East Midlands Gateway
Phase 2 (EMG2)

Document DCO 6.14F/MCO 6.14F (Part 1 of 6)
ENVIRONMENTAL STATEMENT

Technical Appendices

Appendix 14F

Preliminary Sources Study Affecting National Highways

October 2025

14

The East Midlands Gateway Phase 2
and Highway Order 202X and The East Midlands Gateway
Rail Freight and Highway (Amendment) Order 202X

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GEOTECHNICS

East Midlands Gateway Phase 2

Segro Administration Ltd

Preliminary Sources Study Report affecting for works affecting National Highways (PSSR)

BWB Ref. No. 220500
(GDMS No. to be advised)

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East Midlands Gateway Phase 2
Segro Administration Ltd

Preliminary Sources Study Report affecting for works affecting National Highways (PSSR)

GDMS No. to be advised

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EMG2-BWB-HGN-XX-DR-H-0103_Document 2.8C_Highway Plans General Arrangement Sheet 3 of 3
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1. INTRODUCTION

Instruction

1.1 BWB Consulting (BWB) was instructed by Segro Administration Ltd (the Client) to undertake a review of, and submit proposals for, highway improvement works that are necessary for the East Midlands Gateway Phase 2 development, located near Junction 24 of the M1 Motorway, Leicestershire.

Overview

Name of Project:	East Midlands Gateway Phase 2
Overseeing Organisation:	National Highways (NH)
Overseeing Organisation Ref. No:	To be advised.
Principal Contractor:	To be advised.

1.2 The East Midlands Gateway 2 site is proposed on land to the west of the M1 Junction 23A and will comprise a total of approximately 148 hectares including the works associated with M1 Junction 24.

1.3 This report comprises a Preliminary Sources Study Report (PSSR) in accordance with National Highways' Design Manual for Roads and Bridges, CD622 'Managing Geotechnical Risk' (Ref.1) and relates to the proposed road improvement works falling within National Highways' (NH) area of authority.

1.4 For details refer to the drawings listed below in **Table 1:1**, also attached as **Drawings.**

Table 1:1: Scheme Drawings

Drawing No.	Title
EMG2-BWB-GEN-XX-SK-CH-SK037	Overview of works on the strategic road network-S2-P02
EMG2-BWB-HGN-XX-DR-H-0102	Highway Plans General Arrangement Sheet 2 of 3
EMG2-BWB-HGN-XX-DR-H-0103	Highway Plans General Arrangement Sheet 3 of 3
EMG2-BWB-HGT-XX-DR-GI-0654	- NH highway works exploratory hole plan Geological Long Sections-S2-P01

Scheme Overview

1.5 The Ordnance Survey grid reference at the approximate centre of the works related to National Highways infrastructure is 447397 (E), 327034 (N). The site location, (shaded blue), is shown below in **Figure 1:1**.

Figure 1:1: Site Location Plan



1.6 The proposed works consist of the upgrade of Junction 24 of the M1 to provide access and sufficient capacity to facilitate the development of the East Midlands Gateway 2. The junction upgrade and associated works consist of the following:

- Construction of a new motorway link road between the M1 Junction 24 northbound and the A50 westbound.
- Construction of bridge over the A453.
- A new diverge will be constructed connecting link road to the westbound A50 which will be widened to the north of the link connection as well as alternations to the M1 exit slip road at Junction 24.
- Construction of a lane drop on the A50 westbound
- Widening of the link road between the M1 junction 24A A50 southbound diverge and M1 junction 24 A50 southbound merge from one to two lanes

- Widening of the link road between the M1 junction 24, A50 southbound merge and the M1 junction 24 roundabout from two to three lanes
- Construction of new gantries/signs
- Installation of traffic signs
- Demolition of old / alterations of gantries and gantry mounted signs and signals
- Alterations to the screening bunding between M1 junction 24 and the EMG1 rail terminal
- Widening of the A453 southbound within the junction to provide two right turning lanes into EMG1
- Construction of an active travel link on the west side of the A453, heading south from the EMG1 main site towards EMG2 and East Midlands Airport.

1.7 The design life of the scheme and its components is to be defined in accordance with the Design Manual for Roads and Bridges and is anticipated to be 120 years.

Previous Reports

1.8 A Statement of Intent (SOI) has been prepared by BWB Consulting [Ref.2]. This presents an overview of the proposals and the resulting geotechnical risks and mitigation measures anticipated.

1.9 Since issue of the SOI over bridge between M1 over A543 is proposed.

1.10 The key geotechnical risks that are envisaged for the project area are detailed in the Geotechnical Risk Register contained in the SOI, and in the updated Risk Register, included as **Appendix 5** of this report. The Geotechnical Risk Register will operate as a live document throughout the development of the project.

1.11 In summary, the main potential sources of geotechnical risk identified in the SOI are as follows:

- Cut/Fill operations working parallel to the live M1 Motorway;
- Potential for localised areas of soft and/or compressible superficial deposits at new earthworks and road alignment locations leading to differential or excessive settlements;
- Potential for high water table in the superficial Deposits;
- Slope instability / variable ground conditions associated with upgrading and constructing embankments associated with the junction alterations;
- Inadequate consideration of construction sequencing;
- Inadequate pile capacity for bridge foundations taking the link road over the A453 resulting in pile failure;
- Inadequate temporary works; and
- Underground and overhead services.

Geotechnical Category

1.12 It is proposed that the Scheme is classified as Geotechnical Category 2 as defined in CD 622 and BS EN 1997-1 Eurocode 7, as the proposed construction is not anticipated to comprise exceptional risks or abnormal loading conditions.

2. SOURCES OF INFORMATION, DESK STUDY AND REVIEW OF FINDINGS

General

2.1 Sources of geotechnical, geo-environmental, historical, design, as-built, and other information relevant to the scheme are listed below:

- Geological and related mapping and reporting by the British Geological Survey:
  - 1:50,000 geological map Sheet no. 141, Loughborough, Solid & Drift [Ref. 3].
  - 1:10,000 geological map Sheet no. SK42NE, Solid and Drift [Ref. 4].
  - 1:625,000 Hydrogeological Map [Ref. 5].
- Records available through the BGS online 'Geology of Britain viewer', including historic exploratory hole logs [Ref. 6] (**Appendix 3**).
- Service / utilities records and drawings (**Appendix 6**).
- Existing geotechnical investigation, design and/or As Built reports and assets available through the National Highways Geotechnical and Drainage Management Service (GDMS).
- Existing information available through the National Highways Integrated Asset Management Information System (IAMIS).
- Commercially/publicly available desk study information:
  - Commercial geo-environmental searches from Groundsure© (**Appendix 1**)
  - Historical Ordnance Survey (OS) maps (**Appendix 2**)
  - Aerial photographs (Google Earth)
  - Unexploded Ordnance (UXO) risk maps

Geotechnical and Drainage Management Service (GDMS)

2.2 The Geotechnical and Drainage Management Service (GDMS), formerly HAGDMS, was interrogated for the following:

- Geotechnical assets and last complete inspection date
- Geotechnical and geo-environmental investigations and reports

Geotechnical Assets

2.3 Existing geotechnical assets within the scheme section listed on GDMS are summarised in **Table 2:1** on the following page .

Table 2:1: Existing Geotechnical Assets

GDMS ID.	Type	Location	Max Height (m)	Max Angle (°)	Length (m)	Last Complete Inspection Date	CS641 Feature Grade
20910	Embankment	M1 Slip Rd	3.1	28	217	28/01/2021	NR
20911	At Grade	M1 Main	0	0	334	28/01/2021	NR
20912	Embankment	M1 Slip Rd	3.4	30	170	28/01/2021	NR
24418	Embankment	M1 Slip Rd	3.6	27	299	28/01/2021	NR
42051	Embankment	M1 Main	4	30	370	28/01/2021	NR
42052	Cutting	M1 Main	11.23	24	550	28/01/2021	2
42053	Cutting	M1 Main	2.74	23	399	28/01/2021	NR
42054	At Grade	M1 Main	1.5	22	284	28/01/2021	NR
42055	Embankment	M1 Slip Rd	2.74	23	352	28/01/2021	NR
42056	Embankment	M1 Slip Rd	5.5	30	215	28/01/2021	3
42057	Embankment	M1 Main	3.3	24	206	28/01/2021	NR
42058	Embankment	M1 Main	3.7	18	200	28/01/2021	NR
42059	Embankment	M1 Slip Rd	4.9	27	216	28/01/2021	2
42060	Cutting	M1 Main	4.7	22	365	28/01/2021	2
42061	Cutting	M1 Main	11.41	25	529	03/12/2020	2
42062	Embankment	M1 Main	11.74	28	454	28/01/2021	NR
44309	Embankment	A453 Main	10.6	32	62	10/01/2019	NR
44354	Embankment	A453 Main	10.6	32	62	10/01/2019	NR
44358	Embankment	A453 Main	7.4	26	344	10/01/2019	NR
50009	At grade	A453 Main	0	0	141	28/01/2021	NR
50012	At Grade	A453 Main	0	0	431	03/03/2024	NR
50015	At Grade	A453 Main	0	0	370	03/03/2024	NR
50016	Embankment	A453 Main	2.96	25	314	03/03/2024	NR
50017	At Grade	A50 Main	1.37	20	46	03/03/2024	NR
50018	At Grade	A453 Main	0	0	171	03/03/2024	NR
50023	Embankment	A45 Roundabout	3.66	24	512	03/03/2024	NR
52440	At Grade	A50 Slip Rd	0	0	1,044	11/12/2018	2
52441	At Grade	A50 Main	1.39	10	316	11/12/2018	NR
54218	At Grade	M1 Main	0	0	96	28/01/2021	NR
54219	Embankment	M1 Slip Rd	4.4	27	201	27/02/2024	4
62640	Embankment	M1 Main	6.84	20	207	28/01/2021	NR
62641	At Grade	M1 Slip Rd	0.2	27	154	28/01/2021	NR
62642	Embankment	M1 Slip Rd	2.7	27	188	28/01/2021	2
62643	Embankment	M1 Slip Rd	7.5	18	192	28/01/2021	NR
64288	Embankment	A50 Slip Rd	5.07	25	220	11/12/2018	0
64442	Embankment	A453 Main	3.7	24	109	10/01/2019	NR
64443	Embankment	A453 Main	6.1	26	446	10/01/2019	0/3*
65008	At Grade	M1 Slip Rd	0	0	366	03/12/2020	NR
65009	At Grade	M1 Slip Rd	0	0	376	03/12/2020	NR

65014	Embankment	A50 Slip Rd	6	22	198	18/01/2021	NR
65016	Embankment	M1 Slip Rd	5.6	22	179	18/01/2021	NR
65016	Embankment	M1 Slip Rd	4.6	19	122	18/01/2021	NR
65017	At Grade	M1 Main	0	0	508	18/01/2021	NR
65075	Cutting	M1 Main	5.3	26	43	03/12/2020	NR
65076	Cutting	M1 Main	6.5	20	65	03/12/2020	0
* Feature Gradings differ along areas on the same Asset NR = Not Recorded							

2.4 Assets that do not have a CS641 Feature Grade, refer to table above, are recorded on the GSMS as approved, with an unclassified feature grade or gradings were found to be not applicable. This may be due to the assets just having been constructed.

2.5 Geotechnical assets listed with no gradings may be able to be assessed during a site walkover during proposed site investigation phase (see **Section 8**).

Geotechnical and Geo-environmental Reports

2.6 Twenty-three engineering investigation and report records were obtained from GDMS, relevant to the scheme area. Reports referenced in this PSSR are summarised below in **Table 2:2** .Other GDMS reports identified in the surrounding area of the scheme are detailed in **Table 2:3**. .

Table 2:2: GDMS Geotechnical Reports included in PSSR

GDMS ID	Title	Scheme	Author	Date
28929	Ground Investigation Report	Smart Motorways Programme M1 Junction 23a to 25	ARUP	2016
29152	Geotechnical Design Report	Smart Motorways Programme M1 Junction 23a to 25	ARUP	2017
29800	Geotechnical Design Report	East Midlands Gateway Strategic Rail Freight Interchange, M1 Overbridge	Hydrock	2017
30523	Geotechnical Feedback Report	Smart Motorways Programme M1 Junction 23a to 25	ARUP	2021
48534	Combined PSSR-GIR-GDR	Near M1 J23a to J25	SMP Alliance	2024

Table 2:3: GDMS Geotechnical Reports wider area

GDMS ID	Title	Scheme	Author	Date
4068	Site Investigation	Clifton to M1 Dualling	Leonard Fairclough Limited	1973
3678	Ground Investigation	A42 Castle Donington North	Soil Mechanics Limited	1988

9826	Roadworks Geotechnical Design Report	A42 Castle Donington North – Contract 2: M1 Widening	Scott Wilson Kirkpatric & Partners	1988
10075	Ground Investigation and Interpretive Report	A453 (T): Clifton to M1 (Junction 24)	DHV Burrow-Crocker Consulting Ltd	1991
18103	Geotechnical Desk Study	M1 Widening, Junctions 23A to 28	Travers Morgan Ltd	1992
18257	Geotechnical Desk Study	M1 Widening, Junctions 23A to 28	Travers Morgan Ltd	1993
24496	A453 and M1 Motorway Crossing Report	East Midland Airport Sewer Requisition	Charles Haswell and Partners Limited	1997
9172	Ground Investigation	Nottinghamshire/Derbyshire COA NMCS2 Upgrade	Norwest Holst Soil Engineering Ltd	1999
11663A	Ground Investigation	Nottinghamshire/Derbyshire COA NMCS2 Upgrade	WSP Environmental Ltd	1999
20529	Ground Investigation	Scheme 758, A50, Abnormal Load Laybys	Nicolas Colton Geotechnical	2005
19183	Preliminary Sources Study Report	M1 Widening Junctions 21 – 30	ARUP	2005
24067	Ground Investigation	A453 Widening M1 Junction 24 to A52 Nottingham	Geotechnics Ltd	2007
25361	Preliminary Geotechnical Report	M1 Widening Junctions 21-30	ARUP	2007
22126	Factual Report on Ground Investigation	M1 Widening Junctions 21-30	FUGRO Engineering Services Limited	2007
24066	Geotechnical Report	Widening M1 Junction 24 to A52 Nottingham	Highways Agency	2008
22132	Preliminary Geotechnical Report	M1 Widening: Junction 21 – 30	Highways Agency	2008
29798	Preliminary Sources Study Report	Zone 3 Major Trunk Improvements	RSK	2013
46351	Factual Ground Investigation Report	Zone 3 Major Trunk Improvements	RSK	2013

Integrated Asset Management Information System

2.7 The National Highways Integrated Asset Management Information System (IAMIS) has been reviewed. The following structures have been identified:

- 29 No Bridges and large culvers
- 3 No retaining walls

2.8 Scheme drawings referenced in this PSSR are listed above in **Section 1**,**Table 1:1** and are presented in the **Drawings** section of this report.

Historic Exploratory Hole Records

2.9 The British Geological Survey (BGS) provides access to historical exploratory hole and other records through the BGS Onshore GeoIndex. Historical exploratory hole logs were also obtained from the sources listed in **Section 2.1** of this PSSR and are described further in **Section 3**.

2.10 Exploratory hole records referenced in this PSSR are included in **Appendix 3**.

Geotechnical Laboratory Test Data

2.11 Geotechnical laboratory data is available for soil and rocks from the previous investigations noted above, included in **Appendix 4**. Tests typically comprised:

- Moisture Content;
- Atterberg Limits Classification;
- pH, water soluble sulphate, acid soluble sulphate and/or total sulphur;
- Particle Size Distribution determination;
- Unconsolidated Undrained Triaxial Compression;
- Consolidation Testing;
- Triaxial Effective Stress;
- Uniaxial Compressive Strength;
- Point Load Index Testing.

Project-specific Ground Investigation

2.12 No project specific ground investigation has been carried out to date. A summary of the proposed project specific ground investigation will be provided in Ground Investigation Report will be issued separately.

Existing Services / Utilities

2.13 Five services / utilities plans have been identified. The plans are presented in **Appendix 6**, namely:

- 3.4069-UCL-DR-MU-FEA-001-Finger Farm Roundabout - Rev C
- 4.4069-UCL-DR-MU-FEA-001-A453 Footway-Cycleway Link - Rev C
- 6.4069-UCL-DR-MU-FEA-001-M1 Junction 24 (Overview) - Rev C
- 6.4069-UCL-DR-MU-FEA-001-M1 Junction 24 (1 of 4) - Rev C
- 6.4069-UCL-DR-MU-FEA-001-M1 Junction 24 (2 of 4) - Rev C
- 6.4069-UCL-DR-MU-FEA-001-M1 Junction 24 (3 of 4) - Rev C
- 6.4069-UCL-DR-MU-FEA-001-M1 Junction 24 (4 of 4) - Rev C

- 7.4069-UCL-DR-MU-FEA-001-A6 Kegworth Bypass-A453 Junction - Rev A

3. SITE DESCRIPTION

3.1 The site comprises raised sections of motorways and A roads. Proposed works to the M1 extend from just north of M1 J23A to just before the M1 J24. A small section of the A453 east bound connecting to the M1 south is included in the works, along with both slip roads east and west bound connecting the M1 to the A50. There are also works on the A453 at and south of the A453/A6/EMG1 junction.

3.2 Surrounding land uses are summarised below in **Table 3:1.**

Table 3:1 Surrounding Land Use

Surrounding land Use	
North	Continuing M1, Lockington Tarmac Quarry and agricultural fields
East	Kegworth and agricultural fields
South	Continuing M1 and agricultural fields
West	East Midlands Airport

M1 Junction 24 Improvements

3.3 This largely covers the road network at M1 Junction 24. Currently, Junction 24 only provides access to the A50 westbound via Junction 24 roundabout. Construction of a new free-flowing grade-separated link, which will become part of the National Highways network, between the M1 northbound exit slip-road and the A50 westbound. . Construction of a new diverge connection from the link road to the westbound A50 which will be widened as well as alternations to the M1 exit slip road at Junction 24.

3.4 From the A50 eastbound to M1 Junction 24 southbound it is proposed widening of the link road from M1 junction 24 A50 southbound from one lane to two lanes as well as widening of the link road between M1 junction 24A A50 southbound merge and M1 Junction 24 roundabout from two lanes to three lanes and construction of a lane drop on the A50 westbound.

3.5 Additionally, alterations to road markings and signage are proposed for the A453 northbound approach road and A453 southbound approach road.

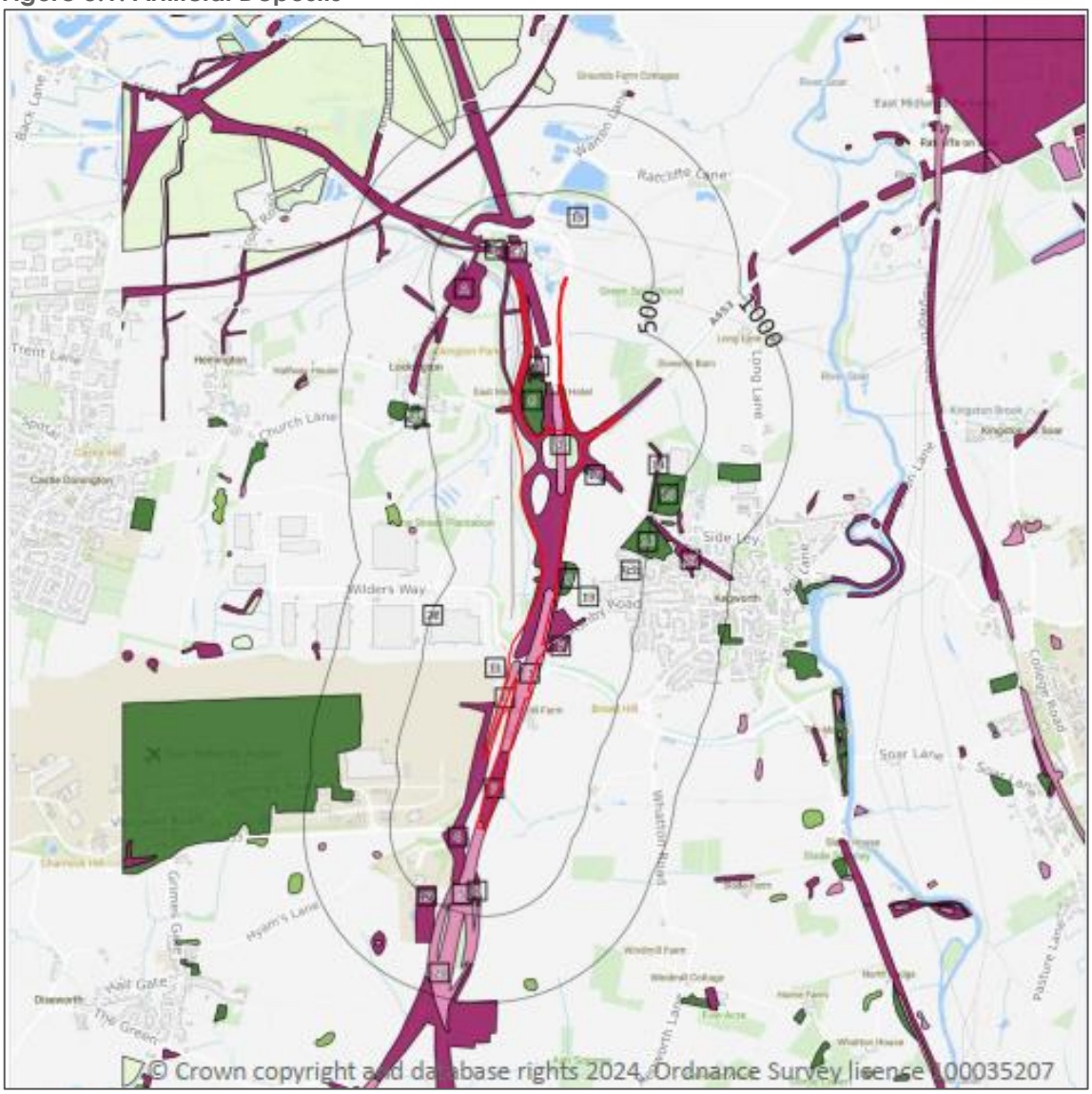
3.6 The extent of the National Highways area with the potential to be affected by the proposed works covers the roundabout at M1 junction 24, A50 westbound north of M1 junction 24 and A453 to the east of M1 junction 24.

Geology

Overview

3.7 Information published by the British Geological Survey (BGS) shows localised artificial deposits along the M1 corridor, indicating areas which have been artificially raised and where the motorway has been constructed on embankment. A map extracted from the Groundsure© Report is presented below as **Figure 3:1** below. The lighter pink areas indicate areas of worked ground and the darker pink areas of Made Ground.

Figure 3:1: Artificial Deposits

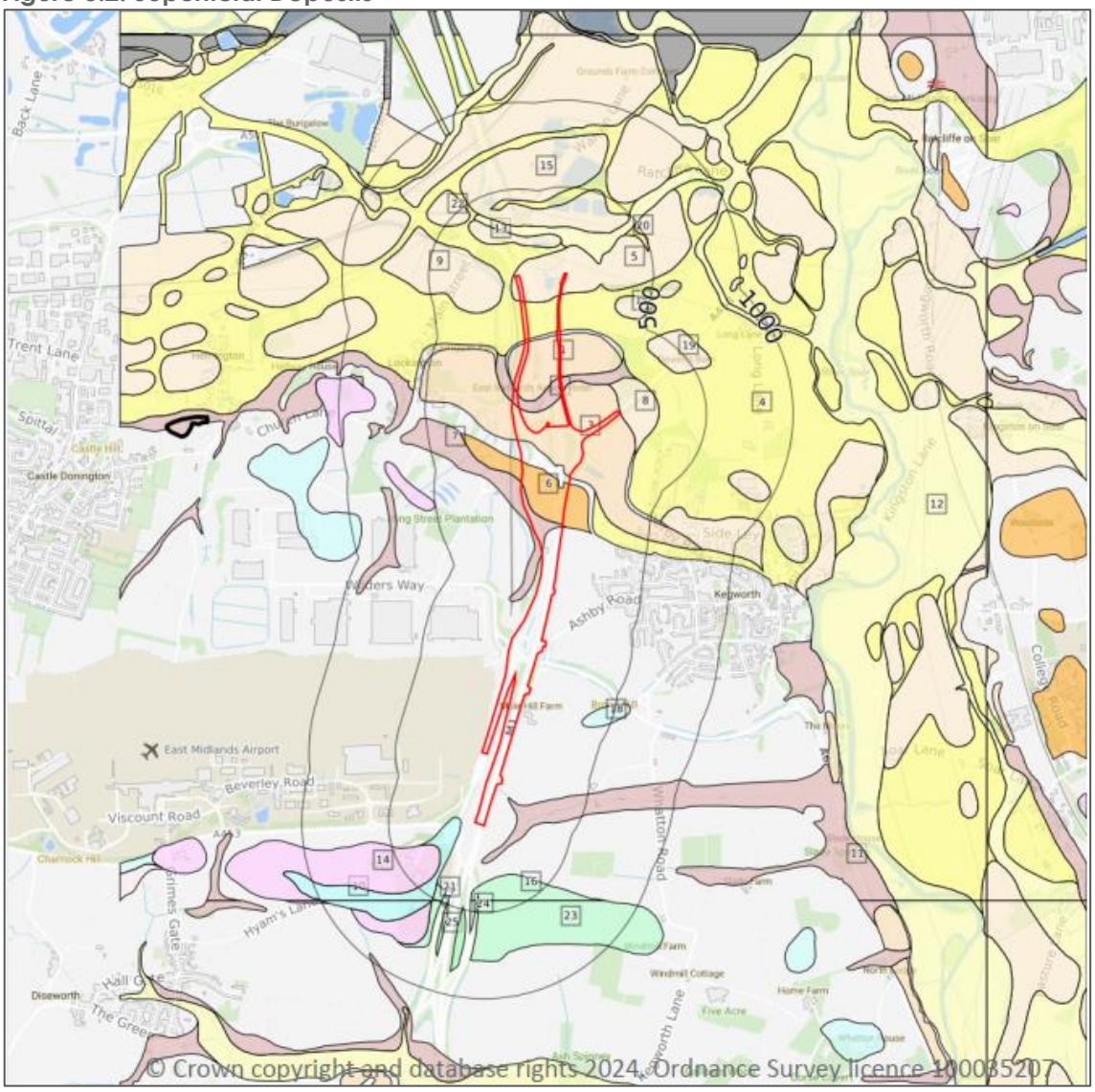


3.8 BGS data records various superficial deposits across the site, as well as an area where superficial deposits are absent in the south. A map extracted from the Groundsure© Report is presented on the following page as **Figure 3:2**. It is emphasised that some variation in the location and extent of these soils is to be expected.

3.9 Superficial deposits mapped to the north include:

- Wanlip Member (shown as No1 and No3).
- Head Deposits (shown as No2 and No7).
- Hemington Member (shown as No4).
- Holme Pierrepont Sand and Gravel Member (shown as No5).
- Eggington Common Sand and Gravel Member (shown as No6).

Figure 3:2: Superficial Deposits



Bedrock Deposits

3.10 Similar to the Superficial Deposits, BGS data records various bedrock across the site. A map extracted from the Groundsure© Report is presented as **Figure 3:3.**

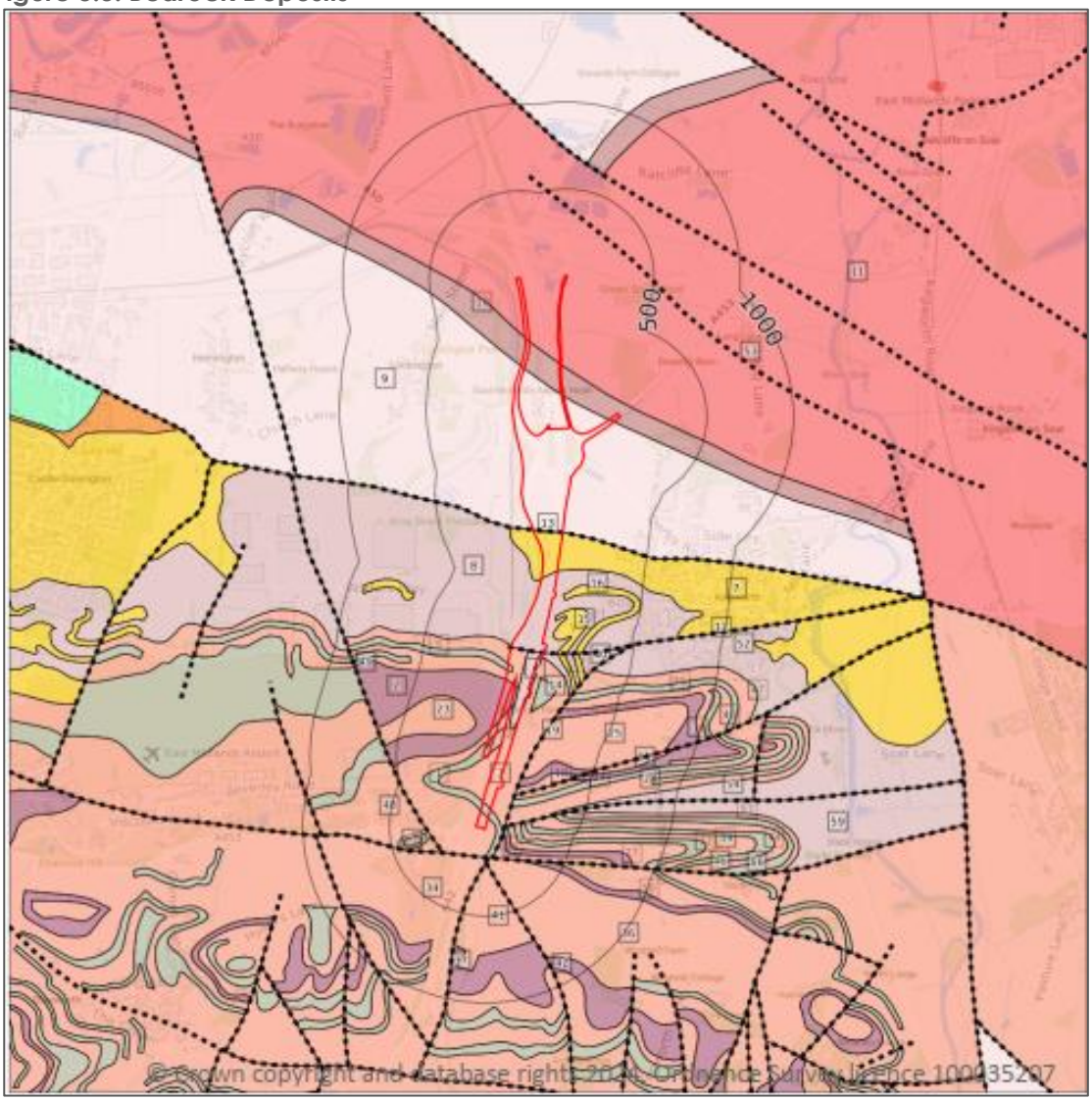
3.11 Bedrock deposits mapped across the site include:

- Gunthorpe Member Siltstone, Dolomitic (shown as No1 and No5).
- Diseworth Sandstone (shown as No2).
- Gunthorpe Member Mudstone (shown as No3 and No6).
- Tarporley Siltstone Formation (shown as No4 and No8)
- Helsby Sandstone Formation (shown as No7)
- Edwalton Member (shown as No9)
- Arden Sandstone Formation (shown as No10)

- Branscombe Mudstone Formation (shown as No11)

3.12 Two bedrock faults (inferred) are mapped through the centre of the site.

Figure 3:3: Bedrock Deposits



Historical BGS Exploratory Hole Logs

3.13 Multiple historical hole logs are located along the line of the M1, with occasional locations positioned up to 50m to the east and west. It should be noted that many of these logs are dated therefore ground levels are likely to have altered.

3.14 The BGS boreholes indicate that varying depths of superficial deposits are present in the overlying the Mercia Mudstone, in the north. To the very south, several logs record weathered bedrock from ground level or directly underlying Topsoil deposits, as would be expected from the geological mapping.

Topsoil

3.15 Topsoil is recorded in the majority of the historical logs from ground level to an average depth of 0.40m bgl. Most logs do not have a composition description of the topsoil.

3.16 It is expected that composition and thickness will vary locally across the works area if encountered.

Made Ground/Fill

3.17 Made Ground deposits are recorded in the majority of exploratory hole locations in the north and centre of the site, underlying Topsoil or from ground level.

3.18 Deposits were encountered as both cohesive and granular deposits, ranging from gravelly or sandy clay with quartz and flint gravels to sand and gravels of mixed lithologies. Slag, ash, PFA and occasional clinker and brick were noted amongst Made Ground descriptions.

3.19 Fill and possible fill was recorded within three locations, described as sand assorted gravels or on one occasion, a sandy clay with mudstone and sandstone gravels.

Superficial Deposits

3.20 The BGS logs indicate that varying depths of glacial deposits are present overlying the bedrock geology. Descriptions of compositions were also greatly variable ranging from firm sandy clays and sandy silts to dense gravelly sands.

Bedrock Geology

3.21 The bedrock geology of the Mercia Mudstone Group was largely encountered across the site, often referred to in older dated logs as Keuper Marl. In the south of the site, several logs record weathered Keuper Marl from either Ground Level or underlying Topsoil deposits.

3.22 The Mercia Mudstone Group bedrock is often recorded as a weathered mudstone with interbedded siltstone and occasionally sandstone.

3.23 Logs recorded pre 1980, often record brief details in description. The more detailed logs include descriptions of compositions and lithorelic details and often include a weathering grade for the stratum described. Weathering grades on the logs are noted to be between 1 (non-weathered) to 4a (highly weathered).

3.24 Anticipated weathering profiles within the scheme comprise fully weathered material comprising clays, overlying partially weathered mudstone with interbedded siltstone and sandstone over non weathered bedrock.

Groundwater

3.25 Numerous groundwater strikes are recorded within the exploratory hole locations across the site, recorded at depths between 1.00m and 9.80m bgl.

Hydrogeology

Aquifer Designation

3.26 The Environment Agency (EA) classifies the Superficial deposits at the site as follows:

- Wanlip Member: Secondary A Aquifer
- Head Deposits: Secondary Undifferentiated Aquifer
- Hemington Member: Secondary A Aquifer
- Holme Pierrepont Sand and Gravel Member: Secondary A Aquifer
- Eggington Common Sand and Gravel Member: Secondary A Aquifer

3.27 The Environment Agency (EA) classifies the Bedrock at the site as follows:

- Gunthorpe Member Siltstone, Dolomitic: Secondary B Aquifer
- Diseworth Sandstone: Secondary B Aquifer
- Gunthorpe Member Mudstone: Secondary B Aquifer
- Tarporley Siltstone Formation: Secondary B Aquifer
- Helsby Sandstone Formation: Principal Aquifer
- Edwalton Member: Secondary B Aquifer
- Arden Sandstone Formation: Secondary A Aquifer
- Branscombe Mudstone Formation: Secondary B Aquifer

3.28 Principal Aquifers are defined as Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

3.29 Secondary A Aquifers are 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.

3.30 Secondary B Aquifer are defined as predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons, and weathering.

3.31 Undifferentiated Secondary Aquifer are assigned in cases where it has not been possible to attribute either a Secondary A or B category to a rock type.

3.32 The site is not located within an EA designated Source Protection Zone. A small section through the centre of the site, lies within two Water Framework Directive Groundwater Bodies; Soar PT Sandstone and Soar Secondary Combined. The Soar PT Sandstone received an overall rating of poor in 2019, with the Soar Secondary Combined received an overall rating of Good, again in 2019.

BGS Borehole and Third-Party Data

3.33 The collected borehole data for the site record groundwater strikes in some locations, at varying depths. Groundwater was recorded mostly within granular bands/horizons, recorded as strikes and seepages.

3.34 The third-party Ground Investigation Report, undertaken by Amey ARUP recorded groundwater strikes and recorded standing groundwater in most wells during the subsequent monitoring period. Intergranular deposits underlying the site are known to have moderate to very high permeability.

Abstractions, Discharge Consents and Pollution Incidents

3.35 Part of the A50 westbound, joining the M1 southbound motorway, is within an active groundwater abstraction licence area, licenced to Tarmac Trading Limited.

3.36 There are no discharge consents listed as issuing to groundwater at the site or within the surrounding area.

3.37 No pollution incidents are listed as impacting upon groundwater within 500m of the site.

Groundwater Flooding

3.38 The majority of the site is located within an area of low to negligible risk of flooding. A small area to the northeast of j24 roundabout is indicated to be at a moderate risk, with a section of the M1 merger road to the A50 westbound indicated, to be at a high risk.

Hydrology

Surface Water Features

3.39 Numerous surface water features have been identified on site and within the immediate surrounding areas, consisting of surface and culverted inland rivers not influenced by normal tidal action. A full list of these surface water features can be found within the Groundsure© Report, presented as **Appendix 1.**

Abstractions, Discharge Consents and Pollution Incidents

3.40 There are no current licenced abstraction or discharge consents relating to surface waters on site.

3.41 No pollution incidents are listed as impacting upon surface waters within 500m of the site.

Flood Zones

3.42 The majority of the site is not indicated to lie within a Zone 2 or 3 flood zone with only two small sections to the north, along the A50 slip roads indicated to be within flood zones 2 and 3.

Ground Instability Risk

3.43 Natural ground instability risks are anticipated to be low to negligible across the site due to the competent nature of the underlying deposits. Risks are expected to be localised in areas of superficial and artificial ground or associated with existing surface water features. Risk designations from Groundsure mapping (**Appendix 1**) and inferences from an overview of existing exploratory hole logs, are summarised below;

- The site is not located within an area associated with coal mining.
- The Groundsure Report references cuttings and embankments observed from historical mapping relating to the existing M1 junction 24.
- Potential for shrinkage and swelling through change in water content is expected to be very low to negligible.
- Potential for freeze/thaw sensitivity is expected to be low in both superficial deposits and solid geology.
- Collapse of soils, subsidence or landslides are not anticipated to be a risk within the scheme boundaries.

Historical Land Use

3.44 Historical Ordnance Survey (OS) mapping for the site area has been reviewed. These maps and plans date from 1883 to 2024. The historical plans reviewed are provided in **Appendix 2**. The key points of the historical development of the site and surrounding area are summarised in **Table 3:1**. All distances quoted are approximate.

Table 3:2: Key Characteristics of Historical Development

Dates	On Site	Off Site
1883 – 1938	The earliest site plans show the site as largely undeveloped, agricultural land. a small residence, labelled Highfield House is located to the south. Two roads run through the north and south of the site. In 1922, ***Rises*** are mapped in the south of the site.	The village of Keyworth is mapped 750m to the east of the site boundary and the village of Lockington is mapped 500m to the northwest. A small **GRAVEL PIT** and several small ***lakes*** are mapped 250m to the north. In 1901, a covered ***Reservoir*** is mapped 100m to the southwest. ***Rises*** are also mapped in the same area from 1919.
1921 - 1955	In 1921, **AIR VALVES** and ***rises*** are mapped along the road running through the north of the site.	In 1921, the gravel pit to the north is no longer mapped and **AIR VALVES** and a **WASHOUT CHAMBER** and sluice valves are mapped.
1966	In 1966, construction of the M1 begins through the site and the A6 to the north, with **EARTHWORKS** mapped along the sides of the roads.	In 1966, the air valves and washout chamber to the north are no longer mapped, with the M1 having been constructed in the same area.

1971 - 1978	Ashby road is now mapped to the south and in 1982 is widened and labelled as the A453.	The reservoir and rises are no longer mapped 100m to the southwest.
1991 - 2010	No significant changes noted.	In 1991, a roundabout Is mapped 100 to the south of the site with the A42 mapped immediately off the south of the roundabout. The East Midlands Airport Hotel is mapped immediately between the M1 and the A50 westbound off J24 to the north, with a ***Flood Prevention Lagoon*** mapped along the northeastern boundary. An unspecified **FACTORY** is mapped 500m to the northeast. ***Weirs*** and ***Wells*** are mapped 500m to the southeast. In 2010, Pegasus Business Park and a hotel are mapped 500m and 750m to the southwest.
2024	To the north, a slight road layout change to the M1 southbound is noted.	**EAST MIDLANDS AIRPORT** is mapped 500m to the southwest of the site and a **SERVICES** with a **PETROL STATION** is mapped 400m to the south. to the north, the A50 eastbound is now directly joined to the M1.

Historical Aerial Photography and Imagery

3.45 Aerial photographs/imagery available through Google Earth and included within the Groundsure report show the site in the same layout at the time of writing.

Operational / Company Records

3.46 No operational records have been made available for review as part of this assessment.

Planning History

3.47 The North West Leicestershire District Council was accessed on 22nd January 2025. No planning applications have been submitted in the last 5 years for the site and no pertinent environmental information was available for review.

