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

7

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 47**

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 47**



ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	River WB catchment	Owler Beck from Source to River Calder	GB104027062530	Lower Calder	Aire and Calder

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 47**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
4	16m W	River	Owler Beck from Source to River Calder	GB104027062530	Moderate	Good	Moderate	2016

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

6.5 WFD Groundwater bodies

Records on site	2
------------------------	----------

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

Features are displayed on the Hydrology map on **page 47**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	On site	Don & Rother Millstone grit & Coal Measures	GB40402G992300	Poor	Poor	Good	2015



ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.	<u>GB40402G700400</u>	Poor	Poor	Good	2015

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



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m**0**

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

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

7.2 Historical Flood Events

Records within 250m**0**

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

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

7.3 Flood Defences

Records within 250m**0**

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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

7.5 Flood Storage Areas

Records within 250m

0

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

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

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

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

7.7 Flood Zone 3

Records within 50m

0

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

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

8 Surface water flooding



—	Site Outline
Search buffers in metres (m)	
1 in 1000 return period	
	Depth between 0.1m - 0.3m
	Depth between 0.3m - 1.0m
	Depth greater than 1.0m
1 in 250 return period	
	Depth between 0.1m - 0.3m
	Depth between 0.3m - 1.0m
	Depth greater than 1.0m
1 in 100 return period	
	Depth between 0.1m - 0.3m
	Depth between 0.3m - 1.0m
	Depth greater than 1.0m
1 in 30 return period	
	Depth between 0.1m - 0.3m
	Depth between 0.3m - 1.0m
	Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site

1 in 30 year, Greater than 1.0m

Highest risk within 50m

1 in 30 year, Greater than 1.0m

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

Features are displayed on the Surface water flooding map on **page 54**

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.

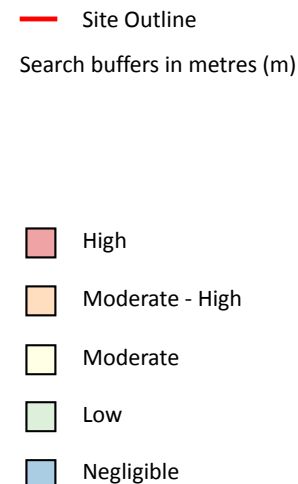
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



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 56**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



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

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m**0**

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m

1

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

Features are displayed on the Environmental designations map on **page 57**

ID	Location	Name	Data source
A	275m NW	Notton Wood	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m

3

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 57**

ID	Location	Name	Woodland Type
A	276m NW	Notton Park	Ancient & Semi-Natural Woodland
3	405m NW	Notton Park	Ancient Replanted Woodland
4	527m W	Notton Park	Ancient Replanted 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**2**

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

Features are displayed on the Environmental designations map on **page 57**

ID	Location	Name	Local Authority name
1	On site	South and West Yorkshire	Barnsley
2	128m NW	South and West Yorkshire	Wakefield

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

4

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	Owler Beck from Source to River Calder NVZ	Surface Water	S268	Existing

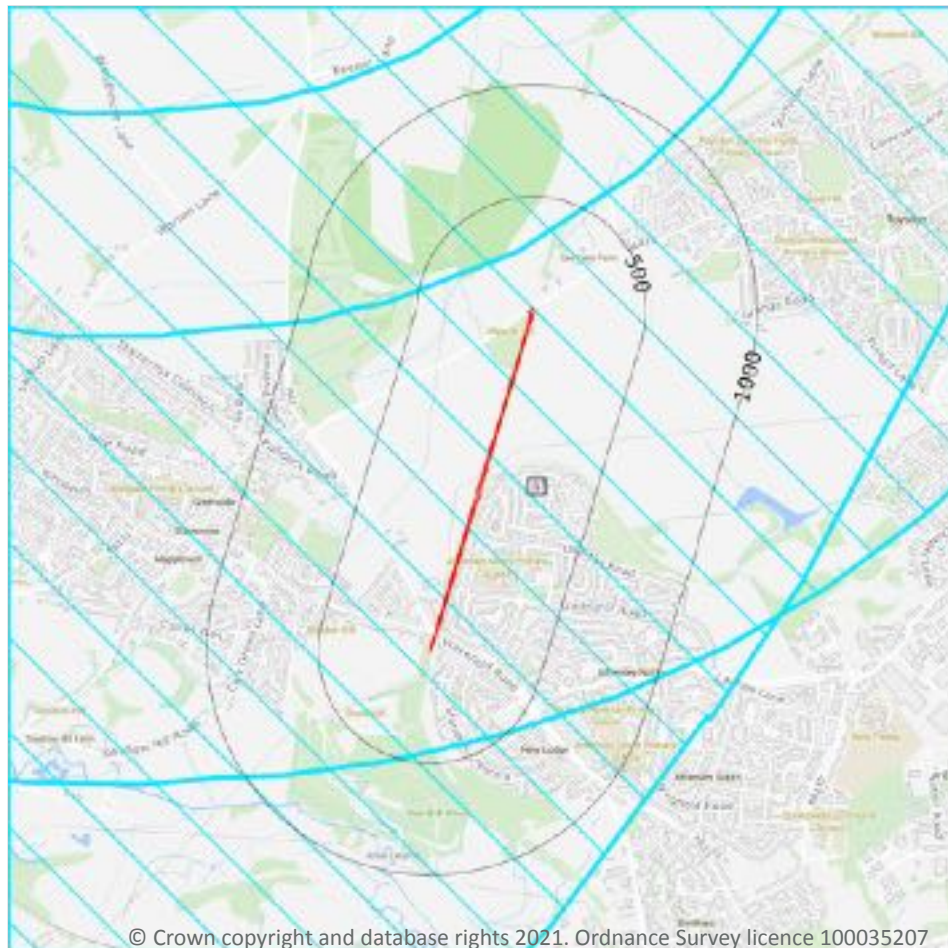


Location	Name	Type	NVZ ID	Status
On site	River Dearne NVZ	Surface Water	S278	Existing
On site	River Dearne NVZ	Surface Water	S278	Existing
91m NW	Owler Beck from Source to River Calder NVZ	Surface Water	S268	Existing

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. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t. Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion

This data is sourced from Natural England.

10.18 SSSI Units

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

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

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m

0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

11.3 National Parks

Records within 250m

0

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

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

11.4 Listed Buildings

Records within 250m

0

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



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

11.5 Conservation Areas

Records within 250m

0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m

0

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

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

11.7 Registered Parks and Gardens

Records within 250m

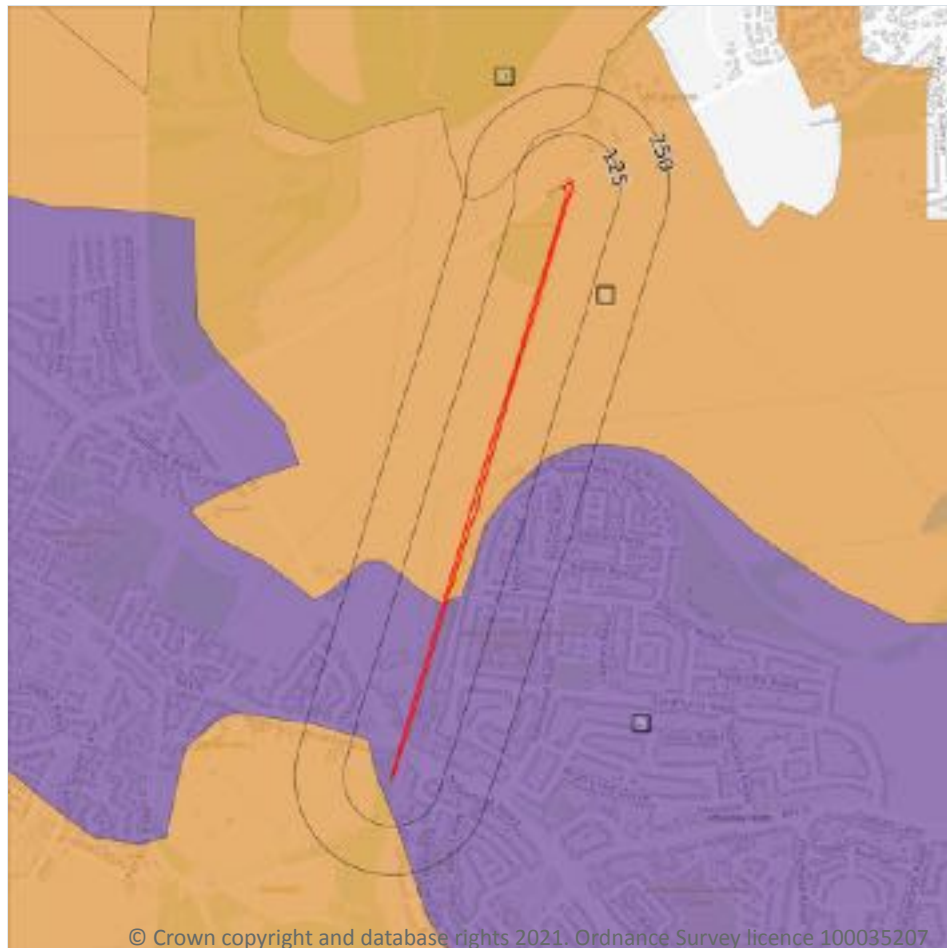
0

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

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



12 Agricultural designations



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

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12.1 Agricultural Land Classification

Records within 250m

3

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

Features are displayed on the Agricultural designations map on **page 67**

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



ID	Location	Classification	Description
3	127m NW	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m

0

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

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

12.3 Tree Felling Licences

Records within 250m

0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

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

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m

0

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

This data is sourced from Natural England.



13 Habitat designations



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

13.1 Priority Habitat Inventory

Records within 250m

7

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 69**

ID	Location	Main Habitat	Other habitats
1	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	On site	No main habitat but additional habitats present	Additional: DWOOD (INV 50%)
A	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)



ID	Location	Main Habitat	Other habitats
A	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	7m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	129m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0
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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	1
----------------------------	----------

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.

Features are displayed on the Habitat designations map on **page 69**

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
5	67m W	BRITPITS ref: 26005	Low	British Geological Survey BRITPITS database	UK Perspectives Aerial Photography	-

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m	0
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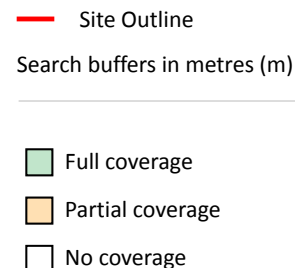
Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to

remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



14.1 10k Availability

Records within 500m

3

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 72**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	SE30NW
2	On site	Full	Full	Full	No coverage	SE31SW
3	485m E	Full	Full	Full	No coverage	SE31SE

This data is sourced from the British Geological Survey.



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



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

14.2 Artificial and made ground (10k)

Records within 500m

21

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

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 73**

ID	Location	LEX Code	Description	Rock description
1	On site	WGR-VOID	Worked Ground (Undivided)	Void
2	On site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	On site	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	On site	WGR-VOID	Worked Ground (Undivided)	Void

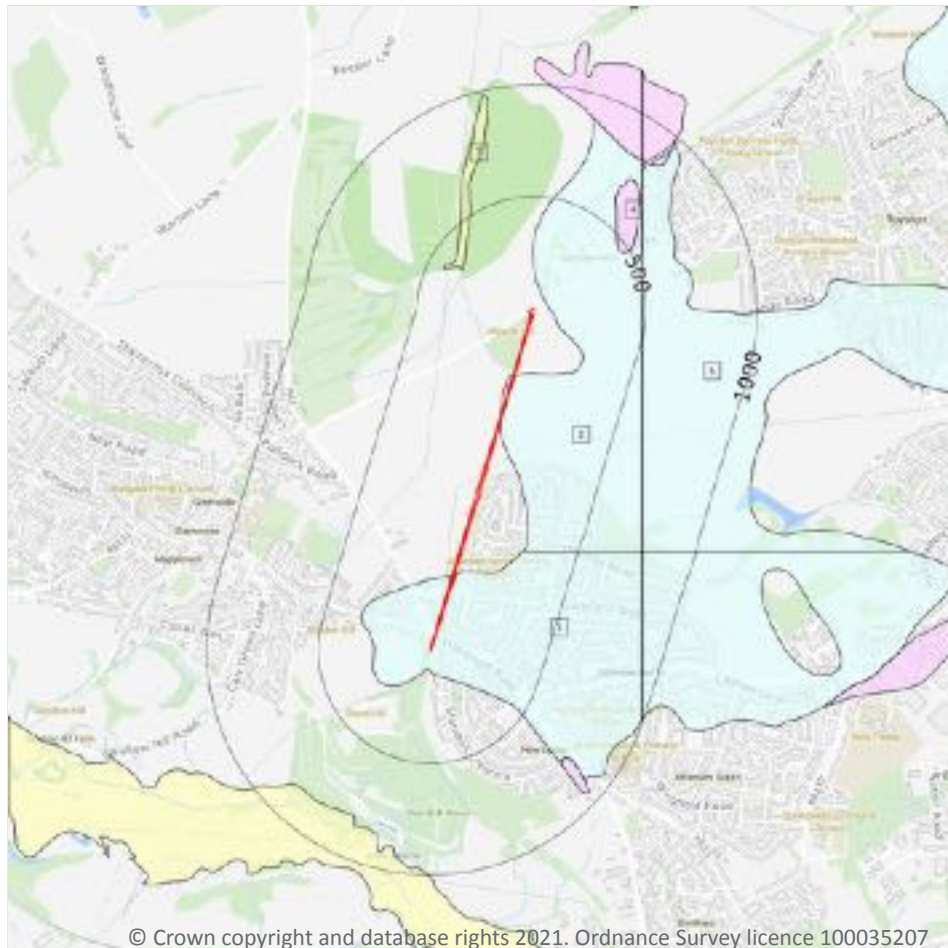


ID	Location	LEX Code	Description	Rock description
5	On site	WGR-VOID	Worked Ground (Undivided)	Void
A	13m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	13m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	20m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
8	46m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	74m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
9	157m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	261m SW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
11	276m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
12	328m SW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
13	348m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
14	349m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
15	418m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	479m S	WMGR-ARTDP	Infilled Ground	Artificial Deposit
16	484m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
17	489m W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
18	496m S	WGR-VOID	Worked Ground (Undivided)	Void

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



— Site Outline

Search buffers in metres (m)

▨ Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m

5

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	On site	TILMP-DMTN	Till, Mid Pleistocene - Diamicton	Diamicton
2	On site	TILMP-DMTN	Till, Mid Pleistocene - Diamicton	Diamicton
3	349m NW	ALV-XCZ	Alluvium - Clay And Silt	Clay And Silt



ID	Location	LEX Code	Description	Rock description
4	466m NE	GFDMP-XSV	Glaciofluvial Deposits, Mid Pleistocene - Sand And Gravel	Sand And Gravel
5	485m E	TILMP-DMTN	Till, Mid Pleistocene - 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

30

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	On site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovan Sub-age - Duckmantian Sub-age
3	On site	WE-SDST	Woolley Edge Rock - Sandstone	Duckmantian Sub-age
4	On site	OR-SDST	Oaks Rock - Sandstone	Duckmantian Sub-age



