

# PHASE 1 GEO-ENVIRONMENTAL DESK STUDY AND PRELIMINARY RISK ASSESSMENT

## AESC Giga Factories Plot 2



ENV3-RPS-XX-XX-RP-G-314000  
P01

31 March 2023

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# EXECUTIVE SUMMARY

Section	Summary
Background	<p>RPS Consulting Services Ltd (RPS) was commissioned by Envision AESC / Wates Group Ltd to undertake a Phase 1 Geo-environmental and Geotechnical Desk Study and Preliminary Risk Assessment of Land off Downhill Lane, Washington, Sunderland, which will comprise the future development for AESC Plant 3. The report has been commissioned prior to the proposed development of the site to supporting a Planning Application for the proposed development.</p>
Site Details	<p><b>Site area:</b> 47 ha <b>National Grid Reference:</b> 432948, 559043 <b>Current site use:</b> The site currently comprises a large area of undeveloped agricultural land, North Moor Farm, and a very small portion of the current Envision Giga Factory Plot 1 construction site. At the time of the walkover most of the site was within the possession of Morgan Sindall, undertaking the realignment of existing overhead power lines that cut across the south and east of the site. These works being undertaken to facilitate the subsequent development of the site. <b>Proposed site use:</b> The proposed development comprises a large battery manufacturing facility (AESC Plant 3) in the north and logistics and distribution centre in the south, with associated access infrastructure and hardstanding. <b>Surrounding land use:</b> The site is located in an area of agricultural and industrial land use. The site is located to the north west of the Sunderland International Advanced Manufacturing Park.</p>
Site Inspection	<p>A site inspection was undertaken on 23<sup>rd</sup> February 2023. The site was in the possession of Morgan Sindall, erecting replacement overhead power line pylons in many of the fields. The North Moor Farm yard was occupied by construction site cabins, and the barn contained construction equipment and materials. The yard outside the barn contained diesel fuel storage in self bunded tanks, small cans of petrol in a bunded cage, and construction waste skips as well as general waste and recycling bins.</p> <p>The topography of the site was observed to generally slope gently downward to the northeast. The south of the site appeared to fall southward toward the main road (A1290). There was no visual or olfactory evidence of contamination.</p>
Previous Reports	<p>Previous Ground Investigation Reports relating to the wider Envision Giga Factory Site have been reviewed, including the 2021 RPS Envision Giga Factory Plot 1 investigation and the earlier 2018 IAMP ground investigations (focussing on a wider area to the east of the site). This review has identified that very limited ground investigation has taken place within the Plot 2 site boundary. The earlier RPS 2021 Envision Plot 1 ground investigation and the Dunelm 2018a investigation showed that no chemicals of concern were recorded in the shallow soils, no asbestos was detected in the soil samples, and no contaminants of concern were detected in the groundwater beneath the investigated area.</p> <p>Ground conditions identified by previous ground investigations across Plot 1 and partially within Plot 2 indicated that rockhead falls to the east, and more steeply to the northeast. Given the absence of ground investigation information within the Plot 2 area whilst the southern boundary the rockhead will be relatively shallow in the west of the site and deepen to the west, the precise form and thickness of superficial deposits across the remainder of the site is currently unknown and will require confirmation through subsequent ground investigation albeit it is expected that it will similarly thicken towards the north and north east.</p> <p>The site is within an area of former coal mining, however the depth to worked seams recorded on the interactive map viewer is between 350 and 450m bgl.</p>
Site History	<p>The site is indicated to have been occupied by two farms, North Moor Farm in the north, and part of West Moor Farm in the south since earliest mapping. Both farms have undergone phases of redevelopment over their history. A pond appears to have been infilled in the early 20th century near to North Moor Farm. West Moor Farm was demolished in 2021.</p> <p>Land use in the vicinity of the site has been largely agricultural. Works and depots including manufacturers associated with the Nissan Car Manufacturing plant were developed nearby from the early 1990s.</p> <p>More recently construction activity associated with the Envision Giga Factory Plot 1 has commenced and the realignment of electricity pylons within the Plot 2 area is ongoing at the time of reporting.</p>

Section	Summary
<b>Environmental Setting</b>	<p>The site is indicated to be underlain by a Secondary A Aquifer relating to the Pennine Middle Coal Measures Formation, and also Alluvium, mapped across the northern site boundary. Superficial Deposits including Pelaw Clay, Laminated Clay and Glacial Till represent unproductive strata overlying the bedrock of variable thickness.</p> <p>The site is not located in a groundwater source protection zone and there is one potentially sensitive groundwater abstraction within 2km of the site, a fish farm, 1993m north of the site.</p> <p>The nearest surface water feature is at the site's northern boundary, a tributary of the River Don. EA data indicates the River Don most recently (2019) has a chemical rating of 'fail' and an ecological rating of 'moderate'.</p> <p>A major pollution incident is indicated to have discharged to the tributary river approximately 450m upstream of the site. There are two potentially ecologically sensitive receptors within 2km of the site, Local Nature Reserves 905m south and 1704m east of the site.</p>
<b>Regulatory Consultation</b>	<p>RPS has written to the Local Authority Environmental Health team and is awaiting the response.</p>
<b>Geo-Environmental Preliminary Risk Assessment</b>	<p>An outline conceptual site model (CSM) has been derived on the basis of the desktop study and site reconnaissance.</p> <p>Current use of the site for construction activities, and historical use of the site for agricultural purposes with associated farm buildings is unlikely to have resulted in significant widespread contamination of soil and groundwater.</p> <p>There is the potential for localised contamination, particularly in the area of the farm buildings, associated with the current and historical storage of materials, vehicles and plant. Made Ground may be present in some areas of the site, particularly in the area of the farm buildings and any area of land raising/ infilling of ponds. Where present this could represent a potential source of contaminants and / or ground gas.</p> <p>Current and historical potential sources of contaminants of concern include the works associated with the Nissan Manufacturing Plant to the south first established in the 1980s, the newer IAMP development to the east of the site, and the ongoing construction of Giga 1 within Plot 1.</p> <p>Topsoil and subsoil horizons are likely to present across the wider site owing to its agricultural use. There is the potential for Made Ground to be present in localised areas, i.e., farm buildings and in areas of infilled ponds, ditches, areas of tipping and earthworks. Where Made Ground and superficial deposits are granular in nature any shallow groundwater and any mobile contaminants that may be present are likely to be able to migrate through the permeable strata. However, the mobility of groundwater and any contaminants is likely to be limited by cohesive Made Ground and significant thickness of cohesive superficial deposits. The bedrock, where weathered to a clay is likely to be of low/moderate permeability limiting the mobility of groundwater and mobile contaminants to deeper strata.</p> <p>There is the limited potential for contaminants of concern (if present) beneath the site to migrate on or off-site via granular horizons of the Made Ground (if present) and the superficial deposits. These may impact controlled waters receptors or on/off-site human health receptors via the dermal contact, ingestion and vapour inhalation pathways. Drainage ditches across the site may act as pathways to the tributary of the River Don located at the northern boundary of the site.</p> <p>On completion of the proposed development, large areas of the site will be covered by buildings or hardstanding. In these areas the risks to future human health receptors via the pathways of dermal contact, ingestion and soil dust inhalation will be mitigated. In areas of managed soft landscaping, the pathways of dermal contact, ingestion and soil dust inhalation could still be active if contaminated soils are subject to disturbance. The presence of buildings and hardstanding are also likely to reduce post-development surface water infiltration reducing the potential for the leaching of any mobile soil contaminants.</p> <p>There is a limited potential for ground gas and volatile contaminants to be present on site in localised areas such as the area of the farm buildings and any areas of filled ground, historical tipping, etc. In these areas there could potentially be a risk to future site users associated with the gas/vapour inhalation pathway in indoor areas.</p>
<b>Geotechnical Preliminary Risk Assessment</b>	<p>The ground conditions at the site are anticipated to comprise localised pockets of Made Ground around the area of the farm buildings, with Topsoil encountered in the wider area. These are underlain by variable thicknesses of superficial deposits, including localised Alluvium restricted to the north and east of the site area, the Pelaw Clay Member, Laminated Clay and Glacial Till, which in turn are underlain by Pennine Middle Coal</p>



Section	Summary
	<p>Measures Formation. The precise thickness of each of those deposits and the variable nature of the Pennine Coal Measures formation is currently undetermined on the Plot 2 area.</p> <p>The Made Ground and Alluvium on site are likely to be of low strength, high compressibility and susceptible to volume change and as such would comprise an unsuitable bearing stratum for shallow foundations. The Pelaw Clay and underlying Laminated Clay and Glacial Till may have been subject to periglacial activity and may contain relic failure planes, which will need further assessment in relation to engineering within this stratum.</p>
<p><b>Conclusions and Recommendations</b></p>	<p>With respect to ground conditions, the geo-environmental and geotechnical Preliminary Risk assessments have not indicated anything significant that would preclude feasibility for the proposed development. This should be confirmed though subsequent site investigation and design such that appropriate environmental and engineering control measures are put in place, as would be commensurate with a project of this nature.</p> <p>Whilst the potential for significant widespread contamination and ground gas generation is limited, there is the potential for localised contamination and Made Ground to exist, particularly in the vicinity of the North Moor farm buildings, and organic materials associated with Alluvium to the north and east of the site.</p> <p>The outline CSM produced upon completion of the desk study assessment has identified potential pollutant linkages that may be active upon completion of the proposed redevelopment. It is therefore recommended that the potential for these linkages to be active is assessed through an intrusive Phase 2 Site Investigation.</p> <p>Any Made Ground present likely to be of low strength, high compressibility and susceptible to volume change and as such would comprise an unsuitable bearing stratum for shallow foundations.</p> <p>The Pelaw Clay, Laminated Clay, Glacial Till and/or Pennine Middle Coal Measures Bedrock should prove an adequate formation stratum for shallow lightly to moderately loaded foundations Subject to suitable assessment through the intrusive site investigation. However, for high column loads consideration may need to be given to placing foundations deeper.</p> <p>Reuse of the of the Pelaw Clay, Laminated Clay and Glacial Till in the earthworks will need to be carefully considered following the site investigation to determine its suitability and to establish appropriate moisture content and compaction criteria.</p>

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- Appendix D Database Information
- Appendix E Part 2A (The Contaminated Land Regime)
- Appendix F General Notes

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# 1 INTRODUCTION

## 1.1 Preamble

- 1.1.1 RPS Consulting Services Ltd (RPS) was commissioned by Envision AESC / Wates Group Ltd to undertake a Phase 1 Geo-Environmental and Geotechnical Preliminary Risk Assessment (PRA) of the site of Envision Plot 2, the second phase of the ongoing development of a Battery Manufacturing plant on the outskirts of Sunderland.
- 1.1.2 The site covers approximately 47 hectares and currently comprises agricultural land, with the southern extent of the site occupied by the adjacent construction site. A site location plan is presented as Figure 1. The proposed development comprises a large battery manufacturing facility (AESC Plant 3 ) in the north and logistics and distribution centre in the south, with associated access infrastructure and hardstanding. A proposed development plan is provided as Figure 2.
- 1.1.3 The PRA is based upon a review of published information available from local, regional, and national agencies. The desk study information is derived from Enviro+Geo Insight Report GS-9381570 and Historical Mapping Report GS-9381570 provided by Groundsure which are presented as Appendix C and Appendix D. Please note the terms and conditions attached to the supply of data from Groundsure.
- 1.1.4 RPS previously undertook a Phase 1 Geo-Environmental PRA in 2021 (ref. 020439-RPS-SI-XX-RP-C-00021) and a Phase 2 Ground Investigation Report (GIR) (ref. ENV1-RPS-XX-XX-RP-G-114000), to support the development of the Giga 1 factory in Plot 1 immediately adjacent to the south of the subject site area. The Plot 2 site boundary includes a small area in the south that was included in the Plot 1 study area, and therefore relevant information for this area of the site within the previous assessments is included in this report.

## 1.2 Objectives

- 1.2.1 The principal objectives of this assessment were as follows:
- To assess potential sources of contamination at the site, associated with historical and current land uses both on site and in the surrounding area;
  - To review the environmental setting to assess the sensitivity of the surrounding area to contamination/pollution;
  - To produce an outline Conceptual Site Model (CSM) detailing how any contamination may impact the identified receptors via pollutant linkages; and
  - To provide a preliminary geotechnical assessment of the site from the available sources of information; and
  - To conclude on the likely requirement for further assessment and investigation to support the proposed design of the facility and to confirm the conceptual model and PRA.

## 1.3 Legislation and Guidance

- 1.3.1 The assessment has been undertaken in general accordance with British Standard BS EN ISO 21365:2020 and is considered suitable to meet the initial requirements of planning as outlined within the National Planning Policy Framework (NPPF). The assessment also reflects the recommendations of Environmental Agency guidance, Land Contamination: Risk management, (LCRM 2020).
- 1.3.2 This report has been produced in general accordance with:
- Contaminated Land (England) Regulations 2006 (as amended);



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- DEFRA Environmental Protection Act 1990: Part 2A - *Contaminated Land Statutory Guidance* (2012);
  - Environment Agency (2020) *Land Contaminated: Risk Management* (LCRM 2020);
  - National Planning Policy Framework (2023);
  - CIRIA Document C665: *Assessing Risks Posed by Hazardous Ground Gases to Buildings*;
  - British Standard requirements for the '*Investigation of potentially contaminated sites - Code of practice*' (ref. BS10175:2011+A1:2017);
  - British Standard requirements for the '*Code of practice for ground investigations*' (ref. BS5930:2015+A1:2020); and,
  - British Standard requirements for the '*Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*' (ref BS8485:2015+A1:2019).

1.3.3 Details of the limitations of this type of assessment are described in Appendix F.

## 2 SITE RECONNAISSANCE AND DESK STUDY

### 2.1 Site Reconnaissance

2.1.1 This section of the report is based upon observations made during a site visit carried out on 23<sup>rd</sup> February 2023. A site boundary plan is provided as Figure 2. Selected photographs are shown in Appendix B.

#### The Site

Table 2-1 – Summary of on-site activities

Section	Description
Background:	The site is located approximately 5km northwest of Sunderland City Centre, centred on National Grid Coordinates 432948, 559043. It is irregularly shaped and occupies an area of approximately 47 ha.
Site Layout:	The site currently comprises agricultural farmland surrounding the former North Moor Farm buildings, which in total occupy less than 5% of the site area. The former farm buildings was accessible via a track adjoining International Drive. The site is bounded to the north by a tributary of the River Don.
Activity / Operations:	<p>At the time of the walkover most of the site was within the possession of Morgan Sindall, undertaking the realignment of existing overhead power lines that cut across the south and east of the site.</p> <p>The former North Moor Farm was occupied by Morgan Sindall, featuring temporary office cabins in the yard surrounded by former stables. The barn and yard were in use for the storage of construction materials and equipment.</p> <p>Within the fields surrounding the farm, electricity pylons were in different stages of construction along the north and west boundaries, in preparation for the diversion from the existing power line route from northeast to south west across the south and east of the site. Two temporary pylons were also erected to facilitate the transfer of power lines. At the location of each new pylon surface soils had been scraped off and stockpiled adjacent, and pylon foundations had been constructed with an aggregate pylon base laid down.</p> <p>Land within the red line boundary but to the east of the overhead power lines forms part of the Envision Plot 1 Giga 1 CDM construction site, and at the time of the walkover was separated from the majority of the site by hoarding. This area was occupied in the southwest by stockpiled materials won from the Envision Plot 1 Giga 1 earthworks, and in the north east by the Wates office and site compound.</p>
Building Structure(s):	There were several buildings at the North Moor Farm compound. In the south, a small stone farmhouse building with pitched roof was boarded up and appeared to be unoccupied. A steel frame barn with concrete walls and sheet metal cladding was in use for the storage of materials and equipment. Three stable buildings adjoined the east side of the barn, these were of concrete and timber construction with sheet metal roofing which had collapsed in at various places.
Surface Cover:	The majority of the site comprised grassed fields, with tree and hedgerow boundaries. Access tracks between fields and to the farm, as well as the farm yard and parking area were covered by crushed stone.
Drainage:	<p>The site was generally level with a gently sloping topography. The highest elevation on site appeared to be approximately mid-way down the western boundary. Fields in the north and middle area of the site sloped downward to the river at the northern boundary. The southern field sloped downward toward the Main Road (A1290) on the southern boundary. There is a general drop of approximately five meters across the site from south west to north east.</p> <p>Drainage ditches were present along the field boundaries. Drainage ditches in the north of the site fell towards the river and to the attenuation ponds north east of the site. A drainage ditch on the south western boundary fell towards the south of the site. A newer ditch had been constructed across the south east of the site along the Giga 1 Plot 1 boundary, falling southward at its southern extent, and north easterly in the middle of the site, where it appeared to discharge to attenuation ponds off-site.</p>

Section	Description
Bulk Storage / Tanks:	Diesel Fuel was stored in two self-bunded 2980 Litre and 1940 Litre tanks at the Morgan Sindall construction yard. A self-bunded fuel cage contained three 5 to 10 Litre plastic fuel cans of petrol. A petrol motor pressure washer bowser was stored to the east of the farm.
Waste:	Three roll-on roll-off skips for general construction wastes were situated on the yard. Two general waste and mixed recyclables wheelie bins were present adjacent to the office cabins. An effluent tank was situated on a platform on the opposite side of the stable buildings from the cabins.
Electricity Sub-Stations /Transformers:	No electricity substations were identified at the time of the walkover.
Visual Evidence of Contamination:	No staining, odour, or other evidence of contamination was encountered during the site inspection.
Statutory Nuisance:	Any complaints, enforcements or other regulatory actions regarding the site or immediate surrounding properties related to environmental conditions (or fire or spill events) is unknown.
Other Geo-Environmental Issues:	No Japanese Knotweed (invasive plant species) was readily identified on the site at the time of the walkover. A Morgan Sindall engineer informed RPS that upon their initial possession of the site, two oil or fuel drums were present south of the small farmhouse building.

## The Surrounding Area

2.1.2 The site is located in an area of mixed agricultural and industrial land uses. At the time of the site inspection, neighbouring land consisted of the following:

**Table 2-2 – Neighbouring Land Uses**

Direction	Description
North:	Agricultural land
East:	Agricultural land, Envision Giga 1, International Advanced Manufacturing Park
South:	Agricultural land, Envision Giga 1, Unipres (UK) Limited, Magna Exteriors Sunderland
West:	Agricultural land

2.1.3 A tributary of the River Don was observed to flow from west to east along the site's northern boundary. A drainage ditch in the northwest discharges directly to the river, whilst ditches in the north east appear to discharge to the river via off-site attenuation ponds utilised by the industrial developments to the east.

## 2.2 Proposed Development

2.2.1 The proposed development comprises a large battery manufacturing facility (AESC Plant 3) in the north and logistics and distribution centre in the south, with associated access infrastructure and hardstanding. A proposed development plan, including selected photos of the current site and drainage features is provided as Appendix A.

## 2.3 Site History

### Historical Map Review

2.3.1 The following review is based on past editions of readily available Ordnance Survey (OS) maps. These include scales of 1:1,250, 1:2,500 and 1:10,000 dated 1857 to 2023. Extracts from selected historical maps are given as Appendix C.

**Table 2-3 – Historical Site Uses**

On-site Land Use and Features	Dates
The site is divided by field boundaries, North Moor farm (featuring a well) is in the north of the site, West Moor farm encroaches on the site's south-eastern boundary.	1856 - 1884
North Moor Farm features two additional buildings and a small pond.	1884 - 1919
West Moor Farm redeveloped with larger buildings	1896 - 1959
North Moor Farm Pond is no longer shown	1919 - 1979
Electricity Pylons constructed along present route through site.	1979 - Present
North Moor Farm buildings appear to have been redeveloped to present configuration.	1986 - Present
West Moor Farm redeveloped, additional buildings - Farm demolished in 2021.	1993 - 2021
Stable Buildings in the eastern yard of North Moor Farm	2001 - 2022
Envision Giga 1 Plot 1 commenced construction in the south-east of the site, on the parcel of land beyond the overhead power lines.	2022 - Present

2.3.2 The site is indicated to have been occupied by two farms, North Moor Farm in the north, and part of West Moor Farm in the south since earliest mapping. Both farms have undergone phases of redevelopment over their history. A pond appears to have been infilled in the early 20<sup>th</sup> century near to North Moor Farm. West Moor Farm was demolished to make way for the development of Giga 1. Anecdotally, Morgan Sindall Engineers suggested that prior to their possession of the site, North Moor Farm had been a riding school, and was latterly occupied by a travelling community. Satellite imagery indicates that several small lean-to style sheds or outbuildings were present in the farmyard areas until 2022.

**Table 2-4 – Historical Neighbouring Site Uses**

Surrounding Land Uses (250m radius)	Orientation	Distance	Dates	
			From	To
West Moor Farm	East	0 – 50m	1856	2021
Works (Unipres UK Ltd) - Tank shown from 1993	South	50 – 250m	1993	Present
Building adjacent to Nissan Sports and Leisure Complex	South East	180m	1993	1994
IAMP international Manufacturing Park	East	75 – 250m	2010	Present
Faltec Europe IAMP Manufacturers	North East	50 – 250m	2010	Present

2.3.3 Land use in the vicinity of the site has been largely agricultural. Works and depots including manufacturers associated with the Nissan Car Manufacturing plant were developed nearby from the early 1990s.

2.3.4 More recently construction activity associated with the Envision Giga Factory Plot 1 has commenced. Construction works are ongoing. Within the Plot 2 area the realignment of electricity pylons within the Plot 2 area are ongoing at the time of reporting. See Table 2.1 above for details.

2.3.5 RPS understands fuel/oil tanks were removed from West Moor farm during its demolition, by Sunderland County Council.

## Site Planning History

2.3.6 Relevant and readily available planning records for the site, as obtained from Sunderland City Council planning website are summarised as follows:



- 01/01387/OHL | Change an existing 11,000 volt single phase line to a three phase line for approx. 670m. Erection of two additional poles. Decided Fri 24 Aug 2001
- 20/00556/OU4 IAMP One Phase Two Washington Road, Erection of industrial units (up to 98,937.2sqm) for light industrial, general industrial and storage and distribution uses with ancillary office and research and development floorspace with internal accesses, parking, service yards, electricity sub-stations, attenuation basins and associated infrastructure, earthworks and landscaping, as well as the demolition of existing buildings at West Moor Farm. Approved June 2020.
- 21/01330/FUL West Moor Farm Cheery Blossom Way, Washington, Demolition of buildings comprising West Moor Farm, application received 3rd June 2021.
- 21/01764/HE4 Erection of industrial unit to be used for the manufacture of batteries for vehicles with ancillary office / welfare floorspace and associated infrastructure provision, accesses, parking, drainage and landscaping. Approved October 2021.

## 2.4 Previous Reports

- 2.4.1 RPS have reviewed previous ground investigation reports relating to the site, detailed below.
- 2.4.2 RPS cannot vouch for the accuracy or validity of the information provided within third party reports and the following opinion is based solely upon the reports. Legal reliance should be sought from the original authors of these reports where their content is considered material to the characterisation of the site.
- 2.4.3 A plan showing previous exploratory hole locations from previous investigations on and near to the site is provided as Figure 3.

### IAMP Ground Investigation Reports 2018.

- 2.4.4 A wider development area known as the International Advanced Manufacturing Park (IAMP) for which a limited area of the Plot 2 site was investigated. There have been various planning applications relating to this development. Outline Planning permission was granted for IAMP One Phase Two Washington Road, Usworth, by Sunderland City Council (Application reference 20/00556/OU4 on 22 June 2020).
- 2.4.5 The subsequent application in relation to “Erection of industrial unit to be used for the manufacture of batteries for vehicles with ancillary office / welfare floorspace and associated infrastructure provision, accesses, parking, drainage and landscaping” was approved by Sunderland City Council (Application Reference: 21/01764/HE4 which was supported by the following reports.
- Factual Report on Site Investigation Report, Dunelm Ltd Report, reference D8044/00 dated 23rd January 2018 (Dunelm, 2018a)
  - Geo-Environmental Appraisal for Land at International Advanced Manufacturing Park Phase 1 Dunelm Ltd Report, reference D8044/IR dated 7th February 2018 (Dunelm, 2018b)
  - IAMP ONE Ground Investigation Report (GIR) AECOM Limited, reference 60283414 rev 001, dated 21February 2018.
- 2.4.6 The ground investigation featured the following exploratory holes within the Plot 2 site boundary:
- BH52 and BH45 - Cable percussion boreholes with rotary core follow on.
  - CPT33 – Cone Penetration Test
  - TP35, TP36, TP37 and TP38 – Mechanically excavated trial pits

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- 2.4.7 BH52 in the south of the site encountered a geology of topsoil over -Glacial Till, to approximately 35.8m AOD, overlying Siltstone with a sequences interbedded layers of Mudstone and Sandstone of the Pennine Middle Coal Measures proven to a depth of 23.50m AOD.
- 2.4.8 BH45 in the east of the site encountered a geology of topsoil over Pelaw Clay/Laminated Clay to 26.13m AOD, a lens of sand and silt from 26.13m to 24.93m AOD, Glacial Till between 24.93m to 22.03m AOD, and Sandstone of the Pennine Middle Coal Measures proven to a depth of 19.10m AOD.
- 2.4.9 CPT33 in the east of the site was noted to correlate closely with BH46 (immediately southeast of the site) where the weathered Pennine Middle Coal Measures were encountered from 30.36m AOD.
- 2.4.10 The Dunelm 2018b report provided an interpretation of the test results and monitoring. Geo-environmental sampling of soils was compared to Generic Assessment Criteria (GAC) based on a commercial based development. No sources of contamination were encountered during the Dunelm 2018a investigation and consequently no unacceptable risks were identified.
- 2.4.11 Trial Pits TP37 and 38 encountered a geology of topsoil over Glacial Till overlying on bedrock whilst TP35 and 36 encountered geology of topsoil over Pelaw Clay directly overlying Glacial Till overlying on bedrock.

## **Envision Sunderland Giga 1 Plot 1 Preliminary Risk Assessment and Ground Investigation.**

- 2.4.12 Planning Application Reference: 21/01764/HE4 was approved October 2021, The planning permission included conditions in relation to ground conditions and associated risk assessment, requirements included Site Investigation and Risk Assessment, a Remediation Scheme, and Verification.
- 2.4.13 The following Risk Assessments and Investigations were therefore undertaken to support the construction of Giga 1 and therefore largely limited to the area of the Plot 1 site boundary. Within the current site boundary for Plot 2 there is generally an overlap in the previous ground investigation in the southeast of the site which is located to the north and west of the Giga 1 development.
- Phase 1 Geo-Environmental Preliminary Risk Assessment RPS reference 020439-RPS-SI-XX-RP-C-00021 R2 dated August 2021
  - Factual Site Investigation Report Solmek Ltd reference S211001, dated January 2022 (instructed by RPS)
  - Phase 2 Ground Investigation Report (GIR) RPS Group reference ENV1-RPS-XX-XX-RP-G-114000 dated 22nd February 2022
- 2.4.14 The ground investigation included the following exploratory holes within the Plot 2 site boundary:
- CP07 – Cable percussion borehole
  - TP01, TP02, TP03, TP09, TP17, TP18 and TP19 and TP51 – Mechanically excavated trial pits
- 2.4.15 CP07 in the east of the site, near to BH45 from the previous ground investigation, encountered a geology of topsoil over Pelaw Clay/Laminated Clay to a depth of 23.54m AOD a lens of sand and silt from 23.54m to 22.14m AOD, Glacial Till between 22.14m and 21.54m AOD, and Sandstone of the Pennine Middle Coal Measures proven to a depth of 21.09m AOD.
- 2.4.16 TP01, TP02, TP03 and TP09 were in the south of the site, generally encountering Pelaw Clay directly overlying Sandstone Bedrock of the Pennine Middle Coal Measures at depths between 37.77m and 37.03m AOD where proven. At TP09, at the location of the former West Moor Farm,

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Made Ground was encountered at a thickness of 1.10m, comprising black ashy sandy fine to coarse gravel of brick, concrete, dolomite, sandstone and quartz, with low cobble content of brick and concrete.

- 2.4.17 TP17, TP18 and TP19, near to the south boundary, encountered Pelaw Clay to depths between 35.76 35.00m AOD. Bedrock was not encountered within these exploratory holes.
- 2.4.18 The ground conditions encountered at Plot 1, were found to comprise localised pockets of Made Ground around the area of the former farm buildings, with Topsoil and reworked subsoils (logged as Made Ground) encountered in the wider area. These were underlain by a variable thickness of Superficial soils comprising a sequence of Pelaw Clay Member, Tyne and Wear Complex (Laminated Clays), and Glacial Till (partially), with the bedrock of Pennine Middle Coal Measures Strata extending to depth.
- 2.4.19 The superficial soils were found to be of varying thickness and strength, and the Pelaw Clay was often found to be difficult to distinguish from the underlying Laminated Clay but was typically in the order of 5m in thickness across the site. The remaining sequence of underlying superficial deposits then being of variable thickness typically increasing towards the north and east respectively.
- 2.4.20 An assessment of the depth to rockhead across Plot 1 was undertaken, which showed the presence of the infilled glacial valley feature trending northeast. The rockhead was encountered at its shallowest in the southwest of the plot at circa 3.50mbgl (37.50mAOD) falling to the east to be at approximately 11.00mbgl (25.00mAOD) and more steeply to the northeast to a lowest level of circa 14.00mbgl (20.00mAOD).
- 2.4.21 It is likely that the rock head gradient within the Plot 2 area will continue with the gradient within the Plot 1 site from west to east. With the current lack of ground investigation data, the precise depth to rockhead and thickness of the superficial deposits cannot at this stage be predetermined however it is anticipated that they may also dip to the north and east albeit that further detailed ground investigations will be required to determine the precise form and thickness of the superficial deposits/depth of rockhead within the Plot 2 area.
- 2.4.22 The Pennine Middle Coals measures were shown to comprise interbedded comprising sequences of the following. Not necessarily encountered in this sequence due to dip of strata:
- Weak, partially weathered, orange brown fine, predominantly medium to coarse, micaceous SANDSTONE. Fractures are sub-horizontal, planar, smooth with dark red staining.
  - Medium strong, partially weathered, light grey fine grained SANDSTONE. Fractures are medium spaced sub-horizontal, planar, smooth, undulose, clean.
  - Mudstone – Extremely weak or very weak distinctly weathered light grey MUDSTONE. Fractures are very closely to closely spaced, sub-horizontal, planar, smooth, clean with dark grey discolouration on fracture surfaces.
  - Siltstone – Very weak, weak or medium strong dark grey SILTSTONE with bands of mudstone. Fractures are very closely to closely spaced, subhorizontal planar, smooth, clean.
  - Coal - Very weak black COAL. Frequently randomly orientated interlocking fractures.
- 2.4.23 Again, in the absence of Plot 2 site specific ground investigation information the interbedded sequence and nature of the Pennine Middle Coal Measures cannot yet be predetermined, and as such ground investigation information will be required to confirm the precise sequencing and nature of deposit and extent of weathering.
- 2.2 Groundwater monitoring of the 2021 investigation was considered to concur with the earlier Dunelm 2018 investigation suggesting a phreatic surface dipping to the northeast across the site

from circa 39.00mAOD to 35.00mAOD with increasing depth up to 2.50m below ground level. It is anticipated that groundwater will continue this gradient within the Plot 2 site.

- 2.4.1 The groundwater conditions within the Pennine Middle Coal Measures were therefore considered to be sub-artesian in nature confined by lower permeability overlying cohesive superficial deposits. Shallow groundwater where encountered was considered to be perched and confined within more granular layers existing discretely within the superficial deposits.
- 2.4.2 No chemicals of concern were recorded in the shallow soils at concentrations above their respective AC, where applicable, or above the laboratory limit of detection. No asbestos was detected in the soil samples collected at the site. Therefore, the shallow soils were not considered to pose a risk to future site users or off-site receptors.
- 2.4.3 No contaminants of concern were detected in the groundwater beneath the site.

## 2.5 Environmental Setting

### Geology

- 2.5.1 Based on Previous Reports, British Geological Survey (BGS) mapping (1:50,000-scale) and the Environment Agency (EA) Groundwater Vulnerability mapping (1:100,000-scale), the stratigraphic sequence and aquifer classifications beneath the site are indicated to be as follows:

**Table 2-5 – Descriptions of Geological Strata**

Strata	Description & approximate thickness	Aquifer Classification
Topsoil / Subsoil	Dark brown sandy slightly gravelly clayey topsoil with many fine to medium plant rootlets. Due to agricultural land use may be locally thickened.	n/a
Alluvium (Mapped at the northern boundary only)	Sorted or semi-sorted alluvial sediment formed by deposition in a stream or river environment. Soft to firm consolidated, compressible silty clay.	Secondary A Aquifer
Pelaw Clay Member	Reddish-brown to dark brown silty clay containing well dispersed pebbles and cobbles (locally abundant), and commonly, small, buff to grey, grotesquely shaped calcareous concretions towards the base of the weathering zone.	Unproductive Stratum
Tyne and Wear Complex (laminated clay)	Dark grey / dark brown laminated silt and clay interbed with bands of sand or silt	Unproductive Stratum
Glacial Till	Unsorted glacial sediment with no stratification, comprising variable proportions of cohesive and granular material.	Unproductive Stratum
Pennine Middle Coal Measures Formation	Interbedded grey mudstone, siltstone, pale grey sandstone and commonly coal seams, with a bed of mudstone containing marine fossils at the base, and several such marine fossil-bearing mudstones in the upper half of the unit.	Secondary A Aquifer

- 2.5.2 Two faults are mapped, both trending southeast to northwest. The western fault extends across the site beneath the former West Moor Farm, whereas the eastern fault is indicated to terminate 200m west of North Moor Farm.
- 2.5.3 Made Ground is unlikely to be present across most of the site, however localised pockets were identified previously at West Moor Farm and may be present elsewhere, particularly at North Moor Farm associated with the previous construction and demolition of farm buildings, as well as along access tracks and drainage features.



- 2.5.4 Ground conditions identified by previous ground investigations across Plot 1 and partially within Plot 2 indicate that rockhead falls to the east, and more steeply to the northeast. It is anticipated therefore that rockhead will be relatively shallow in the south of the site, and deeper in the north east, whilst superficial deposits will be at their thickest in the east and north east. Glacial Till was indicated to be present at greatest thicknesses in the east of Plot 1, and was not indicated in the areas of the site adjoining Plot 2. Glacial Till therefore may not be present beneath the majority of Plot 2.
- 2.5.5 The previous ground investigations, also within similar agricultural land showed topsoil/subsoil thickness of between 0.2 and 0.6m, and locally thickened to 1.15m. It is therefore anticipated that Plot 2 will have similar characteristics due to the agricultural land use.

## Hydrogeology

- 2.5.6 The site is located above Unproductive Stratum relating to the Pelaw Clay Member, and the underlying Glacial Till. These formations have a low permeability and have negligible significance for water supply or base flow. Underlying this is a Secondary A Aquifer relating to the Pennine Middle Coal Measures Formation. These formations are formed of permeable layers capable of supporting water supplies at a local scale, in some cases forming an important source of base flow to rivers. Alluvium at the northern boundary of the site along the River Don tributary also represents a Secondary A Aquifer.
- 2.5.7 According to EA data, the site is not located in a groundwater Source Protection Zone (SPZ).
- 2.5.8 Under the Water Framework Directive, the Environment Agency's local River Basin Management Plan classifies groundwater chemical quality beneath the site relating to the Tyne Carboniferous Limestone and Coal Measures Water Body as poor quality (2019).
- 2.5.9 Information provided by the EA indicates that there are records of one active licensed groundwater abstraction within 2km of the site. This is detailed in the table below:

**Table 2-6 – Licensed Groundwater Abstractions**

Licence Holder	Approx. Distance and Direction from Site	Source	Use
North East Property Partnership Ltd Licence no. 1/23/05/028	1993m north east	Coal Measures Groundwater	Fish Farm/ Cress Pond Throughflow

## Surface Water

- 2.5.10 There is one watercourse within 1km of the site which are classified within a River Basin Management Plan published by the EA under the European Water Framework Directive (2000). A list of readily identifiable nearby watercourses and water bodies is as follows:

**Table 2-7 – Nearby Watercourses and Water Bodies**

Watercourse / Body	Quality Classification	Approx. Distance and Direction from Site
River Don From source to tidal Limit ID: GB103023075690	Chemical Rating – Fail (2019) Ecological Rating – Moderate (2019) Overall Rating – Moderate (2019)	174m north

- 2.5.11 Information provided by the EA indicates that there are no records of active licensed surface water abstractions within 2km of the site.

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## Flood Risk

### Fluvial Flood Flooding

- 2.5.12 Information provided by the EA Flood Risk Map for planning indicates that areas of the north and northwest of the site are located within a Flood Zone 3 and Flood Zone 2, with respectively greater than 0.1% and 1% chance of flooding in any year, representing a medium to high probability of flooding from the river. Flood Defences are marked on the northern bank of the river, outside the site boundary. The areas of buildings and hardstanding for the proposed development are outside these Flood Zones.

### Surface Water Flooding

- 2.5.13 Information provided by the EA Long Term Flood Risk Map indicates while the majority of the site is at very low risk of surface water flooding, there is an area of high risk in the south of the site, centred over the ditch on the southwestern boundary. There is also an area of medium and high risk to the north, south and east of North Moor Farm, extending to the northeastern boundary, associated with drainage ditches falling to the river and attenuation ponds to the northeast.

## Ecologically Sensitive Sites

- 2.5.14 Natural England data indicates that there are two ecologically sensitive sites, that constitute environmental receptors as defined within Table 1 of the DEFRA Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012), located within a 2km radius of the site. These sites are two Local Nature Reserves, Barmston Pond and Hylton Dene, 905m south, and 1704m east of the site respectively.
- 2.5.15 It should be noted the statement regarding ecological systems does not purport to be a formal assessment and this aspect may require a separate independent specialist ecology assessment undertaken by appropriately qualified personal. These assessments are therefore beyond the scope of this report and would be reported independently.

## Radon

- 2.5.16 According to the Indicative Atlas of Radon in England and Wales published by the Health Protection Agency (part of Public Health England) and the British Geological Survey, the site is in an area where less than 1% of properties are estimated to have a radon level at or above the Action Level, and therefore no Radon Protection Measures are required.

## Coal Authority

- 2.5.17 The Interactive Map Viewer on the Coal Authority website indicates that the site is located in a coal mining reporting area, however, is not located in a Development High Risk Area. The site is located in an area where underground coal working is known to have occurred, however the depth to worked seams recorded on the interactive map viewer is between 350 and 450m bgl. The last recorded worked date beneath the site is recorded as 1974.
- 2.5.18 There are no recorded mine entries on or near the site.

## Non-Coal Mining

- 2.5.19 The site is not located in an area of non-coal mining.
- 2.5.20 There are no records of BGS Brit Pits within 500m of the site.

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## BGS Ground Stability Hazard Ratings

2.5.21 British Geological Survey Ground Stability Hazard ratings for the site are summarised as follows

**Table 2-8 – BGS Ground Stability Hazard Ratings**

Ground Stability Hazard	BGS Risk rating
Collapsible ground	Very Low
Compressible ground	Negligible – Moderate (see note below)
Ground dissolution	Negligible
Landslide	Very Low
Running sand	Negligible – Low (see note below)
Shrinking or swelling clay	Low

Note 1: It should however be recognised that there is a moderate risk rating for compressible ground, and a low risk rating for running sands at the northern boundary of the site associated with the Alluvium mapped in this area. Based on the proposed development plan this area of the site is not currently anticipated to be developed, remaining at its existing flood plain level.

## 2.6 Authorised Processes and Pollution Incidents

### Landfills and Waste Sites

2.6.1 Data provided by the EA, Local Authority and BGS indicates that there are no recorded licensed or known historical landfill sites, or waste treatment/transfer sites located within 250m of the site.

### Environmental Permits

2.6.2 EA and Local Authority data indicates that there are no processes regulated by an Environmental Permit (under the Environmental Permitting Regulations 2010) within 500m of the subject site.

2.2 There are records of waste exemptions relating to the former West Moor Farm in the south of the site, for the burning of waste in the open, spreading of plant matter to confer benefit, and deposition of waste from dredging inland waters. Waste exemptions activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit.

### COMAH Sites

2.6.1 There is one record of operations under the Control of Major Accident Hazards (COMAH) Regulations 1999, located within 500m of the site. Brentagg UK Limited 18 metres south of the site operates under COMAH Lower Tier Operator measures.

### Pollution Incidents

2.6.2 Environment Agency data indicates that there are records of one 'major' pollution incident within 500m of the site. These are outlined in the following table:

**Table 2-9 – Pollution Incidents within 500m of the site**

<b>Approx. Distance and Direction from Site</b>	<b>Receiving Medium and Date</b>	<b>Severity of Incident and Type</b>
447m north west	ID: 1918907 Date: 09/04/2021 Inorganic Chemicals/Products	Water Impact Category 1 (Major)

2.6.3 The receiving medium for incident 1918907 is not specified within the EA data, however based on the distance and direction from site it likely that the impacted water source was upstream on the tributary of the River Don that flows past the site.

## **2.7 Unexploded Ordnance**

2.7.1 CIRIA Report C681 (stone et al 2009) outlines recommendations for dealing with the potential risk associated with the legacy of Unexploded Ordnance Risk, largely relating the WWII bombing and military sites.

2.7.2 Reference to the Zetica Unexploded Bomb Risk mapping indicates that the site is in an area of low potential risk from Unexploded Bombs.

2.7.3 It should be noted, however that RAF Usworth was located 500m to the south east of the site and was operational during both WWI and WWII. There are records of a Luftwaffe Target within the former air field.

2.7.4 The site is not located within an area of known military history, therefore, further no consideration of Unexploded Ordnance is considered necessary.

## **2.8 Regulatory Consultations**

2.8.1 RPS has written to the Local Authority Environmental Health team and is awaiting the response.



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## 3 OUTLINE CONCEPTUAL SITE MODEL

### 3.1 Background

3.1.1 An outline conceptual site model (CSM) consists of an appraisal of the *source-pathway-receptor* 'contaminant linkages' which is central to the approach used to determine the existence of 'contaminated land' according to the definition set out under Part 2A of the Environmental Protection Act 1990. For a risk to exist (under Part 2A), all three of the following components must be present to facilitate a potential 'pollutant linkage'.

- **Source** referring to the source of contamination (Hazard).
- **Pathway** for the contaminant to move/migrate to receptor(s).
- **Receptor** (Target) that could be affected by the contaminant(s).

3.1.2 Receptors include human beings, controlled waters and buildings / structures. The National Planning Policy Framework, used to address contaminated land through the planning process, follows the same principles as those set out under Part 2A. Further details on the Part 2A regime are presented within Appendix E.

3.1.3 As part of the assessment the potential risks to receptors for potential source is given one of the following classification:

- **Low risk** - it is considered unlikely that issues within the category will give rise to significant harm to identified receptors
- **Moderate risk** - it is possible, but not certain that issues within the category will give rise to significant harm to receptors
- **High risk** - there is a high potential that issues within the category will give rise to significant harm to identified receptors

### 3.2 Potential Pollutant Linkages

3.2.1 Each stage of the potential pollutant linkage sequence has been assessed individually on the basis of information obtained during the site reconnaissance, review of previous reports and desk study exercise and are discussed in the following section.

#### Potential Contaminant Sources

##### On Site

3.2.2 Current use of the site for construction activities, and historical use of the site for agricultural purposes with associated farm buildings is unlikely to have resulted in significant widespread contamination of soil and groundwater.

3.2.3 There is, however, the potential for localised contamination, particularly in the area of the farm buildings, associated with the current and historical storage of materials, vehicles and plant (i.e. fuels, oils, pesticides/herbicide, etc).

3.2.4 Made Ground may be present in some areas of the site, particularly in the area of the farm buildings and any area of land raising/ infilling. Where present this could represent a potential source of contaminants and / or ground gas.

3.2.5 Potential contaminants could include in metals, asbestos, hydrocarbons, inorganic compounds, volatile organic compounds.

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## Off-site

- 3.2.6 Current and historical potential sources of contaminants of concern include the works associated with the Nissan Manufacturing Plant to the south first established in the 1980s, the newer IAMP development to the east of the site, and the ongoing construction of Giga 1 within Plot 1. These activities are likely to be heavily regulated and well managed.

## Potential Pathways

- 3.2.7 Topsoil and subsoil horizons are likely to present across the wider site owing to its agricultural use. There is the potential for Made Ground to be present in localised areas, particularly in the vicinity of the farm buildings and in areas of infilled ponds, ditches, areas of tipping and earthworks.
- 3.2.8 BSG and previous site investigation data indicates that superficial deposits comprise the Pelaw Clay Member, in some cases also underlain by Laminated Clay and Glacial Till, are present at thicknesses from 2.00m up to 17.50m. The underlying bedrock, Pennine Middle Coal Measures Formation, comprises an interbedded sequence of sandstone, mudstone, siltstone and occasional coal seams. No shallow worked coal seams, voids or broken ground were encountered.
- 3.2.9 Where Made Ground and superficial deposits are granular in nature any shallow groundwater and any mobile contaminants that may be present are likely to be able to migrate through the permeable strata. However, the mobility of groundwater and any contaminants is likely to be limited by cohesive Made Ground and significant thickness of cohesive superficial deposits. The bedrock which is suggested to weather to a clay is likely to be of low/moderate permeability limiting the mobility of groundwater and mobile contaminants to deeper strata.
- 3.2.10 There is the limited potential for contaminants of concern (if present) beneath the site to migrate on or off-site via granular horizons of the Made Ground (if present) and the superficial deposits. These may impact controlled waters receptors or on/off-site human health receptors via the dermal contact, ingestion and vapour inhalation pathways.
- 3.2.11 Drainage ditches across the site may act as pathways to the tributary of the River Don located at the northern boundary of the site.
- 3.2.12 On completion of the proposed development, large areas of the site will be covered by buildings or hardstanding. In these areas the risks to future human health receptors via the pathways of dermal contact, ingestion and soil dust inhalation will be mitigated. In areas of managed soft landscaping, the pathways of dermal contact, ingestion and soil dust inhalation could still be active if contaminated soils are subject to disturbance.
- 3.2.13 The presence of buildings and hardstanding are also likely to reduce post-development surface water infiltration reducing the potential for the leaching of any mobile soil contaminants.
- 3.2.14 There is a limited potential for ground gas and volatile contaminants to be present on site in localised areas such as the area of the farm buildings and any areas of filled ground, historical tipping, etc. In these areas there could potentially be a risk to future site users associated with the gas/vapour inhalation pathway in indoor areas.

## Potential Receptors

- 3.2.15 Post development receptors include future site users and off-site human health receptors.
- 3.2.16 The Secondary A Aquifer and Secondary Undifferentiated/Unproductive Aquifers present beneath the site are not considered to represent a particularly sensitive receptors in their own right. However, they may represent a pathway to surface water features.

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3.2.17 The assessment does not consider the risk to construction/demolition workers during redevelopment. These risks will be managed through appropriate H&S legislation including Health and Safety at works act and Construction Design and Management regulations.

### **3.3 Outline Conceptual Site Model**

3.3.1 An outline CSM has been developed on the basis of the site reconnaissance and desk study. The CSM is used to identify potential sources, pathways and receptors (i.e. potential pollutant linkages) on site post development and is summarised in the table below.

**Table 3-1 – Outline Conceptual Site Model**

Potential Source	Contaminants of Concern	Via	Potential Pathways	Linkage Potentially Active?	Receptors	Qualitative Risk Rating	Notes	
<b>On site:</b> Farm Buildings and associated uses including storage, farm vehicles and plant.  Areas of land raising/in filling	Metals, inorganic compounds, hydrocarbons, VOCs, pesticides / herbicides and asbestos		Direct contact/ingestion	✓	Future site users	Low	Limited potential for significant contamination to be present. Risk of localised contamination increased in area the existing buildings /operations.  Post development risks minimised by buildings, hardstanding and manged landscaping.  Residual risk in areas of soft landscaping, if soils are exposed or disturbed.	
			Soil	Inhalation of volatiles	✓		Low	Limited potential for significant volatile contaminants to be present in soils.
				Airborne migration of soil or dust	✓ ✓	Future site users Off-site users	Low	Limited potential for significant contamination to be present. Risk of localised contamination increased in area the existing buildings /operations.  Post development risks minimised by buildings, hardstanding and manged landscaping.
				Leaching of mobile contaminants	✓	Pennine Middle Coal Measures (Secondary A Aquifer)	Low	Potential for soil leaching and vertical and lateral migration of contaminants (if present) in shallow groundwater to impact controlled waters receptors.
			Groundwater	Direct contact/ingestion	✗ ✗	Future site users Off-site users	Low	Widespread very shallow groundwater unlikely to be present, with localised pockets with any granular Made Ground and superficial deposits. There is a low potential of localised contamination in area the existing buildings /operations.
				Inhalation of volatiles	✓ ✓	Future site users Off-site users	Low	Limited potential for significant volatile contamination in groundwater..
				Vertical and lateral migration in permeable strata	✓ ✓	Pennine Middle Coal Measures (Secondary A Aquifer) River Don	Low	

Potential Source	Contaminants of Concern	Via	Potential Pathways	Linkage Potentially Active?	Receptors	Qualitative Risk Rating	Notes
<b>Off-site</b> Works and tanks are present to the south of the site from the 1990s, with significant development since. Land associated with Nissan Car Factory.	Metals, hydrocarbons, and solvents	Groundwater	Direct contact/ingestion	✓	Future site users	Low	Low permeability clays associated with the Pelaw Clay Member will limit the on-site migration of any contaminated of concern (if present) via shallow groundwater (if present)
			Inhalation of volatiles	✓	Future site users	Low	Limited potential for significant volatile contamination in groundwater.
<b>On and off-site:</b> Made Ground, Areas of land raising/in filling	Carbon dioxide and methane	Ground Gas	Inhalation of ground gas	✓	Future site users	Low	There is the potential for ground gas originating from localised Made Ground and infilled ground on and off site. Significant areas of infilling that could represent a build-up of potentially explosive gases have not been identified historically on or off-site.
				✓	Off-site users		
			Explosive risks	✓	Future site users	Low	
				✗	Off-site users		

Note The Qualitative Risk Rating does not consider the potential for the pathway to be active. In the event that a Moderate or High Qualitative Risk Rating is identified further assessment is recommended.

## 4 PRELIMINARY GEOTECHNICAL ASSESSMENT

### 4.1 Introduction

4.1.1 It is proposed to construct a large battery manufacturing facility (AESC Plant 3) in the north and logistics and distribution centre in the south, with associated access infrastructure and hardstanding.

4.1.2 A proposed development plan is provided as Appendix A.

### 4.2 Preliminary Geotechnical Risk Register

4.2.1 The following table summarises the potential geotechnical hazards associated with the proposed development based on freely available published information. Preliminary information relating to the hazard and associated engineering considerations are provided.