Coal Mining

3.48 The site is not located within a coal mining reporting area.

Mining and Mineral Extraction

3.49 No underground workings, or mineral extractions are recorded on site.

Historical Land Waste Management

3.50 A full listing of EA, BGS and Local Authority recorded landfills, waste exemptions and waste sites are provided in the Groundsure report presented in **Appendix 1**.

3.51 One EA landfill site is located 399m to the north of the site, recorded to receive inert waste, operated by Tarmac Aggregates Limited. No other active or historical EA landfill sites are recorded within 500m of the site.

3.52 One waste exemption is listed on site, located at the A50 from M1 J24 to the B5010 roundabout, recorded as a using waste exemption, use of waste in construction.

3.53 Multiple waste exemptions are listed within 500m of the site, with the closest records relating to using waste, treating waste and disposing of waste, 31m to the south at Mole Hill Farm.

3.54 The historical landfill sites are considered to be too far away from the proposed site to represent a ground gas risk.

3.55 Waste exemptions are required for handling small quantities of waste (below the thresholds of waste permitting legislation) or for low-risk waste management activities. Therefore, BWB do not consider them to represent a significant risk to the site.

Unexploded Ordnance (UXO) Risk

3.56 Regional risk maps accessed online from the Zetica UXO website indicate the potential of UXO within the site boundary is low risk..

Ground Gas and Radon

3.57 The localised Made Ground mapped on site and within the surrounding area, are associated with areas which have been artificially raised, where the motorway has been constructed on embankment and not considered to represent a possible source of ground gas.

3.58 The majority of the site is located in an area where less than 1% of properties are affected by Radon. A small area in the centre is indicated to be in an area where between 1 and 3% of properties are affected. Given that no buildings are proposed as part of the works, the risks associated with Radon will not be considered further.

4. SITE RECONNAISSANCE

Site Walkover and description

4.1 A site walkover was carried out by a BWB Engineer on the 15th August 2025. The extent of the walkover was limited due to health and safety constraints associated with carrying out walkover surveys on motorway slopes and roadsides. The walkover was undertaken across private land adjacent to the motorway and a drive-through of the A453 to M1 Junction 24 and A50 to inspect the visible geotechnical assets from a vehicle. Photographs have been provided, refer to **Appendix 7**, where it was possible to take photographs.

A453 – Pegasus Business Park to East Midlands Gateway

4.2 The A453 from the Finger Farm roundabout located to the south near to M1 J23A to the East Midlands Gateway roundabout comprises a total of four lanes (2 northbound and 2 southbound), which appear to be formed in cutting, at grade and low height embankments for the northbound lanes which are densely vegetated. The southbound lanes appear to be built on embankments which are densely vegetated.

A453 – East Midlands Gateway to M1 junction 24

4.3 The A453 from roundabout entrance East Midlands Gateway to M1 Junction 24 comprises a total of four lanes (2 northbound and 2 southbound), which appear to be formed on high to low height embankments and at for the northbound lanes which are lightly vegetated. Towards M1 junction 24 there is a embankment bund between the boundary of East Midlands Gateway site and the A453. The southbound lanes appear to be built on at grade earthworks which are lightly vegetated.

A453 – M1 junction 24 A50 eastbound

4.4 The A50 exit from M1 Junction 24 comprises a total of two lanes eastbound and two lanes westbound, which appear to be formed on low height embankments or at grade earthworks which are lightly vegetated. It is also noted there is a 3-4m high railway embankment adjacent to the A50 which is the rail line into East Midlands Gateway terminal.

M1 northbound slip road to Junction 24

4.5 The M1 northbound off slip formed on low height embankments or at grade earthworks which are lightly vegetated.

On site - visual Inspection

4.6 A visual inspection of embankments and cuttings at locations of exploratory holes located on National Highways land will be undertaken by a suitably qualified geotechnical engineer or engineering geologist during the ground investigation. The additional ground investigation is discussed in **Section 8.**

Recent Ground Investigations/Reports

'Factual Ground Investigation Report, East Midlands Gateway Strategic Rail Freight Interchange, Zone 3, Major Trunk Road Improvements' by RSK, reference 312494-03 (00), dated December 2013.

4.7 A Ground Investigation for the land immediately east of the M1 was undertaken by RSK in October 2013 to provide information in order for a ground model to be confirmed at the site.

4.8 Within the investigation area, a total of seventeen exploratory holes were advanced, of which twelve are within the EMG2 works areas.

4.9 Ground conditions to the south of J24, were recorded as varying depths of subsoil overlying Head Deposits or Wanlip member clays over Thrussington Member Bedrock. Made Ground was encountered in one location from ground Level comprising slightly sandy gravelly clay.

4.10 To the north of J24, ground conditions were recorded to comprise Topsoil or Subsoil overlying either Hemmington Member Sands and Gravels or Wanlip Member deposits. Bedrock geology was indicated to comprise either the Branscombe Mudstone formation or the Arden Sandstone Formation, with Edwalton Member Mustone recorded in just one CP borehole location.

'Ground Investigation Report, Smart Motorways Programme M1, J23a – 25' by Amey ARUP, reference: HA549342-AMAR-HGT-SWI-RP-CE-000002-Rev P0, dated February 2016.

4.11 A Ground Investigation Report (GIR) was undertaken by Amey ARUP for the Smart Motorways Programme, M1 Junction 23a to 25, on behalf of Highways England (HAGDMS Report number 28929). Scheme specific ground investigations were undertaken during the detailed design phase of the scheme , historical ground investigation data was utilised to inform ground conditions at the site for the GIR.

4.12 The scheme was split into three sections based on general variations in solid geology referred to as the 'south section' (Chainages Ch179500 to Ch184750), the 'central section' (Chainages Ch184750 to Ch191530) and the 'north section' (Chainages Ch191530 to Ch195800).

4.13 The EMG2 work areas, of which this PSSR covers, is presumed to be between Chainages Ch183000 and Ch186000. Sixteen exploratory hole locations are identified to be within the area of the described 'south section' and eleven exploratory hole locations within the described 'central section' which also within the EMG2 works area or within 50m.

4.14 Made Ground was identified throughout the 'south section', recorded as road construction materials or Embankment Fill in areas of Embankment, although the report identified seven areas of Made Ground described as removed unsuitable material. Limited information was available on their extents, thickness and composition.

4.15 Superficial Deposits between the 'south section' and 'central section' are recorded to comprise Glaciofluvial Deposits, River Terrace deposits and Alluvium.

4.16 The bedrock geology of the scheme is recorded as comprising the Mercia Mudstone Group with highly varying proportions of mudstone, siltstone and sandstone. A small section (Ch184600 to Ch184800) is recorded to comprise the Bromsgrove Sandstone Formation.

'Geotechnical Design Report, Smart Motorways Programme M1, J23a – 25' by Amey ARUP, reference: HA549342-AMAR-HGT-SWI-RP-CE-000003-Rev P2, dated June 2017.

4.17 A Geotechnical Design Report (GDR) was undertaken by Amey ARUP for the Smart Motorways Programme, M1 Junction 23a to 25, on behalf of Highways England (HAGDMS Report number 29152). A 'Just in Time' validation GI was undertaken to confirm ground model assumptions at site specific locations where existing local historical GI data was deemed insufficient.

4.18 Appendix A of the Geotechnical Design Report undertaken by Amey ARUP for the Smart Motorways Programme, M1 Junction 23a to 25 summarises the ground models developed for the project. Superficial deposits consisted of Glaciofluvial Deposits over Mercia Mudstone Group.

4.19 A few boreholes and rotary holes were undertaken between Ch183000 and Ch186000 for the 'Just in Time' validation GI to confirm the ground model assumptions adopted for the earthworks and retaining walls.

'Geotechnical Feedback Report, Smart Motorways Programme M1, J23a – 25' by Amey ARUP, reference: HA549342-AMAR-HGT-SWI-RP-CE-000008-Rev P2, dated June 2021.

4.20 A Geotechnical Feedback Report (GFR) was undertaken by Amey ARUP for the Smart Motorways Programme, M1 Junction 23a to 25, on behalf of Highways England (HAGDMS Report number 30523).

4.21 The GFR reports that the ground conditions encountered were consistent with the design models in the GDR. Design changes were due to other factors which are outside the scope of this report.

'Combined PSSR/GIR/GDR Near M1 J23A to J25' by SMP Alliance, reference: HE614830-WSP-HGT-P015_AL_ALLGENR-RP-GE-0003-Rev P3, dated March 2024.

4.22 A combined PSSR/GIR/GDR was undertaken by SMP Alliance, Near M1 J23a to J25, on behalf of Highways England (HAGDMS Report number 48534).Historical ground investigation data from the Amey Arup Gir and GDR (as discussed above) was utilised to inform ground conditions.

5. GROUND CONDITIONS

General

5.1 Available existing ground investigations and reports have been reviewed to provide a general overview of ground conditions in the wider area and allow the preparation of preliminary ground models for the site.

5.2 A ground profile outside the footprint of the existing road embankments may comprise:

Table 5:1: Typical Ground Model

Stratum	Top Depth (m)		Base Depth (m)	
	Min	Max	Min	Max
Topsoil	Ground Level		0.10	0.80
Made Ground	Ground Level		0.40	11.30
Fill/Possible Fill	Ground Level		0.70	1.80
Superficial Deposits (1)	Ground Level		0.70	6.80
Mercia Mudstone (weathered)	Ground Level		Not Proven	
Mercia Mudstone	8.23	11.80	Not Proven	
Note (1) – For PSSR stage ground model does not consider Helbsy Sandstone BGS borehole SK42NE151 although this strata is likely to be encountered at the beginning of the link road from M1 to A50				

Derivation of Anticipated Parameter Values

5.3 Anticipated material parameter values have been summarised based on existing historical information, Design Reports, and Geotechnical Feedback Reports. These have been considered with reference to published information, soil and rock descriptions, empirical correlations with available data and laboratory test results. The process of interpretation of various key soil and rock parameters is summarised below.

Table 5:2: Parameter Derivation Methodology

Parameter	Symbol	Date
Unit Weight	γ	Unit weights of soil and rock may be derived from Figures 1 and 2 in BS 8002:2015 Code of Practice for Earth Retaining Structures, based on material descriptions.
Bulk and Dry Density	γb, γd.	Bulk and dry densities of soil and rock may be derived from Figures 1 and 2 in BS 8002:2015 Code of Practice for Earth Retaining Structures, based on material descriptions.
Effective Angle of Shearing Resistance	φ'	For coarse grained soils (sands, gravels), correlations with particle size distribution data and material descriptions may be adopted in accordance with Table 1 of BS 8002 [Ref. 8]. For fine grained materials (clays), correlations with plasticity index (PI) are available in accordance with Table 2 of BS 8002 [Ref. 8]. φ' in rocks may be assessed based on values published in Rock Slope Engineering by Hoek & Bray (3rd Edition, 1981).

Apparent effective cohesion	c'	In coarse grained soils where drained conditions are assumed to dominate, a c' of zero is recommended for design.
Undrained Shear Strength	c_U	Undrained shear strength is relevant to fine grained soils (clays). Correlations between plasticity index (PI) and SPT 'N' value may be used to infer undrained shear strength using Figure 31 in CIRIA Report 143 [Ref. 9] according to Stroud (1979). Where plasticity index information is not available, a lower bound correlation of c_U = 4.5 x SPT 'N' value may be adopted.
Coefficient of compressibility	m_v	Compressibility and stiffness typically show a wide scatter in published correlations. A moderately conservative assumption of mv = 1/N may be adopted for soils based on CIRIA Report 143 [Ref. 9]. Historical laboratory test data is also available.
Unconfined Compressive Strength	UCS	UCS may be estimated based on published correlations with rock descriptions. Historical laboratory test data may also be available.
Young's Modulus (drained and undrained)	E' E_U	Compressibility and stiffness typically exhibit a wide scatter in published correlations. A moderately conservative assumption of E = N may be adopted for soils based on CIRIA Report 143 [Ref. 9]. Published correlations with c_U ($E=100c_U$) may also be used for comparison.
Poisson's Ratio	v	Poisson's Ratio for soils and rocks is typically assumed to be between 0.2 and 0.3. Poisson's Ratio in undrained conditions is equal to 0.5.

Preliminary Characteristic Parameter Values

5.4 A summary of preliminary characteristic engineering parameter values is presented below in .Table 5:3. From review the geological long section (drg No EMG2-BWB-HGT-XX-DR-GI-0654) BGS borehole SK42NE151 is in the location where Helsby sandstone is mapped with no superficial soils. However, at the location of the bridge, the nearest BGS boreholes SK42NE140 and SK42NE141 indicate superficial deposits over Mercia Mudstone. Therefore the risk of contaminating the Helsby Sandstone aquifer is considered low.

5.5 It is anticipated that these may be refined at later project stages within future Geotechnical Interpretative Report(s) (GIR) and Geotechnical Design Report(s) (GDR).

Table 5:3: Summary of Prelim. Anticipated Ranges for Characteristic Parameter Values

Stratum	Unit Weight, γ'	Effective Angle of Friction, ϕ'	Effective Cohesion, c'	Undrained Shear Strength, c_U	Coefficient of Compressibility, m_v
	kN/m³	deg	kN/m²	kN/m²	MN/m²
Fill	21	27	0	100	0.08
Alluvium [1]	20	25	0	30 – 50	0.16 – 2.15
River Terrace Deposits	20	38	-	-	-

Head Deposits	20	27	0	100	0.09 – 0.20
Glaciofluvial Deposits Fine/Coarse	21	26/38	0	28 – 355	0.03 – 0.36
Till	21	26	0	50 - 300	0.02 – 0.36
Mercia Mudstone	21	27	2	50 – 200	0.01 – 0.31

[1] Unlikely to be encountered and if found is proposed to be removed and replaced.
z = depth below 2m bgl.
Unit weights values taken from Ground Design Report, Smart Motorways Programme M1, J23a – 25' by Amey ARUP, reference: HA549342-AMAR-HGT-SWI-RP-CE-000003-Rev P02 dated June 2017

6. PRELIMINARY ENGINEERING ASSESSMENT

General

6.1 The information contained within this PSSR indicates there are no unusual geotechnical hazards anticipated in relation to the design and construction of improvements to the National Highways infrastructure in relation to East Midlands Gateway 2.

6.2 Key artificial obstacles anticipated from this review of the site history include:

- Existing services and their modification.

6.3 The above is not likely to present an insurmountable obstacle to the proposed scheme.

6.4 Preliminary engineering assessments presented in this section comprise:

- Cuttings and embankments;
- Re-use of site-won materials;
- Link road connecting M1 northbound to A50 westbound comprising of a bridge structure;
- Traffic sign foundations;
- Gantry foundations;
- Geo-environmental considerations; and
- Concrete in aggressive ground.

6.5 A new link road connecting M1 northbound to A50 westbound is proposed with the construction of a bridge over the A453.

Cuttings

6.6 No cuttings are envisaged at present as an overbridge is proposed over A453.

Embankments

6.7 An Overbridge is proposed, it is anticipated that new embankment slopes of 1:3 (V:H) are considered reasonable as an initial guide for future embankments constructed of site-won materials or other acceptable granular or cohesive fill subject to detailed design to modern standards.

6.8 Care should be taken to assess the site-specific anticipated ground conditions, slope stability, long-term settlements under new embankments.

6.9 Where soft clays are present beneath the location of new proposed embankments it is proposed this is removed prior to construction. Soft clay material may be suitable for re-use as landscape fill subject to suitability testing and potentially treatment.

Re-use of site-won materials

6.10 Site-won materials obtained from excavations for foundations and drainage are likely to be suitable for utilisation in the construction of general earthworks subject to suitability testing on the specific material.

Bridge structure

6.11 For the link road between M1 junction 24 northbound to A50 westbound an over bridge is proposed over the existing A453. The structure typewill be subject to detailed design following ground investigation works.

Gantry/ Signage Foundations

6.12 The construction of the additional diverge roads at Junction 24 will require additional gantries/signs to be constructed on the M1, which will require foundations.

6.13 The design of foundations for gantry, signs and other small structures will be subject to detailed design following ground investigation works.

Geo-Environmental Considerations

6.14 There are no known contamination or gas sources within the area of the works.

6.15 A ground investigation will be undertaken which will investigate the fill and natural materials that are to be involved in the proposed works, and any area of potential contamination will be targeted and subjected to appropriate testing. Any contamination or gas issues will be mitigated as part of the detailed design.

Concrete in Aggressive Ground

6.16 The natural soils in the area, and the fill derived from them, are not believed to pose any particular problems in relation to buried concrete.

6.17 The Ground Investigation Report, undertaken by Amey ARUP for the Smart Motorways Programme Scheme, was completed within the EMG2 works area.

6.18 Testing of recovered samples for BRE SD1 analysis indicated conditions to exist at the site as follows:

- Embankment Fill
- Alluvium, Head Deposits and Till: DS-1, AC-1
- River Terrace Deposits and Glaciofluvial Deposits: DS-3, AC-3
- Weathered Mercia Mudstone: DS-2, AC-2
- Mercia Mudstone (Siltstone): DS-1, AC-1
- Mercia Mudstone (Sandstone): DS-3, AC-3

6.19 Scheme specific testing for the potential for aggressive ground conditions in relation to buried concrete will be undertaken as part of the future proposed ground investigation works.

7. COMPARISON OF PROJECT OPTIONS AND RISKS

7.1 The preliminary Geotechnical Risk Register is presented in **Appendix 5**.

7.2 In summary, the main potential geotechnical risks identified at this stage are as follows:

- Cut and Fill operation working parallel to the live M1 for the over bridge for the A453 for the link road between M1 junction 24 Northbound and A50 Westbound;
- Potential for localised areas of soft and/or compressible Made Ground Deposits at new earthworks and road alignment locations leading to differential and/ or excessive settlements;
- Slope instability / variable ground conditions associated with upgrading and constructing embankments/cuttings associated with the new link road connection;
- Inadequate consideration of construction sequencing;
- Inadequate temporary works; and
- Underground services.

7.3 It is proposed that the Scheme is classified as Geotechnical Category 2 as defined in CD 622 and BS EN 1997-1 Eurocode 7 as the proposed construction is not anticipated to comprise exceptional risks or abnormal loading conditions. CDM (2015) Regulations will apply to the project due to the scope, size, and nature of the works.

7.4 Specific key project options to consider include:

- The potential for soft ground and approach to re-use of materials.
- Requirements for design of pavement sub-base and structure foundations in areas of fill.

7.5 Mitigation measures recommended for the next stage of works include:

- A targeted ground investigation is carried out prior to detailed design (see **Section 8** below).

8. GROUND INVESTIGATION SCOPING

General

8.1 A review of the existing ground investigation information has been undertaken for the site.

8.2 There is a lack of existing ground investigation data available for the proposed new link road between M1 junction 24 Northbound and A50 Westbound, which means that further investigation in advance of detailed design is anticipated to be both exploratory and confirmatory.

8.3 Targeted geotechnical ground investigation at the location of key structures is recommended to reduce project risk. BWB considers the requirement for further ground investigation to inform the detailed design of geotechnical and roads elements.

8.4 The ground investigation scoping process is presented in Ground Investigation Scoping Report (GISR) will be issued separately

Investigations

8.5 There is currently limited existing ground investigation information for the scheme, specifically within the area of the proposed bridge structure. Although the range of ground conditions and geotechnical risks are somewhat understood. Intrusive investigations are currently planned to progress the SRFI development and inform the detailed design of the scheme including the related infrastructure.

8.6 Further investigation will be required prior to detailed design of the proposed scheme, as outlined below.

Detailed Ground Investigations

8.7 Ground investigations are recommended to inform detailed design of the proposed works (details to be provided in the GISR, refer to Annex A for further information). The objects of the proposed ground investigation are to:

- Confirm ground conditions at the location of the proposed over bridge A453 linking M1 junction 24 Northbound to A50 Westbound;
- Confirm Gradings of previously identified Geotechnical Assets;
- Establish ground conditions in areas of new roads, new cuttings, or embankments, retaining structures, culverts, or other structures (within the areas requiring highway improvements under the control of National Highways and, separately, Leicestershire County Council);
- Assess the groundwater regime;
- Assess suitability of site-won material for re-use;
- Assess potential susceptibility to freeze-thaw heave where such potential is identified;
- Screen for common contaminants in shallow soils; and

- Inform pavement design, including:
    - Assess stiffness of the subgrade to confirm requirements for new pavement construction.

8.8 A visual inspection of embankments and cuttings at locations of exploratory holes is recommended by a suitably qualified geotechnical engineer or engineering geologist. It is recommended this is coordinated during ground investigation works to take advantage of traffic management and safe access to slopes, as well as potential localised vegetation strips which will allow better access and visibility of the slopes.

9. REFERENCES

1. Design Manual for Roads and Bridges, CD 622, Managing Geotechnical Risk, March 2020, Revision 1.

2. BWB Consulting Ltd, Geotechnical Statement of Intent for Works Affecting National Highways, East Midlands Gateway2. BWB Ref. EMG2-BWB-HGT-XX-RP-CE-001_P01, January 2025.

3. British Geological Survey, 1:50,000 geological map Sheet no. 141, Loughborough, Solid & Drift, dated 2001.

4. British Geological Survey, 1:10,000 geological map Sheet no. SK42NE, Solid and Drift, dated 1997.

5. British Geological Survey, 1:625,000 Hydrogeological Map.

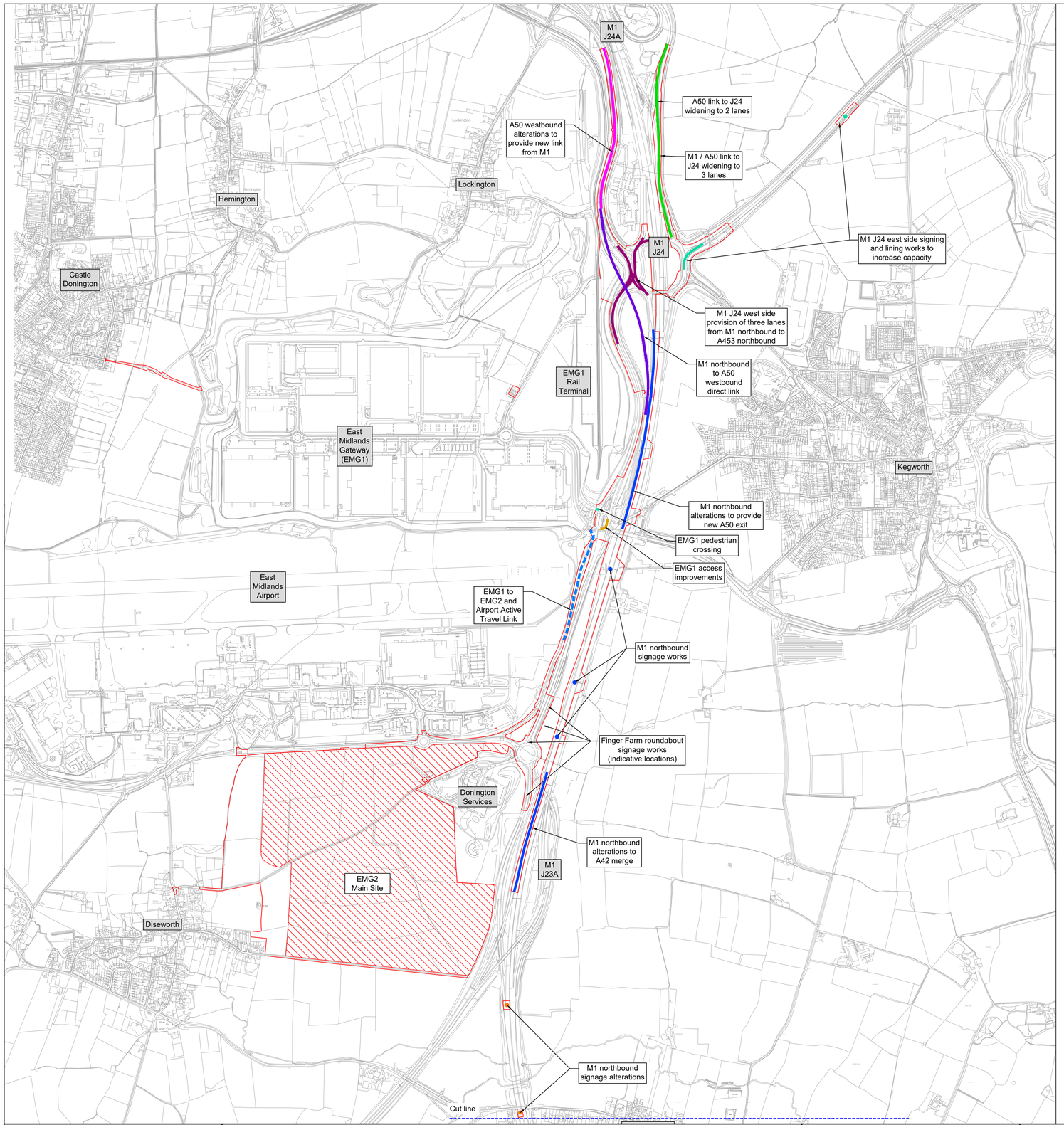
6. BGS Onshore GeoIndex viewer, accessed December/January 2024. https://mapapps2.bgs.ac.uk/geoindex/home.html

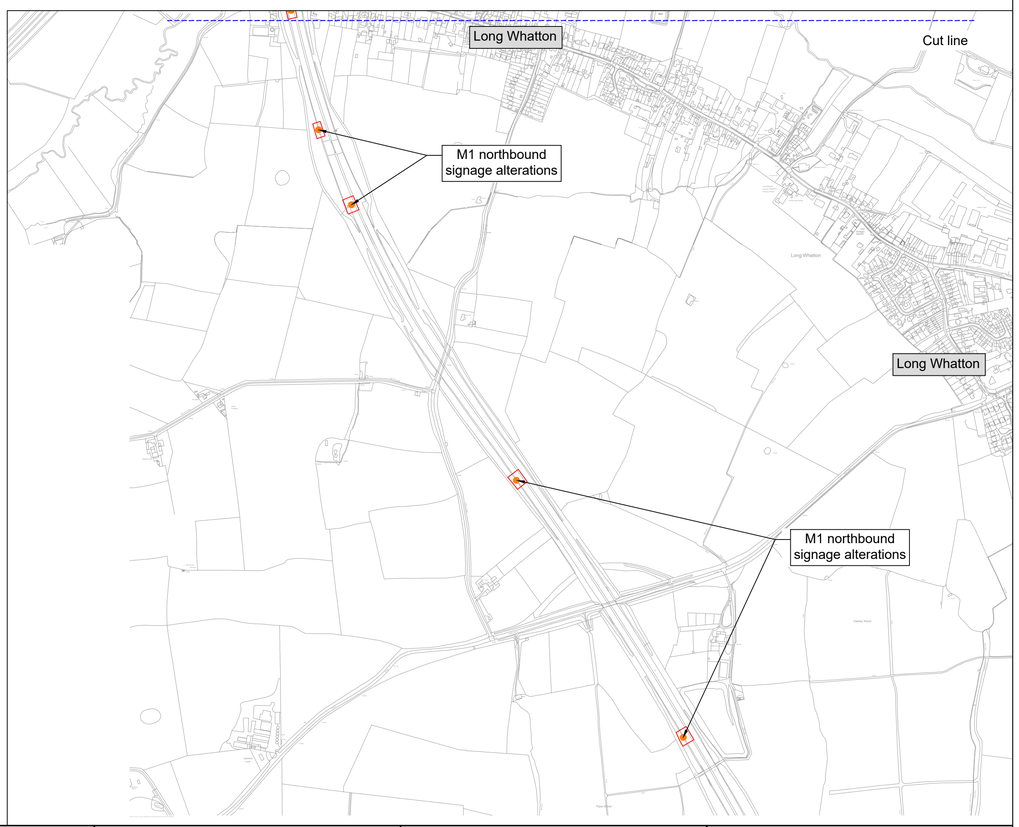
7. BS 8002:2015 – Code of practice for earth retaining structures, Jun 2015

8. CIRIA Report R 143 The standard penetration test (SPT): methods and use: 1995

9. Factual Ground Investigation Report, East Midlands Gateway Strategic Rail Freight Interchange, Zone 3, Major Trunk Road Improvements' by RSK, reference 312494-03 (00), dated December 2013

DRAWINGS





Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

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ISSUES & REVISIONS

Rev	Date	Details of issue / revision	Drw	Rev
P01	04.03.25	Issued for information	SRH	SRH
P02	24.06.25	Scheme updated	SRH	SRH
P03	26.08.25	Updated to latest order limits	SRH	SRH

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Client: SEGRO

Project Title: **EAST MIDLANDS GATEWAY 2 (EMG2)**

Drawing Title: **OVERVIEW OF WORKS ON THE STRATEGIC ROAD NETWORK**

Drawn:	S. Hilditch	Reviewed:	S.Hilditch	Drawing Status	Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
BWB Ref:	220500	Date:	04.03.25	Scale@A1: 1:10,000	FOR INFORMATION	EMG2-BWB-GEN-XX-SK-CH-SK037	S2	P03

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GRID NORTH

Cutline - See Sheet 3

A6 Kegworth Bypass

Existing gantry removed

M1 diverge to A50 free flow link: Layout A Option 2

Exit datum point (new diverge to A50)

M1

A453

3.3m wide hard shoulder

EMG1 access junction capacity improvement

Gantry mounted directional sign replaced

M1

Highway boundary

EMG1 Access Road (Wilders Way)

A453

3m shared use footway/cycleway along line of former A453 carriageway

LCC/NH boundary along cycle track

Gantry mounted directional sign replaced

M1

New gantry mounted directional sign and signals

Signage amendments at Finger Farm roundabout

M1

A453

East Midlands Airport

3m shared use footway/cycleway within EMA land behind A453 lay-by

A42

M1

A42

Finger Farm roundabout

Cutline - See Sheet 1

Donington Motorway Service Area (Moto)

Public footpath L45 upgraded to cycle track along line of former A453 (maintenance access to EMA retained)

Additional 42m of two lanes on exit to provide increased length for merging traffic

Cutline - See Sheet 1

For footway L57 upgrade works, see inset A.

Inset A

GRID NORTH

Castle Donington

Footpath L57 upgraded to a shared use footway/cycleway (cycle track)

Diseworth Lane

Legend

1. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
2. The height of proposed bridges, embankments and depths of cuttings are indicative subject to the limits of deviation referred to in the order.
3. All structure positions and sizes shown are indicative only.
4. The proposed works including their specific alignment will be subject to detailed design within the limits of deviation identified on the works plans.

- Highway Drainage Outfalls
- Proposed Design
- Draft Order Limits
- Chainage Lines
- Cross section location

0 50 100 150 200

SCALE: METRES

Highway Plans Cross Sections

Refer to document DCO 2.9A for:
- Hyam's Lane (Section A-A, B-B)
- EMG2 Access (A453) (Section C-C)

Refer to document DCO 2.9B for:
- Active Travel Link (Section D-D, E-E)
- M1 Northbound to A50 Westbound Interchange Link (Section F-F)
- L57 Shared Use Cycle Track (Sections M-M & N-N)

Refer to document DCO 2.9C for:
- M1 Northbound to A50 Westbound Interchange Link (Section G-G, H-H, I-I)
- A50 Westbound Interchange Link (Section J-J)
- A50 Eastbound (Sections K-K & L-L)

Highway Plans Long Sections

Refer to document DCO 2.10A for:
- M1 Northbound to A50 Westbound Interchange Link
- A50 Westbound Interchange Link

Refer to document DCO 2.10B for:
- A50 Eastbound to M1 J24 Interchange Link
- M1 Southbound to M1 J24 Interchange Link

Refer to document DCO 2.10C for:
- Active Travel Link
- EMG2 Access
- L57 Shared Use Cycle Track

Refer to document DCO 2.10D for:
- Hyam's Lane

A453 Bridge Plan

Refer to document DCO 2.11

Rev	Date	Details of issue / revision	Drw	Rev
P07	31.07.25	Issued for DCO Submission	JFP	SRH
P06	27.06.25	Cross section locations and references added	MS	SRH
P05	16.06.25	M1 northbound amended	MS	SRH
P04	28.01.25	Legend & notes updated	MS	SRH
P03	16.01.25	Minor highway revisions	MS	SRH
P02	20.12.24	Dwg frame update, minor highway revisions	MS	SRH
P01	15.11.24	Issued for information	MS	SRH

ISSUES & REVISIONS

SEGRO

THE EAST MIDLANDS GATEWAY PHASE 2 AND HIGHWAY ORDER 202[ ]

Drawing Title

HIGHWAY PLANS GENERAL ARRANGEMENT SHEET 2 OF 4

Scale	1:2500	Drawn	M.S
Size	A1	Reviewed	S.H

Regulation: **6(2)**

Document: **DCO 2.8B**

Drawing Status: **DCO SUBMISSION**

Drawing No.: **EMG2-BWB-HGN-XX-DR-H-0102**

Revision: **P07**

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For signing works, see inset A

A453 Remembrance Way

Derby Rd

Signing and lining amendment (A453 SB for the airport to be signed in lanes 2 and 3)

Lane allocations amended on bridge provide two lanes to A453 southbound

Lane allocations amended on existing slip road to provide three lanes to A453 northbound

A50EB to J24 interchange link
85kph Design Speed
Widened to two lanes

M1 SB & A50EB to J24 interchange link
85kph Design Speed
Widened to three lanes over weaving section

J24A

M1

J24

Abnormal load bay retained

Layout changes to west side of M1 J24 to provide:
- 2 lanes from A453 NB to M1 NB
- 3 lanes from M1 NB to A453 NB
- 2 lanes onto A50 WB

Gantry mounted directional sign replaced

M1 diverge to J24: Layout A Option 1

3.3m wide hard shoulder

New gantry mounted directional sign and signals

New gantry mounted directional sign and signals

Exit datum point (J24)

Existing outfall, no changes required as part of the scheme

Existing outfall, no changes required as part of the scheme

Construction compound 1

Drainage Basin

M1 NB to A50WB interchange link
85kph Design Speed
Cross section IL1A

A50

A453

EMG1 Rail Terminal

Construction compound 2

Drainage Basin

Offside lane drop

M1 NB & J24 to A50WB interchange link
85kph Design Speed

A50 widened to three lanes downstream of merge

Merge with nearside lane gain

Segregated left-turn lane removed

Bridge to take M1 northbound to A50 westbound interchange link over the A453

Cutline - See Sheet 2

Cutline - See Sheet 2

Lockington

Lockington Park

Inset A

Signing amendment

Legend

1. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
2. The height of proposed bridges, embankments and depths of cuttings are indicative subject to the limits of deviation referred to in the order.
3. All structure positions and sizes shown are indicative only.
4. The proposed works including their specific alignment will be subject to detailed design within the limits of deviation identified on the works plans.

- Approximate Area of Construction Compound
- Highway Drainage Outfalls
- Proposed Design
- Draft Order Limits
- Chainage Lines
- A — Cross section location

0 50 100 150 200

SCALE: METRES

Highway Plans Cross Sections

Refer to document DCO 2.9A for:
- Hyam's Lane (Section A-A, B-B)
- EMG2 Access (A453) (Section C-C)

Refer to document DCO 2.9B for:
- Active Travel Link (Section D-D, E-E)
- M1 Northbound to A50 Westbound Interchange Link (Section F-F)
- L57 Shared Use Cycle Track (Sections M-M & N-N)

Refer to document DCO 2.9C for:
- M1 Northbound to A50 Westbound Interchange Link (Section G-G, H-H, I-I)
- A50 Westbound Interchange Link (Section J-J)
- A50 Eastbound (Sections K-K & L-L)

Highway Plans Long Sections

Refer to document DCO 2.10A for:
- M1 Northbound to A50 Westbound Interchange Link
- A50 Westbound Interchange Link

Refer to document DCO 2.10B for:
- A50 Eastbound to M1 J24 Interchange Link
- M1 Southbound to M1 J24 Interchange Link

Refer to document DCO 2.10C for:
- Active Travel Link
- EMG2 Access
- L57 Shared Use Cycle Track

Refer to document DCO 2.10D for:
- Hyam's Lane

A453 Bridge Plan

Refer to document DCO 2.11

Rev	Date	Details of issue / revision	Drw	Rev
P07	31.07.25	Issued for DCO Submission	JFP	SRH
P06	27.06.25	Cross section locations and references added	MS	SRH
P05	16.06.25	Dwg title sheet numbers revised	MS	SRH
P04	28.01.25	Legend & notes updated	MS	SRH
P03	16.01.25	Minor highway revisions	MS	SRH
P02	20.12.24	Dwg frame update, minor highway revisions	MS	SRH
P01	15.11.24	Issued for information	MS	SRH

ISSUES & REVISIONS

SEGRO

THE EAST MIDLANDS GATEWAY PHASE 2 AND HIGHWAY ORDER 202[ ]

Drawing Title

HIGHWAY PLANS GENERAL ARRANGEMENT SHEET 3 OF 4

Scale	1:2500	Drawn	M.S
Size	A1	Reviewed	S.H

Regulation: **6(2)**

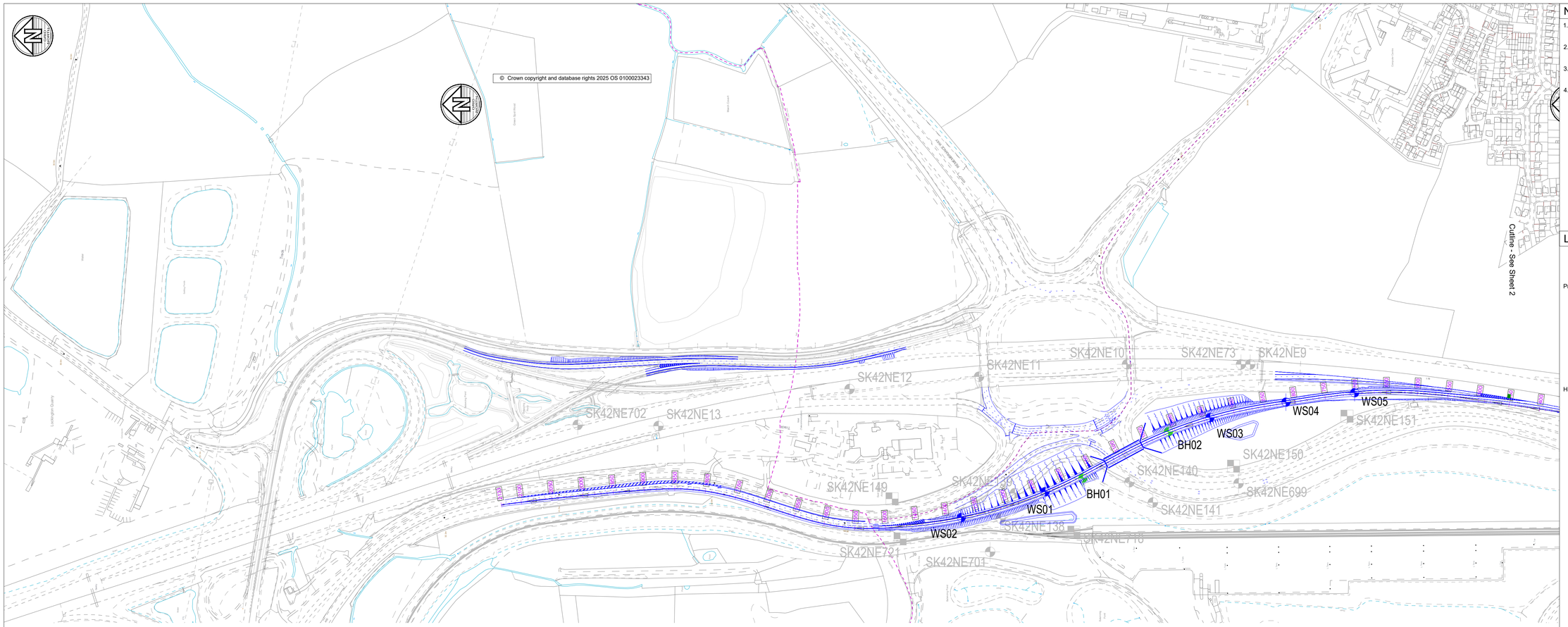
Document: **DCO 2.8C**

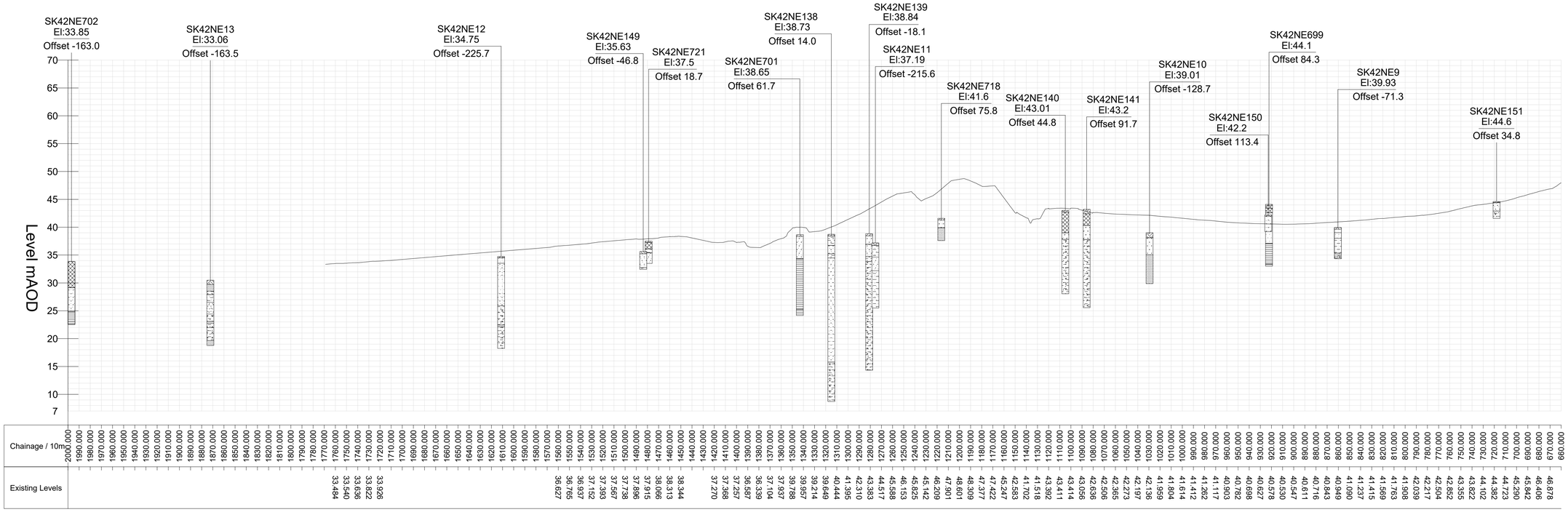
Drawing Status: **DCO SUBMISSION**

Drawing No.: **EMG2-BWB-HGN-XX-DR-H-0103**

Revision: **P07**

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ALIGNMENT 1 LONGSECTION
SCALE: H 1:2500,V 1:500. DATUM: 7.000