ID	Location	LEX Code	Description	Rock age
5	On site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
11	On site	OR-SDST	Oaks Rock - Sandstone	Duckmantian Sub-age
12	On site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
18	38m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
20	51m E	ACR-SDST	Ackton Rock - Sandstone	Bolsovia Sub-age
21	82m W	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
24	108m W	CRRO-SDST	Crigglestone Rock - Sandstone	Duckmantian Sub-age
25	128m S	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
27	134m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
28	165m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
31	175m S	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
33	201m W	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
34	220m W	WE-SDST	Woolley Edge Rock - Sandstone	Duckmantian Sub-age
37	259m E	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
39	268m W	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
41	274m E	OR-SDST	Oaks Rock - Sandstone	Duckmantian Sub-age
43	288m W	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
67	380m W	WE-SDST	Woolley Edge Rock - Sandstone	Duckmantian Sub-age
69	389m W	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
70	401m W	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age



ID	Location	LEX Code	Description	Rock age
71	406m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
76	436m SE	WE-SDST	Woolley Edge Rock - Sandstone	Duckmantian Sub-age
77	443m W	KNR-SDST	Kent's Rock - Sandstone	Duckmantian Sub-age
78	461m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
82	485m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
84	487m E	OR-SDST	Oaks Rock - Sandstone	Duckmantian Sub-age
85	490m E	PMCM-SDST	Pennine Middle Coal Measures Formation - 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	56
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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
2	On site	ROCK	Coal seam, inferred
6	On site	ROCK	Coal seam, inferred
7	On site	ROCK	Coal seam, inferred
8	On site	ROCK	Coal seam, inferred
9	On site	FAULT	Normal fault, inferred
10	On site	FOSSIL_HORIZON	Fossil horizon, marine band
13	8m W	ROCK	Coal seam, inferred
14	14m E	ROCK	Coal seam, inferred
15	20m W	ROCK	Coal seam, observed
16	25m E	FOSSIL_HORIZON	Fossil horizon, marine band



ID	Location	Category	Description
17	31m W	FOSSIL_HORIZON	Fossil horizon, marine band
19	42m E	FOSSIL_HORIZON	Fossil horizon, marine band
22	84m W	FOSSIL_HORIZON	Fossil horizon, marine band
23	102m W	ROCK	Coal seam, inferred
26	132m E	FAULT	Normal fault, inferred
29	166m E	ROCK	Coal seam, inferred
30	175m S	ROCK	Coal seam, observed
32	197m SW	ROCK	Coal seam, inferred
35	252m E	ROCK	Coal seam, inferred
36	257m E	FOSSIL_HORIZON	Fossil horizon, marine band
38	261m SW	ROCK	Coal seam, observed
40	268m W	FAULT	Normal fault, inferred
42	276m W	ROCK	Coal seam, observed
44	288m W	FAULT	Normal fault, inferred
45	297m E	FAULT	Normal fault, inferred
46	307m W	FOSSIL_HORIZON	Fossil horizon, marine band
47	309m W	ROCK	Coal seam, inferred
48	319m S	FAULT	Normal fault, observed
49	323m W	ROCK	Coal seam, inferred
50	328m SW	ROCK	Coal seam, observed
51	335m SW	ROCK	Coal seam, observed
52	336m E	FAULT	Normal fault, inferred
53	344m S	ROCK	Coal seam, inferred
54	348m W	ROCK	Coal seam, observed
55	349m W	ROCK	Coal seam, observed
56	349m SW	FOSSIL_HORIZON	Fossil horizon, marine band
57	350m S	ROCK	Coal seam, observed
58	350m S	ROCK	Coal seam, observed

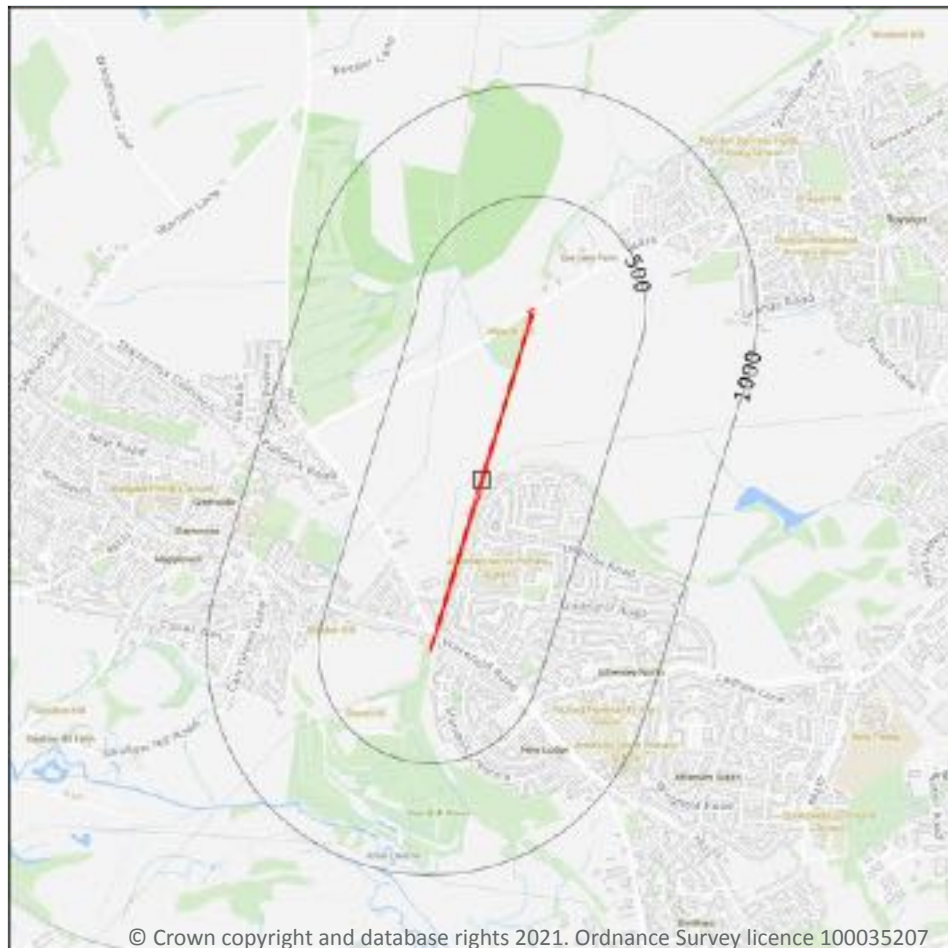


ID	Location	Category	Description
59	350m S	ROCK	Coal seam, observed
60	351m S	ROCK	Coal seam, observed
61	355m S	FOSSIL_HORIZON	Fossil horizon, marine band
62	356m SW	ROCK	Coal seam, observed
63	358m SW	ROCK	Coal seam, observed
64	363m S	ROCK	Coal seam, observed
65	370m W	ROCK	Coal seam, inferred
66	375m W	ROCK	Coal seam, observed
68	384m S	ROCK	Coal seam, observed
72	407m W	ROCK	Coal seam, inferred
73	432m S	ROCK	Coal seam, inferred
74	434m W	ROCK	Coal seam, inferred
75	436m SE	FAULT	Normal fault, inferred
79	468m SW	ROCK	Coal seam, observed
80	479m S	ROCK	Coal seam, observed
81	479m W	ROCK	Coal seam, observed
83	487m E	FAULT	Normal fault, inferred
86	494m S	ROCK	Coal seam, observed

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.

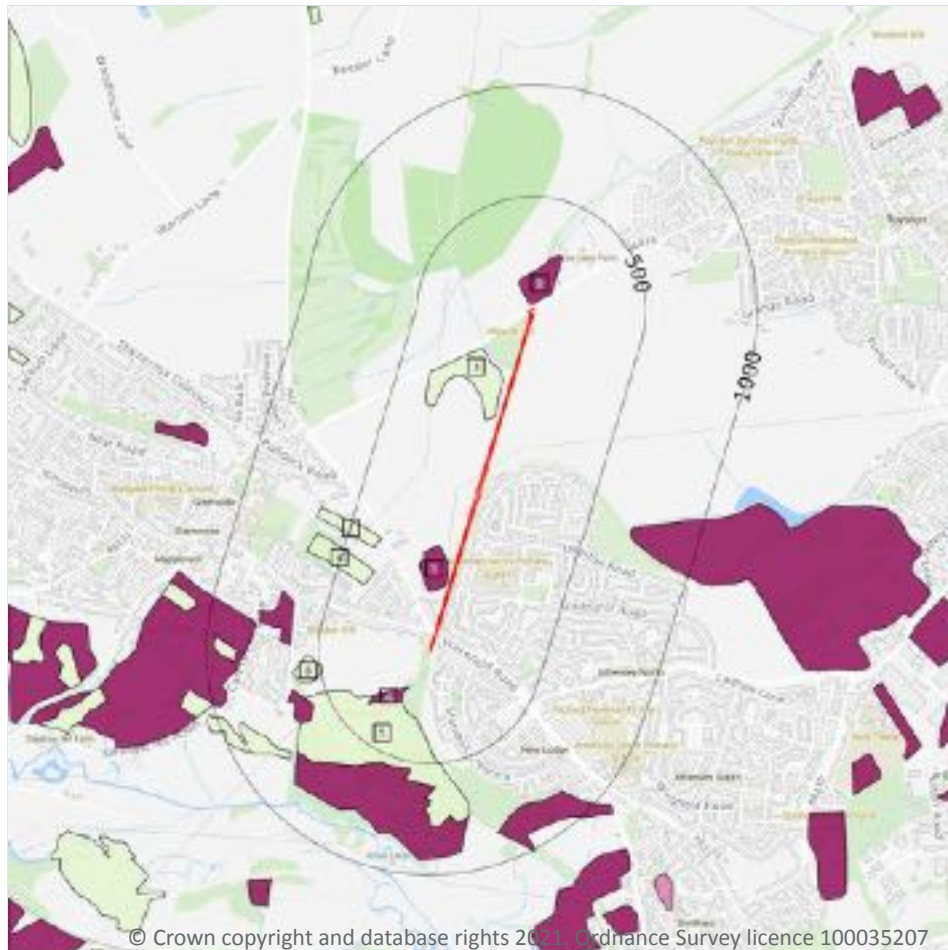
Features are displayed on the Geology 1:50,000 scale - Availability map on **page 82**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	Full	EW087_barnsley_v4

This data is sourced from the British Geological Survey.



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



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

15.2 Artificial and made ground (50k)

Records within 500m

8

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 83**

ID	Location	LEX Code	Description	Rock description
1	15m W	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	20m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	22m W	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
4	185m SW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

ID	Location	LEX Code	Description	Rock description
5	260m SW	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
6	337m W	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
7	348m W	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
8	490m W	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

3

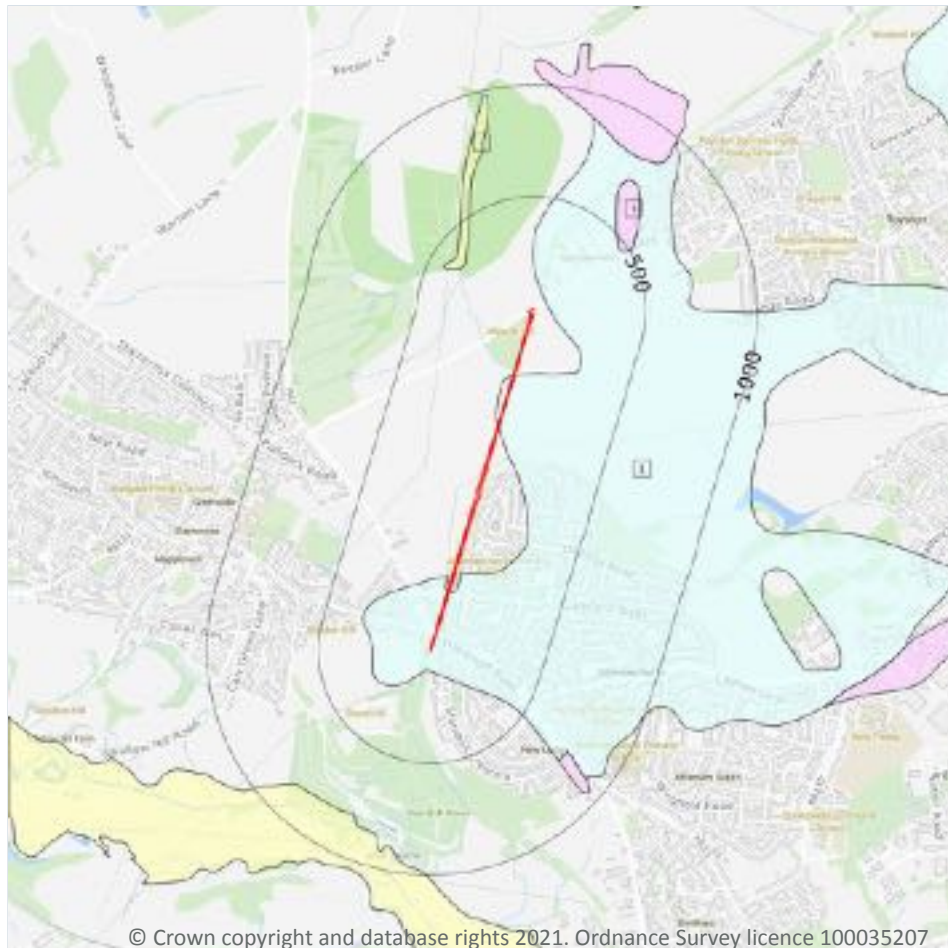
A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
15m SW	Mixed	Very High	Low
20m N	Mixed	Very High	Low
22m N	Mixed	Very High	Low

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m

3

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 85**

ID	Location	LEX Code	Description	Rock description
1	On site	TILMP-DMTN	TILL, MID PLEISTOCENE	DIAMICTON
2	353m NW	ALV-XCZ	ALLUVIUM	CLAY AND SILT
3	468m NE	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m

2

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

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

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

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

15.8 Bedrock geology (50k)

Records within 500m

23

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 87**

ID	Location	LEX Code	Description	Rock age
1	On site	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE	WESTPHALIAN
3	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
4	On site	OR-SDST	OAKS ROCK - SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
9	On site	OR-SDST	OAKS ROCK - SANDSTONE	WESTPHALIAN
10	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	38m E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
17	51m E	ACR-SDST	ACKTON ROCK - SANDSTONE	WESTPHALIAN
18	82m W	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
22	134m E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
23	165m E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
26	201m W	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
28	214m W	CRRO-SDST	CRIGGLESTONE ROCK - SANDSTONE	WESTPHALIAN
29	220m W	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE	WESTPHALIAN
31	260m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
33	261m E	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
35	269m W	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
45	380m W	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE	WESTPHALIAN
49	389m W	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
50	406m E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
51	408m W	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
54	436m SE	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE	WESTPHALIAN
56	439m W	KNR-SDST	KENT'S ROCK - SANDSTONE	WESTPHALIAN
57	461m E	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