4.2.2 The potential risks are given one of the following classifications:

- **Low risk** - it is considered unlikely that issues within the category will give rise to significant damage in relation to the proposed development.
- **Moderate risk** - it is possible, but not certain that issues within the category will give rise to significant damage in relation to the proposed development.
- **High risk** - there is a high potential that issues within the category will give rise to significant damage in relation to the proposed development.
- **N/A** - The anticipated ground conditions are not consistent with this hazard.

**Table 4-1 - Preliminary Geotechnical Risk Register**

Hazard Description	Potential for Hazard	Comments / Possible Engineering Requirements
Sudden lateral / vertical changes in ground conditions	High	<p>The anticipated ground conditions from existing ground level are likely to comprise with locally thickened Topsoil/Subsoil to a shallow depth overlying Cohesive materials of the Pelaw Clay Formation transitioning into Laminated Clays and possibly Glacial Till. These are underlain at depth by weathered becoming competent strata of the Pennine Middle Coal Measures. The depth to bedrock formation has been shown on the southern boundary to be variable and increasing from west to east, and the sequence and competency of the bedrock may also be variable between the mudstone, siltstone and sandstone layers.</p> <p>Localised pockets of deep Made Ground may be present across the site, particularly around the existing farm buildings. The difference between the Pelaw clay and the underlying Glacial Till across the site has previously been found to be hard to distinguish. The precise depth of and nature of the deposits should be established through ground investigation as this will affect foundation type and depth and may also affect serviceability limits for both structure foundations and floor slabs.</p> <p>If required appropriate assessment of piling method should be undertaken by a specialist piling contractor to ensure that adequate penetration of the variable strength rock materials is achieved.</p>
Highly compressible / low bearing capacity soils, (including peat and soft clay)	Moderate to High	<p>Made Ground is anticipated locally across the site near the farm buildings, although it is considered unlikely to be of considerable thickness. Cohesive soils at depth within the Pelaw Clay Member and the underlying Laminated Clays are potentially of soft consistency Low strength and hence compressible. and have been previously subject to periglacial activity which may have resulted in the development of relic failure planes within the soil. Alluvium is mapped across the northern</p>



Hazard Description	Potential for Hazard	Comments / Possible Engineering Requirements
		boundary of the site. Such strata may be considered unsuitable as a bearing stratum. Foundations for highly loaded columns may be required to more competent underlying layers.
Ground dissolution features / natural cavities	N/A	Ground conditions beneath the site are not consistent with these conditions.
Shrinking and swelling clays	Moderate	Shallow soils across the site are indicated to be cohesive in nature and therefore pose a risk for shrinking and swelling of clays. Shallow soils at Plot 1 were indicated to be intermediate to high plasticity in nature and therefore pose a low to moderate risk for shrinking and swelling of clays.  Mature and semi mature trees are not indicated to be widespread on site. The potential effect of these on the depth required for the foundations should be assess in accordance with the NHBC Manual guidelines. The potential for any heave following excavation associated to earthworks required on site will also need to be assessed.
Earthworks Acceptability	Moderate to High	The adjacent site investigations have shown that the Pelaw Clays are moisture susceptible and locally have been shown to have high moisture contents and would require moisture conditioning/treatment to ensure that the material is suitable for reuse to achieve appropriate design CBR. Any stabilisation measures should take due regard of future works with will include piling and below ground infrastructure and any treatment should not be detrimental to such follow-on activities. An earthworks specification should be development in accordance with the MCHW Specification for Highway Works using an end product criteria for compaction, with appropriate acceptability and performance related testing.
Slope stability issues	Low	Whilst no significant slopes are present on site, any temporary slopes created as part of the development should be subject to appropriate geotechnical design based on site-specific site investigation information. The potential for relict failure planes to be present within the Pelaw Clay should also be assessed.
High groundwater table (including waterlogged ground)	Low to Moderate	Based on the current understanding of likely ground conditions it is considered unlikely that shallow groundwater is present, however, there is the potential for localised pockets of perched groundwater within any granular layers in the superficial soils and especially within the alluvial deposits.  A continuous deeper groundwater body may be present at depth within the Pennine Middle Coal Measures Strata.  Groundwater control/exclusion measures may be required to enable formation of any excavations required at the site depending on localised ground conditions. This is likely to be in the form of sumps and pumping, although should fast inflows of water be encountered dewatering or sheet piled cofferdams in extreme circumstances may be required. However, requirements for this should be confirmed via intrusive investigation and subsequent groundwater level monitoring.
Filled and Made Ground (including embankments)	Low, locally moderate	Made Ground is not generally anticipated to be present on site with the exception being the area around the farm buildings and any areas of land raising/infilling.
Obstructions (including foundations, services, basements, tunnels and adjacent sub-structures)	Low	Most of the site has largely been agricultural land since the earliest mapping and has had no development history. However, there is a potential for relict structures to be encountered in the vicinity of the existing farm buildings, which may require removal to enable the construction of the proposed development. It is likely these obstructions, if encountered, may be removed using standard construction plant.
Underground mining	Low	The site is located in an area where underground coal mining is known to have occurred, with depths to workings recorded between

Hazard Description	Potential for Hazard	Comments / Possible Engineering Requirements
		350 and 450m bgl. The site is not in a development high risk area and is not in an area where shallowing mining is known to have occurred.
Concrete classification	Moderate	The Made Ground may contain sulphate bearing soils. Chemical laboratory analysis should be undertaken on soil samples collected from each strata encountered beneath the site to determine a Design Sulphate Class and an Aggressive Chemical Environment for Concrete (ACEC) Classification for proposed buried structures as part of the development.
Seismic Activity	Low	The Eurocode 8 seismic hazard zoning maps for the UK (Musson and Sargeant, 2007) indicate that horizontal Peak Ground Acceleration (PGA) values with 10% probability of being exceeded in 50 years (475 year return period) are between 0.02 and 0.04g, which is considered very low.

## 4.3 Preliminary Geotechnical Assessment

### Ground Conditions

- 4.3.1 The ground conditions at the site are anticipated to comprise localised pockets of Made Ground around the area of the former farm buildings, with Topsoil encountered in the wider area. These are underlain by variable thicknesses of superficial deposits, including the Pelaw Clay Member and also Laminated Clay and Glacial Till, which in turn is underlain by Pennine Middle Coal Measures Strata.
- 4.3.2 The Made Ground is likely to be of low strength, high compressibility and susceptible to volume change and as such would comprise an unsuitable bearing stratum for shallow foundations. The Pelaw Clay and underlying Laminated Clay and Glacial Till may have been subject to periglacial activity and contain relic failure planes, which will need further assessment in relation to engineering within this stratum.
- 4.3.3 During the previous ground investigations, shallow groundwater was identified to represent localised perched water in the granular layers of the Made Ground and Superficial Strata.

### Shallow Foundation

- 4.3.4 From a preliminary geotechnical viewpoint, based on the findings of the previous investigation, the underlying Pelaw Clay or Glacial Till should prove an adequate formation stratum for shallow foundations supporting light to moderate structural loads. This would need to be confirmed following the intrusive site investigation and assessment of the potential for relic failure planes within the Pelaw clay.
- 4.3.5 For column loads in excess of shallow foundations allowable capacity, pad foundations may not be considered a feasible foundation solution without ground improvement. Alternatively, a piled foundation solution may be required to transfer the structural loads to the lower levels of the Glacial Till or socketed into the Coal Measures Bedrock to provide suitable carrying capacity and tolerable settlement limits.
- 4.3.6 Previous ground investigations indicate the bedrock profile is likely to be quite variable across the site and the bedrock has significantly higher strength than the overlying Glacial Till. Moreover, the nature and competency of the bedrock will also have a significant impact, as the Sandstone layers are significantly stronger than the Mudstone or Siltstone beds. These factors will have an impact on the end bearing resistance achieved from piled foundations.

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## Piled Foundation

- 4.3.7 For the purposes of considering preliminary piled foundation sizes and lengths for initial outline substructure design, piled foundation capacities shall be undertaken by a qualified geotechnical engineer. on the basis of the site ground conditions. It is anticipated that bored, rotary bored or Continuous Flight Auger (CFA) piles, advanced through the Glacial Till to the upper layers of the Coal Measures Bedrock will be suitable from a geotechnical viewpoint.
- 4.3.8 Early consultation with an appropriate piling contractor is recommended to confirm pile working capacities and to ensure the contractor can achieve the required depths and capacities.
- 4.3.9 An appropriate piling platform should be designed and constructed in accordance with BRE Digest 470 (Working Platforms for Tracked Plant).

## Earthworks and Floor Slabs

- 4.3.10 Further assessment during the site investigation will be required to determine if the excavated material can be reused as general or structural fill beneath the floor slab where the ground surface elevation is lower than the proposed ground surface.
- 4.3.11 The adjacent site investigations have shown that the Pelaw Clays are moisture susceptible and locally have been shown to have high moisture contents and would require moisture conditioning/treatment to ensure that the material is suitable for reuse to achieve appropriate design CBR. Any stabilisation measures should take due regard of future works with will include piling and below ground infrastructure and any treatment should not be detrimental to such follow-on activities. An earthworks specification should be development in accordance with the MCHW Specification for Highway Works using an end product criteria for compaction, with appropriate acceptability and performance related testing.
- 4.3.12 It is likely that in areas of higher loading, or where ground conditions are softer under the building footprint, differential settlement across the floor slab will be excessive depending on the gradient tolerance required. It is considered that a Ground Movement Assessment (GMA) may be required to accurately determine the extent of settlement across the proposed floor slab, should a ground bearing slab be adopted. The effects of differential settlement on the floor slab may be addressed through settlement reducing piles or some form of ground improvement below the floor slab. Alternatively, if the predicted settlements are too high, then it may be prudent to consider a larger scope of ground improvement or to revert to a suspended or hybrid floor slab.
- 4.3.13 An assessment of the shrink/swell potential of any clay soils excavated as part of the earthworks will need to be undertaken and factored into any foundation, earthworks and floor slab design.
- 4.3.14 Whilst Made Ground is not anticipated to be widespread at the site, it may be encountered in localised amounts in the vicinity of the farm buildings. Any buried obstructions encountered are likely to be able to be removed by conventional earthmoving plant. The Made Ground and superficial deposits may contain sulphate bearing soils. Chemical laboratory analysis should be undertaken on soil samples collected from each strata encountered beneath the site to determine a Design Sulphate Class and an Aggressive Chemical Environment for Concrete (ACEC) Classification for proposed buried structures as part of the development.

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## 5 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

- 5.1.1 With respect to ground conditions, the geo-environmental and geotechnical Preliminary Risk Assessment has not indicated anything significant that would preclude development for the proposed industrial land.
- 5.1.2 Whilst the potential for significant widespread contamination and ground gas generation is limited, there is the potential for localised contamination and Made Ground to exist, particularly in the vicinity of the North Moor farm buildings.
- 5.1.3 The outline CSM produced upon completion of the desk study assessment has identified potential pollutant linkages that may be active upon completion of the proposed redevelopment.
- 5.1.4 It is likely that the pollutant linkages will be such that they could be mitigated by the use of typical measures such as a surface cover system, gas protection measures and 'barrier' water supply pipe. There may however be a requirement for a degree of remediation and increased soil/groundwater disposal cost may be realised. If excavated materials are to be reused on site a Materials Management Plan may be required and appropriate licenses/exemptions will be required.
- 5.1.5 Any Made Ground present, and Alluvium mapped in the north of the site is likely to be of low strength, high compressibility and susceptible to volume change and as such would comprise an unsuitable bearing stratum for shallow foundations.
- 5.1.6 The Pelaw Clay, Laminated Clay, Glacial Till and/or Pennine Middle Coal Measures Bedrock should prove an adequate formation stratum for shallow lightly to moderately loaded foundations Subject to suitable assessment through the intrusive site investigation. However, for high column loads consideration may need to be given to placing foundations deeper, undertaking some form of ground improvement to stiffen the near surface deposits or recourse to a piled foundation solution.

### 5.2 Recommendations

- 5.2.1 It is considered that intrusive ground investigation works are not considered necessary in support of a planning application for the proposed development. It is however recommended that a Phase 2 ground investigation is undertaken at the site in advance of development to determine the ground conditions. This will provide site specific information to provide geotechnical parameters for foundation and infrastructure design and allow confirmation of the low geo-environmental risk assessment and to determine if any localised remedial action is required.
- 5.2.2 Such an investigation would therefore confirm the conceptual model and anticipated ground and groundwater conditions and determine the appropriate environmental and engineering control measures that may need to be put in place, as would be commensurate with a project of this nature. If the site investigation identifies the presence of potentially significant contamination or ground gases further investigation, monitoring, risk assessment and remediation may be necessary and would be subject to regulatory approval.
- 5.2.3 Development specific geotechnical investigation will be required to inform preliminary foundation, floor slab, basement and pavement design as part of the redevelopment. Reuse of the Pelaw Clay, Laminated Clay and Glacial Till for earthworks will need to be carefully considered following the site investigation to determine its suitability and need for moisture conditioning to facilitate adequate compaction.
- 5.2.4 The development is suspected to include high floor slab loads in some areas of the proposed building which may give rise to unacceptable levels of differential settlement with respect to

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proposed end use tolerances. It is considered that a Ground Movement Assessment will be required to determine the level of expected settlement as a result of such imposed loads. This will need to be undertaken based on the findings from the site investigation which can then inform further iterations of the floor slab design.

- 5.2.5 The Made Ground and superficial deposits may contain sulphate bearing soils. Chemical laboratory analysis should be undertaken on soil samples collected from each strata encountered beneath the site to determine a Design Sulphate Class and an Aggressive Chemical Environment for Concrete (ACEC) Classification for proposed buried structures as part of the development.

## 5.3 Other Considerations

- 5.3.1 The following actions to reduce or clarify other potential environmental risks at the site are recommended:

- Given the age of the buildings on site, it is possible that asbestos containing material (ACM) is present within the building fabric. An asbestos survey must be undertaken prior to the demolition of any structures that may contain ACMs.

---

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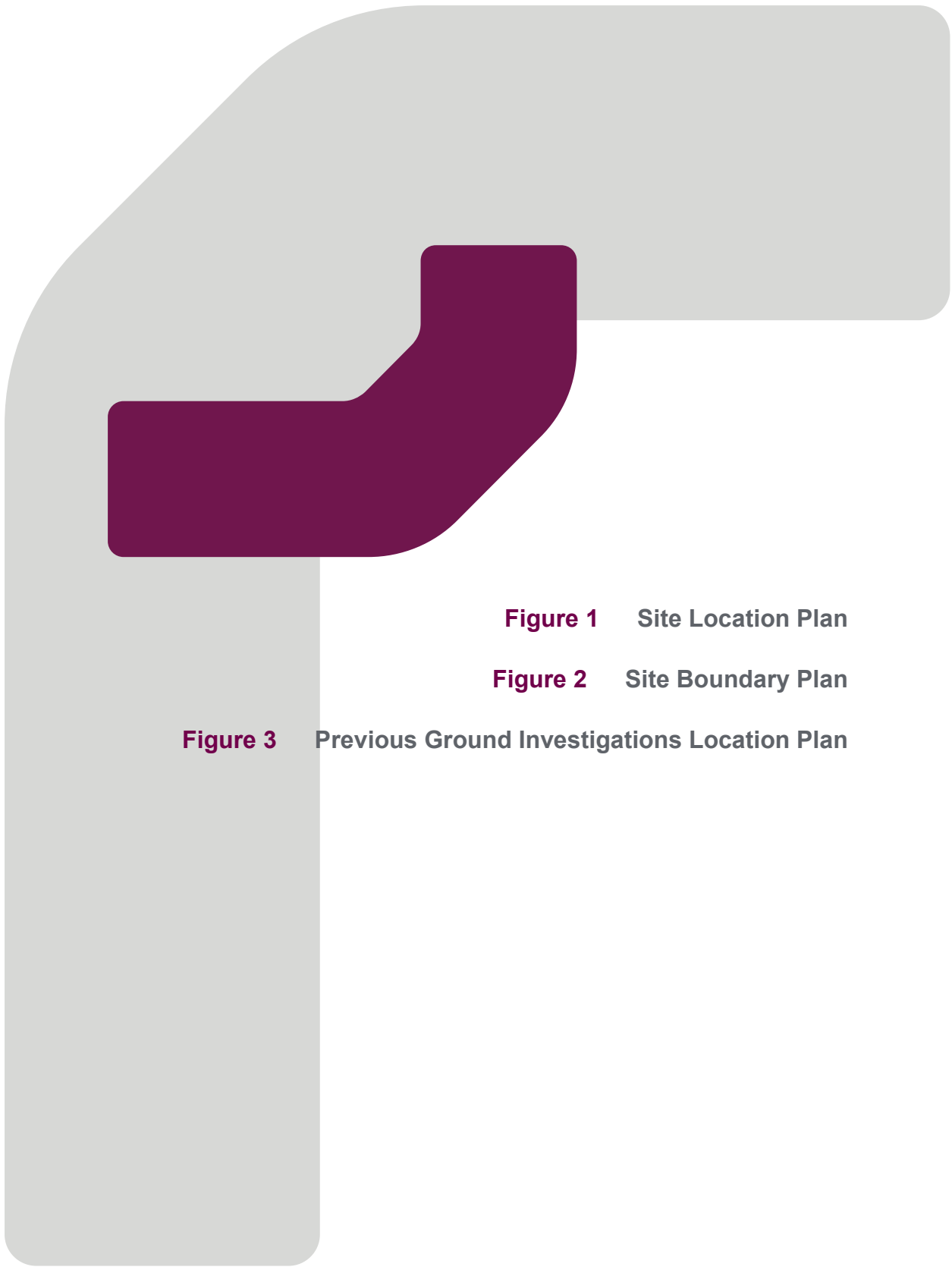
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Solmek Ltd Factual Site Investigation Report reference S211001, dated January 2022 (instructed by RPS)



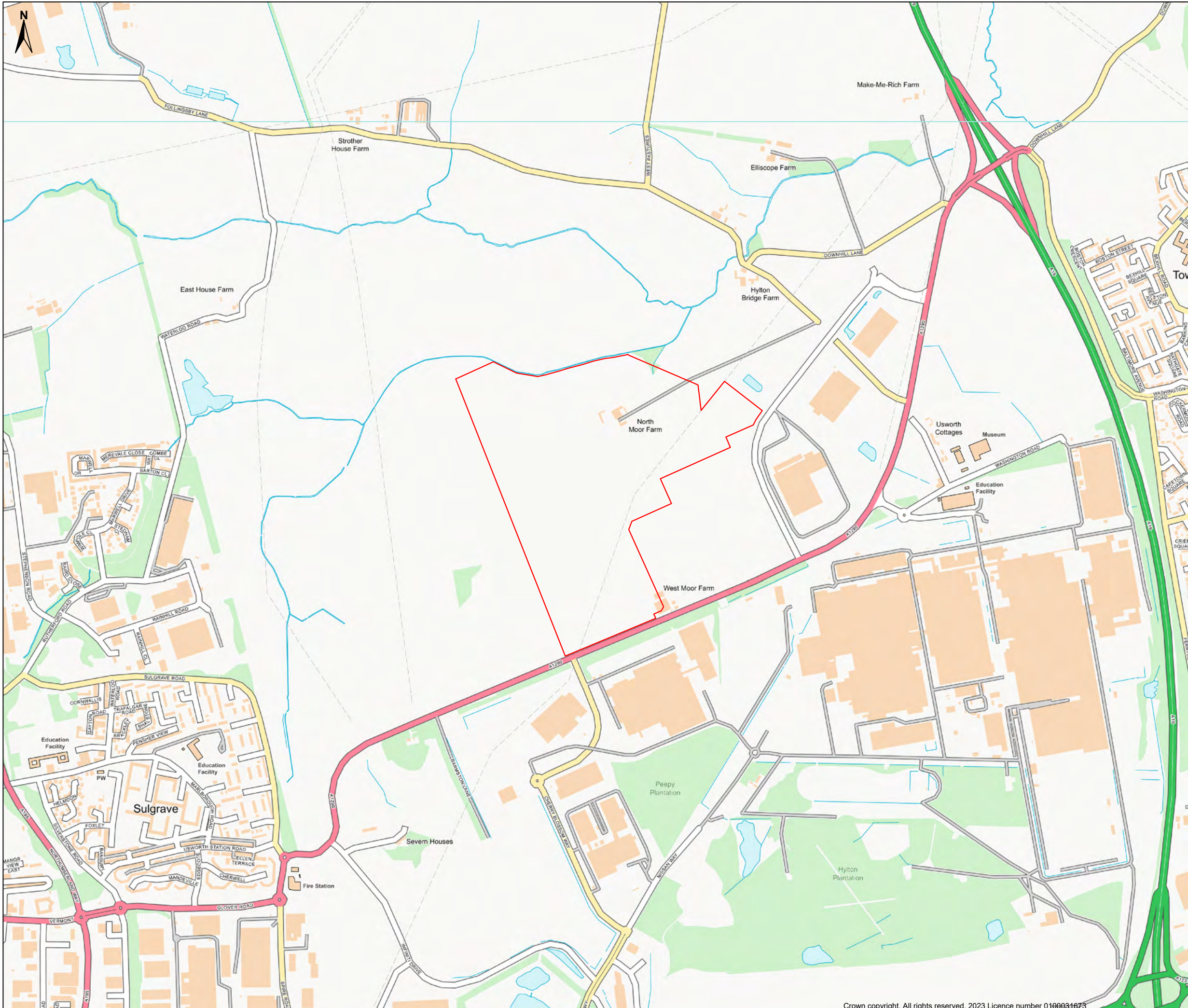


**Figure 1** Site Location Plan

**Figure 2** Site Boundary Plan

**Figure 3** Previous Ground Investigations Location Plan





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**Legend**

Plot 2 Site Boundary



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Client Envision AESC/Wates Group Ltd

Project AESC Giga Factories  
Plot 2 Planning

Title Site Location Plan

Status	Drawn By	PM/Checked by
Final	TF	KD

Job Ref	Date Created
ENV3 -RPS-XX-XX-RP-G-314000	MAR 23

Figure Number	Rev
Figure 1	P01

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**Legend**

 Plot 2 Site Boundary



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Client Envision AESC/Waters Group Ltd

Project AESC Giga Factories  
Plot 2 Planning

Title Site Boundary Plan

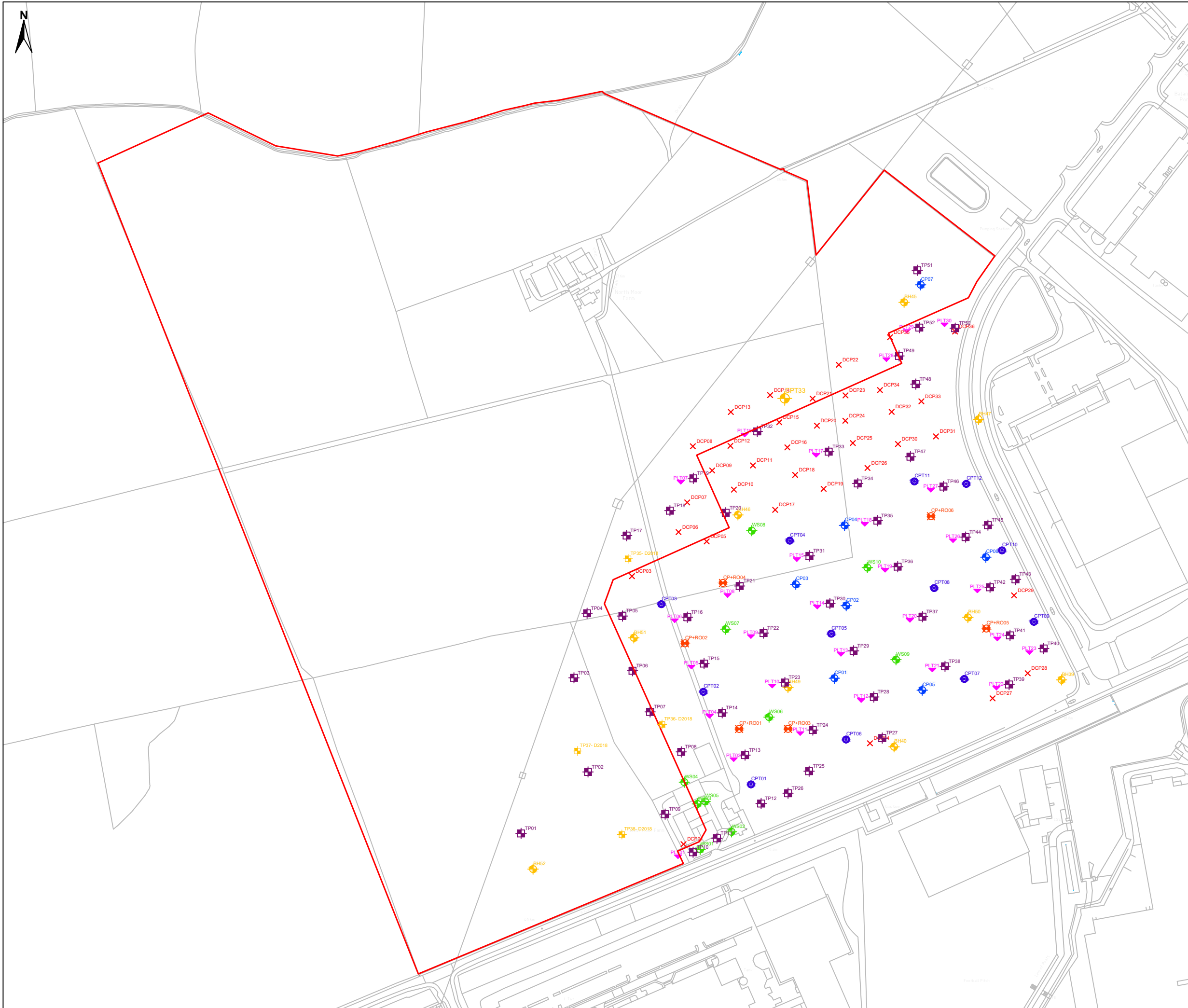
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Draft	TF	KD

Job Ref	Date Created
ENV3 -RPS-XX-XX-RP-G-314000	MAR 23

Figure Number	Rev
Figure 2	P01

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**Legend:**

Plot 2 Site Boundary

**2018 IAMP Ground Investigation Locations**

- Boreholes
- Trial Pits

**2021 Envision Plot 1 Ground Investigation Locations**

- Cable Percussive Borehole
- Cable Percussive Borehole with Rotary Follow on
- Window Sample Borehole
- Cone Penetration Tests
- Trial Pit
- Dynamic Cone Penetrometer Tests
- Plate Load Tests



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Client Envision AESC/Wates Group Ltd

Project AESC Giga Factories  
Plot 2 Planning

Title Previous Ground  
Investigation Locations

Status	Drawn By	PM/Checked by
Final	TF	KD

Job Ref	Scale @ A3	Date Created
ENV3 -RPS-XX-XX-RP-G-314000		MAR 23

Figure Number	Rev
Figure 3	P01

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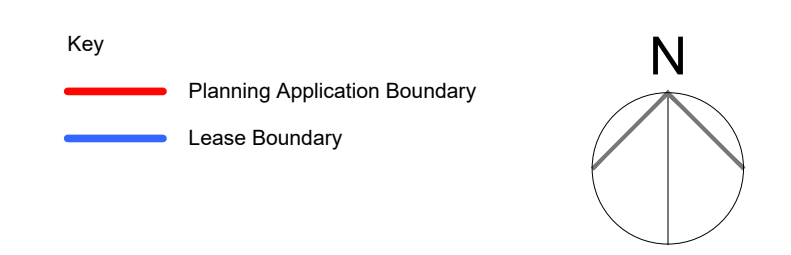
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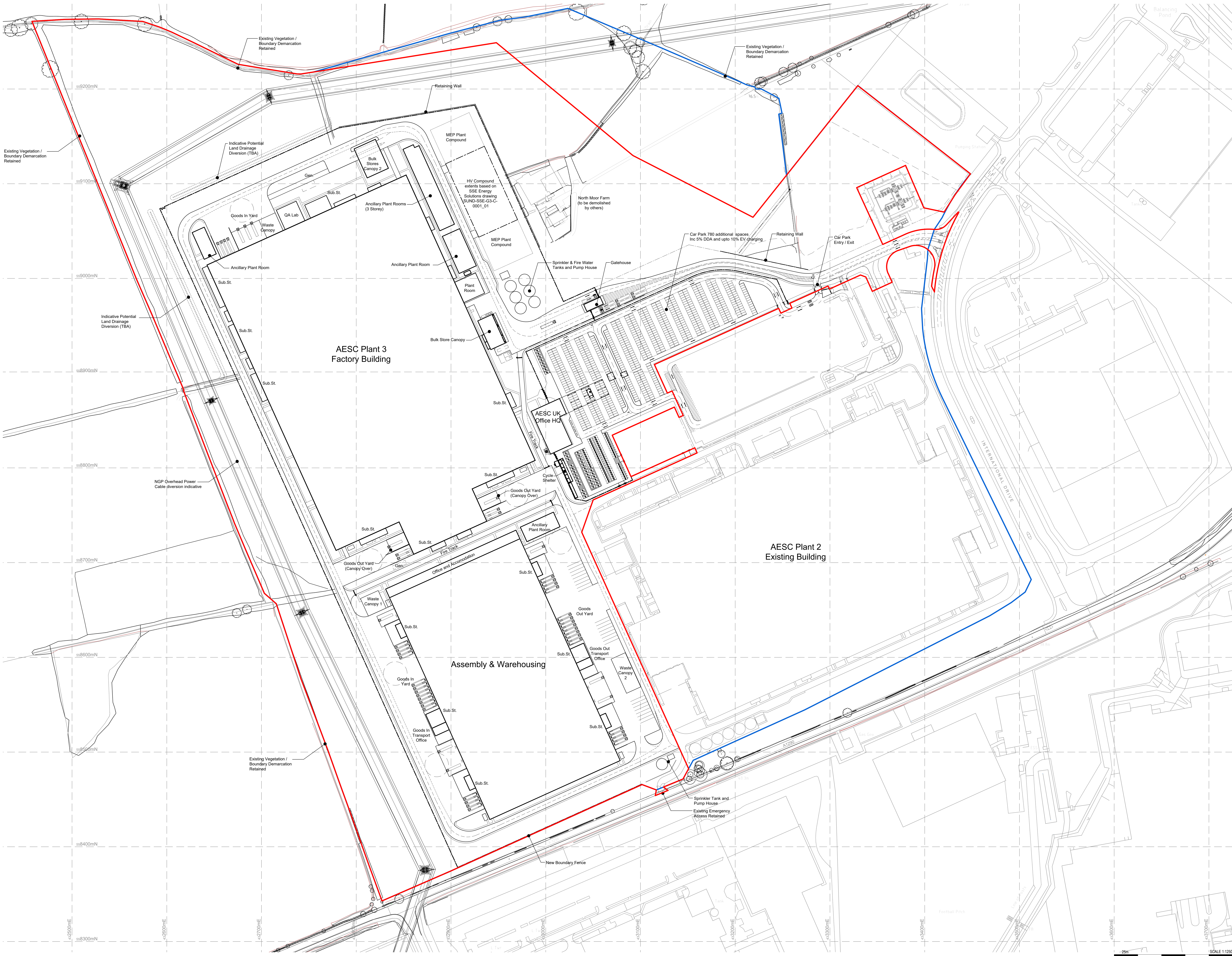
**Appendix A**  
**PROPOSED DEVELOPMENT PLAN**



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Drawing Reference:  
 For 400kV Route Plan and Profile Permanent Diversion refer to Groundline drawings:  
 21762-GLE-0608-ZZ-DR-Y-060250  
 21762-GLE-0608-ZZ-DR-Y-060251  
 21762-GLE-0608-ZZ-DR-Y-060252



**Schedule of Areas**

Site Area (Application Boundary) 104.74 Acres (42.39 Ha)

**Gross Internal Areas:**

- AESC Plant 3 Factory Building**
    - Ground Floor 79,828 m<sup>2</sup>
    - First Floor 29,797 m<sup>2</sup>
    - Second Floor 17,331 m<sup>2</sup>
    - Central Core (First Floor) 3,955 m<sup>2</sup>
    - Sub St. / Plant Rooms 2,137 m<sup>2</sup>
  - Assembly & Warehousing Building**
    - Assembly & Warehousing 38,464 m<sup>2</sup>
    - Office / Accommodation 1,929 m<sup>2</sup>
    - Sub St. / Plant Rooms 622 m<sup>2</sup>
  - AESC UK Office HQ Building**
    - Ground Floor 1,316 m<sup>2</sup>
    - First Floor 2,105 m<sup>2</sup>
    - Second Floor 485 m<sup>2</sup>
  - Ancillary MEP Plant Rooms**
    - Ground Floor 3,266 m<sup>2</sup>
    - First Floor 1,763 m<sup>2</sup>
    - Second Floor 1,414 m<sup>2</sup>
    - Third Floor 1,414 m<sup>2</sup>
  - Gatehouse** 130 m<sup>2</sup>
- Total 185,956 m<sup>2</sup>**

- Excluded from GIA**
- Bulk Store Canopy 1 568 m<sup>2</sup>
  - Bulk Store Canopy 2 792 m<sup>2</sup>
  - Waste Canopy 1 400 m<sup>2</sup>
  - Waste Canopy 2 617 m<sup>2</sup>
  - Waste Canopy 3 280 m<sup>2</sup>
  - Mezzanine Floors\* 6,170 m<sup>2</sup>
- (to be < max 50% of the total floor space)

Gross Internal Area (GIA) in accordance with RICS Code of Measuring Practice 6th Edition.

Car Parking: (inc. 5% accessible & upto 10% EV charging)  
 Total 780

Bicycle and Motorcycle Shelter: up to 80 spaces

HGVs: upto 75 spaces (inc docks)

Rev	Description	By	Ckd	Date
P03	Planning Submission	JJD	HH	20/09/23



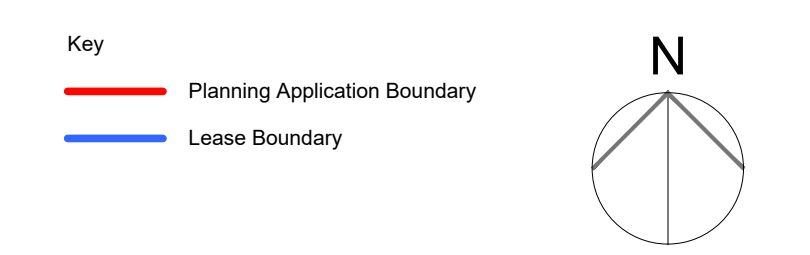
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**AESC Waters**  
 Project AESC Giga Factories Plot 2 Planning  
 Title Proposed Site Plan

RPS Project Number NK020439P	Scale @ A0 1:1250	Date Created 13/06/23
Task Team Manager T4	Information Author TSR	Task Information Manager JAT
Sheet S2 (Suitable for Information)	Document Number 201	Revision P03
Project Code - Originator - Function - Space - Type - Revision Number rpsgroup.com		

SCALE 1:1250



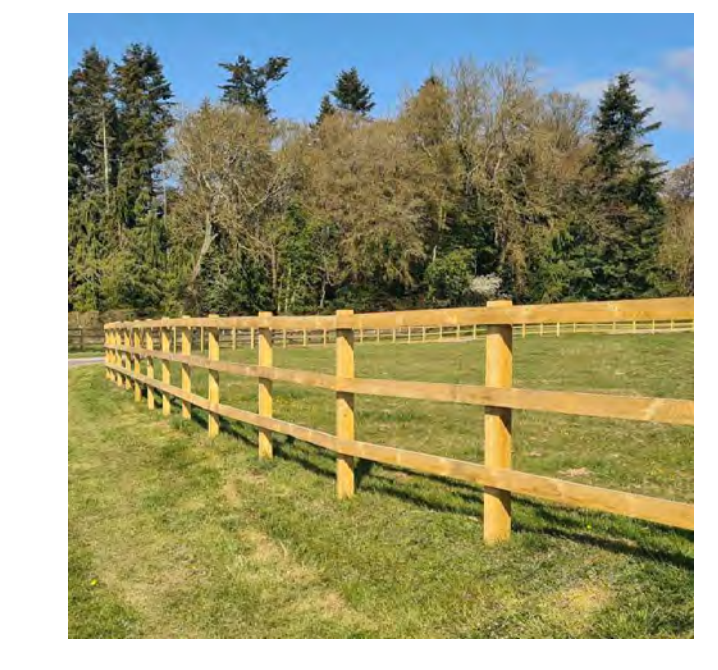
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Drawing Reference:  
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21762-GL-0608-ZZ-DR-Y-060250  
21762-GL-0608-ZZ-DR-Y-060251  
21762-GL-0608-ZZ-DR-Y-060252



2.4m high Wire Mesh Fence (RAL 6005 - Green)



1.1m high Timber Fence and Rail



Rev	Description	By	Chk	Date
P03	Planning Submission	JJD	HE	20/09/23

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Client: **AESC Wates**  
Project: AESC Giga Factories Plot 2 Planning  
Title: Proposed Site Layout

RPS Project Number: NK020439P	Scale @ A0: 1:1250	Date Created: 09/06/23
Task Team Manager: TTR	Information Author: TSR	Task Information Manager: JAT
Series: S2 (Suitable for Information)	Document Number: 204	Revision: P03
Project Code - Originator - Function - Space - Type - Risk - Number		
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SCALE 1:1250



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## Appendix B SITE PHOTOGRAPHS



Photo 01: North Moor Farm, parking and offices



Photo 02: North Moor Farm stable buildings



Photo 03: North Moor Farm barn



Photo 04: North Moor Farm fuel storage area



Photo 05: North Moor Farm waste storage area



Photo 06: East of North Moor Farm drainage feature





Photo 07: Eastern area of Plot 2, access track



Photo 08: River along northern boundary



Photo 09: Newly constructed electricity pylon



Photo 10: Electricity pylon under construction



Photo 11: Central area of site looking south east



Photo 12: Pylon under construction, boulders from excavated soils in foreground.





Photo 13: Stockpiled material adjacent to pylon



Photo 14: Drainage feature along western boundary



Photo 15: Temporary Pylon in power line realignment



Photo 16: Beneath existing powerline route



Photo 17: Drainage from Plot 1



Photo 18: View towards Plot 1 from centre of site

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# Appendix C HISTORICAL MAPS



**Site Details:**

WEST MOOR FARM, CHERRY BLOSSOM WAY, WASHINGTON, SR5 3HY

**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569  
**Grid Ref:** 432951, 558813

**Map Name:** County Series

**Map date:** 1857

**Scale:** 1:10,560

**Printed at:** 1:10,560



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 Revised 1857  
 Edition N/A  
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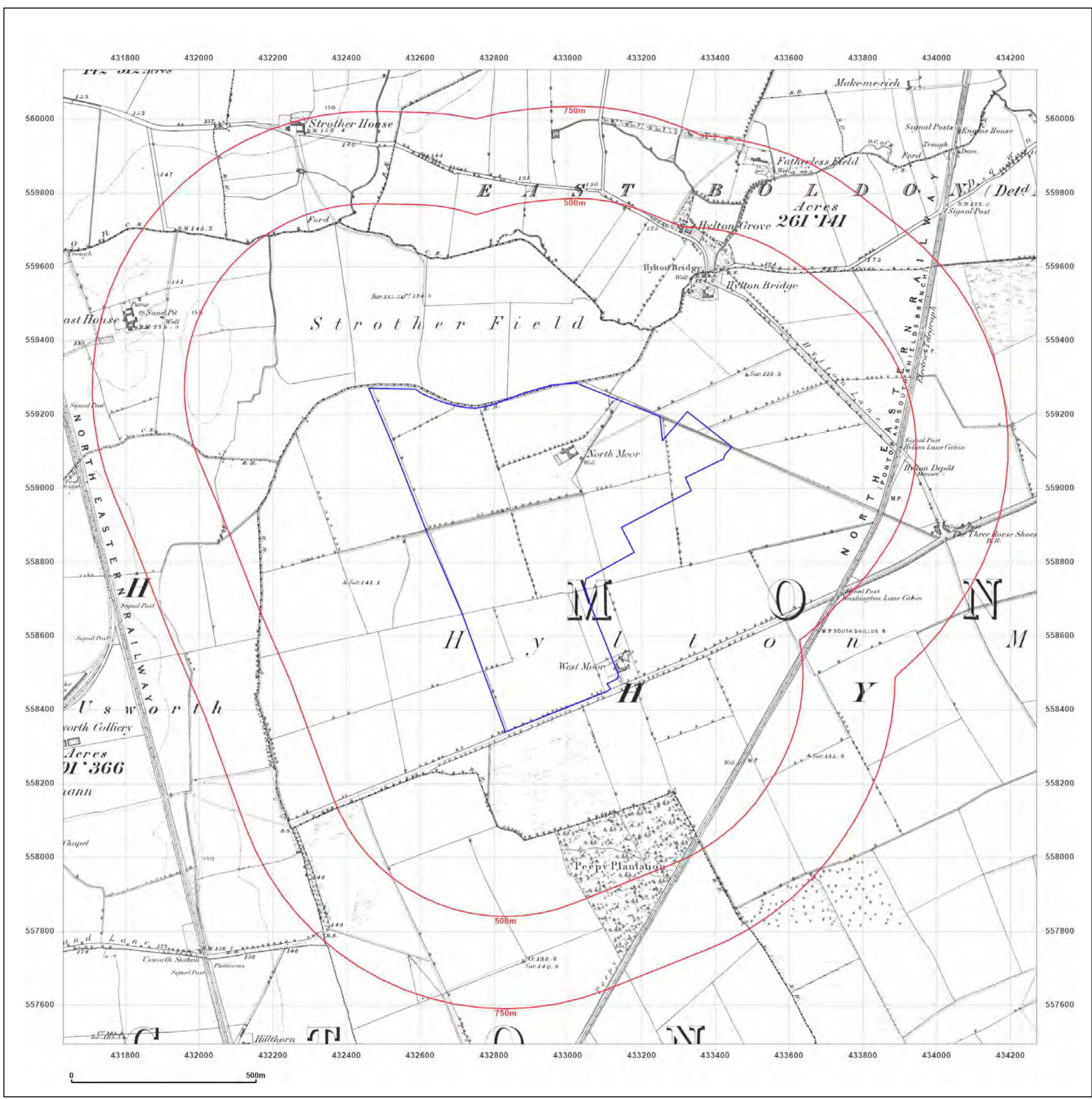


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**Report Ref:** GS-9381569  
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**Map date:** 1895-1898

**Scale:** 1:10,560

**Printed at:** 1:10,560



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Revised 1898  
Edition N/A  
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Revised 1895  
Edition N/A  
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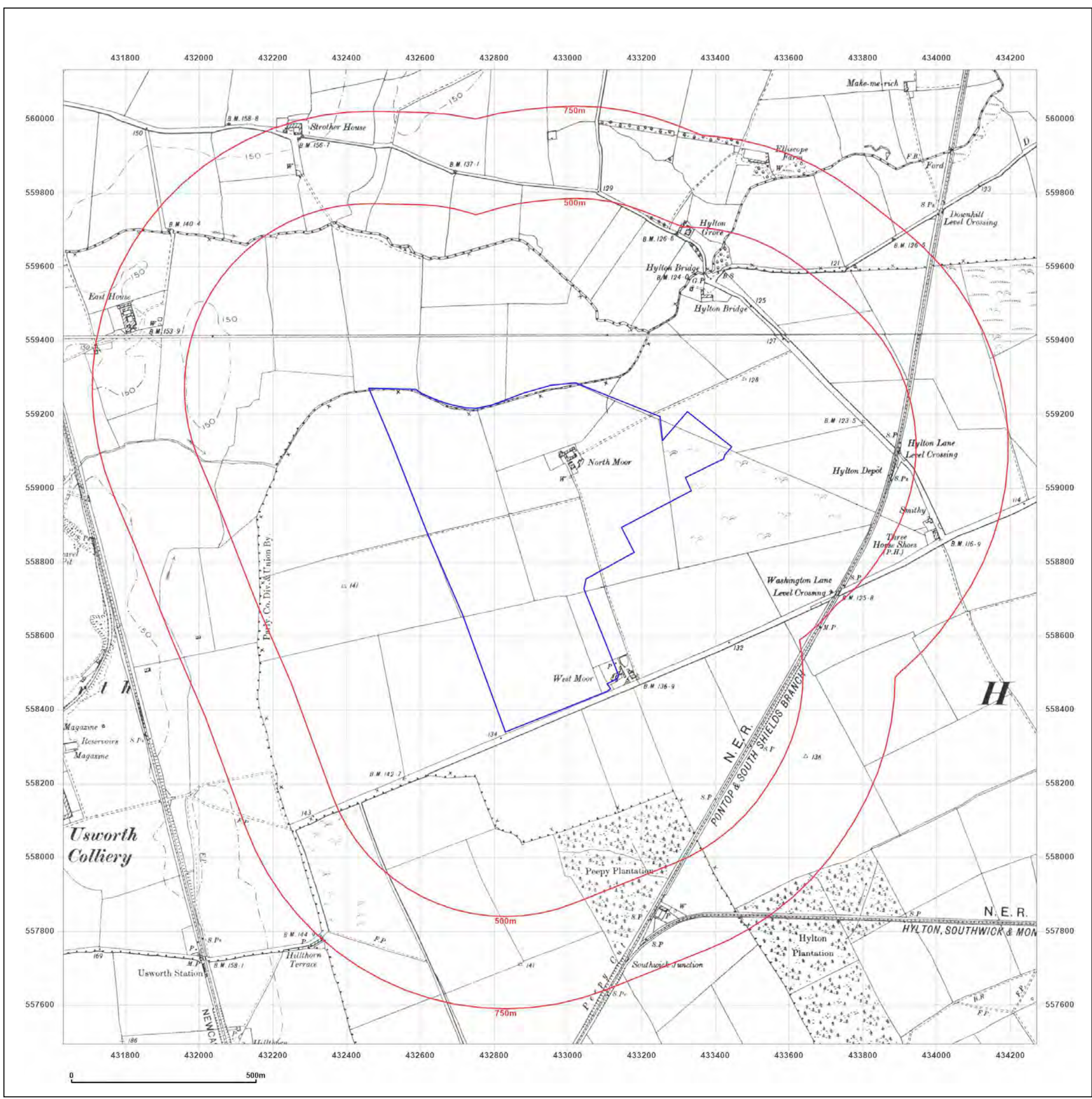


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**Grid Ref:** 432951, 558813

**Map Name:** County Series

**Map date:** 1921

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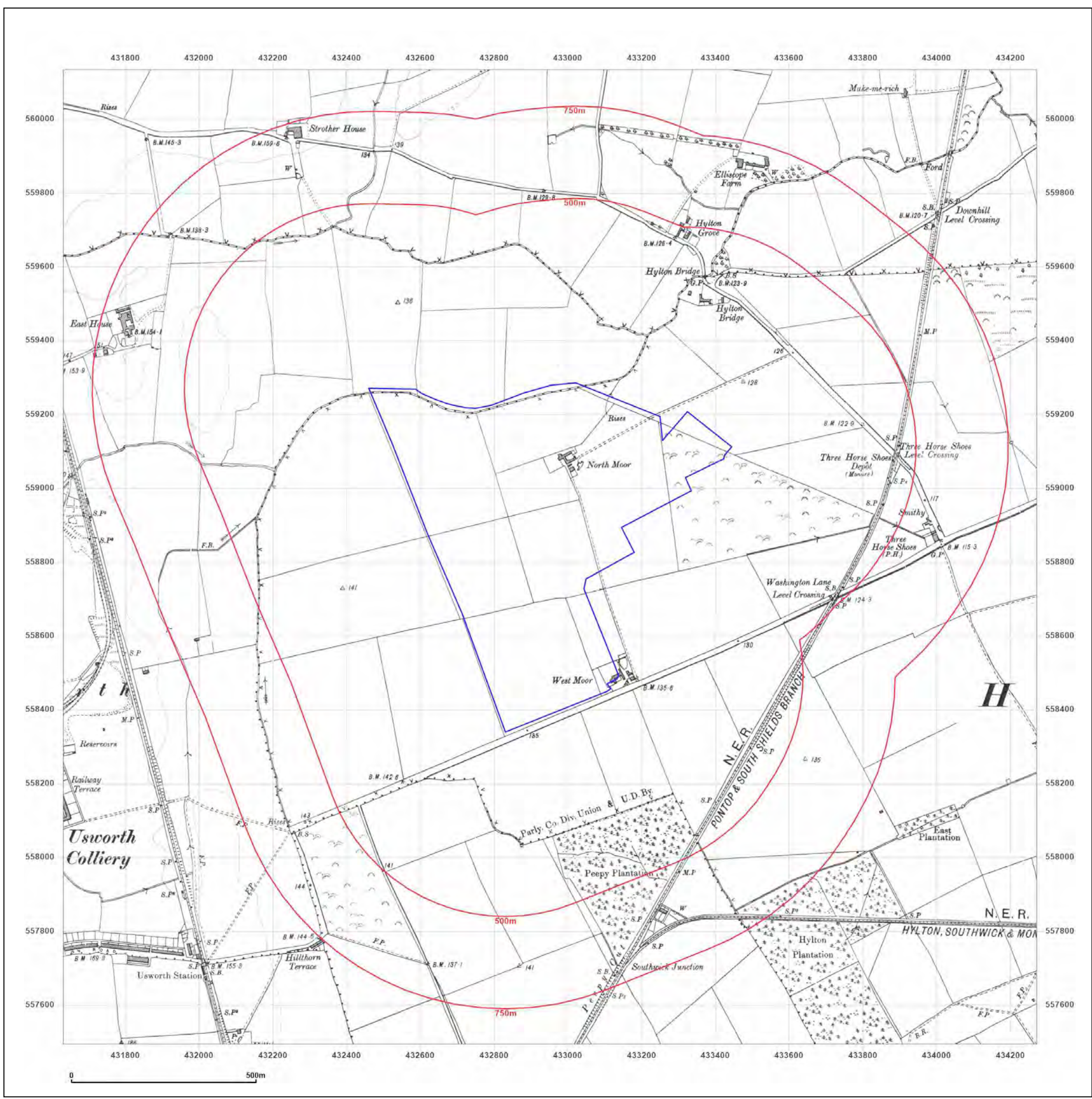