Notes

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2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
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Legend

Proposed Trial Pit / Window Sampling Borehole / Cable Percussive Borehole

Historic Trial Pit / Borehole

Rev	Date	Details of issue / revision	Drw	Rev
P01	21.08.25	For Information	RT	GS

Issues & Revisions

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Client
SEGRO

Project Title
EAST MIDLANDS GATEWAY - PHASE 2

Drawing Title
NH Highway Works: Exploratory Hole locatoin plan, Geological Long Section Plan & Profile

Drawn:	R. Theobalds	Reviewed:	G. Summerfield
BWB Ref:	220500	Date: 21.08.25	Scale@A1: 1:2500

Drawing Status
FOR INFORMATION

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
EMG2-BWB-HGT-XX-DR-GI-0654	S1	P01

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J:\2022\220500-East Midlands Gateway Phase 2\ProjectDelivery\01-WIP\Drawings\GS\EMG2-BWB-HGT-XX-DR-GI-0001 - Location Plan & Geological Long Sections (updated plan).dwg

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APPENDICES

Appendix 1: Groundsure Report

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

East Midlands Gateway 2, J24 M1 (NH Land)

Order Details

Date: 13/12/2024

Your ref: 220500 - 10250

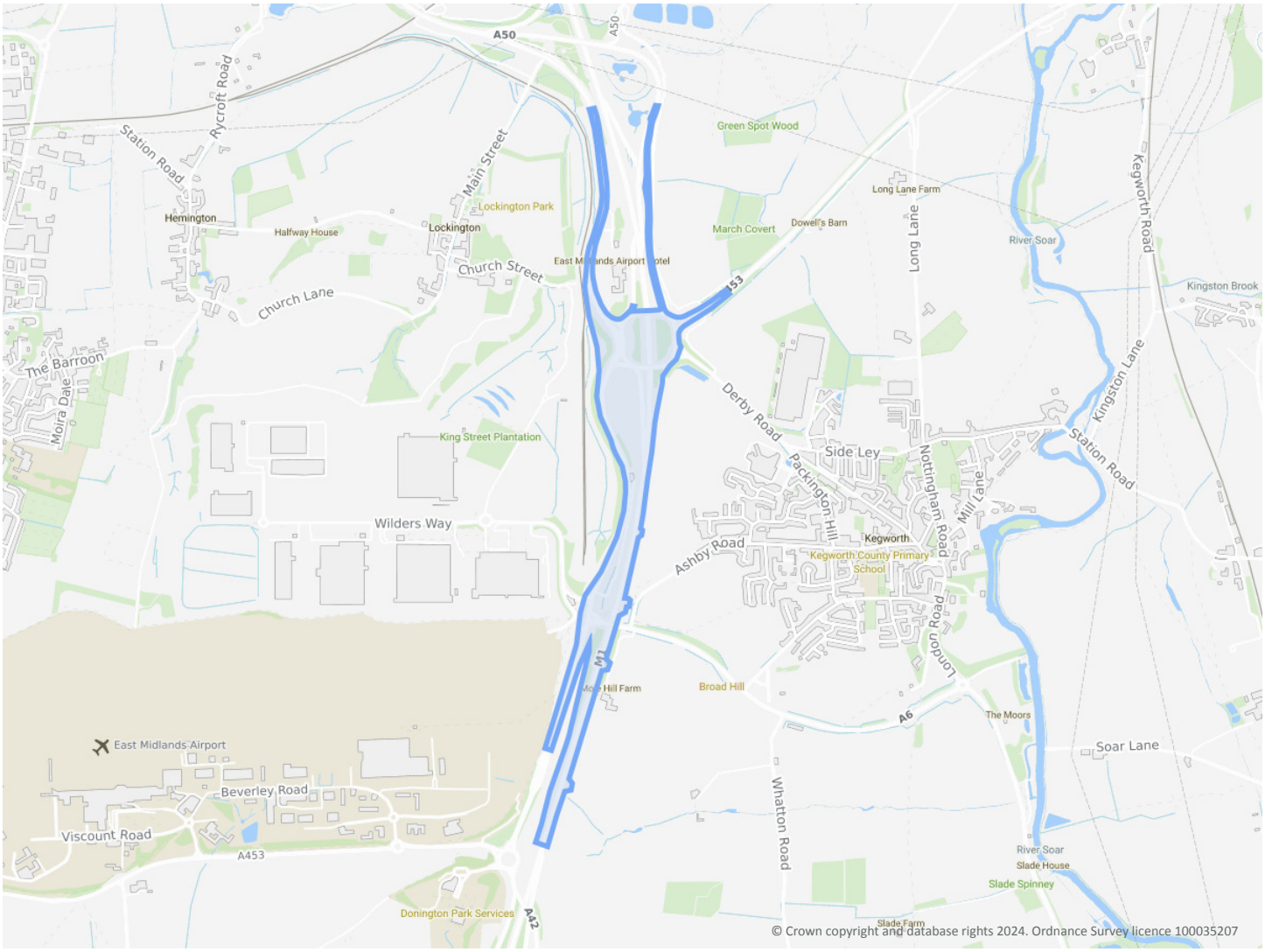
Our Ref: GS-BBU-NDC-5SO-FTK

Site Details

Location: 447397 327034

Area: 39.28 ha

Authority: North West Leicestershire District Council ↗



Summary of findings p. 2 >

OS MasterMap site plan N/A: >10ha

Aerial image p. 9 >

Insight User Guide ↗

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

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
14 >	1.1 >	Historical industrial land uses >	4	0	12	15	-
16 >	1.2 >	Historical tanks >	0	0	1	2	-
16 >	1.3 >	Historical energy features >	2	0	1	1	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
18 >	2.1 >	Historical industrial land uses >	6	0	19	20	-
20 >	2.2 >	Historical tanks >	0	0	1	2	-
21 >	2.3 >	Historical energy features >	2	0	4	1	-
21	2.4	Historical petrol stations	0	0	0	0	-
21	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
22 >	3.1 >	Active or recent landfill >	0	0	0	1	-
23	3.2	Historical landfill (BGS records)	0	0	0	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
23	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
23	3.5	Historical waste sites	0	0	0	0	-
23 >	3.6 >	Licensed waste sites >	0	0	0	12	-
27 >	3.7 >	Waste exemptions >	1	30	15	2	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
32 >	4.1 >	Recent industrial land uses >	5	5	11	-	-
34 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
34	4.3	Electricity cables	0	0	0	0	-
34	4.4	Gas pipelines	0	0	0	0	-
34	4.5	Sites determined as Contaminated Land	0	0	0	0	-

35	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35 >	**4.8 >**	**Hazardous substance storage/usage >**	0	0	0	1	-
35	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
36 >	**4.10 >**	**Licensed industrial activities (Part A(1)) >**	0	0	0	3	-
36 >	**4.11 >**	**Licensed pollutant release (Part A(2)/B) >**	0	0	0	2	-
37	4.12	Radioactive Substance Authorisations	0	0	0	0	-
37 >	**4.13 >**	**Licensed Discharges to controlled waters >**	0	1	1	0	-
38	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
38	4.15	Pollutant release to public sewer	0	0	0	0	-
38	4.16	List 1 Dangerous Substances	0	0	0	0	-
38	4.17	List 2 Dangerous Substances	0	0	0	0	-
38 >	**4.18 >**	**Pollution Incidents (EA/NRW) >**	1	0	0	1	-
39	4.19	Pollution inventory substances	0	0	0	0	-
39	4.20	Pollution inventory waste transfers	0	0	0	0	-
39	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
40 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
42 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
44 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
49	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
49	5.5	Groundwater vulnerability- local information	None (within 0m)				
50 >	**5.6 >**	**Groundwater abstractions >**	2	0	0	0	20
55 >	**5.7 >**	**Surface water abstractions >**	0	0	0	0	12
58	5.8	Potable abstractions	0	0	0	0	0
58	5.9	Source Protection Zones	0	0	0	0	-
58	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m
59 >	**6.1 >**	**Water Network (OS MasterMap) >**	12	21	76	-	-

68 >	6.2 >	Surface water features >	1	16	43	-	-
68 >	6.3 >	WFD Surface water body catchments >	2	-	-	-	-
69 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
69 >	6.5 >	WFD Groundwater bodies >	2	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
70 >	7.1 >	Risk of flooding from rivers and the sea >	High (within 50m)				
71 >	7.2 >	Historical Flood Events >	0	0	2	-	-
71	7.3	Flood Defences	0	0	0	-	-
71	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
72	7.5	Flood Storage Areas	0	0	0	-	-
73 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
74 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
75 >	8.1 >	Surface water flooding >	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
77 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
78 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
79	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
79	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
79	10.4	Special Protection Areas (SPA)	0	0	0	0	0
79	10.5	National Nature Reserves (NNR)	0	0	0	0	0
80	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
80 >	10.7 >	Designated Ancient Woodland >	0	0	1	0	0
80	10.8	Biosphere Reserves	0	0	0	0	0
80	10.9	Forest Parks	0	0	0	0	0
81	10.10	Marine Conservation Zones	0	0	0	0	0
81 >	10.11 >	Green Belt >	0	0	0	0	1
81	10.12	Proposed Ramsar sites	0	0	0	0	0

81	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
82	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
82	10.15	Nitrate Sensitive Areas	0	0	0	0	0
82 >	10.16 >	Nitrate Vulnerable Zones >	3	0	0	0	1
83 >	10.17 >	SSSI Impact Risk Zones >	4	-	-	-	-
85 >	10.18 >	SSSI Units >	0	0	0	0	2
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
86	11.1	World Heritage Sites	0	0	0	-	-
87	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
87	11.3	National Parks	0	0	0	-	-
87	11.4	Listed Buildings	0	0	0	-	-
87 >	11.5 >	Conservation Areas >	0	0	1	-	-
88	11.6	Scheduled Ancient Monuments	0	0	0	-	-
88	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
89 >	12.1 >	Agricultural Land Classification >	Grade 3b (within 250m)				
92	12.2	Open Access Land	0	0	0	-	-
92	12.3	Tree Felling Licences	0	0	0	-	-
92 >	12.4 >	Environmental Stewardship Schemes >	0	3	2	-	-
93	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
94 >	13.1 >	Priority Habitat Inventory >	2	3	10	-	-
95	13.2	Habitat Networks	0	0	0	-	-
95	13.3	Open Mosaic Habitat	0	0	0	-	-
96	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
97 >	14.1 >	10k Availability >	Identified (within 500m)				
98 >	14.2 >	Artificial and made ground (10k) >	7	7	5	13	-
100 >	14.3 >	Superficial geology (10k) >	7	1	5	14	-

102	14.4	Landslip (10k)	0	0	0	0	-
103 >	14.5 >	Bedrock geology (10k) >	13	4	30	15	-
106 >	14.6 >	Bedrock faults and other linear features (10k) >	3	0	6	7	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
108 >	15.1 >	50k Availability >	Identified (within 500m)				
109	15.2	Artificial and made ground (50k)	0	0	0	0	-
109	15.3	Artificial ground permeability (50k)	0	0	-	-	-
110 >	15.4 >	Superficial geology (50k) >	7	1	6	11	-
112 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
112	15.6	Landslip (50k)	0	0	0	0	-
112	15.7	Landslip permeability (50k)	None (within 50m)				
113 >	15.8 >	Bedrock geology (50k) >	11	3	26	11	-
116 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
116 >	15.10 >	Bedrock faults and other linear features (50k) >	2	0	7	1	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
118 >	16.1 >	BGS Boreholes >	61	56	69	-	-
Page	Section	Natural ground subsidence >					
127 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
129 >	17.2 >	Running sands >	Very low (within 50m)				
131 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
132 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
133 >	17.5 >	Landslides >	Low (within 50m)				
135 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
137 >	18.1 >	BritPits >	0	0	0	5	-
138 >	18.2 >	Surface ground workings >	11	3	34	-	-
140	18.3	Underground workings	0	0	0	0	0
141	18.4	Underground mining extents	0	0	0	0	-
141	18.5	Historical Mineral Planning Areas	0	0	0	0	-

141	18.6	Non-coal mining	0	0	0	0	0
141	18.7	JPB mining areas	None (within 0m)				
141	18.8	The Coal Authority non-coal mining	0	0	0	0	-
142	18.9	Researched mining	0	0	0	0	-
142	18.10	Mining record office plans	0	0	0	0	-
142	18.11	BGS mine plans	0	0	0	0	-
142	18.12	Coal mining	None (within 0m)				
143	18.13	Brine areas	None (within 0m)				
143	18.14	Gypsum areas	None (within 0m)				
143	18.15	Tin mining	None (within 0m)				
143	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
144	19.1	Natural cavities	0	0	0	0	-
144	19.2	Mining cavities	0	0	0	0	0
144	19.3	Reported recent incidents	0	0	0	0	-
144	19.4	Historical incidents	0	0	0	0	-
145	19.5	National karst database	0	0	0	0	-
Page	Section	**Radon** >					
146 >	**20.1** >	**Radon** >	Between 1% and 3% (within 0m)				
Page	Section	**Soil chemistry** >	On site	0-50m	50-250m	250-500m	500-2000m
148 >	**21.1** >	**BGS Estimated Background Soil Chemistry** >	53	24	-	-	-
152	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
153	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	**Railway infrastructure and projects** >	On site	0-50m	50-250m	250-500m	500-2000m
154	22.1	Underground railways (London)	0	0	0	-	-
154	22.2	Underground railways (Non-London)	0	0	0	-	-
155	22.3	Railway tunnels	0	0	0	-	-
155	22.4	Historical railway and tunnel features	0	0	0	-	-
155	22.5	Royal Mail tunnels	0	0	0	-	-

155	22.6	Historical railways	0	0	0	-	-
155 >	**22.7 >**	**Railways >**	0	10	2	-	-
156	22.8	Crossrail 2	0	0	0	0	-
156 >	**22.9 >**	**HS2 >**	3	1	8	6	-

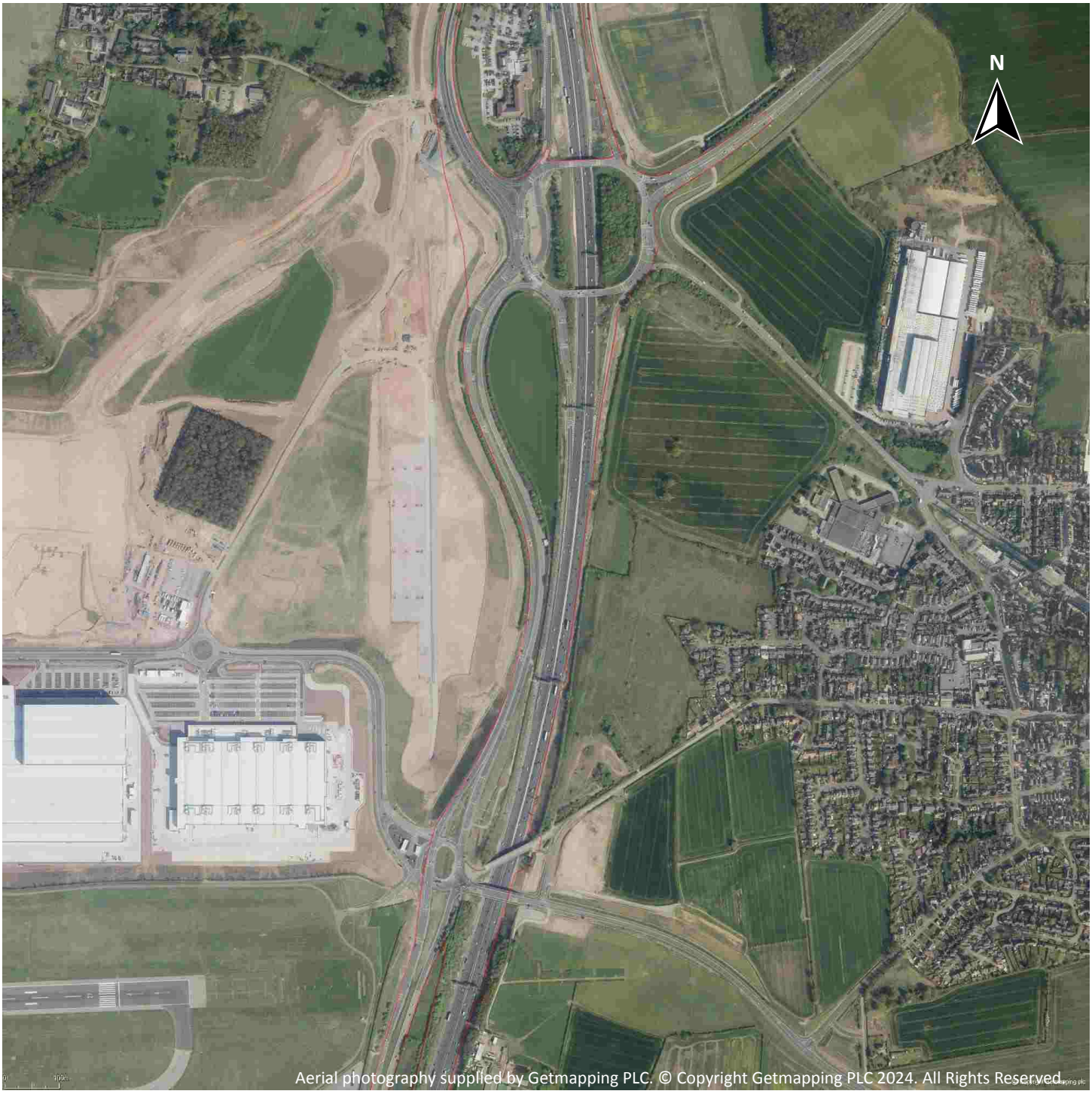
Recent aerial photograph



Capture Date: 10/07/2022

Site Area: 39.28ha

Recent site history - 2019 aerial photograph



Capture Date: 20/04/2019

Site Area: 39.28ha

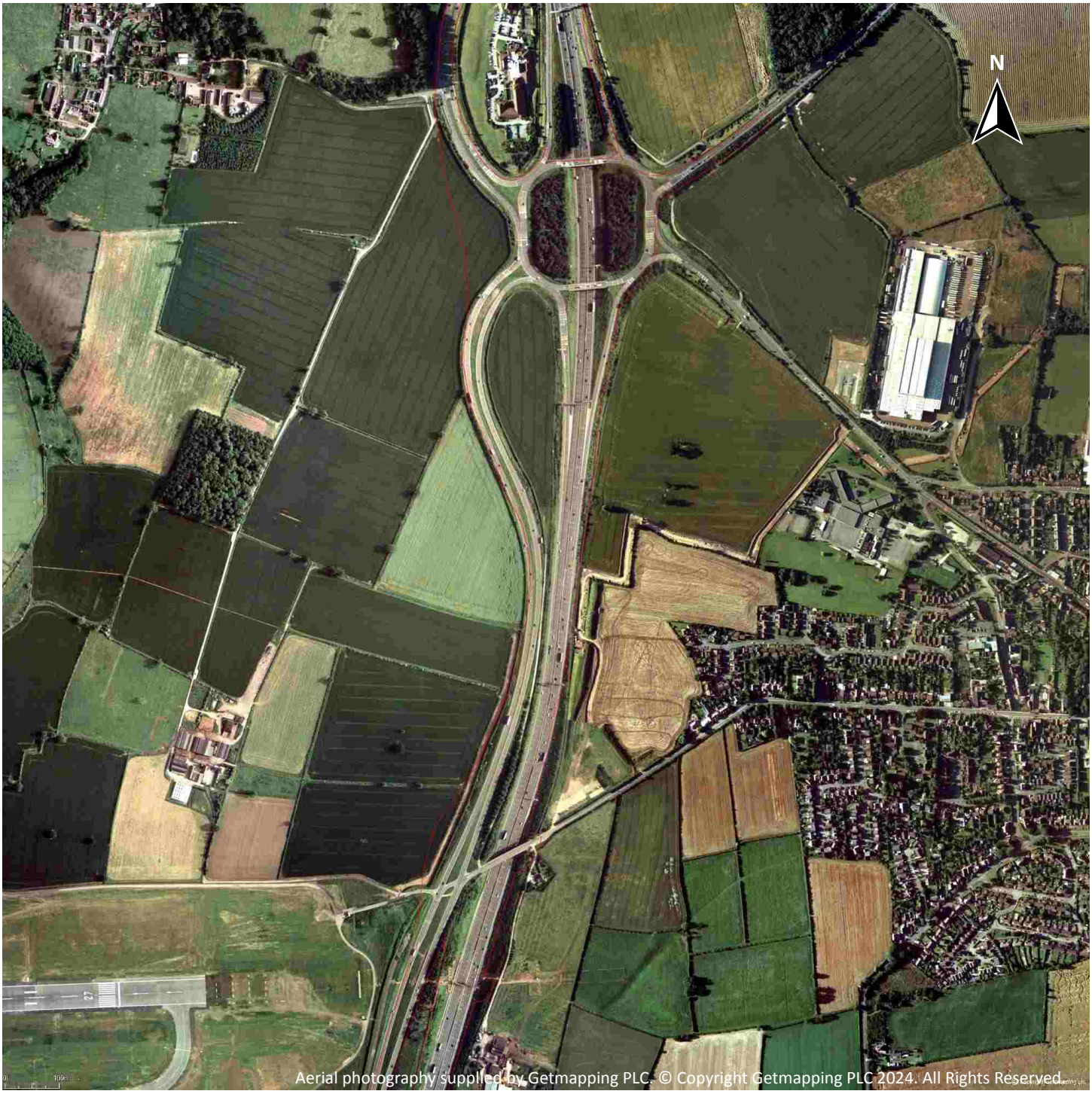
Recent site history - 2015 aerial photograph



Capture Date: 24/04/2015

Site Area: 39.28ha

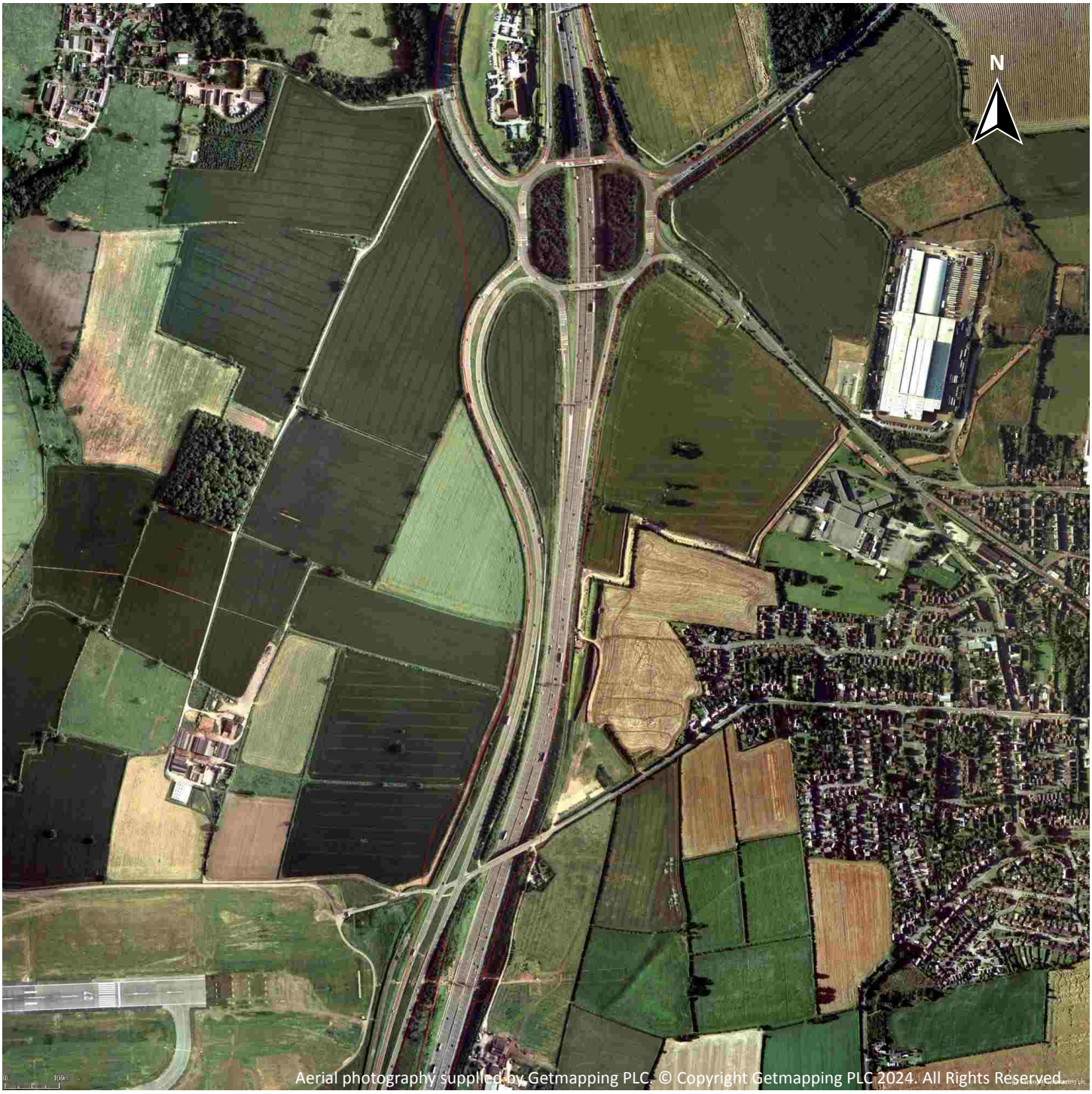
Recent site history - 2000 aerial photograph



Capture Date: 17/06/2000

Site Area: 39.28ha

Recent site history - 1999 aerial photograph

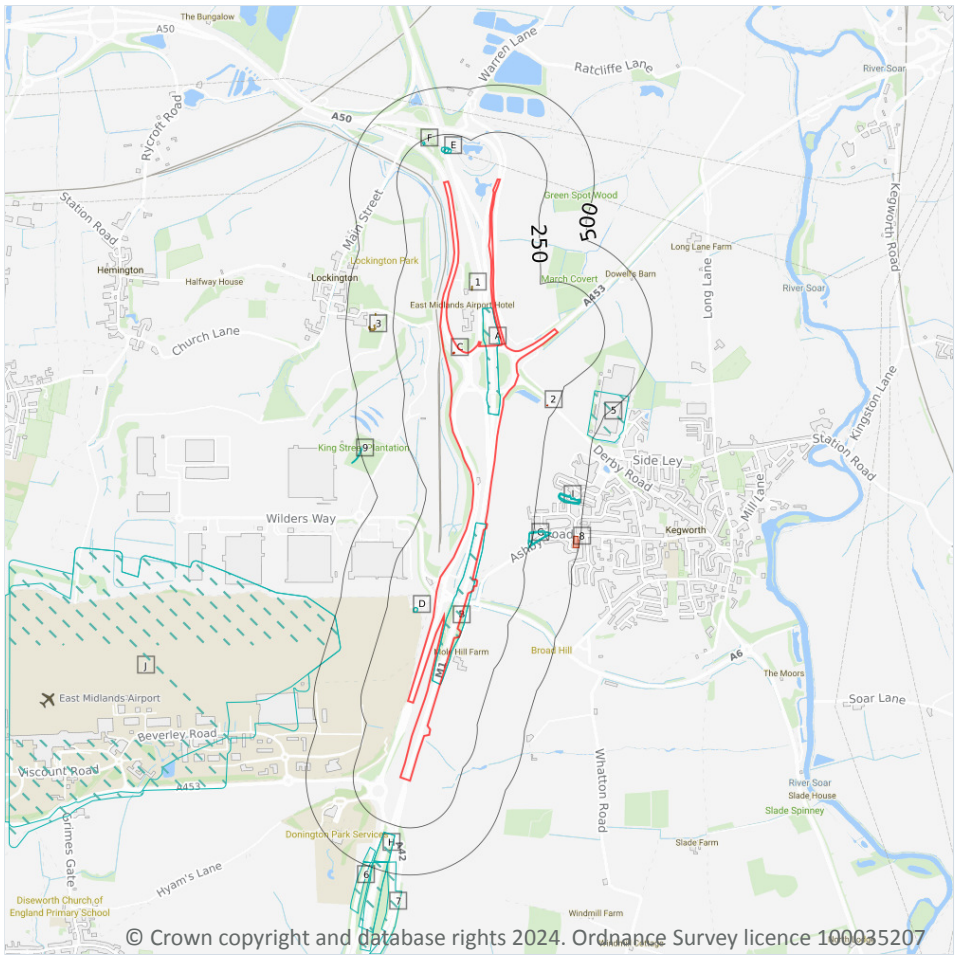


Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 11/07/1999

Site Area: 39.28ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	31

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

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

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Cuttings**	**1971**	**1680201**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Cuttings**	**1982 - 1992**	**1726088**
B	**On site**	**Cuttings**	**1971**	**1692256**
B	**On site**	**Cuttings**	**1982 - 1992**	**1710569**
D	88m S	Unspecified Heap	1971	1659945
D	88m S	Unspecified Heap	1982 - 1992	1691670
E	151m N	Unspecified Pit	1921	1749059
E	151m N	Unspecified Pit	1938 - 1955	1720061
E	152m N	Gravel Pit	1883	1629122
E	154m N	Unspecified Heap	1899	1621736
F	226m N	Sluice Valve and Washout Chamber	1921	1681726
G	228m SE	Flour Mill	1883	1639308
G	229m SE	Unspecified Mill	1901 - 1922	1696951
G	229m SE	Unspecified Mill	1922	1728150
F	230m N	Pump House	1992	1635143
G	230m SE	Unspecified Mill	1955	1654739
H	301m S	Cuttings	1971	1712470
H	301m S	Cuttings	1982 - 1992	1729166
I	361m E	Unspecified Pit	1883	1764290
I	363m E	Unspecified Pit	1883	1665093
I	363m E	Unspecified Pit	1901 - 1922	1776543
5	365m NE	Unspecified Factory	1992	1635426
I	365m E	Unspecified Pit	1901	1751343
I	368m E	Unspecified Pit	1955	1704605
6	404m S	Cuttings	1992 - 1993	1744917
J	425m SW	Airport	1971	1751047
J	425m SW	Airport	1982 - 1992	1767001
7	437m S	Cuttings	1993	1584849
K	448m S	Cuttings	1993	1685144

ID	Location	Land use	Dates present	Group ID
K	449m S	Cuttings	1975	1653354
9	479m W	Unspecified Ground Workings	1883	1593177

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**3**

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

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

ID	Location	Land use	Dates present	Group ID
1	99m N	Tanks	1991	264224
3	341m NW	Tanks	1991	264225
4	345m NW	Unspecified Tank	1991	271573

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**4**

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

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

ID	Location	Land use	Dates present	Group ID
C	**On site**	**Gas Governor**	**1991**	**170963**
C	**On site**	**Gas Governor**	**1999**	**177717**
2	202m NE	Gas Governor	1982 - 1999	167595

ID	Location	Land use	Dates present	Group ID
8	463m SE	Electricity Substation	1988	164902

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	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 un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

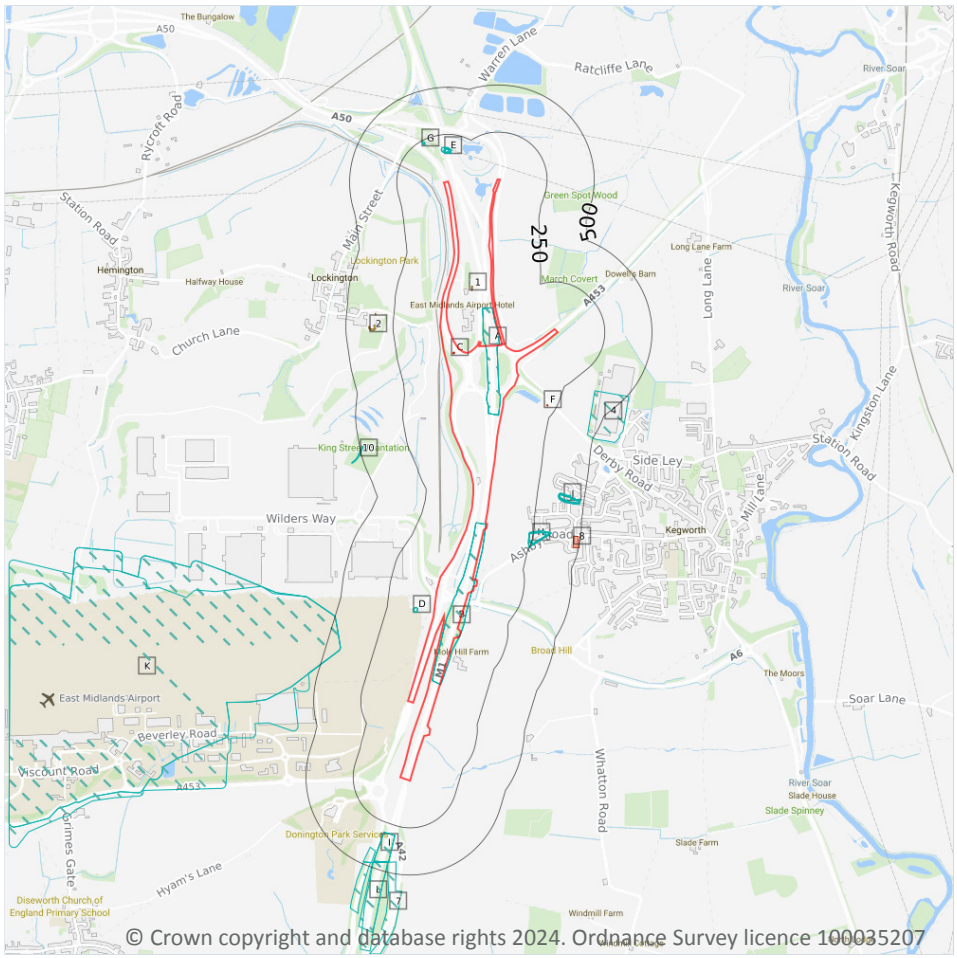
1.6 Historical military land

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	45

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

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

ID	Location	Land Use	Date	Group ID
A	**On site**	**Cuttings**	**1971**	**1680201**
A	**On site**	**Cuttings**	**1982**	**1726088**
A	**On site**	**Cuttings**	**1992**	**1726088**

ID	Location	Land Use	Date	Group ID
B	**On site**	**Cuttings**	**1971**	**1692256**
B	**On site**	**Cuttings**	**1982**	**1710569**
B	**On site**	**Cuttings**	**1992**	**1710569**
D	88m S	Unspecified Heap	1971	1659945
D	88m S	Unspecified Heap	1982	1691670
D	88m S	Unspecified Heap	1992	1691670
E	151m N	Unspecified Pit	1921	1749059
E	151m N	Unspecified Pit	1921	1749059
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E	151m N	Unspecified Pit	1938	1720061
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G	226m N	Sluice Valve and Washout Chamber	1921	1681726
H	228m SE	Flour Mill	1883	1639308
H	229m SE	Unspecified Mill	1922	1696951
H	229m SE	Unspecified Mill	1901	1696951
H	229m SE	Unspecified Mill	1922	1728150
G	230m N	Pump House	1992	1635143
H	230m SE	Unspecified Mill	1955	1654739
H	231m SE	Flour Mill	1883	1639308
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I	301m S	Cuttings	1982	1729166
I	301m S	Cuttings	1992	1729166
J	361m E	Unspecified Pit	1883	1764290
J	363m E	Unspecified Pit	1883	1665093
J	363m E	Unspecified Pit	1922	1776543

ID	Location	Land Use	Date	Group ID
J	363m E	Unspecified Pit	1901	1776543
J	363m E	Unspecified Pit	1922	1776543
4	365m NE	Unspecified Factory	1992	1635426
J	365m E	Unspecified Pit	1901	1751343
J	368m E	Unspecified Pit	1955	1704605
5	404m S	Cuttings	1992	1744917
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K	425m SW	Airport	1971	1751047
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7	437m S	Cuttings	1993	1584849
L	448m S	Cuttings	1993	1685144
L	449m S	Cuttings	1975	1653354
9	478m S	Cuttings	1993	1744917
10	479m W	Unspecified Ground Workings	1883	1593177

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**3**

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 18 >**

ID	Location	Land Use	Date	Group ID
1	99m N	Tanks	1991	264224
2	341m NW	Tanks	1991	264225
3	345m NW	Unspecified Tank	1991	271573

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	7

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

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

ID	Location	Land Use	Date	Group ID
C	**On site**	**Gas Governor**	**1991**	**170963**
C	**On site**	**Gas Governor**	**1999**	**177717**
F	202m NE	Gas Governor	1982	167595
F	202m NE	Gas Governor	1988	167595
F	202m NE	Gas Governor	1991	167595
F	202m NE	Gas Governor	1999	167595
8	463m SE	Electricity Substation	1988	164902

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

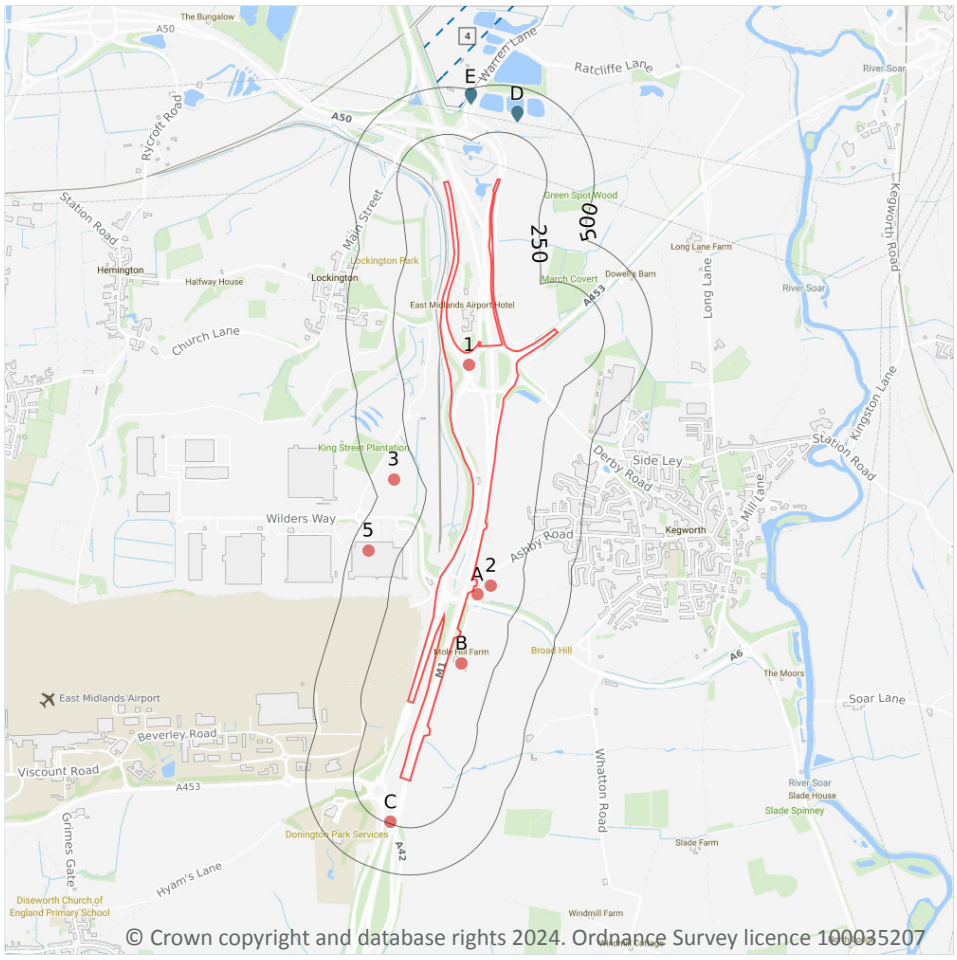
2.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