6

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

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

34

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 87**

ID	Location	Category	Description
2	On site	FAULT	Fault, inferred
5	On site	ROCK	Coal seam, inferred
6	On site	ROCK	Coal seam, inferred
7	On site	ROCK	Coal seam, inferred
8	On site	ROCK	Coal seam, inferred
11	22m W	ROCK	Coal seam, inferred
12	22m W	ROCK	Coal seam, inferred
13	32m W	ROCK	Coal seam, inferred
14	36m W	ROCK	Coal seam, inferred

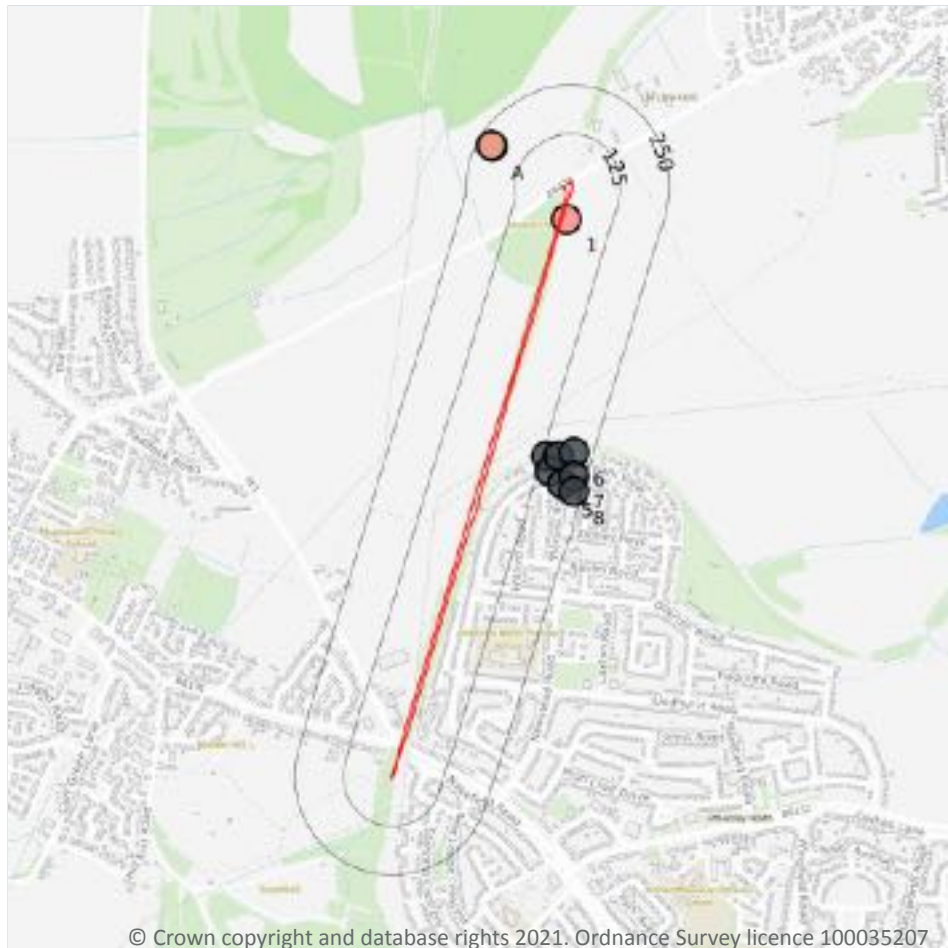


ID	Location	Category	Description
16	38m E	FOSSIL_HORIZON	Marine band
19	83m W	ROCK	Coal seam, inferred
20	129m S	ROCK	Coal seam, inferred
21	132m E	FAULT	Fault, inferred
24	166m E	ROCK	Coal seam, inferred
25	185m SW	ROCK	Coal seam, inferred
27	214m W	ROCK	Coal seam, inferred
30	256m E	ROCK	Coal seam, inferred
32	260m SW	ROCK	Coal seam, inferred
34	269m W	FAULT	Fault, inferred
36	307m W	ROCK	Coal seam, inferred
37	317m S	ROCK	Coal seam, inferred
38	318m W	ROCK	Coal seam, inferred
39	336m E	FAULT	Fault, inferred
40	337m W	ROCK	Coal seam, inferred
41	348m W	ROCK	Coal seam, inferred
42	349m SW	FOSSIL_HORIZON	Marine band
43	360m W	ROCK	Coal seam, inferred
44	380m W	ROCK	Coal seam, inferred
46	382m S	ROCK	Coal seam, inferred
47	383m W	ROCK	Coal seam, inferred
48	383m W	ROCK	Coal seam, inferred
52	422m NW	ROCK	Coal seam, inferred
53	436m SE	FAULT	Fault, inferred
55	439m W	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

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

16.1 BGS Boreholes

Records within 250m

10

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

Features are displayed on the Boreholes map on **page 91**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	11m E	434501 410991	MUSCLE HILL SURFACE BH	185.93	N	85810
2	137m E	434450 410380	ATHERSLEY NORTH PHASE 3 TP 6	-	Y	N/A
3	158m E	434460 410340	ATHERSLEY NORTH PHASE 3 TP 7	-	Y	N/A



ID	Location	Grid reference	Name	Length	Confidential	Web link
4	166m E	434480 410380	ATHERSLEY NORTH PHASE 3 TP 5	-	Y	N/A
5	195m E	434490 410310	ATHERSLEY NORTH PHASE 3 TP 8	-	Y	N/A
6	201m E	434520 410390	ATHERSLEY NORTH PHASE 3 TP 4	-	Y	N/A
A	211m NW	434309 411179	WOOLLEY COLLIERY NO.31 UGBH	21.18	N	85800
A	213m NW	434308 411181	WOOLLEY COLLIERY NO.32 UGBH	50.8	N	85801
7	218m E	434520 410330	ATHERSLEY NORTH PHASE 3 TP 3	-	Y	N/A
8	229m E	434520 410290	ATHERSLEY NORTH PHASE 3 TP 1	-	Y	N/A

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

2

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

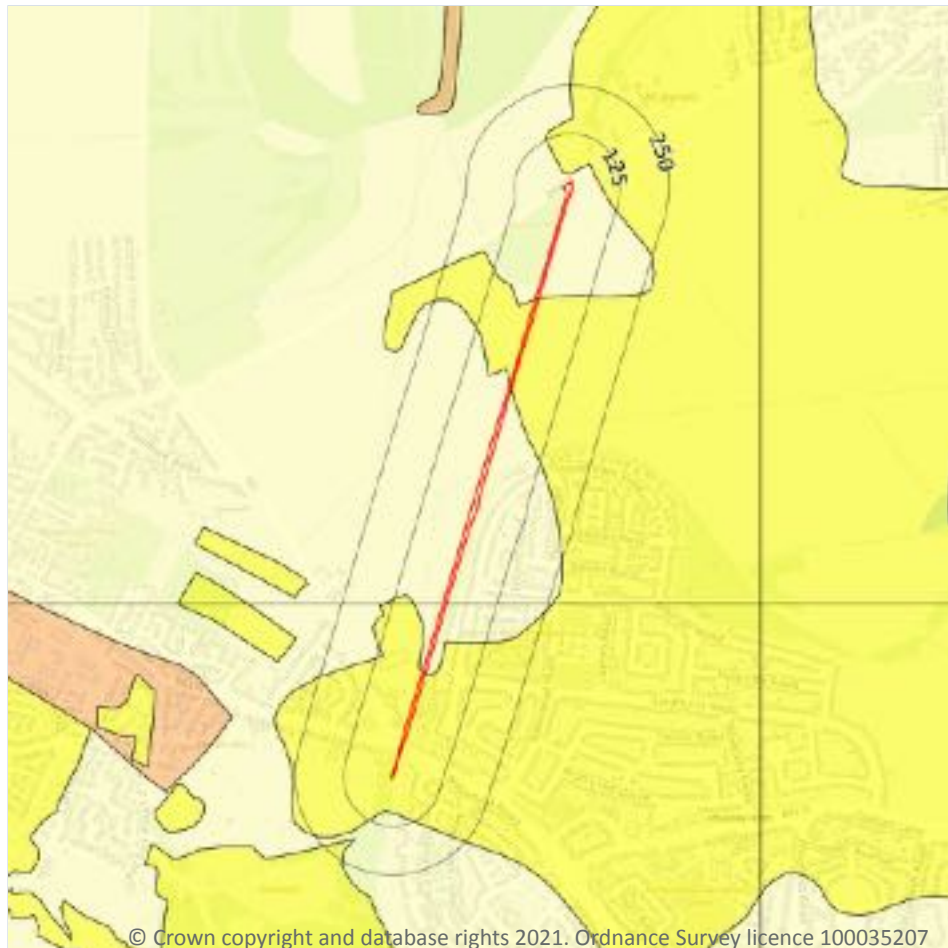
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 93**

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.
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

2

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

Features are displayed on the Natural ground subsidence - Running sands map on **page 94**

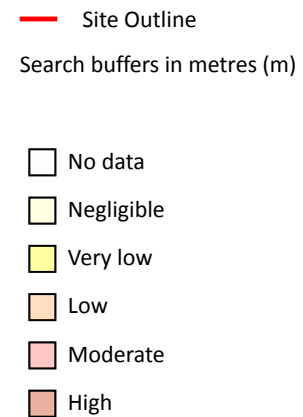
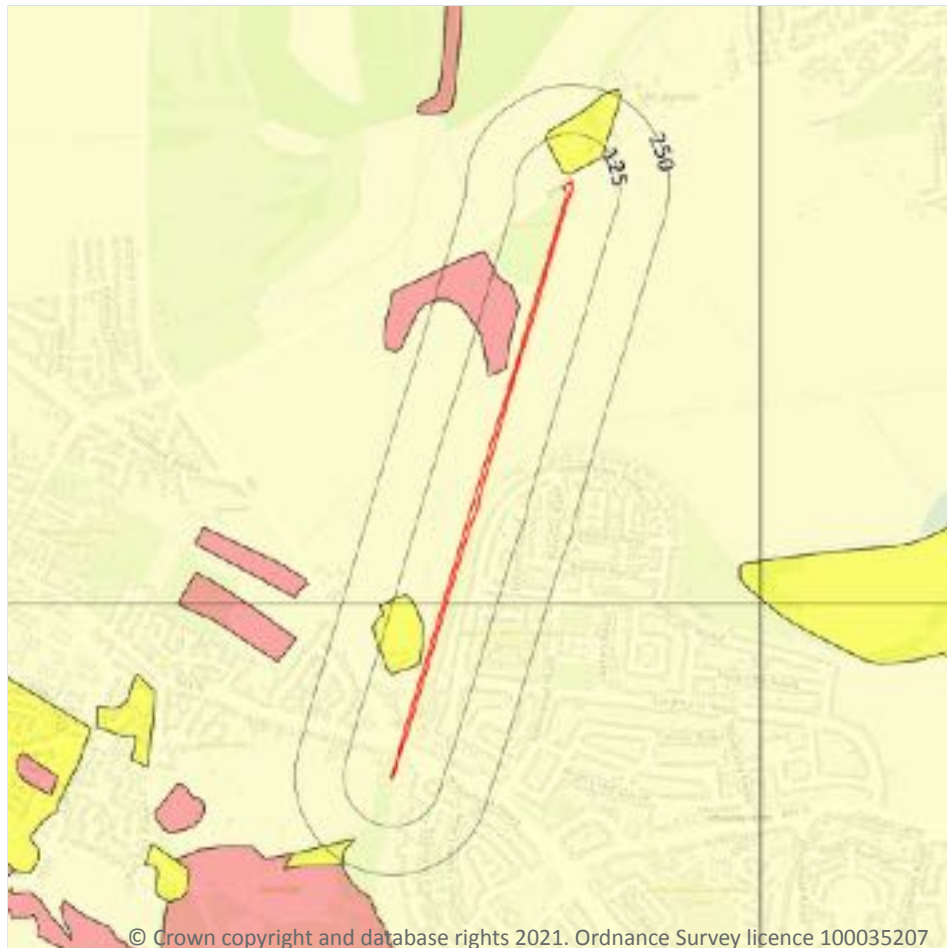
Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

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



17.3 Compressible deposits

Records within 50m

4

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 96**

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.
15m W	Very low	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.



Location	Hazard rating	Details
20m N	Very low	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.
22m W	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



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

17.4 Collapsible deposits

Records within 50m

1

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

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

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



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

17.5 Landslides

Records within 50m

2

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

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

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



Location	Hazard rating	Details
4m W	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



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

17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 101**

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

7

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 103**

ID	Location	Details	Description
I	166m W	Name: Muscle Hill Address: Royston, BARNSELEY, South Yorkshire Commodity: Sand & Gravel 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
K	280m W	Name: Tipsey Lodge Address: Darton, BARNSELEY, South Yorkshire 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
7	436m SW	Name: Tipsey Hill OCCS Address: Mapplewell, BARNSELEY, South Yorkshire Commodity: Coal, Surface Mined 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
N	443m W	Name: Staincross Address: Royston, BARNSELEY, South Yorkshire Commodity: Sand & Gravel 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
O	444m W	Name: Blacker Hill Address: Mapplewell, BARNSELEY, South Yorkshire 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



ID	Location	Details	Description
8	456m SW	Name: Tipsey Hill OCCS Address: Mapplewell, BARNSELEY, South Yorkshire Commodity: Coal, Surface Mined 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
9	468m SW	Name: Tipsey Hill OCCS Address: Mapplewell, BARNSELEY, South Yorkshire Commodity: Coal, Surface Mined Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	41
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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 103**

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Cuttings	1948	1:10560
A	On site	Cuttings	1904	1:10560
A	On site	Cuttings	1891	1:10560
A	On site	Cuttings	1930	1:10560
A	On site	Cuttings	1930	1:10560
A	On site	Cuttings	1930	1:10560
A	On site	Cuttings	1930	1:10560
B	On site	Cuttings	1993	1:10000
B	On site	Cuttings	1973	1:10000
B	On site	Cuttings	1966	1:10560
B	On site	Cuttings	1982	1:10000
B	On site	Cuttings	1938	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
B	On site	Cuttings	1951	1:10560
C	On site	Cuttings	1973	1:10000
C	On site	Cuttings	1966	1:10560
C	On site	Cuttings	1951	1:10560
D	On site	Cuttings	1993	1:10000
D	On site	Cuttings	1982	1:10000
E	On site	Cuttings	1930	1:10560
E	On site	Cuttings	1930	1:10560
E	On site	Cuttings	1930	1:10560
E	On site	Cuttings	1930	1:10560
F	On site	Cuttings	1948	1:10560
F	On site	Cuttings	1904	1:10560
F	On site	Cuttings	1891	1:10560
F	On site	Cuttings	1930	1:10560
F	On site	Cuttings	1930	1:10560
F	On site	Cuttings	1930	1:10560
F	On site	Cuttings	1930	1:10560
G	On site	Cuttings	1990	1:10000
G	On site	Cuttings	1965	1:10560
G	On site	Cuttings	1978	1:10000
G	On site	Cuttings	1951	1:10560
H	143m S	Cuttings	1938	1:10560
H	148m S	Cuttings	1948	1:10560
H	148m S	Cuttings	1904	1:10560
H	152m S	Cuttings	1890	1:10560
I	159m W	Gravel Pit	1854	1:10560
I	159m W	Gravel Pit	1854	1:10560
J	211m W	Sandstone Quarry	1854	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
J	211m W	Sandstone Quarry	1854	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

17

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 103**

ID	Location	Land Use	Year of mapping	Mapping scale
R	595m SW	Disused Colliery	1890	1:10560
R	606m W	Unspecified Old Shaft	1951	1:10560
R	610m W	Unspecified Old Shaft	1948	1:10560
R	610m W	Unspecified Old Shaft	1904	1:10560
R	625m SW	Unspecified Old Shaft	1951	1:10560
T	625m W	Colliery	1948	1:10560
T	628m W	Colliery	1904	1:10560
R	629m SW	Unspecified Old Shaft	1948	1:10560
T	632m W	Colliery	1982	1:10000
T	773m W	Colliery	1951	1:10560
T	773m W	Unspecified Mine	1966	1:10560
T	773m W	Unspecified Mine	1973	1:10000
Y	775m S	Colliery	1890	1:10560
Y	779m S	Colliery	1904	1:10560
T	784m W	Colliery	1891	1:10560
T	959m W	Unspecified Shaft	1948	1:10560
T	996m W	Unspecified Shaft	1951	1:10560

This is data is sourced from Ordnance Survey/Groundsure.