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**Scale:** 1:10,560

**Printed at:** 1:10,560



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Edition 1921  
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Revised 1921  
Edition 1921  
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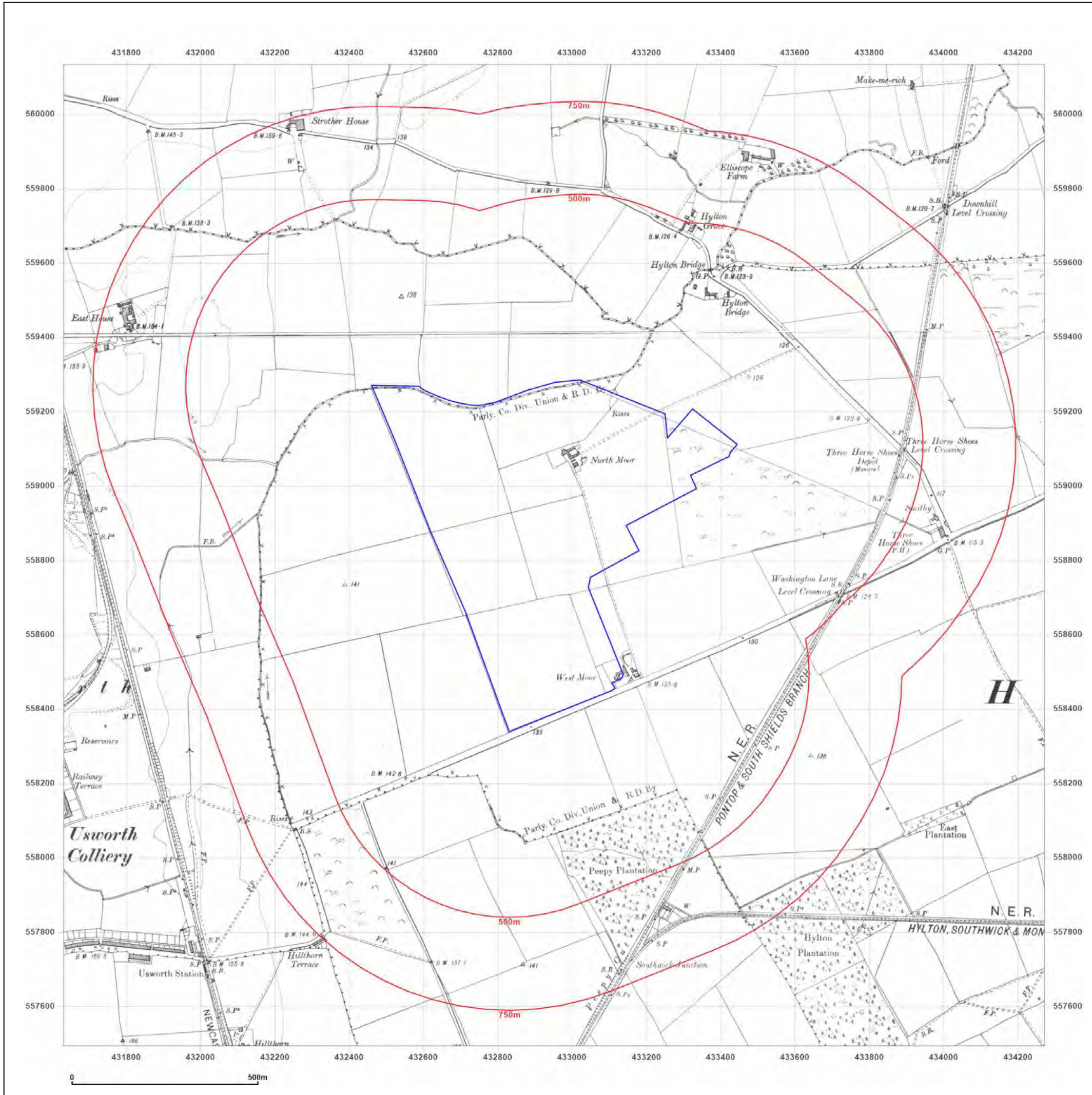


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Copyright N/A  
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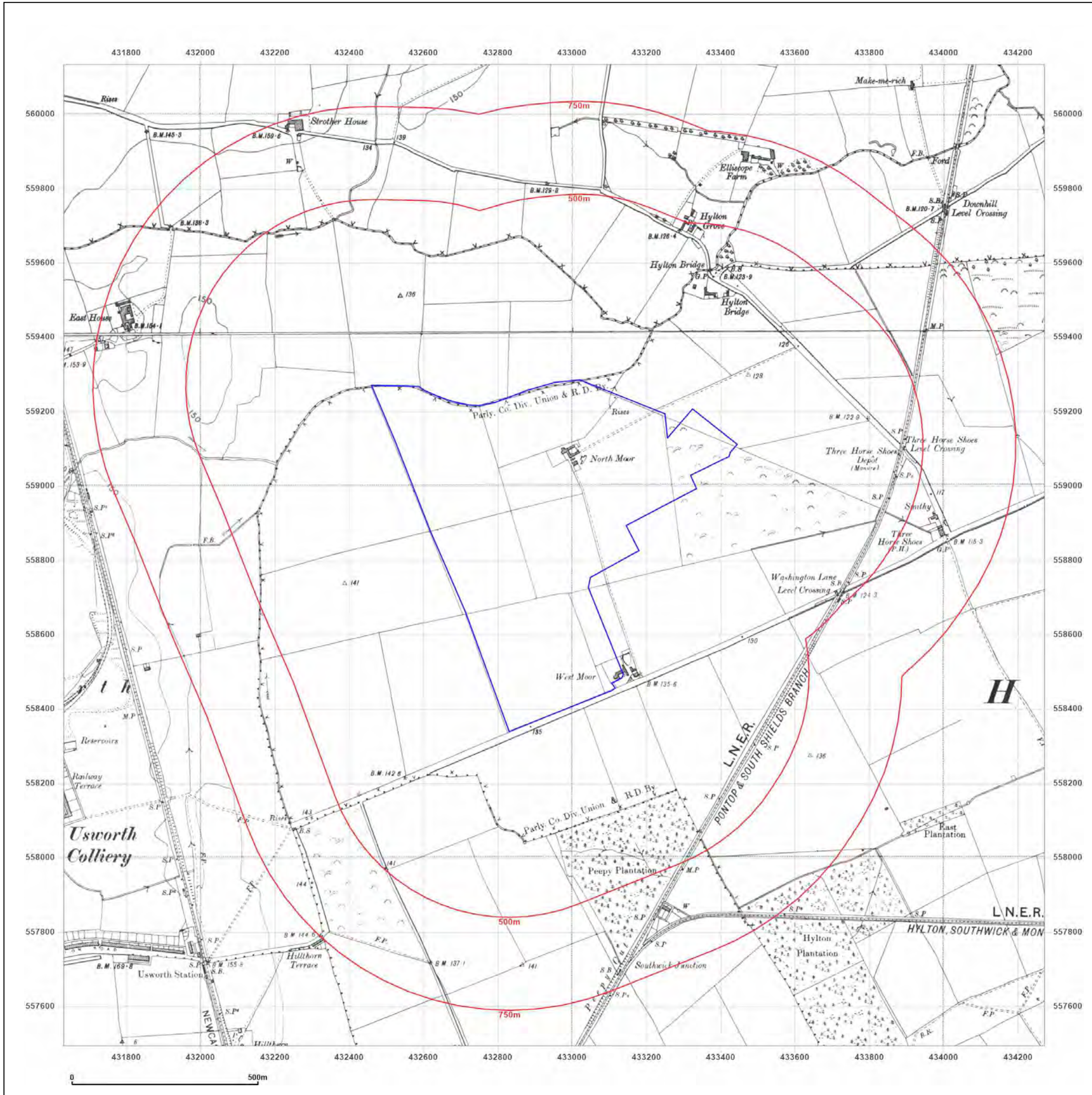


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**Site Details:**

WEST MOOR FARM, CHERRY BLOSSOM WAY, WASHINGTON, SR5 3HY

**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569  
**Grid Ref:** 432951, 558813

**Map Name:** Provisional

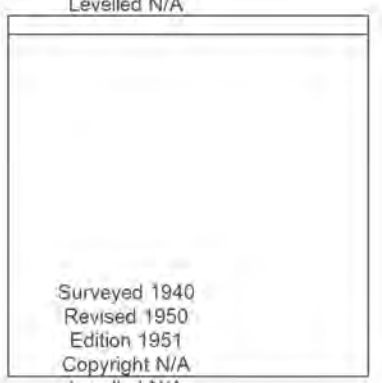
**Map date:** 1951

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed N/A  
 Revised 1951  
 Edition N/A  
 Copyright N/A  
 Levelled N/A



Surveyed 1940  
 Revised 1950  
 Edition 1951  
 Copyright N/A  
 Levelled N/A

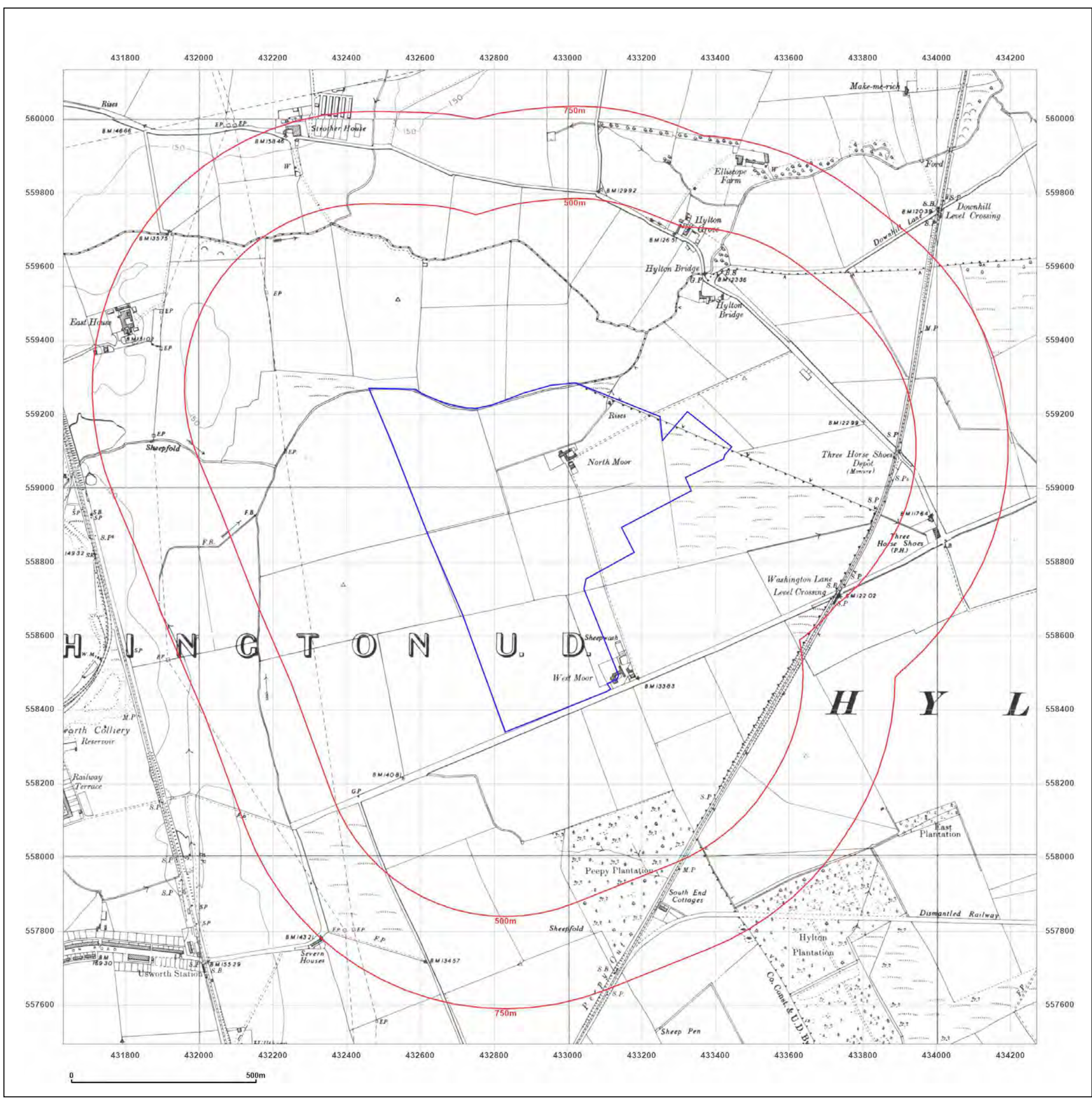


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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569  
**Grid Ref:** 432951, 558813

**Map Name:** Provisional

**Map date:** 1965-1967

**Scale:** 1:10,560

**Printed at:** 1:10,560



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

Surveyed 1967  
 Revised 1967  
 Edition N/A  
 Copyright N/A  
 Levelled N/A

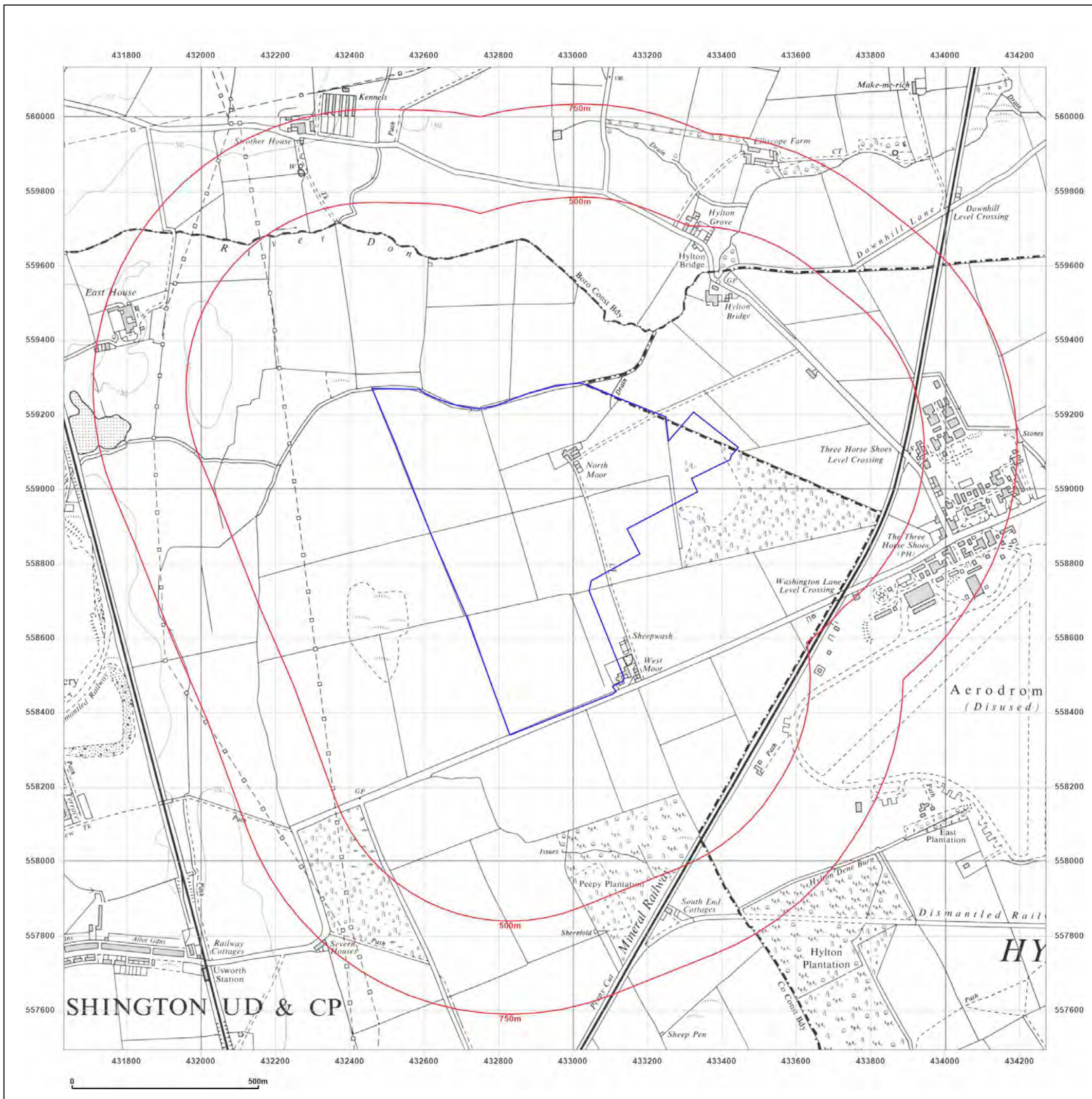


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WASHINGTON, SR5 3HY

**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569  
**Grid Ref:** 432951, 558813

**Map Name:** National Grid

**Map date:** 1979

**Scale:** 1:10,000

**Printed at:** 1:10,000



Surveyed 1975  
Revised 1979  
Edition N/A  
Copyright N/A  
Levelled N/A

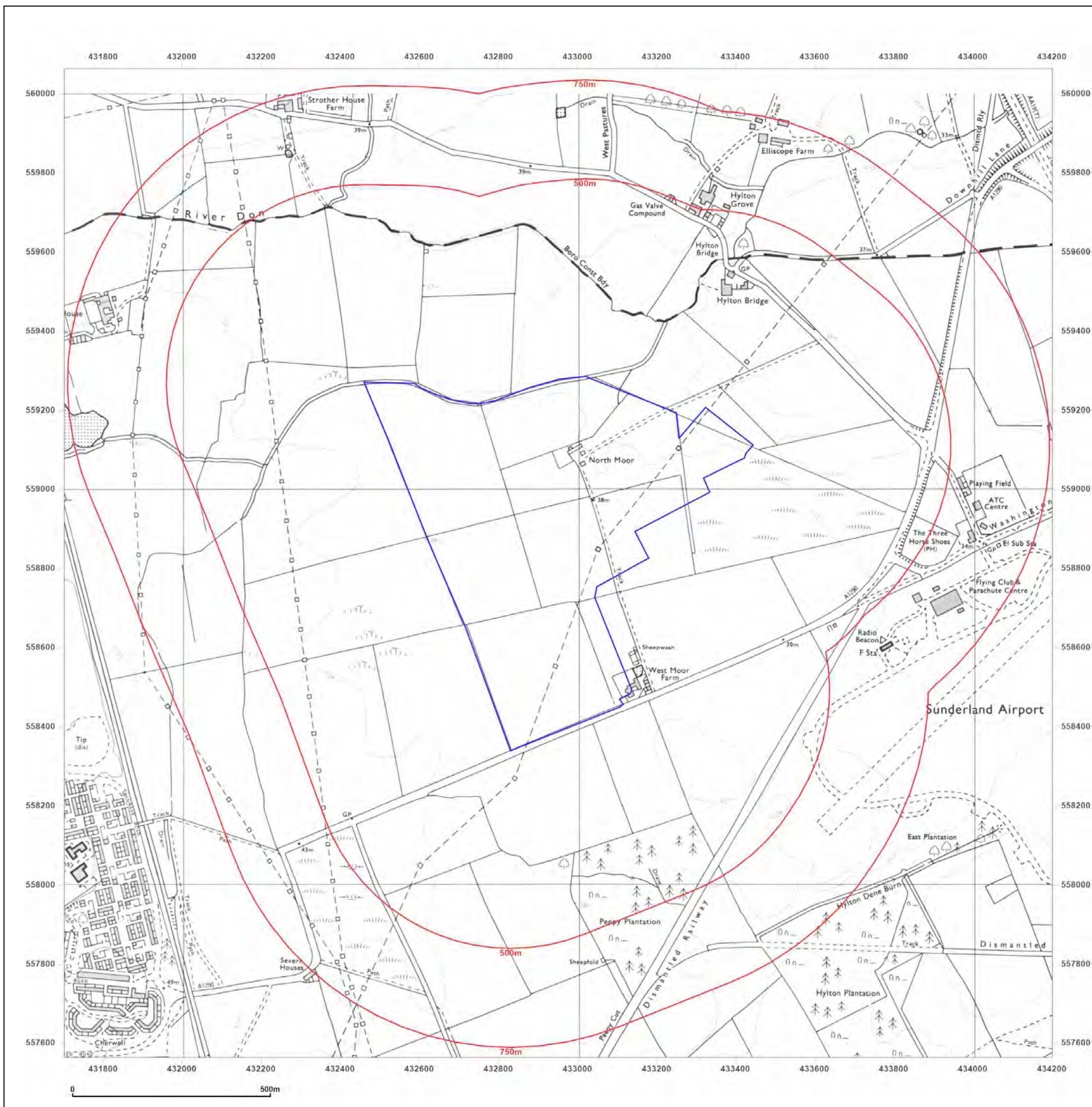


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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569  
**Grid Ref:** 432951, 558813

**Map Name:** National Grid

**Map date:** 1989-1992

**Scale:** 1:10,000

**Printed at:** 1:10,000



Surveyed 1989  
Revised 1992  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1988  
Revised 1989  
Edition N/A  
Copyright N/A  
Levelled N/A

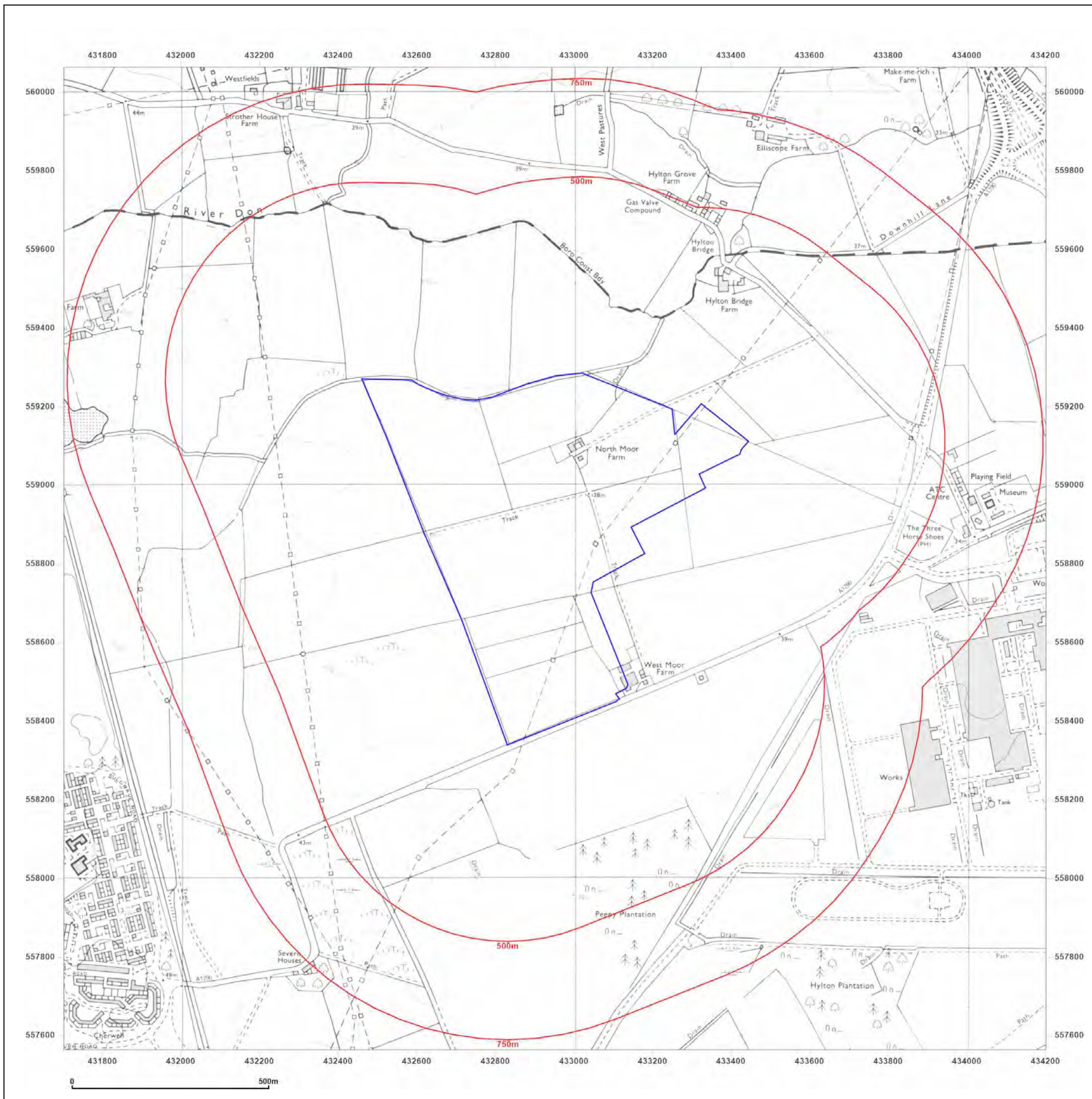


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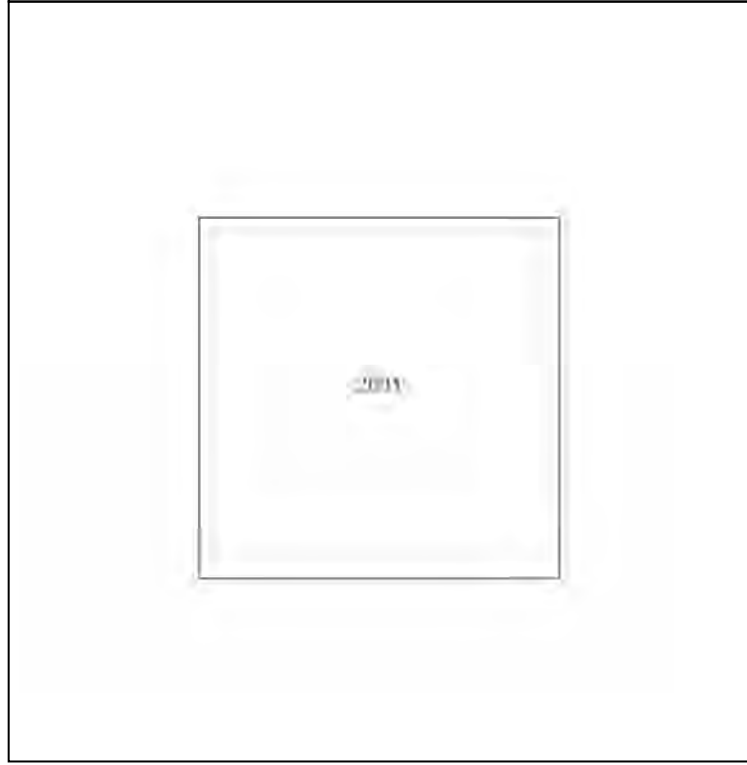
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**Grid Ref:** 432951, 558813

**Map Name:** National Grid

**Map date:** 2001

**Scale:** 1:10,000

**Printed at:** 1:10,000

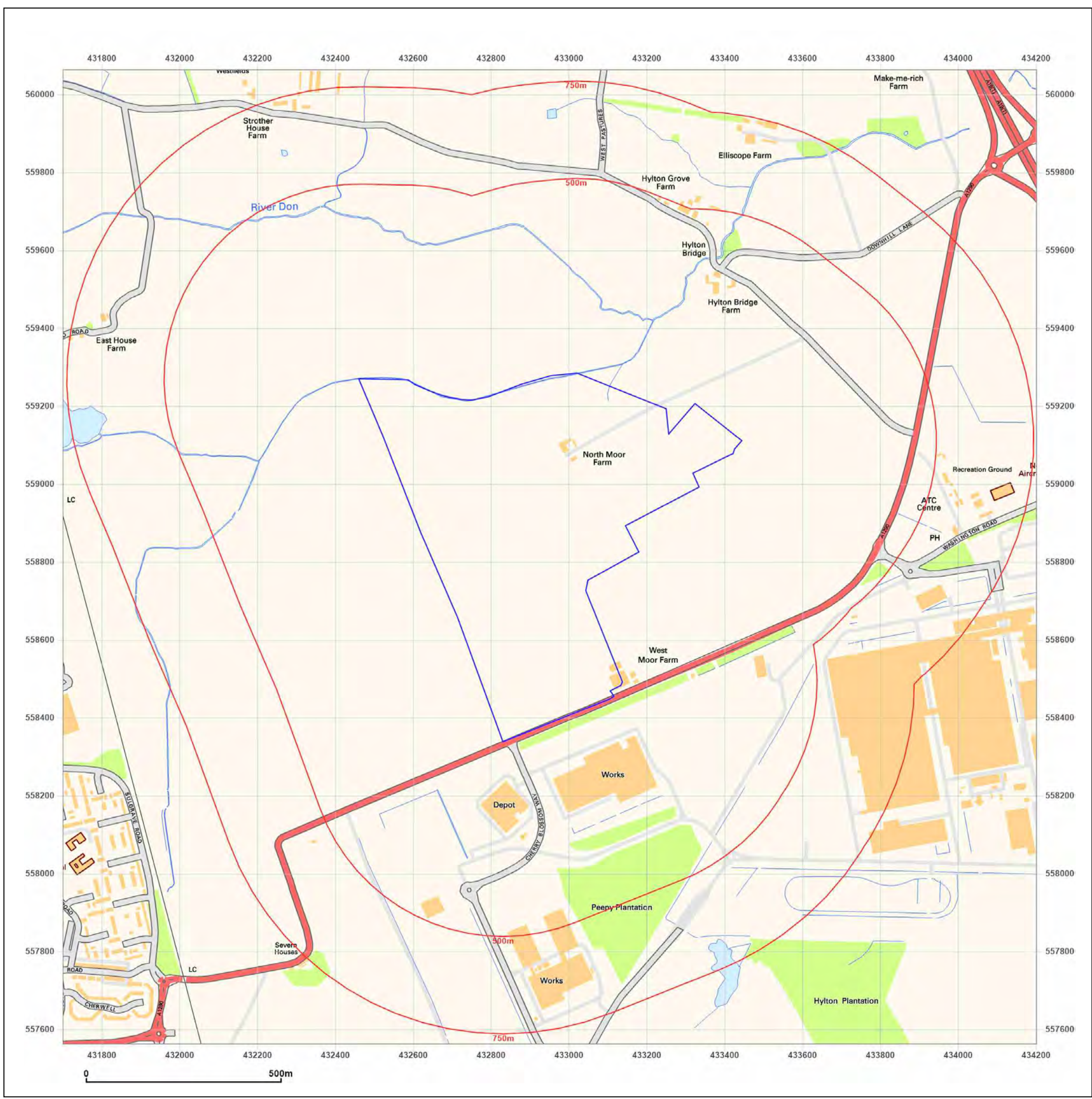


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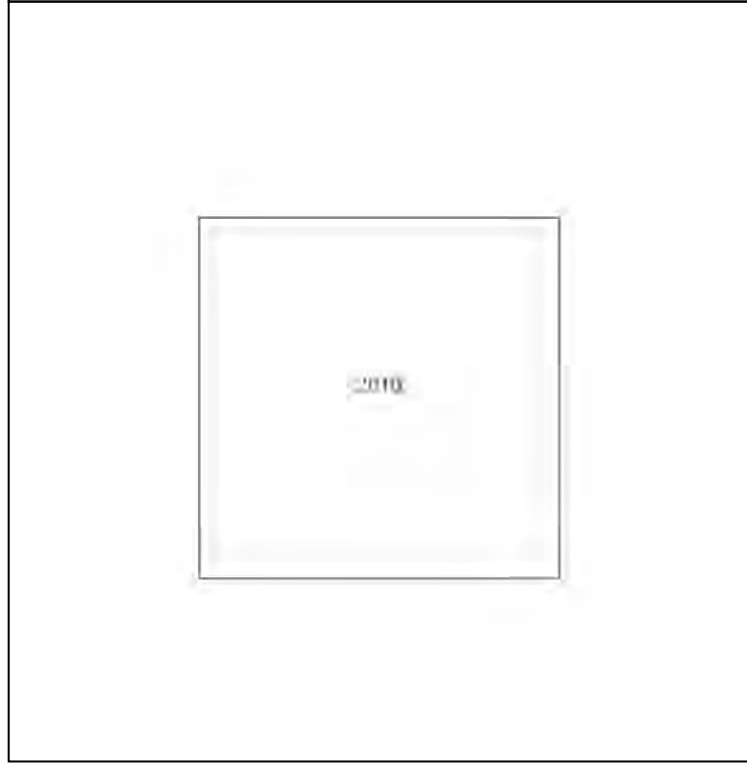
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**Report Ref:** GS-9381569  
**Grid Ref:** 432951, 558813

**Map Name:** National Grid

**Map date:** 2010

**Scale:** 1:10,000

**Printed at:** 1:10,000



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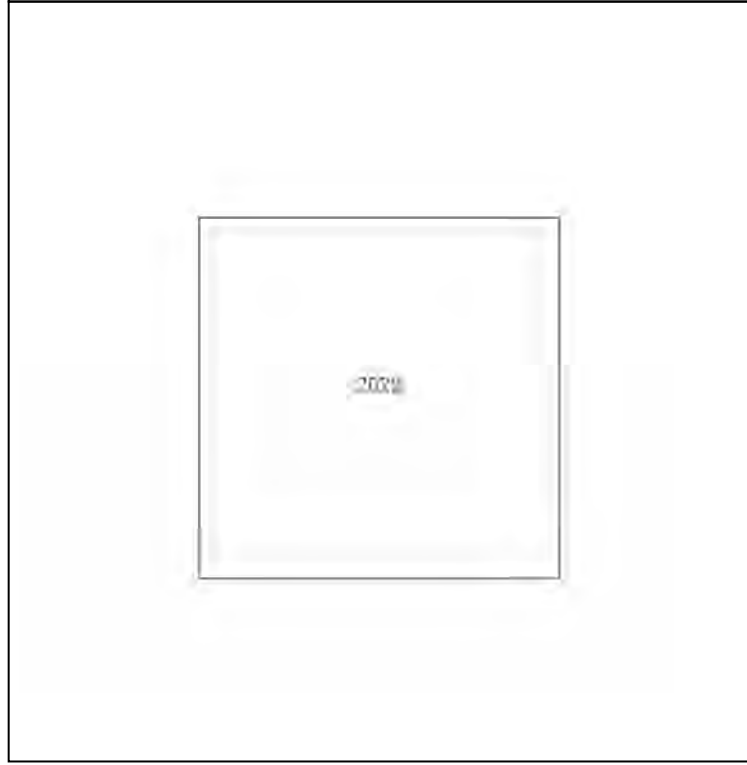
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**Grid Ref:** 432951, 558813

**Map Name:** National Grid

**Map date:** 2023

**Scale:** 1:10,000

**Printed at:** 1:10,000



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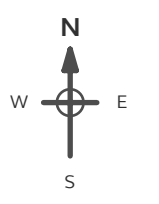




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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_1  
**Grid Ref:** 432638, 558499

**Map Name:** County Series  
**Map date:** 1884  
**Scale:** 1:2,500  
**Printed at:** 1:2,500



Surveyed 1856  
 Revised N/A  
 Edition 1884  
 Copyright N/A  
 Levelled N/A

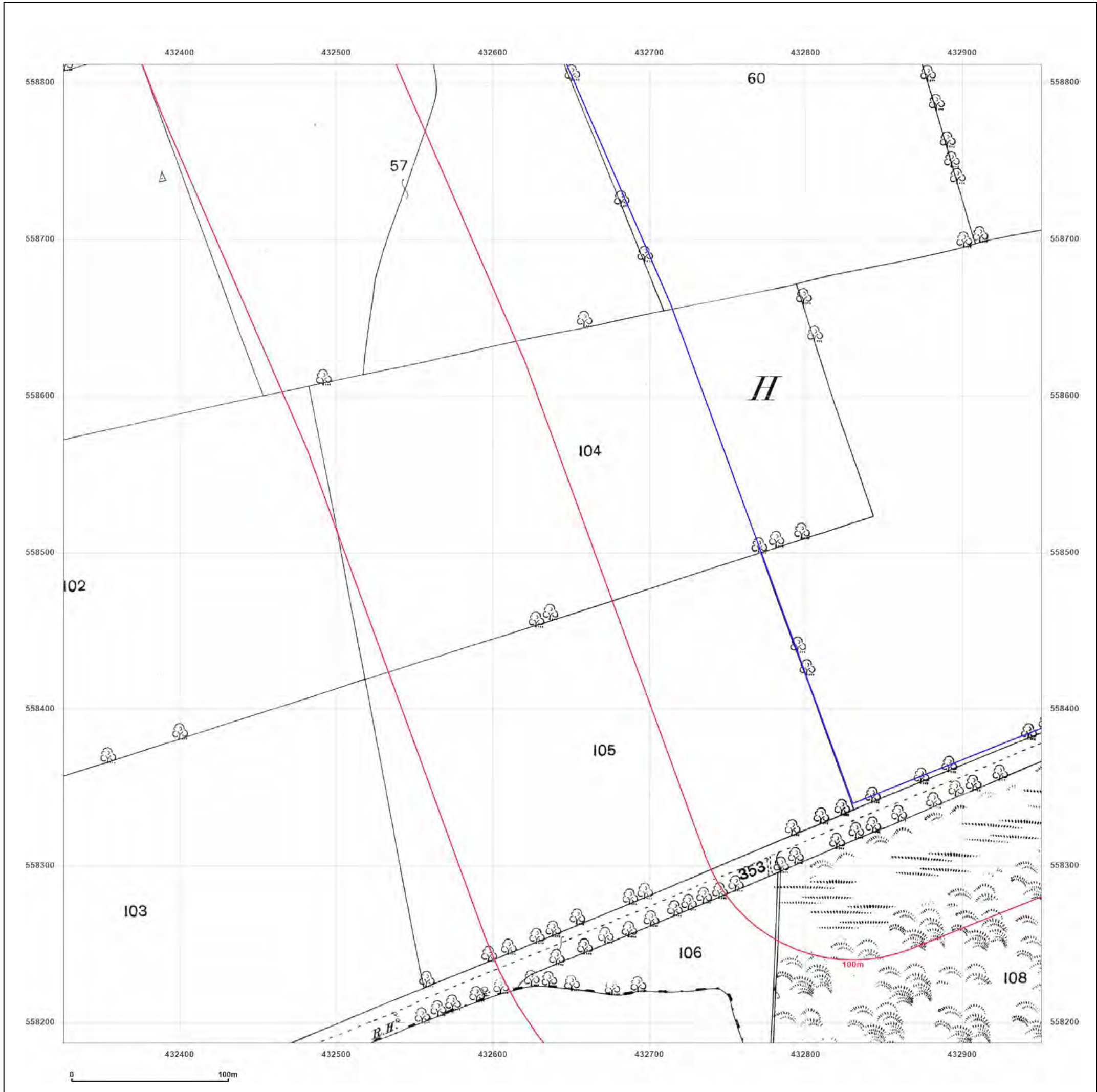


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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_1  
**Grid Ref:** 432638, 558499

**Map Name:** County Series  
**Map date:** 1896  
**Scale:** 1:2,500  
**Printed at:** 1:2,500



Surveyed 1896  
 Revised 1896  
 Edition N/A  
 Copyright N/A  
 Levelled N/A

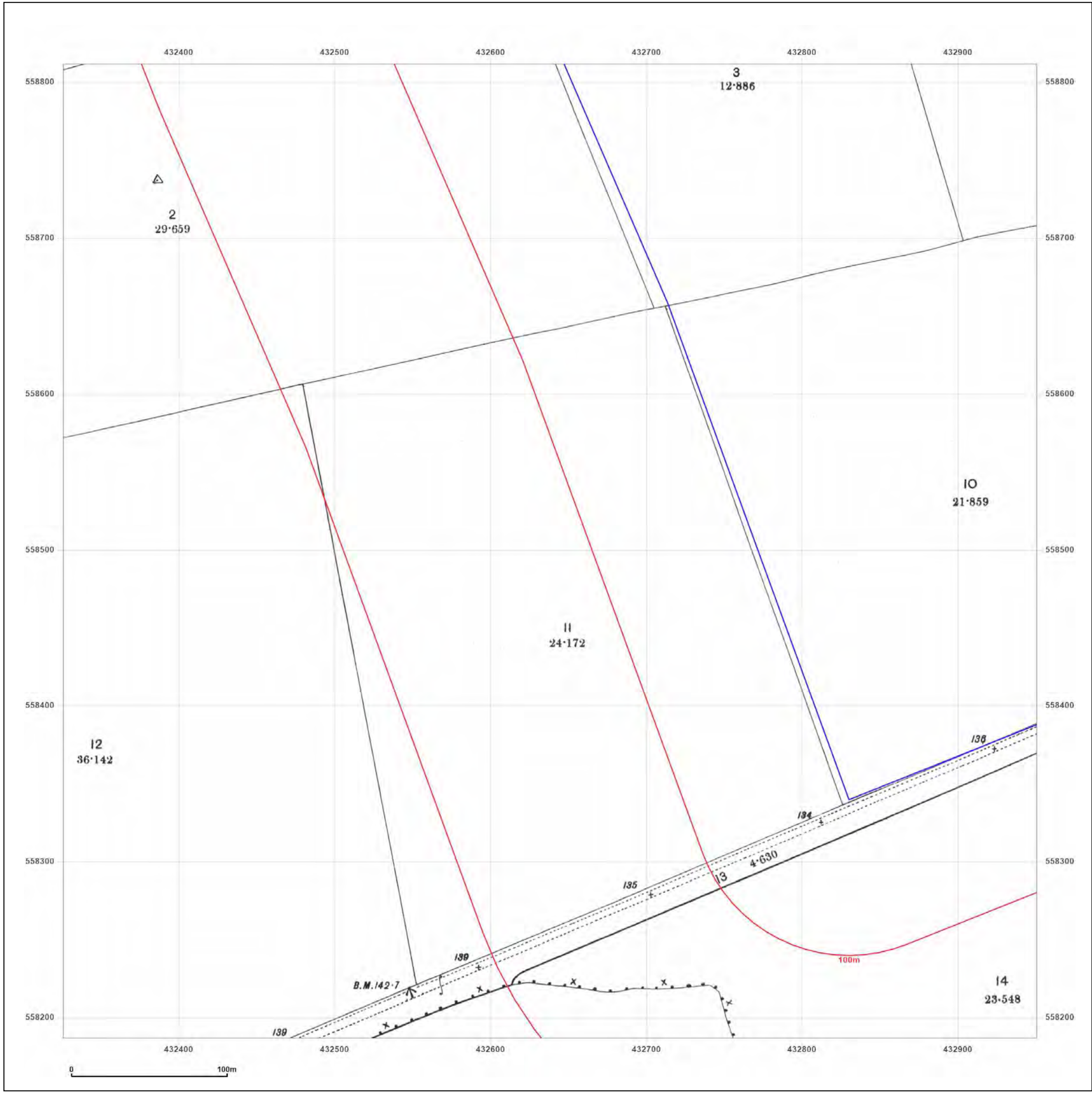
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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_1  
**Grid Ref:** 432638, 558499

**Map Name:** County Series

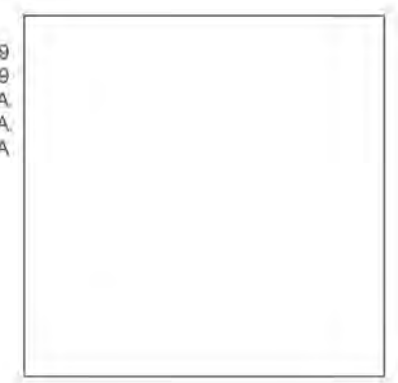
**Map date:** 1919

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1919  
Revised 1919  
Edition N/A  
Copyright N/A  
Levelled N/A

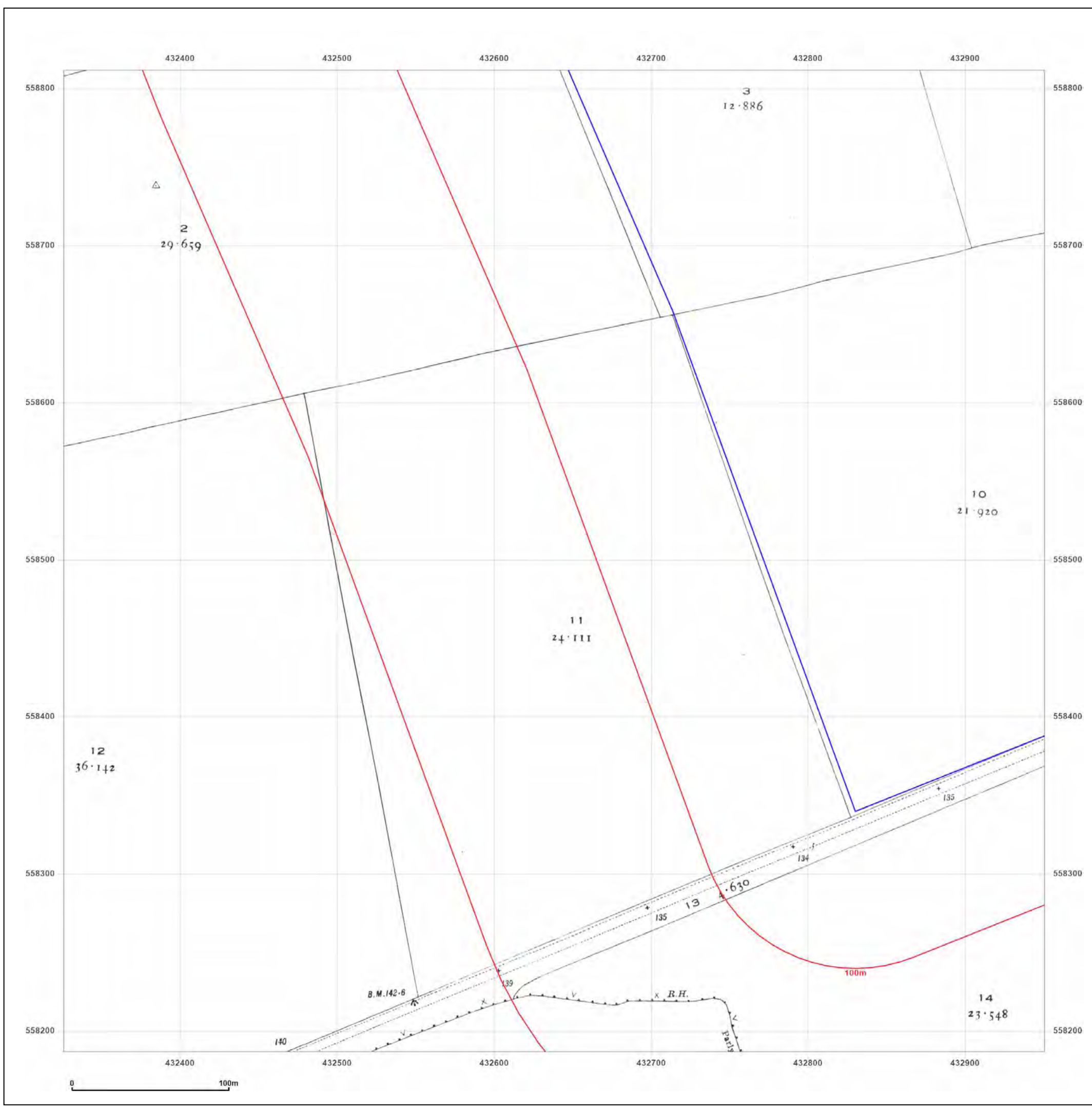


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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_1  
**Grid Ref:** 432638, 558499

**Map Name:** County Series

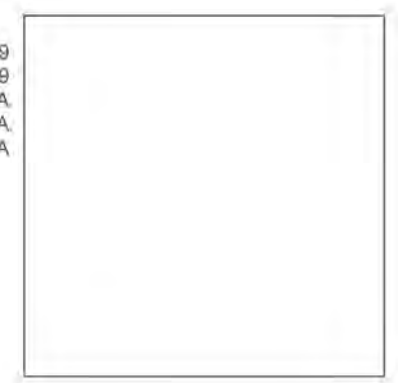
**Map date:** 1939

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1939  
Revised 1939  
Edition N/A  
Copyright N/A  
Levelled N/A

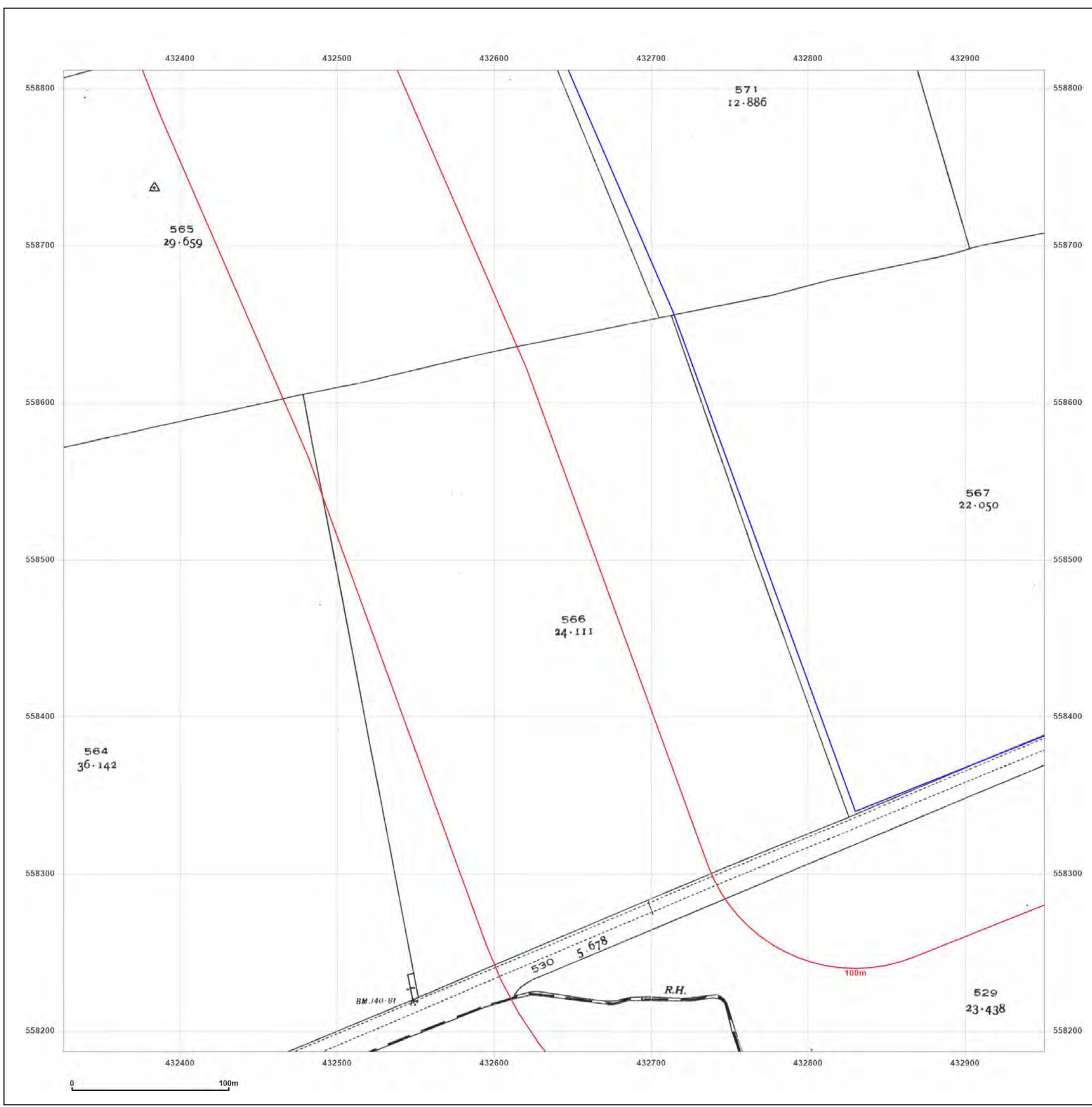


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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_1  
**Grid Ref:** 432638, 558499