3.1 Active or recent landfill

Records within 500m	1

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

Features are displayed on the Waste and landfill map on **page 22 >**

ID	Location	Details	
4	399m N	Operator: Tarmac Aggregates Limited Site Address: Tarmac Aggregates Limited, Lockington Quarry Landfill Site, Warren Lane, Lockington, Leicestershire, DE74 2RG	WML Number: 210024 EPR Reference: 658291 Landfill type: L05: Inert LF Status: Issued IPPC Reference: - EPR Number: EA/EPR/FP3194ET

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	12

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

Features are displayed on the Waste and landfill map on **page 22 >**

ID	Location	Details		
D	358m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Derbyshire, DE74 2RG Correspondence Address: -	Type of Site: Management of inert or extractive waste at mine Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF043 EPR reference: EA/EPR/SP3094VZ/V002 Operator: Lafarge Aggregates Limited Waste Management licence No: 102317 Annual Tonnage: 0	Issue Date: 26/01/2011 Effective Date: - Modified: 15/11/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	358m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Derbyshire, DE74 2RG Correspondence Address: -	Type of Site: Management of inert or extractive waste at mine Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF043 EPR reference: EA/EPR/SP3094VZ/A001 Operator: Lafarge Aggregates Ltd Waste Management licence No: 102317 Annual Tonnage: 0	Issue Date: 26/01/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
D	358m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: Management of inert or extractive waste at mine Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 643290 EPR reference: EA/EPR/SP3094VZ Operator: Tarmac Aggregates Limited Waste Management licence No: 102317 Annual Tonnage: 0	Issue Date: 26/01/2011 Effective Date: 26/01/2011 Modified: 26/01/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

ID	Location	Details		
E	459m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: 75kte HCI Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF062 EPR reference: EA/EPR/GB3036AJ/V003 Operator: Lafarge Aggregates Limited Waste Management licence No: 104056 Annual Tonnage: 74999	Issue Date: 23/04/2012 Effective Date: - Modified: 17/06/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	459m N	Site Name: Lockington Recycling Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: 75kte HCI Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TAR018 EPR reference: EA/EPR/HB3904MJ/T001 Operator: Tarmac Trading Limited Waste Management licence No: 104056 Annual Tonnage: 74999	Issue Date: 23/04/2012 Effective Date: 19/11/2019 Modified: 08/01/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred
E	459m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: 75kte HCI Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF062 EPR reference: EA/EPR/GB3036AJ/V004 Operator: Tarmac Aggregates Limited Waste Management licence No: 104056 Annual Tonnage: 74999	Issue Date: 23/04/2012 Effective Date: - Modified: 08/01/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
E	459m N	Site Name: Lockington Recycling Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: 75kte HCI Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GRS007 EPR reference: EA/EPR/HB3305HG/T001 Operator: G R S Earth Solutions Limited Waste Management licence No: 104056 Annual Tonnage: 74999	Issue Date: 23/04/2012 Effective Date: 21/05/2019 Modified: 08/01/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred
E	459m N	Site Name: Lockington Quarry Landfill Site Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: Inert LF Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF026 EPR reference: EA/EPR/FP3194ET/V003 Operator: Lafarge Aggregates Ltd Waste Management licence No: 210024 Annual Tonnage: 750000	Issue Date: 30/03/2007 Effective Date: - Modified: 22/07/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	459m N	Site Name: Lockington Quarry Landfill Site Site Address: Lockington Quarry Landfill Site, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: Inert LF Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF026 EPR reference: EA/EPR/FP3194ET/V004 Operator: Lafarge Aggregates Limited Waste Management licence No: 210024 Annual Tonnage: 750000	Issue Date: 30/03/2007 Effective Date: - Modified: 20/11/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	463m N	Site Name: Lockington Quarry Site Address: Warren Lane, Nr Lockington, Leicestershire, DE74 2RG Correspondence Address: Bradgate House, Groby, Leicester, Leicestershire, LE6 0FA	Type of Site: Landfill taking Non-Biodegradeable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF005 EPR reference: - Operator: Lafarge Redland Aggregates Ltd Waste Management licence No: 43491 Annual Tonnage: 375000	Issue Date: 13/07/2001 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

ID	Location	Details		
E	464m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: P O Box 7388, Syston, Leicester, Leicestershire, LE7 1WA	Type of Site: Landfill taking Non-Biodegradeable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF005 EPR reference: - Operator: Lafarge Aggregates Limited Waste Management licence No: 43491 Annual Tonnage: 375000	Issue Date: 7/13/2001 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
E	464m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: Landfill taking Non-Biodegradeable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 627825 EPR reference: EA/EPR/MP3190CX Operator: Tarmac Aggregates Limited Waste Management licence No: 43491 Annual Tonnage: 375000	Issue Date: 13/07/2001 Effective Date: 13/07/2001 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired

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

3.7 Waste exemptions

Records within 500m **48**

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 22 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	**On site**	**A50 From M1 J24 To B5010 Roundabout Sk4741227636 To Sk4503929435**	**EPR/AE5387NS/A001**	**Using waste exemption**	**Non-agricultural waste only**	**Use of waste in construction**
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit

ID	Location	Site	Reference	Category	Sub-Category	Description
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Disposing of waste exemption	On a farm	Burning waste in the open
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Use of waste in construction
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Incorporation of ash into soil
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Use of waste in construction
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Incorporation of ash into soil

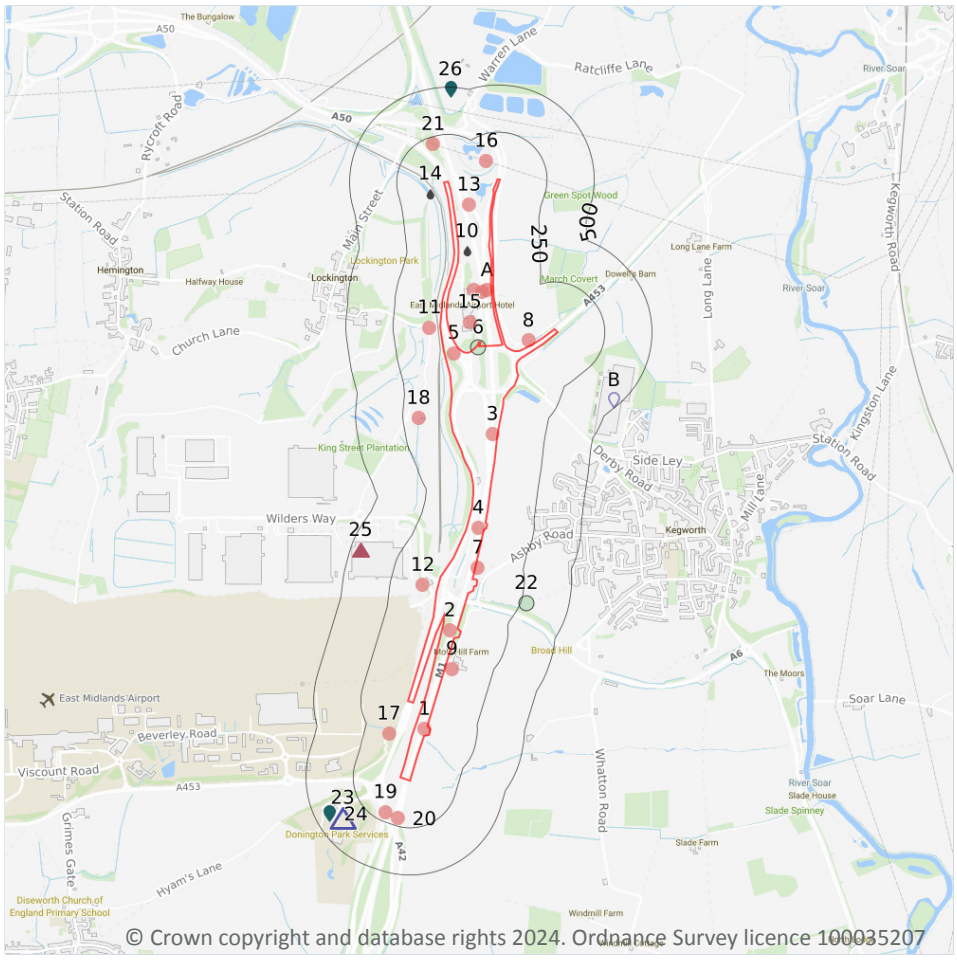
ID	Location	Site	Reference	Category	Sub-Category	Description
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Disposing of waste exemption	On a farm	Burning waste in the open
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Use of waste in construction
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Incorporation of ash into soil
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Disposing of waste exemption	On a farm	Burning waste in the open

ID	Location	Site	Reference	Category	Sub-Category	Description
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
2	75m S	-	WEX112348	Treating waste exemption	Not on a farm	Treatment of waste aerosol cans
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Burning waste in the open
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading waste on agricultural land to confer benefit
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Cleaning, washing, spraying or coating relevant waste
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Aerobic composting and associated prior treatment
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Using waste exemption	Both agricultural and non-agricultural waste	Incorporation of ash into soil
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Using waste exemption	Both agricultural and non-agricultural waste	Burning of waste as a fuel in a small appliance
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Storing waste exemption	Not on a farm	Storage of waste in a secure place
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Using waste exemption	Not on a farm	Use of waste in construction
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Using waste exemption	Not on a farm	Spreading of plant matter to confer benefit
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Treating waste exemption	Not on a farm	Treatment of waste aerosol cans
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Using waste exemption	Not on a farm	Use of mulch
3	389m W	-	WEX376154	Using waste exemption	Not on a farm	Use of waste in construction
5	409m SW	19, Tenter Road, Moulton Park Industrial Estate, Northampton, Nn3 6pz	WEX093934	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



Site Outline

Search buffers in metres (m)

- Recent industrial land uses
- Current or recent petrol stations
- Hazardous substance storage/usage
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	21

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Gantry**	**Leicestershire, DE74**	**Travelling Cranes and Gantries**	**Industrial Features**
2	**On site**	**Gantry**	**Leicestershire, DE74**	**Travelling Cranes and Gantries**	**Industrial Features**
3	**On site**	**Gantry**	**Leicestershire, DE74**	**Travelling Cranes and Gantries**	**Industrial Features**

ID	Location	Company	Address	Activity	Category
4	**On site**	**Gantry**	**Leicestershire, DE74**	**Travelling Cranes and Gantries**	**Industrial Features**
5	**On site**	**Gas Governor Station**	**Leicestershire, DE74**	**Gas Features**	**Infrastructure and Facilities**
7	13m S	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
A	22m N	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
8	28m NE	Electricity Sub Station	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
9	37m S	Masts (Telecommunication)	Leicestershire, DE74	Telecommunications Features	Infrastructure and Facilities
A	47m N	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
11	57m N	Electricity Sub Station	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
12	80m S	Electricity Sub Station	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
13	83m N	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
A	91m N	Mast (Telecommunication)	Leicestershire, DE74	Telecommunications Features	Infrastructure and Facilities
15	114m N	Green Motion	Hilton Hotels, Derby Road, Town Centre, Derby, Leicestershire, DE74 2YW	Vehicle Hire and Rental	Hire Services
16	114m N	Pylon	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
17	121m S	Pumping Station	Leicestershire, DE74	Water Pumping Stations	Industrial Features
18	168m NW	Electricity Sub Station	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
19	201m S	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
20	208m S	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features

ID	Location	Company	Address	Activity	Category
21	211m N	Pylon	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Company	Address	LPG	Status
23	375m S	BP	M1 J23a, A453, Castle Donington, Derby, Leicestershire, DE74 2TN	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	1

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.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Details	
25	447m SW	Application reference number: No Details Application status: Approved Application date: No Details Address: Gasrec Ltd, Zone B, East Midlands Gateway, Leicestershire, England, DE74 2DL	Details: No Details Enforcement: No Details Date of enforcement: No Details Comment: No Details

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	3

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

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Details	
B	468m NE	Operator: Refresco Drinks UK Ltd Installation Name: Cott Beverages - EPR/MP3735SN Process: ANIMAL VEGETABLE AND FOOD; TREATING ETC VEGETABLE RAW MATERIALS FOR FOOD >300T/D Permit Number: MP3730QS Original Permit Number: MP3735SN	EPR Reference: - Issue Date: 15/05/2018 Effective Date: 15/05/2018 Last date noted as effective: 21/03/2023 Status: Effective
B	468m NE	Operator: Refresco Drinks UK Ltd Installation Name: Cott Beverages - EPR/MP3735SN Process: ASSOCIATED PROCESS Permit Number: MP3730QS Original Permit Number: MP3735SN	EPR Reference: - Issue Date: 15/05/2018 Effective Date: 15/05/2018 Last date noted as effective: 21/03/2023 Status: Effective
B	468m NE	Operator: REFRESCO DRINKS UK LIMITED Installation Name: Kegworth Site Process: DIRECTLY ASSOCIATED ACTIVITY (INCLUDED) Permit Number: MP3735SN Original Permit Number: MP3735SN	EPR Reference: EPR/MP3735SN Issue Date: 15/05/2018 Effective Date: 15/05/2018 Last date noted as effective: 29/10/2024 Status: Effective

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

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

Records within 500m	2

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

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Address	Details	
24	422m S	Moto Hospitality Ltd (BP), Donington Park Service Station, Junction 23A, Ashby Road, Castle Donington, Derby, DE74 2TN	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No enforcements notified Date of enforcement: No enforcements notified Comment: No enforcements notified

ID	Location	Address	Details	
26	488m N	Lafarge Aggregates Ltd, Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG	Process: Use of Bulk Cement Status: Current Permit Permit Type: Part B	Enforcement: No enforcements notified Date of enforcement: No enforcements notified Comment: No enforcements notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	**2**

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

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Address	Details	
10	43m N	HILTONHOTELSTP,LOCKINGTON,LEICESTERSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: T/59/20516/S Permit Version: 1 Receiving Water: TRIB OF RIVER SOAR	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 10/09/1990 Effective Date: 10/09/1990 Revocation Date: 09/09/2003
14	87m N	RAILTERMINALPHASE2,EAST MIDLANDSGATEWAY,KEGWORTH,DERBYSHIRE,DE742DL	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPREP3529PX Permit Version: 1 Receiving Water: LOCKINGTON BROOK	Status: NEW ISSUED UNDER EPR 2010 Issue date: 18/08/2023 Effective Date: 18/08/2023 Revocation Date: -

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	2

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

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Details	
6	**On site**	**Incident Date: 30/07/2001** **Incident Identification: 20190** **Pollutant: General Biodegradable Materials and Wastes** **Pollutant Description: Natural Organic Material**	**Water Impact: Category 4 (No Impact)** **Land Impact: Category 3 (Minor)** **Air Impact: Category 4 (No Impact)**
22	280m SE	Incident Date: 16/10/2003 Incident Identification: 196505 Pollutant: Inert Materials and Wastes Pollutant Description: Other Inert Material or Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

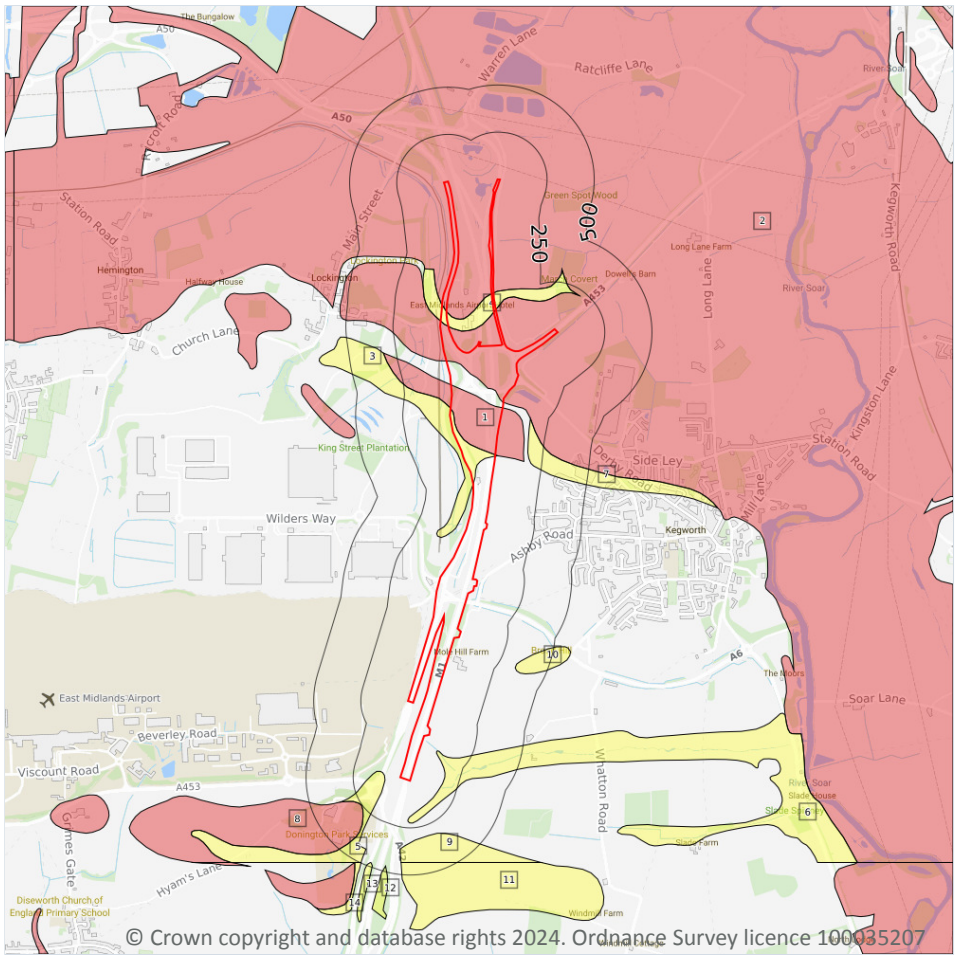
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



5.1 Superficial aquifer

Records within 500m	14

Aquifer status of groundwater held within superficial geology.

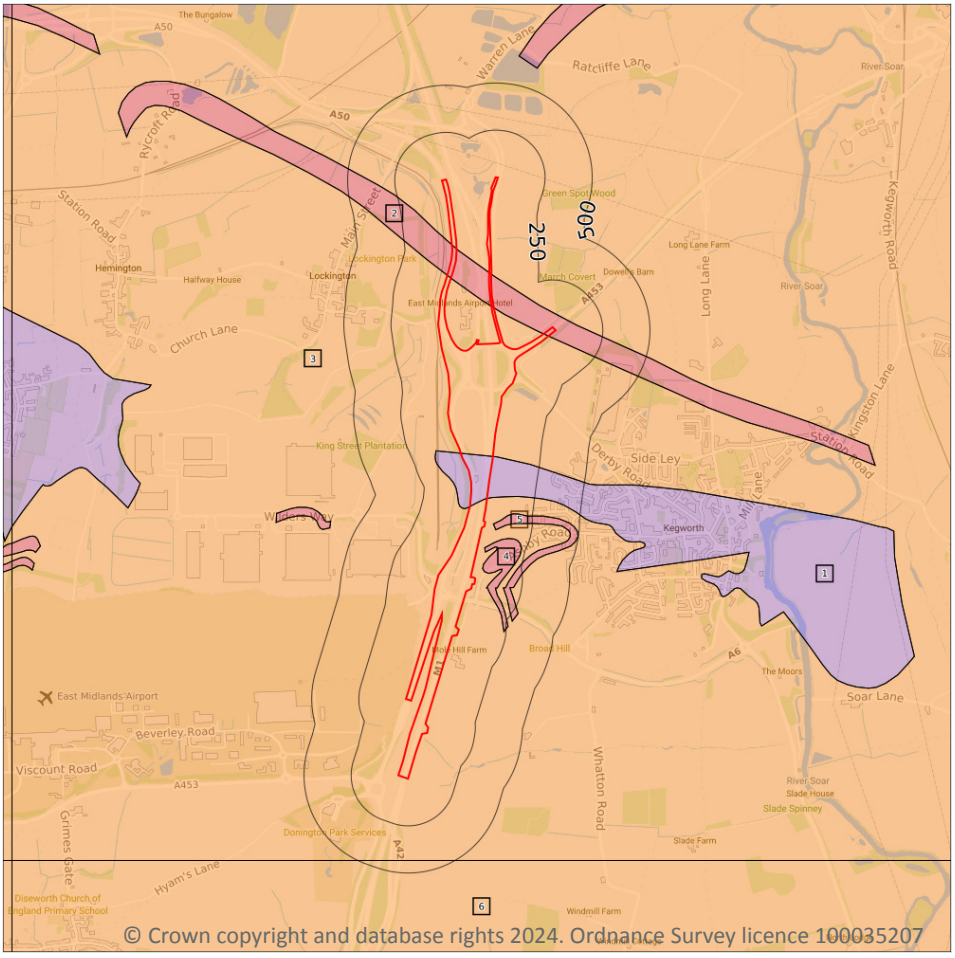
Features are displayed on the Hydrogeology map on **page 40 >**

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

ID	Location	Designation	Description
3	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
4	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
5	82m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	90m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
7	156m NE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
8	253m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
9	307m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
10	338m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
11	434m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
12	471m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
13	478m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
14	497m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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

Bedrock aquifer



5.2 Bedrock aquifer

Records within 500m	6

Aquifer status of groundwater held within bedrock geology.

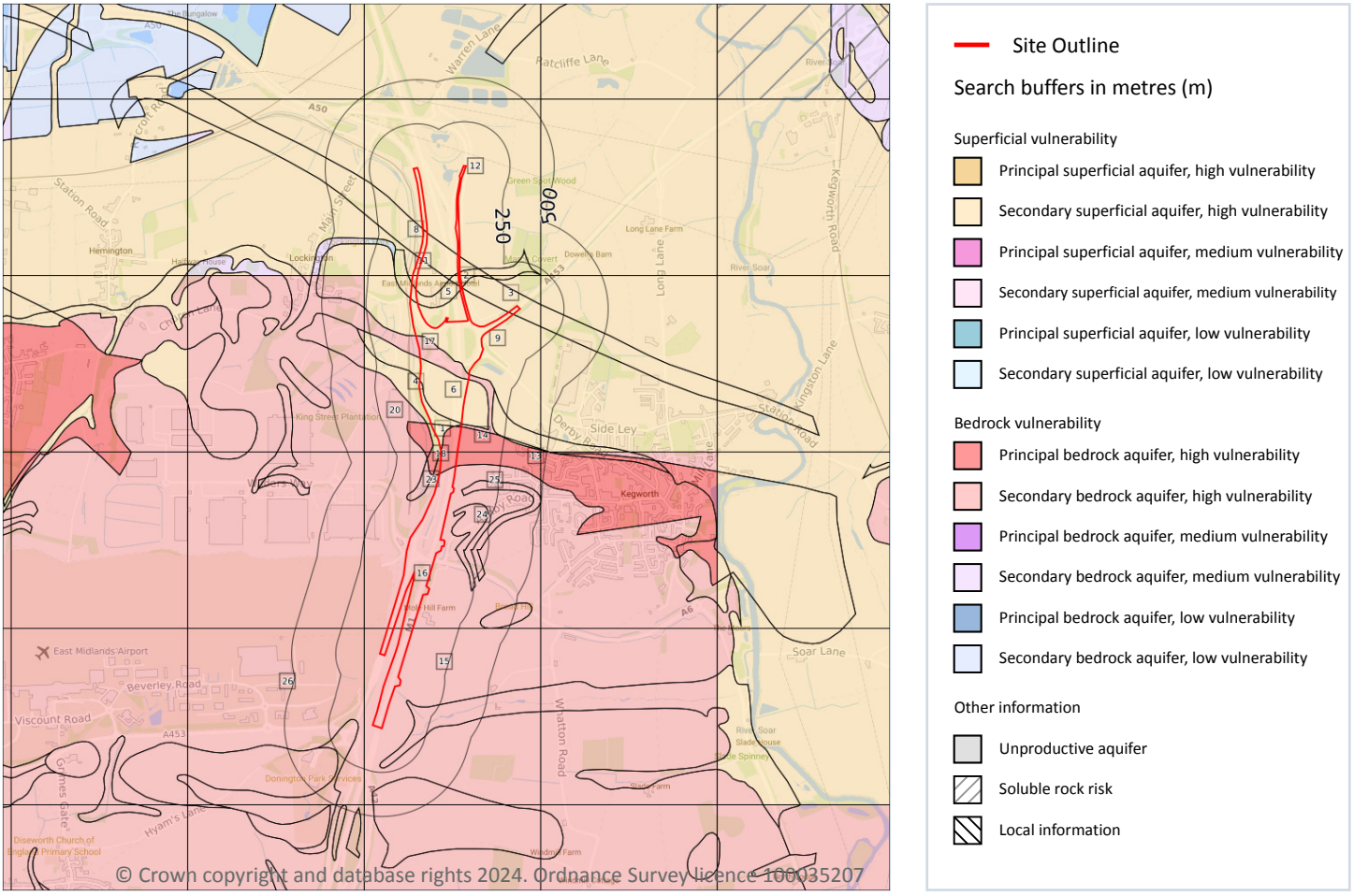
Features are displayed on the Bedrock aquifer map on **page 42 >**

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	**On site**	**Secondary B**	**Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers**
4	38m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	45m SE	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
6	434m S	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

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

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	26

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 44 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
4	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
5	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
6	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
7	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
8	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
9	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
10	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
11	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
12	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
13	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
14	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
15	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
16	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
17	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
18	2m SE	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
19	21m N	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
20	23m N	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
21	25m N	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
22	27m N	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
23	34m S	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
24	38m S	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
25	45m SE	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
26	48m S	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

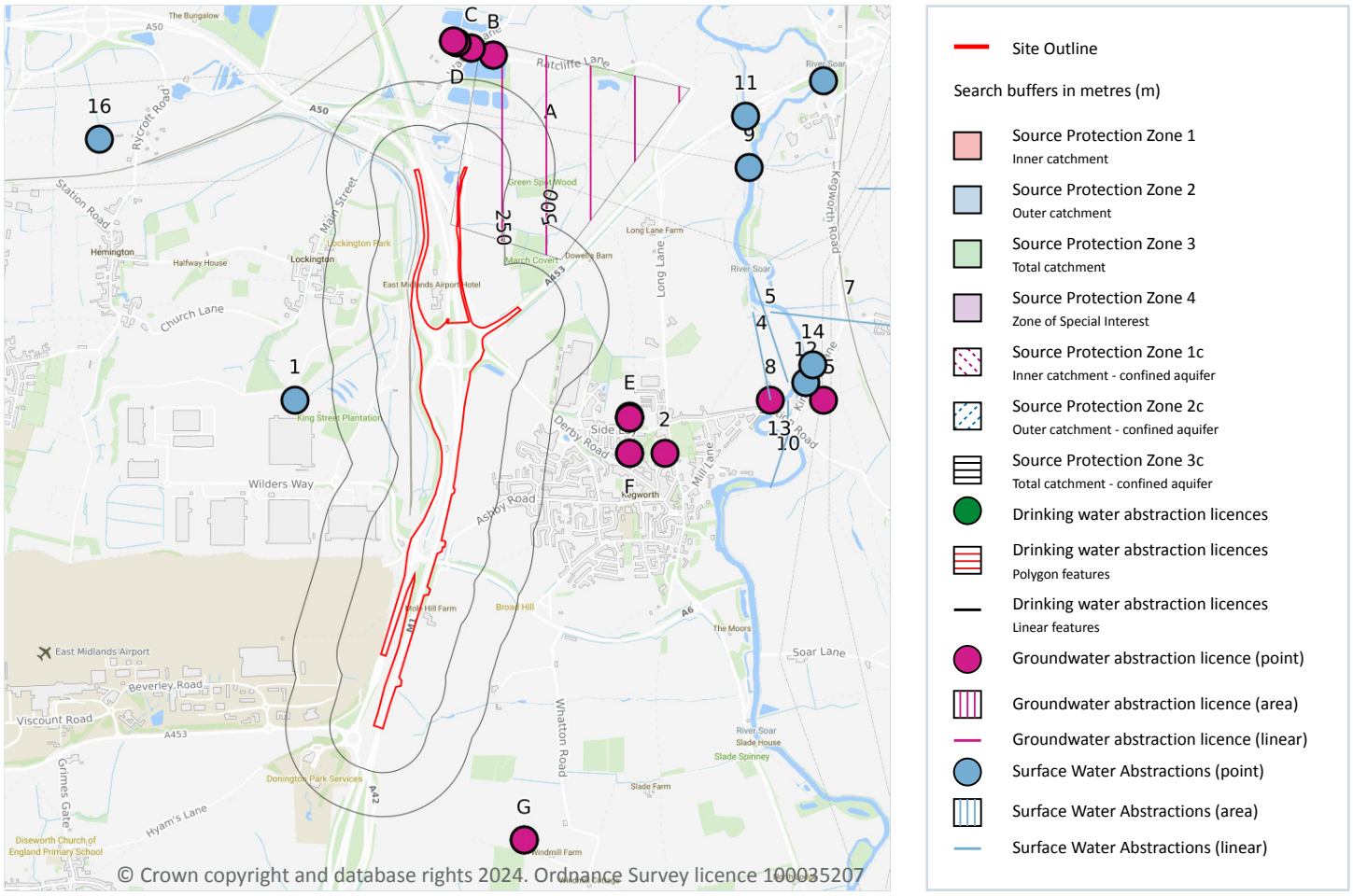
5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



5.6 Groundwater abstractions

Records within 2000m	22

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 50 >**

ID	Location	Details	
A	**On site**	**Status: Active** **Licence No: MD/028/0059/004** **Details: Dewatering** **Direct Source: Groundwater Midlands Region** **Point: LOCKINGTON QUARRY** **Data Type: Poly4** **Name: Tarmac Trading Limited** **Easting: 447660** **Northing: 329342**	**Annual Volume (m^3): 1760000** **Max Daily Volume (m^3): 6400** **Original Application No: NPS/NA/000749** **Original Start Date: 24/10/2022** **Expiry Date: 31/03/2037** **Issue No: 1** **Version Start Date: 24/10/2022** **Version End Date: -**
A	**On site**	**Status: Active** **Licence No: MD/028/0059/007** **Details: Dust Suppression** **Direct Source: Groundwater Midlands Region** **Point: LOCKINGTON QUARRY** **Data Type: Poly4** **Name: Tarmac Trading Limited** **Easting: 447660** **Northing: 329342**	**Annual Volume (m^3): 13750** **Max Daily Volume (m^3): 50** **Original Application No: NPS/NA/000748** **Original Start Date: 24/10/2022** **Expiry Date: 31/03/2037** **Issue No: 1** **Version Start Date: 24/10/2022** **Version End Date: -**
B	657m N	Status: Active Licence No: 03/28/59/0012/R01 Details: Mineral Washing Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - BORROW PIT Data Type: Point Name: Tarmac Trading Limited Easting: 447727 Northing: 329260	Annual Volume (m^3): 1036619 Max Daily Volume (m^3): 6829.1 Original Application No: NPS/WR/038710 Original Start Date: 01/04/2018 Expiry Date: 31/03/2025 Issue No: 3 Version Start Date: 26/08/2022 Version End Date: -
B	657m N	Status: Active Licence No: 03/28/59/0012/R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - BORROW PIT Data Type: Point Name: Tarmac Trading Limited Easting: 447727 Northing: 329260	Annual Volume (m^3): 1036619 Max Daily Volume (m^3): 6829.1 Original Application No: NPS/WR/038710 Original Start Date: 01/04/2018 Expiry Date: 31/03/2025 Issue No: 3 Version Start Date: 26/08/2022 Version End Date: -
C	679m N	Status: Historical Licence No: 03/28/59/0012 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - BORROW PIT Data Type: Point Name: Tarmac Aggregates Limited Easting: 447600 Northing: 329300	Annual Volume (m^3): 1878000 Max Daily Volume (m^3): 6829 Original Application No: - Original Start Date: 02/01/2001 Expiry Date: 31/03/2018 Issue No: 5 Version Start Date: 26/10/2015 Version End Date: -

ID	Location	Details	
C	679m N	Status: Historical Licence No: 03/28/59/0012 Details: Mineral Washing Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - BORROW PIT Data Type: Point Name: Tarmac Aggregates Limited Easting: 447600 Northing: 329300	Annual Volume (m^3): 1878000 Max Daily Volume (m^3): 6829 Original Application No: - Original Start Date: 02/01/2001 Expiry Date: 31/03/2018 Issue No: 5 Version Start Date: 26/10/2015 Version End Date: -
D	707m N	Status: Active Licence No: 03/28/59/0012/R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - SEEPAGE LAGOONS Data Type: Point Name: Tarmac Trading Limited Easting: 447520 Northing: 329327	Annual Volume (m^3): 1036619 Max Daily Volume (m^3): 6829.1 Original Application No: NPS/WR/038710 Original Start Date: 01/04/2018 Expiry Date: 31/03/2025 Issue No: 3 Version Start Date: 26/08/2022 Version End Date: -
D	707m N	Status: Active Licence No: 03/28/59/0012/R01 Details: Mineral Washing Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - SEEPAGE LAGOONS Data Type: Point Name: Tarmac Trading Limited Easting: 447520 Northing: 329327	Annual Volume (m^3): 1036619 Max Daily Volume (m^3): 6829.1 Original Application No: NPS/WR/038710 Original Start Date: 01/04/2018 Expiry Date: 31/03/2025 Issue No: 3 Version Start Date: 26/08/2022 Version End Date: -
D	721m N	Status: Historical Licence No: 03/28/59/0012 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - SEEPAGE LAGOONS Data Type: Point Name: Tarmac Aggregates Limited Easting: 447500 Northing: 329340	Annual Volume (m^3): 1878000 Max Daily Volume (m^3): 6829 Original Application No: - Original Start Date: 02/01/2001 Expiry Date: 31/03/2018 Issue No: 5 Version Start Date: 26/10/2015 Version End Date: -
D	721m N	Status: Historical Licence No: 03/28/59/0012 Details: Mineral Washing Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - SEEPAGE LAGOONS Data Type: Point Name: Tarmac Aggregates Limited Easting: 447500 Northing: 329340	Annual Volume (m^3): 1878000 Max Daily Volume (m^3): 6829 Original Application No: - Original Start Date: 02/01/2001 Expiry Date: 31/03/2018 Issue No: 5 Version Start Date: 26/10/2015 Version End Date: -

ID	Location	Details	
E	862m E	Status: Historical Licence No: 03/28/59/0003 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: KEGWORTH - CATCHPIT Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327210	Annual Volume (m^3): 9999 Max Daily Volume (m^3): 227 Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2005 Version End Date: -
E	869m E	Status: Historical Licence No: 03/28/59/0003 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: KEGWORTH - WELLS Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 07/04/1970 Version End Date: -
E	869m E	Status: Historical Licence No: 03/28/59/0003 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: KEGWORTH-WELL Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327200	Annual Volume (m^3): 9999 Max Daily Volume (m^3): 227 Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2005 Version End Date: -
E	869m E	Status: Historical Licence No: 03/28/59/0003 Details: Process Water Direct Source: Groundwater Midlands Region Point: KEGWORTH - WELLS Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327200	Annual Volume (m^3): 9999 Max Daily Volume (m^3): 227 Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2005 Version End Date: -
F	961m E	Status: Historical Licence No: 03/28/59/0003 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: KEGWORTH - CATCHPIT Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 07/04/1970 Version End Date: -

ID	Location	Details	
F	961m E	Status: Historical Licence No: 03/28/59/0003 Details: Process Water Direct Source: Groundwater Midlands Region Point: KEGWORTH - CATCHPIT Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327000	Annual Volume (m^3): 9999 Max Daily Volume (m^3): 227 Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2005 Version End Date: -
G	1021m S	Status: Active Licence No: 03/28/57/0108 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: WHATTON HOUSE, NR LONG WHATTON - B/HOLE Data Type: Point Name: LORD CRAWSHAW Easting: 447900 Northing: 324800	Annual Volume (m^3): 4773.3 Max Daily Volume (m^3): 45.46 Original Application No: - Original Start Date: 12/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
G	1021m S	Status: Active Licence No: 03/28/57/0108 Details: Spray Irrigation - Direct Direct Source: Groundwater Midlands Region Point: WHATTON HOUSE, NR LONG WHATTON - B/HOLE Data Type: Point Name: LORD CRAWSHAW Easting: 447900 Northing: 324800	Annual Volume (m^3): 4773.3 Max Daily Volume (m^3): 45.46 Original Application No: - Original Start Date: 12/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
2	1152m E	Status: Historical Licence No: 03/28/59/0006 Details: Spray Irrigation - Direct Direct Source: Groundwater Midlands Region Point: BOWLING GREEN - WELL Data Type: Point Name: KEGWORTH BOWLS CLUB Easting: 448700 Northing: 327000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -
-	1190m N	Status: Active Licence No: 03/28/59/0008/G Details: Spray Irrigation - Direct Direct Source: Groundwater Midlands Region Point: LOCKINGTON GROUNDS,NOTTS - POND Data Type: Point Name: R OLDERSHAW LTD Easting: 447400 Northing: 329800	Annual Volume (m^3): 2273 Max Daily Volume (m^3): 200.02 Original Application No: - Original Start Date: 18/08/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/08/1966 Version End Date: -

ID	Location	Details	
8	1507m E	Status: Historical Licence No: 03/28/57/0064 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: BRIDGE FARM - WELL (1) Data Type: Point Name: MELLORS Easting: 449300 Northing: 327300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 03/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -
15	1792m E	Status: Historical Licence No: 03/28/57/0064 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: BRIDGE FARM - WELL (2) Data Type: Point Name: MELLORS Easting: 449600 Northing: 327300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 03/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**12**

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 50 >**

ID	Location	Details	
1	715m W	Status: Historical Licence No: 03/28/59/0004 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Midlands Region Point: LOCKINGTON - SPRINGS Data Type: Point Name: EXECUTORS OF J CURZON Easting: 446600 Northing: 327300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 26/04/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -

ID	Location	Details	
4	1318m NE	Status: Active Licence No: 03/28/57/0123 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: BRIDGE FARM, KEGWORTH - RIVER SOAR Data Type: Line Name: MELLORS Easting: 449300 Northing: 327300	Annual Volume (m^3): 22730 Max Daily Volume (m^3): 655 Original Application No: - Original Start Date: 12/09/1977 Expiry Date: - Issue No: 100 Version Start Date: 12/09/1977 Version End Date: -
5	1331m NE	Status: Historical Licence No: 03/28/57/0090 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: CHURCH FARM,KINGSTON - RIVER SOAR Data Type: Line Name: N BEEBY & SON Easting: 449200 Northing: 328000	Annual Volume (m^3): 14879.058 Max Daily Volume (m^3): 654.62 Original Application No: - Original Start Date: 13/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/2005 Version End Date: -
-	1385m N	Status: Historical Licence No: 03/28/59/0008/S Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: LOCKINGTON GROUND, NOTTS - TRIBUTARY OF RIVER TRENT Data Type: Point Name: R OLDERSHAW LTD Easting: 447700 Northing: 330000	Annual Volume (m^3): 2273 Max Daily Volume (m^3): 200.024 Original Application No: - Original Start Date: 18/08/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/08/1966 Version End Date: -
7	1418m E	Status: Historical Licence No: 03/28/57/0090 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: CHURCH FARM,KINGSTON - KINGSTON BROOK Data Type: Line Name: N BEEBY & SON Easting: 449300 Northing: 327800	Annual Volume (m^3): 14879.058 Max Daily Volume (m^3): 654.62 Original Application No: - Original Start Date: 13/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/2005 Version End Date: -
9	1529m NE	Status: Historical Licence No: 03/28/59/0011 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: LAND AT RATCLIFFE ON SOAR - RIVER SOAR Data Type: Point Name: WHITWORTH Easting: 449180 Northing: 328620	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/12/1996 Expiry Date: - Issue No: 100 Version Start Date: 12/12/1996 Version End Date: -