18.5 Historical Mineral Planning Areas

Records within 500m

0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

14

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 103**

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
2	On site	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
3	On site	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
4	On site	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
5	On site	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
6	On site	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered



ID	Location	Name	Commodity	Class	Likelihood
10	485m E	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
11	487m E	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
16	627m E	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
21	743m S	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
22	768m E	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
25	794m E	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
29	973m NE	Sheffield Area	Iron Ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
31	991m E	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or 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
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Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	1
-----------------	---

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

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

This data is sourced from the Coal Authority.

18.10 Brine areas

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

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

18.11 Gypsum areas

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

This data is sourced from British Gypsum.

18.12 Tin mining

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

This data is sourced from Groundsure.



18.13 Clay mining

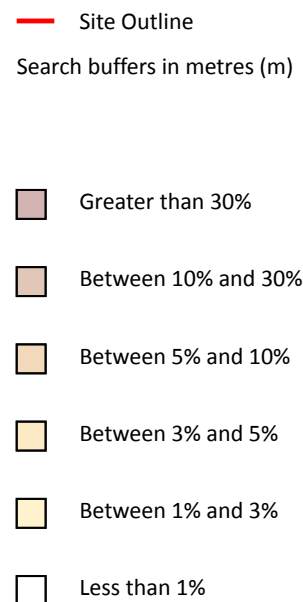
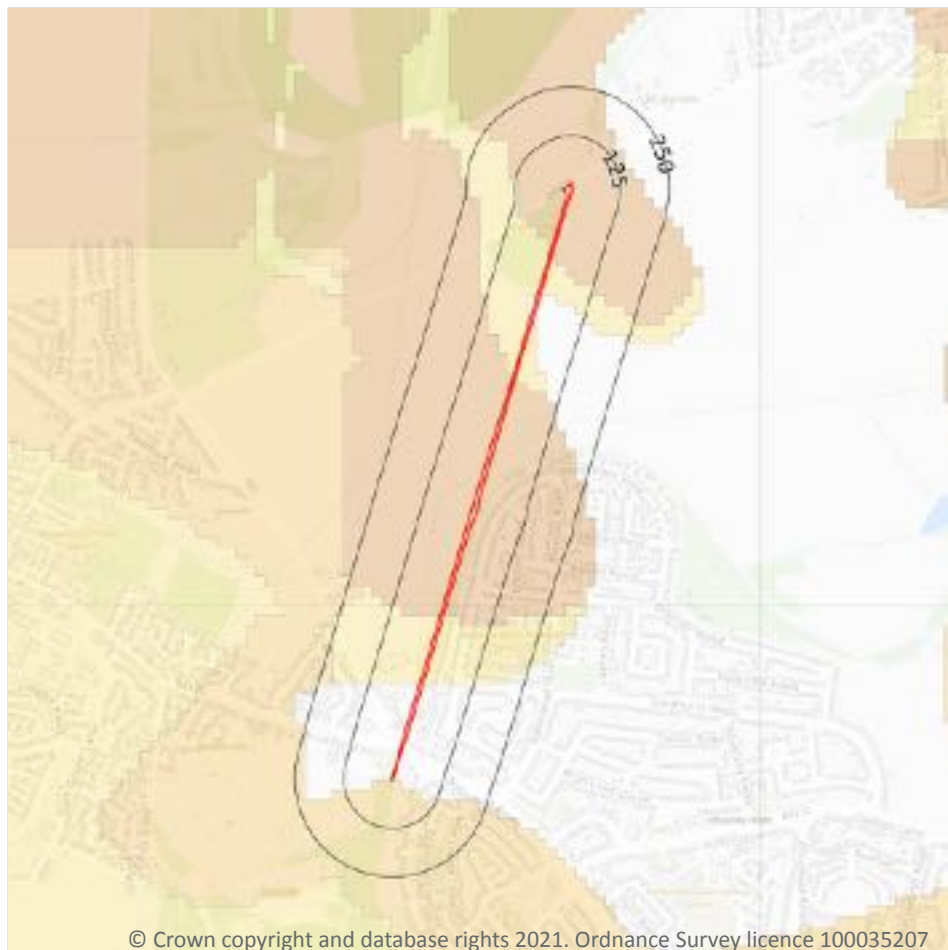
Records on site
0

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

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



19 Radon



19.1 Radon

Records on site

3

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 112**

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 1% and 3%	None
On site	Between 5% and 10%	Basic



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

24

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	120 - 180 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	120 - 180 mg/kg	30 - 45 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg



Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
1m N	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
7m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
12m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
12m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
30m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
41m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
44m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
46m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
48m NE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
49m W	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 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



- Site Outline
- Search buffers in metres (m)
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- ... Active railways
- ... Active tunnels
- ... Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m

0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m

0

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m

3

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

Features are displayed on the Railway infrastructure and projects map on **page 117**

Location	Land Use	Year of mapping	Mapping scale
On site	Railway Sidings	1906	2500
On site	Railway Sidings	1893	2500
2m E	Railway Sidings	1904	10560

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m

0

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

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

2

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

Features are displayed on the Railway infrastructure and projects map on **page 117**



Location	Description
On site	Abandoned
23m E	Abandoned

This data is sourced from OpenStreetMap.

21.7 Railways

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

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

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

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

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

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

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

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

This data is sourced from HS2 Ltd.

Data providers

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

Terms and conditions

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



APPENDIX E - SYMAS MINING REPORT

PLACE DIRECTORATE
South Yorkshire Mining Advisory Service



To: Highways & Engineering

FAO: Liz Campbell

My Ref: MAL.21.009

Your Ref: ECHD/EDC/BLR1

Date: 3rd September 2021

Enquiries to: Mr. M. Lyons

Ext: 2690

Subject: **PROPOSED ACTIVE TRAVEL SCHEME – A61 BAR LANE TO ROYSTON**

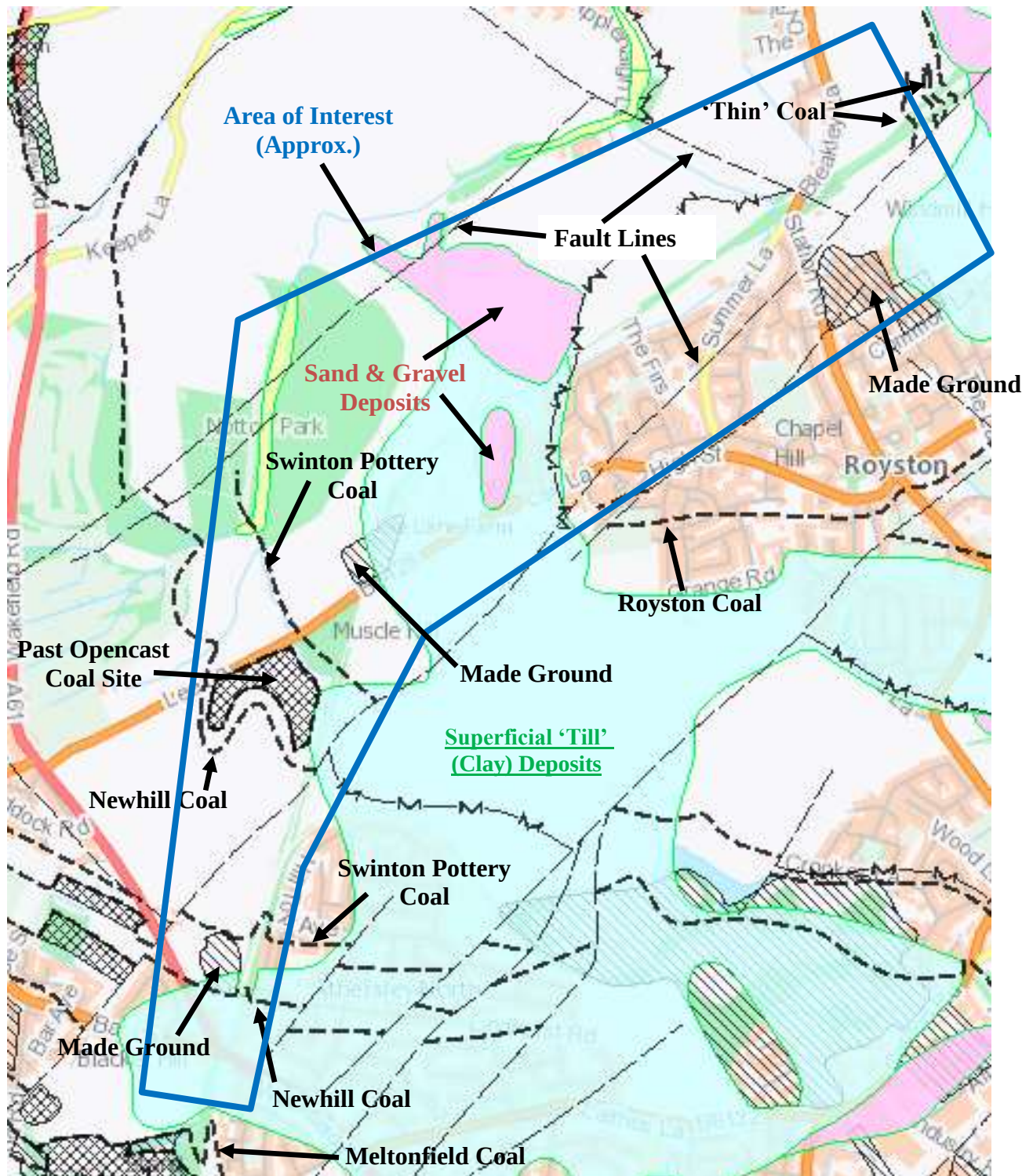
SITUATION

The area of land under consideration is illustrated in the following image, located between OS National Grid References: 435875-412304 and 434028-409439. The proposals are for: construction of shared pedestrian / cycle route and improvements to existing footway / carriageway links. This report provides a review of the mining and geological history of the site and an assessment for the potential for mining legacy risks. The report makes generalised recommendations for the likely investigative and/or remediation requirements within specific parts of the area. Further phase 1 studies of a more site-specific nature will be required when a more detailed scheme proposal is decided upon.



GEOLOGICAL INFORMATION

Geological records indicate that the land is underlain by sandstones, shales and mudstones of the Middle Coal Measures; strata dipping generally in a north-easterly direction. The following image (Onshore BGS extract) illustrates the anticipated geology.



Areas of superficial 'till' (clay) deposits and sand and gravel will be present as shown above. Geological faulting is conjectured as indicated and any sandstone bedrock may contain fissures that could have been opened out by the past deep coal

mining in the area. Various areas of made ground exist as indicated, one of which relates to a past landfill site as detailed below.

Various coal seams are conjectured to outcrop through the area, details of which, listed stratigraphically from shallowest to deepest are:

Royston seam – up to 0.8m thickness;

Thin seam (north-east) – negligible thickness;

Swinton Pottery - up to 0.3m thickness;

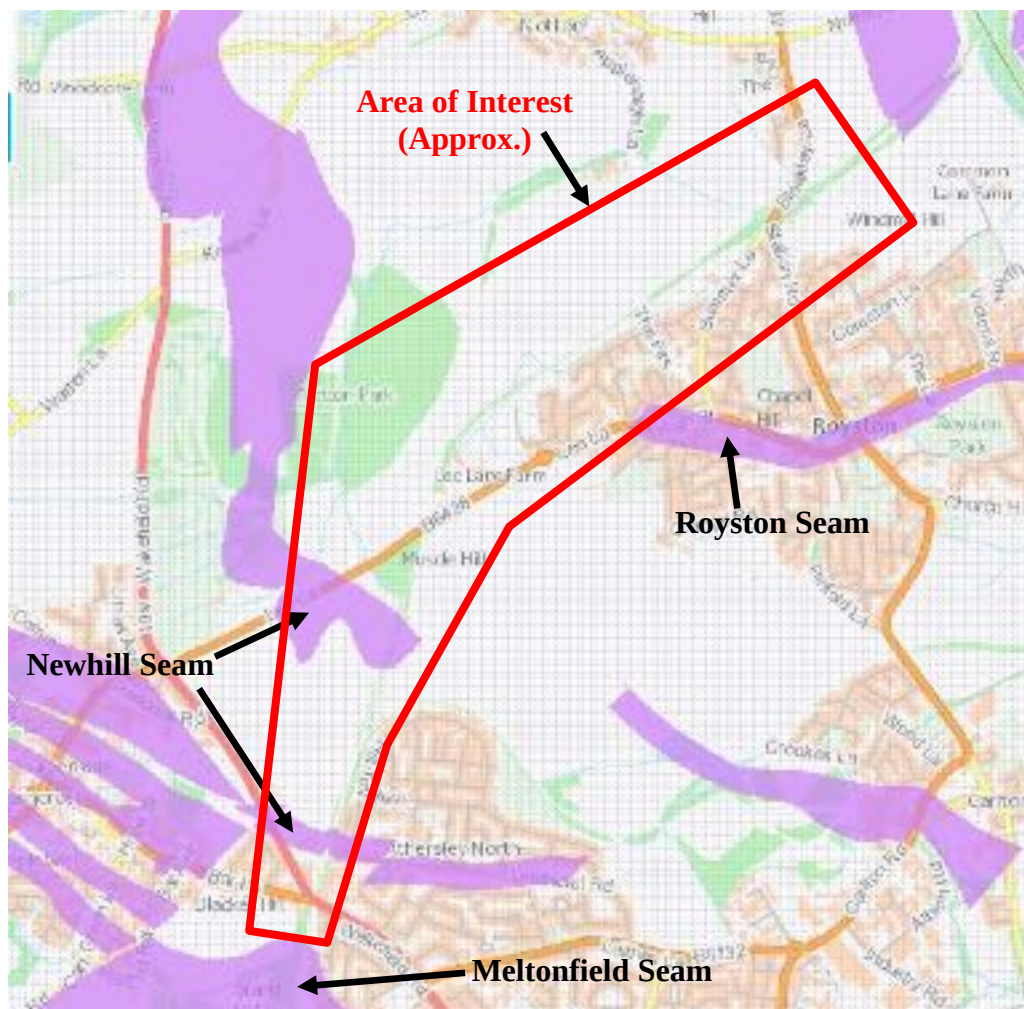
Newhill - up to 0.9m thickness;

Meltonfield – up to 1.0m thickness.