**Map Name:** National Grid  
**Map date:** 1959  
**Scale:** 1:2,500  
**Printed at:** 1:2,500



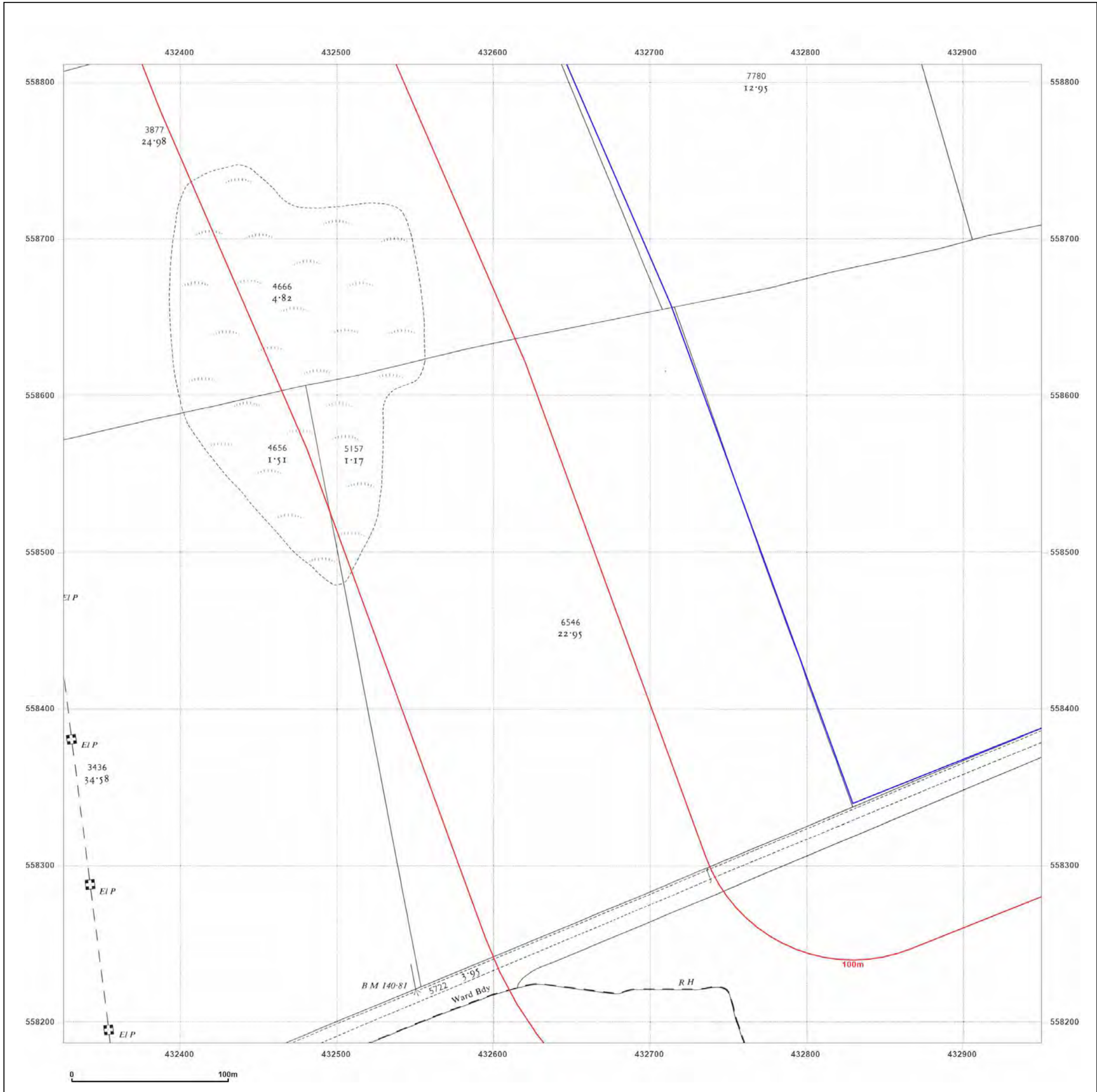
Surveyed 1958  
 Revised 1958  
 Edition N/A  
 Copyright 1959  
 Levelled 1939

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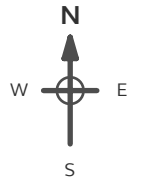
Map legend available at:  
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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_1  
**Grid Ref:** 432638, 558499

**Map Name:** National Grid  
**Map date:** 1993  
**Scale:** 1:2,500  
**Printed at:** 1:2,500



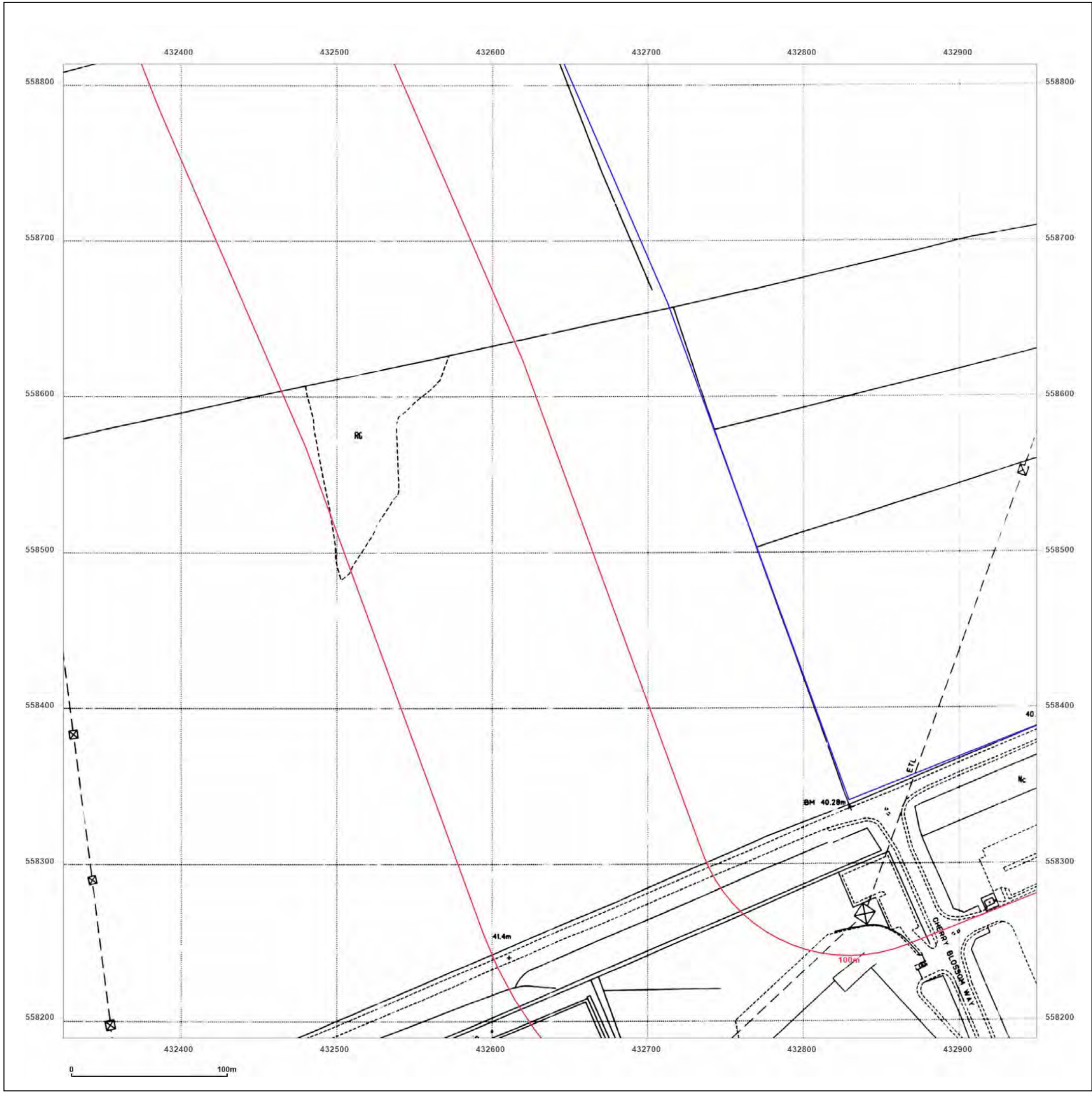
Surveyed N/A  
 Revised N/A  
 Edition N/A  
 Copyright 1993  
 Levelled N/A

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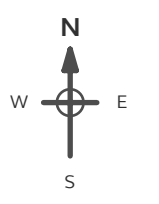




**Site Details:**  
 WEST MOOR FARM, CHERRY BLOSSOM WAY, WASHINGTON, SR5 3HY

**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_1  
**Grid Ref:** 432638, 558499

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**Map date:** 1993  
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**Printed at:** 1:2,500



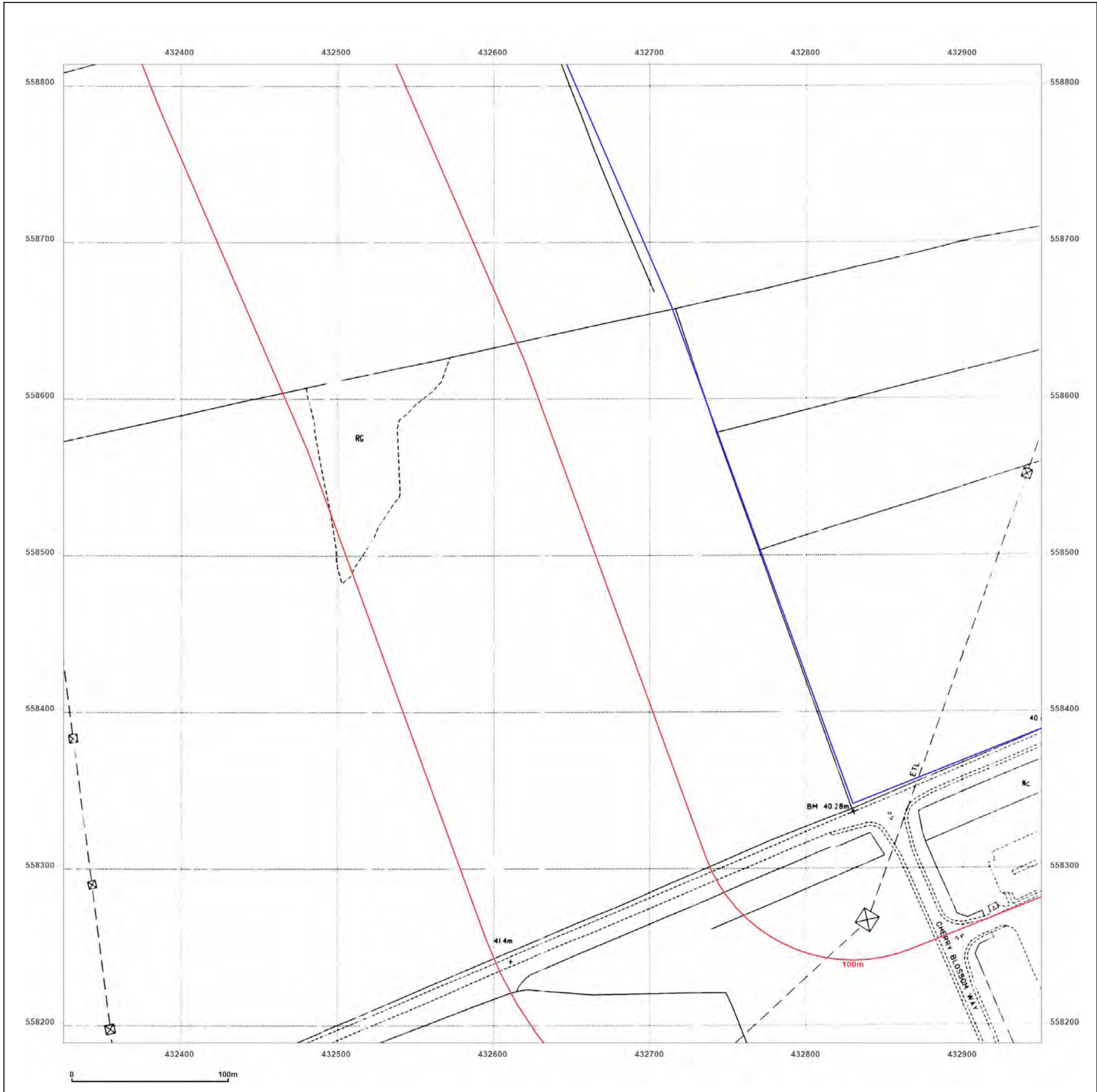
Surveyed N/A  
 Revised N/A  
 Edition N/A  
 Copyright 1993  
 Levelled N/A

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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_1  
**Grid Ref:** 432638, 558499

**Map Name:** National Grid

**Map date:** 1994

**Scale:** 1:2,500

**Printed at:** 1:2,500



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

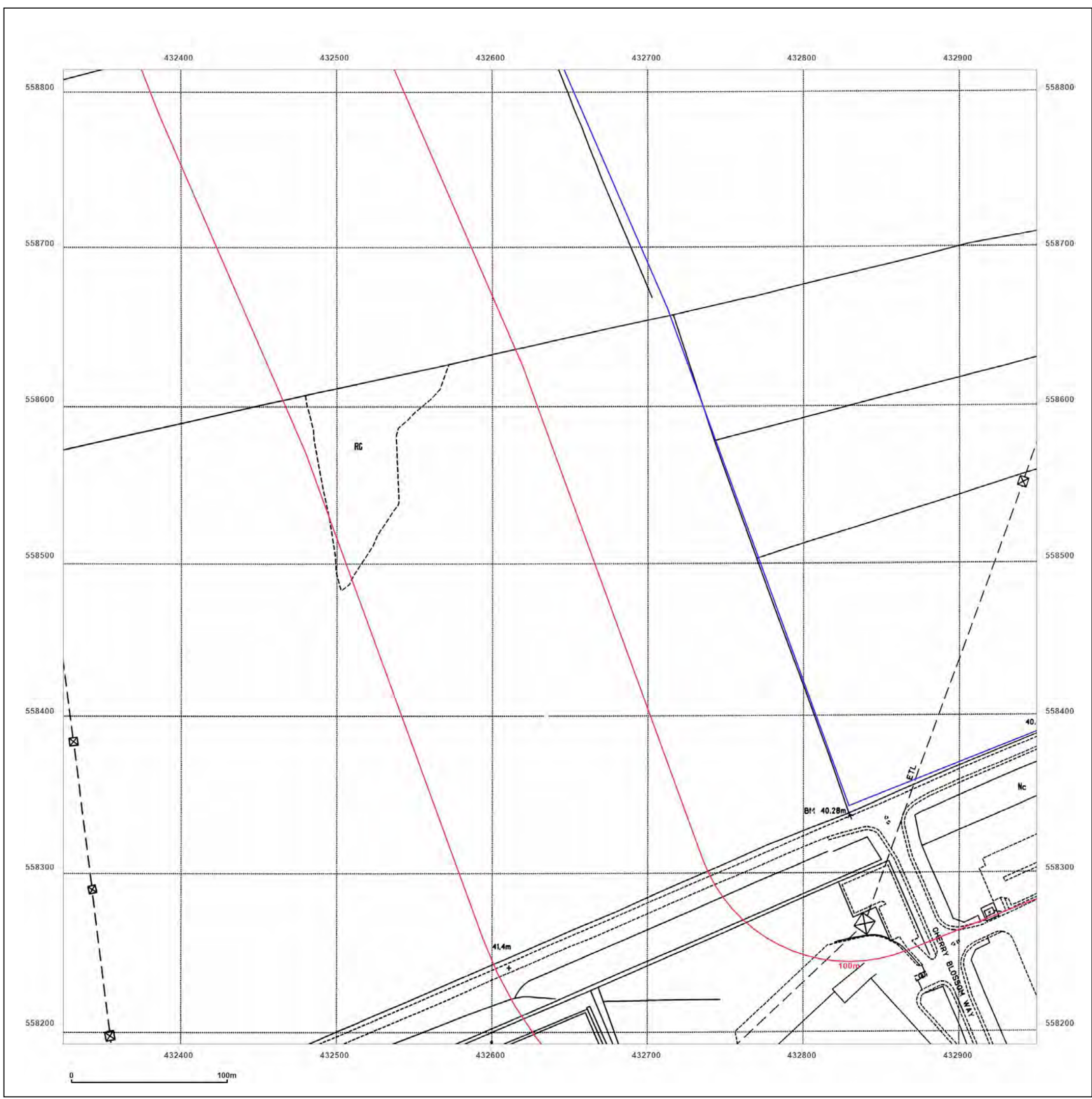


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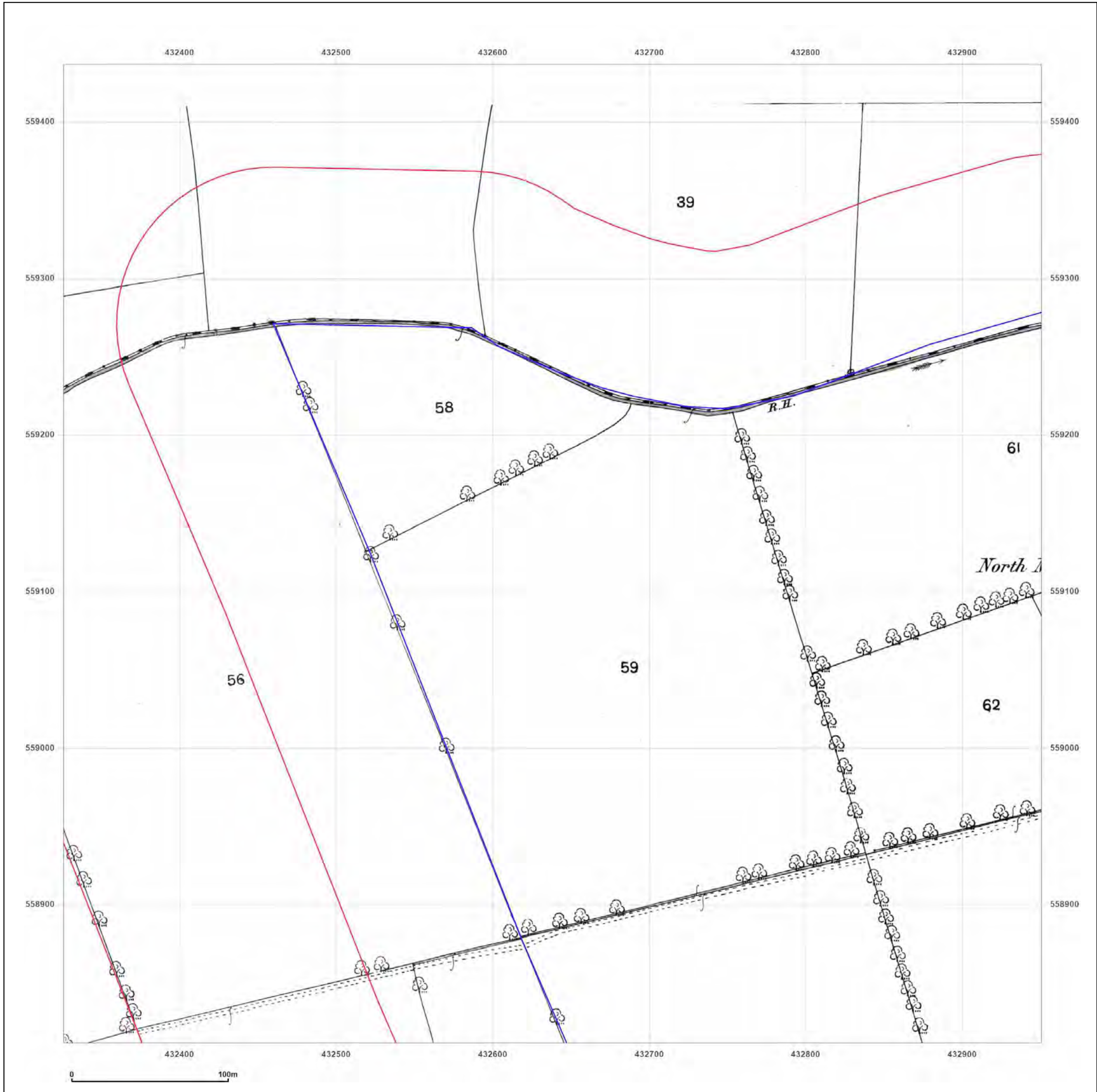
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**Grid Ref:** 432638, 559124

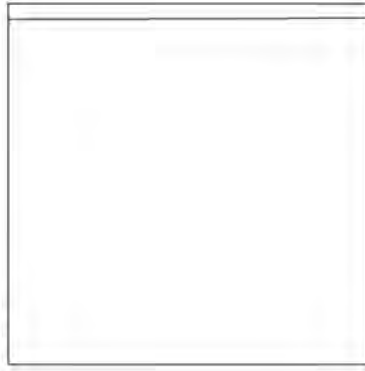
**Map Name:** County Series

**Map date:** 1884

**Scale:** 1:2,500

**Printed at:** 1:2,500





Surveyed 1856  
Revised N/A  
Edition 1884  
Copyright N/A  
Levelled N/A



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**Client Ref:** JER9933\_PO23-0124  
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**Grid Ref:** 432638, 559124

**Map Name:** County Series

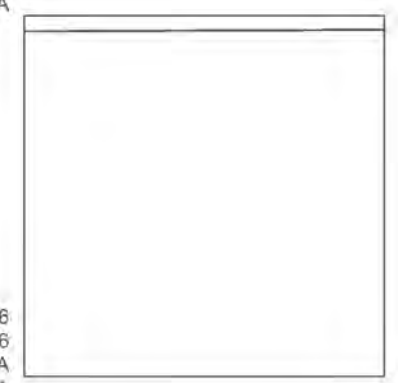
**Map date:** 1896-1897

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1897  
Revised 1897  
Edition N/A  
Copyright N/A  
Levelled N/A



Surveyed 1896  
Revised 1896  
Edition N/A  
Copyright N/A  
Levelled N/A

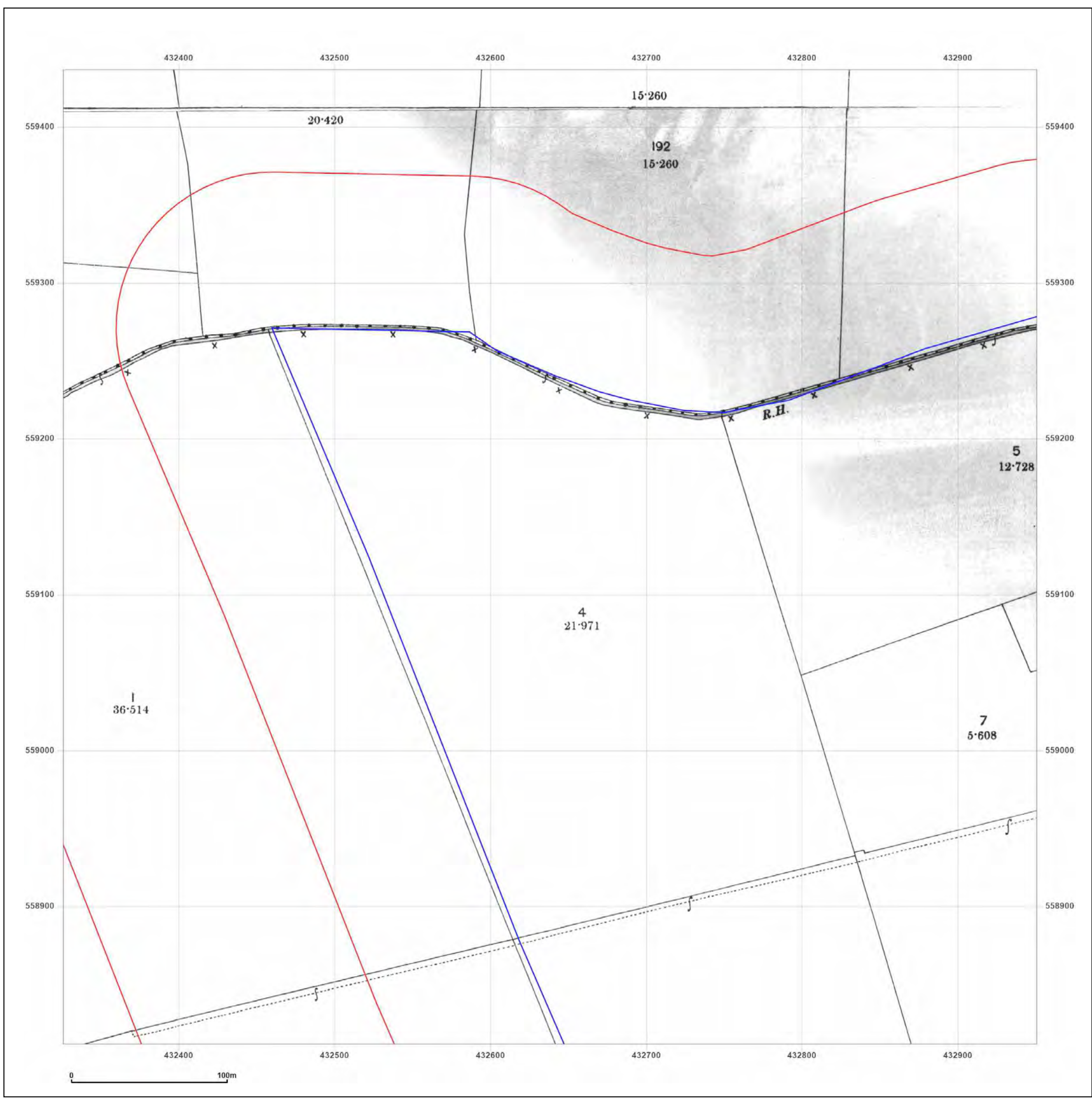


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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_1\_2  
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**Map Name:** County Series

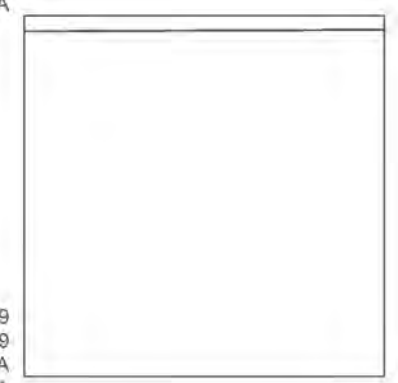
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**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1919  
Revised 1919  
Edition N/A  
Copyright N/A  
Levelled N/A



Surveyed 1919  
Revised 1919  
Edition N/A  
Copyright N/A  
Levelled N/A

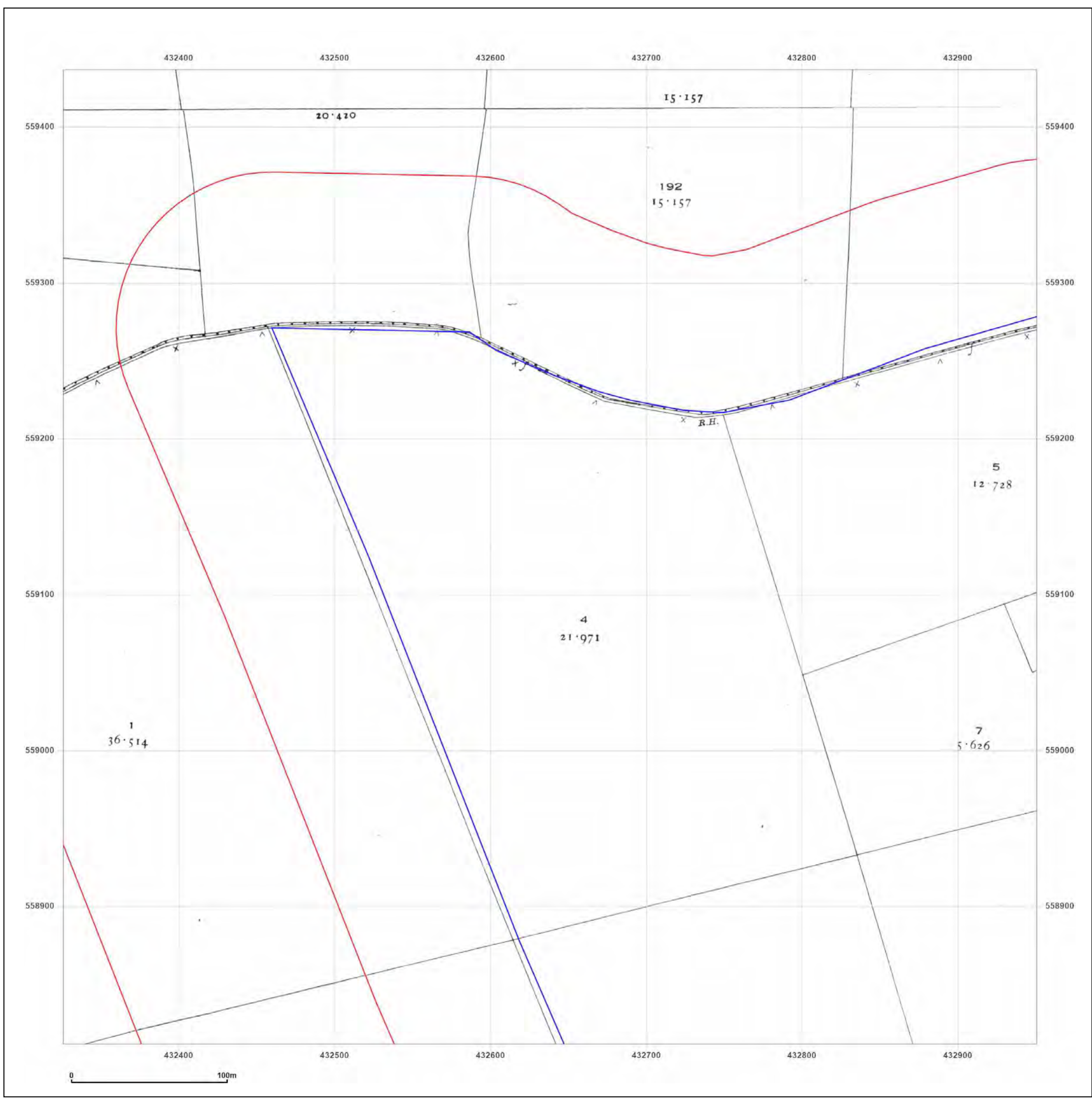


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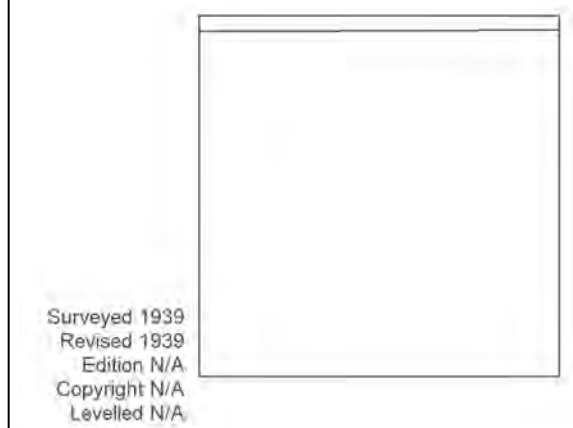
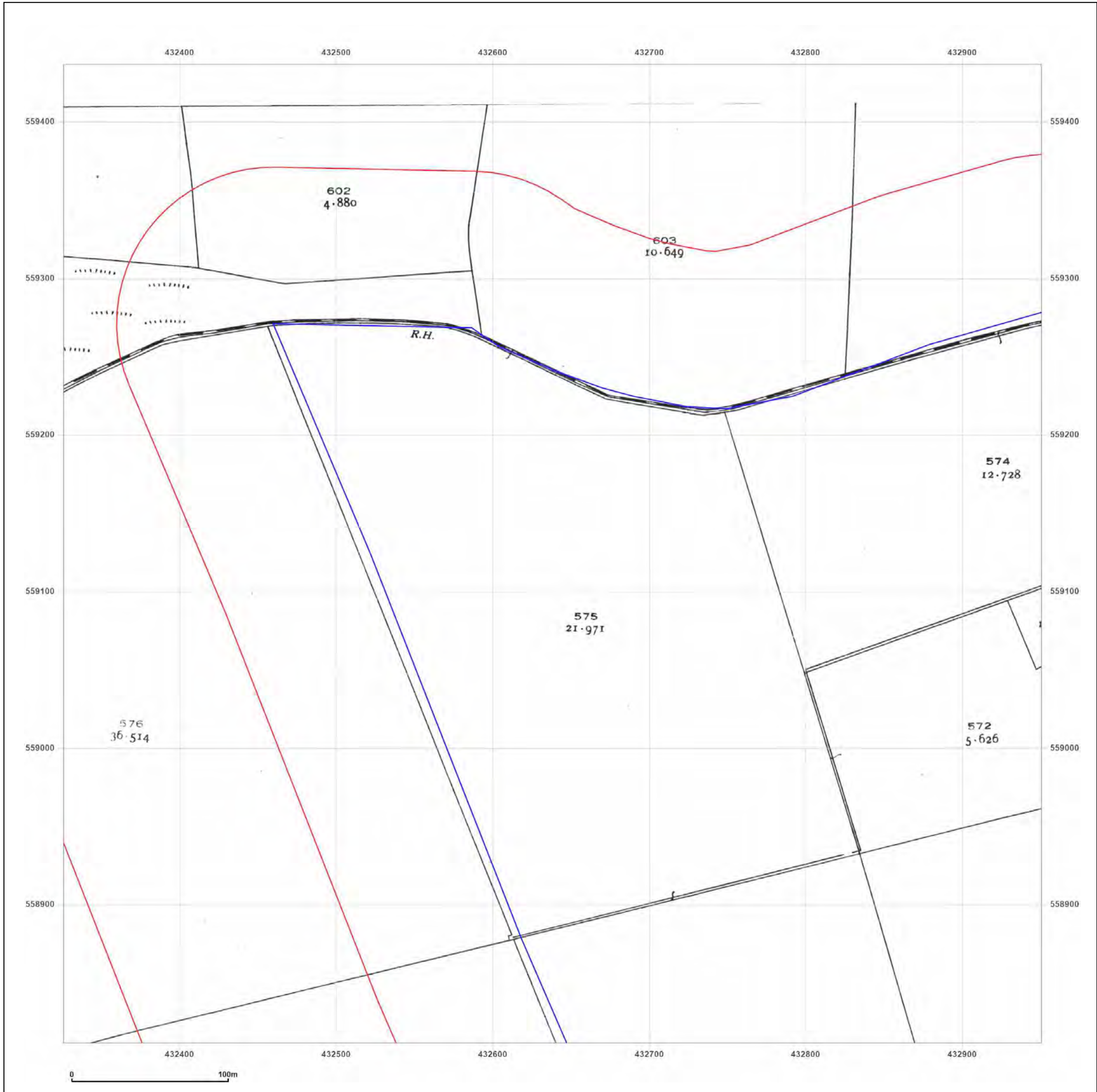
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**Grid Ref:** 432638, 559124

**Map Name:** County Series

**Map date:** 1939

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1939  
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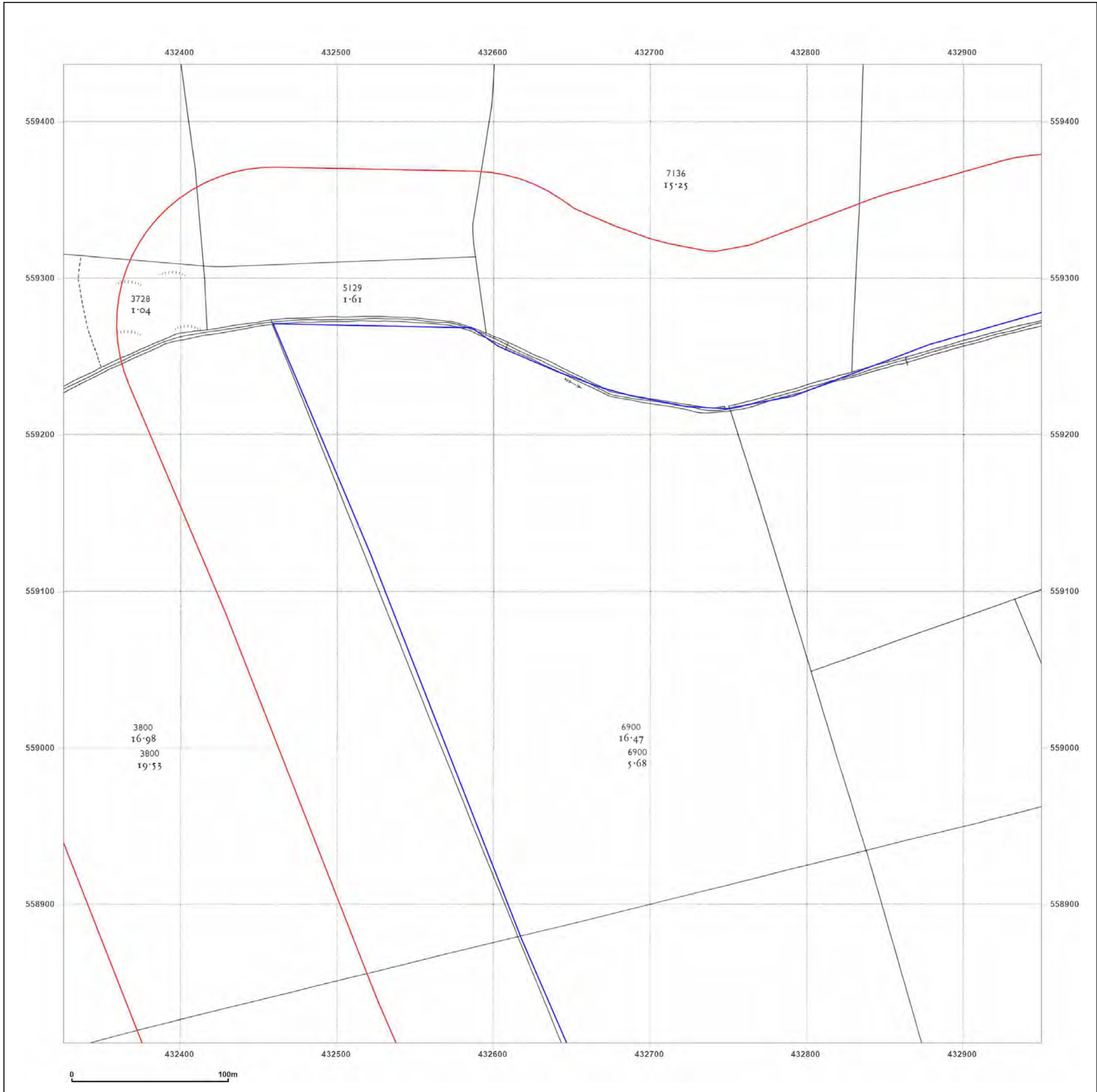
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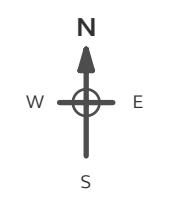
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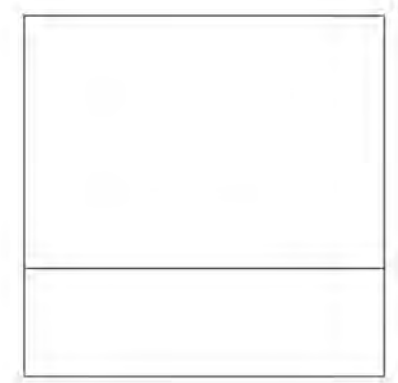
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 Edition N/A  
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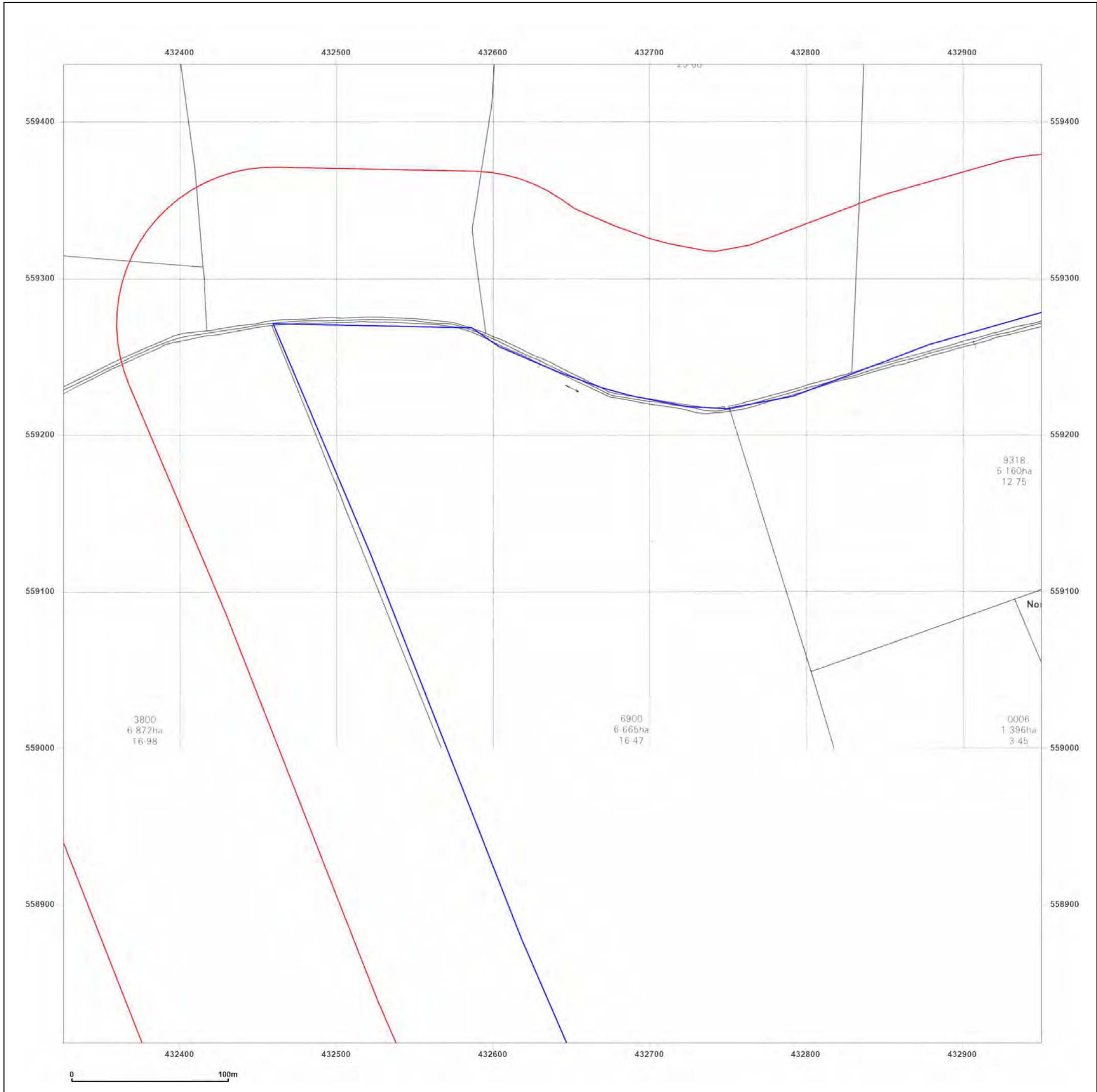


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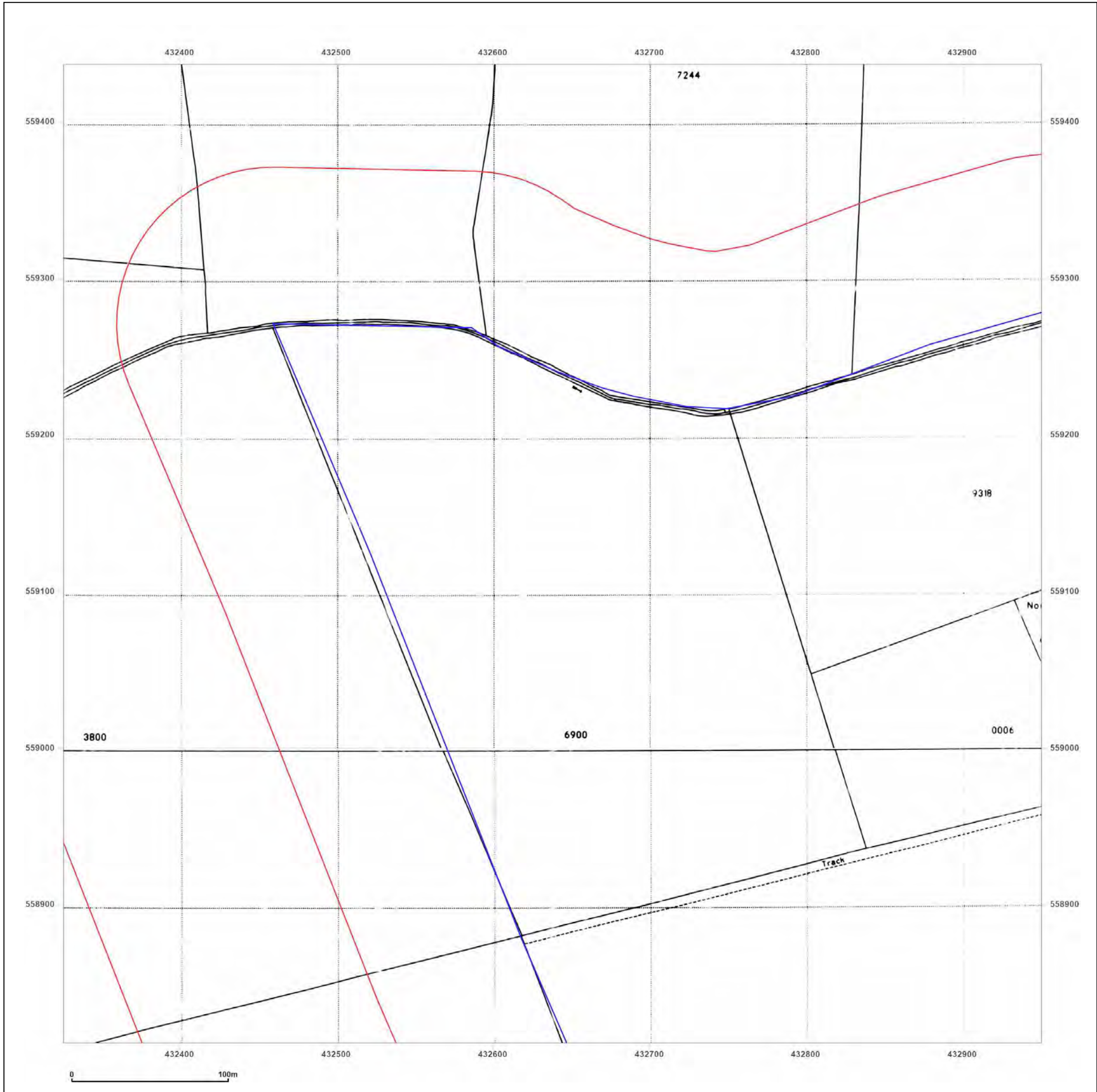
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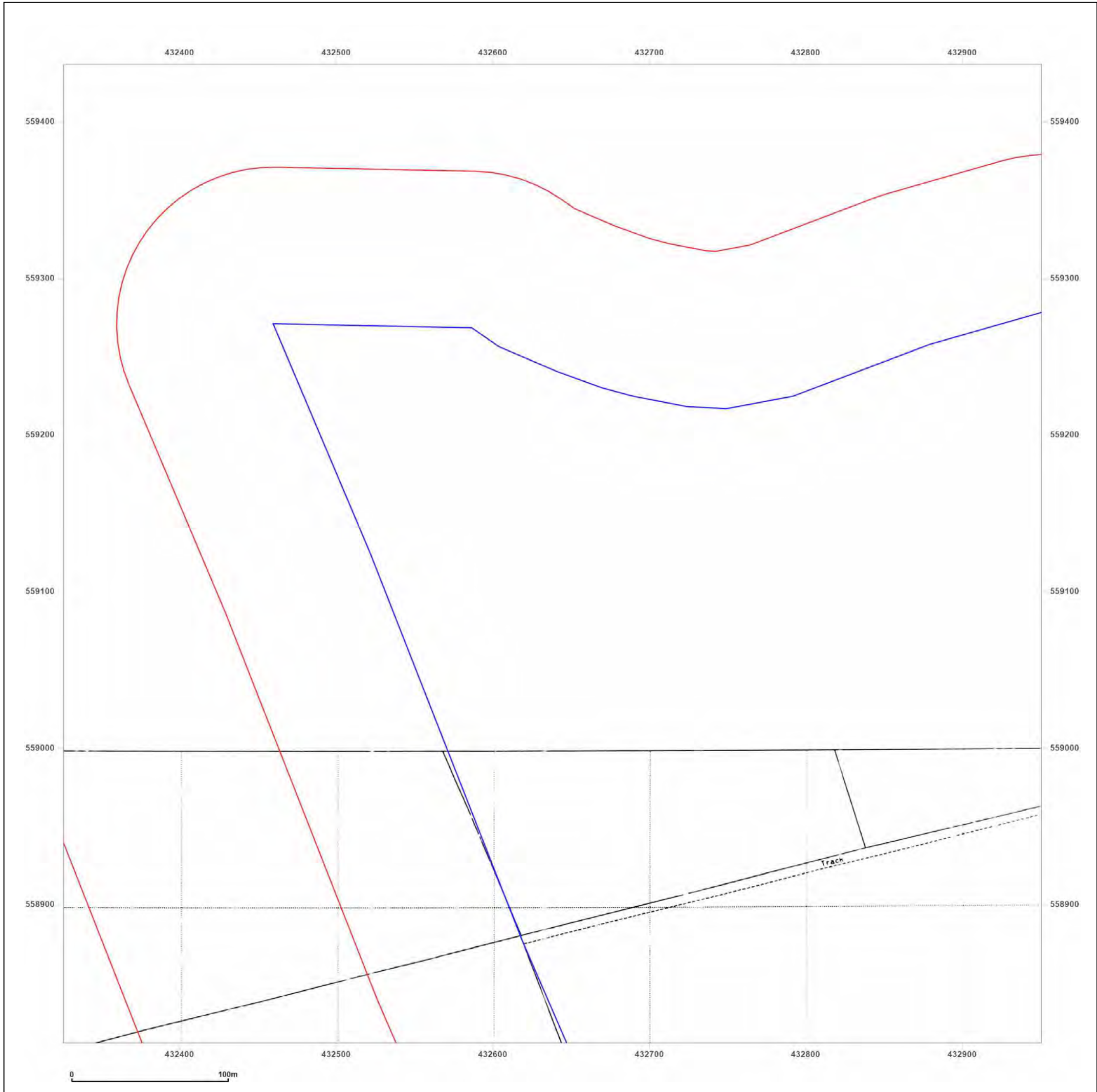
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**Map date:** 1993