ID	Location	Details	
10	1602m E	Status: Historical Licence No: 03/28/57/0090 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: CHURCH FARM - SUTTON BONINGTON BROOK Data Type: Line Name: N BEEBY & SON Easting: 449400 Northing: 327300	Annual Volume (m^3): 14879.058 Max Daily Volume (m^3): 654.62 Original Application No: - Original Start Date: 13/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/2005 Version End Date: -
11	1611m NE	Status: Historical Licence No: MD/028/0059/001 Details: Dust Suppression Direct Source: Surface Water Midlands Region Point: POINT 'B' ON THE RIVER SOAR AT RATCLIFFE ON SOAR, NOTTS Data Type: Point Name: Laing O'Rourke Infrastructure Limited Easting: 449160 Northing: 328913	Annual Volume (m^3): 16000 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 07/10/2013 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 07/10/2013 Version End Date: -
12	1669m E	Status: Historical Licence No: 03/28/58/0017 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: LAND AT KINGSTON ON SOAR - BLACK BROOK Data Type: Point Name: UNIVERSITY OF NOTTINGHAM Easting: 449500 Northing: 327400	Annual Volume (m^3): 45801 Max Daily Volume (m^3): 1350.18 Original Application No: - Original Start Date: 13/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 05/09/1977 Version End Date: -
13	1676m E	Status: Active Licence No: 03/28/57/0124 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: BRIDGE FARM, KEGWORTH - RIVER SOAR Data Type: Line Name: MELLORS Easting: 449300 Northing: 326800	Annual Volume (m^3): 22730 Max Daily Volume (m^3): 655 Original Application No: - Original Start Date: 12/09/1977 Expiry Date: - Issue No: 100 Version Start Date: 12/09/1977 Version End Date: -
14	1687m E	Status: Historical Licence No: 03/28/57/0131 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: SUTTON BONINGTON - RIVER SOAR Data Type: Point Name: UNIVERSITY OF NOTTINGHAM Easting: 449540 Northing: 327500	Annual Volume (m^3): 121500 Max Daily Volume (m^3): 2727 Original Application No: - Original Start Date: 25/03/1980 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1984 Version End Date: -

ID	Location	Details	
16	1798m NW	Status: Historical Licence No: 03/28/36/0161 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: RYECROFT ROAD,HEMINGTON - HEMINGTON BRK Data Type: Point Name: T C HIGGINS & SON Easting: 445490 Northing: 328780	Annual Volume (m^3): 1250 Max Daily Volume (m^3): 125 Original Application No: - Original Start Date: 29/10/1991 Expiry Date: - Issue No: 100 Version Start Date: 03/12/2018 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

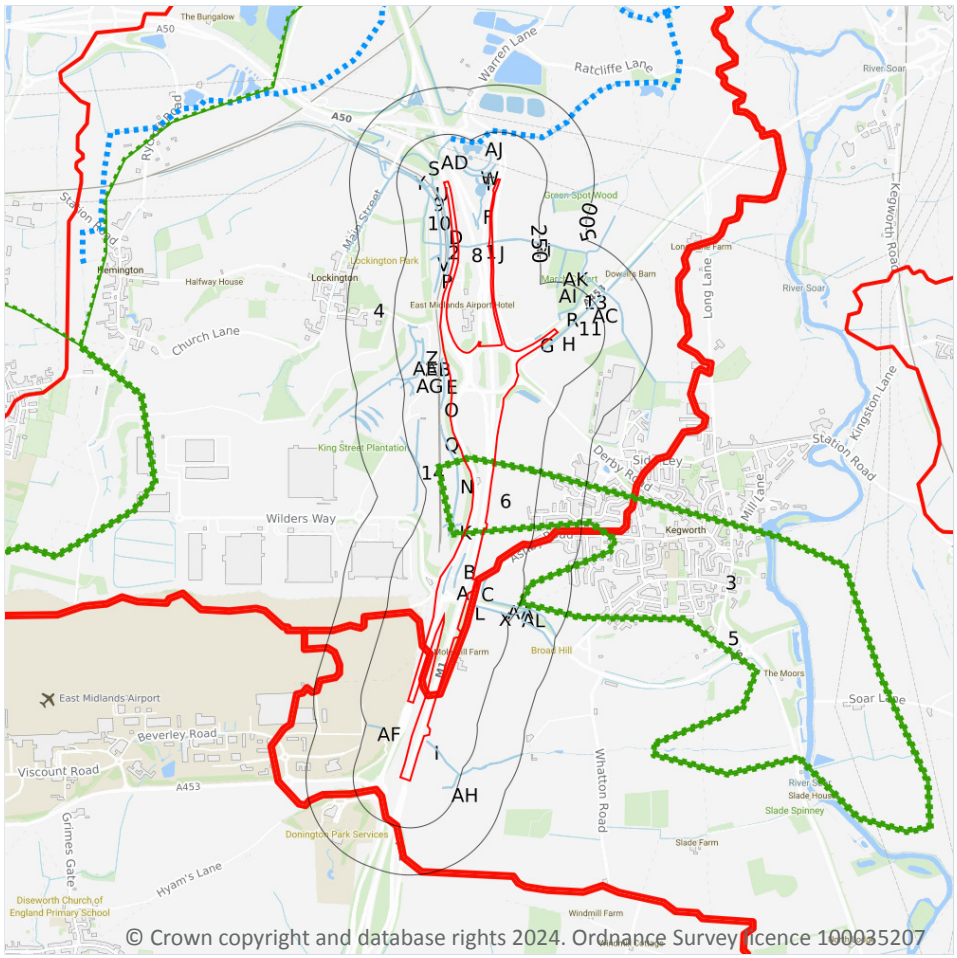
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology



- Site Outline

Search buffers in metres (m)

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

6.1 Water Network (OS MasterMap)

Records within 250m	109

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 59 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	-

ID	Location	Type of water feature	Ground level	Permanence	Name
2	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse may not contain water all year round**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse may not contain water all year round**	**-**
A	**On site**	**Manmade watercourse for water transfer.**	**On ground surface**	**Watercourse may not contain water all year round**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	14m S	Inland river not influenced by normal tidal action.	Underground	Watercourse may not contain water all year round	-
C	14m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-

ID	Location	Type of water feature	Ground level	Permanence	Name
D	15m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	15m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	15m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
G	17m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	21m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	22m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	24m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	31m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
K	32m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	34m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
L	38m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
M	39m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	43m S	Inland river not influenced by normal tidal action.	Underground	Watercourse may not contain water all year round	-

ID	Location	Type of water feature	Ground level	Permanence	Name
K	43m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	45m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	47m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
L	48m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
O	49m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	50m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	51m N	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	54m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
8	55m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	55m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	55m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
F	55m N	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Q	56m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
R	56m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Q	57m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
T	59m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	59m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
S	60m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	61m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	62m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	65m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	67m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
K	71m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	71m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	72m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	74m S	Inland river not influenced by normal tidal action.	Underground	Watercourse may not contain water all year round	-

ID	Location	Type of water feature	Ground level	Permanence	Name
9	82m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	83m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	88m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	89m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
X	92m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
10	92m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	93m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	94m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	99m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Y	99m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	102m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	102m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	102m N	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
Y	103m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
11	110m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AA	113m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
AB	116m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	119m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AC	122m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AB	123m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	124m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AD	124m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	133m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AB	135m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
I	137m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AE	142m N	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
Z	143m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
13	156m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	157m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	157m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AF	160m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	163m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
14	167m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AD	173m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AD	173m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AD	174m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
AH	175m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	201m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	202m NW	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
AG	206m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	214m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	215m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	215m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	215m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AI	216m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AI	219m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AG	220m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AJ	221m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AK	221m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	231m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	232m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	237m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AH	238m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	239m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AL	242m S	Inland river not influenced by normal tidal action.	Underground	Watercourse may not contain water all year round	-
AG	249m NW	Manmade watercourse for water transfer.	On ground surface	Watercourse may not contain water all year round	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	60

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 59 >**

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 59 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
3	**On site**	**River**	**Soar from Long Whatton Brook to Trent**	**GB104028047212**	**Soar River**	**Soar**
4	**On site**	**River**	**Hemington Brook Catchment (trib of the Soar)**	**GB104028047410**	**Soar River**	**Soar**

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

6.4 WFD Surface water bodies

Records identified	2

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 59 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
16	216m N	River	Hemington Brook Catchment (trib of the Soar)	GB104028047410 ↗	Bad	Fail	Bad	2019
-	1286m NE	River	Soar from Long Whatton Brook to Trent	GB104028047212 ↗	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	2

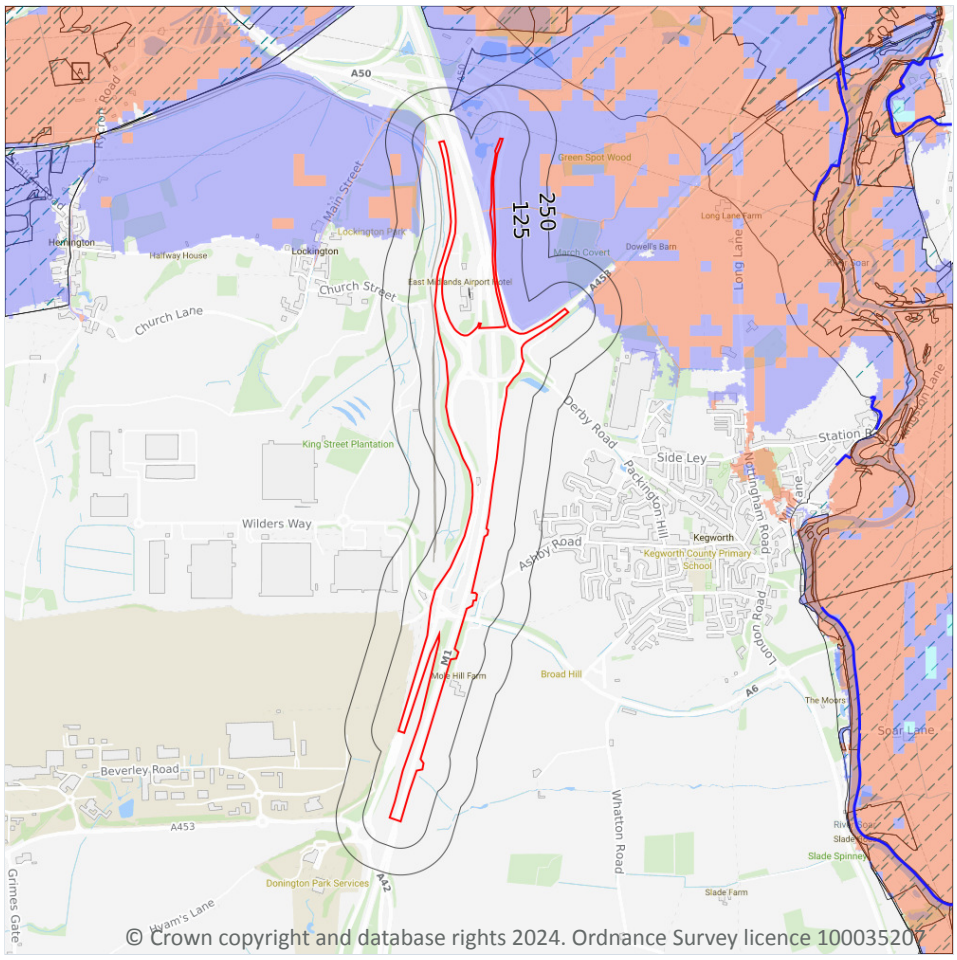
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 59 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
5	**On site**	**Soar - PT Sandstone**	**GB40401G302800 ↗**	**Poor**	**Poor**	**Good**	**2019**
6	**On site**	**Soar - Secondary Combined**	**GB40402G990600 ↗**	**Good**	**Good**	**Good**	**2019**

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

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

River and coastal flooding:

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

7.1 Risk of flooding from rivers and the sea

Records within 50m	3

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 70 >**

Distance	Flood risk category
On site	**High**
0 - 50m	High

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

7.2 Historical Flood Events

Records within 250m	**2**

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.

Features are displayed on the River and coastal flooding map on **page 70 >**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
A	142m N	Trent 1932 Shardlow & Notts	1932-01-01 1932-01-01	Main river	Channel capacity exceeded (no raised defences)	Fluvial
A	142m N	Trent 1932 Shardlow & Notts	1932-01-01 1932-01-01	Main river	Channel capacity exceeded (no raised defences)	Fluvial

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

7.3 Flood Defences

Records within 250m	**0**

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	**0**

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

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

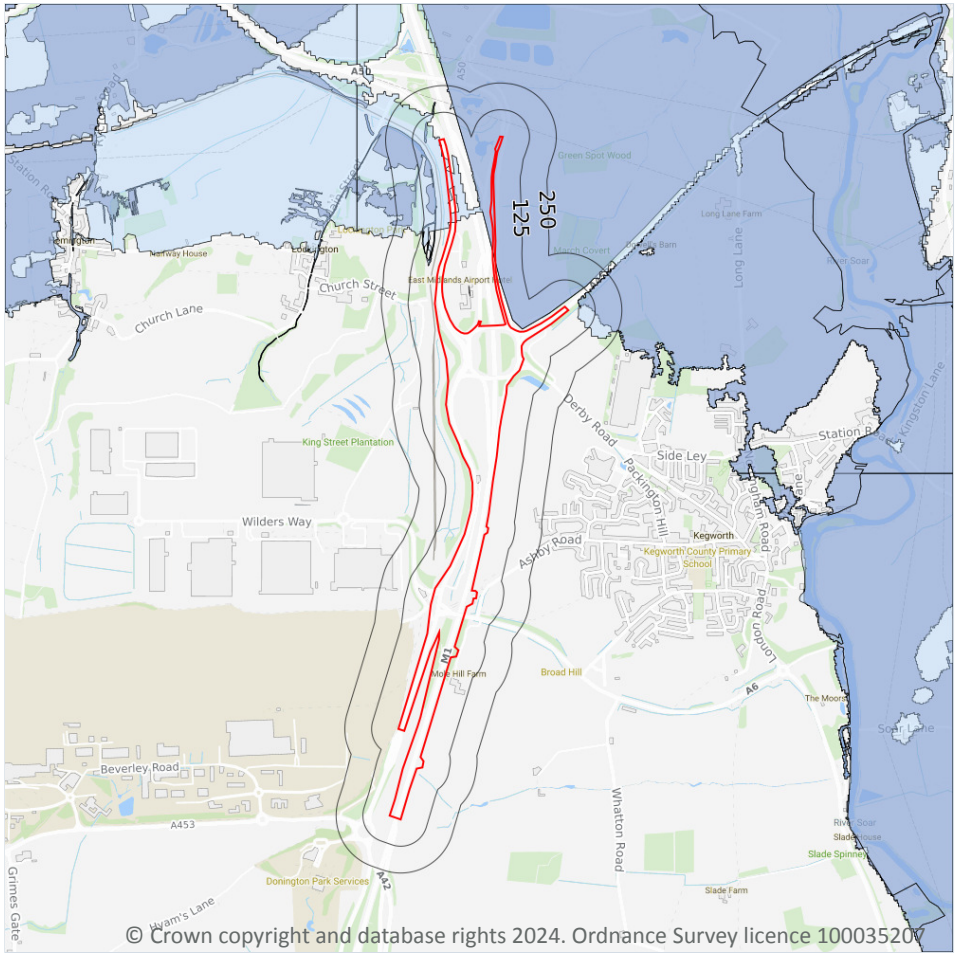
7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

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

Features are displayed on the River and coastal flooding map on **page 70 >**

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

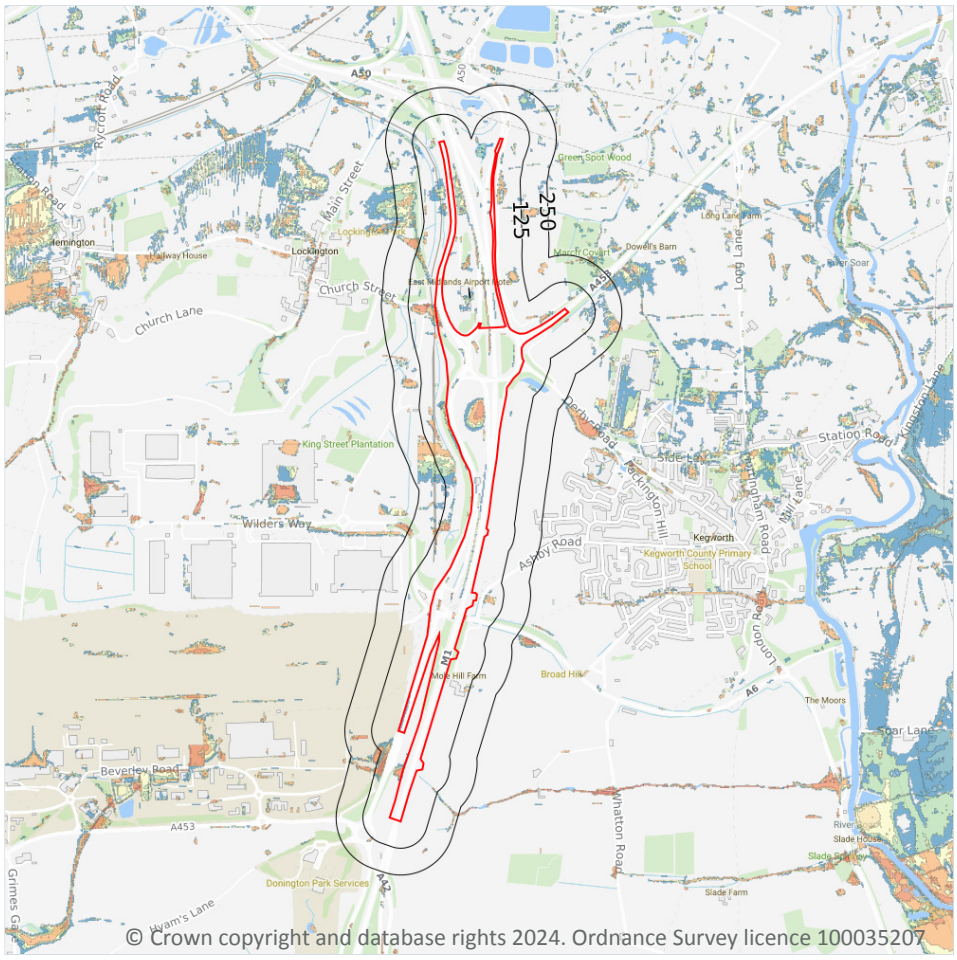
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 70 >**

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

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

8 Surface water flooding



Site Outline

Search buffers in metres (m)

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

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

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

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

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 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 75 >**

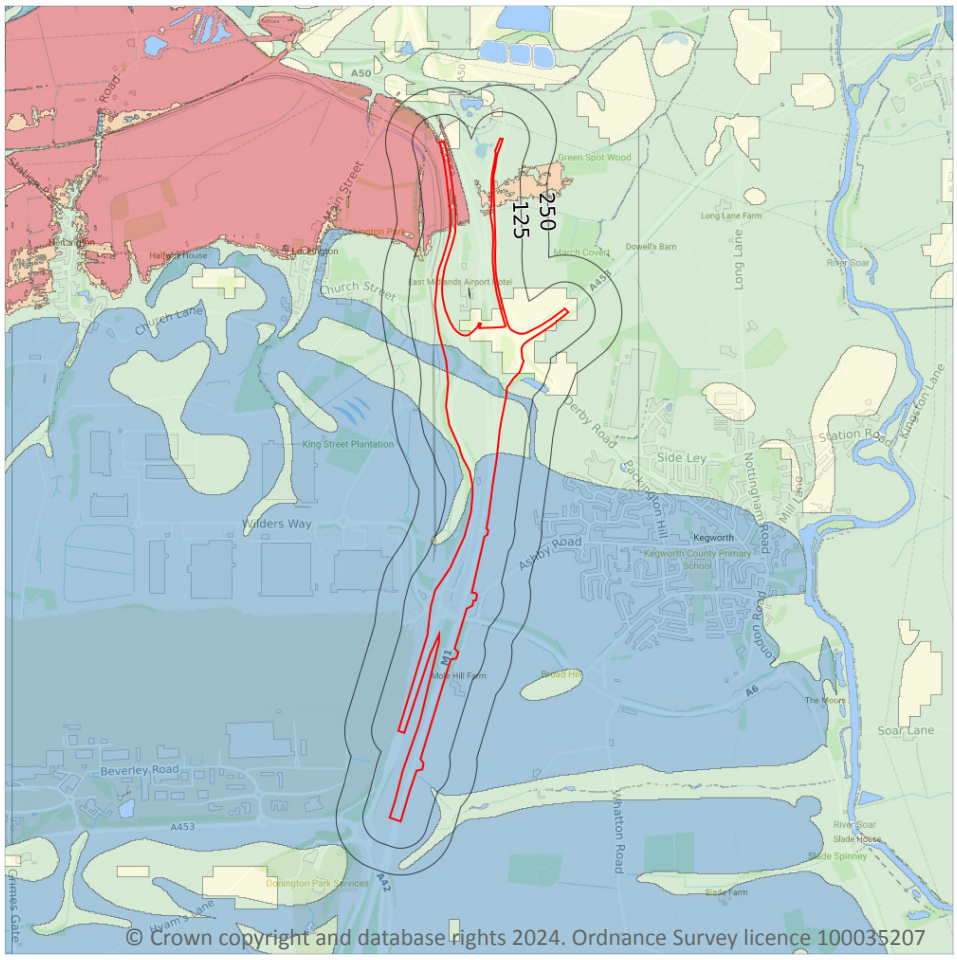
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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



Site Outline

Search buffers in metres (m)

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

9.1 Groundwater flooding

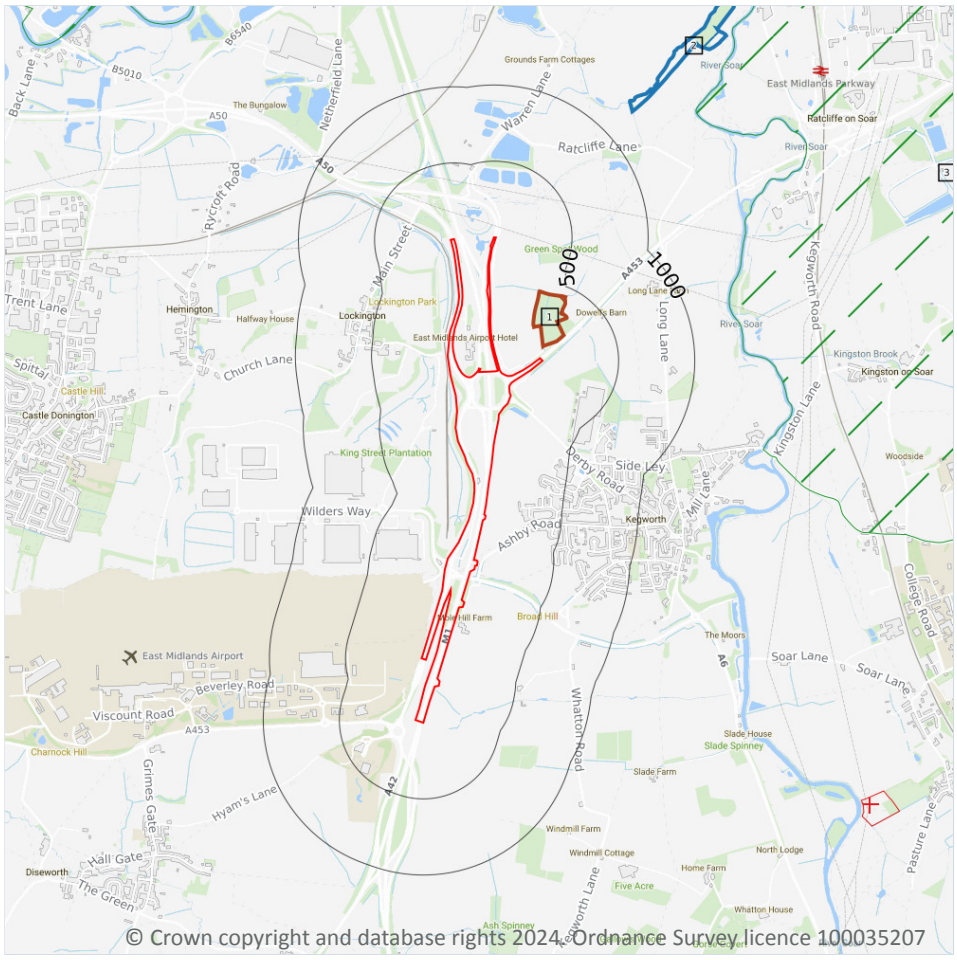
Highest risk on site	**High**
Highest risk within 50m	**High**

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

Features are displayed on the Groundwater flooding map on **page 77 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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Site Outline

Search buffers in metres (m)

- Sites of Special Scientific Interest (SSSI)
- Local Nature Reserves (LNR)
- Designated Ancient Woodland
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	1

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.

Features are displayed on the Environmental designations map on **page 78 >**

ID	Location	Name	Data source
2	1220m NE	Lockington Marshes	Natural England

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	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 78 >**

ID	Location	Name	Woodland Type
1	81m NE	March Covert	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	1

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

Features are displayed on the Environmental designations map on **page 78 >**

ID	Location	Name	Local Authority name
3	1279m NE	Derby and Nottingham Green Belt	Rushcliffe

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

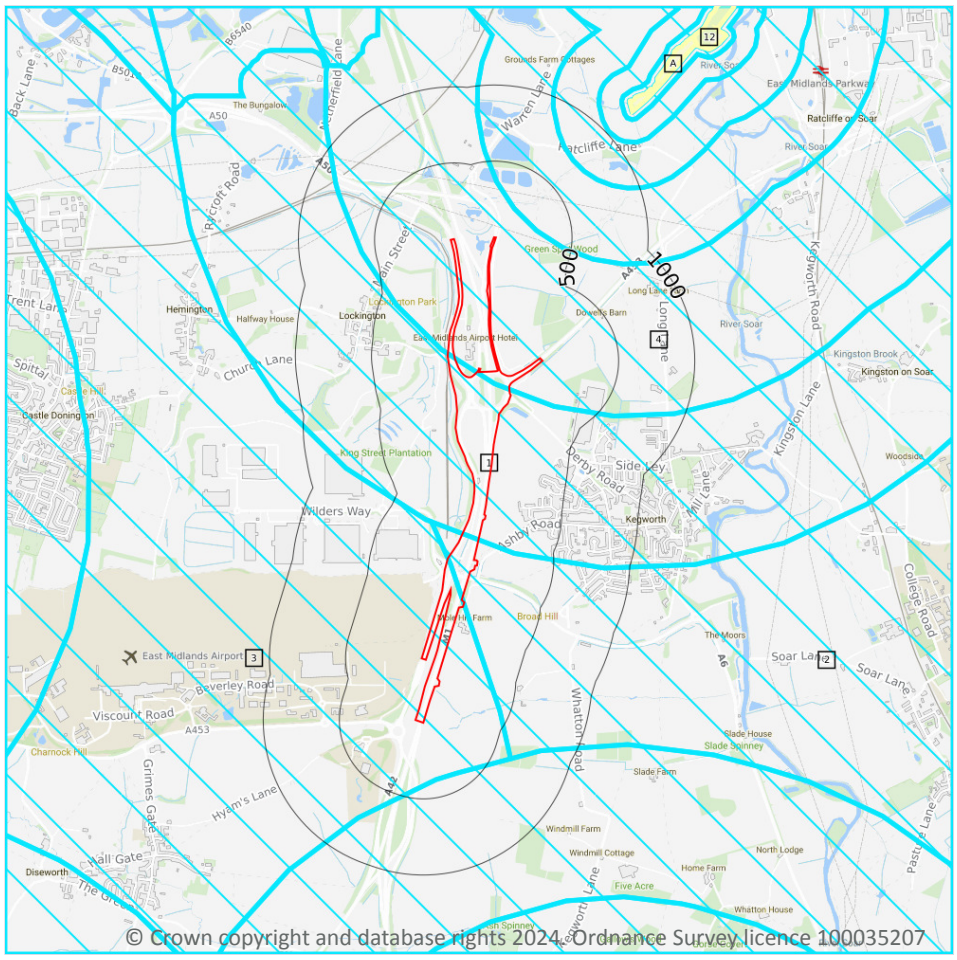
Records within 2000m	4

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

Location	Name	Type	NVZ ID	Status
On site	**SOAR R NVZ**	**Surface Water**	**309**	**Existing**
On site	**SOAR R NVZ**	**Surface Water**	**309**	**Existing**
On site	**Burton**	**Groundwater**	**34**	**Existing**
1322m SE	Burton	Groundwater	34	Existing

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 83 >**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**
2	On site	**Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**
3	On site	**Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**
4	On site	**Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Rural residential - Any residential development of 100 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	2

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.

Features are displayed on the SSSI Impact Zones and Units map on **page 83 >**

ID: A
Location: 1220m NE
SSSI name: Lockington Marshes
Unit name: South Marsh
Broad habitat: Neutral Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

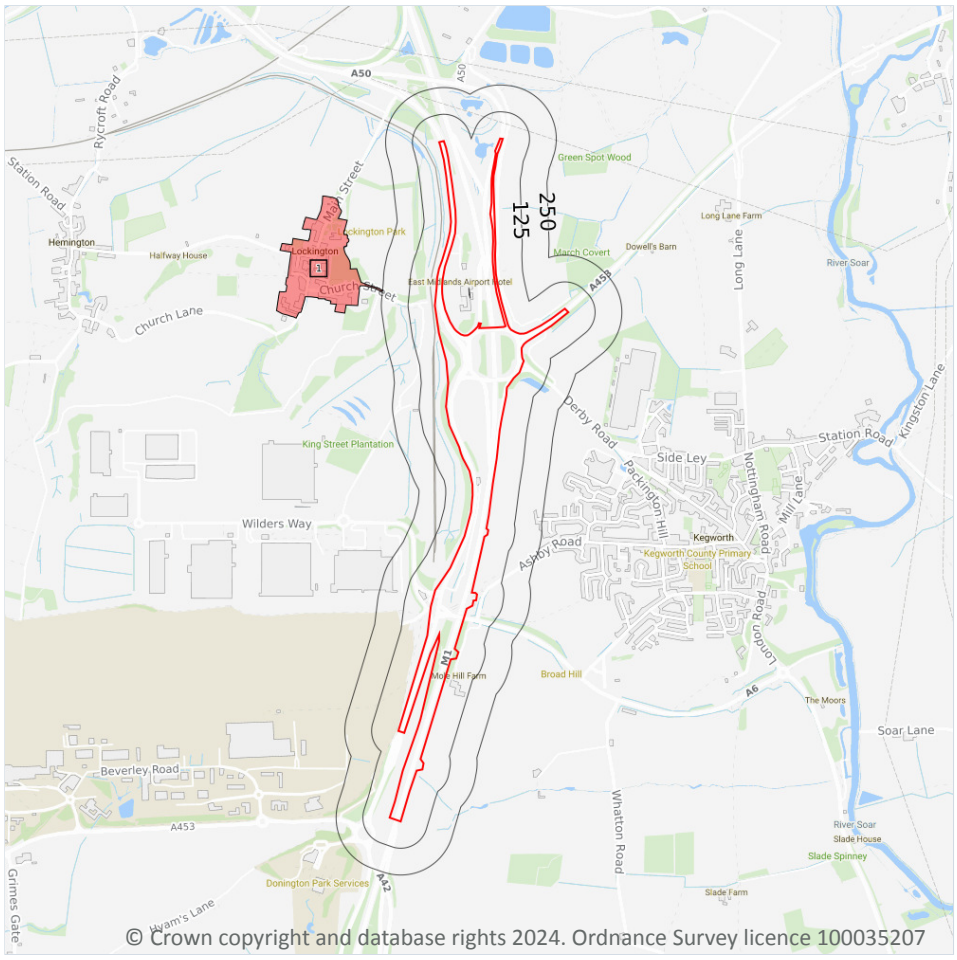
Feature name	Feature condition	Date of assessment
Invert. assemblage W3 permanent wet mire	Unfavourable - Recovering	01/07/2014
Lowland fens, including basin, flood-plain, open water transition and valley fens	Favourable	01/07/2014

ID: 12
Location: 1828m NE
SSSI name: Lockington Marshes
Unit name: South Carr
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Unfavourable - Recovering	01/07/2014

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

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	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	1

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.

Features are displayed on the Visual and cultural designations map on **page 86 >**

ID	Location	Name	District	Date of designation
1	250m NW	Lockington	North West Leicestershire	08/09/1992

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

11.6 Scheduled Ancient Monuments

Records within 250m	**0**

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

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

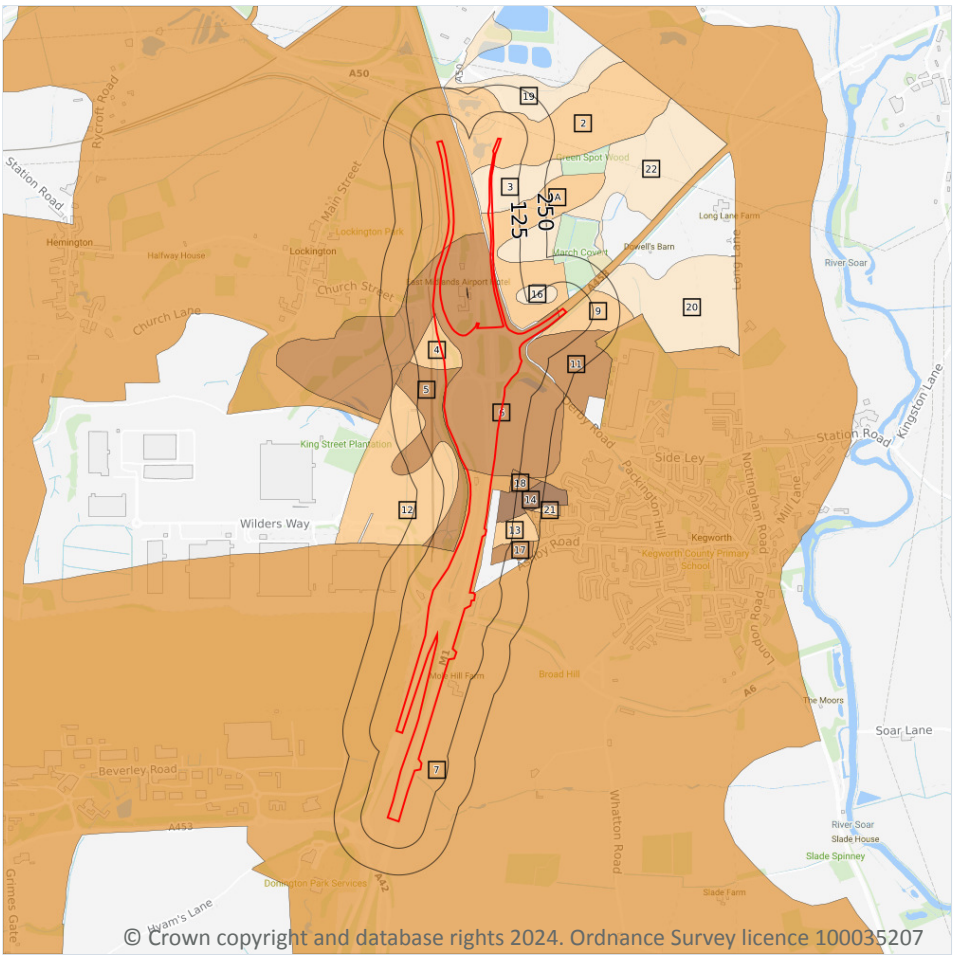
11.7 Registered Parks and Gardens

Records within 250m	**0**

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	20

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 89 >**

ID	Location	Classification	Description
2	**On site**	**Grade 3a**	**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.**

ID	Location	Classification	Description
3	**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.**
4	**On site**	**Grade 3a**	**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.**
5	**On site**	**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.**
6	**On site**	**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.**
7	**On site**	**Grade 3**	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**
A	**On site**	**Grade 3a**	**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.**
9	3m NE	Grade 3a	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.
11	16m NE	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.
A	19m 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.
12	20m N	Grade 3a	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.

ID	Location	Classification	Description
13	42m SE	Grade 3a	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.
14	49m SE	Grade 1	Excellent quality agricultural land. Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.
16	56m NE	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.
17	59m SE	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.
18	90m E	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
19	127m 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.
20	162m NE	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.
21	205m SE	Grade 3a	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.
22	215m NE	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	5

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.

Location	Reference	Scheme	Start Date	End date
13m E	AG00659932	Entry Level plus Higher Level Stewardship	01/09/2011	31/08/2021
16m N	AG00659932	Entry Level plus Higher Level Stewardship	01/09/2011	31/08/2021
28m NE	AG00659932	Entry Level plus Higher Level Stewardship	01/09/2011	31/08/2021
77m N	AG00659932	Entry Level plus Higher Level Stewardship	01/09/2011	31/08/2021
190m S	AG00591636	Entry Level plus Higher Level Stewardship	01/10/2014	30/09/2024

This data is sourced from Natural England.

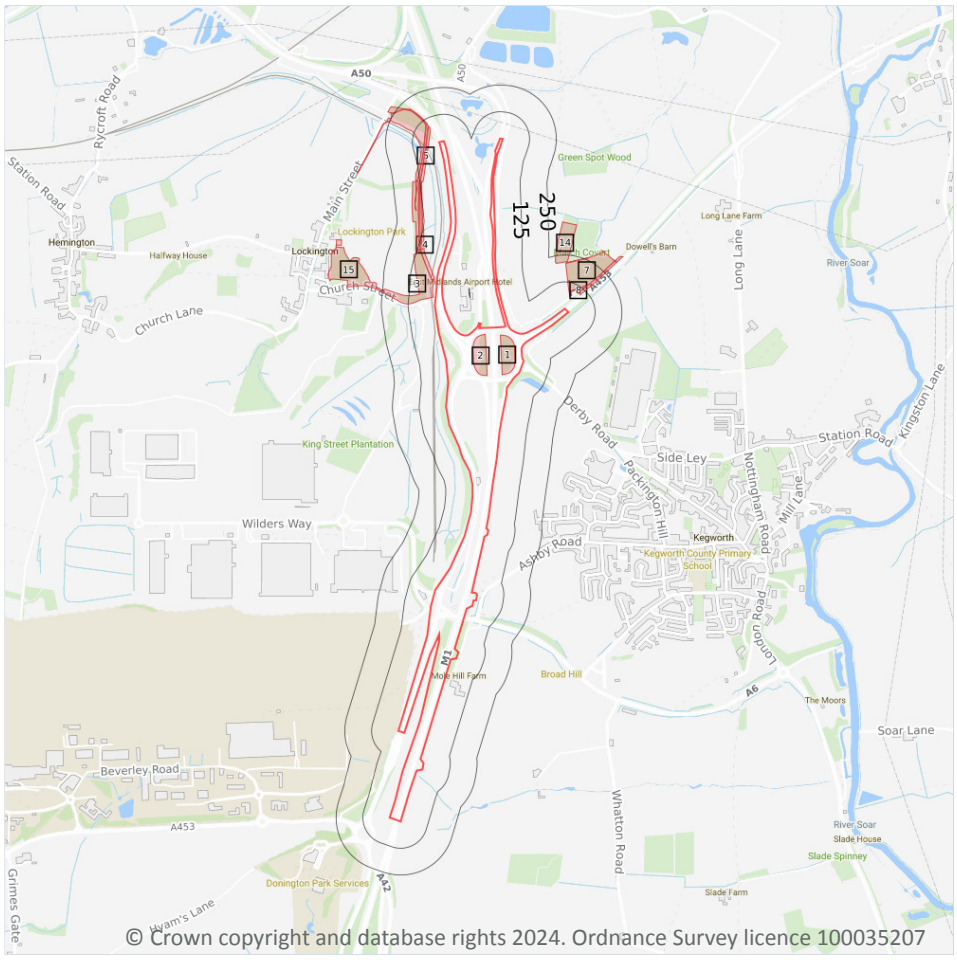
12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders

Habitat Networks

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

13.1 Priority Habitat Inventory

Records within 250m	15

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 94 >**

ID	Location	Main Habitat	Other habitats
1	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
2	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
3	12m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	13m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
5	48m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	61m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	64m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	66m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	70m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	96m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
11	109m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
12	127m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
13	213m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
14	215m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
15	250m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**0**

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	**0**

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

This data is sourced from Natural England.