MINING

Shallow Underground Mining

No shallow coal mine workings are recorded in any of the coal seams within the area. There will be some risk however of unrecorded workings summarised in the image below (an extract from the Coal Authorities interactive viewer of areas of ‘probable shallow coal workings’):



Deep Underground Mining

Deep coal mining operations have taken place beneath the area in various coal seams, all settlement from which will be long complete. All deep coal mining has now ceased within the area and therefore it should remain stable for the foreseeable future.

Opencast

One former opencast site is shown within the site which worked the Newhill coal seam – as illustrated on the initial image above. Associated backfill material and former quarry high walls would be anticipated in that area.

Mine Entries

Considering the size of the area it is quite surprising that there are no known mine entries (shafts or adits) within the site. Some potential will of course exist for unrecorded mine entries in the specific areas where a coal seam is anticipated at a shallow depth (apart from the Swinton Pottery seam and Thin seam which are very unlikely to have been worked via underground methods).

FORMER LAND USES

The proposals appear to follow the former ‘MS & LR Barnsley Coal Extension’ mineral railway route. This will comprise various areas of cutting or indeed fill/embankment and colliery spoil material which may comprise old burnt shale for example, may be experienced throughout this section.

LANDFILL

One former landfill sites is shown in the southern part of the area as shown on the image below, which abuts the former railway route:



Any parts of the scheme proposed to travel through these areas will require a more detailed analysis of the anticipated extent, content and nature of these sites, in conjunction with the local authorities contaminated land officer, to establish appropriate designs for safe development.

CONCLUSIONS

Although there will be a slight element of ‘probable’ shallow coal mining risks, it is not anticipated that the scale/nature of development will impose a duty to carry out intrusive investigations for stability. This position should be confirmed with SYMAS and/or the Coal Authority however, when more detailed proposed ground works/designs/locations are realised.

A watching brief should be maintained during future ground works in the areas of shallow coal for unrecorded mine entries that may impact the development. SYMAS and/or the Coal Authority should be notified immediately should any be suspected.

Development should adequately consider the likely nature of the material (colliery spoil/burnt shale) along the former mineral railway route and areas of made ground (particularly near/over the former opencast coal site) for appropriate ground work/foundation designs. Safety measures would be required regarding fugitive gas risk in any deep excavations taking place. Similar considerations will be required for development adjacent/over the former landfill operation – the local authorities contaminated land officer should be consulted as such.

Future ground works may expose coal at the surface in the conjectured areas of outcrops which may require removal and blinding off to help prevent spontaneous combustion risks.

Watching briefs would be prudent for any signs of faulted/fissured sandstone bedrock and/or areas of alluvial material that may require appropriate treatment/design considerations.

When further work has been undertaken on route selection for the scheme SYMAS can be consulted again for more site-specific information as required e.g. opencast abandonment plan details, coal mining investigation specifications (if required) etc.

THIS REPORT IS BASED ON AND LIMITED TO THE RECORDS IN THE POSSESSION OF SYMAS AT THE TIME THE ENQUIRY IS ANSWERED.

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Report prepared by M. Lyons 3rd September 2021.

P. James
Principal Mining Engineer.

APPENDIX F - EXPLORATORY HOLE LOGS

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS1
Job No 151116	Date 05-01-22	Ground level (m AOD) 90.50	Co-Ordinates (NGR) E 434,220.0 N 410,088.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				
Sheet 1 of 1				

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.10	J			90.35		0.15	MADE GROUND. Soft dark brown sandy gravelly clay. Gravel is fine subangular to subrounded of sandstone, ceramic and plastic. High content of leaves and rootlets. Cobble of brick from 0.10 - 0.15m bgl.		
0.30	D			90.10		(0.25) 0.40	MADE GROUND. Dark grey clayey gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone, brick, coal, ash and clinker.		
0.70	D					(0.99)	MADE GROUND. Very dense dark grey slightly clayey sandy gravel. Gravel is fine to coarse angular to subrounded of sandstone, brick, ash, clinker, coal and quartz.		
1.00	SPT	N50 (1,14/16,15,15,4)		89.11		1.39	Window sample hole refused at 1.39m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS2	
Job No 151116	Date 05-01-22	Ground level (m AOD) 90.50	Co-Ordinates (NGR) E 434,191.0 N 410,020.0		
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	J			90.30		(0.20) 0.20	MADE GROUND. Dark brown clayey gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone, clinker and coal. High content of leaves and rootlets in top 0.10m.		
0.40	D			89.90		(0.40) 0.60	Brown sandy GRAVEL. Gravel is fine to coarse subrounded of sandstone and fine subangular of coal.		
0.90	D					(0.63)	Extremely weak light grey SILTSTONE. Recovered as gravelly clay. Gravel is fine to coarse angular to subangular of siltstone.		
1.00	SPT	N50 (12,13 for 50mm/27,23 for 30mm)		89.27		1.23	Window sample hole refused at 1.23m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
--	---	---------------------------	-----------------

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS3	
Job No 151116	Date 05-01-22	Ground level (m AOD) 90.50	Co-Ordinates (NGR) E 434,174.0 N 409,972.0		
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.10	J			90.30		(0.20) 0.20	MADE GROUND. Dark brown clayey sand. Gravel is fine to coarse subangular to subrounded of sandstone, brick and coal.		
0.40	D			90.00		(0.30) 0.50	Firm light brown gravelly sandy CLAY. Gravel is fine to coarse subangular to subrounded of sandstone, and fine subangular of coal.		
0.80	D					(0.62)	Extremely weak light grey SILSTONE. Recovered as gravelly sandy clay. Gravel is fine to coarse angular to subangular of siltstone.		
1.00	SPT	N50 (10,15 for 50mm/27,23 for 20mm)		89.38		1.12	Window sample hole refused at 1.12m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS4	
Job No 151116	Date 05-01-22	Ground level (m AOD) 90.50	Co-Ordinates (NGR) E 434,150.0 N 409,880.0		
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.30	J			90.00		0.50	MADE GROUND. Dark greyish brown slightly clayey very gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone, brick, clinker and coal.		
0.60	D			89.85		0.65	Firm brown slightly gravelly sandy CLAY. Gravel is fine to coarse angular to subangular of siltstone.		
0.80	D					(0.54)	Extremely weak light grey SILSTONE. Recovered as sandy gravel. Gravel is fine to coarse angular to subangular of siltstone.		
1.00	SPT	N50 (11, 11/22, 28 for 60mm)		89.31		1.19			
							Window sample hole refused at 1.19m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS5	
Job No 151116	Date 05-01-22	Ground level (m AOD) 89.50	Co-Ordinates (NGR) E 434,123.0 N 409,790.0		
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
							No recovery.		
						(0.50)			
				89.00		0.50			
0.60	J					(0.30)	MADE GROUND. Black sandy gravel. Gravel is fine to coarse subangular to subrounded of clinker, coal, siltstone and sandstone.		
				88.70		0.80			
0.80	D			88.60		0.90	MADE GROUND. Reddish brown gravelly sand. Gravel is fine to coarse subangular of brick, siltstone and clinker.		
				88.50		1.00			
1.00	SPT	N24 (5,4/3,4,5,12)				(0.30)	MADE GROUND. Firm brown gravelly sandy CLAY. Gravel is fine to coarse subangular to subrounded of sandstone, siltstone, brick and coal.		
				88.20		1.30	No recovery		
1.30	D					(0.43)	MADE GROUND. Firm brown gravelly sandy CLAY. Gravel is fine to coarse subangular to subrounded of sandstone, siltstone, brick and coal.		
1.50	SPT	N50 (13,12 for 40mm/30,20 for 40mm)							
				87.77		1.73	Window sample hole refused at 1.73m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Monitoring standpipe installed to 1.50m bgl.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS6
Job No 151116	Date 05-01-22	Ground level (m AOD) 88.50	Co-Ordinates (NGR) E 434,098.0 N 409,714.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 2

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.15	PEN	0.8		88.20		(0.30) 0.30	MADE GROUND. Soft brown slightly gravelly sandy clay. Gravel is fine to medium subangular to subrounded of sandstone, siltstone, coal and brick.		
0.20	J					(0.30)			
0.40	D			87.90		(0.30) 0.60	MADE GROUND. Dark brownish grey slightly clayey sandy gravel. Gravel is fine to coarse angular to subrounded of clinker, coal, sandstone and brick.		
0.80	D					(0.50)	Firm becoming stiff light brown gravelly sandy CLAY. Gravel is fine to coarse subrounded of sandstone and fine subangular of coal.		
1.00	SPT	N14 (3,2/3,3,4,4)		87.40		1.10			
1.30	PEN	3					Very stiff light grey slightly gravelly CLAY. Gravel is medium to coarse subangular of coal and sandstone. Cobble of sandstone at 1.90m bgl.		
1.40	D								
1.50	PEN	2.4							
1.80	D								
1.90	PEN	3							
2.00	SPT	N23 (3,2/4,5,6,8)							
2.20	PEN	3				(2.70)			
2.50	D								
2.50	PEN	3							
2.80	PEN	2.9							
2.90	D								
3.00	SPT	N22 (3,3/4,4,6,8)							
3.10	D								
3.70	D			84.70		3.80			
3.90	D						Very stiff light grey CLAY.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS6
Job No 151116	Date 05-01-22	Ground level (m AOD) 88.50	Co-Ordinates (NGR) E 434,098.0 N 409,714.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 2 of 2

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Boring Progress and Water Observations						GENERAL REMARKS
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth	
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS7
Job No 151116	Date 06-01-22	Ground level (m AOD) 90.00	Co-Ordinates (NGR) E 434,071.0 N 409,629.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.10	J			89.90		0.10	MADE GROUND. Dark brown clayey gravelly sand. Gravel is fine to medium subrounded of sandstone and brick. Contains rootlets.		
0.60	D					(1.00)	MADE GROUND. Very dense reddish brown gravelly sand. Gravel is fine to coarse subangular to subrounded of concrete, brick, sandstone, coal, clinker and quartz. Contains cobbles of concrete.		
1.00	SPT	N50 (25 for 75mm/50 for 30mm)		88.90		1.10	Window sample hole refused at 1.10m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS8
Job No 151116	Date 06-01-22	Ground level (m AOD) 91.50	Co-Ordinates (NGR) E 434,051.0 N 409,569.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 2

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	J			91.40		0.10	MADE GROUND. Dark brown clayey gravelly sand. Gravel is fine to medium subangular to subrounded of sandstone, siltstone and brick.		
0.20	D					(0.30)	MADE GROUND. Brown slightly clayey gravelly sand. Gravel is fine to coarse subangular to subrounded of brick, sandstone, concrete, coal and siltstone.		
				91.10		0.40			
0.70	D						MADE GROUND. Firm greyish brown slightly gravelly sandy CLAY. Gravel is fine to coarse subangular to subrounded of sandstone, siltstone and rare fine subangular coal.		
1.00	SPT	N11 (2,3/2,3,3,3)							
1.50	D					(2.20)			
2.00	SPT	N11 (2,2/2,3,3,3)							
				88.90		2.60			
2.70	D					(0.30)	Stiff mottled grey and brown sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of sandstone, siltstone and rare fine subangular coal.		
				88.60		2.90			
3.00	SPT	N7 (2,2/1,2,2,2)		88.50		3.00	Black sandy GRAVEL. Gravel is fine to coarse angular to subangular of coal.		
							Firm light grey sandy gravelly CLAY. Gravel is fine to coarse subangular siltstone and rare fine subangular coal.		
3.80	D					(1.80)			

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Monitoring standpipe installed to 5.00m bgl.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS8	
Job No 151116	Date 06-01-22	Ground level (m AOD) 91.50	Co-Ordinates (NGR) E 434,051.0 N 409,569.0		
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 2 of 2	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
4.00	SPT	N9 (3,2,2,3,2,2)					Firm light grey sandy gravelly CLAY. Gravel is fine to coarse subangular siltstone and rare fine subangular coal. (continued)		
4.90	D SPT	N15 (2,1/2,4,4,5)		86.70		4.80			
5.00						(0.65)	Firm grey sandy gravelly CLAY. Gravel is fine to coarse subangular of siltstone.		
				86.05		5.45			
							Bottom of window sample hole at 5.45m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Monitoring standpipe installed to 5.00m bgl.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS9	
Job No 151116	Date 06-01-22	Ground level (m AOD) 90.50	Co-Ordinates (NGR) E 434,253.0 N 410,219.0		
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	J			90.15		(0.35) 0.35	MADE GROUND. Black sandy gravel. Gravel is fine to coarse subangular to subrounded of clinker, ash, concrete, brick and sandstone.		
0.40	D			89.96		(0.19) 0.54	MADE GROUND. Very dense light brown slightly clayey gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone, brick and siltstone.		
0.50	SPT	N50					Window sample hole refused at 0.54m bgl.		
(25 for 20mm/50 for 15mm)									

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS10	
Job No 151116	Date 01-06-22	Ground level (m AOD) 89.50	Co-Ordinates (NGR) E 434,275.0 N 410,305.0		
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.30	J			89.10		(0.40) 0.40	MADE GROUND. Black sandy gravel. Gravel is fine to coarse subangular to subrounded of clinker, ash, concrete, brick and sandstone.		
0.50	D			88.90		(0.20) 0.60	MADE GROUND. Light brown slightly clayey gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone, brick and siltstone.		
				88.80		0.70	Cobble of concrete		
0.75	D			88.70		0.80	Firm brown gravelly sandy CLAY. Gravel is fine to coarse subrounded of sandstone.		
0.90	SPT	N50 (25 for 70mm/50 for 50mm)		88.48		(0.22) 1.02	Very dense light brown sandy GRAVEL. Gravel is fine to coarse subangular to subrounded of sandstone.		
							Window sample hole refused at 1.02m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS11
Job No 151116	Date 06-01-22	Ground level (m AOD) 89.00	Co-Ordinates (NGR) E 434,303.0 N 410,375.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.30	J			88.50		(0.50) 0.50	MADE GROUND. Greyish brown slightly clayey gravelly sand. Gravel is fine to coarse angular to subrounded of sandstone, coal, clinker and brick.		
0.60	D			88.00		(0.50) 1.00	Medium dense light brown gravelly SAND. Gravel is fine to coarse subrounded of sandstone, and fine subangular of coal. (Possible reworked natural).		
1.00	SPT	N12 (2,2/3,2,3,4)				(1.20) 2.20	Medium dense light brown slightly clayey slightly gravelly SAND. Gravel is fine to coarse subrounded of sandstone, and fine subangular of coal. (Possible reworked natural).		
1.60	D			86.80		(0.70) 2.90	Firm mottled orange and brown slightly gravelly sandy CLAY. Gravel is fine to coarse subangular to subrounded of sandstone.		
2.00	SPT	N9 (2,2/2,2,3)		86.10		(0.55) 3.45	Very dense orangey brown sandy GRAVEL. Gravel is fine to coarse subangular of sandstone.		
2.50	D			85.55			Window sample hole refused at 3.45m bgl.		
2.90	D								
3.00	SPT	N50 (4,6/9,12,13,16)							