**Scale:** 1:2,500

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**Map date:** 1994

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Edition N/A  
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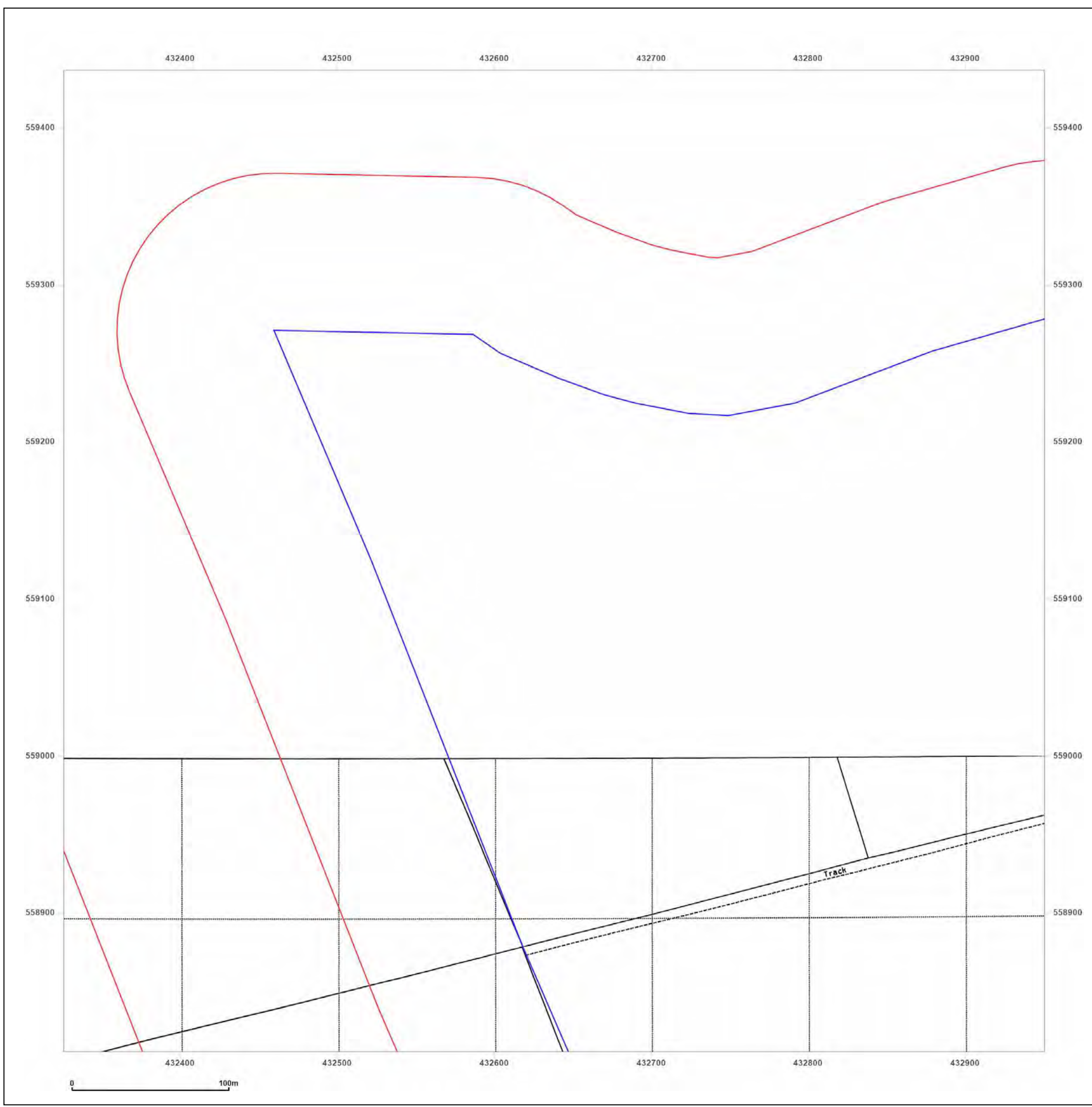


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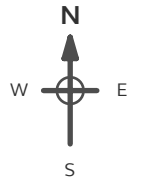
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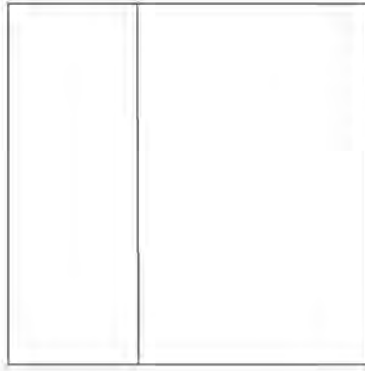


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Surveyed 1856  
 Revised N/A  
 Edition N/A  
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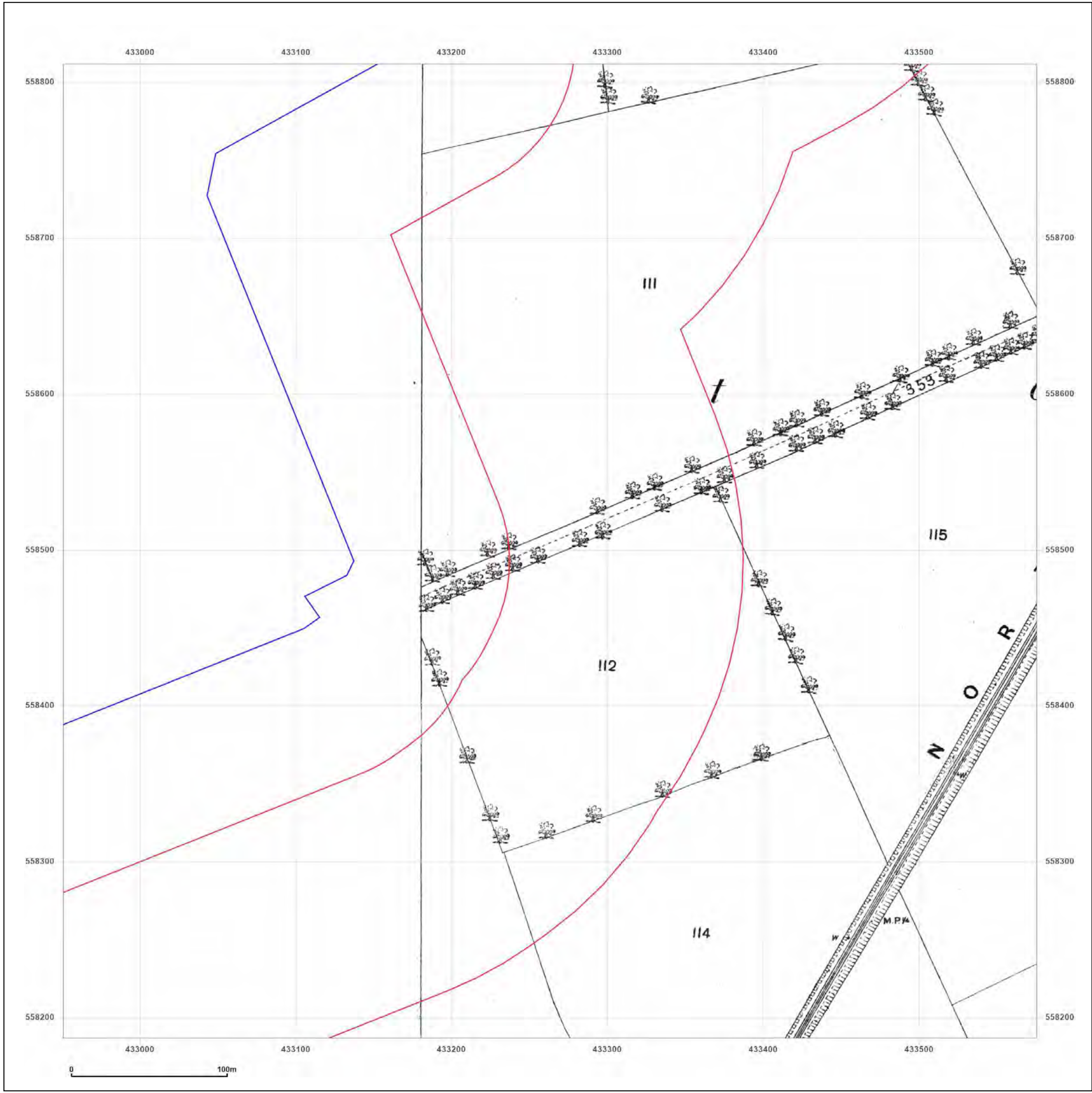


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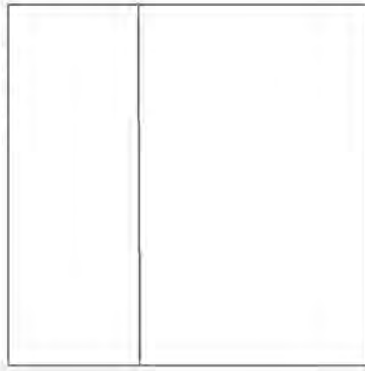
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**Scale:** 1:2,500  
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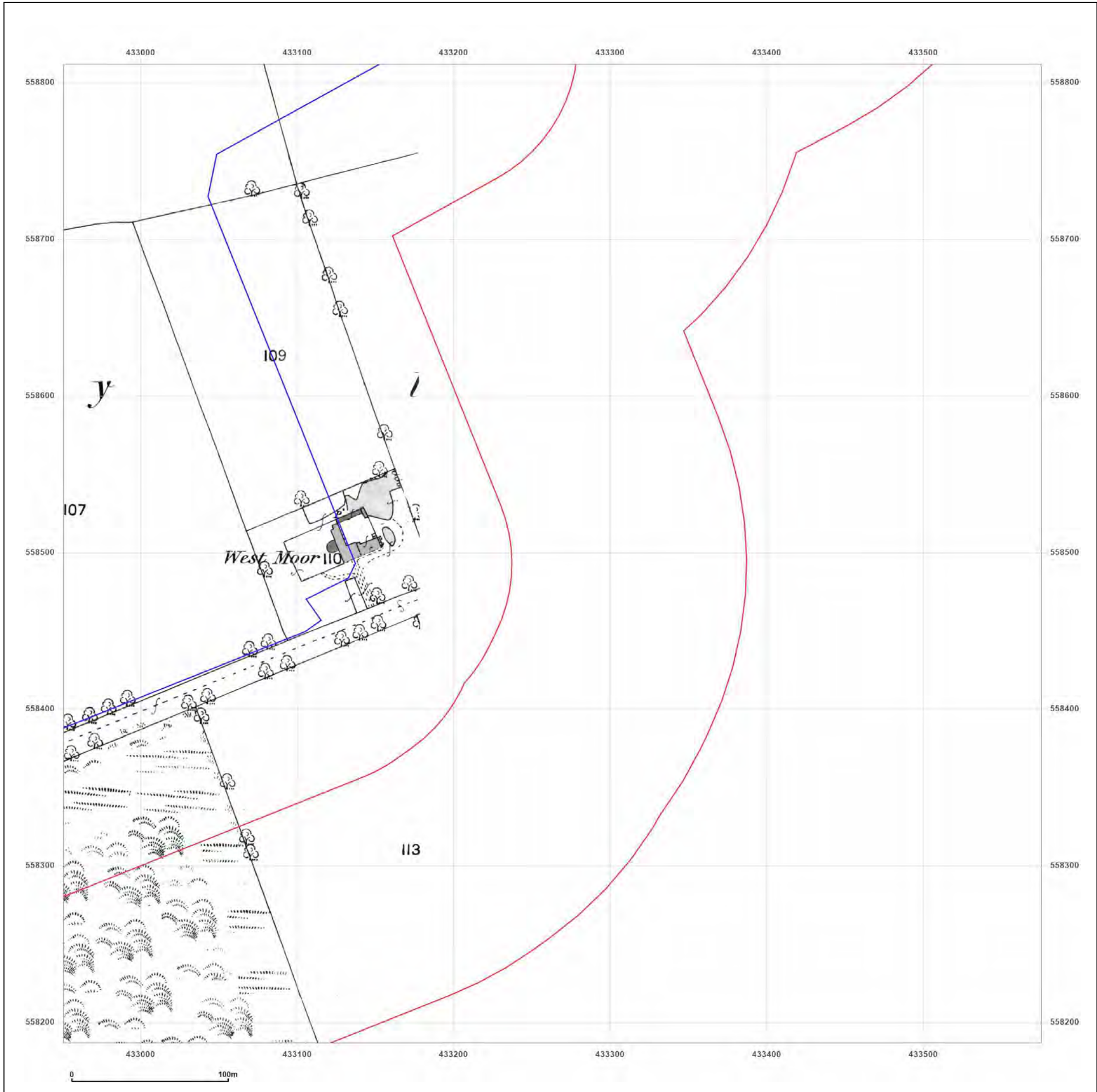


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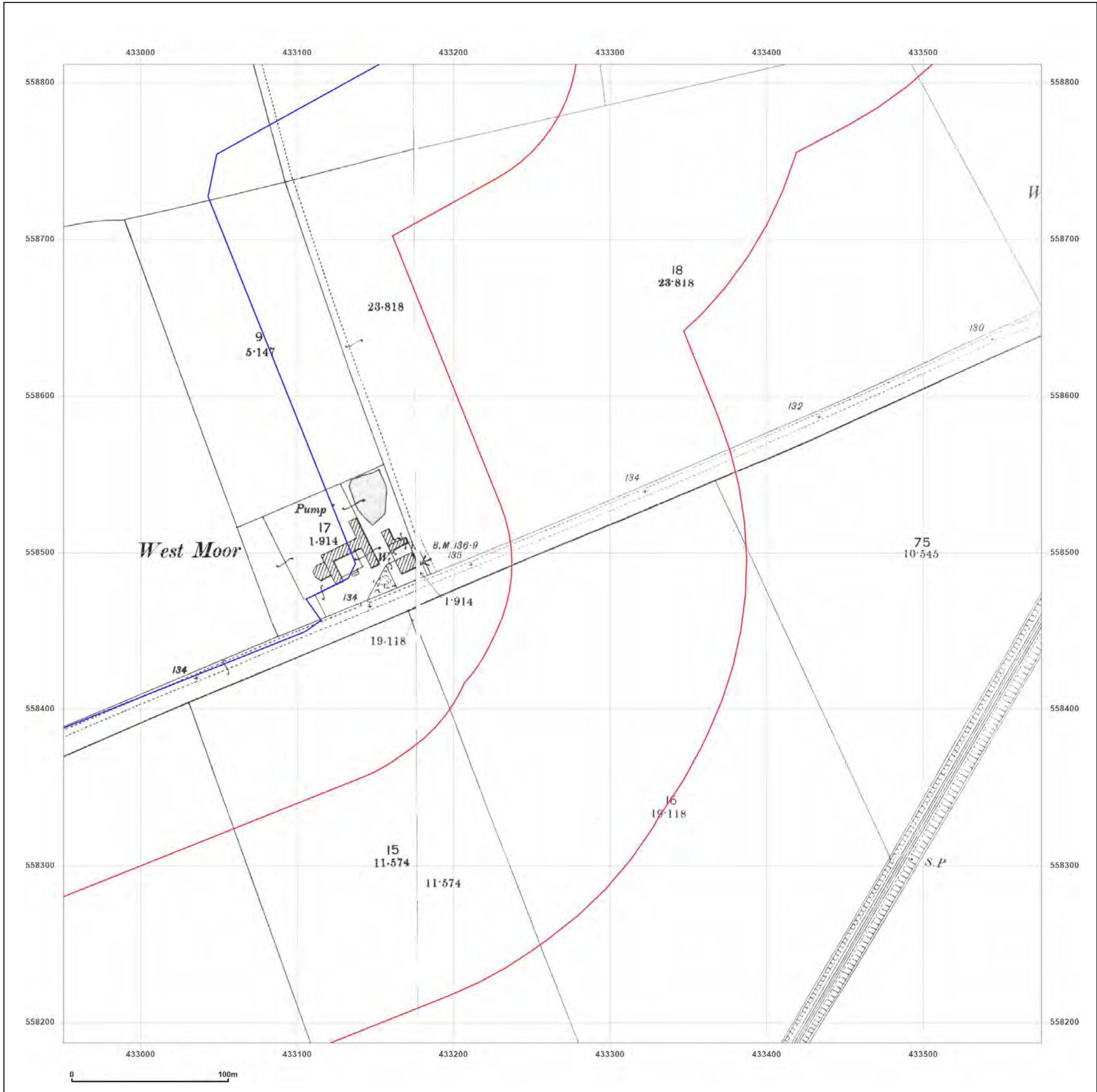
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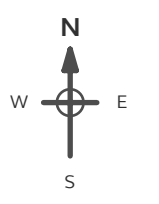
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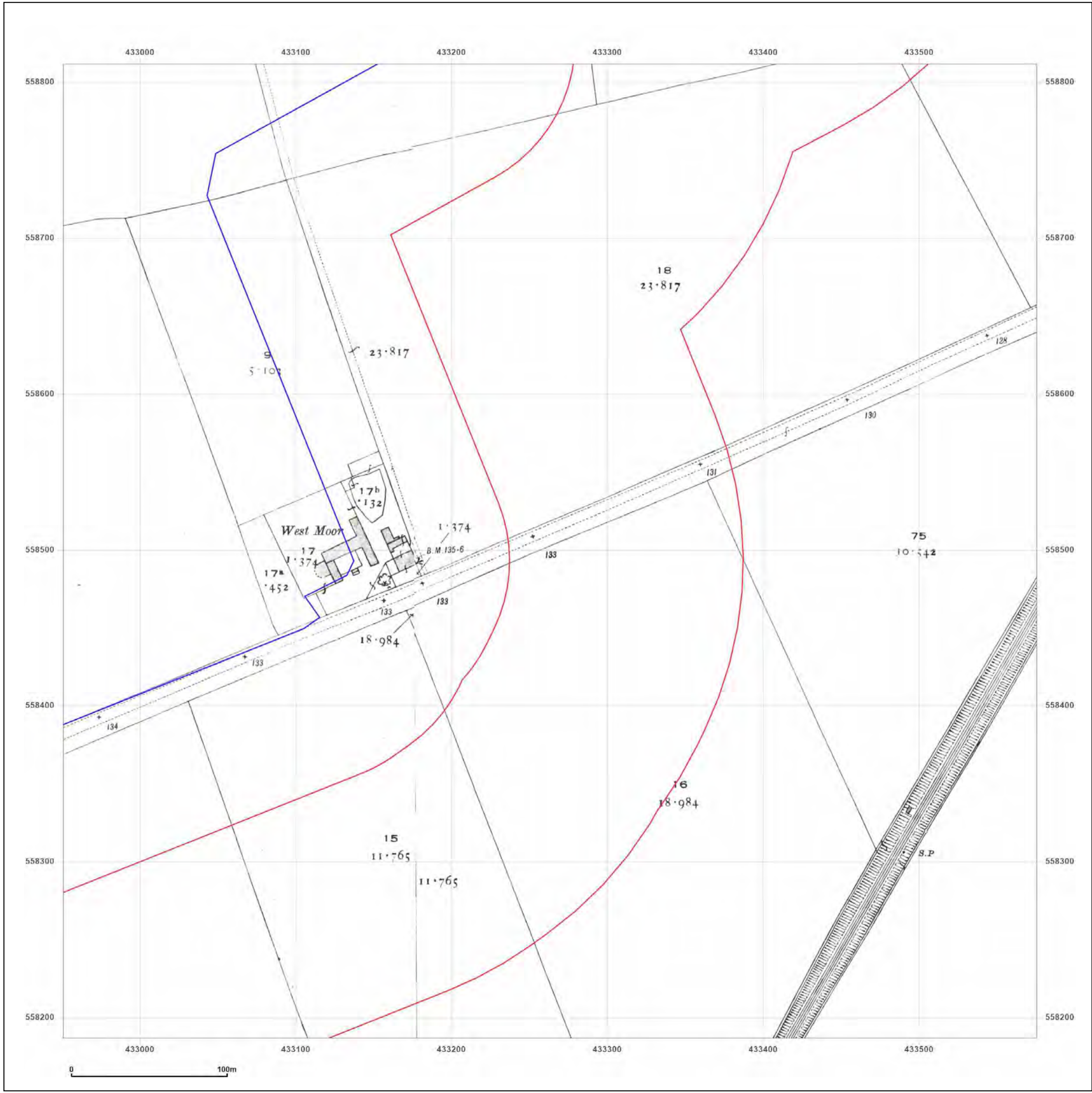
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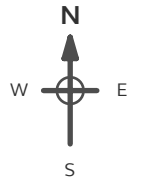
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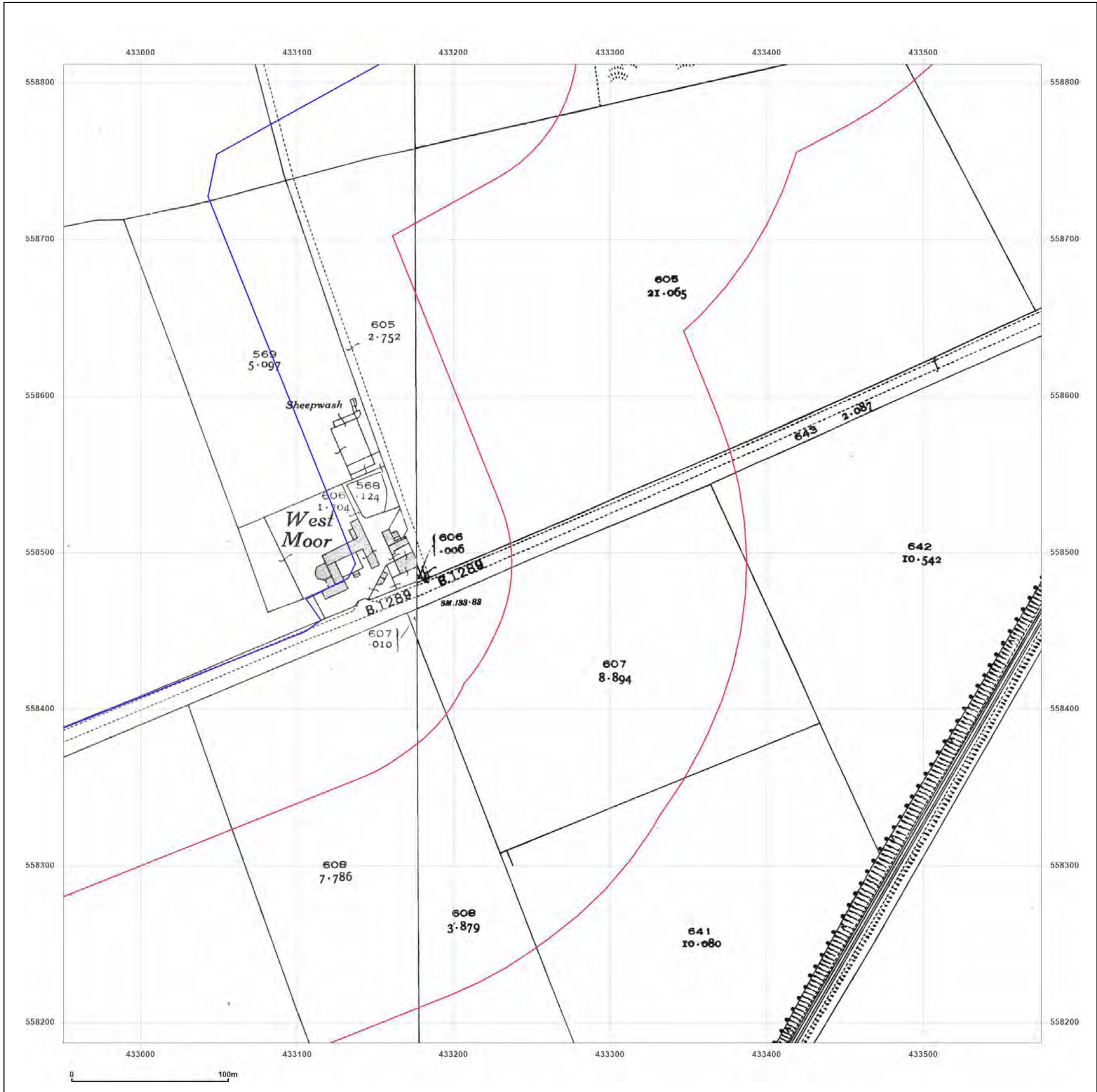
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**Map date:** 1959  
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 Revised 1958  
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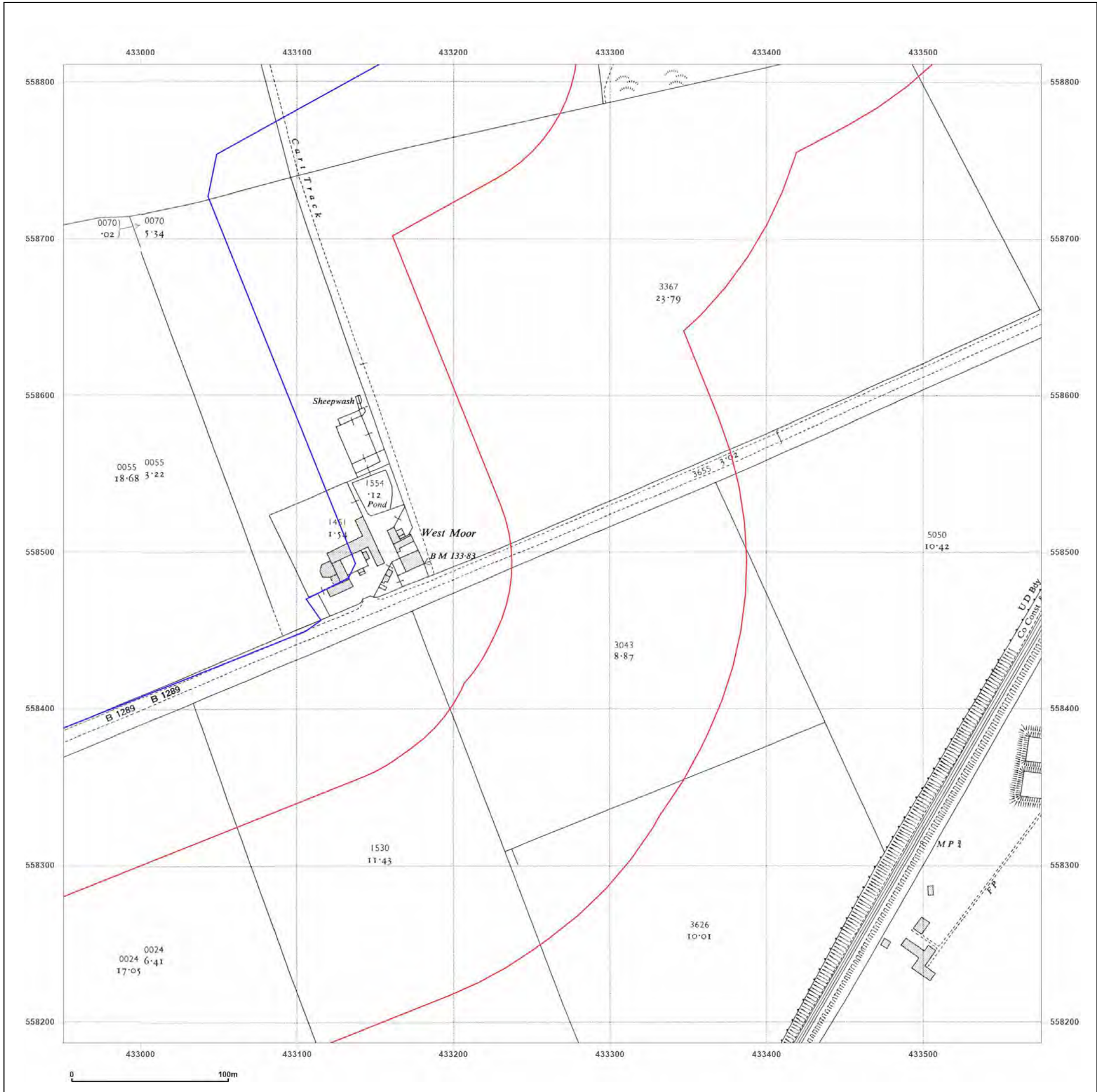
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**Map Name:** National Grid

**Map date:** 1993

**Scale:** 1:2,500

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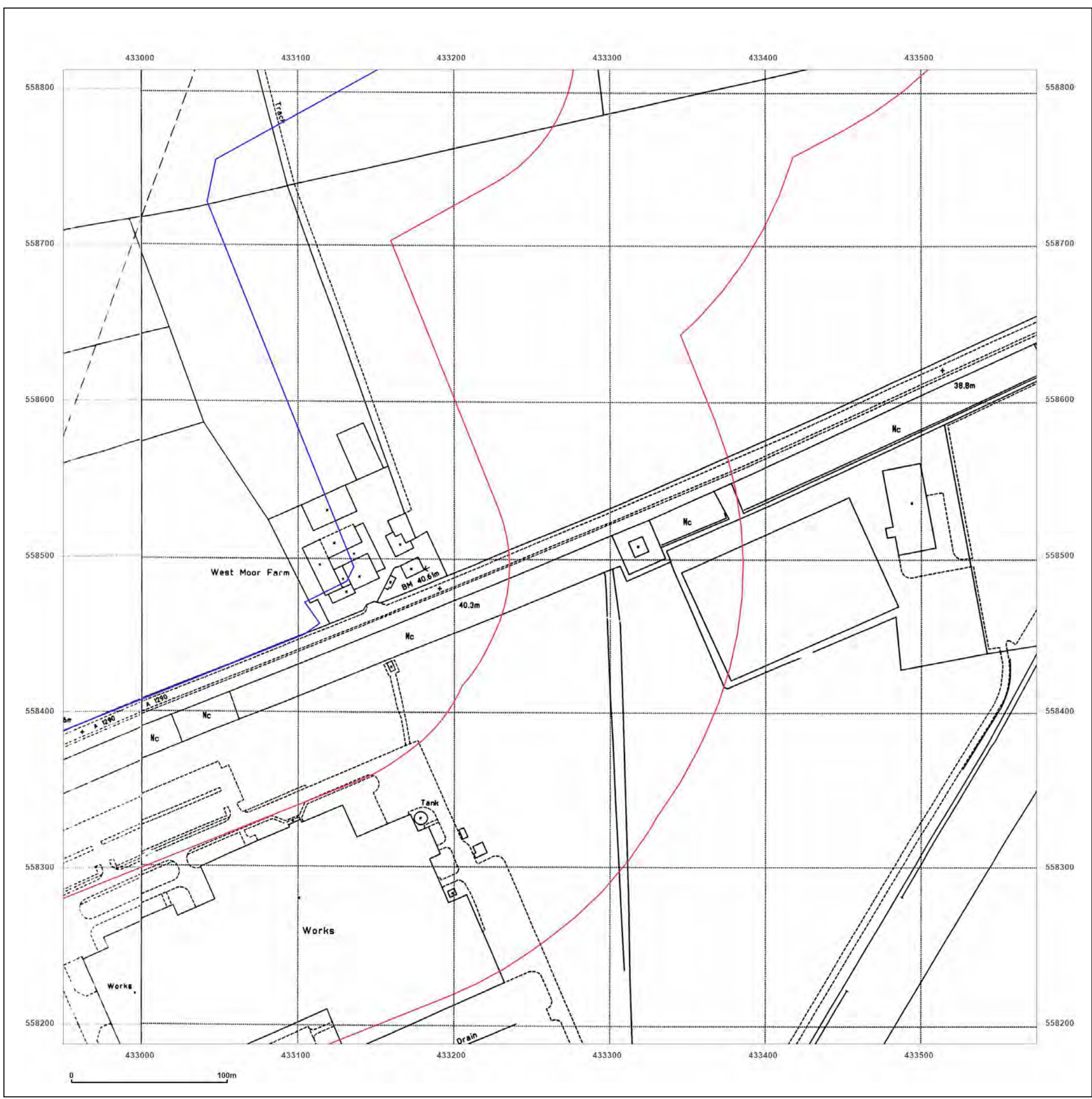


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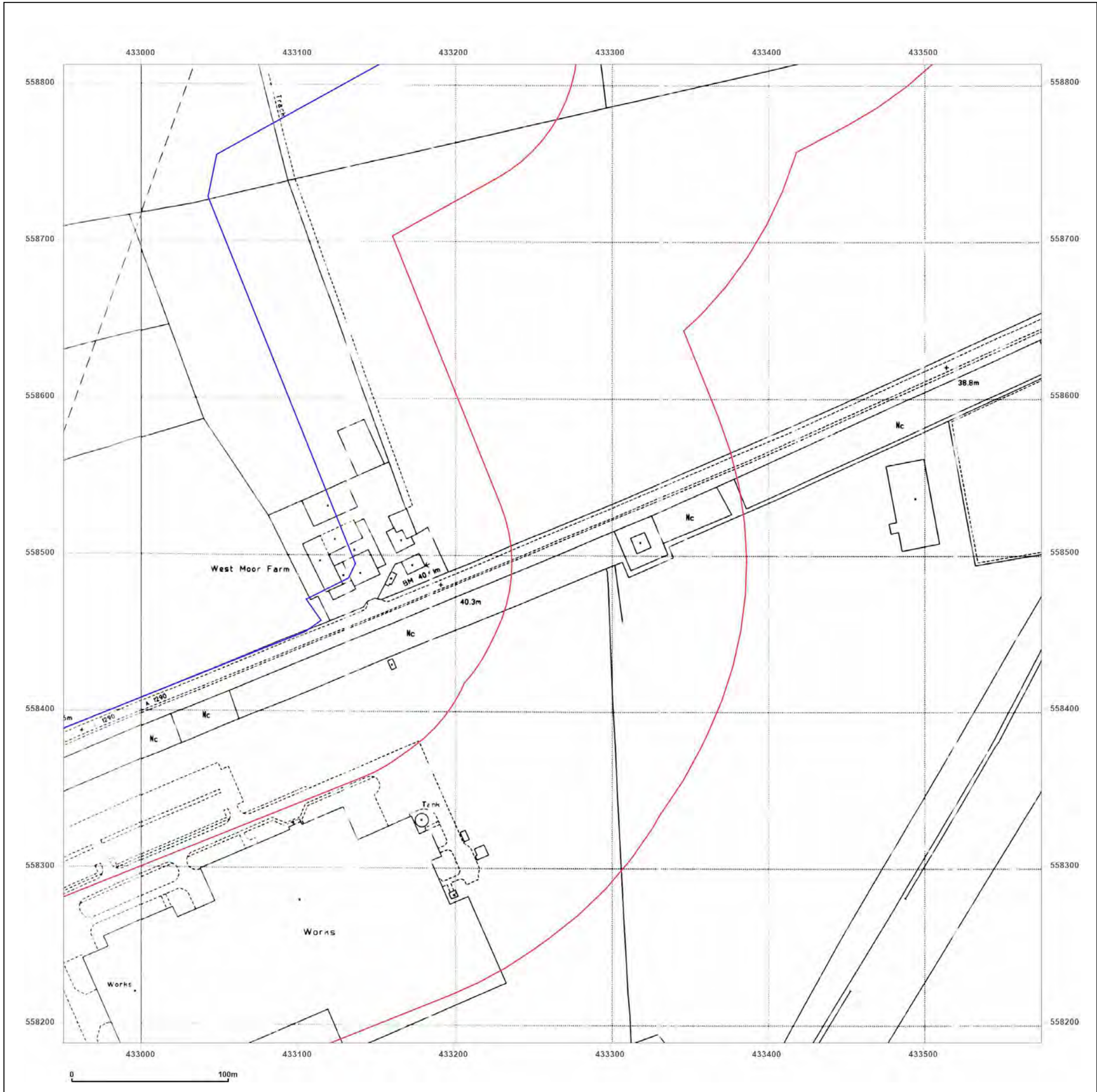
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**Printed at:** 1:2,500



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

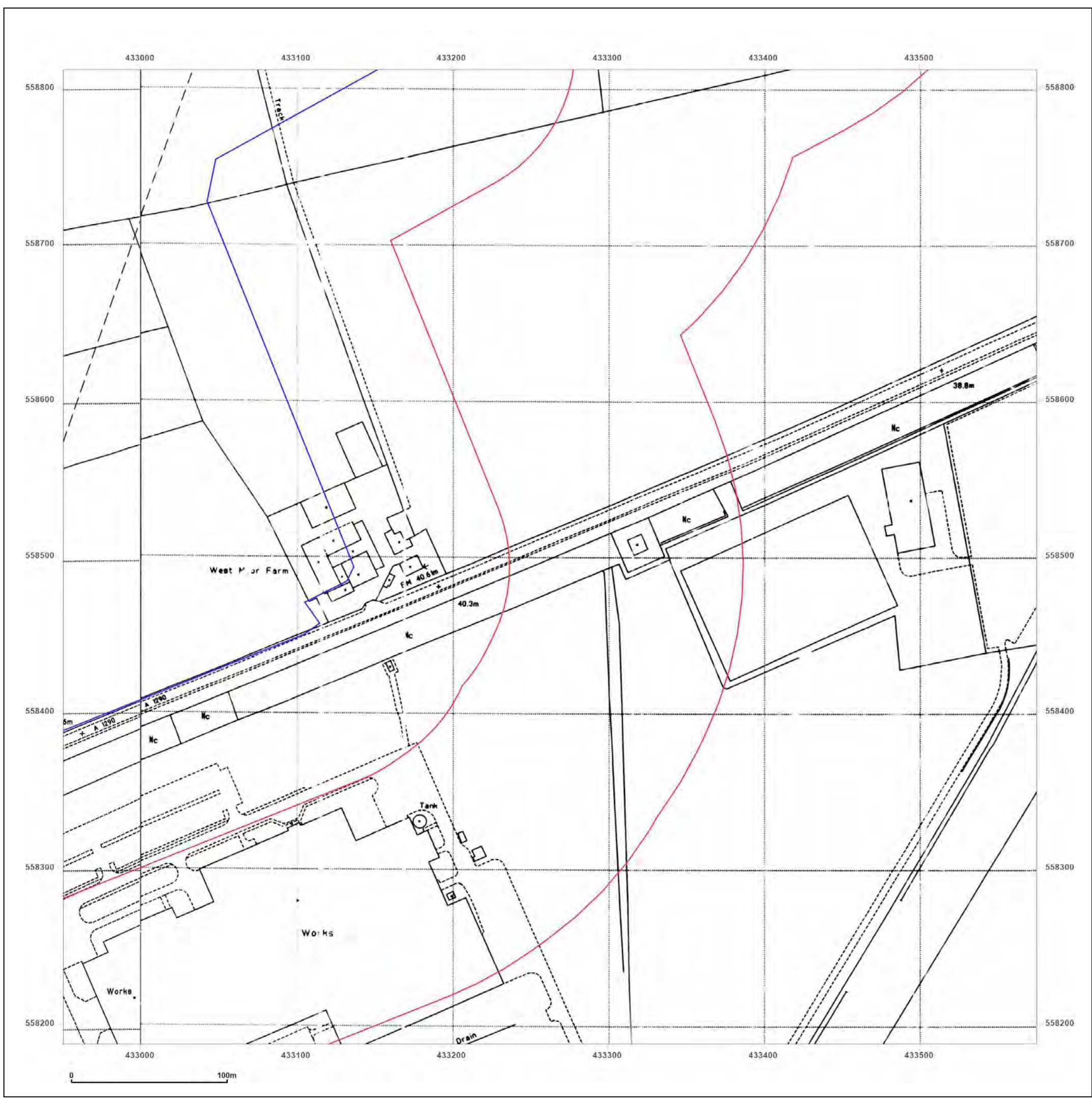


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**Map date:** 1856

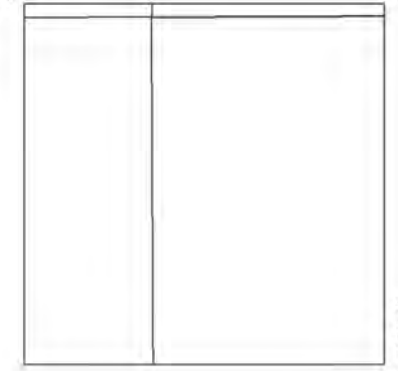
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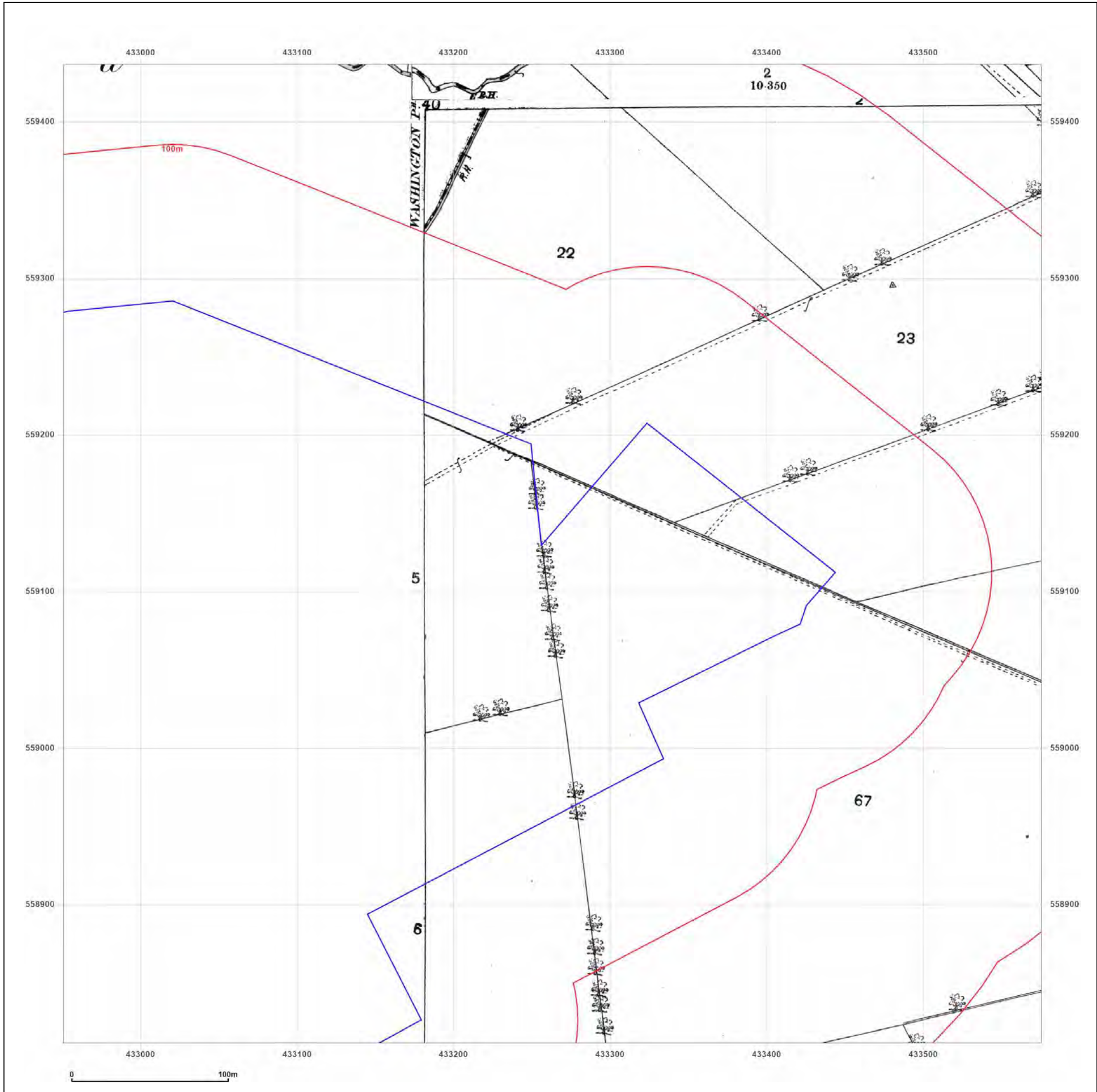


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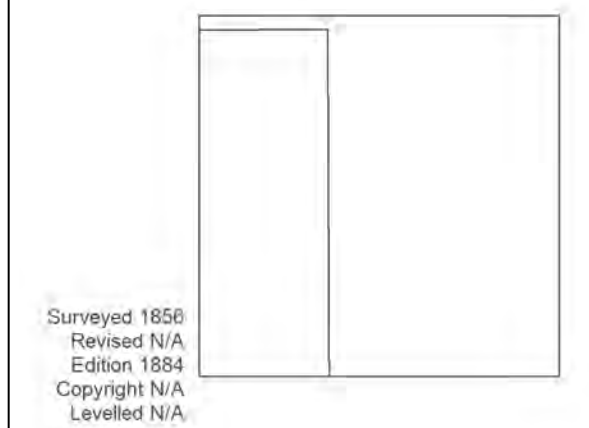
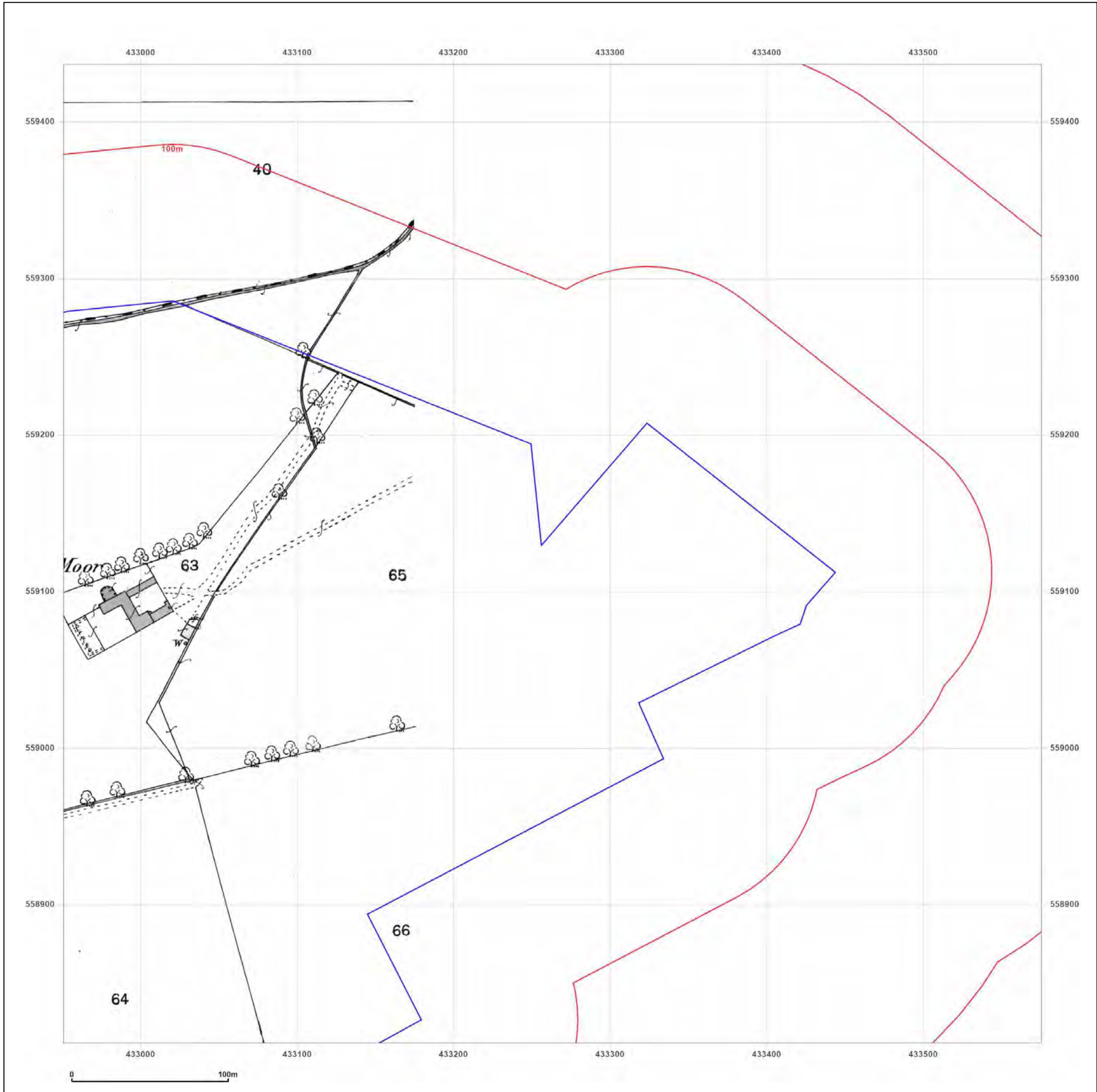
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**Map Name:** County Series

**Map date:** 1884

**Scale:** 1:2,500

**Printed at:** 1:2,500



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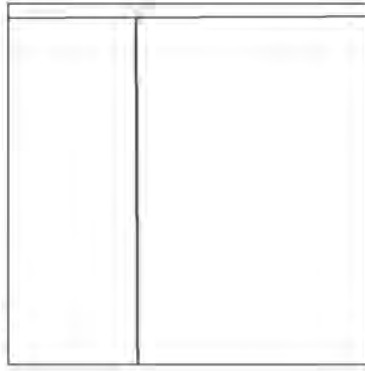
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**Map Name:** County Series

**Map date:** 1896

**Scale:** 1:2,500

**Printed at:** 1:2,500

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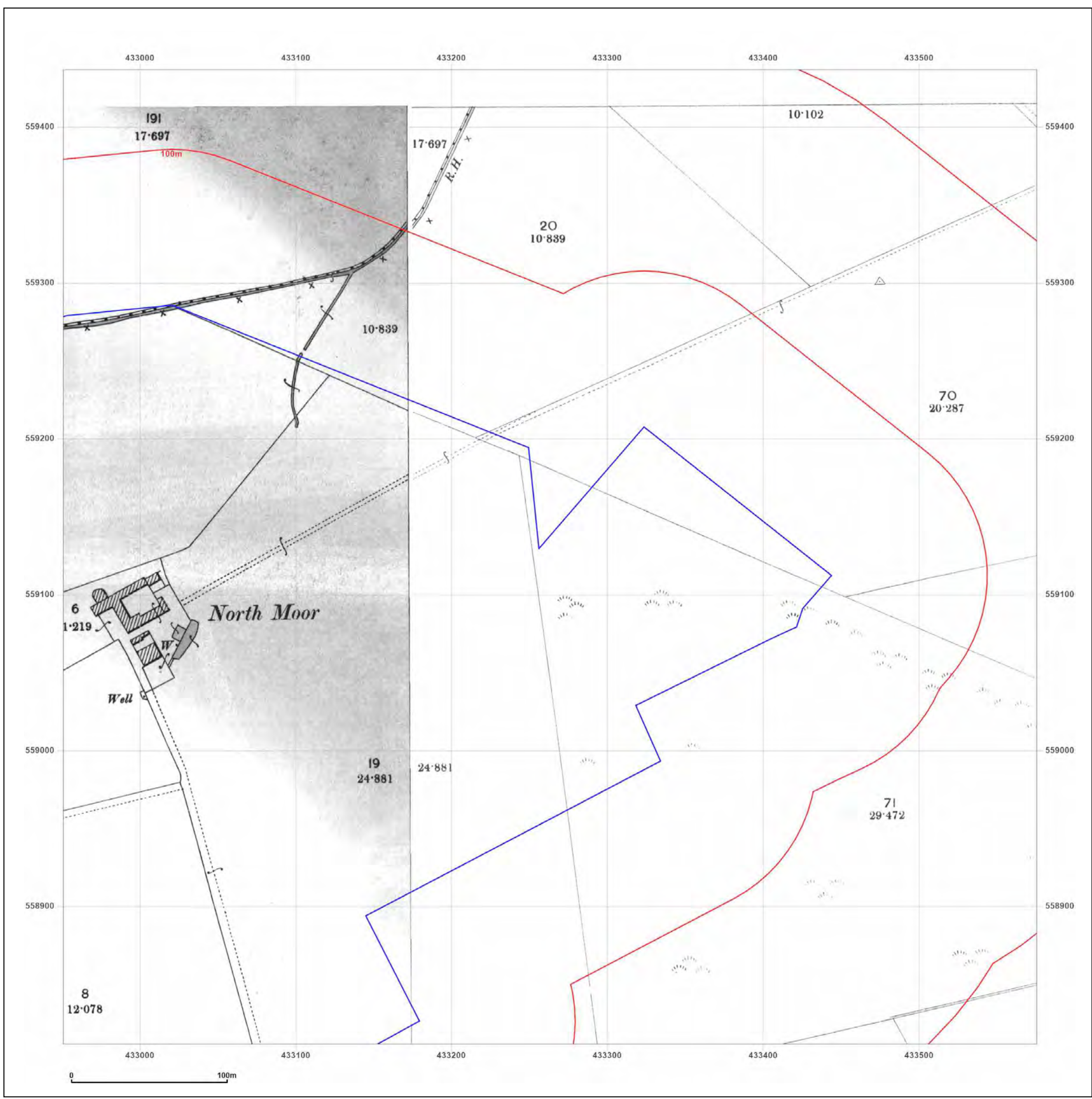