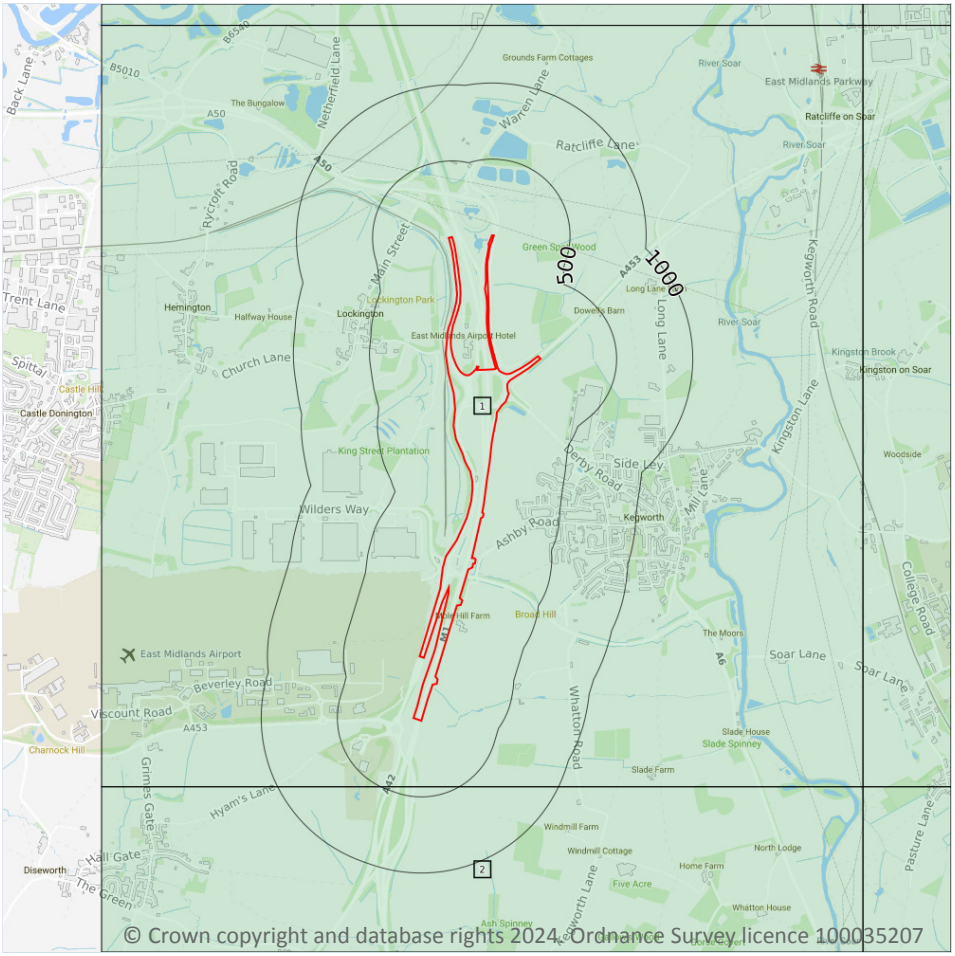
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	2

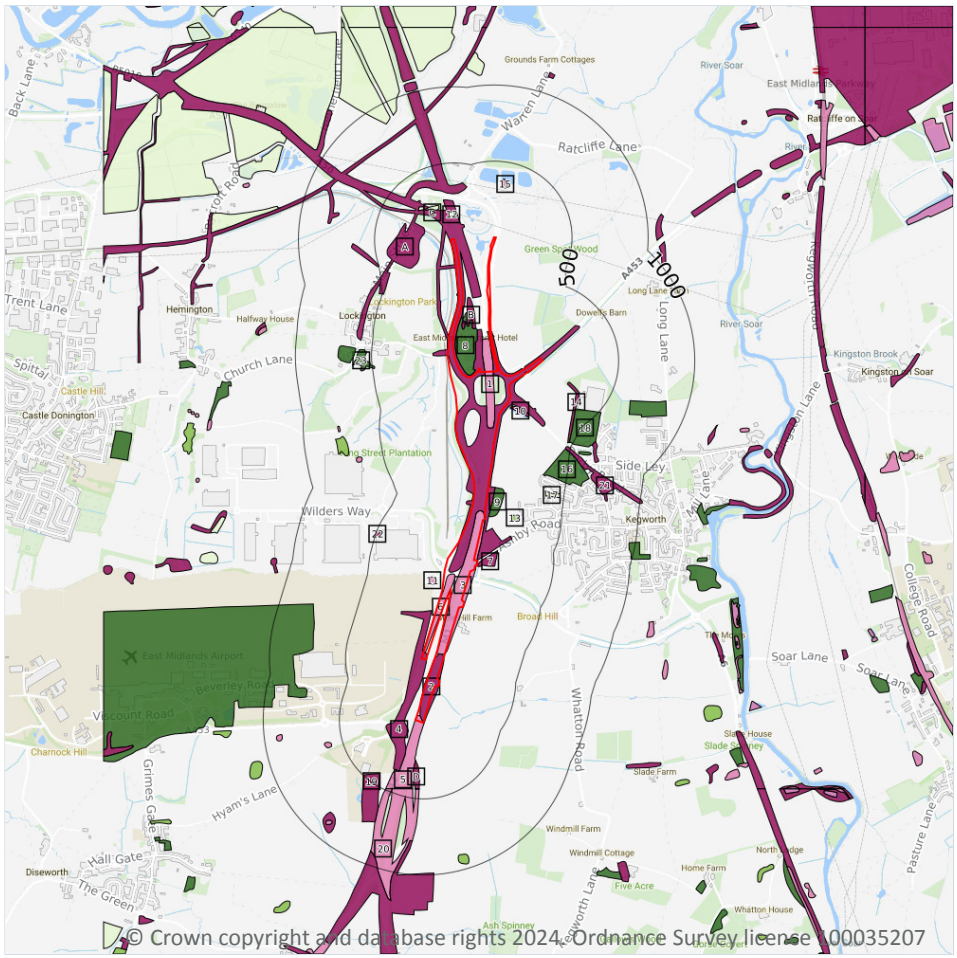
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 97 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**SK42NE**
2	434m S	Full	Full	Full	No coverage	SK42SE

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m	32

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

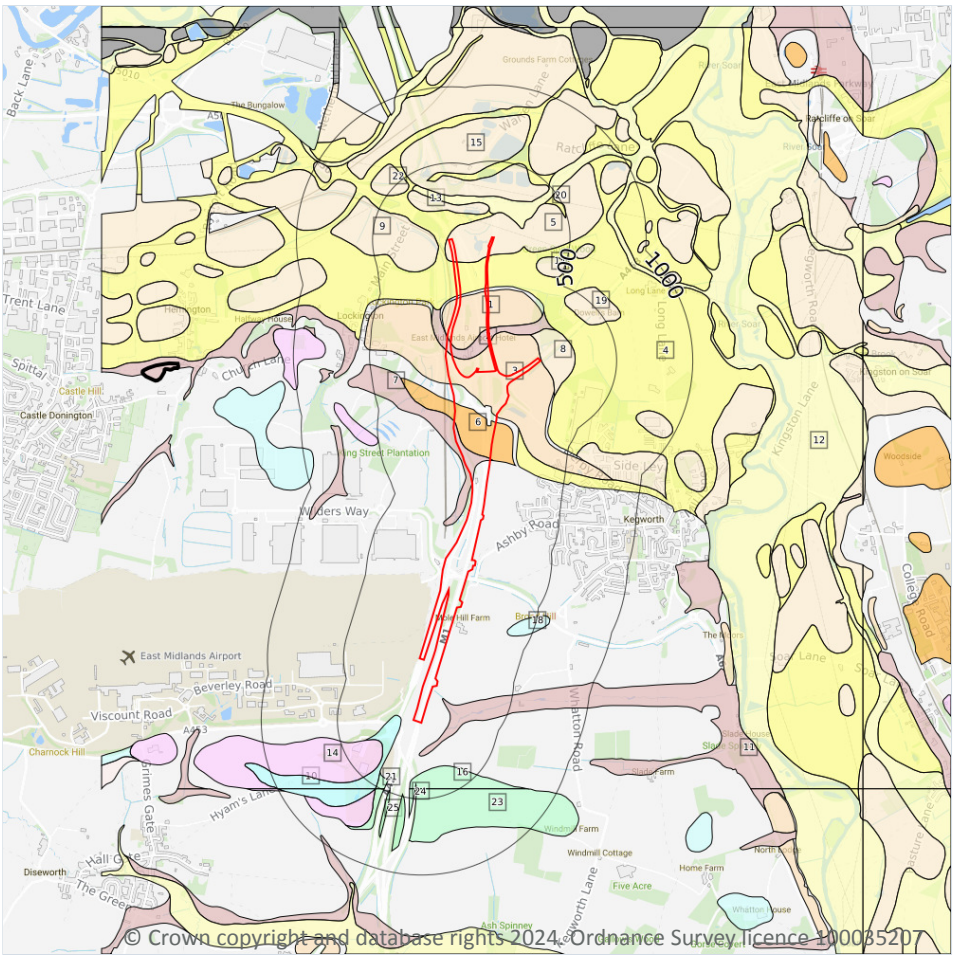
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 98 >**

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

ID	Location	LEX Code	Description	Rock description
5	**On site**	**WGR-VOID**	**Worked Ground (Undivided)**	**Void**
6	**On site**	**WGR-VOID**	**Worked Ground (Undivided)**	**Void**
A	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**
7	4m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	12m N	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
9	21m SE	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
10	30m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	33m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	35m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11	46m S	WGR-VOID	Worked Ground (Undivided)	Void
12	149m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
13	167m SE	DDGR-UKNOWN	Disturbed Ground (Undivided)	Unknown/unclassified Entry
C	207m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
C	216m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
14	222m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
D	253m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
C	267m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
15	329m N	WGR-VOID	Worked Ground (Undivided)	Void
16	346m E	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
17	376m E	WMGR-ARTDP	Infilled Ground	Artificial Deposit
18	382m NE	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
19	424m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
D	435m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
20	437m S	WGR-VOID	Worked Ground (Undivided)	Void
21	469m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
22	474m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
23	485m NW	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
A	499m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m	27

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 100 >**

ID	Location	LEX Code	Description	Rock description
1	On site	WASG-XSV	Wanlip Member - Sand And Gravel	Sand And Gravel
2	On site	HEAD-DMTN	Head - Diamicton	Diamicton
3	On site	WASG-XSV	Wanlip Member - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
4	**On site**	**HETD-XSV**	**Hemington Member - Sand And Gravel**	**Sand And Gravel**
5	**On site**	**HPSG-XSV**	**Holme Pierrepont Sand And Gravel Member - Sand And Gravel**	**Sand And Gravel**
6	**On site**	**EGSG-XSV**	**Egginton Common Sand And Gravel Member - Sand And Gravel**	**Sand And Gravel**
7	**On site**	**HEAD-DMTN**	**Head - Diamicton**	**Diamicton**
8	6m NE	SYSG-XSV	Syston Member - Sand And Gravel	Sand And Gravel
9	76m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
10	81m S	ODT-DMTN	Oadby Member - Diamicton	Diamicton
11	87m S	HEAD-DMTN	Head - Diamicton	Diamicton
12	154m N	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
13	163m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
14	260m S	GFDUA-XSV	Glaciofluvial Deposits, Anglian - Sand And Gravel	Sand And Gravel
15	267m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
16	307m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
17	317m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
18	344m S	THT-DMTN	Thrussington Member - Diamicton	Diamicton
19	380m NE	SYSG-XSV	Syston Member - Sand And Gravel	Sand And Gravel
20	402m N	HETD-XSV	Hemington Member - Sand And Gravel	Sand And Gravel
21	406m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
22	425m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
23	434m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
24	436m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
25	479m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
26	486m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton

ID	Location	LEX Code	Description	Rock description
27	491m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton

This data is sourced from the British Geological Survey.

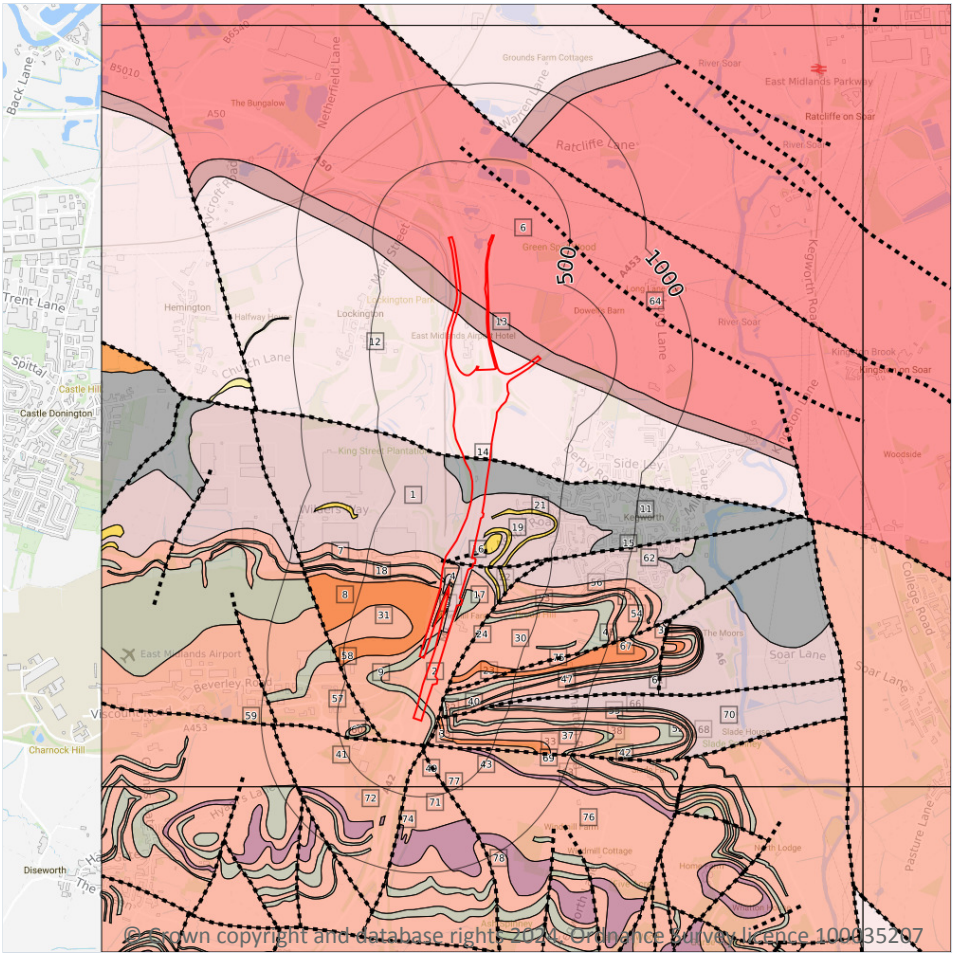
14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



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Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m	62

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 103 >**

ID	Location	LEX Code	Description	Rock age
1	On site	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
2	On site	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
3	On site	GUN-SDST	Gunthorpe Member - Sandstone	Ladinian Age - Anisian Age

ID	Location	LEX Code	Description	Rock age
4	**On site**	**TPSF-MDSS**	**Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone**	**Anisian Age - Olenekian Age**
5	**On site**	**GUN-DSLST**	**Gunthorpe Member - Dolomitic Siltstone**	**Ladinian Age - Anisian Age**
6	**On site**	**BCMU-MDST**	**Branscombe Mudstone Formation - Mudstone**	**Rhaetian Age - Norian Age**
7	**On site**	**GUN-DSLST**	**Gunthorpe Member - Dolomitic Siltstone**	**Ladinian Age - Anisian Age**
8	**On site**	**GUN-SDST**	**Gunthorpe Member - Sandstone**	**Ladinian Age - Anisian Age**
9	**On site**	**GUN-DSLST**	**Gunthorpe Member - Dolomitic Siltstone**	**Ladinian Age - Anisian Age**
10	**On site**	**TPSF-MDSS**	**Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone**	**Anisian Age - Olenekian Age**
11	**On site**	**BMS-SDST**	**Bromsgrove Sandstone Formation - Sandstone**	**Anisian Age - Early Triassic Epoch**
12	**On site**	**EDW-MDST**	**Edwalton Member - Mudstone**	**Carnian Age**
13	**On site**	**AS-SDST**	**Arden Sandstone Formation - Sandstone**	**Carnian Age**
17	4m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
18	33m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
19	47m S	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
20	50m S	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
21	56m SE	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
22	70m S	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
23	80m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
25	81m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
27	84m S	GUN-SDST	Gunthorpe Member - Sandstone	Ladinian Age - Anisian Age
28	90m S	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
29	93m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
30	98m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
31	99m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
32	100m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
33	103m S	GUN-SDST	Gunthorpe Member - Sandstone	Ladinian Age - Anisian Age
35	103m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age

ID	Location	LEX Code	Description	Rock age
36	117m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
37	119m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
38	153m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
39	158m S	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
40	159m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
41	161m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
43	163m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
45	168m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
46	172m S	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
47	181m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
48	187m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
49	189m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
51	192m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
52	197m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
53	203m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
54	206m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
55	210m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
56	242m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
57	252m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
60	293m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
61	293m S	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
62	297m SE	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
63	297m S	DIS-SDST	Diseworth Sandstone - Sandstone	Ladinian Age
65	320m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
66	351m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
67	373m S	GUN-SDST	Gunthorpe Member - Sandstone	Ladinian Age - Anisian Age
68	380m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age

ID	Location	LEX Code	Description	Rock age
69	381m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
70	411m S	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
71	434m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
72	445m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
75	453m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
76	460m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**16**

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

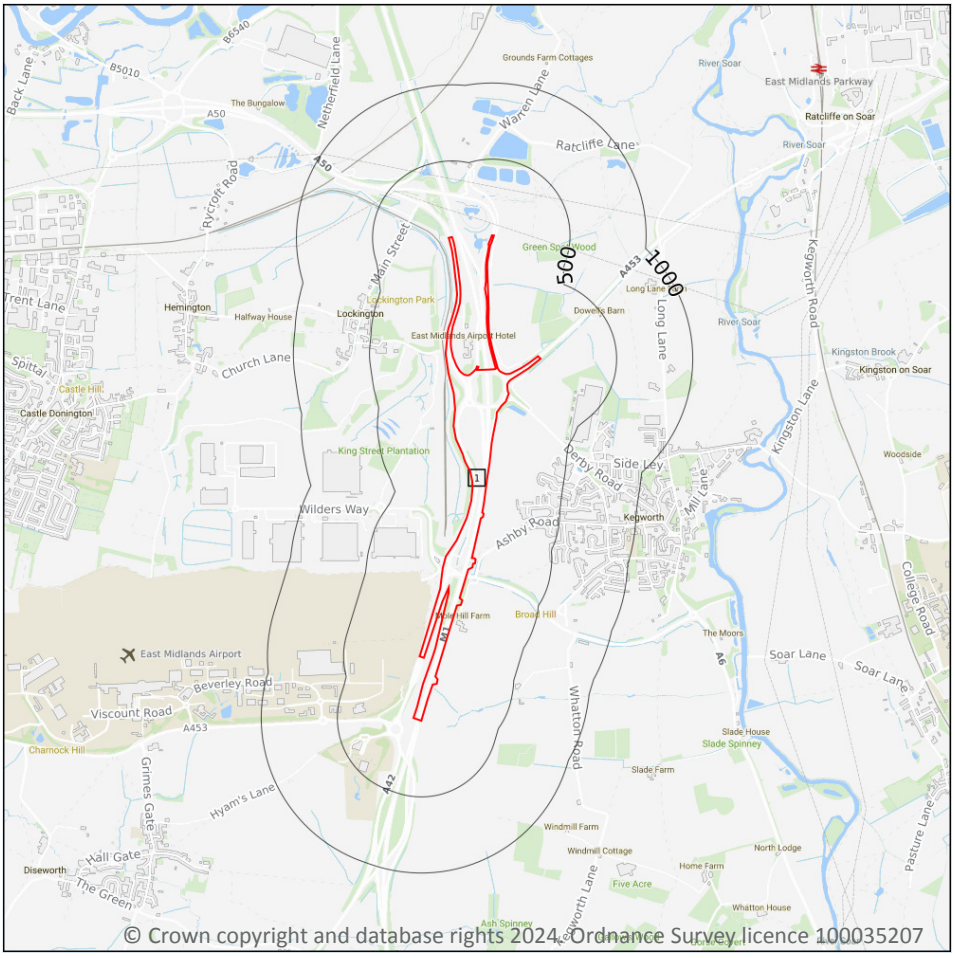
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 103 >**

ID	Location	Category	Description
14	**On site**	**FAULT**	**Normal fault, inferred**
15	**On site**	**FAULT**	**Normal fault, inferred**
16	**On site**	**FAULT**	**Normal fault, inferred**
24	80m S	FAULT	Normal fault, inferred
26	81m S	FAULT	Normal fault, inferred
34	103m S	FAULT	Normal fault, inferred
42	161m S	FAULT	Normal fault, inferred
44	163m S	FAULT	Normal fault, inferred
50	189m S	FAULT	Normal fault, inferred
58	252m S	FAULT	Normal fault, inferred
59	252m S	FAULT	Normal fault, inferred
64	313m N	FAULT	Normal fault, inferred
73	445m S	FAULT	Normal fault, inferred

ID	Location	Category	Description
74	448m S	FAULT	Normal fault, inferred
77	460m S	FAULT	Normal fault, inferred
78	470m S	FAULT	Normal fault, inferred

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 108 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW141_loughborough_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.

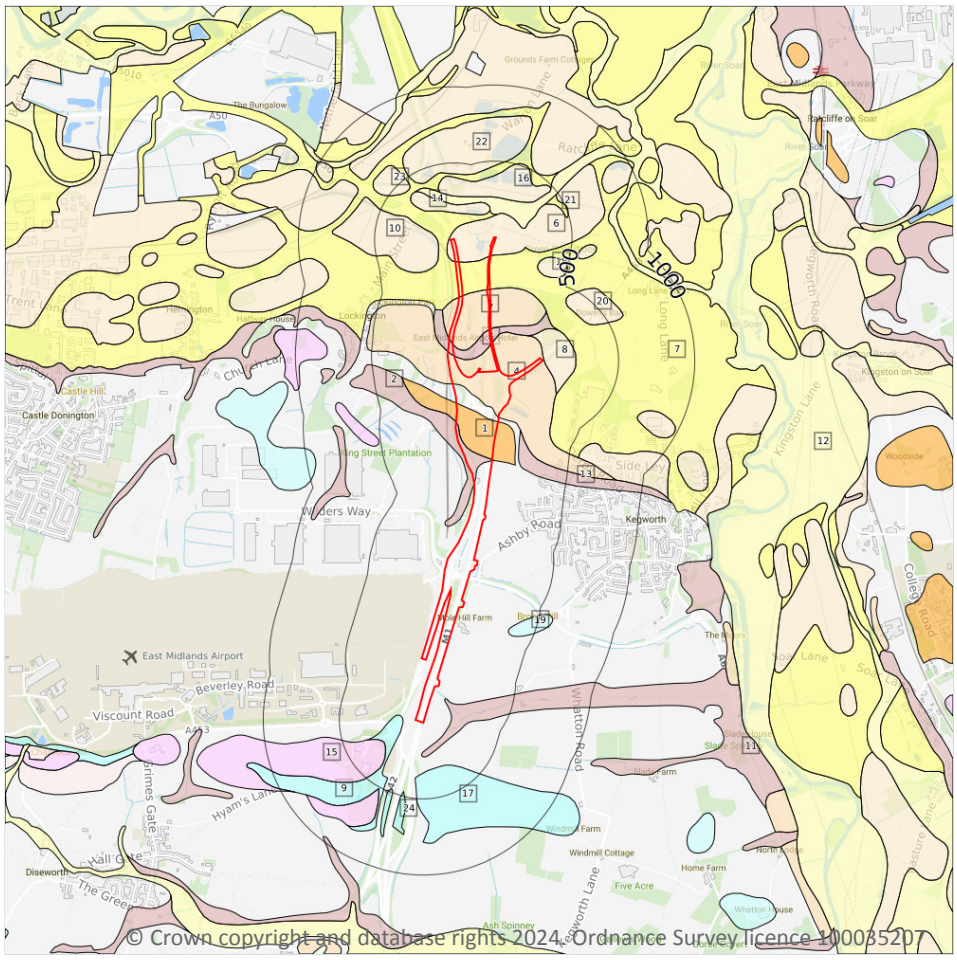
15.3 Artificial ground permeability (50k)

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	25

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 110 >**

ID	Location	LEX Code	Description	Rock description
1	On site	EGSG-XSV	EGGINTON COMMON SAND AND GRAVEL MEMBER	SAND AND GRAVEL
2	On site	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
3	On site	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	**On site**	**WASG-XSV**	**WANLIP MEMBER**	**SAND AND GRAVEL**
5	**On site**	**WASG-XSV**	**WANLIP MEMBER**	**SAND AND GRAVEL**
6	**On site**	**HPSG-XSV**	**HOLME PIERREPONT SAND AND GRAVEL MEMBER**	**SAND AND GRAVEL**
7	**On site**	**HETD-XZV**	**HEMINGTON MEMBER**	**SILT AND GRAVEL**
8	11m NE	SYSG-XSV	SYSTON MEMBER	SAND AND GRAVEL
9	82m S	ODT-DMTN	OADBY MEMBER	DIAMICTON
10	85m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
11	90m S	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
12	151m N	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
13	156m NE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
14	163m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
15	253m S	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL
16	260m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
17	307m S	ODT-DMTN	OADBY MEMBER	DIAMICTON
18	313m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
19	338m S	THT-DMTN	THRUSSINGTON MEMBER	DIAMICTON
20	375m NE	SYSG-XSV	SYSTON MEMBER	SAND AND GRAVEL
21	393m N	HETD-XZV	HEMINGTON MEMBER	SILT AND GRAVEL
22	410m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
23	429m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
24	471m S	ODT-DMTN	OADBY MEMBER	DIAMICTON
25	478m S	ODT-DMTN	OADBY MEMBER	DIAMICTON

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	8

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**Very High**	**High**
On site	**Mixed**	**High**	**Very Low**
On site	**Mixed**	**High**	**Very Low**
On site	**Intergranular**	**High**	**Moderate**
On site	**Intergranular**	**Very High**	**High**
11m NE	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

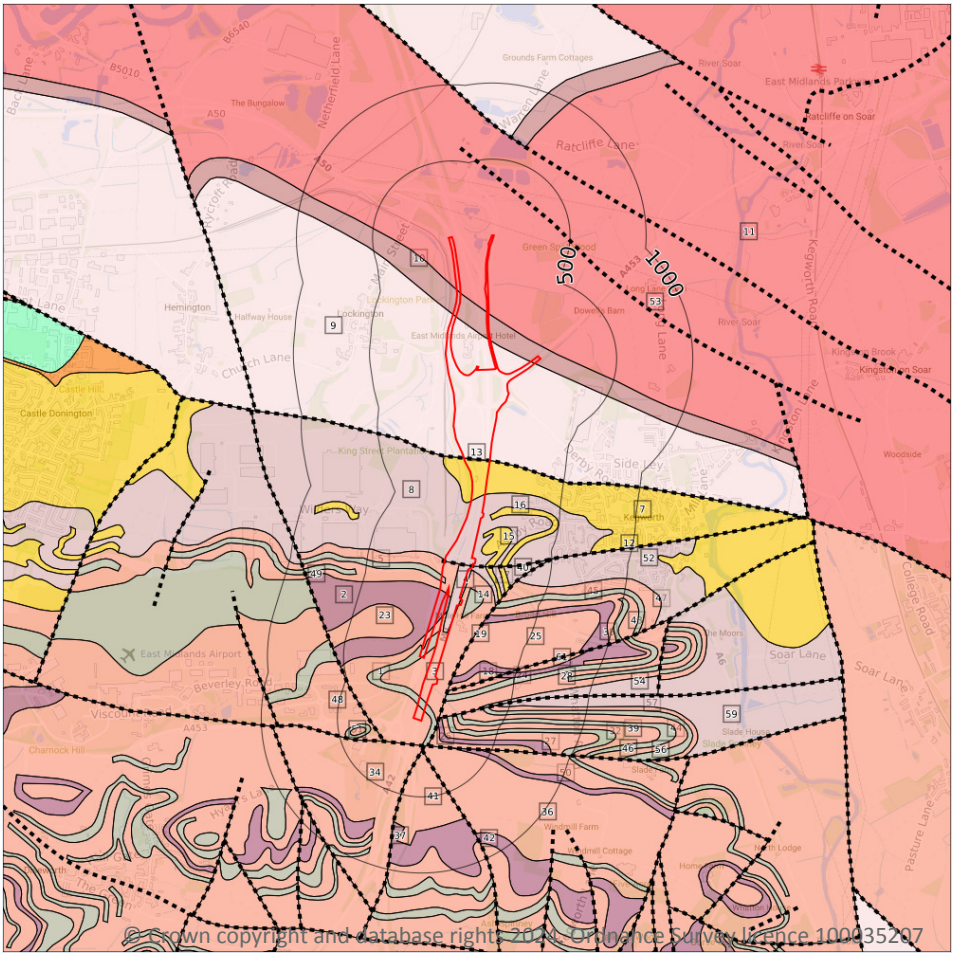
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m	51

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 113 >**

ID	Location	LEX Code	Description	Rock age
1	On site	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
2	On site	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
3	On site	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN

ID	Location	LEX Code	Description	Rock age
4	**On site**	**TPSF-SIMS**	**TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE**	**OLENEKIAN**
5	**On site**	**GUN-DSLST**	**GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC**	**ANISIAN**
6	**On site**	**GUN-MDST**	**GUNTHORPE MEMBER - MUDSTONE**	**ANISIAN**
7	**On site**	**HEY-SDST**	**HELSBY SANDSTONE FORMATION - SANDSTONE**	**ANISIAN**
8	**On site**	**TPSF-SIMS**	**TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE**	**OLENEKIAN**
9	**On site**	**EDW-MDST**	**EDWALTON MEMBER - MUDSTONE**	**CARNIAN**
10	**On site**	**AS-SDST**	**ARDEN SANDSTONE FORMATION - SANDSTONE**	**CARNIAN**
11	**On site**	**BCMU-MDST**	**BRANSCOMBE MUDSTONE FORMATION - MUDSTONE**	**NORIAN**
14	28m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
15	38m S	TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE	OLENEKIAN
16	45m SE	TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE	OLENEKIAN
17	72m S	TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE	OLENEKIAN
18	82m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
20	85m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
22	86m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
23	93m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
24	95m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
25	101m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
26	106m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
27	106m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
28	107m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
30	113m S	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
31	122m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
32	154m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
33	155m S	TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE	OLENEKIAN
34	162m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN

ID	Location	LEX Code	Description	Rock age
36	167m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
38	186m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
39	187m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
40	189m S	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
41	193m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
43	196m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
44	210m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
45	215m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
46	238m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
47	239m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
48	246m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
50	280m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
51	290m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
52	299m SE	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
54	320m S	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
55	321m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
56	340m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
57	370m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
58	377m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
59	412m S	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
60	423m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
61	452m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	13

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**	**Moderate**	**Low**
On site	**Fracture**	**Moderate**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Mixed**	**High**	**Moderate**
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**Low**	**Low**
28m S	Fracture	Moderate	Low
38m S	Fracture	High	Moderate
45m SE	Fracture	High	Moderate

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	10

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.

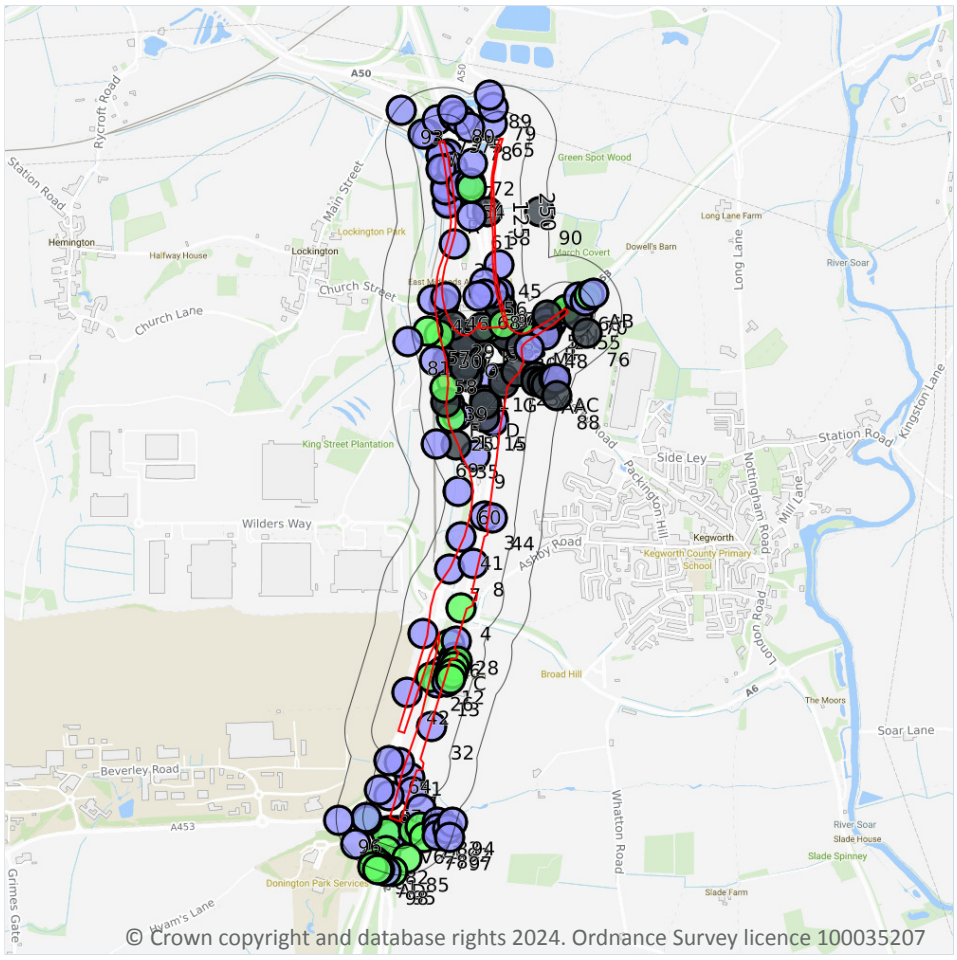
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 113 >**

ID	Location	Category	Description
12	**On site**	**FAULT**	**Fault, inferred**
13	**On site**	**FAULT**	**Fault, inferred**

ID	Location	Category	Description
19	82m S	FAULT	Fault, inferred
21	85m S	FAULT	Fault, inferred
29	107m S	FAULT	Fault, inferred
35	162m S	FAULT	Fault, inferred
37	167m S	FAULT	Fault, inferred
42	193m S	FAULT	Fault, inferred
49	246m S	FAULT	Fault, inferred
53	309m N	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

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

16.1 BGS Boreholes

Records within 250m	186

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 118 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	447140 325640	M1 EXTENSIONS BH306 KEGWORTH	9.14	N	218144 ↗
2	On site	447321 327682	A564 DERBY S BYPASS/SPUR BH139	24.45	N	218279 ↗
3	On site	447491 326858	A42 CASTLE DONINGTON 749	4.0	N	218211 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
4	On site	447380 326430	M1 EXTENSIONS BH309 KEGWORTH	12.19	N	218147 ↗
5	On site	447339 327496	A564 DERBY S BYPASS/SPUR BH140	30.2	N	218280 ↗
6	On site	447330 326260	M1 EXTENSIONS BH308 KEGWORTH	15.24	N	218146 ↗
7	On site	447330 326610	A42 CASTLE DONINGTON BH279	4.0	N	218251 ↗
8	On site	447440 326640	M1 EXTENSIONS BH310 KEGWORTH	7.62	N	218148 ↗
9	On site	447446 327143	A564 DERBY S BYPASS/SPUR TP234	3.0	N	218291 ↗
10	On site	447365 327327	A564 DERBY S BYPASS/SPUR TP233	3.0	N	218290 ↗
11	On site	447530 327500	M1 EXTENSIONS BH312 KEGWORTH	9.14	N	218150 ↗
12	On site	447292 326133	A42 CASTLE DONINGTON 748	5.0	N	218210 ↗
13	On site	447270 326080	M1 EXTENSIONS BH307 KEGWORTH	9.14	N	218145 ↗
14	On site	447300 327850	M1 JUNCTION 24 SCHEME 164 WS19	-	Y	N/A
15	On site	447490 327320	M1 JUNCTION 24 SCHEME 164 WS27	-	Y	N/A
16	On site	447560 327880	M1 JUNCTION 24 SCHEME 164 WS32	-	Y	N/A
17	On site	447340 327720	M1 JUNCTION 24 SCHEME 164 TP4	-	Y	N/A
18	On site	447430 327640	M1 JUNCTION 24 SCHEME 164 WS12	-	Y	N/A
19	On site	447620 327660	M1 JUNCTION 24 SCHEME 164 TP8	-	Y	N/A
20	On site	447630 327690	M1 JUNCTION 24 SCHEME 164	-	Y	N/A
21	On site	447410 327510	M1 JUNCTION 24 SCHEME 164 WS10	-	Y	N/A
22	On site	447660 327650	M1 JUNCTION 24 SCHEME 164 WS15	-	Y	N/A
23	On site	447640 327530	M1 JUNCTION 24 SCHEME 164 WS16	-	Y	N/A
24	On site	447820 327790	A453 WIDENING MI JUNCTION 24-A52 NOTTINGHAM WS01-06	1.6	N	18189587 ↗
25	On site	447337 327319	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1085	11.17	N	18913750 ↗
26	On site	447240 326105	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1079	15.5	N	18913771 ↗
27	On site	447556 327905	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D120L	3.2	N	19511278 ↗
28	On site	447358 326274	M1 J23a to J25 Ground Investigation CPT01	6.45	N	21246666 ↗
A	On site	447530 327315	A42 CASTLE DONINGTON BH751	7.0	N	218213 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	On site	447530 327300	M1 EXTENSIONS BH311 KEGWORTH	6.09	N	218149 ↗
B	On site	447773 327733	A453 CLIFTON TO M1 4	12.6	N	218319 ↗
B	On site	447738 327733	A453 CLIFTON TO M1 2	16.4	N	218317 ↗
B	On site	447756 327746	A453 CLIFTON TO M1 108	14.0	N	218375 ↗
C	On site	447349 326201	A42 CASTLE DONINGTON BH737R	8.0	N	218206 ↗
D	On site	447500 327380	M1 JUNCTION 24 SCHEME 164 WS29	-	Y	N/A
D	On site	447490 327400	M1 JUNCTION 24 SCHEME 164 WS28	-	Y	N/A
D	On site	447490 327380	M1 JUNCTION 24 SCHEME 164 PIT 01	-	Y	N/A
E	On site	447400 327560	M1 JUNCTION 24 SCHEME 164 TP1A	-	Y	N/A
E	On site	447430 327570	M1 JUNCTION 24 SCHEME 164 WS11	-	Y	N/A
E	On site	447400 327580	M1 JUNCTION 24 SCHEME 164 WS2	-	Y	N/A
E	On site	447400 327580	M1 JUNCTION 24 SCHEME 164 TP2	-	Y	N/A
E	On site	447400 327550	M1 JUNCTION 24 SCHEME 164 WS1	-	Y	N/A
E	On site	447410 327570	M1 JUNCTION 24 SCHEME 164	-	Y	N/A
E	On site	447400 327550	M1 JUNCTION 24 SCHEME 164 TP1B	-	Y	N/A
F	On site	447330 327380	M1 JUNCTION 24 SCHEME 164 WS20	-	Y	N/A
G	On site	447580 327500	M1 JUNCTION 24 SCHEME 164 WS17	-	Y	N/A
G	On site	447580 327480	M1 JUNCTION 24 SCHEME 164 WS18	-	Y	N/A
H	On site	447590 327700	M1 JUNCTION 24 SCHEME 164 WS7	-	Y	N/A
H	On site	447580 327710	M1 JUNCTION 24 SCHEME 164 TP7	-	Y	N/A
H	On site	447590 327700	M1 JUNCTION 24 SCHEME 164 WS6	-	Y	N/A
I	On site	447320 327580	M1 JUNCTION 24 SCHEME 164 TP11	-	Y	N/A
I	On site	447320 327580	M1 JUNCTION 24 SCHEME 164 WS5	-	Y	N/A
J	On site	447570 327830	M1 JUNCTION 24 SCHEME 164 WS30	-	Y	N/A
K	On site	447480 327720	M1 JUNCTION 24 SCHEME 164 WS13	-	Y	N/A
L	On site	447800 327760	M1 JUNCTION 24 SCHEME 164 WS33	-	Y	N/A
M	On site	447720 327710	M1 JUNCTION 24 SCHEME 164 WS26	-	Y	N/A
M	On site	447720 327710	M1 JUNCTION 24 SCHEME 164 SERVICE PIT TP12	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
N	**On site**	**447870 327820**	**M1 JUNCTION 24 SCHEME 164 WS25**	**-**	**Y**	**N/A**
O	**On site**	**447400 327660**	**M1 JUNCTION 24 SCHEME 164 WS3**	**-**	**Y**	**N/A**
O	**On site**	**447390 327680**	**M1 JUNCTION 24 SCHEME 164 TP3**	**-**	**Y**	**N/A**
P	**On site**	**447340 328370**	**SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP3/WS3**	**3.5**	**N**	**18127251**
29	**On site**	**447340 327750**	**M1 JUNCTION 24 SCHEME 164 WS4**	**-**	**Y**	**N/A**
30	**On site**	**447280 327705**	**A564 DERBY S BYPASS/SPUR BH137**	**30.0**	**N**	**218278**
Q	**On site**	**447320 328540**	**SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP1A**	**1.2**	**N**	**18127234**
L	1m NE	447780 327767	A453 CLIFTON TO M1 TP1	1.0	N	218301
31	2m N	447510 327740	M1 EXTENSIONS BH313 KEGWORTH	12.19	N	218151
Q	2m N	447320 328550	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP1/WS1	3.6	N	18127227
J	3m N	447560 327840	M1 JUNCTION 24 SCHEME 164 WS31	-	Y	N/A
K	3m N	447480 327740	M1 JUNCTION 24 SCHEME 164 WS14	-	Y	N/A
F	3m N	447310 327390	M1 JUNCTION 24 SCHEME 164 WS21	-	Y	N/A
M	3m NE	447720 327690	A648 CLIFTON TO M1 BH1 LOCKINGTON	10.06	N	218160
N	3m NE	447874 327824	A453 CLIFTON TO M1 5	15.0	N	218320
32	4m S	447243 325878	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1078	3.02	N	18913749
33	4m N	447582 327754	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1086	12.94	N	18913751
P	5m N	447350 328370	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP8	1.2	N	18127722
R	5m N	447320 328330	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP4/WS4	3.8	N	18127253
R	6m N	447320 328320	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT01	1.2	N	18127864
S	6m N	447290 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP6	5.0	N	18127259
S	6m N	447290 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT04	1.2	N	18127866