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Monitoring standpipe installed to 3.0m bgl.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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ABEC WINDOW SAMPLE 151116.GPJ ABEC TEMPLATE.GDT 14/3/22

WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS12
Job No 151116	Date 06-01-22	Ground level (m AOD) 84.50	Co-Ordinates (NGR) E 434,328.0 N 410,475.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 2

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	J			84.20		(0.30) 0.30	MADE GROUND. Dark brown slightly clayey gravelly sand. Gravel is fine to coarse subrounded sandstone, siltstone and clinker.		
0.80	D			83.50		(0.70) 1.00	Yellowish brown gravelly SAND. Gravel is fine to coarse subangular to subrounded of sandstone. Cobble of sandstone at 0.90m bgl. (Possible reworked natural).		
1.00	SPT	N17 (4,4/4,4,4,5)				(2.00)	Medium dense light yellowish brown gravelly SAND. Gravel is fine to coarse subrounded of sandstone. Cobble of sandstone at 3.80m bgl. (Possible reworked natural).		
1.60	D								
2.00	SPT	N13 (4,3/3,4,3,3)							
2.50	D								
3.00	SPT	N17 (5,5/4,4,4,5)		81.50		3.00	Stiff mottled orange and grey slightly sandy CLAY.		
3.50	PEN	4							
3.70	D					(1.45)			

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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ABEC WINDOW SAMPLE 151116.GPJ ABEC TEMPLATE.GDT 14/3/22

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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS13
Job No 151116	Date 07-01-22	Ground level (m AOD) 83.00	Co-Ordinates (NGR) E 434,355.0 N 410,563.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 2

SAMPLES & TESTS			Water	STRATA			Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)		
0.10	J			82.85		0.15		
0.20	D			82.70		0.30		
0.70	D							
1.00	SPT	N11 (3,3/3,3,3,2)				(1.70)		
1.80	D							
2.00	SPT	N14 (2,2/2,4,4,4)		81.00		2.00		
2.50	D							
3.00	SPT	N7 (2,1/0,2,3,2)						
3.80	D			79.40		3.60		
						(0.60)		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS13
Job No 151116	Date 07-01-22	Ground level (m AOD) 83.00	Co-Ordinates (NGR) E 434,355.0 N 410,563.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 2 of 2

SAMPLES & TESTS			Water	STRATA			Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick- ness)		
4.00	SPT	N12 (2,3/2,3,3,4)		78.80		4.20	Firm dark brown slightly gravelly sandy CLAY. Gravel is fine subangular of siltstone. <i>(continued)</i>	
4.80	D					(1.25)	Extremely weak black COAL. Recovered as gravelly sand. Gravel is fine to medum subangular of coal.	
5.00	SPT	N23 (7,6/4,5,7,7)		77.55		5.45		
							Bottom of window sample hole at 5.45m bgl.	

Boring Progress and Water Observations						GENERAL REMARKS
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth	
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS14
Job No 151116	Date 07-01-22	Ground level (m AOD) 82.00	Co-Ordinates (NGR) E 434,380.0 N 410,648.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 2

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.30	J	N14 (3,3/3,3,3,5)		81.55		0.45	MADE GROUND. Dark greyish brown slightly clayey gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone, clinker, ash and siltstone.		
0.60	D			81.20		0.80	Grey clayey gravelly SAND. Gravel is fine to medium subangular of siltstone. (Possible reworked natural).		
1.00	SPT	N12 (4,3/2,3,3,4)		79.80		1.40	Medium dense orangey brown very gravelly SAND. Gravel is fine to coarse subangular to subrounded of sandstone and siltstone. (Possible reworked natural).		
1.60	D					2.20	Medium dense orangey brown very gravelly SAND. Gravel is fine to coarse subangular to subrounded of sandstone and siltstone. (Possible reworked natural).		
2.00	SPT	N30 (5,8/8,7,7,8)		79.00		0.80	Medium dense grey very gravelly SAND. Gravel is fine to medium subangular of siltstone. (Possible reworked natural).		
2.70	D					3.00	Medium dense orangey brown very gravelly SAND. Gravel is fine to coarse subangular to subrounded of sandstone and siltstone. (Possible reworked natural).		
3.00	SPT								
3.80	D								

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS14
Job No 151116	Date 07-01-22	Ground level (m AOD) 82.00	Co-Ordinates (NGR) E 434,380.0 N 410,648.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 2 of 2

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
4.00	SPT	N22 (6,6/5,6,5,6)			○	(2.45)	Medium dense orangey brown very gravelly SAND. Gravel is fine to coarse subangular to subrounded of sandstone and siltstone. (Possible reworked natural). <i>(continued)</i>		
4.90	D				○				
5.00	SPT	N17 (4,4/5,4,4,4)			○				
				76.55		5.45	Bottom of window sample hole at 5.45m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS15
Job No 151116	Date 07-01-22	Ground level (m AOD) 81.00	Co-Ordinates (NGR) E 434,408.0 N 410,727.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	J			80.70		(0.30) 0.30	MADE GROUND. Dark greyish brown slightly clayey gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone, ash and siltstone.		
0.50	D			80.30		(0.40) 0.70	Pale yellow sandy GRAVEL. Gravel is fine to coarse subangular of sandstone. (Possible reworked natural).		
1.00	SPT	N26 (3,4/6,5,5,10)					Medium dense becoming loose pale yellow gravelly SAND. Gravel is fine to coarse subangular to subrounded of sandstone. (Possible reworked natural).		
1.80	D								
2.00	SPT	N11 (2,2/2,3,3,3)				(2.75)			
2.80	D								
3.00	SPT	N9 (2,0/2,3,1,3)							
				77.55		3.45			
							Window sample hole collapsed at 3.45m bgl, to 2.60m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Monitoring standpipe installed to 2.60m bgl.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS

WINDOW SAMPLE LOG



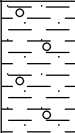
Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS16
Job No 151116	Date 07-01-22	Ground level (m AOD) 79.00	Co-Ordinates (NGR) E 434,458.0 N 410,898.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 2

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	J			78.70		(0.30) 0.30	MADE GROUND. Dark greyish brown slightly clayey gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone, siltstone, clinker and ash.		
0.40	D			78.50		(0.20) 0.50	Light yellow sandy GRAVEL. Gravel is fine to coarse subangular to subrounded of sandstone. Contains cobbles of sandstone. (Possible reworked natural).		
							Firm mottled grey and brown slightly sandy CLAY.		
0.90	D					(1.00)			
0.90	PEN	1.4							
1.00	SPT	N8 (1,1/2,2,2,2)							
				77.50		1.50			
1.60	PEN	1.4					Firm mottled grey and brown slightly gravelly CLAY. Gravel is fine to medium subangular of siltstone.		
1.90	PEN	1.3				(0.70)			
2.00	SPT	N9 (2,1/2,2,2,3)		76.80		2.20			
2.35	PEN	2.4					Stiff mottled grey and brown CLAY.		
2.55	PEN	2.2				(0.75)			
2.70	D								
2.85	PEN	3		76.05		2.95			
3.00	D			75.95		3.05	Black sandy GRAVEL. Gravel is fine to coarse subangular of coal.		
3.00	SPT	N21 (2,2/4,4,5,8)					Very stiff grey mottled orange sandy gravelly CLAY. Gravel is fine to coarse subangular of siltstone.		
						(1.40)			
3.80	D								

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Monitoring standpipe installed to 4.00m bgl.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS16
Job No 151116	Date 07-01-22	Ground level (m AOD) 79.00	Co-Ordinates (NGR) E 434,458.0 N 410,898.0	
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 2 of 2

SAMPLES & TESTS			Water	STRATA			Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)		
4.00	SPT	N50 (7,8/13,13,14,10)				Very stiff grey mottled orange sandy gravelly CLAY. Gravel is fine to coarse subangular of siltstone. <i>(continued)</i>		
			74.55		4.45	Window sample hole refused at 4.45m bgl.		

Boring Progress and Water Observations						GENERAL REMARKS
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth	
						CAT used to check for services prior to boring. No groundwater encountered. Monitoring standpipe installed to 4.00m bgl.

All dimensions in metres Scale 1:25	Client Barnsley Metropolitan Borough Council	Contractor RP Drilling	Logged By OS
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WINDOW SAMPLE LOG



Project A61 Bar Lane Cycleway, Mapplewell, Barnsley				HOLE No WS17	
Job No 151116	Date 07-01-22	Ground level (m AOD) 79.00	Co-Ordinates (NGR) E 434,485.0 N 410,996.0		
Method/Plant Used Global Geo4 Windowless Sampling Rig				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	J			78.80		(0.20) 0.20	MADE GROUND. Dark brown slightly clayey very gravelly sand. Gravel is fine to coarse subangular to subrounded of sandstone and siltstone.		
0.30	D					(0.27)	Very dense orangey brown sandy GRAVEL. Gravel is fine to coarse subangular to subrounded of sandstone. Low cobble content of sandstone.		
0.40	SPT	N50		78.53		0.47	Window sample hole refused at 0.47m bgl.		
(25 for 40mm/50 for 30mm)									

Boring Progress and Water Observations						GENERAL REMARKS	
Date	Time	Depth	Core/casing Depth	Dia. mm	Water Dpth		
						CAT used to check for services prior to boring. No groundwater encountered. Backfilled with arisings on completion.	
All dimensions in metres Scale 1:25			Client Barnsley Metropolitan Borough Council			Contractor RP Drilling	Logged By OS

APPENDIX G - LABORATORY TESTING RESULTS



ANALYTICAL TEST REPORT

Contract no: 104447

Contract name: A61 Bar Lane Cycleway, Mapplewell, Barnsley

Client reference: 151116

Clients name: Abbeydale BEC

Clients address: 4 Neville Street
Wakefield
WF1 5EF

Samples received: 12 January 2022

Analysis started: 12 January 2022

Analysis completed: 19 January 2022

Report issued: 19 January 2022

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
\$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing
NAD	No Asbestos Detected

Approved by:

Megan Harris
Senior Reporting Administrator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
104447-1	WS3	0.10	Sandy Loamy Clay with Gravel	-	-	26.2
104447-2	WS4	0.30	Sandy Clayey Loam with Gravel	-	-	16.7
104447-3	WS5	0.60	Sandy Clayey Loam with Gravel	-	-	14.9
104447-4	WS7	0.60	Clayey Sand with Gravel	-	-	13.1
104447-5	WS9	0.20	Sandy Clayey Loam with Gravel	-	-	17.4
104447-6	WS13	0.20	Sandy Clayey Loam with Gravel	-	-	14.6
104447-7	WS14	0.30	Sandy Clayey Loam with Gravel	-	-	10.3
104447-8	WS16	0.20	Sandy Clayey Loam with Gravel	-	-	25.4

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SOILS

Lab number Sample id Depth (m) Date sampled			104447-1 WS3 0.10 05/01/2022	104447-2 WS4 0.30 05/01/2022	104447-3 WS5 0.60 05/01/2022	104447-4 WS7 0.60 06/01/2022	104447-5 WS9 0.20 06/01/2022	104447-6 WS13 0.20 07/01/2022
Test	Method	Units						
Arsenic (total)	CE127 ^M	mg/kg As	9.3	19	15	6.0	36	22
Beryllium (total)	CE127 ^U	mg/kg Be	3.5	2.7	6.1	<1	1.7	2.2
Boron (water soluble)	CE063 ^M	mg/kg B	3.3	2.7	1.5	1.9	1.2	1.1
Cadmium (total)	CE127 ^M	mg/kg Cd	<0.2	<0.2	3.5	0.3	<0.2	<0.2
Chromium (total)	CE127 ^M	mg/kg Cr	33	41	75	59	44	47
Chromium (III)	CE208	mg/kg CrIII	33	41	75	59	44	47
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 ^M	mg/kg Cu	54	54	106	18	180	79
Lead (total)	CE127 ^M	mg/kg Pb	33	49	41	42	62	8.7
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	0.8	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	20	28	36	18	40	32
Selenium (total)	CE127 ^M	mg/kg Se	3.4	2.9	4.6	1.0	1.8	2.3
Vanadium (total)	CE127 ^M	mg/kg V	44	45	162	27	62	35
Zinc (total)	CE127 ^M	mg/kg Zn	61	34	76	96	86	12
pH	CE004 ^M	units	8.1	8.6	8.5	9.9	8.6	6.7
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	214	210	537	309	58	145
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Cyanide (total)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Organic Carbon (TOC)	CE197	% w/w C	9.0	8.6	13.7	1.1	29.3	30.9
Estimate of OMC (calculated from TOC)	CE197	% w/w	15.4	14.8	23.6	1.9	50.5	53.3
PAH								
Naphthalene	CE087 ^M	mg/kg	0.18	0.44	2.01	0.05	2.11	0.10
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	0.30	<0.02	0.04	0.03
Acenaphthene	CE087 ^M	mg/kg	<0.02	0.34	0.09	0.03	0.03	0.08
Fluorene	CE087 ^U	mg/kg	<0.02	0.38	0.13	<0.02	0.05	0.07
Phenanthrene	CE087 ^M	mg/kg	0.20	3.67	1.67	0.41	1.57	1.66
Anthracene	CE087 ^U	mg/kg	0.05	0.63	0.61	0.22	0.40	0.53
Fluoranthene	CE087 ^M	mg/kg	0.25	3.49	2.47	1.24	1.09	0.17
Pyrene	CE087 ^M	mg/kg	0.21	2.83	2.25	1.42	0.90	0.17
Benzo(a)anthracene	CE087 ^U	mg/kg	0.15	1.40	1.32	0.77	0.60	0.11
Chrysene	CE087 ^M	mg/kg	0.13	1.22	1.25	0.68	0.53	0.11
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.19	1.24	1.96	0.94	0.84	0.06
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.08	0.50	0.76	0.36	0.26	<0.03
Benzo(a)pyrene	CE087 ^U	mg/kg	0.15	1.08	1.42	0.81	0.53	0.03
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.12	0.68	1.18	0.65	0.57	<0.02
Dibenz(ah)anthracene	CE087 ^M	mg/kg	0.02	0.16	0.23	0.11	0.14	<0.02
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.10	0.59	0.98	0.62	0.50	0.04
PAH (total of USEPA 16)	CE087	mg/kg	1.86	18.6	18.6	8.31	10.2	3.15