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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_2\_2  
**Grid Ref:** 433263, 559124

**Map Name:** County Series

**Map date:** 1919

**Scale:** 1:2,500

**Printed at:** 1:2,500



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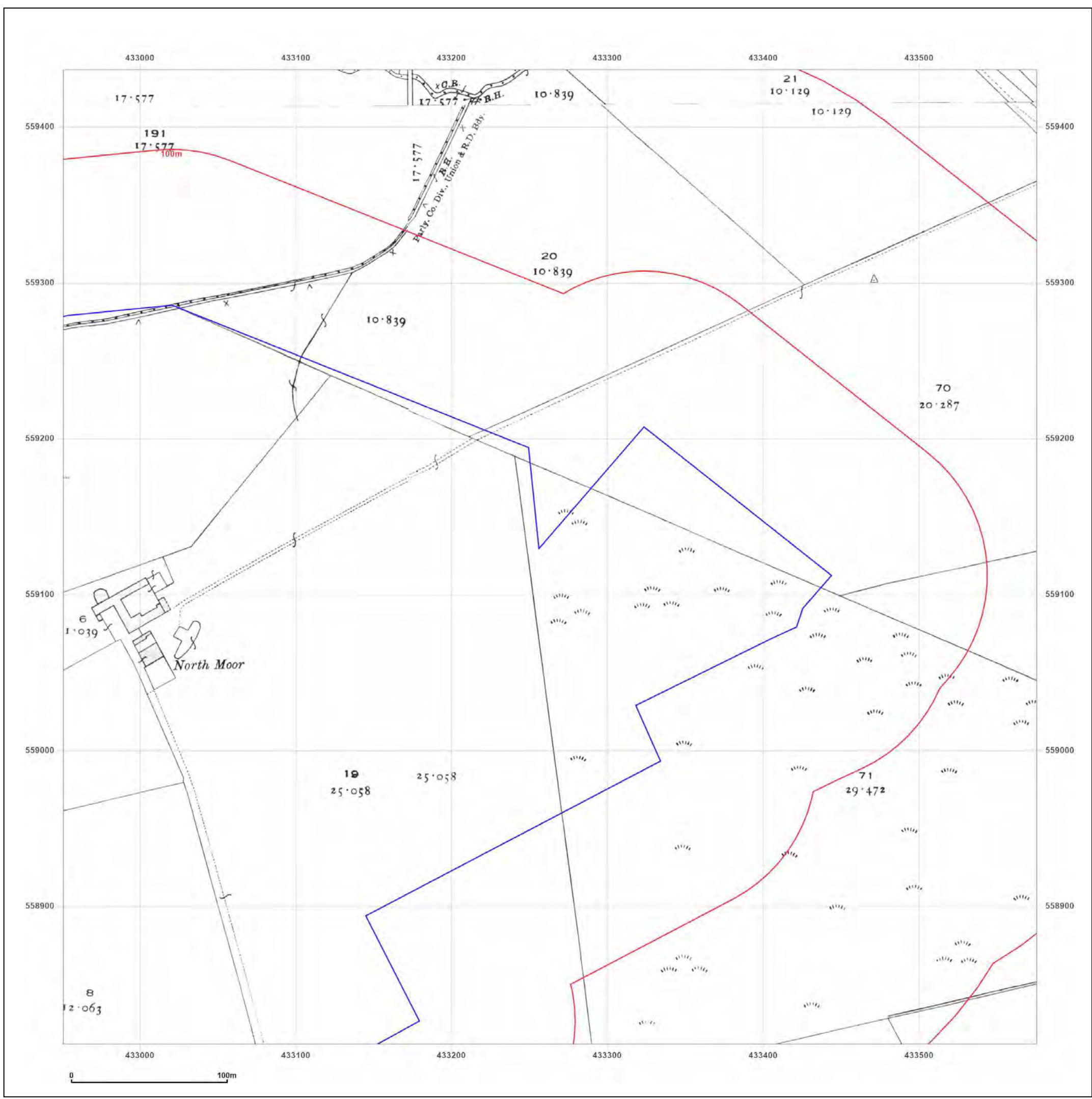


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**Site Details:**

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**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_2\_2  
**Grid Ref:** 433263, 559124

**Map Name:** National Grid

**Map date:** 1959

**Scale:** 1:2,500

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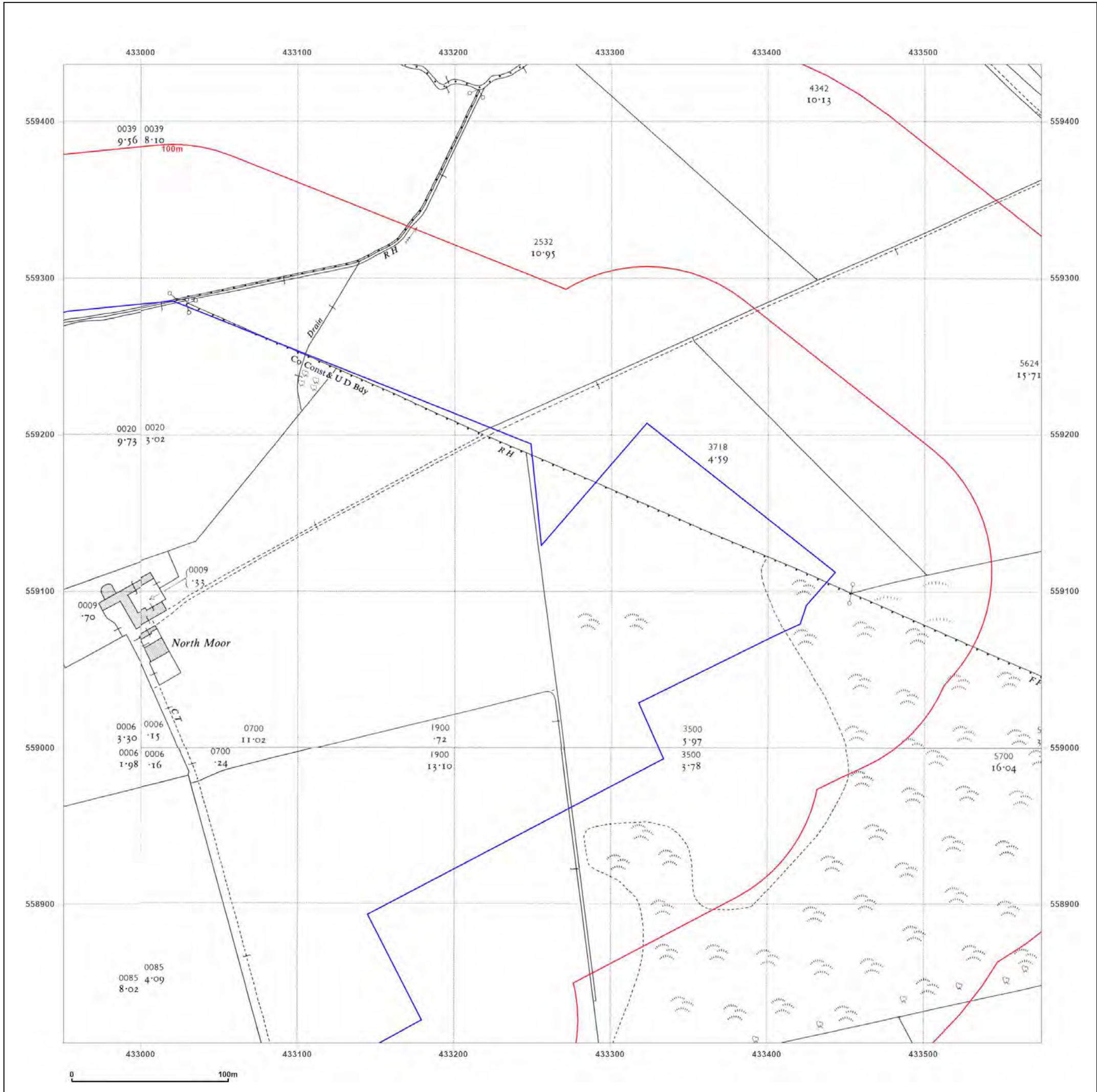


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WASHINGTON, SR5 3HY

**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_2\_2  
**Grid Ref:** 433263, 559124

**Map Name:** National Grid

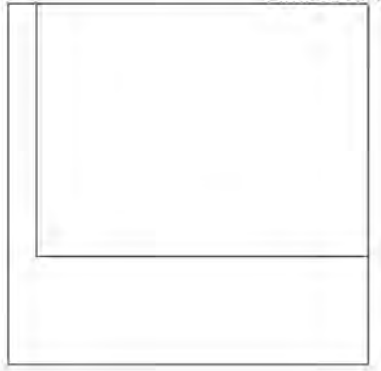
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**Scale:** 1:2,500

**Printed at:** 1:2,500



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Edition N/A  
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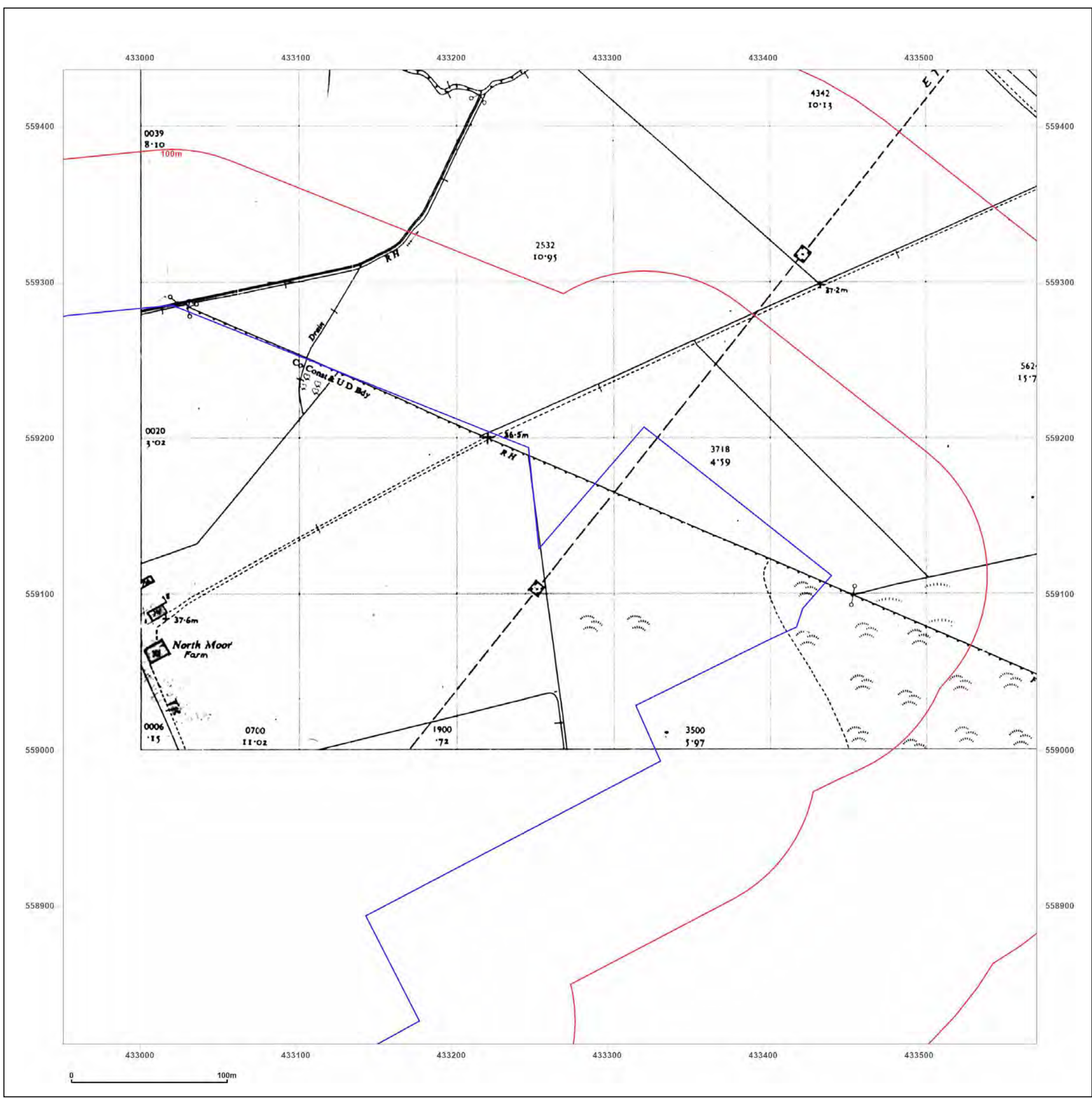



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**Site Details:**

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WASHINGTON, SR5 3HY

**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_2\_2  
**Grid Ref:** 433263, 559124

**Map Name:** National Grid

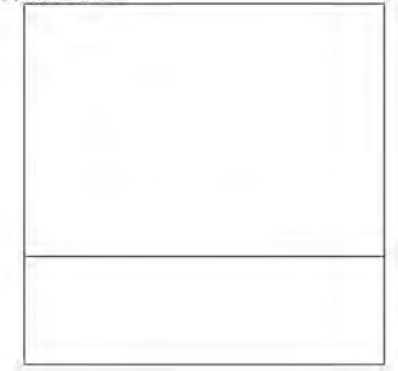
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**Scale:** 1:2,500

**Printed at:** 1:2,500



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Edition N/A  
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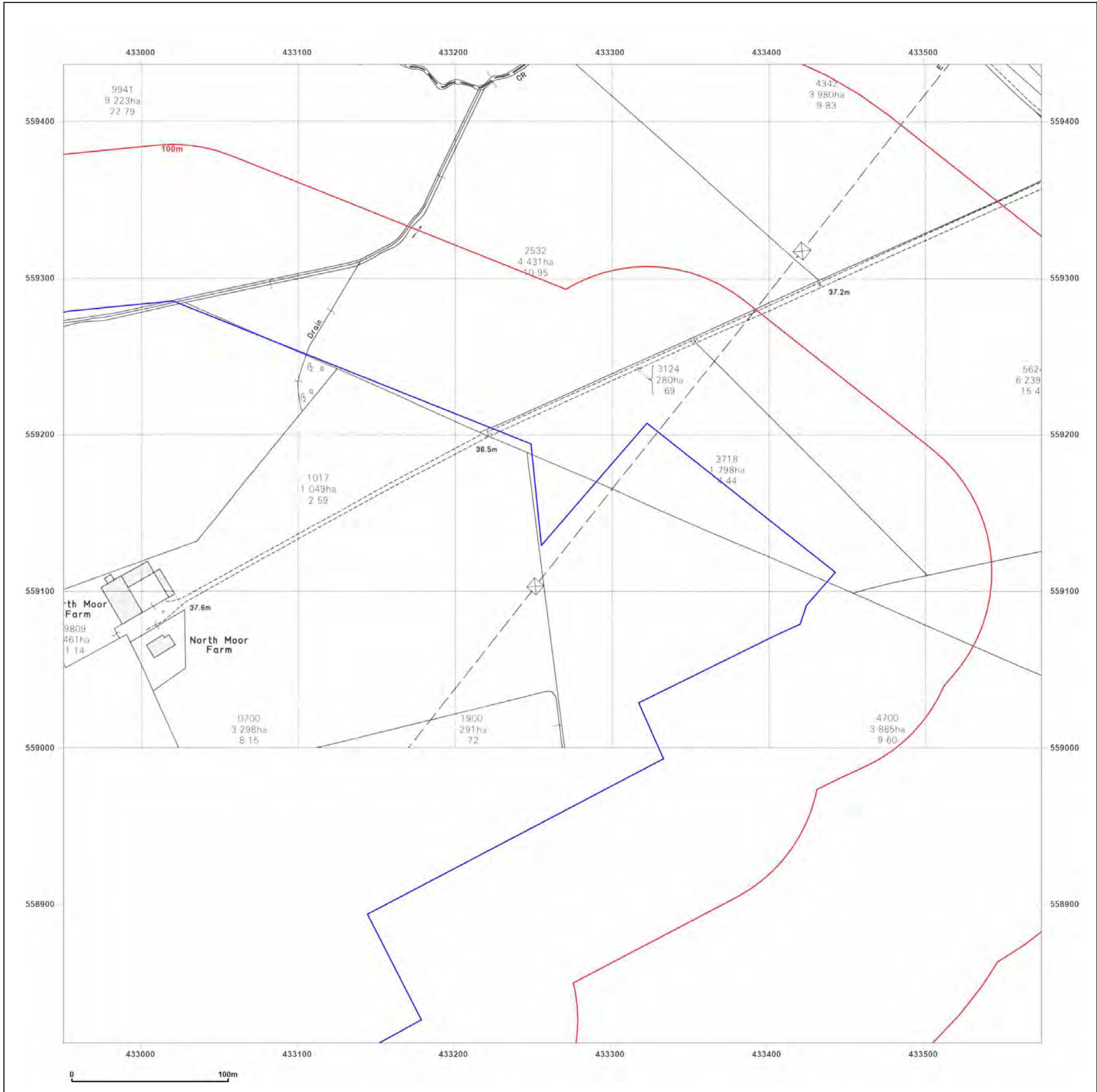


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**Site Details:**

WEST MOOR FARM, CHERRY  
BLOSSOM WAY,  
WASHINGTON, SR5 3HY

**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_2\_2  
**Grid Ref:** 433263, 559124

**Map Name:** National Grid

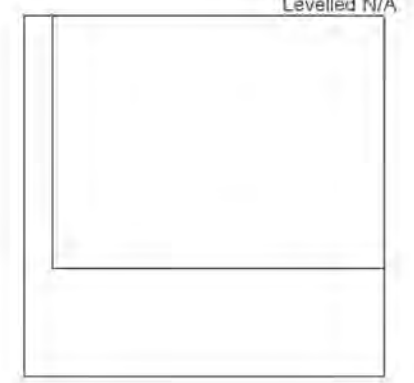
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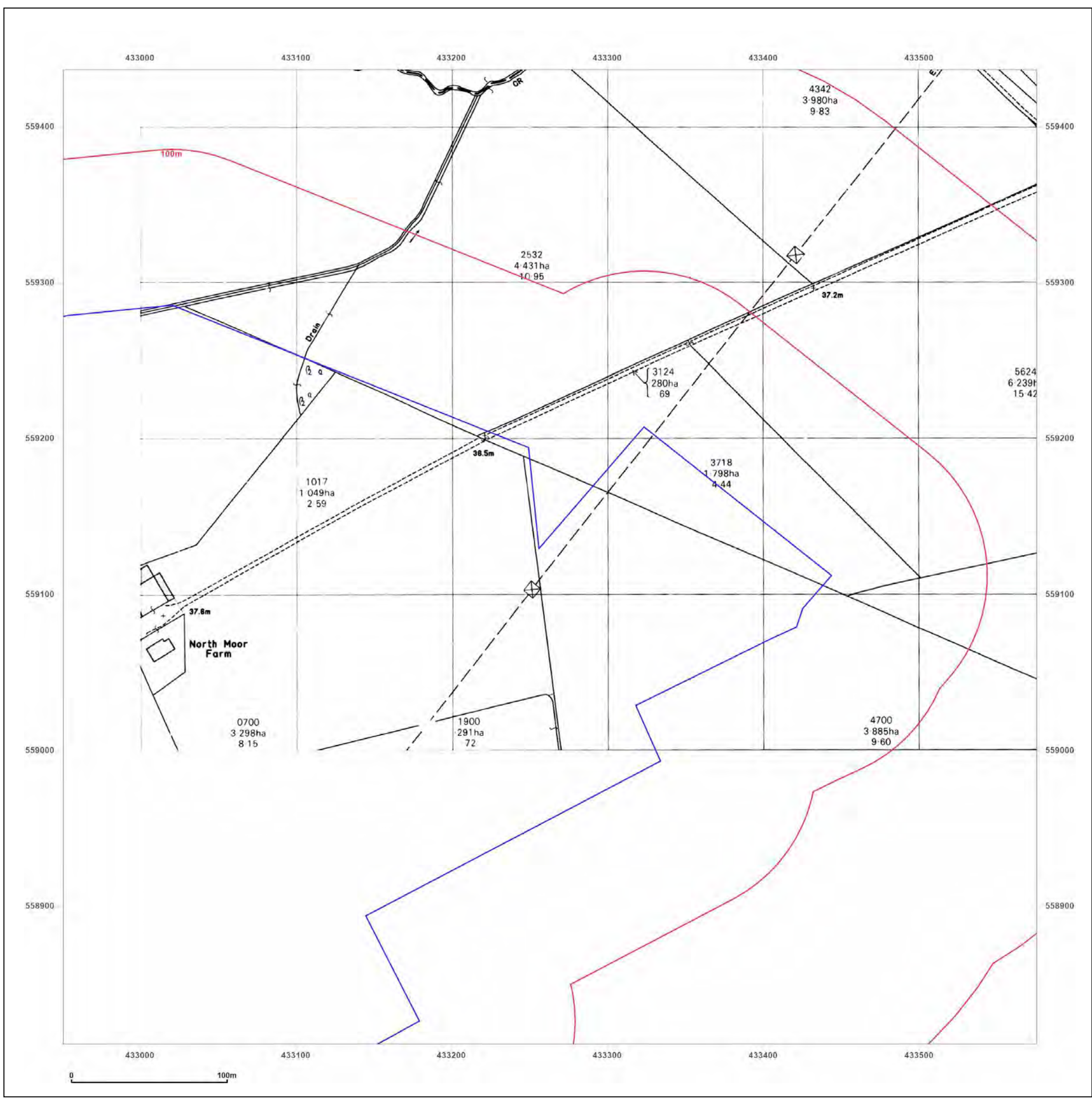


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WASHINGTON, SR5 3HY

**Client Ref:** JER9933\_PO23-0124  
**Report Ref:** GS-9381569\_LS\_2\_2  
**Grid Ref:** 433263, 559124

**Map Name:** National Grid

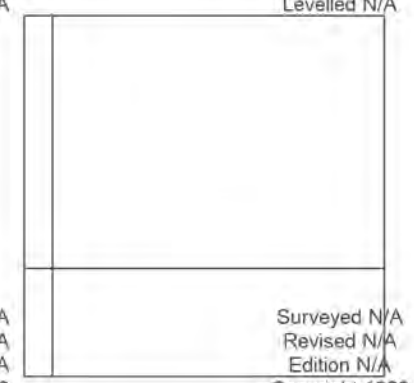
**Map date:** 1993

**Scale:** 1:2,500

**Printed at:** 1:2,500



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Edition N/A  
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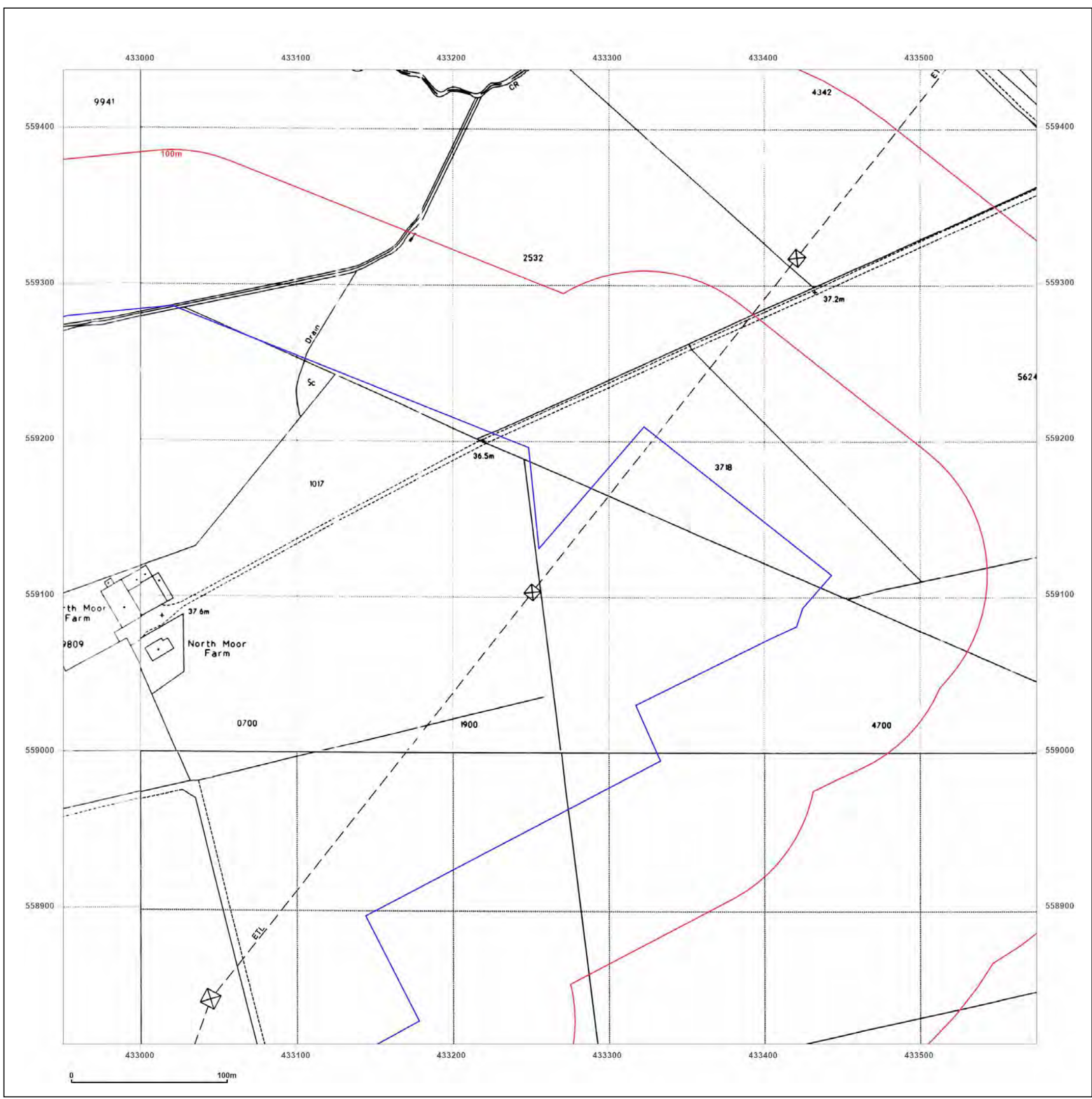


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**Site Details:**

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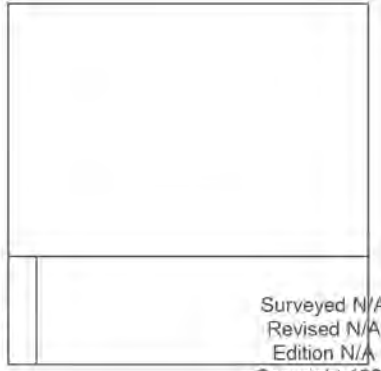
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**Map date:** 1993

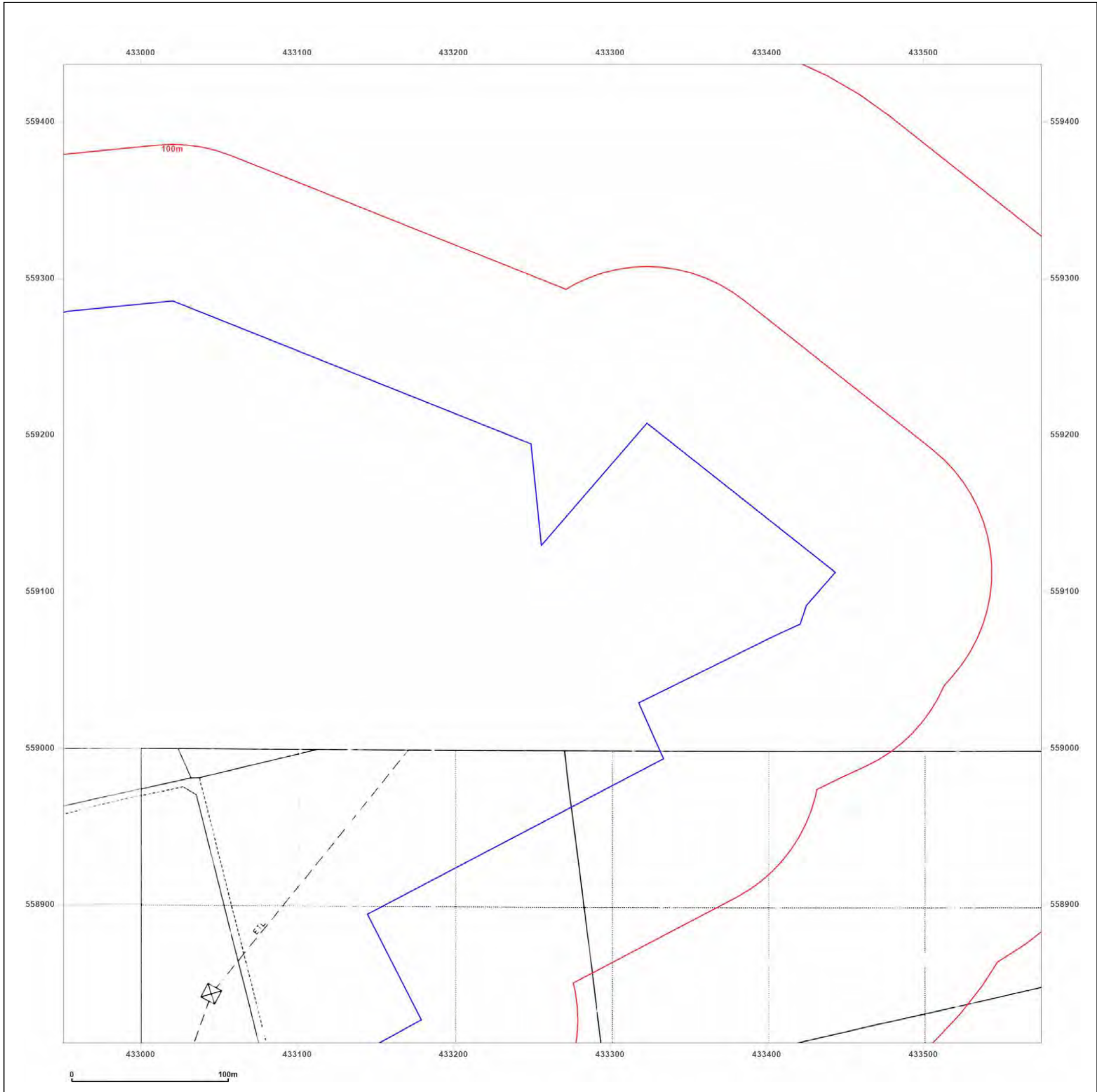
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**Site Details:**

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BLOSSOM WAY,  
WASHINGTON, SR5 3HY

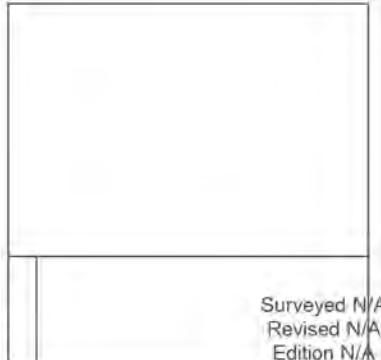
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**Report Ref:** GS-9381569\_LS\_2\_2  
**Grid Ref:** 433263, 559124

**Map Name:** National Grid

**Map date:** 1993-1994

**Scale:** 1:2,500

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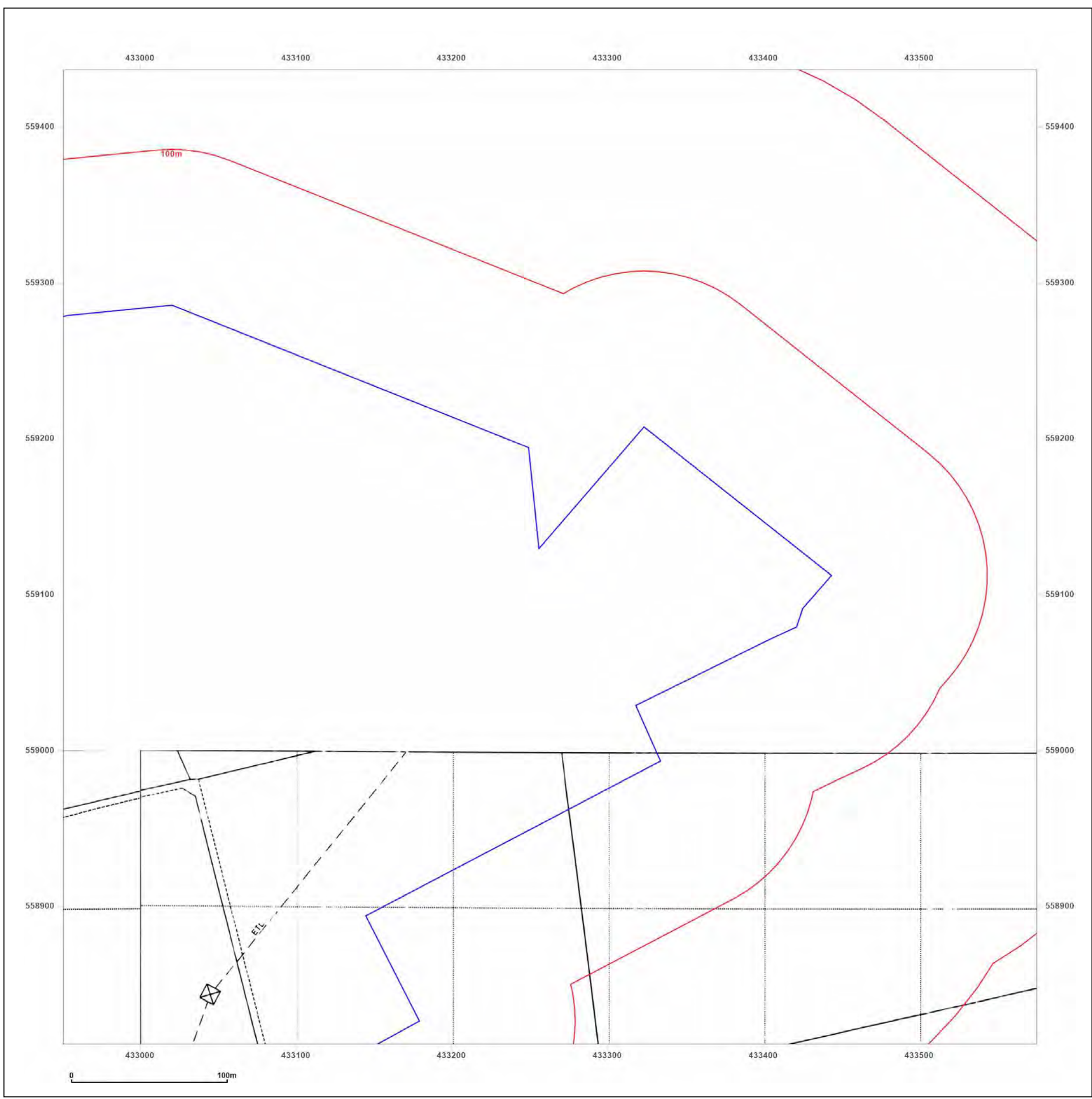


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# Appendix D

## DATABASE INFORMATION

WEST MOOR FARM, CHERRY BLOSSOM WAY, WASHINGTON, SR5 3HY

**Order Details**

**Date:** 24/02/2023  
**Your ref:** JER9933\_PO23-0124  
**Our Ref:** GS-9381570

**Site Details**

**Location:** 432884 558824  
**Area:** 47.01 ha  
**Authority:** [Sunderland City Council](#)



**Summary of findings**

p. 2

**Aerial image**

p. 8

**OS MasterMap site plan**

N/A: >10ha

[groundsure.com/insightuserguide](https://groundsure.com/insightuserguide)



## Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
<b>13</b>	<b>1.1</b>	<b><u>Historical industrial land uses</u></b>	1	0	0	15	-
<b>14</b>	<b>1.2</b>	<b><u>Historical tanks</u></b>	0	0	2	0	-
15	1.3	Historical energy features	0	0	0	0	-
15	1.4	Historical petrol stations	0	0	0	0	-
15	1.5	Historical garages	0	0	0	0	-
15	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
<b>16</b>	<b>2.1</b>	<b><u>Historical industrial land uses</u></b>	1	0	0	17	-
<b>17</b>	<b>2.2</b>	<b><u>Historical tanks</u></b>	0	0	2	0	-
18	2.3	Historical energy features	0	0	0	0	-
18	2.4	Historical petrol stations	0	0	0	0	-
18	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
19	3.1	Active or recent landfill	0	0	0	0	-
19	3.2	Historical landfill (BGS records)	0	0	0	0	-
20	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
20	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
20	3.5	Historical waste sites	0	0	0	0	-
20	3.6	Licensed waste sites	0	0	0	0	-
<b>20</b>	<b>3.7</b>	<b><u>Waste exemptions</u></b>	2	4	0	3	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
<b>22</b>	<b>4.1</b>	<b><u>Recent industrial land uses</u></b>	3	1	8	-	-
23	4.2	Current or recent petrol stations	0	0	0	0	-
23	4.3	Electricity cables	0	0	0	0	-
24	4.4	Gas pipelines	0	0	0	0	-
24	4.5	Sites determined as Contaminated Land	0	0	0	0	-



<b>24</b>	<b>4.6</b>	<b><u>Control of Major Accident Hazards (COMAH)</u></b>	0	1	0	0	-
24	4.7	Regulated explosive sites	0	0	0	0	-
25	4.8	Hazardous substance storage/usage	0	0	0	0	-
25	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
25	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
25	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
25	4.12	Radioactive Substance Authorisations	0	0	0	0	-
26	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
26	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
26	4.15	Pollutant release to public sewer	0	0	0	0	-
26	4.16	List 1 Dangerous Substances	0	0	0	0	-
26	4.17	List 2 Dangerous Substances	0	0	0	0	-
<b>27</b>	<b>4.18</b>	<b><u>Pollution Incidents (EA/NRW)</u></b>	0	0	0	1	-
27	4.19	Pollution inventory substances	0	0	0	0	-
27	4.20	Pollution inventory waste transfers	0	0	0	0	-
27	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
<b>29</b>	<b>5.1</b>	<b><u>Superficial aquifer</u></b>	Identified (within 500m)				
<b>31</b>	<b>5.2</b>	<b><u>Bedrock aquifer</u></b>	Identified (within 500m)				
<b>32</b>	<b>5.3</b>	<b><u>Groundwater vulnerability</u></b>	Identified (within 50m)				
34	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
34	5.5	Groundwater vulnerability- local information	None (within 0m)				
<b>35</b>	<b>5.6</b>	<b><u>Groundwater abstractions</u></b>	0	0	0	0	3
<b>36</b>	<b>5.7</b>	<b><u>Surface water abstractions</u></b>	0	0	0	0	2
37	5.8	Potable abstractions	0	0	0	0	0
37	5.9	Source Protection Zones	0	0	0	0	-
37	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
<b>38</b>	<b>6.1</b>	<b><u>Water Network (OS MasterMap)</u></b>	3	3	7	-	-





<b>40</b>	<b>6.2</b>	<b><u>Surface water features</u></b>	1	2	5	-	-
<b>40</b>	<b>6.3</b>	<b><u>WFD Surface water body catchments</u></b>	2	-	-	-	-
<b>40</b>	<b>6.4</b>	<b><u>WFD Surface water bodies</u></b>	0	0	1	-	-
<b>41</b>	<b>6.5</b>	<b><u>WFD Groundwater bodies</u></b>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
<b>42</b>	<b>7.1</b>	<b><u>Risk of flooding from rivers and the sea</u></b>	High (within 50m)				
43	7.2	Historical Flood Events	0	0	0	-	-
<b>43</b>	<b>7.3</b>	<b><u>Flood Defences</u></b>	1	1	2	-	-
43	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
44	7.5	Flood Storage Areas	0	0	0	-	-
<b>45</b>	<b>7.6</b>	<b><u>Flood Zone 2</u></b>	Identified (within 50m)				
<b>46</b>	<b>7.7</b>	<b><u>Flood Zone 3</u></b>	Identified (within 50m)				
Page	Section	Surface water flooding					
<b>47</b>	<b>8.1</b>	<b><u>Surface water flooding</u></b>	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding					
<b>49</b>	<b>9.1</b>	<b><u>Groundwater flooding</u></b>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
50	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
51	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
51	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
51	10.4	Special Protection Areas (SPA)	0	0	0	0	0
51	10.5	National Nature Reserves (NNR)	0	0	0	0	0
<b>52</b>	<b>10.6</b>	<b><u>Local Nature Reserves (LNR)</u></b>	0	0	0	0	2
<b>52</b>	<b>10.7</b>	<b><u>Designated Ancient Woodland</u></b>	0	0	0	0	1
52	10.8	Biosphere Reserves	0	0	0	0	0
53	10.9	Forest Parks	0	0	0	0	0
53	10.10	Marine Conservation Zones	0	0	0	0	0
<b>53</b>	<b>10.11</b>	<b><u>Green Belt</u></b>	1	0	1	0	3
53	10.12	Proposed Ramsar sites	0	0	0	0	0



54	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
54	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
54	10.15	Nitrate Sensitive Areas	0	0	0	0	0
54	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
<b>55</b>	<b>10.17</b>	<b><u>SSSI Impact Risk Zones</u></b>	<b>4</b>	-	-	-	-
56	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
57	11.1	World Heritage Sites	0	0	0	-	-
57	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
57	11.3	National Parks	0	0	0	-	-
57	11.4	Listed Buildings	0	0	0	-	-
58	11.5	Conservation Areas	0	0	0	-	-
58	11.6	Scheduled Ancient Monuments	0	0	0	-	-
58	11.7	Registered Parks and Gardens	0	0	0	-	-

Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
<b>59</b>	<b>12.1</b>	<b><u>Agricultural Land Classification</u></b>	<b>Grade 3b (within 250m)</b>				
60	12.2	Open Access Land	0	0	0	-	-
60	12.3	Tree Felling Licences	0	0	0	-	-
61	12.4	Environmental Stewardship Schemes	0	0	0	-	-
61	12.5	Countryside Stewardship Schemes	0	0	0	-	-

Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
<b>62</b>	<b>13.1</b>	<b><u>Priority Habitat Inventory</u></b>	0	2	1	-	-
63	13.2	Habitat Networks	0	0	0	-	-
63	13.3	Open Mosaic Habitat	0	0	0	-	-
63	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
<b>64</b>	<b>14.1</b>	<b><u>10k Availability</u></b>	<b>Identified (within 500m)</b>				
65	14.2	Artificial and made ground (10k)	0	0	0	0	-
66	14.3	Superficial geology (10k)	0	0	0	0	-





66	14.4	Landslip (10k)	0	0	0	0	-
67	14.5	Bedrock geology (10k)	0	0	0	0	-
67	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
<b>68</b>	<b>15.1</b>	<b><u>50k Availability</u></b>	Identified (within 500m)				
69	15.2	Artificial and made ground (50k)	0	0	0	0	-
69	15.3	Artificial ground permeability (50k)	0	0	-	-	-
<b>70</b>	<b>15.4</b>	<b><u>Superficial geology (50k)</u></b>	2	2	1	1	-
<b>71</b>	<b>15.5</b>	<b><u>Superficial permeability (50k)</u></b>	Identified (within 50m)				
71	15.6	Landslip (50k)	0	0	0	0	-
71	15.7	Landslip permeability (50k)	None (within 50m)				
<b>72</b>	<b>15.8</b>	<b><u>Bedrock geology (50k)</u></b>	6	1	6	7	-
<b>74</b>	<b>15.9</b>	<b><u>Bedrock permeability (50k)</u></b>	Identified (within 50m)				
<b>74</b>	<b>15.10</b>	<b><u>Bedrock faults and other linear features (50k)</u></b>	2	1	3	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
<b>75</b>	<b>16.1</b>	<b><u>BGS Boreholes</u></b>	2	2	5	-	-
Page	Section	Natural ground subsidence					
<b>77</b>	<b>17.1</b>	<b><u>Shrink swell clays</u></b>	Low (within 50m)				
<b>78</b>	<b>17.2</b>	<b><u>Running sands</u></b>	Low (within 50m)				
<b>80</b>	<b>17.3</b>	<b><u>Compressible deposits</u></b>	Moderate (within 50m)				
<b>82</b>	<b>17.4</b>	<b><u>Collapsible deposits</u></b>	Very low (within 50m)				
<b>83</b>	<b>17.5</b>	<b><u>Landslides</u></b>	Very low (within 50m)				
<b>84</b>	<b>17.6</b>	<b><u>Ground dissolution of soluble rocks</u></b>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
85	18.1	Natural cavities	0	0	0	0	-
86	18.2	BritPits	0	0	0	0	-
<b>86</b>	<b>18.3</b>	<b><u>Surface ground workings</u></b>	0	1	0	-	-
<b>86</b>	<b>18.4</b>	<b><u>Underground workings</u></b>	0	0	0	0	6
87	18.5	Historical Mineral Planning Areas	0	0	0	0	-



87	18.6	Non-coal mining	0	0	0	0	0
87	18.7	Mining cavities	0	0	0	0	0
87	18.8	JPB mining areas	None (within 0m)				
<b>87</b>	<b>18.9</b>	<b>Coal mining</b>	<b>Identified (within 0m)</b>				
88	18.10	Brine areas	None (within 0m)				
88	18.11	Gypsum areas	None (within 0m)				
88	18.12	Tin mining	None (within 0m)				
88	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<b>89</b>	<b>19.1</b>	<b>Radon</b>	<b>Less than 1% (within 0m)</b>				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<b>91</b>	<b>20.1</b>	<b>BGS Estimated Background Soil Chemistry</b>	34	14	-	-	-
93	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
93	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
94	21.1	Underground railways (London)	0	0	0	-	-
94	21.2	Underground railways (Non-London)	0	0	0	-	-
94	21.3	Railway tunnels	0	0	0	-	-
94	21.4	Historical railway and tunnel features	0	0	0	-	-
94	21.5	Royal Mail tunnels	0	0	0	-	-
95	21.6	Historical railways	0	0	0	-	-
95	21.7	Railways	0	0	0	-	-
95	21.8	Crossrail 1	0	0	0	0	-
95	21.9	Crossrail 2	0	0	0	0	-
95	21.10	HS2	0	0	0	0	-





## Recent aerial photograph



Capture Date: 19/04/2021

Site Area: 47.01ha



## Recent site history - 2019 aerial photograph



Capture Date: 26/08/2019

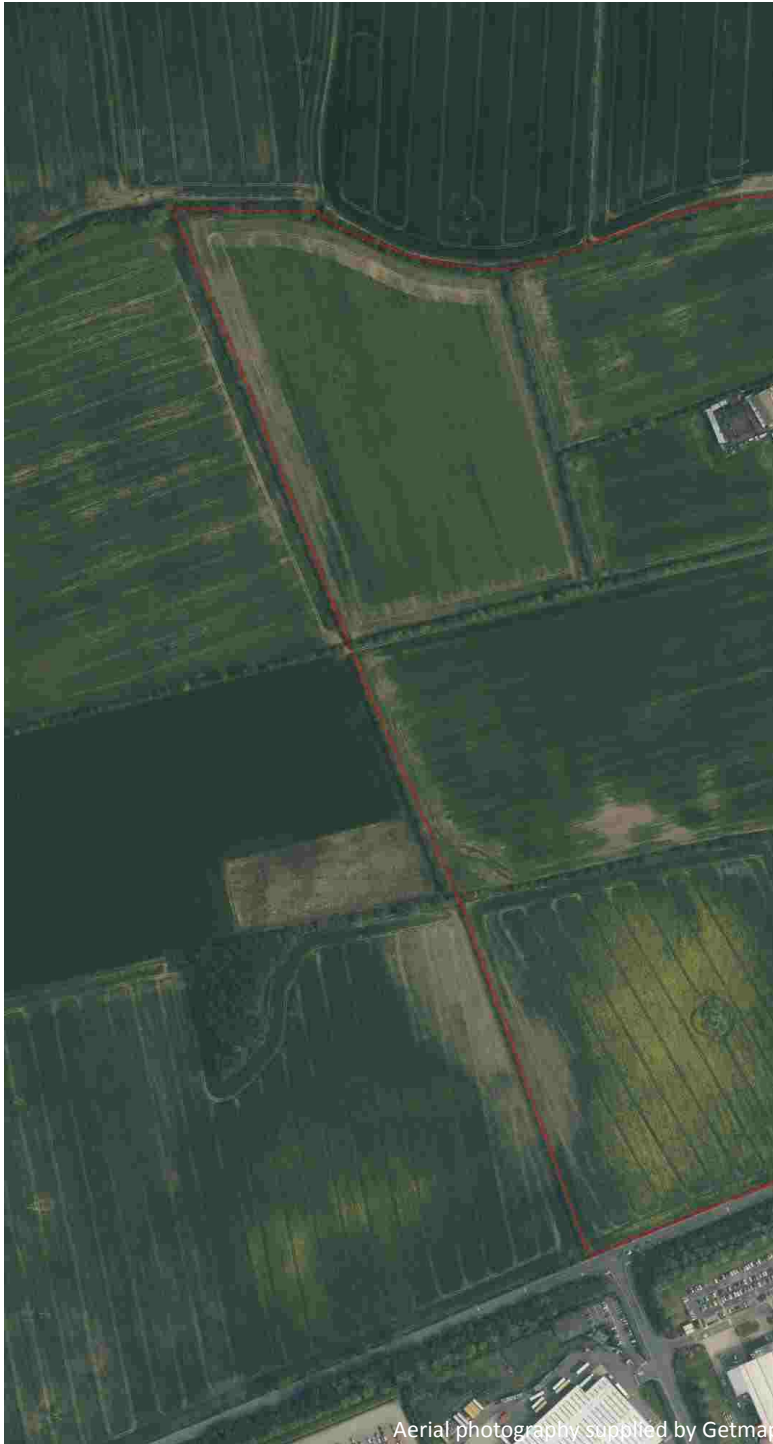
Site Area: 47.01ha

Aerial photograph provided by Getmap





## Recent site history - 2016 aerial photograph



Aerial photography supplied by Getmap

Capture Date: 06/05/2016

Site Area: 47.01ha



## Recent site history - 2014 aerial photograph



Capture Date: 02/10/2014

Site Area: 47.01ha





## Recent site history - 1999 aerial photograph



Capture Date: 10/07/1999

Site Area: 47.01ha



# 1 Past land use



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

## 1.1 Historical industrial land uses

**Records within 500m** **16**

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

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

ID	Location	Land use	Dates present	Group ID
1	On site	Unspecified Tank	1857	1325739



ID	Location	Land use	Dates present	Group ID
4	277m E	Manure Depot	1921 - 1938	1400079
A	386m SE	Cuttings	1950	1347943
B	387m E	Unspecified Depot	1895	1320754
A	396m SE	Cuttings	1857	1365884
B	400m E	Manure Depot	1950	1348244
C	409m SE	Disused Aerodrome	1967	1323969
C	410m SE	Airport	1979	1313736
B	437m E	Railway Sidings	1895	1383312
B	438m E	Railway Sidings	1857	1344387
B	438m E	Railway Sidings	1921	1389525
B	443m E	Manure Depot	1921	1385989
5	462m SE	Cuttings	1857	1306472
6	481m E	Manure Depot	1857	1346768
7	486m N	Gas Valve Compound	1979 - 1989	1356551
8	487m E	Railway Building	1950	1322091

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.2 Historical tanks

### Records within 500m

2

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
2	135m SE	Unspecified Tank	1993	200311
3	247m S	Unspecified Tank	1994	200313

*This data is sourced from Ordnance Survey / Groundsure.*



### 1.3 Historical energy features

Records within 500m

0

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'.