ID	Location	Grid reference	Name	Length	Confidential	Web link
B	7m NE	447786 327728	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS01-07	-	Y	N/A
T	7m N	447300 328480	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT03	1.2	N	18127865 ↗
U	7m N	447310 328400	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP5/WS5	5.0	N	18127257 ↗
34	8m N	447340 328460	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP2/WS2	2.9	N	18127235 ↗
35	8m N	447360 327190	M1 JUNCTION 24 SCHEME 164 WS23	-	Y	N/A
U	10m N	447310 328380	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP9	1.25	N	18127724 ↗
36	11m N	447351 328129	A564 DERBY S BYPASS/SPUR TP231	3.0	N	218288 ↗
C	11m S	447322 326116	A42 CASTLE DONINGTON BH731	8.0	N	218200 ↗
C	11m S	447331 326144	A42 CASTLE DONINGTON BH733	8.0	N	218202 ↗
C	11m S	447340 326173	A42 CASTLE DONINGTON BH735R	8.0	N	218204 ↗
C	12m S	447314 326087	A42 CASTLE DONINGTON BH729R	8.0	N	218198 ↗
37	12m N	447340 328490	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP7	1.2	N	18127721 ↗
38	13m N	447506 328279	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS15-07	-	Y	N/A
39	13m N	447306 327458	A564 DERBY S BYPASS/SPUR BH142	17.65	N	218281 ↗
40	14m S	447155 325573	A42 CASTLE DONINGTON 747	7.0	N	218209 ↗
C	14m S	447362 326181	A42 CASTLE DONINGTON BH736	14.0	N	218205 ↗
41	14m S	447380 326760	A42 CASTLE DONINGTON BH280	6.0	N	218252 ↗
42	15m S	447129 326038	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1080	1.2	N	18913778 ↗
43	15m N	447247 327868	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1089	4.0	N	18913784 ↗
44	16m SE	447525 326851	A42 CASTLE DONINGTON BH750	7.0	N	218212 ↗
45	16m N	447558 328033	A42 CASTLE DONINGTON BH752	7.05	N	218214 ↗
46	17m N	447312 327881	A564 DERBY S BYPASS/SPUR TP232	3.0	N	218289 ↗
47	17m N	447531 327899	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D1B	3.0	N	19513368 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
T	17m N	447290 328480	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP10	1.2	N	18127725 ↗
48	20m NE	447774 327705	A453 CLIFTON TO M1 3	10.0	N	218318 ↗
49	22m S	447203 326311	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1082	2.4	N	18913780 ↗
50	23m NE	447786 327797	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS13-07	-	Y	N/A
C	26m S	447349 326154	A42 CASTLE DONINGTON BH734	14.0	N	218203 ↗
C	26m S	447341 326126	A42 CASTLE DONINGTON BH732/R	14.14	N	218201 ↗
C	27m S	447333 326097	A42 CASTLE DONINGTON BH730	14.0	N	218199 ↗
51	27m S	447094 325709	A42 CASTLE DONNINGTON TP 826	2.0	N	218295 ↗
52	29m NE	447699 327645	A453 CLIFTON TO M1 1	10.0	N	218316 ↗
53	32m S	447046 325552	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1076	1.9	N	18913776 ↗
V	44m S	447100 325390	A42 CASTLE DONINGTON BH289	25.0	N	218242 ↗
54	46m N	447387 328402	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D2A	1.7	N	19513369 ↗
V	48m S	447080 325390	A42 CASTLE DONINGTON BH286	20.0	N	218239 ↗
55	48m NE	447927 327793	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS05-07	-	Y	N/A
56	49m N	447490 327950	M1 EXTENSIONS BH314 KEGWORTH	9.14	N	218152 ↗
57	50m N	447226 327722	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1088	14.54	N	18913752 ↗
58	52m N	447258 327586	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1083	4.0	N	18913781 ↗
V	54m S	447060 325390	A42 CASTLE DONINGTON BH284	20.0	N	218237 ↗
59	55m N	447493 327893	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D1A	3.1	N	19513367 ↗
V	61m S	447040 325390	A42 CASTLE DONINGTON BH282	20.0	N	218235 ↗
V	64m S	447090 325370	A42 CASTLE DONINGTON BH287	15.0	N	218241 ↗
60	66m SW	447369 326976	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1084	3.0	N	18913782 ↗
V	67m S	447080 325370	A42 CASTLE DONINGTON BH287	20.0	N	218240 ↗

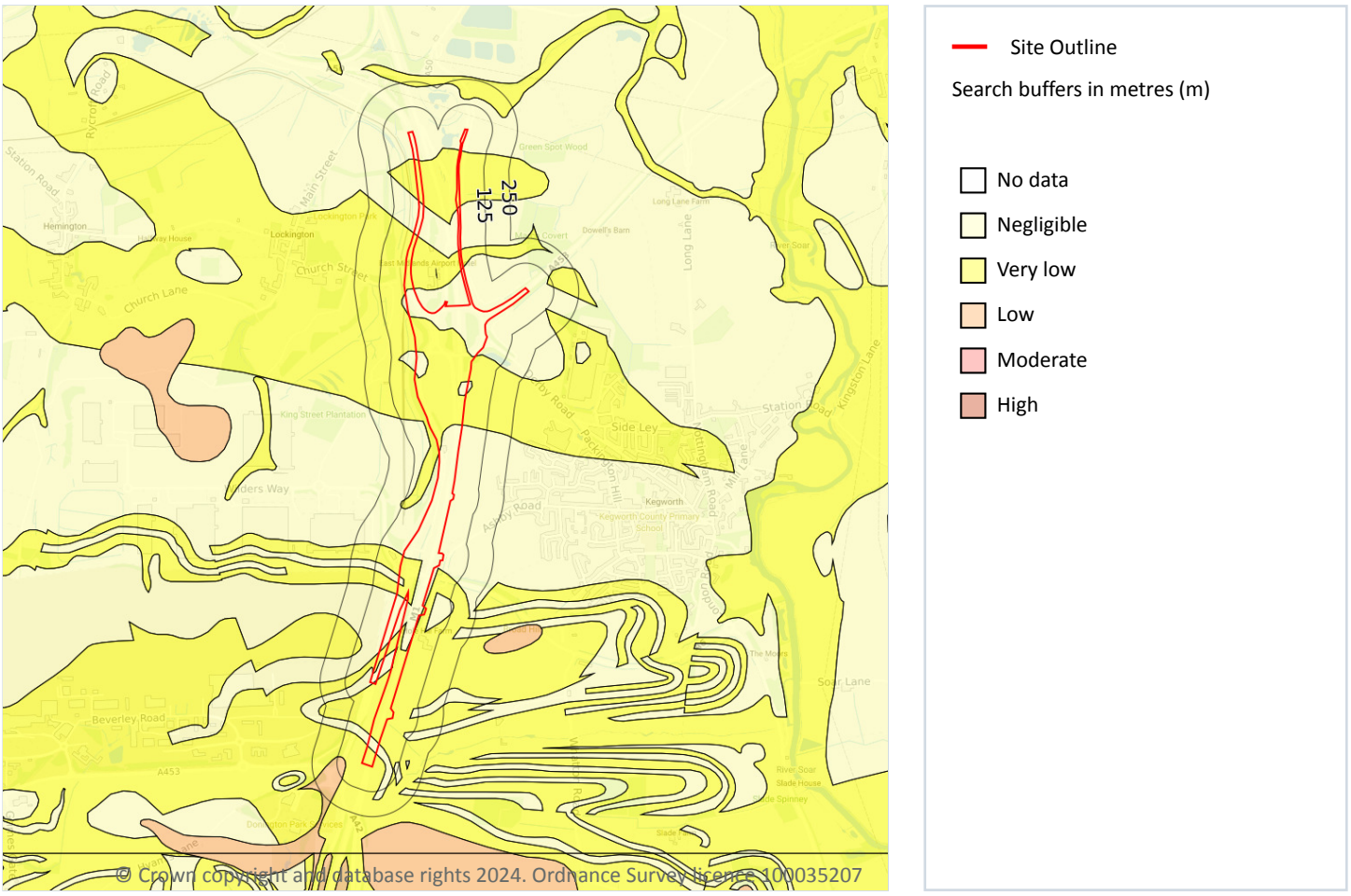
ID	Location	Grid reference	Name	Length	Confidential	Web link
W	67m N	447223 328641	A564 DERBY S BYPASS/SPUR BH136	8.0	N	218277 ↗
V	70m S	447040 325380	A42 CASTLE DONINGTON BH283	20.0	N	218236 ↗
V	73m S	447060 325370	A42 CASTLE DONINGTON BH285	7.0	N	218238 ↗
V	74m S	447030 325380	A42 CASTLE DONINGTON BH281	20.0	N	218234 ↗
61	74m N	447430 328260	M1 EXTENSIONS BH315 LOCKINGTON	9.14	N	218153 ↗
62	74m S	447161 325392	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1283	15.0	N	18913773 ↗
63	75m S	447194 325490	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1077	2.4	N	18913777 ↗
64	78m S	447044 325719	A42 CASTLE DONNINGTON TP 825	2.0	N	218294 ↗
X	78m NE	447730 327510	M1 JUNCTION 24 SCHEME 164	-	Y	N/A
65	80m N	447526 328692	A564 DERBY SOUTH'BYPASS BH5664	10.0	N	218534 ↗
66	82m NE	447930 327880	A453 WIDENING MI JUNCTION 24-A52 NOTTINGHAM WS01A-06	1.3	N	18189586 ↗
67	84m S	447000 325580	A42 CASTLE DONINGTON BH278	5.0	N	218243 ↗
Y	85m N	447425 328411	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D2B	3.0	N	19513370 ↗
W	85m N	447203 328642	A564 DERBY S BYPASS/SPUR TP230	2.0	N	218287 ↗
X	86m NE	447730 327490	M1 JUNCTION 24 SCHEME 164 TP9	-	Y	N/A
68	89m N	447460 327885	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D119K	2.0	N	19511277 ↗
Y	89m N	447432 328391	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1090	11.39	N	18913753 ↗
69	92m NW	447265 327196	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1081	3.4	N	18913779 ↗
70	93m NE	447960 327862	A453 CLIFTON TO M1 6	6.0	N	218321 ↗
71	93m S	447190 325410	A42 CASTLE DONINGTON BH290	16.0	N	218244 ↗
72	101m N	447433 328508	A42 CASTLE DONINGTON BH757	3.0	N	218215 ↗
73	104m N	447272 328710	A564 DERBY SOUTH'BYPASS TP5633	4.0	N	218559 ↗
Z	105m S	446944 325439	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1075	17.2	N	18913770 ↗
Z	108m S	446940 325450	A42 CASTLE DONINGTON BH277	5.0	N	218233 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
AA	113m NE	447760 327490	M1 JUNCTION 24 SCHEME 164 WS9	-	Y	N/A
AA	117m NE	447760 327480	M1 JUNCTION 24 SCHEME 164 WS8	-	Y	N/A
AB	126m NE	447980 327890	A453 WIDENING MI JUNCTION 24-A52 NOTTINGHAM 01A-06	12.0	N	18189548 ↗
74	126m N	447352 328725	A564 DERBY SOUTH'BYPASS TP5674	2.0	N	218566 ↗
75	128m N	447380 328710	M1 EXTENSION BH316 LOCKINGTON	6.4	N	218159 ↗
76	132m NE	447970 327713	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS02-07	-	Y	N/A
77	133m S	447210 325360	A42 CASTLE DONINGTON BH291S	16.0	N	218245 ↗
78	137m N	447421 328675	A564 DERBY SOUTH'BYPASS TP5665	3.0	N	218564 ↗
AA	139m NE	447780 327470	M1 JUNCTION 24 SCHEME 164 WS24	-	Y	N/A
AB	148m NE	448000 327900	A648 CLIFTON TO M1 BH3 LOCKINGTON	5.18	N	218161 ↗
79	150m N	447533 328768	A564 DERBY SOUTH'BYPASS TP5663	3.0	N	218563 ↗
80	150m N	447340 328755	A564 DERBY SOUTH'BYPASS BH5666	10.0	N	218535 ↗
81	151m N	447133 327673	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1087	3.5	N	18913783 ↗
82	153m S	447031 325296	A42 CASTLE DONINGTON BH728R	20.0	N	218197 ↗
AC	163m NE	447817 327501	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS03-07	-	Y	N/A
83	165m S	447270 325430	A42 CASTLE DONINGTON TP445	3.0	N	218247 ↗
AC	170m NE	447825 327502	SOAR VALLEY SAND AND GRAVEL	7.5	N	218262 ↗
84	173m S	447270 325400	A42 CASTLE DONINGTON TP444	3.0	N	218246 ↗
85	175m S	447127 325261	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1074	15.0	N	18913769 ↗
86	182m S	447270 325370	A42 CASTLE DONINGTON TP446	4.0	N	218248 ↗
87	200m S	446890 325330	A42 CASTLE DONINGTON BH275	5.0	N	218221 ↗
88	207m NE	447830 327420	M1 JUNCTION 24 SCHEME 164 TP12	-	Y	N/A
89	210m N	447513 328825	A564 DERBY SOUTH'BYPASS BH5662	10.0	N	218533 ↗
90	211m N	447748 328282	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS14-07	-	Y	N/A
91	213m S	446980 325250	A42 CASTLE DONINGTON BH274	20.0	N	218231 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
92	221m S	447320 325400	A42 CASTLE DONINGTON TP447	3.0	N	218249 ↗
AD	225m S	447000 325230	A42 CASTLE DONINGTON BH272	25.0	N	218229 ↗
93	231m N	447101 328752	A564 DERBY S BYPASS/SPUR TP229	2.0	N	218286 ↗
94	232m S	447340 325430	A42 CASTLE DONINGTON TP448	3.0	N	218250 ↗
95	235m S	447064 325201	A42 CASTLE DONINGTON BH727	15.0	N	218196 ↗
AD	238m S	447006 325214	A42 CASTLE DONINGTON 744	7.0	N	218207 ↗
96	239m S	446810 325440	A42 CASTLE DONINGTON BH276	5.0	N	218232 ↗
97	239m S	447327 325361	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1278	2.6	N	18913787 ↗
98	244m S	447030 325200	A42 CASTLE DONINGTON BH268	10.0	N	218225 ↗
AD	244m S	447000 325210	A42 CASTLE DONINGTON BH270	10.0	N	218227 ↗
AD	244m S	446970 325220	A42 CASTLE DONINGTON BH273	20.0	N	218230 ↗
AD	247m S	446990 325210	A42 CASTLE DONINGTON BH271	20.0	N	218228 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m	3

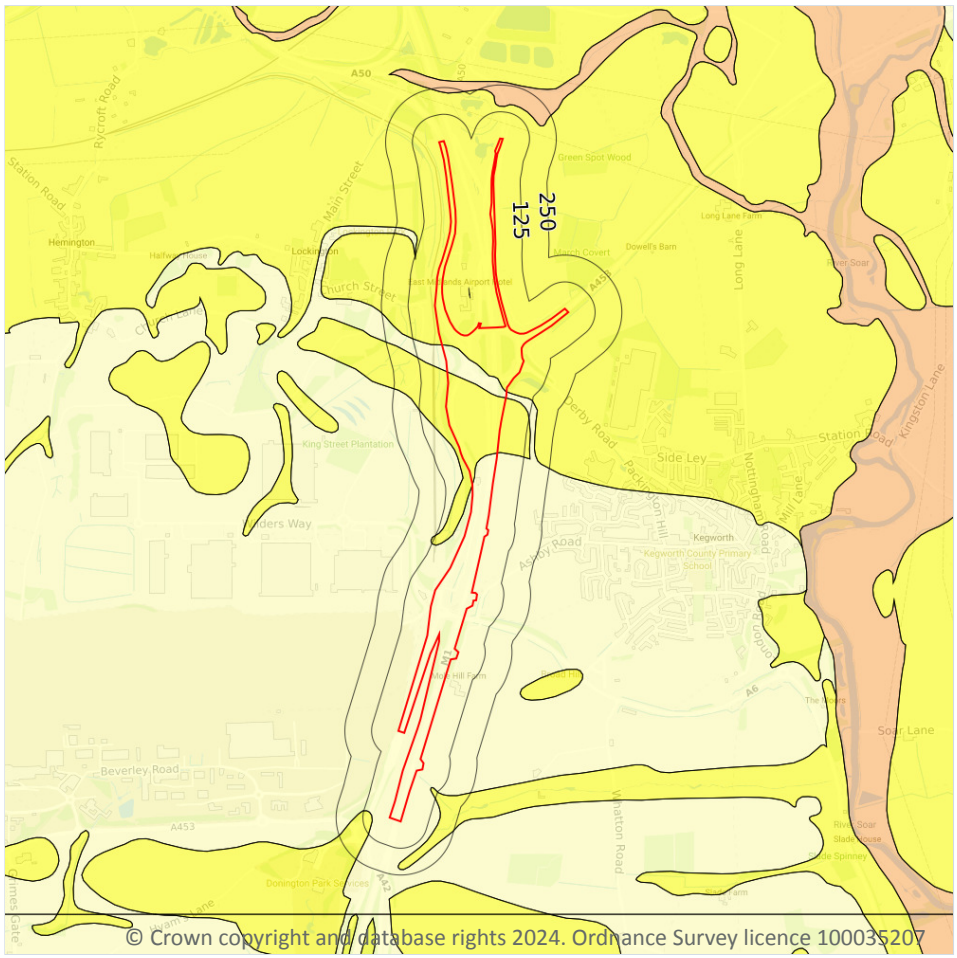
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 127 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Very low**	**Ground conditions predominantly low plasticity.**
28m S	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	2

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

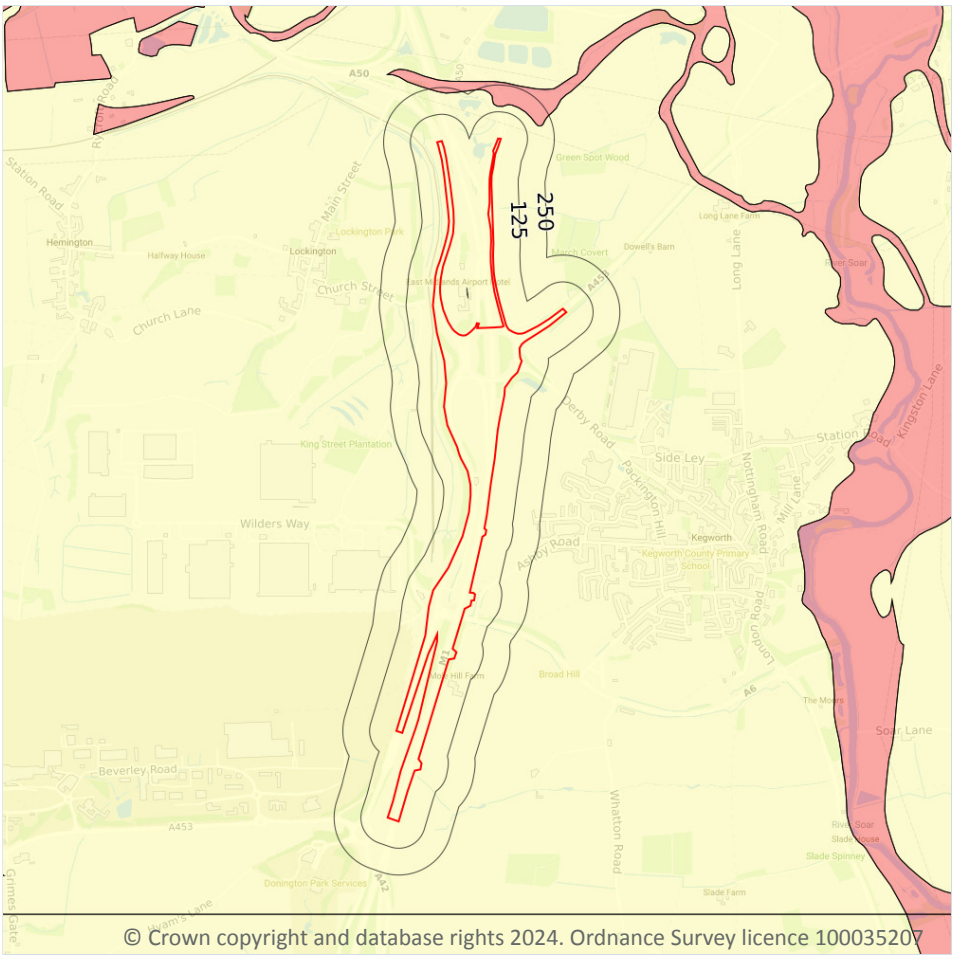
Features are displayed on the Natural ground subsidence - Running sands map on **page 129 >**

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

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



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Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

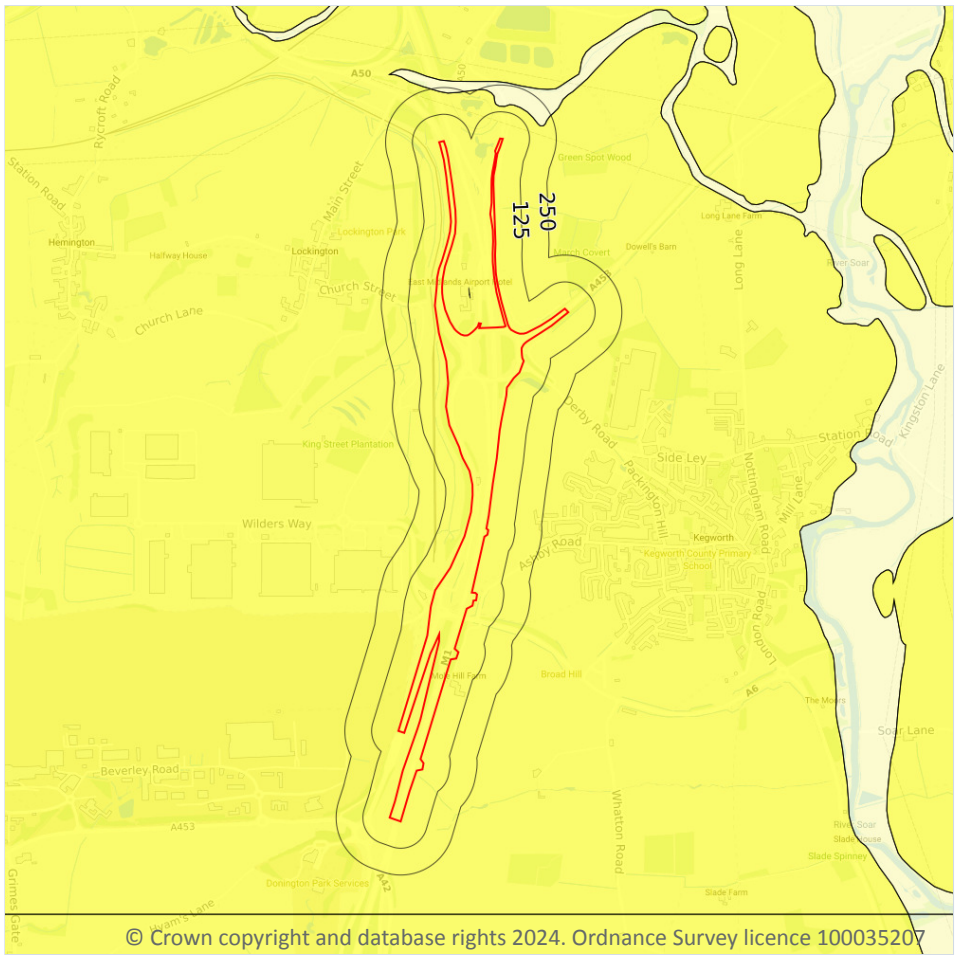
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 131 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

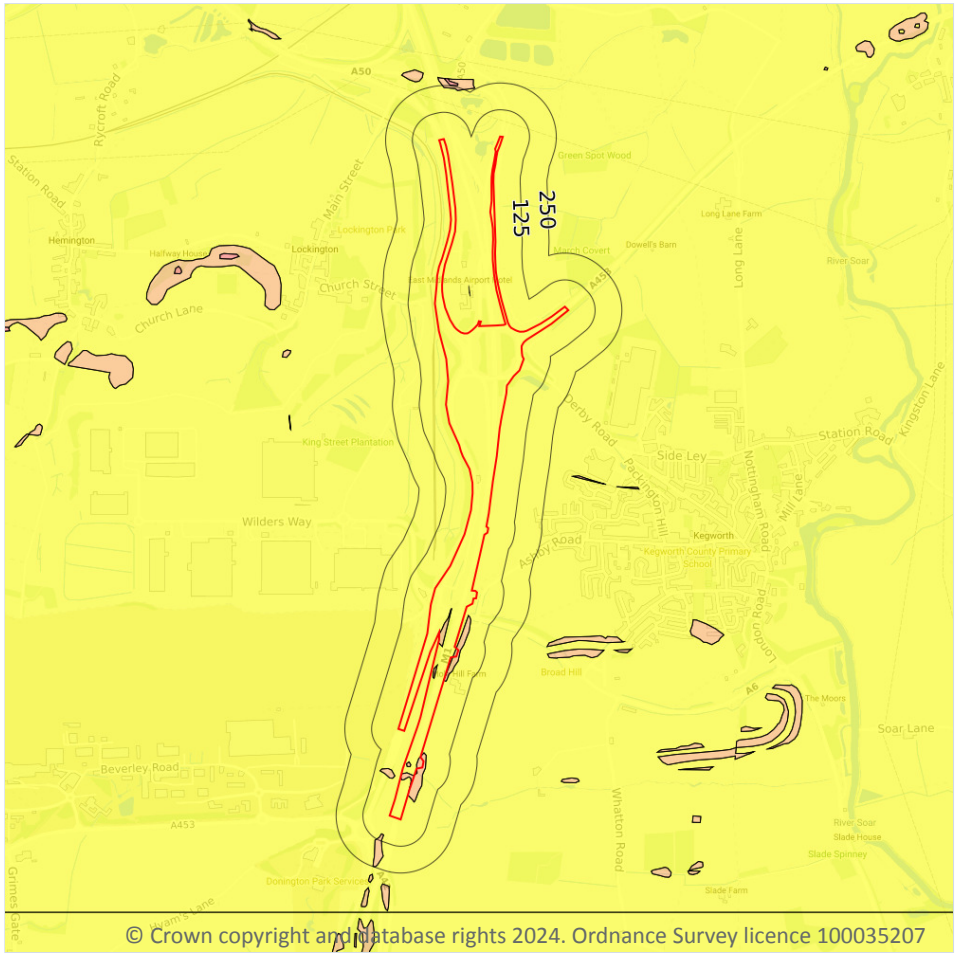
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 132 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	3

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.

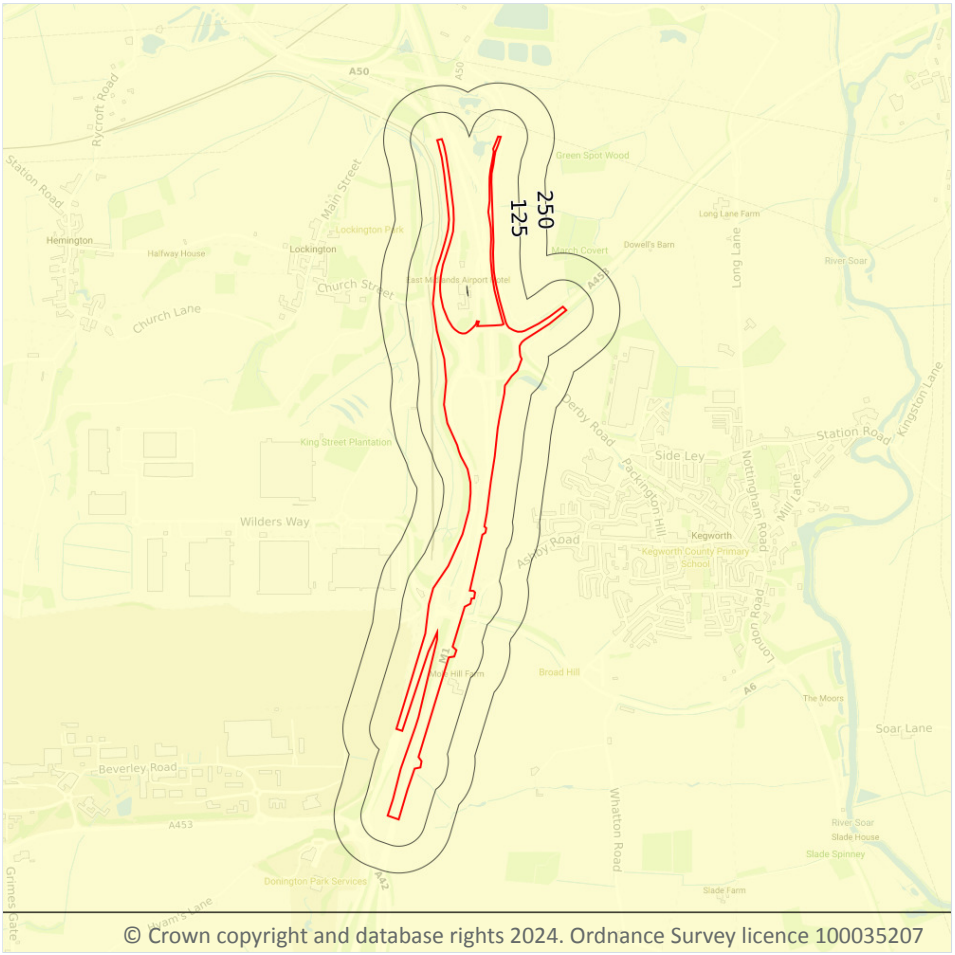
Features are displayed on the Natural ground subsidence - Landslides map on **page 133 >**

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

Location	Hazard rating	Details
On site	**Low**	**Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.**
28m S	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



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Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

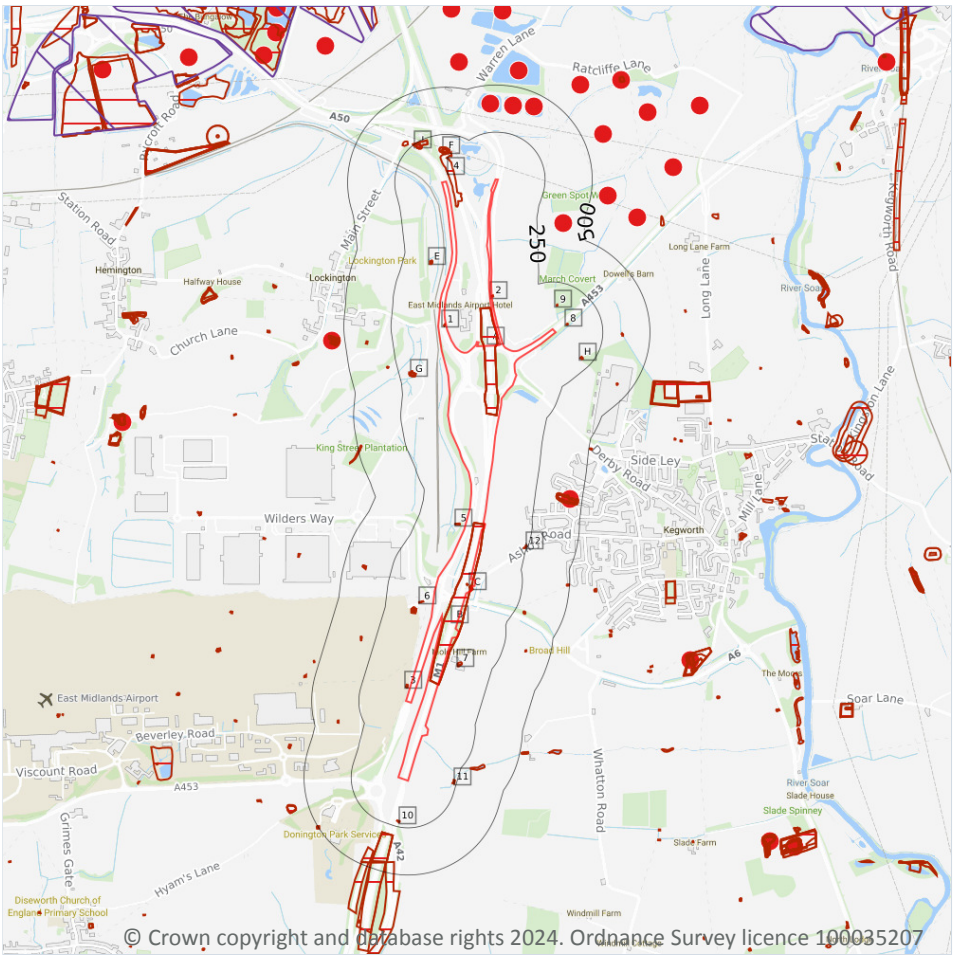
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 135 >**

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

This data is sourced from the British Geological Survey.

18 Mining and ground workings



18.1 BritPits

Records within 500m	5

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

Features are displayed on the Mining and ground workings map on **page 137 >**

ID	Location	Details	Description
22	391m N	Name: Lockington Quarry Address: Lockington, KEGWORTH, Leicestershire Commodity: Sand & Gravel Status: Inactive	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, is not extracting minerals, but which still has a valid planning permission to do so, and can restart at any time. May be considered Mothballed by operator.May be considered to have Active or Dormant planning permission
23	400m N	Name: Lockington Quarry Address: Lockington, KEGWORTH, Leicestershire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
24	402m N	Name: Lockington Quarry Address: Lockington, KEGWORTH, Leicestershire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
26	431m N	Name: Lockington Quarry Address: Lockington, KEGWORTH, Leicestershire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
K	437m E	Name: Kegworth Address: KEGWORTH, Leicestershire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	**48**

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

Features are displayed on the Mining and ground workings map on **page 137 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	**On site**	**Pond**	**1922**	**1:10560**
2	**On site**	**Pond**	**1922**	**1:10560**
A	**On site**	**Cuttings**	**1971**	**1:10000**
A	**On site**	**Cuttings**	**1982**	**1:10000**
A	**On site**	**Cuttings**	**1992**	**1:10000**
B	**On site**	**Cuttings**	**1971**	**1:10000**
B	**On site**	**Cuttings**	**1982**	**1:10000**
B	**On site**	**Cuttings**	**1992**	**1:10000**
C	**On site**	**Pond**	**1922**	**1:10560**
C	**On site**	**Pond**	**1922**	**1:10560**
C	**On site**	**Pond**	**1901**	**1:10560**
3	13m S	Pond	1922	1:10560
4	22m N	Ponds	1955	1:10560
5	29m S	Pond	1922	1:10560
6	52m S	Pond	1922	1:10560
7	68m S	Pond	1901	1:10560
8	71m NE	Pond	1922	1:10560
D	85m S	Reservoir	1922	1:10560
D	85m S	Covered Reservoir	1901	1:10560
D	85m S	Reservoir	1922	1:10560
D	88m S	Unspecified Heap	1971	1:10000
D	88m S	Unspecified Heap	1982	1:10000
D	88m S	Unspecified Heap	1992	1:10000
D	90m S	Reservoir	1955	1:10560
D	93m S	Covered Reservoir	1901	1:10560
E	97m N	Pond	1922	1:10560
E	97m N	Pond	1901	1:10560
9	126m NE	Pond	1922	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
F	151m N	Unspecified Pit	1921	1:10560
F	151m N	Unspecified Pit	1921	1:10560
F	151m N	Unspecified Pit	1938	1:10560
F	151m N	Unspecified Pit	1938	1:10560
F	152m N	Gravel Pit	1883	1:10560
F	154m N	Unspecified Heap	1899	1:10560
F	157m N	Unspecified Pit	1955	1:10560
G	164m NW	Pond	1971	1:10000
G	164m NW	Pond	1982	1:10000
G	170m NW	Pond	1922	1:10560
G	170m NW	Pond	1901	1:10560
H	189m NE	Pond	1922	1:10560
H	195m NE	Pond	1922	1:10560
I	212m N	Ponds	1921	1:10560
I	212m N	Ponds	1921	1:10560
I	213m N	Ponds	1899	1:10560
I	215m N	Ponds	1883	1:10560
10	218m S	Pond	1922	1:10560
11	229m S	Pond	1922	1:10560
12	234m SE	Pond	1922	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	**0**

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

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	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 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.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the

Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	0

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

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

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

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

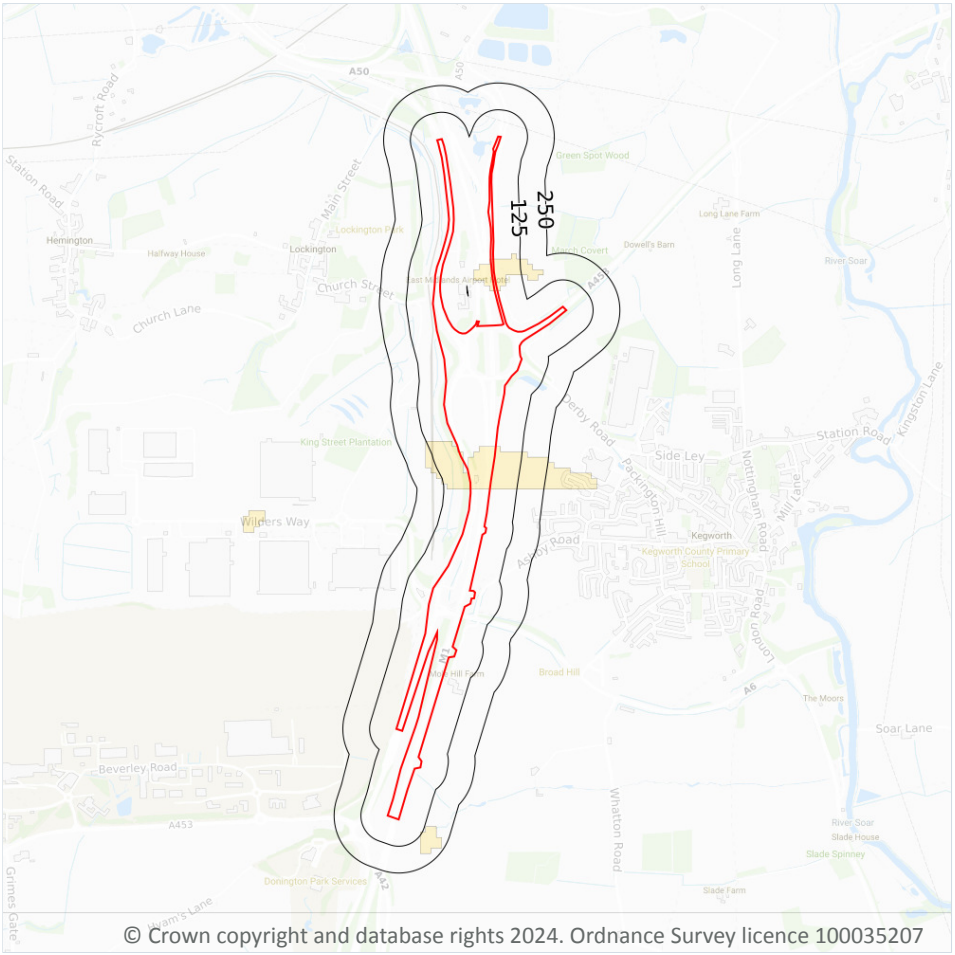
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



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Site Outline

Search buffers in metres (m)

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

20.1 Radon

Records on site	2

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 146 >**

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

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

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

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	77

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 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**	**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**	**40 - 60 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	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	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 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	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 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**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
2m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
3m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
4m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
5m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
11m NE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
12m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
18m S	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	40 - 60 mg/kg	15 - 30 mg/kg
23m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
25m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
25m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
27m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
27m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
28m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
33m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
33m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
34m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
34m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
38m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
44m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
44m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
45m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
48m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
50m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

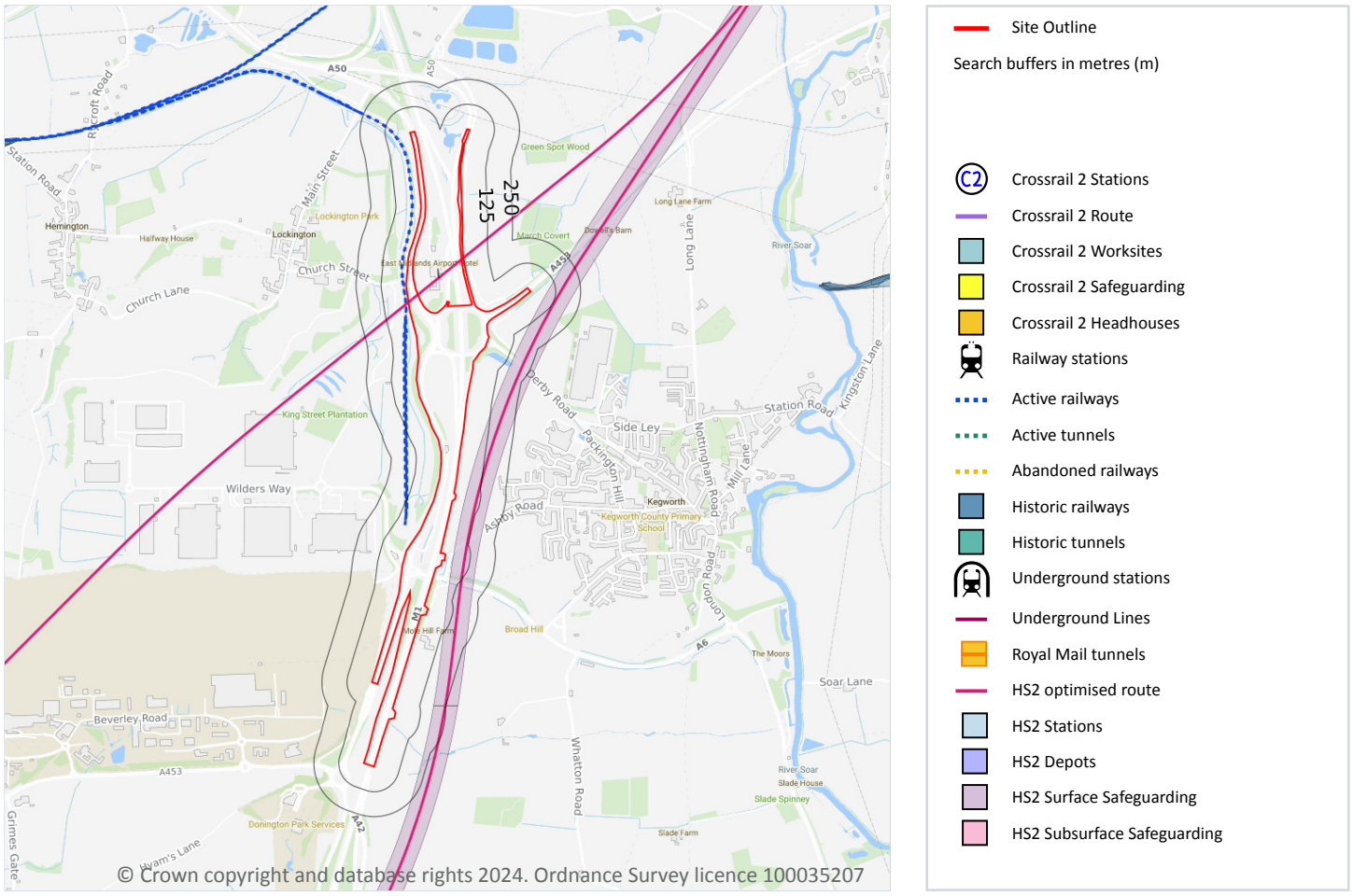
21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



22.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	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.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	12

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 154 >**

Location	Name	Type
12m N	Not given	Single Track
14m N		rail
23m N		rail
24m N		rail
35m N		rail
38m N	Not given	Single Track
38m N	Not given	Single Track
41m N	Not given	Single Track
44m N		rail
50m N		rail
78m S		rail
79m S	Not given	Single Track

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 2

Records within 500m	**0**

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

This data is sourced from publicly available information by Groundsure.