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SOILS

Lab number			104447-1	104447-2	104447-3	104447-4	104447-5	104447-6
Sample id			WS3	WS4	WS5	WS7	WS9	WS13
Depth (m)			0.10	0.30	0.60	0.60	0.20	0.20
Date sampled			05/01/2022	05/01/2022	05/01/2022	06/01/2022	06/01/2022	07/01/2022
Test	Method	Units						
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	-	-	-	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	-	-	-	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	-	-	-	-
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	-	-	-	-
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	-	-	-	-
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	<1	12	-	-	-	-
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	<1	7	-	-	-	-
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	-	-	-	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	-	-	-	-
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	-	-	-	-
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	10.0	-	-	-	-
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	-	-	-	-
EPH Aliphatic (>C12-C16)	CE068	mg/kg	5	8	-	-	-	-
EPH Aliphatic (>C16-C35)	CE068	mg/kg	74	190	-	-	-	-
EPH Aliphatic (>C35-C44)	CE068	mg/kg	11	18	-	-	-	-
Subcontracted analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD

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SOILS

Lab number			104447-7	104447-8
Sample id			WS14	WS16
Depth (m)			0.30	0.20
Date sampled			07/01/2022	07/01/2022
Test	Method	Units		
Arsenic (total)	CE127 ^M	mg/kg As	7.2	14
Beryllium (total)	CE127 ^U	mg/kg Be	1.1	1.0
Boron (water soluble)	CE063 ^M	mg/kg B	0.7	1.6
Cadmium (total)	CE127 ^M	mg/kg Cd	0.2	0.3
Chromium (total)	CE127 ^M	mg/kg Cr	83	51
Chromium (III)	CE208	mg/kg CrIII	83	51
Chromium (VI)	CE146	mg/kg CrVI	<1	<1
Copper (total)	CE127 ^M	mg/kg Cu	29	67
Lead (total)	CE127 ^M	mg/kg Pb	40	65
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	22	24
Selenium (total)	CE127 ^M	mg/kg Se	1.2	1.6
Vanadium (total)	CE127 ^M	mg/kg V	25	29
Zinc (total)	CE127 ^M	mg/kg Zn	56	87
pH	CE004 ^M	units	7.3	7.5
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	16	36
Cyanide (free)	CE077	mg/kg CN	<1	<1
Cyanide (total)	CE077	mg/kg CN	<1	<1
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5
Total Organic Carbon (TOC)	CE197	% w/w C	2.5	19.3
Estimate of OMC (calculated from TOC)	CE197	% w/w	4.2	33.2
PAH				
Naphthalene	CE087 ^M	mg/kg	0.21	1.92
Acenaphthylene	CE087 ^M	mg/kg	<0.02	0.07
Acenaphthene	CE087 ^M	mg/kg	<0.02	0.14
Fluorene	CE087 ^U	mg/kg	<0.02	0.14
Phenanthrene	CE087 ^M	mg/kg	0.28	4.78
Anthracene	CE087 ^U	mg/kg	0.04	0.90
Fluoranthene	CE087 ^M	mg/kg	0.16	1.64
Pyrene	CE087 ^M	mg/kg	0.13	1.43
Benzo(a)anthracene	CE087 ^U	mg/kg	0.12	0.99
Chrysene	CE087 ^M	mg/kg	0.11	0.82
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.18	1.31
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.07	0.51
Benzo(a)pyrene	CE087 ^U	mg/kg	0.17	1.25
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.16	1.23
Dibenz(ah)anthracene	CE087 ^M	mg/kg	0.03	0.22
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.14	1.11
PAH (total of USEPA 16)	CE087	mg/kg	1.79	18.5

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SOILS

Lab number			104447-7	104447-8
Sample id			WS14	WS16
Depth (m)			0.30	0.20
Date sampled			07/01/2022	07/01/2022
Test	Method	Units		
TPH				
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	-
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	-	-
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	-	-
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	-	-
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	-	-
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	-	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	-
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	-
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	-
EPH Aliphatic (>C10-C12)	CE068	mg/kg	-	-
EPH Aliphatic (>C12-C16)	CE068	mg/kg	-	-
EPH Aliphatic (>C16-C35)	CE068	mg/kg	-	-
EPH Aliphatic (>C35-C44)	CE068	mg/kg	-	-
Subcontracted analysis				
Asbestos (qualitative)	\$	-	NAD	NAD

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SURFACE WATERS

Lab number Sample id Depth (m) Date sampled Time sampled			104447-9 SW1 0.05 07/01/2022 -
Test	Method	Units	
Arsenic (dissolved)	CE128 ^U	µg/l As	1.03
Beryllium (dissolved)	CE128 ^U	µg/l Be	<0.06
Boron (dissolved)	CE128 ^U	µg/l B	51
Cadmium (dissolved)	CE128 ^U	µg/l Cd	<0.07
Chromium (dissolved)	CE128 ^U	µg/l Cr	0.3
Chromium III (dissolved)	CE207	µg/l CrIII	0.3
Chromium VI (dissolved)	CE050 ^U	µg/l CrVI	<10
Copper (dissolved)	CE128 ^U	µg/l Cu	3.4
Lead (dissolved)	CE128 ^U	µg/l Pb	<0.2
Mercury (dissolved)	CE128 ^U	µg/l Hg	<0.008
Nickel (dissolved)	CE128 ^U	µg/l Ni	<0.5
Selenium (dissolved)	CE128 ^U	µg/l Se	0.57
Vanadium (dissolved)	CE128 ^U	µg/l V	0.9
Zinc (dissolved)	CE128 ^U	µg/l Zn	125
Hardness (by calculation)	CE121	mg/l CaCO ₃	304
pH	CE213 ^U	units	8.7
Sulphate	CE049	mg/l SO ₄	64
Cyanide (total)	CE147	µg/l CN	<20
Phenols (total)	CE148	µg/l PhOH	<10
PAH			
Naphthalene	CE051	µg/l	<0.1
Acenaphthylene	CE051	µg/l	<0.1
Acenaphthene	CE051	µg/l	<0.1
Fluorene	CE051	µg/l	<0.1
Phenanthrene	CE051	µg/l	<0.1
Anthracene	CE051	µg/l	<0.1
Fluoranthene	CE051	µg/l	<0.1
Pyrene	CE051	µg/l	<0.1
Benzo(a)anthracene	CE051	µg/l	<0.1
Chrysene	CE051	µg/l	<0.1
Benzo(b)fluoranthene	CE051	µg/l	<0.1
Benzo(k)fluoranthene	CE051	µg/l	<0.1
Benzo(a)pyrene	CE051	µg/l	<0.1
Indeno(123cd)pyrene	CE051	µg/l	<0.1
Dibenz(ah)anthracene	CE051	µg/l	<0.1
Benzo(ghi)perylene	CE051	µg/l	<0.1
PAH (total of USEPA 16)	CE051	µg/l	<1.6

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Beryllium (total)	Aqua regia digest, ICP-MS	Dry	U	1	mg/kg Be
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	M	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE208	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Vanadium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg V
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO ₄
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE077	Cyanide (total)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE078	Phenols (total)	Extraction, Continuous Flow Colorimetry	As received		0.5	mg/kg PhOH
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	As received		1	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	As received		6	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	As received		6	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	As received		15	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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METHOD DETAILS

METHOD	SURFACE WATERS	METHOD SUMMARY	STATUS	LOD	UNITS
CE128	Arsenic (dissolved)	ICP-MS	U	0.06	µg/l As
CE128	Beryllium (dissolved)	ICP-MS	U	0.06	µg/l Be
CE128	Boron (dissolved)	ICP-MS	U	8	µg/l B
CE128	Cadmium (dissolved)	ICP-MS	U	0.07	µg/l Cd
CE128	Chromium (dissolved)	ICP-MS	U	0.2	µg/l Cr
CE207	Chromium III (dissolved)	Calculation: Cr (total) - Cr (VI)		10	µg/l CrIII
CE050	Chromium VI (dissolved)	Colorimetry	U	10	µg/l CrVI
CE128	Copper (dissolved)	ICP-MS	U	0.4	µg/l Cu
CE128	Lead (dissolved)	ICP-MS	U	0.2	µg/l Pb
CE128	Mercury (dissolved)	ICP-MS	U	0.008	µg/l Hg
CE128	Nickel (dissolved)	ICP-MS	U	0.5	µg/l Ni
CE128	Selenium (dissolved)	ICP-MS	U	0.07	µg/l Se
CE128	Vanadium (dissolved)	ICP-MS	U	0.3	µg/l V
CE128	Zinc (dissolved)	ICP-MS	U	1	µg/l Zn
CE121	Hardness (by calculation)	Calculation from Ca (dissolved) & Mg (dissolved)		1	mg/l CaCO ₃
CE213	pH	Based on BS 1377, pH Meter	U	-	units
CE049	Sulphate	Ion Chromatography		1.7	mg/l SO ₄
CE147	Cyanide (total)	Continuous Flow Colorimetry		20	µg/l CN
CE148	Phenols (total)	Continuous Flow Colorimetry		10	µg/l PhOH
CE051	Naphthalene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Acenaphthylene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Acenaphthene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Fluorene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Phenanthrene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Anthracene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Fluoranthene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Pyrene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Benzo(a)anthracene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Chrysene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Benzo(b)fluoranthene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Benzo(k)fluoranthene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Benzo(a)pyrene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Indeno(123cd)pyrene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Dibenz(ah)anthracene	Solvent extraction, GC-MS		0.1	µg/l
CE051	Benzo(ghi)perylene	Solvent extraction, GC-MS		0.1	µg/l
CE051	PAH (total of USEPA 16)	Solvent extraction, GC-MS		1.6	µg/l

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
104447-1	WS3	0.10	N	
104447-2	WS4	0.30	N	
104447-3	WS5	0.60	N	
104447-4	WS7	0.60	N	
104447-5	WS9	0.20	N	
104447-6	WS13	0.20	N	
104447-7	WS14	0.30	N	
104447-8	WS16	0.20	N	
104447-9	SW1	0.05	Y	Chromium (III & VI) (EHT), Cyanide (IC,NCF)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.



Final Report

Report No.: 22-04909-1

Initial Date of Issue: 16-Feb-2022

Client Abbeydale BEC

Client Address: 4 Neville Street
Wakefield
Yorkshire
WF1 5EF

Contact(s): INFO

Project 151116 A61 Bar Lane Cycleway,
Barnsley

Quotation No.: Q20-21725 **Date Received:** 10-Feb-2022

Order No.: 3921 **Date Instructed:** 10-Feb-2022

No. of Samples: 2

Turnaround (Wkdays): 5 **Results Due:** 16-Feb-2022

Date Approved: 16-Feb-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Water

Project: 151116 A61 Bar Lane Cycleway, Barnsley

Client: Abbeydale BEC	Chemtest Job No.:				22-04909	22-04909
Quotation No.: Q20-21725	Chemtest Sample ID.:				1369377	1369378
	Client Sample ID.:				SW02	SW03
	Sample Type:				WATER	WATER
	Top Depth (m):				0.05	0.05
	Date Sampled:				08-Feb-2022	08-Feb-2022
Determinand	Accred.	SOP	Units	LOD		
pH	U	1010		N/A	8.2	8.3
Sulphate	U	1220	mg/l	1.0	67	66
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Total Hardness as CaCO3	U	1270	mg/l	15	180	180
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.77	0.80
Boron (Dissolved)	U	1455	µg/l	10.0	45	39
Beryllium (Dissolved)	U	1455	µg/l	1.00	< 1.0	< 1.0
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11
Copper (Dissolved)	U	1455	µg/l	0.50	3.6	3.6
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	µg/l	0.50	1.4	1.4
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	0.57	< 0.50
Vanadium (Dissolved)	U	1455	µg/l	0.50	0.52	0.52
Zinc (Dissolved)	U	1455	µg/l	2.5	89	90
Chromium (Trivalent)	N	1490	µg/l	20	< 20	< 20
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10

Results - Water

Project: 151116 A61 Bar Lane Cycleway, Barnsley

Client: Abbeydale BEC	Chemtest Job No.:				22-04909	22-04909
Quotation No.: Q20-21725	Chemtest Sample ID.:				1369377	1369378
	Client Sample ID.:				SW02	SW03
	Sample Type:				WATER	WATER
	Top Depth (m):				0.05	0.05
	Date Sampled:				08-Feb-2022	08-Feb-2022
Determinand	Accred.	SOP	Units	LOD		
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



LABORATORY REPORT



4043

Contract Number: PSL22/0266

Report Date: 24 February 2022

Client's Reference: 151116 - 3907

Client Name: Abbeydale BEC
4 Neville Street
Wakefield
WF1 5EF

For the attention of: Olivia Shannon

Contract Title: A61 Bar Lane Cycleway, Barnsley

Date Received: 12/1/2022

Date Commenced: 12/1/2022

Date Completed: 24/02/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS2		D	0.40		Brown sandy GRAVEL.
WS2		D	0.90		Grey slightly gravelly sandy CLAY.
WS3		D	0.40		Brown slightly gravelly very sandy CLAY.
WS3		D	0.80		Brown mottled grey sandy CLAY.
WS4		D	0.60		Brown mottled grey slightly gravelly sandy CLAY.
WS4		D	0.80		Brown mottled grey highly weathered MUDSTONE.
WS5		D	1.30		MADE GROUND brown very gravelly sandy clay.
WS6		D	0.80		Brown very gravelly sandy CLAY.
WS6		D	1.40		Brown sandy CLAY.
WS6		D	1.80		Brown sandy CLAY.
WS6		D	2.50		Brown slightly gravelly sandy CLAY.
WS6		D	2.90		Brown sandy CLAY.
WS6		D	3.10		Brown sandy CLAY.
WS6		D	3.70		Brown sandy CLAY.
WS6		D	3.90		Brown slightly sandy CLAY.
WS8		D	0.70		Brown mottled grey sandy CLAY.
WS8		D	1.50		Brown mottled grey sandy CLAY.
WS8		D	2.70		Brown slightly sandy CLAY.
WS8		D	3.80		Brown mottled grey sandy CALY



4043

PSL

Professional Soils Laboratory

A61 Bar Lane Cycleway, Barnsley

Contract No:

PSL22/0266

Client Ref:

151116-3907

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS8		D	4.90		Dark grey gravelly sandy CLAY.
WS10		D	0.75		Brown very gravelly sandy CLAY.
WS11		D	2.50		Brown mottled grey slightly gravelly slightly sandy CLAY.
WS11		D	2.90		Brown mottled grey very gravelly slightly sandy CLAY.
WS12		D	3.70		Brown mottled grey slightly sandy CLAY.
WS13		D	3.80		Brown sandy CLAY.
WS13		D	4.80		Dark brown CLAY.
WS16		D	0.90		MADE GROUND brown mottled grey slightly sandy clay.
WS16		D	2.70		Brown mottled grey sandy CLAY.
WS16		D	3.00		Dark brown CLAY.
WS16		D	3.80		Brown mottled grey slightly gravelly sandy CLAY.
WS17		D	0.30		Brown sandy GRAVEL.