*This data is sourced from Ordnance Survey / Groundsure.*

### 1.4 Historical petrol stations

Records within 500m

0

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

*This data is sourced from Ordnance Survey / Groundsure.*

### 1.5 Historical garages

Records within 500m

0

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

*This data is sourced from Ordnance Survey / Groundsure.*

### 1.6 Historical military land

Records within 500m

0

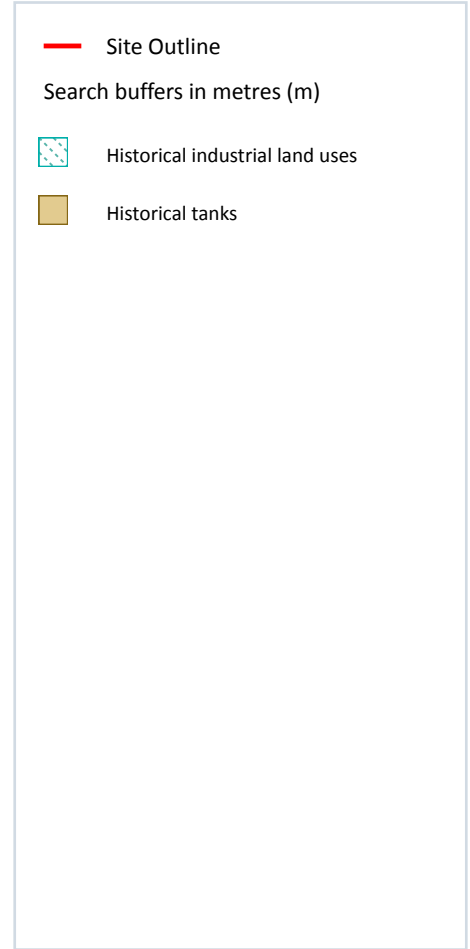
Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

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





## 2 Past land use - un-grouped



### 2.1 Historical industrial land uses

Records within 500m

18

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 16**

ID	Location	Land Use	Date	Group ID
<b>1</b>	<b>On site</b>	<b>Unspecified Tank</b>	<b>1857</b>	<b>1325739</b>
A	277m E	Manure Depot	1938	1400079
A	299m E	Manure Depot	1921	1400079

ID	Location	Land Use	Date	Group ID
B	386m SE	Cuttings	1950	1347943
C	387m E	Unspecified Depot	1895	1320754
B	396m SE	Cuttings	1857	1365884
C	400m E	Manure Depot	1950	1348244
D	409m SE	Disused Aerodrome	1967	1323969
D	410m SE	Airport	1979	1313736
C	437m E	Railway Sidings	1895	1383312
C	438m E	Railway Sidings	1921	1389525
C	438m E	Railway Sidings	1857	1344387
C	443m E	Manure Depot	1921	1385989
4	462m SE	Cuttings	1857	1306472
5	481m E	Manure Depot	1857	1346768
E	486m N	Gas Valve Compound	1979	1356551
E	486m N	Gas Valve Compound	1989	1356551
6	487m E	Railway Building	1950	1322091

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.2 Historical tanks

### Records within 500m

2

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 16**

ID	Location	Land Use	Date	Group ID
2	135m SE	Unspecified Tank	1993	200311
3	247m S	Unspecified Tank	1994	200313

*This data is sourced from Ordnance Survey / Groundsure.*





## 2.3 Historical energy features

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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'.

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.4 Historical petrol stations

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- 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** **0**

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

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

### 3.5 Historical waste sites

**Records within 500m** **0**

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

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

### 3.6 Licensed waste sites

**Records within 500m** **0**

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

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

### 3.7 Waste exemptions

**Records within 500m** **9**

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 19**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	On site	WEST MOOR FARM, WASHINGTON ROAD, SUNDERLAND, SR5 3HY	WEX175738	Using waste exemption	On a farm	Spreading of plant matter to confer benefit



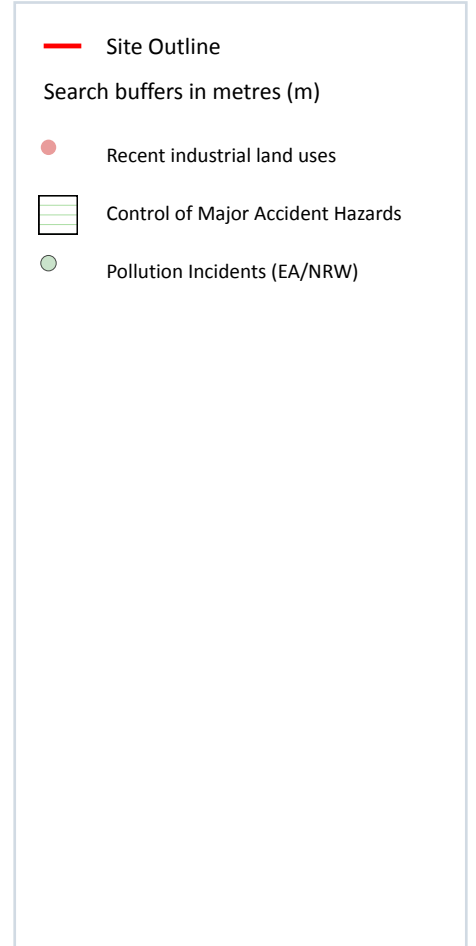
ID	Location	Site	Reference	Category	Sub-Category	Description
<b>A</b>	<b>On site</b>	<b>WEST MOOR FARM, WASHINGTON ROAD, SUNDERLAND, SR5 3HY</b>	<b>WEX009964</b>	<b>Disposing of waste exemption</b>	<b>On a farm</b>	<b>Burning waste in the open</b>
A	31m SE	West Moor Farm Washington Road SUNDERLAND SR5 3HY	EPR/ZH0372SJ /A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of waste from dredging of inland waters
A	31m SE	West Moor Farm Washington Road SUNDERLAND SR5 3HY	EPR/ZH0372SJ /A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
A	31m SE	West Moor Farm Washington Road SUNDERLAND SR5 3HY	EPR/ZH0372SJ /A001	Using waste exemption	Agricultural Waste Only	Spreading of plant matter to confer benefit
A	37m SE	WEST MOOR FARM, WASHINGTON ROAD, SUNDERLAND, SR5 3HY	WEX307318	Using waste exemption	On a Farm	Spreading of plant matter to confer benefit
B	329m NE	Faltec, Howard Russell Construction Site, Downhill Lane, East Boldon, NE36 0BB	WEX162021	Storing waste exemption	Not on a Farm	Storage of waste in a secure place
B	329m NE	Faltec, Howard Russell Construction Site, Downhill Lane, East Boldon, NE36 0BB	WEX162021	Using waste exemption	Not on a Farm	Use of waste in construction
1	486m SW	-	WEX215757	Using waste exemption	Not on a farm	Use of waste in construction

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





## 4 Current industrial land use



### 4.1 Recent industrial land uses

Records within 250m

12

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 22**

ID	Location	Company	Address	Activity	Category
1	On site	Pylon	Tyne & Wear, SR5	Electrical Features	Infrastructure and Facilities
2	On site	Pylon	Tyne & Wear, NE36	Electrical Features	Infrastructure and Facilities
3	On site	Pylon	Tyne & Wear, NE36	Electrical Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
4	11m NE	Pumping Station	Tyne & Wear, NE36	Water Pumping Stations	Industrial Features
6	72m S	Pylon	Tyne & Wear, SR5	Electrical Features	Infrastructure and Facilities
7	128m S	Electricity Sub Station	Tyne & Wear, SR5	Electrical Features	Infrastructure and Facilities
8	135m SE	Tank	Tyne & Wear, SR5	Tanks (Generic)	Industrial Features
9	137m S	Gas Governor	Tyne & Wear, SR5	Gas Features	Infrastructure and Facilities
10	144m NE	Pylon	Tyne & Wear, NE36	Electrical Features	Infrastructure and Facilities
11	156m S	Unipress	Cherry Blossom Way, Washington, Tyne & Wear, SR5 3NT	Special Purpose Machinery and Equipment	Industrial Products
12	195m SE	Gas Governor	Tyne & Wear, SR5	Gas Features	Infrastructure and Facilities
13	241m NW	Pylon	Tyne & Wear, NE37	Electrical Features	Infrastructure and Facilities

*This data is sourced from Ordnance Survey.*

## 4.2 Current or recent petrol stations

**Records within 500m**

**0**

Open, closed, under development and obsolete petrol stations.

*This data is sourced from Experian.*

## 4.3 Electricity cables

**Records within 500m**

**0**

High voltage underground electricity transmission cables.

*This data is sourced from National Grid.*





#### 4.4 Gas pipelines

**Records within 500m** **0**

High pressure underground gas transmission pipelines.

*This data is sourced from National Grid.*

#### 4.5 Sites determined as Contaminated Land

**Records within 500m** **0**

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

*This data is sourced from Local Authority records.*

#### 4.6 Control of Major Accident Hazards (COMAH)

**Records within 500m** **1**

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.

Features are displayed on the Current industrial land use map on **page 22**

ID	Location	Company	Address	Operational status	Tier
5	18m S	Brenntag UK Limited	Brenntag UK Limited, Sunderland, Turbine Business Park, Nissan Way, Sunderland, Tyne & Wear, NE38 8LE	Current COMAH Site	COMAH Lower Tier Operator

*This data is sourced from the Health and Safety Executive.*

#### 4.7 Regulated explosive sites

**Records within 500m** **0**

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

*This data is sourced from the Health and Safety Executive.*

#### 4.8 Hazardous substance storage/usage

Records within 500m

0

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

*This data is sourced from Local Authority records.*

#### 4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

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

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

#### 4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

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

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

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

Records within 500m

0

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

*This data is sourced from Local Authority records.*

#### 4.12 Radioactive Substance Authorisations

Records within 500m

0

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

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





#### 4.13 Licensed Discharges to controlled waters

Records within 500m 0

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

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

#### 4.14 Pollutant release to surface waters (Red List)

Records within 500m 0

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

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

#### 4.15 Pollutant release to public sewer

Records within 500m 0

Discharges of Special Category Effluents to the public sewer.

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

#### 4.16 List 1 Dangerous Substances

Records within 500m 0

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

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

#### 4.17 List 2 Dangerous Substances

Records within 500m 0

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

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

## 4.18 Pollution Incidents (EA/NRW)

Records within 500m

1

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

Features are displayed on the Current industrial land use map on **page 22**

ID	Location	Details	
14	447m NW	Incident Date: 09/04/2021 Incident Identification: 1918907 Pollutant: Inorganic Chemicals/Products Pollutant Description: Other Inorganic Chemical or Product	Water Impact: Category 1 (Major) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

## 4.19 Pollution inventory substances

Records within 500m

0

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

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

## 4.20 Pollution inventory waste transfers

Records within 500m

0

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

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

## 4.21 Pollution inventory radioactive waste

Records within 500m

0

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

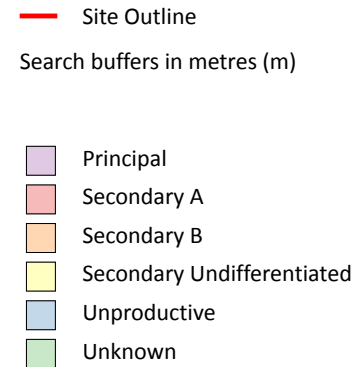
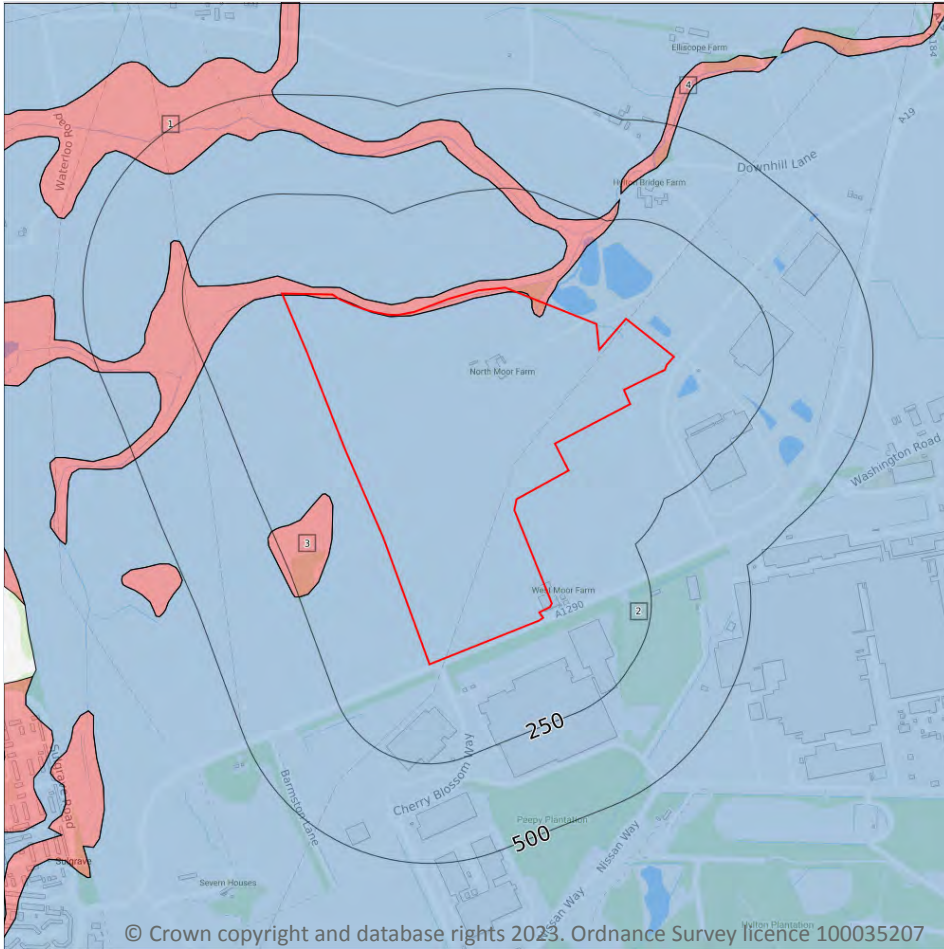




*This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.*



## 5 Hydrogeology - Superficial aquifer



### 5.1 Superficial aquifer

Records within 500m

4

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 29**

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	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

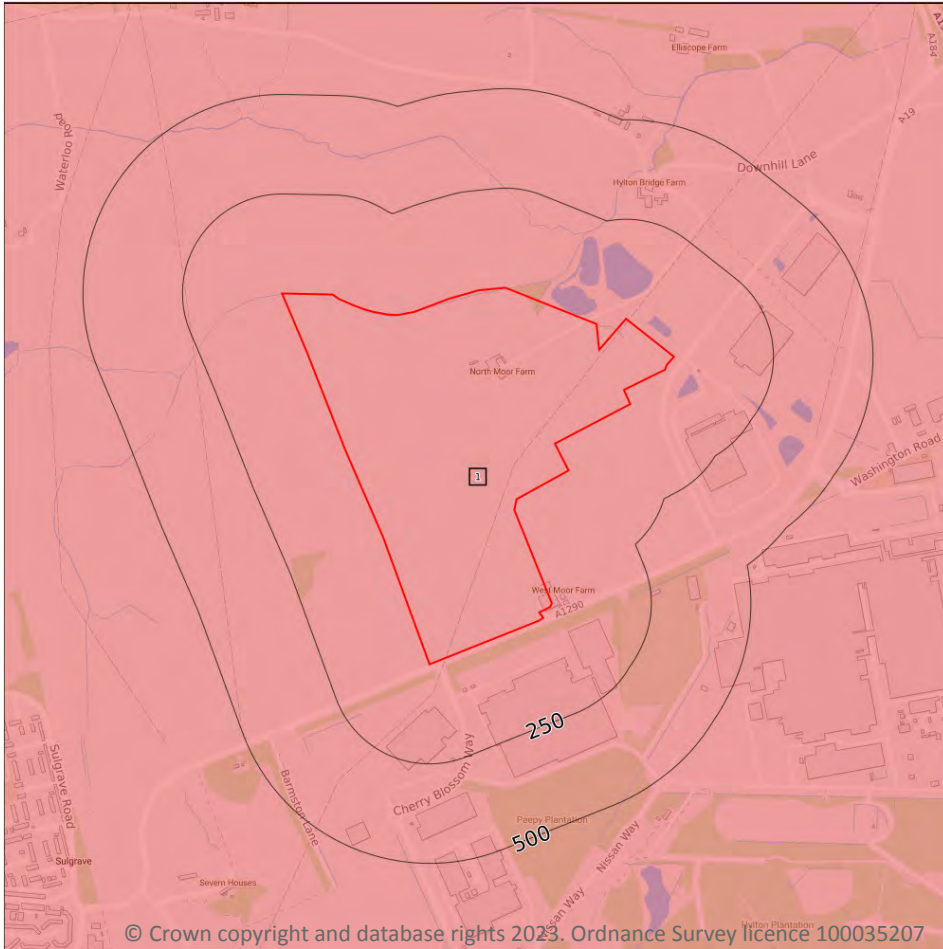


ID	Location	Designation	Description
3	83m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	315m NE	Secondary 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

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



## Bedrock aquifer



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

### 5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

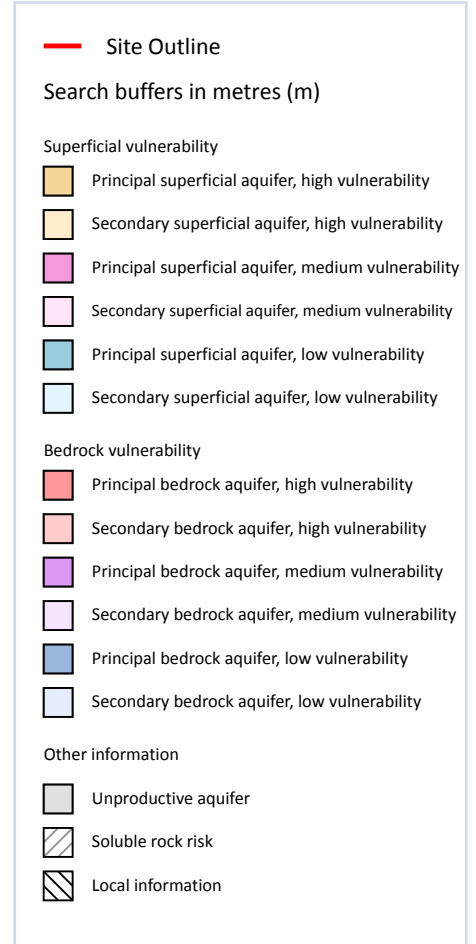
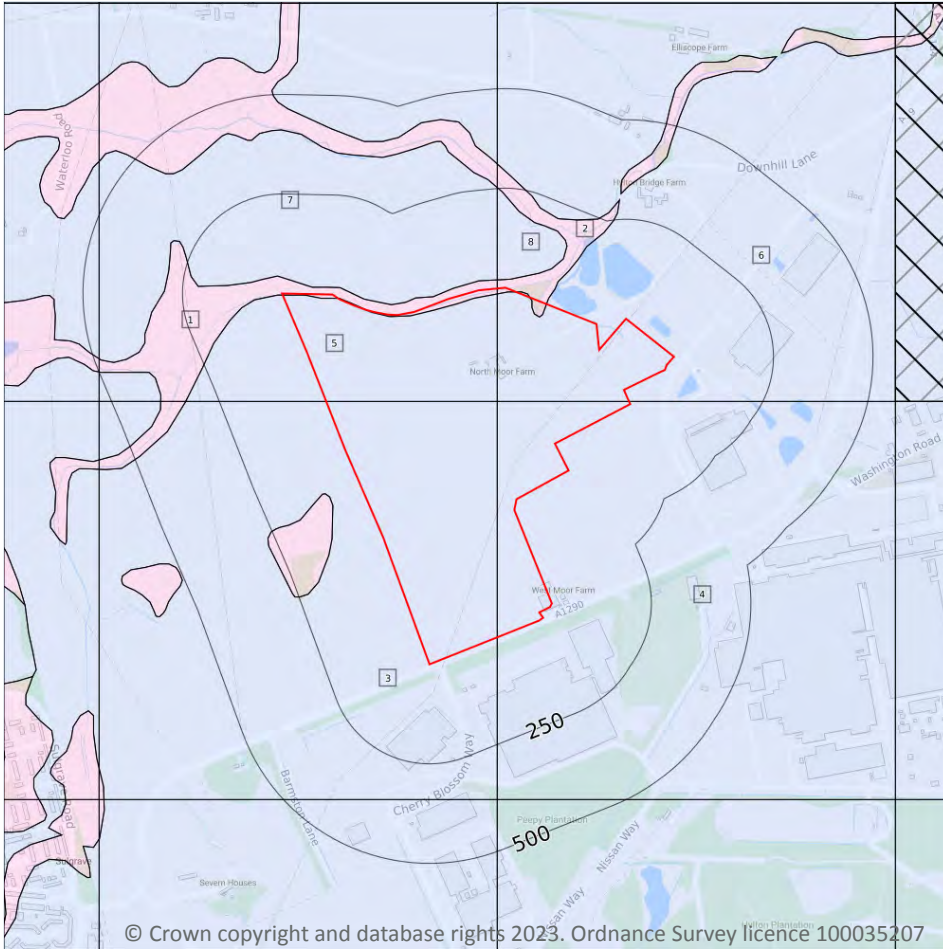
Features are displayed on the Bedrock aquifer map on **page 31**

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

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



## Groundwater vulnerability



### 5.3 Groundwater vulnerability

Records within 50m

8

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 32**

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





ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
7	17m NW	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: 3-10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
8	20m N	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Unproductive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Unproductive Aquifer type: Unproductive Thickness: 3-10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

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

## 5.4 Groundwater vulnerability- soluble rock risk

**Records on site**

**0**

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](mailto: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

3

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 35**



ID	Location	Details	
-	1993m NE	Status: Historical Licence No: 1/23/05/028 Details: Fish Farm/Cress Pond Throughflow Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - BOLDON Data Type: Point Name: ONE NORTHEAST Easting: 433920 Northing: 561110	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 18/04/1986 Expiry Date: - Issue No: 100 Version Start Date: 02/07/1999 Version End Date: -
-	1993m NE	Status: Historical Licence No: 1/23/05/028 Details: Make-Up or Top Up Water Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - BOLDON Data Type: Point Name: NORTH EAST PROPERTY PARTNERSHIP LTD Easting: 433920 Northing: 561110	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 18/04/1986 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2004 Version End Date: -
-	1993m NE	Status: Active Licence No: 1/23/05/028 Details: Lake & Pond Throughflow Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - BOLDON Data Type: Point Name: NORTH EAST PROPERTY PARTNERSHIP LTD Easting: 433920 Northing: 561110	Annual Volume (m <sup>3</sup> ): 79,716 Max Daily Volume (m <sup>3</sup> ): 218.40 Original Application No: NPS/WR/020106 Original Start Date: 18/04/1986 Expiry Date: - Issue No: 103 Version Start Date: 03/11/2015 Version End Date: -

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

## 5.7 Surface water abstractions

### Records within 2000m

2

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 35**



ID	Location	Details	
-	928m W	Status: Historical Licence No: 1/23/05/026 Details: General Farming & Domestic Direct Source: SURFACE WATER Point: USWORTH BURN Data Type: Point Name: BOROUGH OF SUNDERLAND Easting: 431600 Northing: 558920	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 04/11/1983 Expiry Date: - Issue No: 100 Version Start Date: 23/06/1993 Version End Date: -
-	1990m S	Status: Historical Licence No: 1/24/05/036 Details: Lake & Pond Throughflow Direct Source: SURFACE WATER Point: RIVER WEAR (INLAND WATER NON TIDAL) Data Type: Line Name: THE WILDFOWL AND WETLANDS TRUST Easting: 433150 Northing: 555600	Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Original Application No: - Original Start Date: 13/03/1975 Expiry Date: - Issue No: 100 Version Start Date: 07/12/1984 Version End Date: -

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

## 5.8 Potable abstractions

<b>Records within 2000m</b>	<b>0</b>
-----------------------------	----------

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

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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)

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

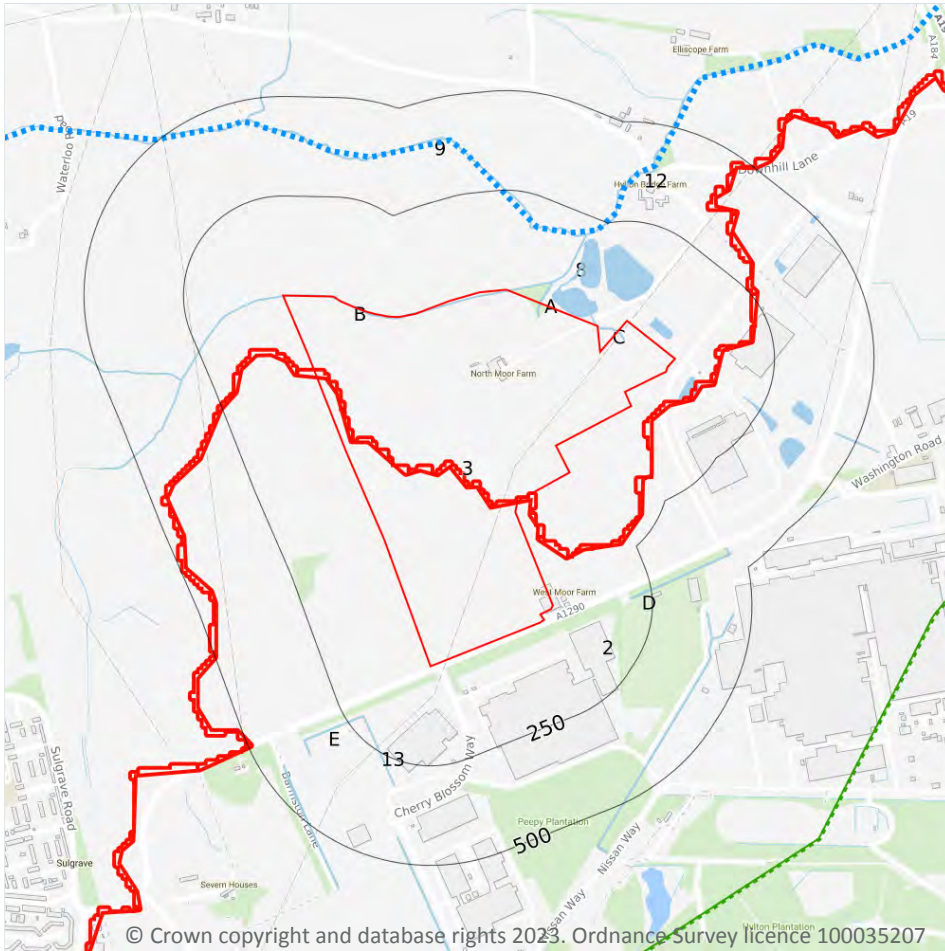
Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

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





## 6 Hydrology



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

### 6.1 Water Network (OS MasterMap)

Records within 250m

13

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 38**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	On site	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	On site	<b>Inland river not influenced by normal tidal action.</b>	<b>On ground surface</b>	<b>Watercourse contains water year round (in normal circumstances)</b>	-
C	On site	<b>Inland river not influenced by normal tidal action.</b>	<b>On ground surface</b>	<b>Watercourse contains water year round (in normal circumstances)</b>	-
C	5m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	16m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	20m NE	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
8	62m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
9	168m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Don
D	196m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
12	202m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Don
13	210m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	210m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	239m SE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

*This data is sourced from the Ordnance Survey.*





## 6.2 Surface water features

**Records within 250m**

**8**

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 38**

*This data is sourced from the Ordnance Survey.*

## 6.3 WFD Surface water body catchments

**Records on site**

**2**

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 38**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	On site	Coastal Catchment	Not part of a river WB catchment	9	Wear Lower and Estuary	Wear
B	On site	River	Don from Source to Tidal Limit	GB103023075690	Tyne Lower and Estuary	Tyne

*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 38**



ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
10	174m N	River	Don from Source to Tidal Limit	<a href="#">GB103023075690</a>	Moderate	Fail	Moderate	2019

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

## 6.5 WFD Groundwater bodies

<b>Records on site</b>	<b>1</b>
------------------------	----------

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.

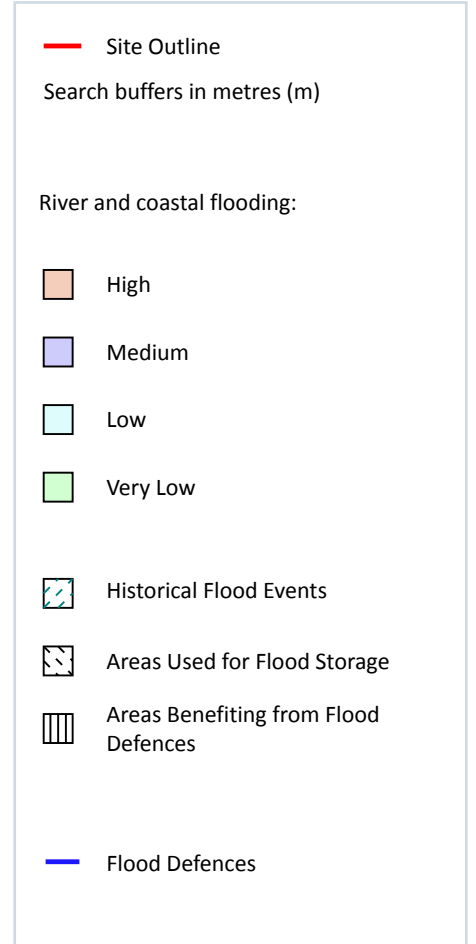
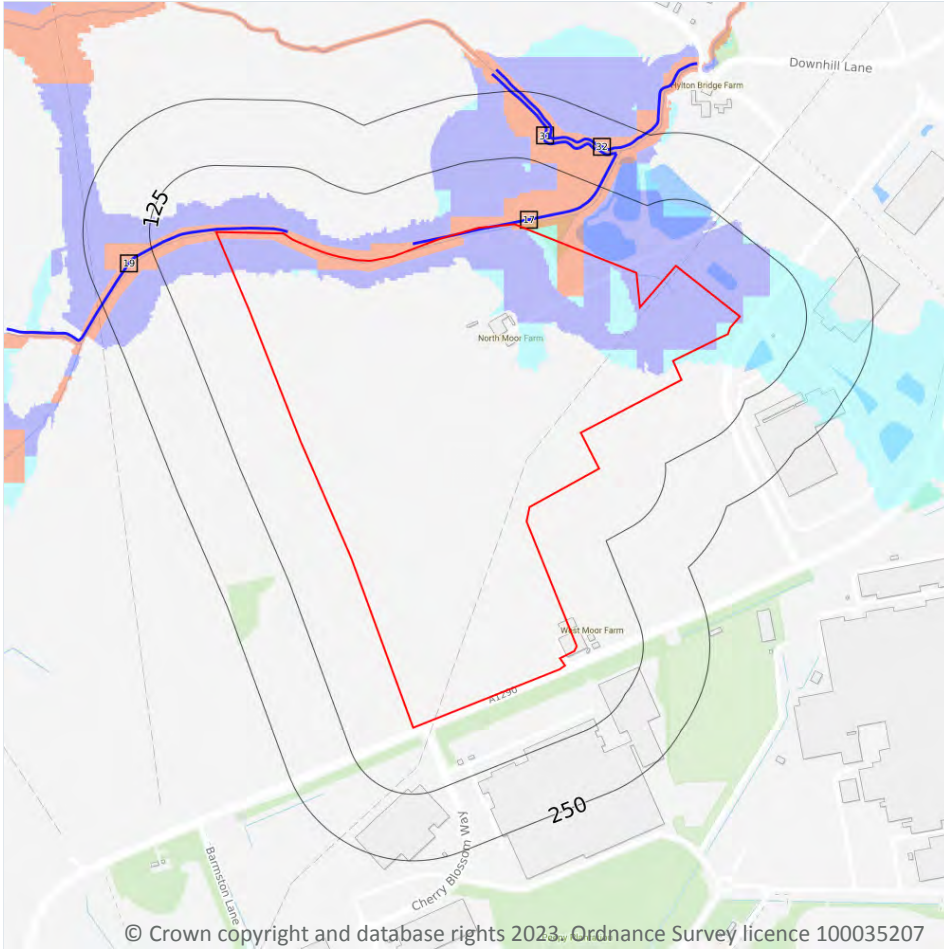
Features are displayed on the Hydrology map on **page 38**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
3	On site	Tyne Carboniferous Limestone and Coal Measures	<a href="#">GB40302G701500</a>	Poor	Poor	Good	2019

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



## 7 River and coastal flooding



### 7.1 Risk of flooding from rivers and the sea

Records within 50m

20

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).

Features are displayed on the River and coastal flooding map on **page 42**

Distance	Flood risk category
<b>On site</b>	<b>High</b>
0 - 50m	High

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

## 7.2 Historical Flood Events

<b>Records within 250m</b>	<b>0</b>
----------------------------	----------

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

<b>Records within 250m</b>	<b>4</b>
----------------------------	----------

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.

Features are displayed on the River and coastal flooding map on **page 42**

ID	Location	Update
<b>17</b>	<b>On site</b>	<b>08/11/2022</b>
19	5m NW	08/11/2022
31	164m N	08/11/2022
32	176m N	08/11/2022

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

## 7.4 Areas Benefiting from Flood Defences

<b>Records within 250m</b>	<b>0</b>
----------------------------	----------

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

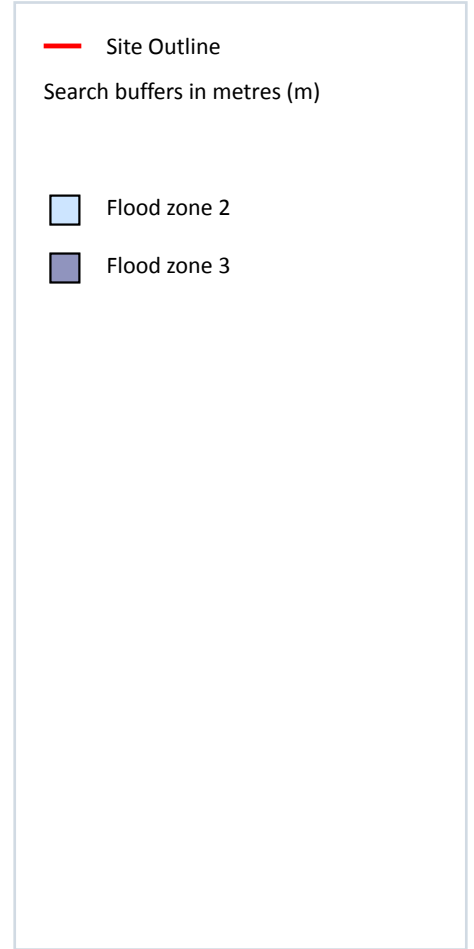
0

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**

**1**

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

Features are displayed on the River and coastal flooding map on **page 42**

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

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



## 7.7 Flood Zone 3

Records within 50m

1

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

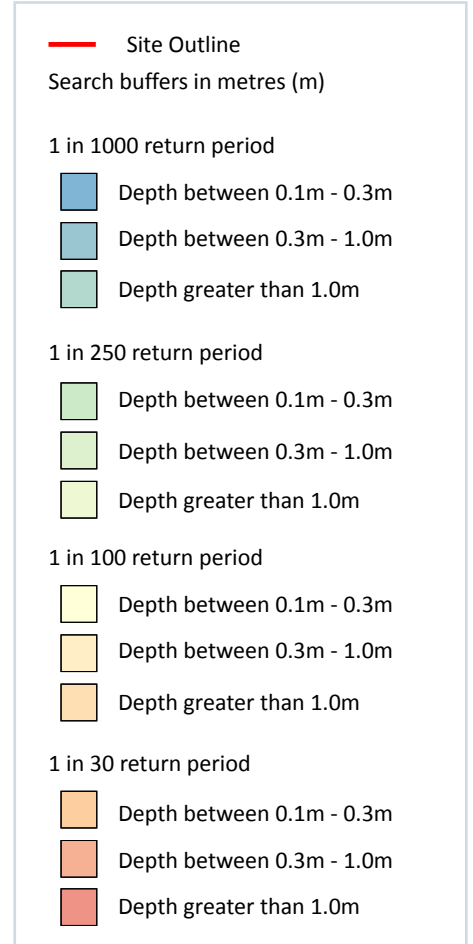
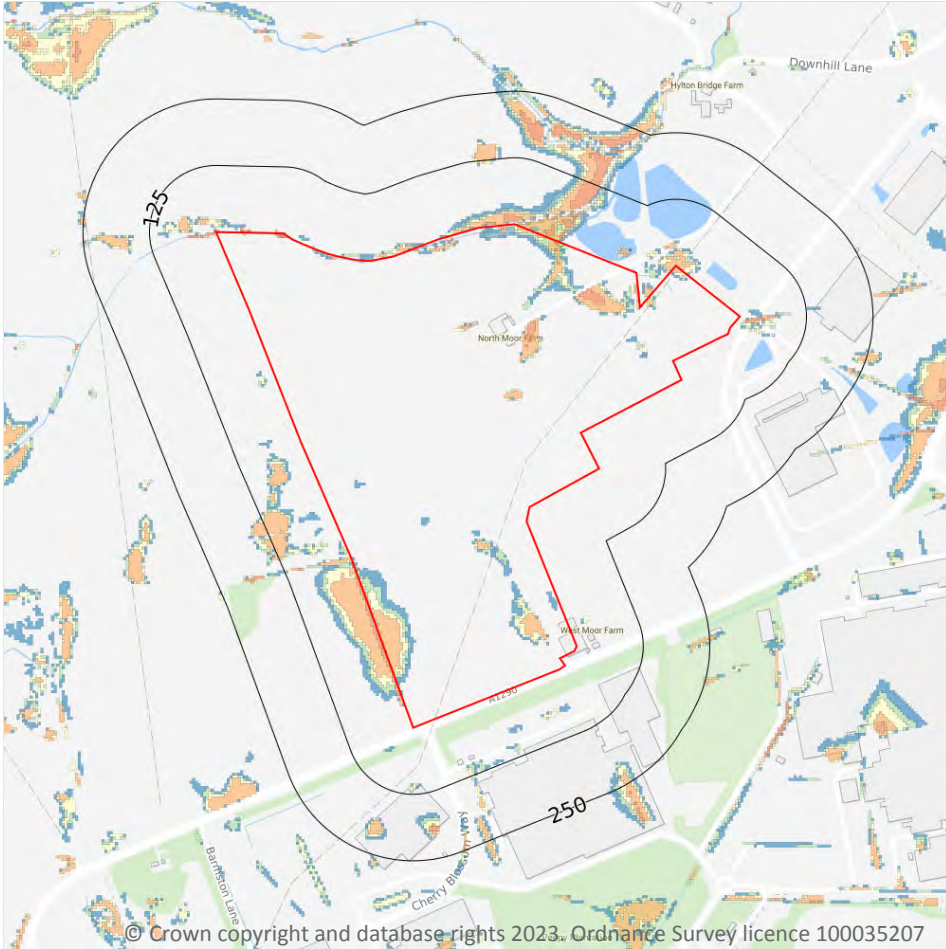
Features are displayed on the River and coastal flooding map on **page 42**

Location	Type
On site	Zone 3 - (Fluvial /Tidal Models)

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



## 8 Surface water flooding



### 8.1 Surface water flooding

Highest risk on site

**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 47**

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 Ambiental Risk Analytics.*

## 9 Groundwater flooding



### 9.1 Groundwater flooding

**Highest risk on site**

**Low**

**Highest risk within 50m**

**Low**

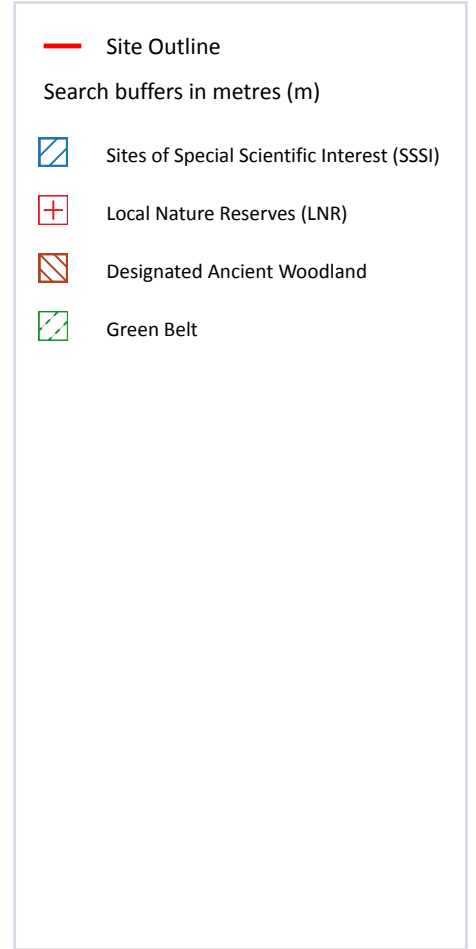
Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks 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 49**

*This data is sourced from Ambiantal Risk Analytics.*



## 10 Environmental designations



### 10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

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

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

## 10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m

0

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

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

## 10.3 Special Areas of Conservation (SAC)

Records within 2000m

0

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

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

## 10.4 Special Protection Areas (SPA)

Records within 2000m

0

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

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

## 10.5 National Nature Reserves (NNR)

Records within 2000m

0

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

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





## 10.6 Local Nature Reserves (LNR)

Records within 2000m

2

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 50**

ID	Location	Name	Data source
3	905m S	Barmston Pond	Natural England
-	1704m E	Hylton Dene	Natural England

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

## 10.7 Designated Ancient Woodland

Records within 2000m

1

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 50**

ID	Location	Name	Woodland Type
-	1904m SE	High Wood	Ancient & Semi-Natural Woodland

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

## 10.8 Biosphere Reserves

Records within 2000m

0

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

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



## 10.9 Forest Parks

Records within 2000m

0

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

*This data is sourced from the Forestry Commission.*

## 10.10 Marine Conservation Zones

Records within 2000m

0

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

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

## 10.11 Green Belt

Records within 2000m

5

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

Features are displayed on the Environmental designations map on **page 50**

ID	Location	Name	Local Authority name
1	On site	Tyne and Wear	Sunderland
2	179m N	Tyne and Wear	South Tyneside
4	1555m SE	Tyne and Wear	Sunderland
-	1623m NE	Tyne and Wear	Sunderland
-	1998m SE	Tyne and Wear	Sunderland

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

## 10.12 Proposed Ramsar sites

Records within 2000m

0

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

*This data is sourced from Natural England.*





### 10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

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

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

### 10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

*This data is sourced from Natural England.*

### 10.15 Nitrate Sensitive Areas

Records within 2000m

0

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

*This data is sourced from Natural England.*

### 10.16 Nitrate Vulnerable Zones

Records within 2000m

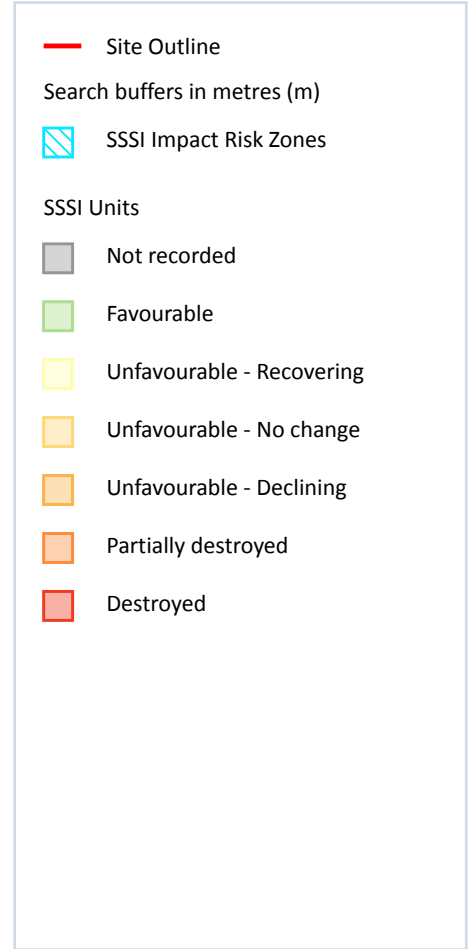
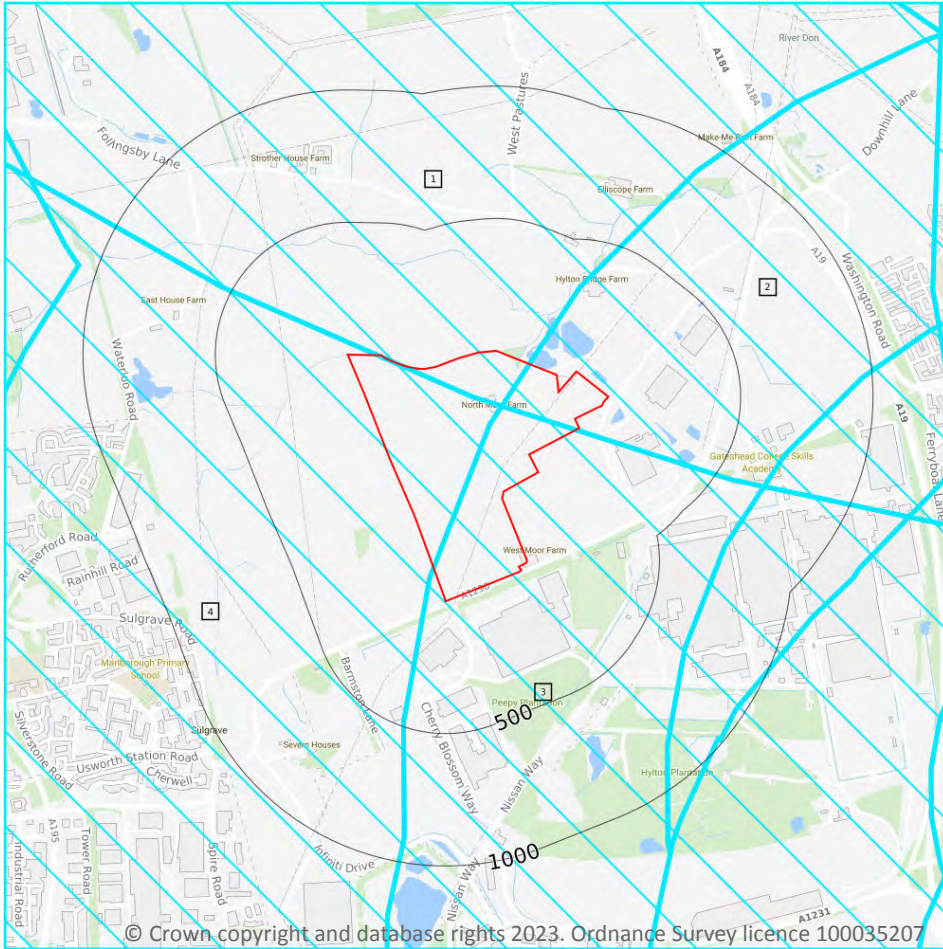
0

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

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



## SSSI Impact Zones and Units



### 10.17 SSSI Impact Risk Zones

Records on site

4

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 55**



ID	Location	Type of developments requiring consultation
1	On site	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Wind and Solar - Solar schemes with footprint &gt; 0.5ha, all wind turbines.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Combustion - General combustion processes &gt;50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p> <p>Waste - Landfill. incl: inert landfill, non-hazardous landfill, hazardous landfill.</p>
2	On site	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Wind and Solar - Solar schemes with footprint &gt; 0.5ha, all wind turbines.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil &amp; gas exploration/extraction.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Combustion - General combustion processes &gt;50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p> <p>Waste - Landfill. incl: inert landfill, non-hazardous landfill, hazardous landfill.</p>
3	On site	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil &amp; gas exploration/extraction.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Combustion - General combustion processes &gt;50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p>
4	On site	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Combustion - General combustion processes &gt;50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p>