4043

PSL

Professional Soils Laboratory

A61 Bar Lane Cycleway, Barnsley

Contract No:

PSL22/0266

Client Ref:

151116-3907

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS2		D	0.40		8.6							
WS2		D	0.90		6.9							
WS3		D	0.40		13							
WS3		D	0.80		11							
WS4		D	0.60		14							
WS4		D	0.80		6.4							
WS5		D	1.30		25							
WS6		D	0.80		9.6							
WS6		D	1.40		13			36	18	18	100	Intermediate Plasticity CI
WS6		D	1.80		19			43	21	22	100	Intermediate Plasticity CI
WS6		D	2.50		16							
WS6		D	2.90		22							
WS6		D	3.10		23							
WS6		D	3.70		15							
WS6		D	3.90		20							
WS8		D	0.70		23							
WS8		D	1.50		17							
WS8		D	2.70		25			55	25	30	100	High Plasticity CH
WS8		D	3.80		15							

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



4043

PSL
Professional Soils Laboratory

A61 Bar Lane Cycleway, Barnsley

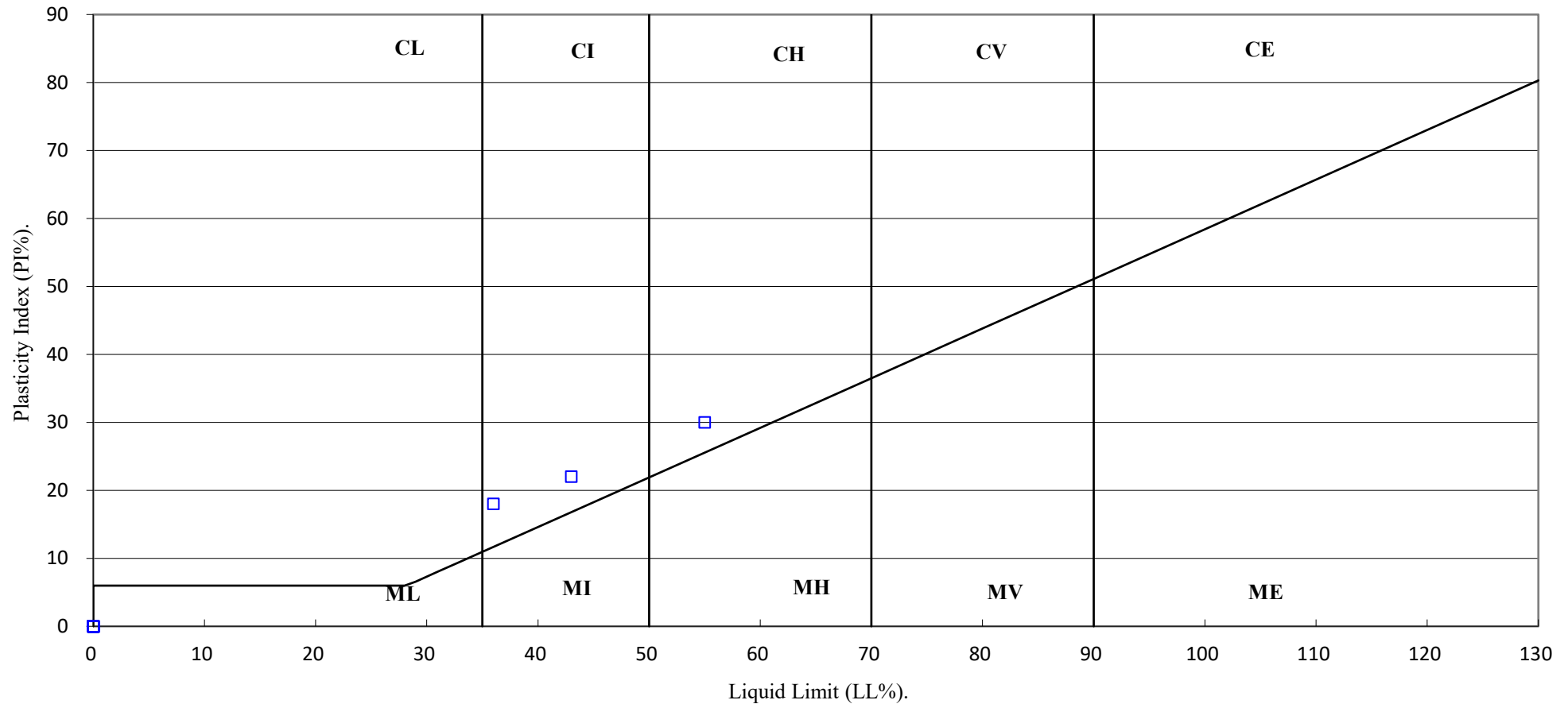
Contract No:

PSL22/0266

Client Ref:

151116-3907

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL
Professional Soils Laboratory

A61 Bar Lane Cycleway, Barnsley

Contract No:

PSL22/0266

Client Ref:

151116-3907

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS8		D	4.90		14							
WS10		D	0.75		7.5							
WS11		D	2.50		24			56	25	31	97	High Plasticity CH
WS11		D	2.90		8.3							
WS12		D	3.70		19			50	24	26	100	High Plasticity CH
WS13		D	3.80		25							
WS13		D	4.80		33							
WS16		D	0.90		28			58	25	33	100	High Plasticity CH
WS16		D	2.70		21							
WS16		D	3.00		31							
WS16		D	3.80		13							
WS17		D	0.30		11							

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



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PSL
Professional Soils Laboratory

A61 Bar Lane Cycleway, Barnsley

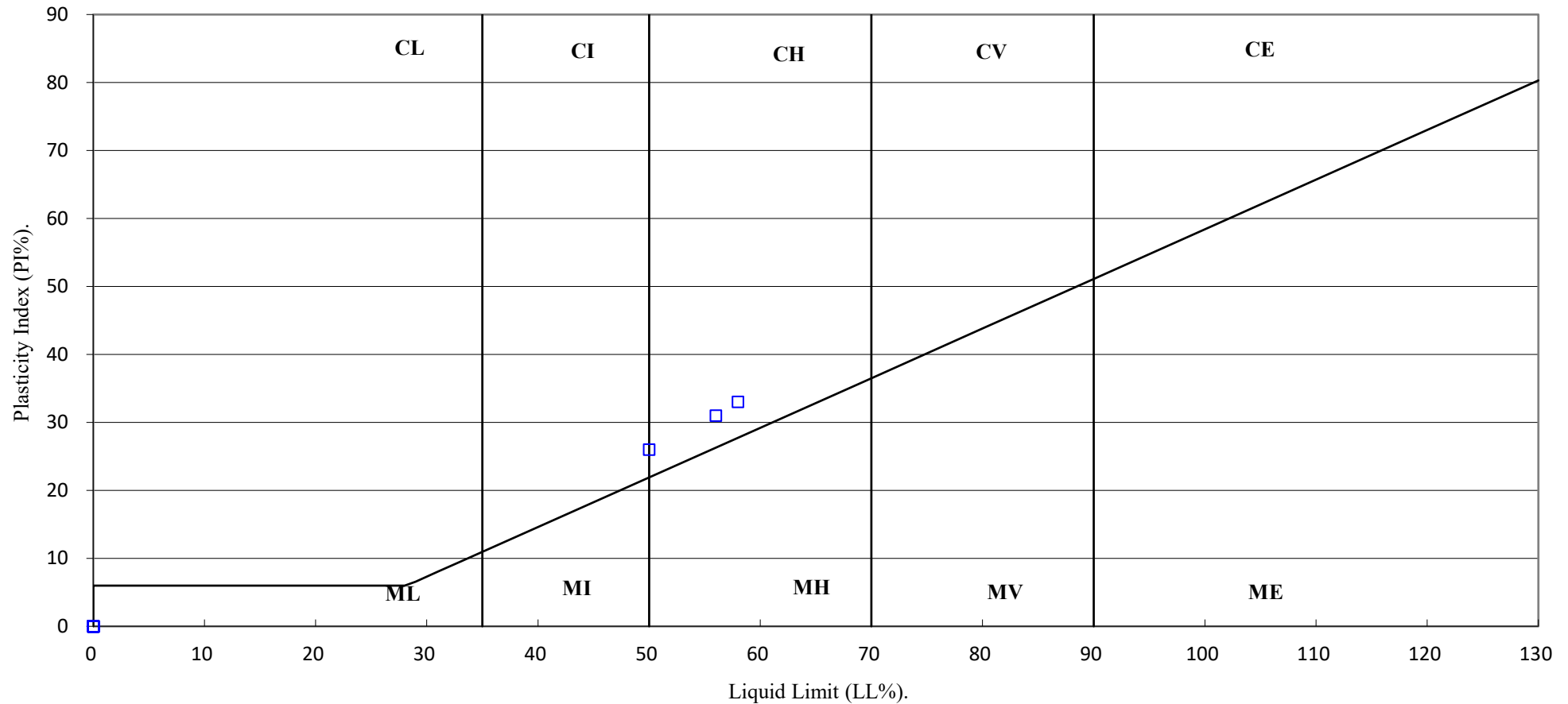
Contract No:

PSL22/0266

Client Ref:

151116-3907

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL
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Contract No:

PSL22/0266

Client Ref:

151116-3907

APPENDIX H - CONCEPTUAL SITE MODEL

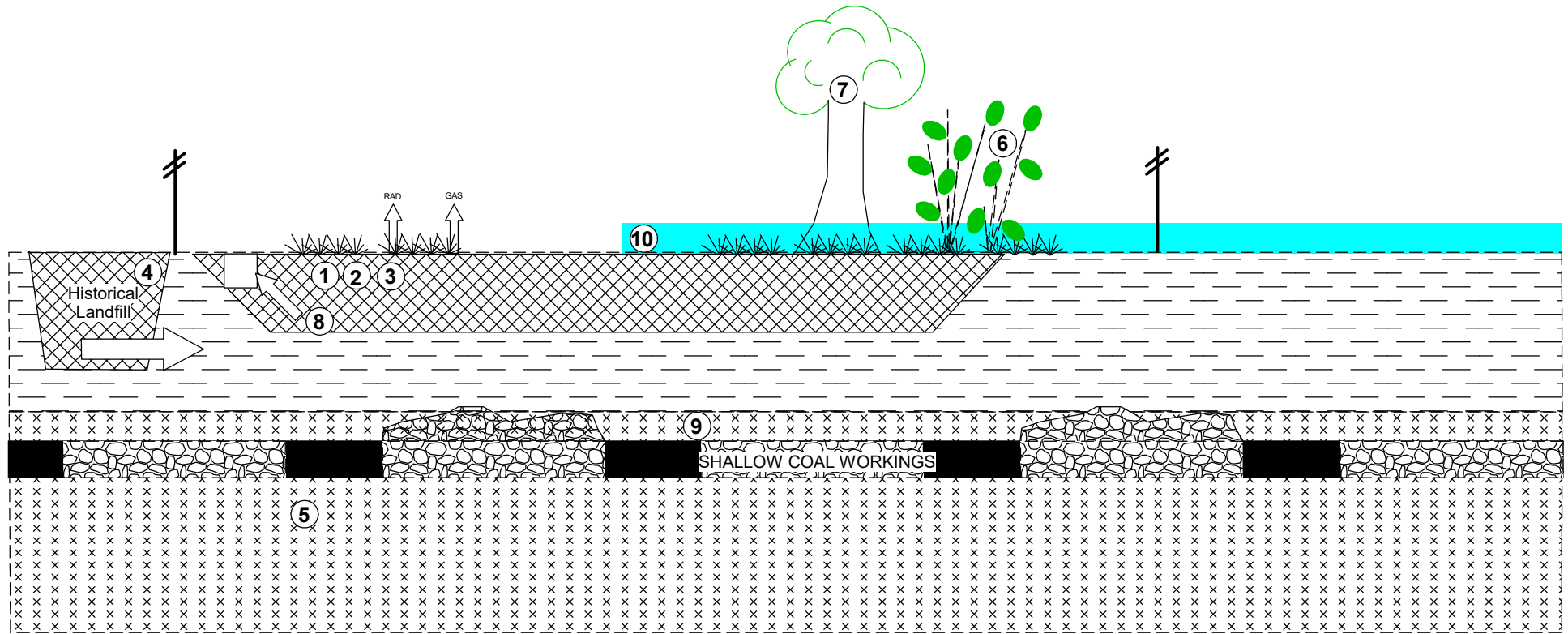
Ref.	Hazard	Source	Pathway	Receptor	Pollutant Linkage ?	Current anticipated risk (1) *	Comment	Action	Residual Risk *^
1	Metals and PAHs	Made Ground	Ingestion of soil & indoor dust	Construction workers	✓	Low / 100%	No risk based on soil contaminant levels	Standard precautionary measures to be applied	Very Low
2	Leachable Metals and PAHs	Made Ground	Leaching to groundwater	Groundwater	✓	Low / 100%	No risk based on soil contaminant levels	No further action deemed necessary	Very Low
3	Asbestos fibres in soils	Made Ground	Inhalation of dust	Construction workers	✓	Low / 100%	No asbestos fibres detected in samples analysed	No further action deemed necessary	Very Low
4	Ground gases	Made Ground / historical landfill	Migration through the ground	Construction workers	✓	Moderate/low / 25%	Gas monitoring recorded some elevated gas concentrations.	Gas monitoring should be undertaken if personnel enter trenches or confined spaces	Very Low
5	Radon	Bedrock	Migration through the ground	Site users	✓	Low / 100%	The site is not within a radon affected area	No further action deemed necessary	Very Low
6	Invasive plant species	Invasive plant species	Direct contact	On site buildings	✗	Negligible / 100%	None identified during walkover survey & no buildings proposed	No further action deemed necessary	Negligible
7	Trees	On site trees	Changes to soil moisture regime	On site buildings	✗	Negligible / 100%	No buildings are included within the development proposals.	No further action deemed necessary	Negligible
8	Sulphate	Made Ground	Direct contact	Concrete substructures	✓	Low / 25%	Concrete Class DS-2 (ACEC Class AC-2) can be used	No further action deemed necessary	Very Low
9	Shallow Mine Workings	Mine workings	Collapse of workings	On site buildings	✓	Negligible / 100%	Development proposals are not considered to be at risk should collapse of mine workings occur	No further action deemed necessary	Very Low
10	Outfall from adjacent site	Made Ground	Over land flow of water	Site users	✓	Very low / 25%	All chemical levels below drinking water standards guideline values	No further action deemed necessary	Very Low

NOTES:

- (1) Anticipated risk over percentage site area.
 * Refer to Risk Matrix Table within report text.
 ^ Anticipated risk after carrying out action

CONCEPTUAL MODEL TABLE

Client : Barnsley Metropolitan Borough Council
 Project : A61 Bar Ln Cycleway
 Job No : 151116



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Notes:

1. Diagram not to scale. This model is schematic only and does not reflect the specific ground conditions identified on or off the site.
2. See Conceptual Model Table for further details.
3. Sloping ground not depicted. Topography is considered in report text.

CONCEPTUAL SITE MODEL

Client: Barnsley Metropolitan Borough Council

Project: A61 Bar Lane Cycleway

Number: 151116

FIG 4