*This data is sourced from Natural England.*

## 10.18 SSSI Units

Records within 2000m

0

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

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



## 11 Visual and cultural designations

### 11.1 World Heritage Sites

Records within 250m

0

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

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

### 11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

### 11.3 National Parks

Records within 250m

0

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

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

### 11.4 Listed Buildings

Records within 250m

0

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





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

## 11.5 Conservation Areas

**Records within 250m**

**0**

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

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

## 11.6 Scheduled Ancient Monuments

**Records within 250m**

**0**

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

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

## 11.7 Registered Parks and Gardens

**Records within 250m**

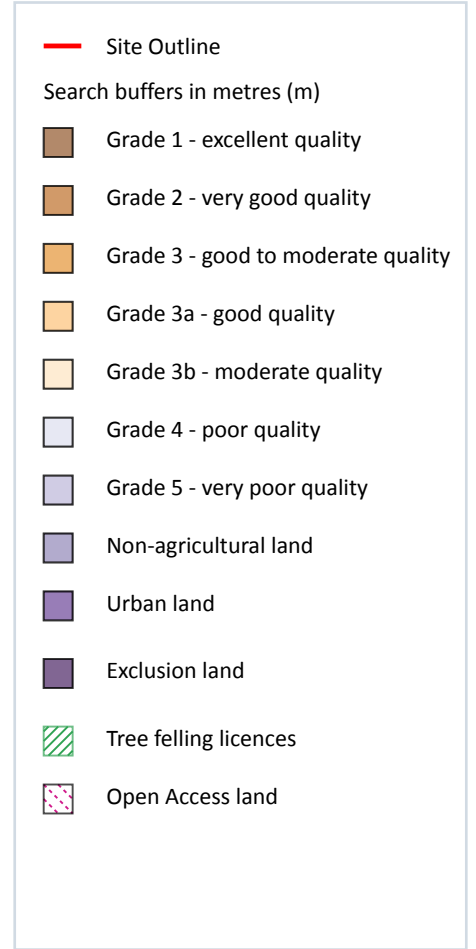
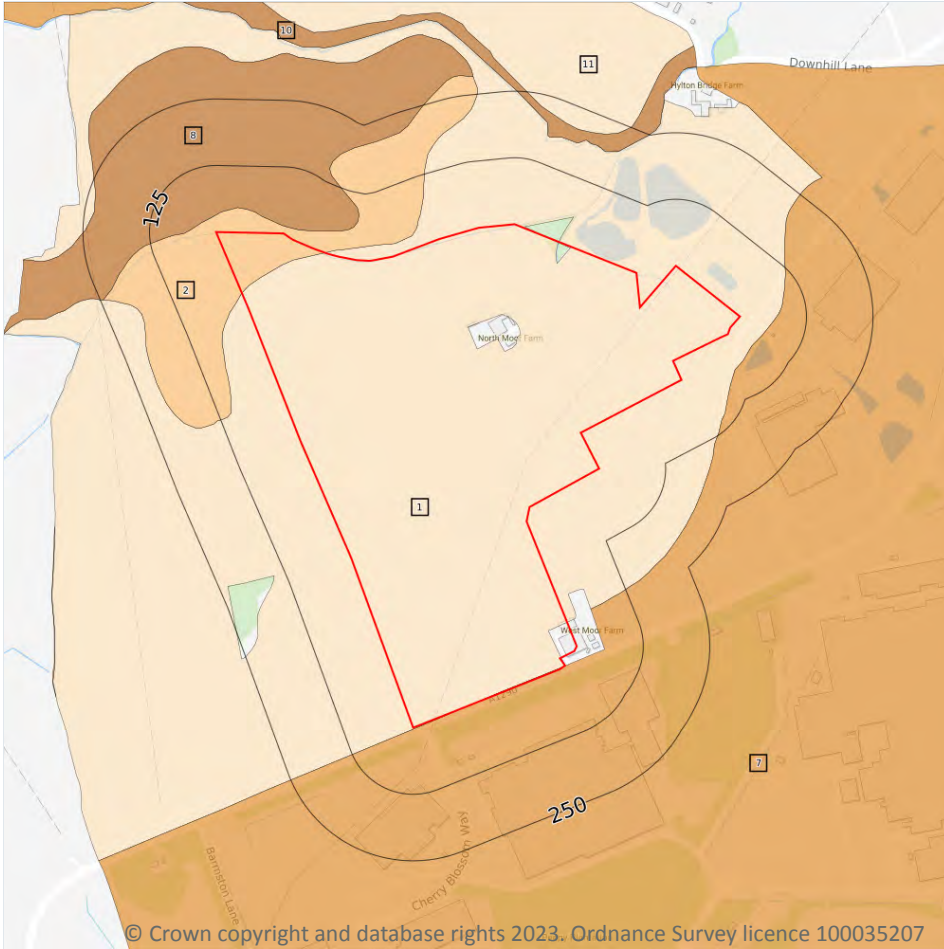
**0**

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

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



## 12 Agricultural designations



### 12.1 Agricultural Land Classification

Records within 250m

6

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 59**

ID	Location	Classification	Description
1	On site	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

ID	Location	Classification	Description
2	On site	Grade 3a	<b>Good quality agricultural land. Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.</b>
7	On site	Grade 3	<b>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.</b>
8	14m NW	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
10	176m N	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
11	210m N	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

*This data is sourced from Natural England.*

## 12.2 Open Access Land

Records within 250m

0

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

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

## 12.3 Tree Felling Licences

Records within 250m

0

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

*This data is sourced from the Forestry Commission.*





## 12.4 Environmental Stewardship Schemes

Records within 250m

0

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

*This data is sourced from Natural England.*

## 12.5 Countryside Stewardship Schemes

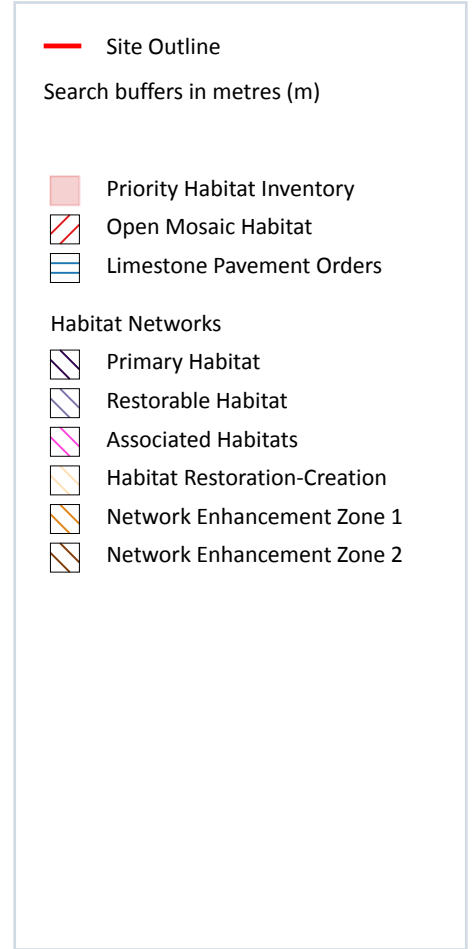
Records within 250m

0

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

*This data is sourced from Natural England.*

## 13 Habitat designations



### 13.1 Priority Habitat Inventory

Records within 250m

3

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 62**

ID	Location	Main Habitat	Other habitats
1	15m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	20m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	143m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

*This data is sourced from Natural England.*

## 13.2 Habitat Networks

Records within 250m

0

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

*This data is sourced from Natural England.*

## 13.3 Open Mosaic Habitat

Records within 250m

0

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

*This data is sourced from Natural England.*

## 13.4 Limestone Pavement Orders

Records within 250m

0

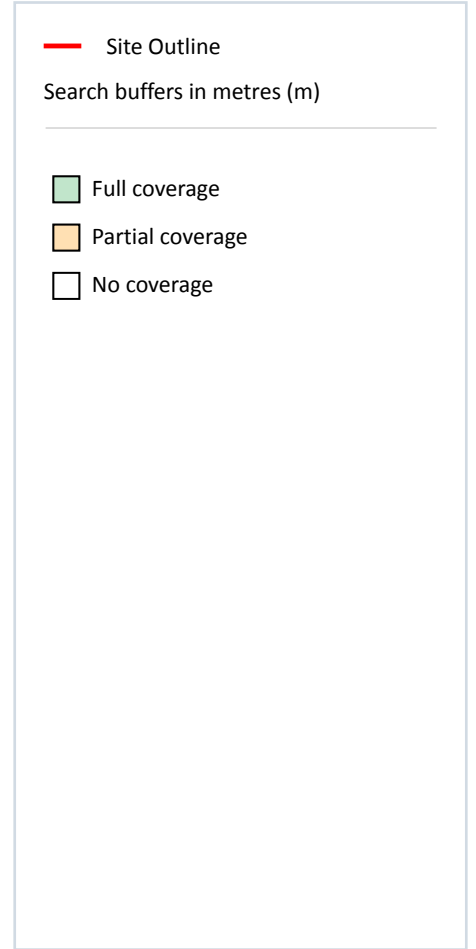
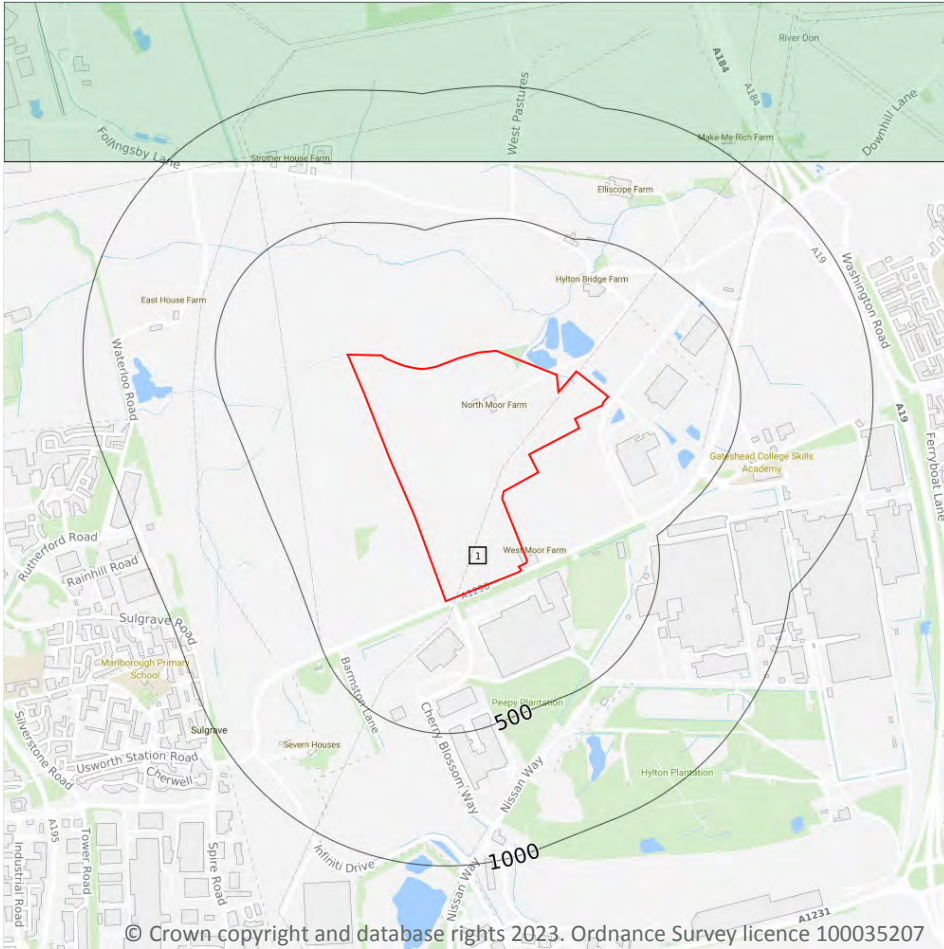
Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened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

*This data is sourced from Natural England.*





## 14 Geology 1:10,000 scale - Availability



### 14.1 10k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 64**

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

*This data is sourced from the British Geological Survey.*

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

### 14.2 Artificial and made ground (10k)

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Superficial

### 14.3 Superficial geology (10k)

Records within 500m

0

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.

*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

### 14.5 Bedrock geology (10k)

Records within 500m

0

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.

*This data is sourced from the British Geological Survey.*

### 14.6 Bedrock faults and other linear features (10k)

Records within 500m

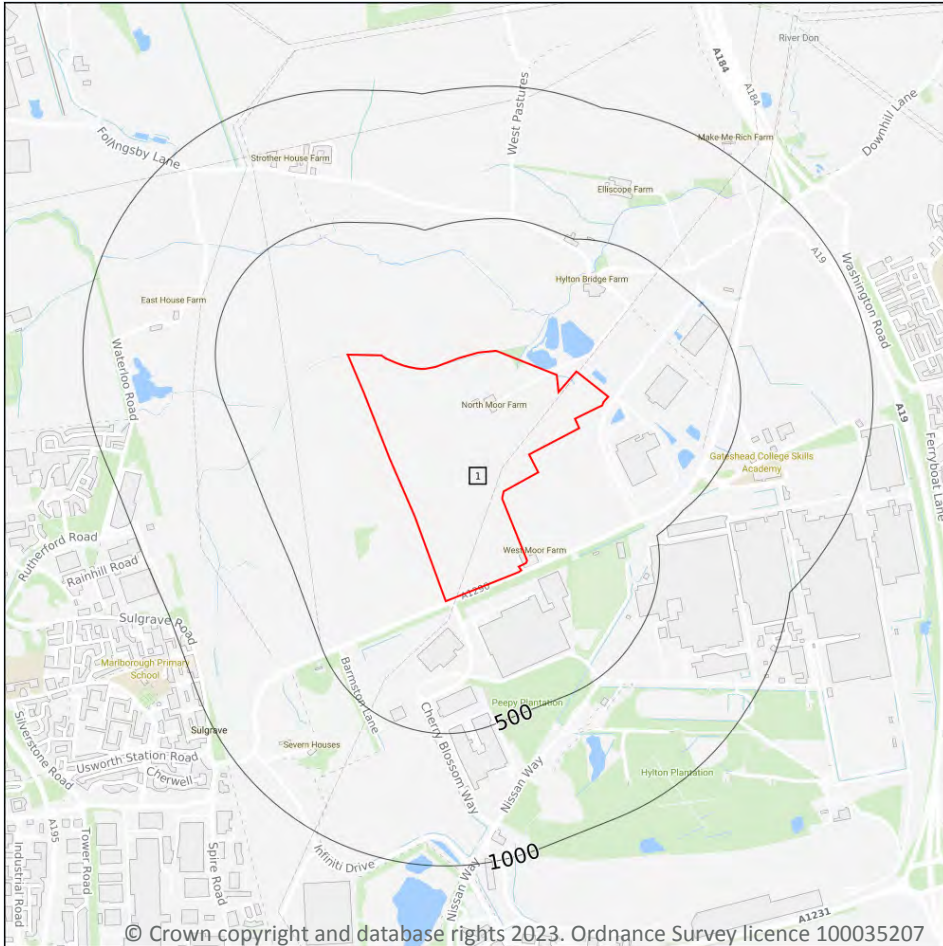
0

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

*This data is sourced from the British Geological Survey.*



## 15 Geology 1:50,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Geological map tile

### 15.1 50k Availability

Records within 500m

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 68**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW021_sunderland_v4

*This data is sourced from the British Geological Survey.*



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

### 15.2 Artificial and made ground (50k)

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*

### 15.3 Artificial ground permeability (50k)

Records within 50m

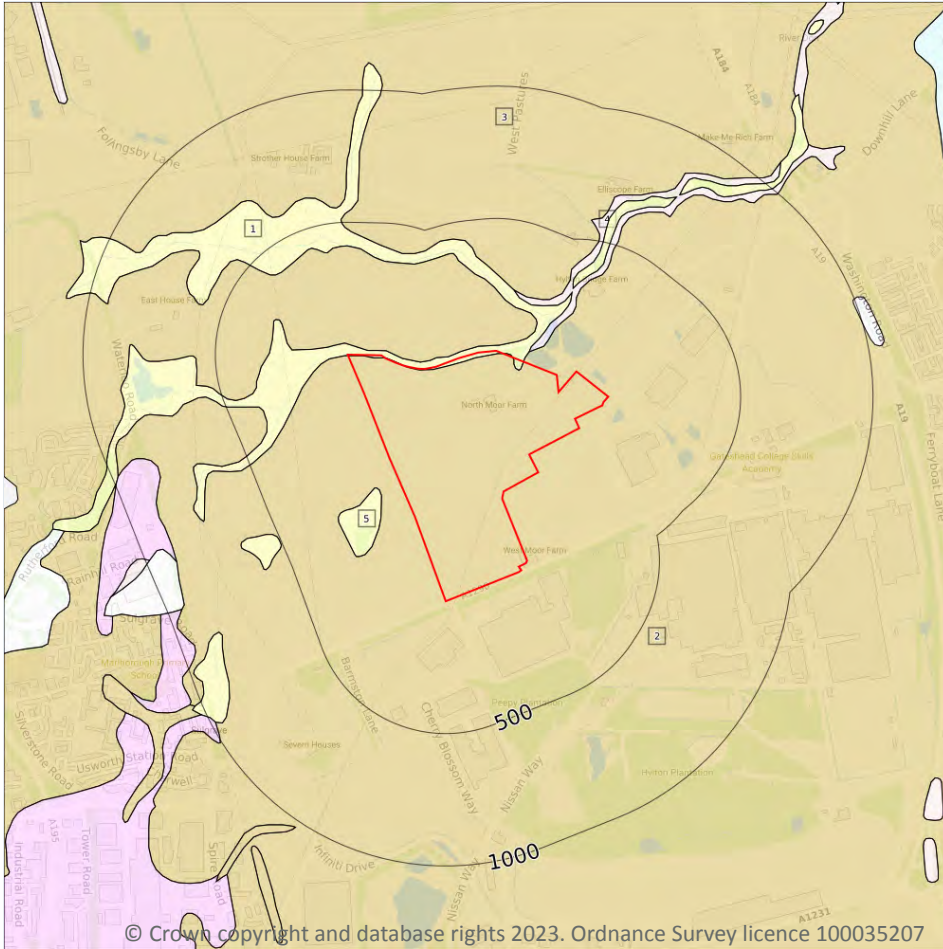
0


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

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Superficial



- Site Outline
- Search buffers in metres (m)
-  Landslip (50k)
- Superficial geology (50k)  
Please see table for more details.

### 15.4 Superficial geology (50k)

Records within 500m

6

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 70**

ID	Location	LEX Code	Description	Rock description
1	On site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2	On site	PELC-C	PELAW CLAY MEMBER	CLAY
3	17m NW	PELC-C	PELAW CLAY MEMBER	CLAY
4	43m NE	GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVANSIAN	CLAY AND SILT



ID	Location	LEX Code	Description	Rock description
5	83m SW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
6	315m NE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

*This data is sourced from the British Geological Survey.*

## 15.5 Superficial permeability (50k)

<b>Records within 50m</b>	<b>3</b>
---------------------------	----------

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
<b>On site</b>	<b>Intergranular</b>	<b>High</b>	<b>Very Low</b>
<b>On site</b>	<b>Mixed</b>	<b>Low</b>	<b>Very Low</b>
43m NE	Mixed	Low	Very Low

*This data is sourced from the British Geological Survey.*

## 15.6 Landslip (50k)

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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.*

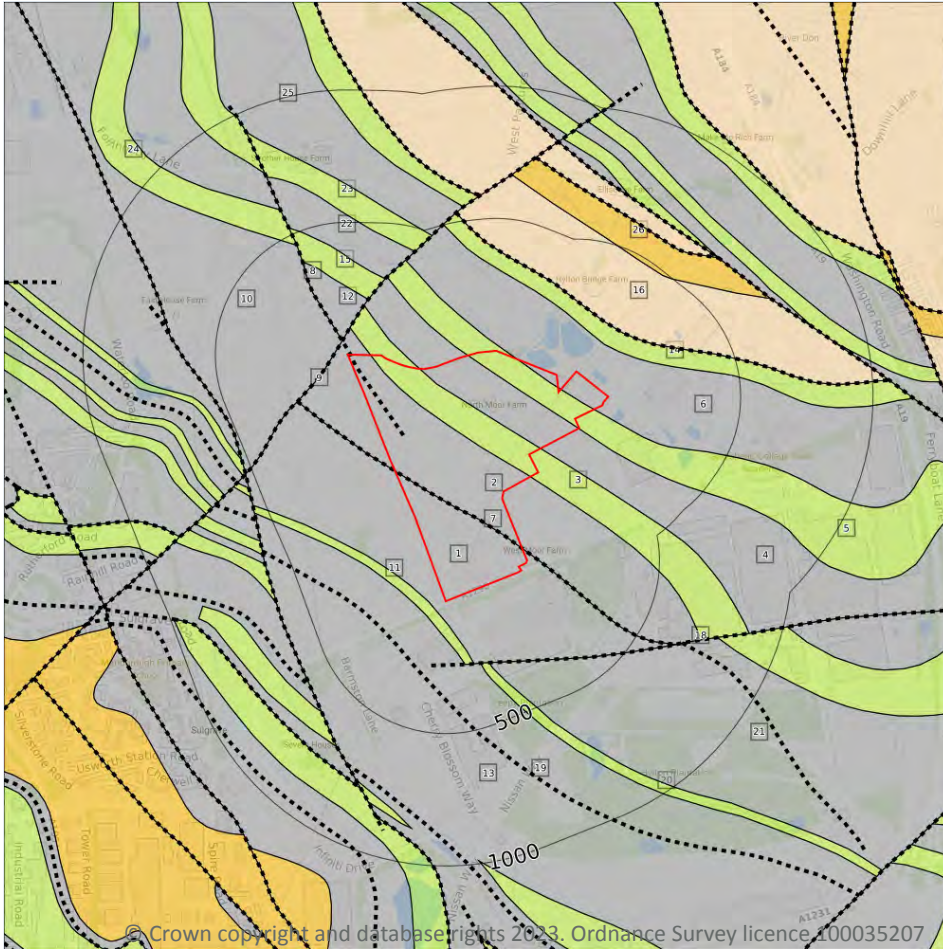
## 15.7 Landslip permeability (50k)

<b>Records within 50m</b>	<b>0</b>
---------------------------	----------

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

20

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 72**

ID	Location	LEX Code	Description	Rock age
1	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN





ID	Location	LEX Code	Description	Rock age
3	On site	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
4	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
5	On site	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
6	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10	45m NW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
11	51m S	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
12	57m NW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
13	91m S	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
14	146m NE	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
15	210m NW	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
16	216m NE	PUCM-MDSS	PENNINE UPPER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
20	266m S	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
21	277m S	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
22	290m NW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
23	413m N	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
24	455m NW	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
25	473m N	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
26	481m NE	PUCM-SDST	PENNINE UPPER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN

*This data is sourced from the British Geological Survey.*



## 15.9 Bedrock permeability (50k)

Records within 50m

3

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

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

*This data is sourced from the British Geological Survey.*

## 15.10 Bedrock faults and other linear features (50k)

Records within 500m

6

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.

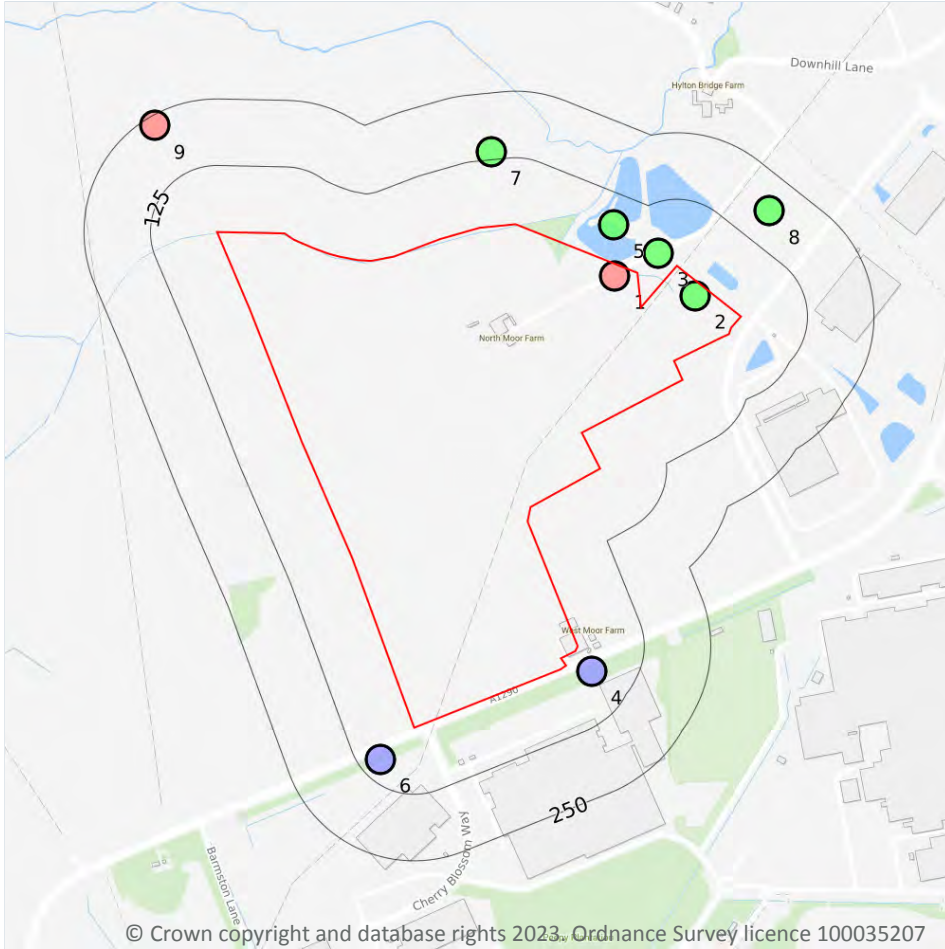
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 72**

ID	Location	Category	Description
7	On site	FAULT	Fault, inferred, displacement unknown
8	On site	FAULT	Fault, inferred, displacement unknown
9	45m NW	FAULT	Fault, inferred, displacement unknown
17	216m NE	FOSSIL_HORIZON	Marine band
18	241m S	FAULT	Fault, inferred, displacement unknown
19	248m S	FOSSIL_HORIZON	Marine band

*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

9

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 75**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	433207 559188	USWORTH COLLIERY U/G BH	137.21	N	<a href="#">829484</a>
2	On site	433358 559151	USWORTH COLLIERY U/G DOWNOVER	28.04	N	<a href="#">829707</a>
3	43m NE	433288 559232	USWORTH COLLIERY U/G DOWNOVER	29.87	N	<a href="#">829706</a>

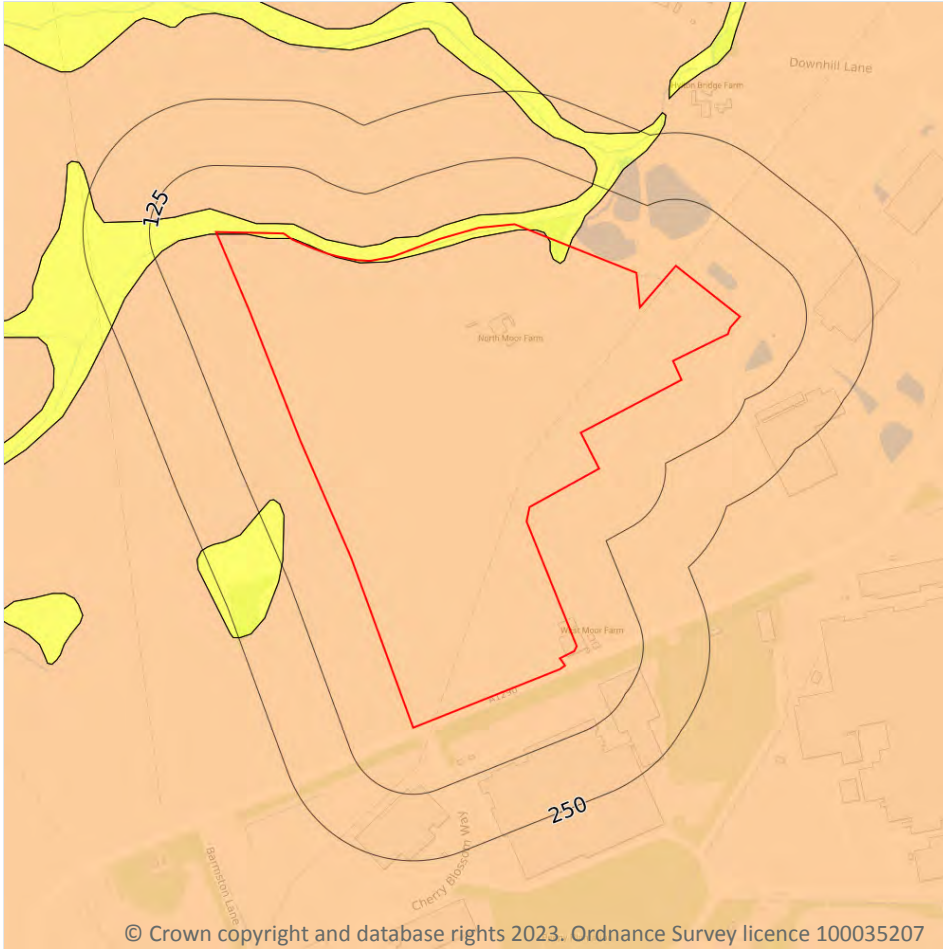


ID	Location	Grid reference	Name	Length	Confidential	Web link
4	49m SE	433163 558445	A1290 WASHINGTON ROAD, WASHINGTON 4	5.0	N	<a href="#">19282587</a>
5	68m NE	433205 559285	USWORTH COLLIERY U/G DOWNOVER	27.89	N	<a href="#">829702</a>
6	87m S	432766 558281	A1290 WASHINGTON ROAD, WASHINGTON 6	10.0	N	<a href="#">19282589</a>
7	139m N	432974 559421	USWORTH COLLIERY U/G DOWNOVER	28.09	N	<a href="#">829708</a>
8	189m NE	433497 559311	USWORTH COLLIERY U/G DOWNOVER	29.26	N	<a href="#">829705</a>
9	232m NW	432342 559471	USWORTH HARVEY BACK WNNING DOWNOVER U/G	36.45	N	<a href="#">829567</a>

*This data is sourced from the British Geological Survey.*



## 17 Natural ground subsidence - Shrink swell clays



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### 17.1 Shrink swell clays

Records within 50m

2

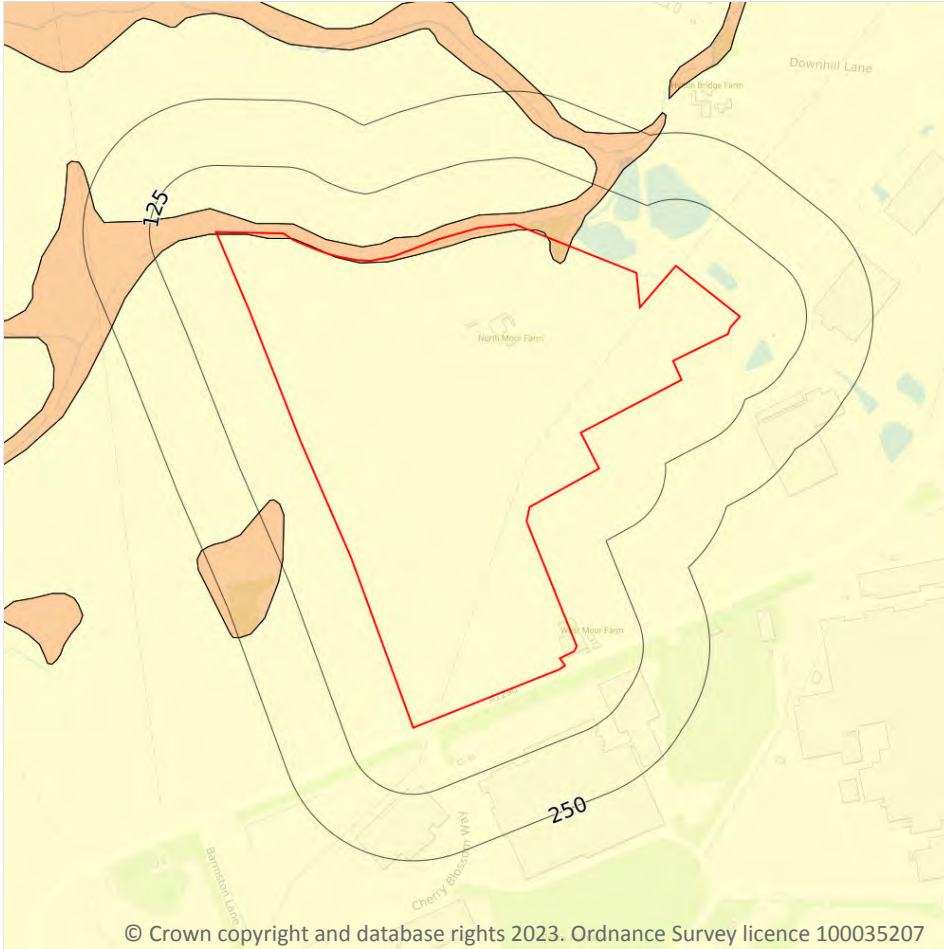
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 77**

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

*This data is sourced from the British Geological Survey.*

## Natural ground subsidence - Running sands



— Site Outline  
Search buffers in metres (m)

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

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### 17.2 Running sands

Records within 50m

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 78**

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.

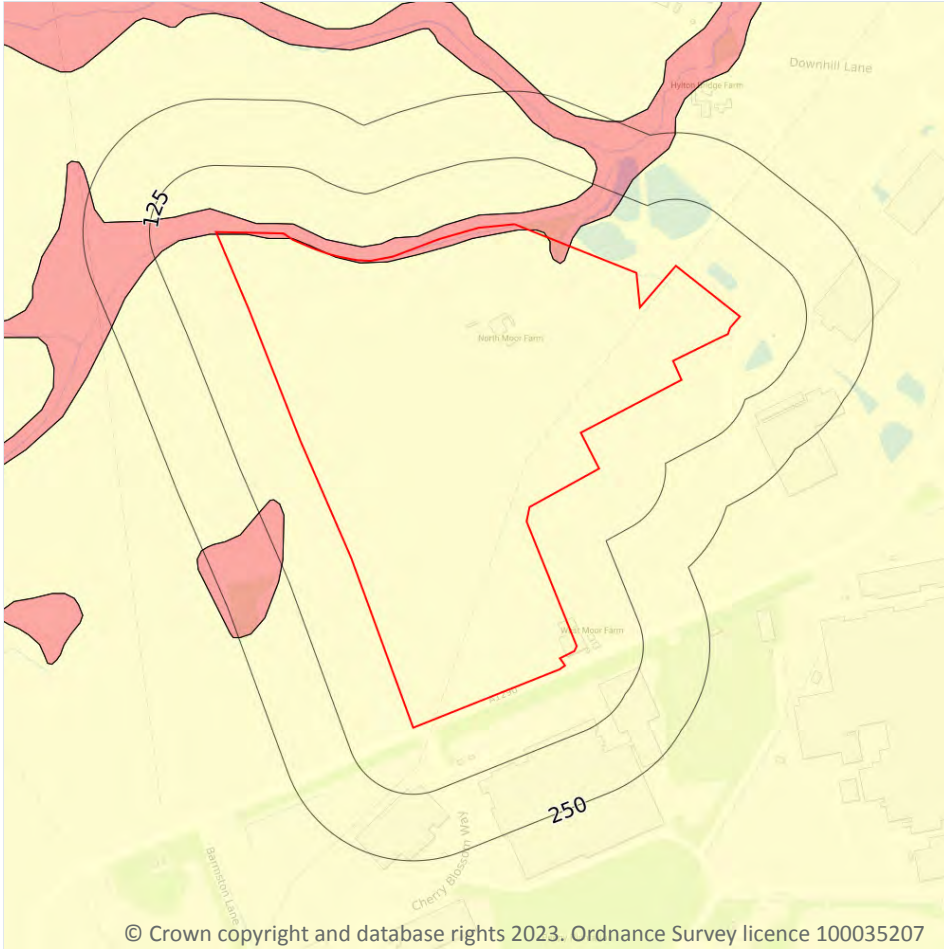


Location	Hazard rating	Details
On site	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Compressible deposits



— Site Outline  
Search buffers in metres (m)

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

### 17.3 Compressible deposits

Records within 50m

2

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 80**

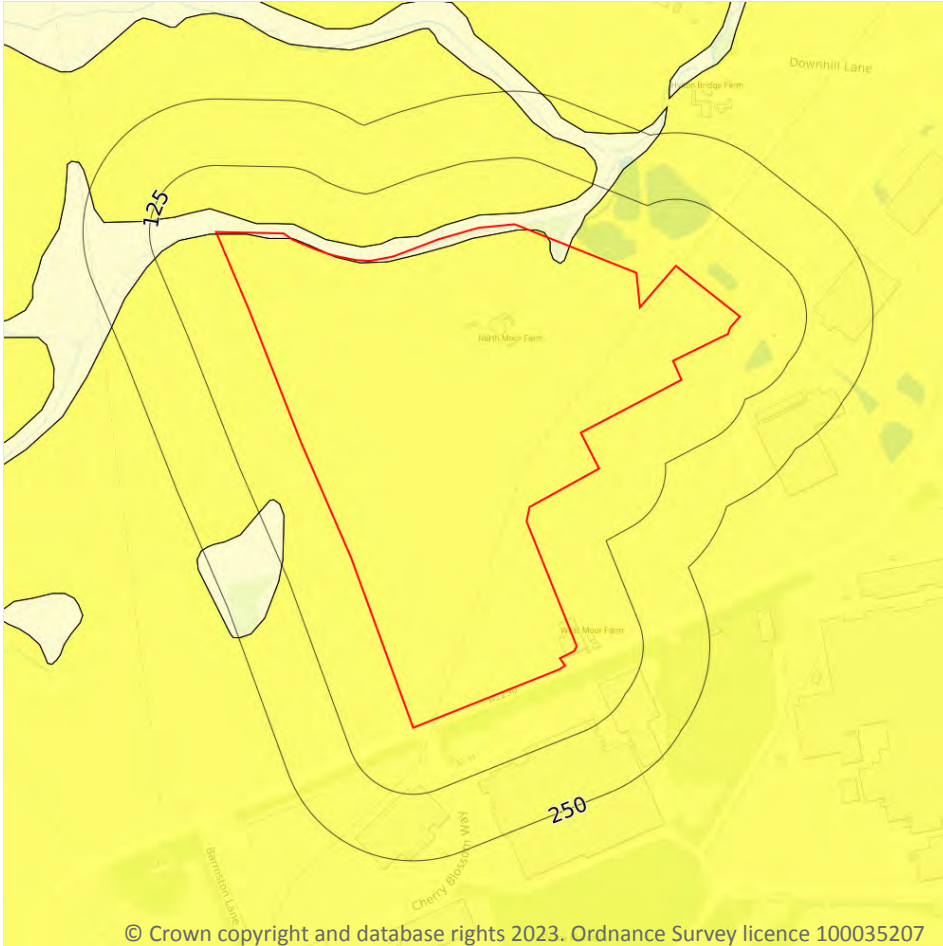
Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.
On site	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.

*This data is sourced from the British Geological Survey.*





## Natural ground subsidence - Collapsible deposits



### 17.4 Collapsible deposits

Records within 50m

2

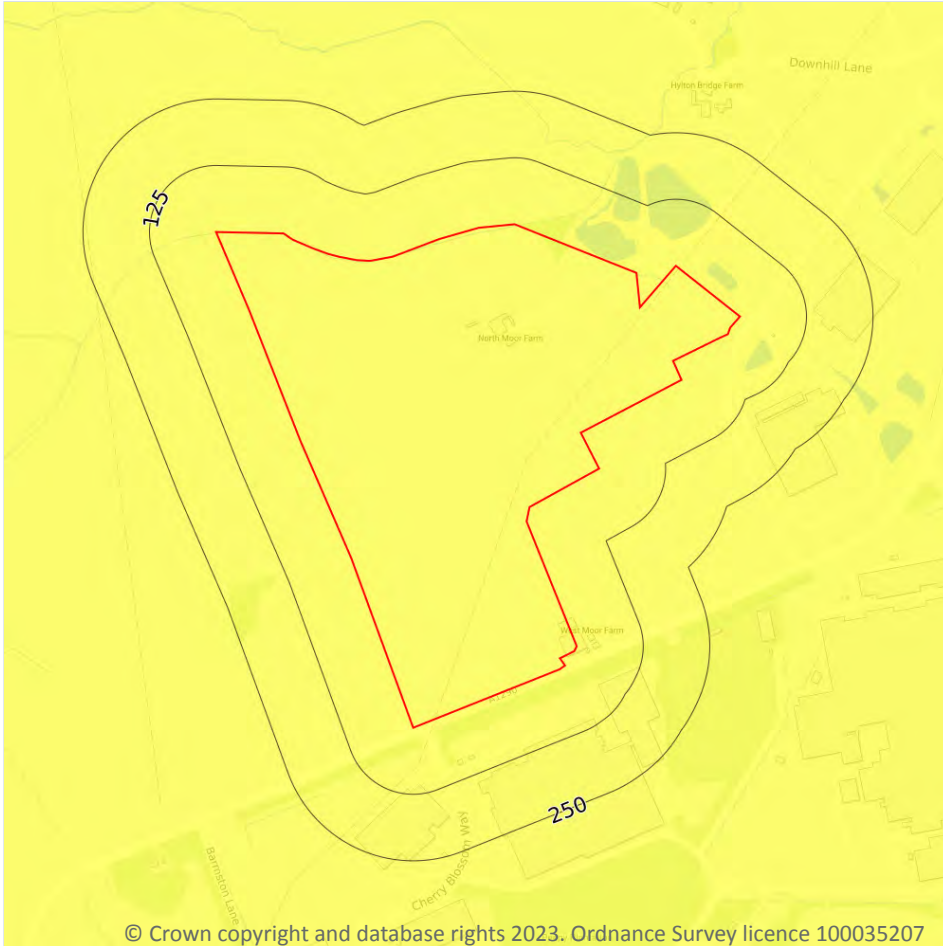
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 82**

Location	Hazard rating	Details
On site	Negligible	Deposits with potential to collapse when loaded and saturated are believed not to be present.
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

*This data is sourced from the British Geological Survey.*

## Natural ground subsidence - Landslides



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### 17.5 Landslides

Records within 50m

1

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

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

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

*This data is sourced from the British Geological Survey.*

## Natural ground subsidence - Ground dissolution of soluble rocks



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### 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 84**

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



### 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

0

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

*This data is sourced from the British Geological Survey.*

## 18.3 Surface ground workings

Records within 250m

1

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 85**

ID	Location	Land Use	Year of mapping	Mapping scale
1	16m SE	Pond	1895	1:10560

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.4 Underground workings

Records within 1000m

6

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 85**

ID	Location	Land Use	Year of mapping	Mapping scale
E	875m W	Colliery	1938	1:10560
12	906m W	Colliery	1921	1:10560
13	907m W	Colliery	1967	1:10560
15	907m W	Colliery	1895	1:10560
-	933m W	Unspecified Old Shaft	1857	1:10560
-	972m W	Colliery	1857	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

0

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

*This data is sourced from the British Geological Survey.*

## 18.7 Mining cavities

Records within 1000m

0

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

*This data is sourced from Stantec UK Ltd.*

## 18.8 JPB mining areas

Records on site

0

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

*This data is sourced from Johnson Poole and Bloomer.*

## 18.9 Coal mining

Records on site

1

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





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

*This data is sourced from the Coal Authority.*

### 18.10 Brine areas

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

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

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

### 18.11 Gypsum areas

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

Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

### 18.12 Tin mining

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

Generalised areas that may be affected by historical tin mining.

*This data is sourced from Groundsure.*

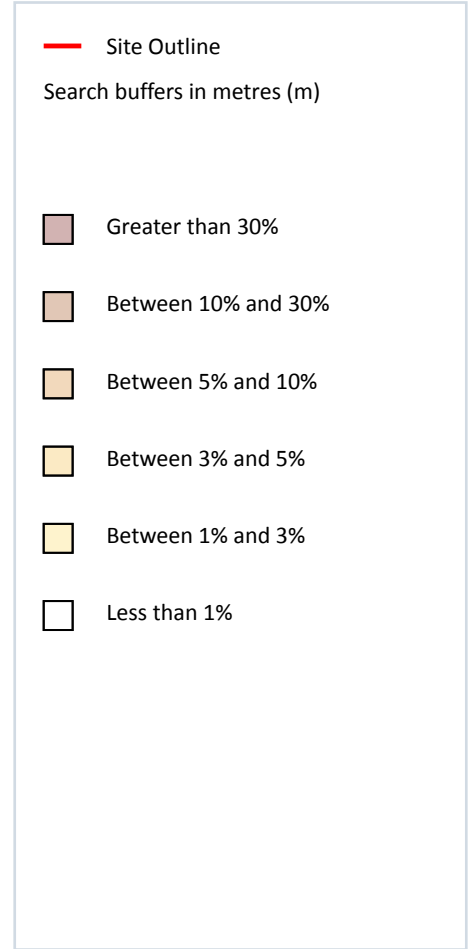
### 18.13 Clay mining

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

1

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

Features are displayed on the Radon map on **page 89**

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

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





## 20 Soil chemistry

### 20.1 BGS Estimated Background Soil Chemistry

Records within 50m

48

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

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



Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
17m NW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
18m NW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
19m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
21m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
22m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
22m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
22m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
28m NW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
37m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
41m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
41m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
43m NE	15 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
45m NW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
49m NW	15 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 km<sup>2</sup>).

*This data is sourced from the British Geological Survey.*

## 20.3 BGS Measured Urban Soil Chemistry

**Records within 50m**

**0**

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

*This data is sourced from the British Geological Survey.*



## 21 Railway infrastructure and projects

### 21.1 Underground railways (London)

Records within 250m

0

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

*This data is sourced from publicly available information by Groundsure.*

### 21.2 Underground railways (Non-London)

Records within 250m

0

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

*This data is sourced from publicly available information by Groundsure.*

### 21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

### 21.4 Historical railway and tunnel features

Records within 250m

0

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

*This data is sourced from Ordnance Survey/Groundsure.*

### 21.5 Royal Mail tunnels

Records within 250m

0

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



*This data is sourced from Groundsure/the Postal Museum.*

## 21.6 Historical railways

<b>Records within 250m</b>	<b>0</b>
----------------------------	----------

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

*This data is sourced from OpenStreetMap.*

## 21.7 Railways

<b>Records within 250m</b>	<b>0</b>
----------------------------	----------

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

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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

*This data is sourced from HS2 Ltd.*



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## 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>.

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## Terms and conditions

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





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**Appendix E**  
**PART 2A (THE CONTAMINATED LAND REGIME)**

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## Contaminated Land Definition

Under Section 57 of the Environmental Act 1995, Part 2A was inserted into the Environmental Protection Act 1990 to include provisions for the management of contaminated land.

Subsequent regulations were first implemented in England in April 2000, Scotland in July 2000 and Wales in July 2001<sup>1</sup>, providing a definition of 'contaminated land' and setting out the nature of liabilities that can be incurred by owners of contaminated land and groundwater.

According to the Act, contaminated land is defined as 'any land which appears to the local authority in whose area the land is situated to be in such a condition, by reason of substances in, on or under the land that:

1. *significant harm* is being caused or there is a *significant possibility* of such harm being caused; or
1. *significant pollution* of controlled waters<sup>2</sup> is being caused or there is a significant possibility of such pollution being caused<sup>3</sup>

The guidance on determining whether a particular possibility is significant is based on the principles of risk assessment and in particular on considerations of the magnitude or consequences of the different types of significant harm caused. The term 'possibility of significant harm being caused' should be taken, as referring to a measure of the probability, or frequency, of the occurrence of circumstances that could lead to significant harm being caused.

The following situations are defined where harm is to be regarded as significant:

1. Chronic or acute toxic effect, serious injury or death to humans
2. Irreversible or other adverse harm to the ecological system
3. Substantial damage to, or failure of, buildings
4. Disease, other physical damage or death of livestock or crops
5. The pollution of controlled waters<sup>4</sup>.

With regard to radioactivity, contaminated land is defined as 'any land which appears to be in such a condition, by reason of substances in, on or under the land that harm is being caused, or there is a *significant possibility of such harm being caused*<sup>5</sup>'.

## The Risk Assessment Methodology

Risk assessment is the process of collating known information on a hazard or set of hazards in order to estimate actual or potential risks to receptors. The receptor may be humans, a water resource, a sensitive local ecosystem or future construction materials. Receptors can be connected with the hazard via one or several exposure pathways (e.g. the pathway of direct contact). Risks are generally managed by isolating or removing the hazard, isolating the receptor, or by intercepting the exposure pathway. Without the three

---

<sup>1</sup> In England by The Contaminated Land (England) Regulations 2000, updated by The Contaminated Land (England) (Amendment) Regulations 2012; in Scotland by The Contaminated Land (Scotland) Regulations 2000, updated by the Contaminated Land (Scotland) Regulations 2005; and in Wales by The Contaminated Land (Wales) Regulations 2001, updated by the Contaminated Land (Wales) Regulations 2006.

<sup>2</sup> In Scotland the term "controlled water" has been updated to "water environment" under the Contaminated Land (Scotland) Regulations 2005 in line with the Water Environment and Water Services (Scotland) Act 2003.

<sup>3</sup> The definition was amended in 2012 by implementation of the Water Act 2003.

<sup>4</sup> Groundwater in this context does not include waters within underground strata but above the saturated zone.

<sup>5</sup> The Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006 and Contaminated Land (Wales) Regulations 2006.

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essential components of a source (hazard), pathway and receptor, there can be no risk. Thus, the mere presence of a hazard at a site does not mean that there will necessarily be attendant risks.

## **The Risk Assessment**

By considering where a viable pathway exists which connects a source with a receptor, this assessment will identify where pollutant linkages may exist. A pollutant linkage is the term used by the DEFRA in their standard procedure on risk assessment. If there is no pollutant linkage, then there is no risk. Therefore, only where a viable pollutant linkage is established does this assessment go on to consider the level of risk. Risk should be based on a consideration of both:

- The likelihood of an event (probability) - takes into account both the presence of the hazard and receptor and the integrity of the pathway.
- The severity of the potential consequence - takes into account both the potential severity of the hazard and the sensitivity of the receptor.

For further information please see the Contaminated Land section on the DEFRA website ([www.defra.gov.uk](http://www.defra.gov.uk)).



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**Appendix F**  
**GENERAL NOTES**

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# General Notes

## RPS Consulting Services Ltd

### *Phase 1 - Environmental Risk Assessment / Desk Study Environmental Review*

6. A "desk study" means that no site visits have been carried out as any part thereof, unless otherwise specified.
7. This report provides available factual data for the site obtained only from the sources described in the text and related to the site on the basis of the location information provided by the Client.
8. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.
9. The accuracy of maps cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.
10. No sampling or analysis has been undertaken in relation to this desk study.
11. Any borehole data from British Geological Survey sources is included on the basis that: "The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation".
12. Where any data supplied by the Client or from other sources, including that from previous site investigations, have been used it has been assumed that the information is correct. No responsibility can be accepted by RPS for inaccuracies in the data supplied by any other party.
13. This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a re-interpretation of the report in whole or in part after its original submission.
14. The copyright in the written materials shall remain the property of the RPS Company but with a royalty-free perpetual licence to the Client deemed to be granted on payment in full to the RPS Company by the Client of the outstanding amounts.
15. The report is provided for sole use by the Client and is confidential to them, their professional advisors, no responsibility whatsoever for the contents of the report will be accepted to any person other than the Client. [Unless otherwise agreed]
16. These terms apply in addition to the RPS "Standard Terms & Conditions" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms & Conditions the said Standard Terms & Conditions shall prevail.) In the absence of such a written contract the Standard Terms & Conditions will apply.

# PHASE 1 GEO-ENVIRONMENTAL DESK STUDY AND PRELIMINARY RISK ASSESSMENT

## Envision Plot 2

2023-03-31

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