22.9 HS2

Records within 500m	**18**

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.

Features are displayed on the Railway infrastructure and projects map on **page 154 >**

Location	Track Type	Speed (mph)	Speed (km/h)	Status
On site	**Surface Running Track**	**249mph**	**400kph**	**Section is scheduled for cancellation**

Location	Track Type	Speed (mph)	Speed (km/h)	Status
On site	**Bridge/Viaduct**	**249mph**	**400kph**	**Section is scheduled for cancellation**
On site	**Bridge/Viaduct**	**199mph**	**320kph**	**Section is scheduled for cancellation**
3m N	Surface Running Track	249mph	400kph	Section is scheduled for cancellation
98m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
131m NE	Bridge/Viaduct	171mph	275kph	Section is scheduled for cancellation
131m NE	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
132m SE	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
148m S	Tunnel	171mph	275kph	Section is scheduled for cancellation
149m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
239m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
242m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
315m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
334m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
339m NW	Surface Running Track	249mph	400kph	Section is scheduled for cancellation
380m NW	Surface Running Track	249mph	400kph	Section is scheduled for cancellation
396m NW	Surface Running Track	249mph	400kph	Section is scheduled for cancellation
419m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.

Appendix 2: Historical Mapping

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

East Midlands Gateway 2, J24 M1 (NH Land)

Order Details

Date: 13/12/2024

Your ref: 220500 - 10250

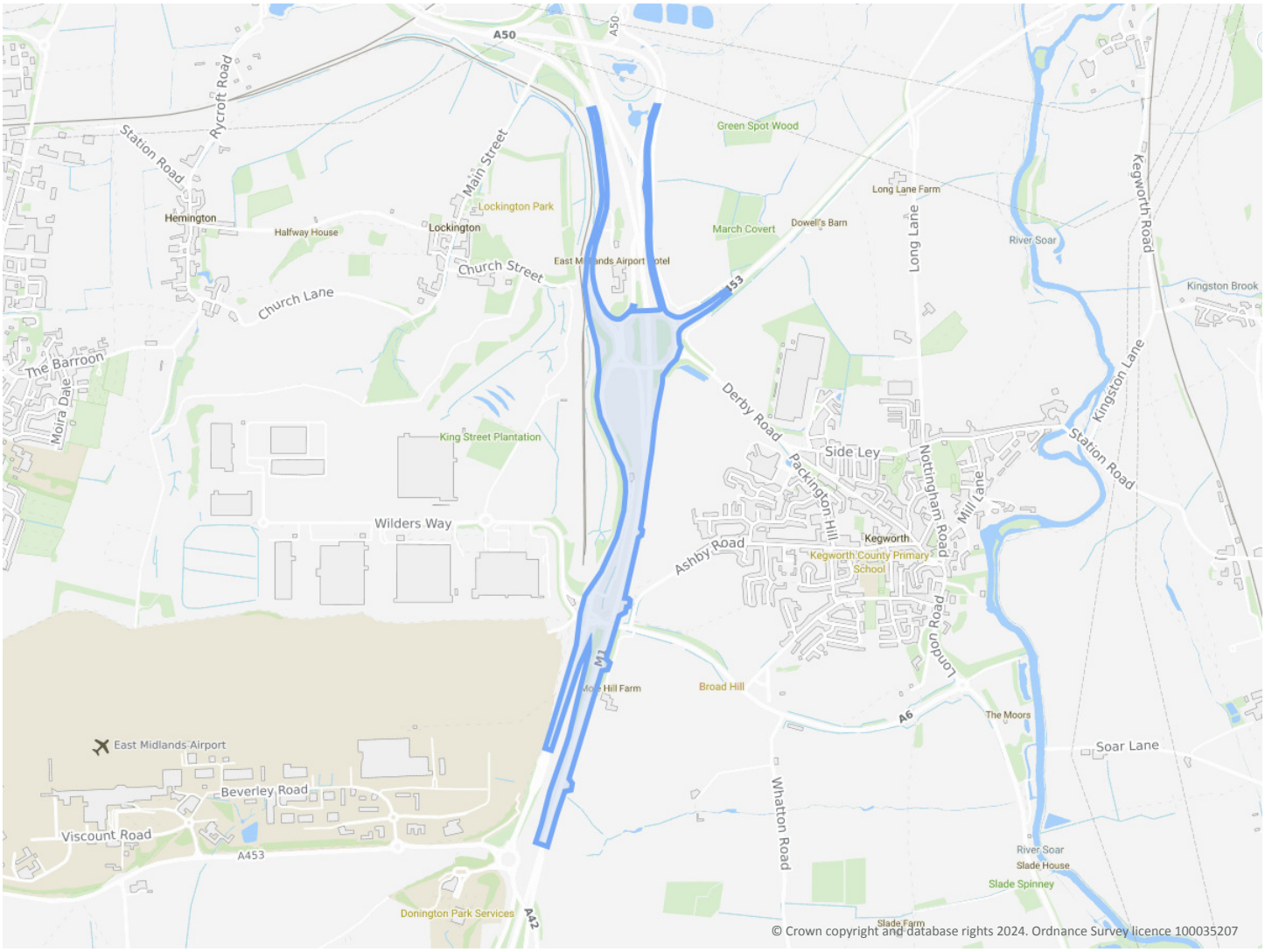
Our Ref: GS-BBU-NDC-5SO-FTK

Site Details

Location: 447397 327034

Area: 39.28 ha

Authority: North West Leicestershire District Council ↗



Summary of findings p. 2 >

OS MasterMap site plan N/A: >10ha

Aerial image p. 9 >

Insight User Guide ↗

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

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
14 >	1.1 >	Historical industrial land uses >	4	0	12	15	-
16 >	1.2 >	Historical tanks >	0	0	1	2	-
16 >	1.3 >	Historical energy features >	2	0	1	1	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
18 >	2.1 >	Historical industrial land uses >	6	0	19	20	-
20 >	2.2 >	Historical tanks >	0	0	1	2	-
21 >	2.3 >	Historical energy features >	2	0	4	1	-
21	2.4	Historical petrol stations	0	0	0	0	-
21	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
22 >	3.1 >	Active or recent landfill >	0	0	0	1	-
23	3.2	Historical landfill (BGS records)	0	0	0	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
23	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
23	3.5	Historical waste sites	0	0	0	0	-
23 >	3.6 >	Licensed waste sites >	0	0	0	12	-
27 >	3.7 >	Waste exemptions >	1	30	15	2	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
32 >	4.1 >	Recent industrial land uses >	5	5	11	-	-
34 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
34	4.3	Electricity cables	0	0	0	0	-
34	4.4	Gas pipelines	0	0	0	0	-
34	4.5	Sites determined as Contaminated Land	0	0	0	0	-

35	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35 >	**4.8 >**	**Hazardous substance storage/usage >**	0	0	0	1	-
35	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
36 >	**4.10 >**	**Licensed industrial activities (Part A(1)) >**	0	0	0	3	-
36 >	**4.11 >**	**Licensed pollutant release (Part A(2)/B) >**	0	0	0	2	-
37	4.12	Radioactive Substance Authorisations	0	0	0	0	-
37 >	**4.13 >**	**Licensed Discharges to controlled waters >**	0	1	1	0	-
38	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
38	4.15	Pollutant release to public sewer	0	0	0	0	-
38	4.16	List 1 Dangerous Substances	0	0	0	0	-
38	4.17	List 2 Dangerous Substances	0	0	0	0	-
38 >	**4.18 >**	**Pollution Incidents (EA/NRW) >**	1	0	0	1	-
39	4.19	Pollution inventory substances	0	0	0	0	-
39	4.20	Pollution inventory waste transfers	0	0	0	0	-
39	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
40 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
42 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
44 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
49	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
49	5.5	Groundwater vulnerability- local information	None (within 0m)				
50 >	**5.6 >**	**Groundwater abstractions >**	2	0	0	0	20
55 >	**5.7 >**	**Surface water abstractions >**	0	0	0	0	12
58	5.8	Potable abstractions	0	0	0	0	0
58	5.9	Source Protection Zones	0	0	0	0	-
58	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m
59 >	**6.1 >**	**Water Network (OS MasterMap) >**	12	21	76	-	-

68 >	6.2 >	Surface water features >	1	16	43	-	-
68 >	6.3 >	WFD Surface water body catchments >	2	-	-	-	-
69 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
69 >	6.5 >	WFD Groundwater bodies >	2	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
70 >	7.1 >	Risk of flooding from rivers and the sea >	High (within 50m)				
71 >	7.2 >	Historical Flood Events >	0	0	2	-	-
71	7.3	Flood Defences	0	0	0	-	-
71	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
72	7.5	Flood Storage Areas	0	0	0	-	-
73 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
74 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
75 >	8.1 >	Surface water flooding >	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
77 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
78 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
79	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
79	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
79	10.4	Special Protection Areas (SPA)	0	0	0	0	0
79	10.5	National Nature Reserves (NNR)	0	0	0	0	0
80	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
80 >	10.7 >	Designated Ancient Woodland >	0	0	1	0	0
80	10.8	Biosphere Reserves	0	0	0	0	0
80	10.9	Forest Parks	0	0	0	0	0
81	10.10	Marine Conservation Zones	0	0	0	0	0
81 >	10.11 >	Green Belt >	0	0	0	0	1
81	10.12	Proposed Ramsar sites	0	0	0	0	0

81	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
82	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
82	10.15	Nitrate Sensitive Areas	0	0	0	0	0
82 >	10.16 >	Nitrate Vulnerable Zones >	3	0	0	0	1
83 >	10.17 >	SSSI Impact Risk Zones >	4	-	-	-	-
85 >	10.18 >	SSSI Units >	0	0	0	0	2
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
86	11.1	World Heritage Sites	0	0	0	-	-
87	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
87	11.3	National Parks	0	0	0	-	-
87	11.4	Listed Buildings	0	0	0	-	-
87 >	11.5 >	Conservation Areas >	0	0	1	-	-
88	11.6	Scheduled Ancient Monuments	0	0	0	-	-
88	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
89 >	12.1 >	Agricultural Land Classification >	Grade 3b (within 250m)				
92	12.2	Open Access Land	0	0	0	-	-
92	12.3	Tree Felling Licences	0	0	0	-	-
92 >	12.4 >	Environmental Stewardship Schemes >	0	3	2	-	-
93	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
94 >	13.1 >	Priority Habitat Inventory >	2	3	10	-	-
95	13.2	Habitat Networks	0	0	0	-	-
95	13.3	Open Mosaic Habitat	0	0	0	-	-
96	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
97 >	14.1 >	10k Availability >	Identified (within 500m)				
98 >	14.2 >	Artificial and made ground (10k) >	7	7	5	13	-
100 >	14.3 >	Superficial geology (10k) >	7	1	5	14	-

102	14.4	Landslip (10k)	0	0	0	0	-
103 >	14.5 >	Bedrock geology (10k) >	13	4	30	15	-
106 >	14.6 >	Bedrock faults and other linear features (10k) >	3	0	6	7	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
108 >	15.1 >	50k Availability >	Identified (within 500m)				
109	15.2	Artificial and made ground (50k)	0	0	0	0	-
109	15.3	Artificial ground permeability (50k)	0	0	-	-	-
110 >	15.4 >	Superficial geology (50k) >	7	1	6	11	-
112 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
112	15.6	Landslip (50k)	0	0	0	0	-
112	15.7	Landslip permeability (50k)	None (within 50m)				
113 >	15.8 >	Bedrock geology (50k) >	11	3	26	11	-
116 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
116 >	15.10 >	Bedrock faults and other linear features (50k) >	2	0	7	1	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
118 >	16.1 >	BGS Boreholes >	61	56	69	-	-
Page	Section	Natural ground subsidence >					
127 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
129 >	17.2 >	Running sands >	Very low (within 50m)				
131 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
132 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
133 >	17.5 >	Landslides >	Low (within 50m)				
135 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
137 >	18.1 >	BritPits >	0	0	0	5	-
138 >	18.2 >	Surface ground workings >	11	3	34	-	-
140	18.3	Underground workings	0	0	0	0	0
141	18.4	Underground mining extents	0	0	0	0	-
141	18.5	Historical Mineral Planning Areas	0	0	0	0	-

141	18.6	Non-coal mining	0	0	0	0	0
141	18.7	JPB mining areas	None (within 0m)				
141	18.8	The Coal Authority non-coal mining	0	0	0	0	-
142	18.9	Researched mining	0	0	0	0	-
142	18.10	Mining record office plans	0	0	0	0	-
142	18.11	BGS mine plans	0	0	0	0	-
142	18.12	Coal mining	None (within 0m)				
143	18.13	Brine areas	None (within 0m)				
143	18.14	Gypsum areas	None (within 0m)				
143	18.15	Tin mining	None (within 0m)				
143	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
144	19.1	Natural cavities	0	0	0	0	-
144	19.2	Mining cavities	0	0	0	0	0
144	19.3	Reported recent incidents	0	0	0	0	-
144	19.4	Historical incidents	0	0	0	0	-
145	19.5	National karst database	0	0	0	0	-
Page	Section	**Radon** >					
146 >	**20.1** >	**Radon** >	Between 1% and 3% (within 0m)				
Page	Section	**Soil chemistry** >	On site	0-50m	50-250m	250-500m	500-2000m
148 >	**21.1** >	**BGS Estimated Background Soil Chemistry** >	53	24	-	-	-
152	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
153	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	**Railway infrastructure and projects** >	On site	0-50m	50-250m	250-500m	500-2000m
154	22.1	Underground railways (London)	0	0	0	-	-
154	22.2	Underground railways (Non-London)	0	0	0	-	-
155	22.3	Railway tunnels	0	0	0	-	-
155	22.4	Historical railway and tunnel features	0	0	0	-	-
155	22.5	Royal Mail tunnels	0	0	0	-	-

155	22.6	Historical railways	0	0	0	-	-
155 >	**22.7 >**	**Railways >**	0	10	2	-	-
156	22.8	Crossrail 2	0	0	0	0	-
156 >	**22.9 >**	**HS2 >**	3	1	8	6	-

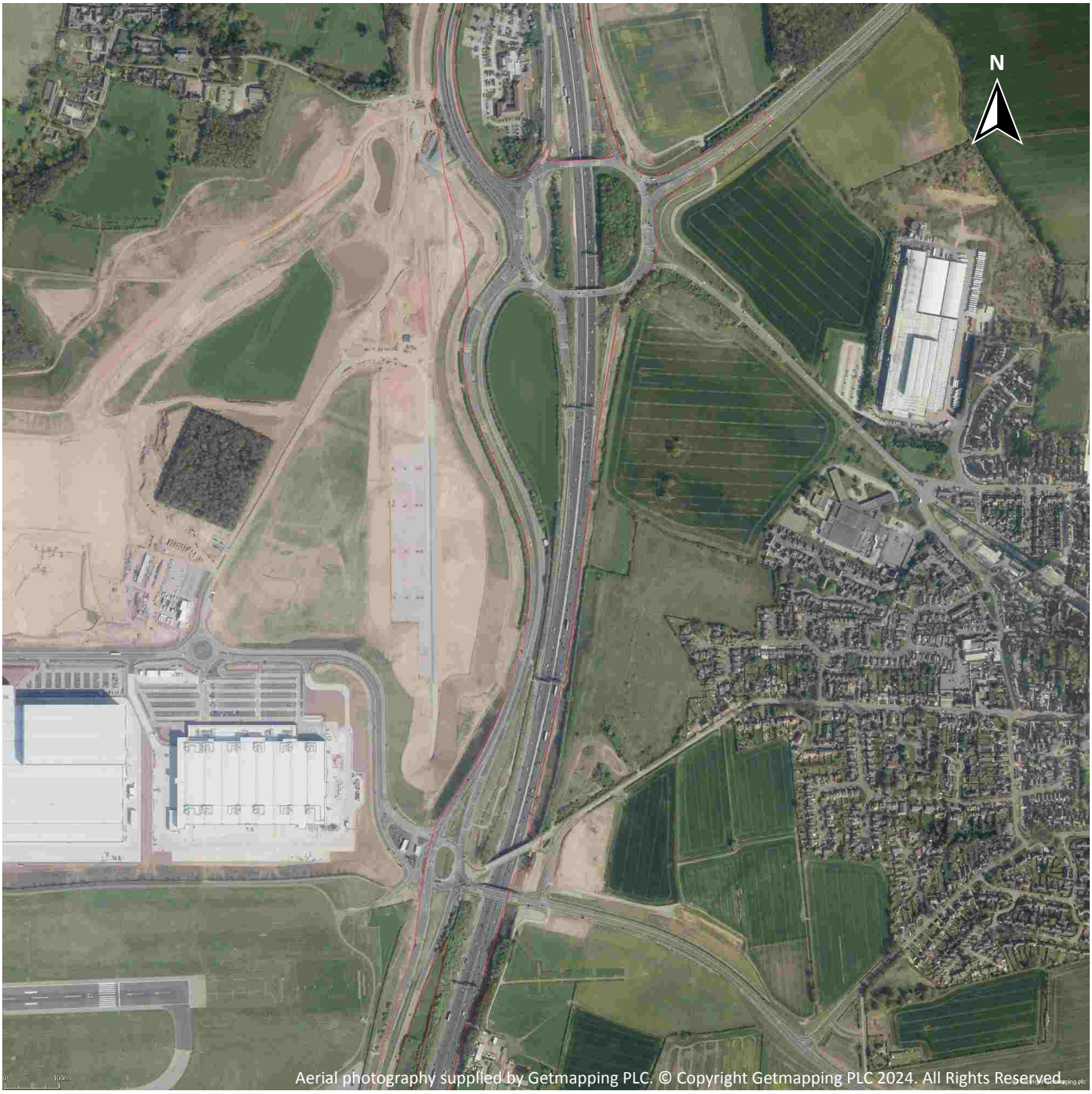
Recent aerial photograph



Capture Date: 10/07/2022

Site Area: 39.28ha

Recent site history - 2019 aerial photograph



Capture Date: 20/04/2019

Site Area: 39.28ha

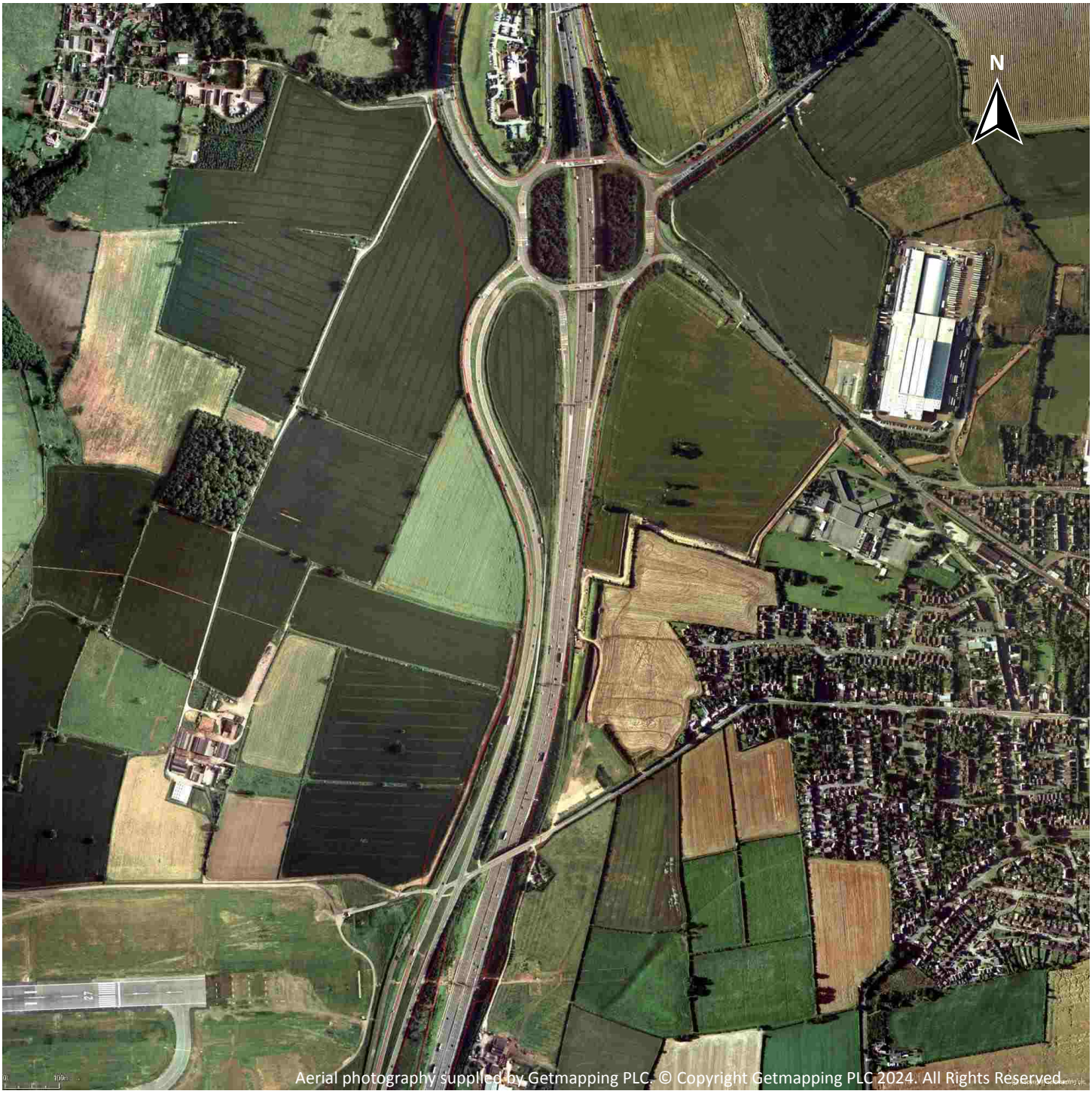
Recent site history - 2015 aerial photograph



Capture Date: 24/04/2015

Site Area: 39.28ha

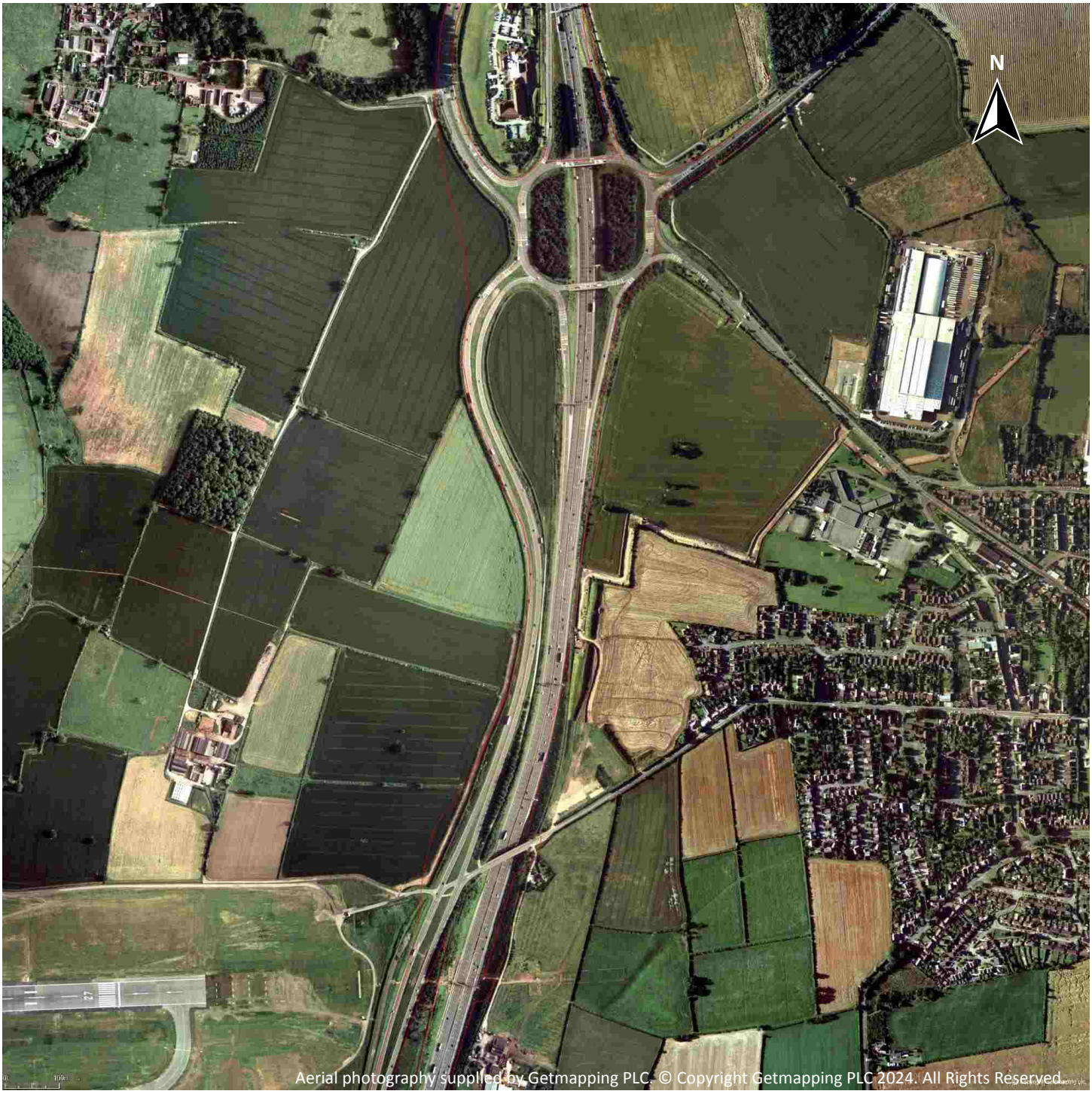
Recent site history - 2000 aerial photograph



Capture Date: 17/06/2000

Site Area: 39.28ha

Recent site history - 1999 aerial photograph

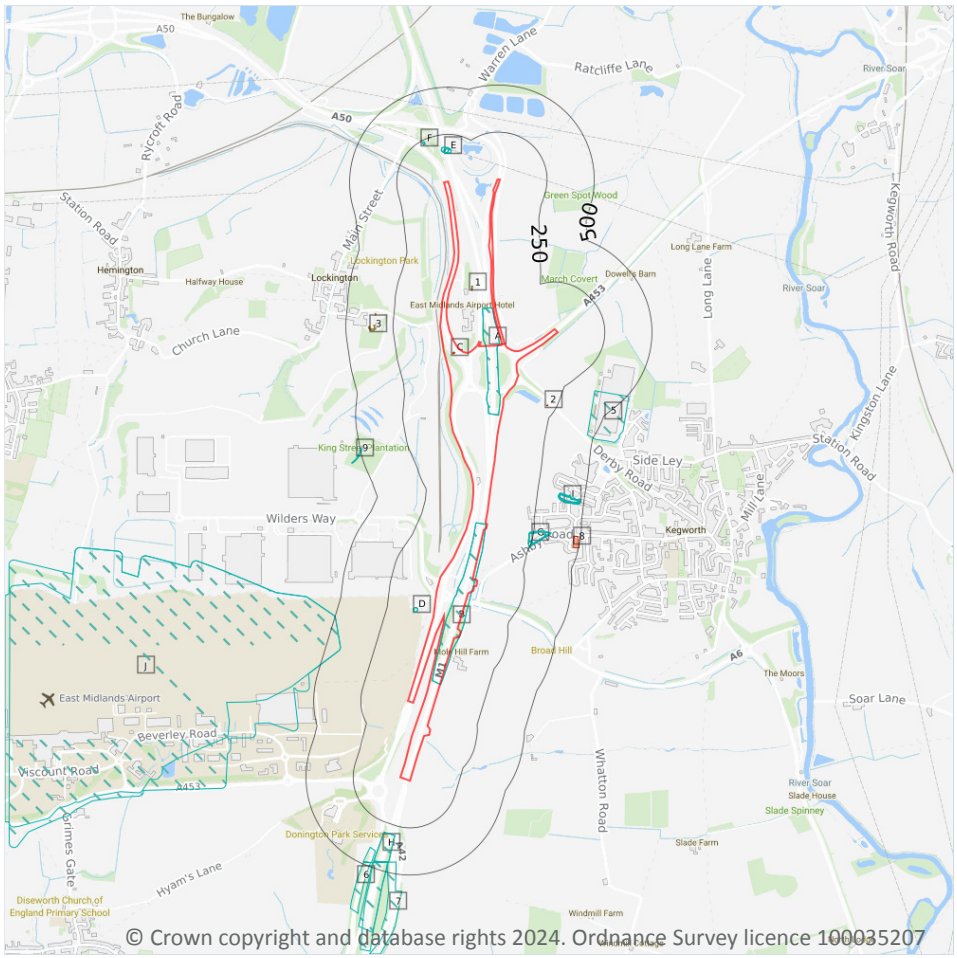


Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 11/07/1999

Site Area: 39.28ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	31

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

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

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Cuttings**	**1971**	**1680201**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Cuttings**	**1982 - 1992**	**1726088**
B	**On site**	**Cuttings**	**1971**	**1692256**
B	**On site**	**Cuttings**	**1982 - 1992**	**1710569**
D	88m S	Unspecified Heap	1971	1659945
D	88m S	Unspecified Heap	1982 - 1992	1691670
E	151m N	Unspecified Pit	1921	1749059
E	151m N	Unspecified Pit	1938 - 1955	1720061
E	152m N	Gravel Pit	1883	1629122
E	154m N	Unspecified Heap	1899	1621736
F	226m N	Sluice Valve and Washout Chamber	1921	1681726
G	228m SE	Flour Mill	1883	1639308
G	229m SE	Unspecified Mill	1901 - 1922	1696951
G	229m SE	Unspecified Mill	1922	1728150
F	230m N	Pump House	1992	1635143
G	230m SE	Unspecified Mill	1955	1654739
H	301m S	Cuttings	1971	1712470
H	301m S	Cuttings	1982 - 1992	1729166
I	361m E	Unspecified Pit	1883	1764290
I	363m E	Unspecified Pit	1883	1665093
I	363m E	Unspecified Pit	1901 - 1922	1776543
5	365m NE	Unspecified Factory	1992	1635426
I	365m E	Unspecified Pit	1901	1751343
I	368m E	Unspecified Pit	1955	1704605
6	404m S	Cuttings	1992 - 1993	1744917
J	425m SW	Airport	1971	1751047
J	425m SW	Airport	1982 - 1992	1767001
7	437m S	Cuttings	1993	1584849
K	448m S	Cuttings	1993	1685144

ID	Location	Land use	Dates present	Group ID
K	449m S	Cuttings	1975	1653354
9	479m W	Unspecified Ground Workings	1883	1593177

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**3**

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

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

ID	Location	Land use	Dates present	Group ID
1	99m N	Tanks	1991	264224
3	341m NW	Tanks	1991	264225
4	345m NW	Unspecified Tank	1991	271573

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**4**

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

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

ID	Location	Land use	Dates present	Group ID
C	**On site**	**Gas Governor**	**1991**	**170963**
C	**On site**	**Gas Governor**	**1999**	**177717**
2	202m NE	Gas Governor	1982 - 1999	167595

ID	Location	Land use	Dates present	Group ID
8	463m SE	Electricity Substation	1988	164902

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	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 un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

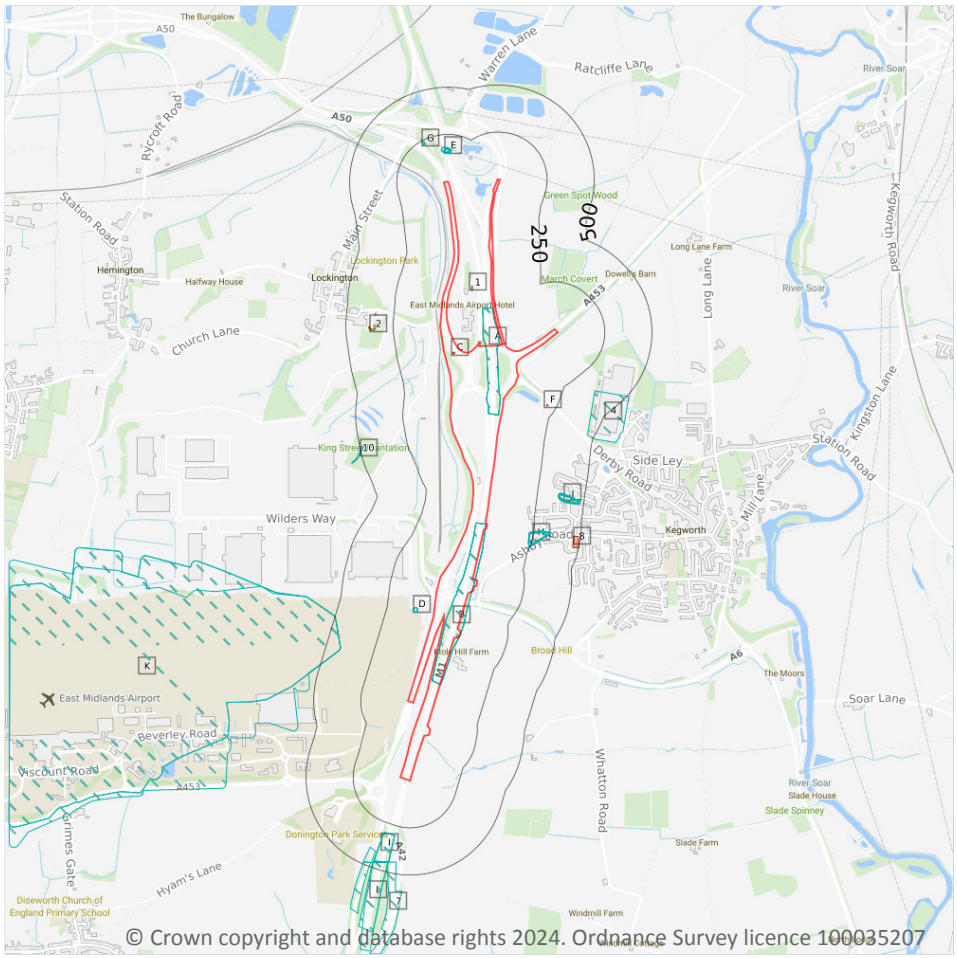
1.6 Historical military land

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	45

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

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

ID	Location	Land Use	Date	Group ID
A	**On site**	**Cuttings**	**1971**	**1680201**
A	**On site**	**Cuttings**	**1982**	**1726088**
A	**On site**	**Cuttings**	**1992**	**1726088**

ID	Location	Land Use	Date	Group ID
B	**On site**	**Cuttings**	**1971**	**1692256**
B	**On site**	**Cuttings**	**1982**	**1710569**
B	**On site**	**Cuttings**	**1992**	**1710569**
D	88m S	Unspecified Heap	1971	1659945
D	88m S	Unspecified Heap	1982	1691670
D	88m S	Unspecified Heap	1992	1691670
E	151m N	Unspecified Pit	1921	1749059
E	151m N	Unspecified Pit	1921	1749059
E	151m N	Unspecified Pit	1938	1720061
E	151m N	Unspecified Pit	1938	1720061
E	152m N	Gravel Pit	1883	1629122
E	154m N	Unspecified Heap	1899	1621736
E	157m N	Unspecified Pit	1955	1720061
G	226m N	Sluice Valve and Washout Chamber	1921	1681726
G	226m N	Sluice Valve and Washout Chamber	1921	1681726
H	228m SE	Flour Mill	1883	1639308
H	229m SE	Unspecified Mill	1922	1696951
H	229m SE	Unspecified Mill	1901	1696951
H	229m SE	Unspecified Mill	1922	1728150
G	230m N	Pump House	1992	1635143
H	230m SE	Unspecified Mill	1955	1654739
H	231m SE	Flour Mill	1883	1639308
I	301m S	Cuttings	1971	1712470
I	301m S	Cuttings	1982	1729166
I	301m S	Cuttings	1992	1729166
J	361m E	Unspecified Pit	1883	1764290
J	363m E	Unspecified Pit	1883	1665093
J	363m E	Unspecified Pit	1922	1776543

ID	Location	Land Use	Date	Group ID
J	363m E	Unspecified Pit	1901	1776543
J	363m E	Unspecified Pit	1922	1776543
4	365m NE	Unspecified Factory	1992	1635426
J	365m E	Unspecified Pit	1901	1751343
J	368m E	Unspecified Pit	1955	1704605
5	404m S	Cuttings	1992	1744917
6	425m SW	Airport	1992	1767001
K	425m SW	Airport	1971	1751047
K	425m SW	Airport	1982	1767001
7	437m S	Cuttings	1993	1584849
L	448m S	Cuttings	1993	1685144
L	449m S	Cuttings	1975	1653354
9	478m S	Cuttings	1993	1744917
10	479m W	Unspecified Ground Workings	1883	1593177

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**3**

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 18 >**

ID	Location	Land Use	Date	Group ID
1	99m N	Tanks	1991	264224
2	341m NW	Tanks	1991	264225
3	345m NW	Unspecified Tank	1991	271573

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	7

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

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

ID	Location	Land Use	Date	Group ID
C	**On site**	**Gas Governor**	**1991**	**170963**
C	**On site**	**Gas Governor**	**1999**	**177717**
F	202m NE	Gas Governor	1982	167595
F	202m NE	Gas Governor	1988	167595
F	202m NE	Gas Governor	1991	167595
F	202m NE	Gas Governor	1999	167595
8	463m SE	Electricity Substation	1988	164902

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

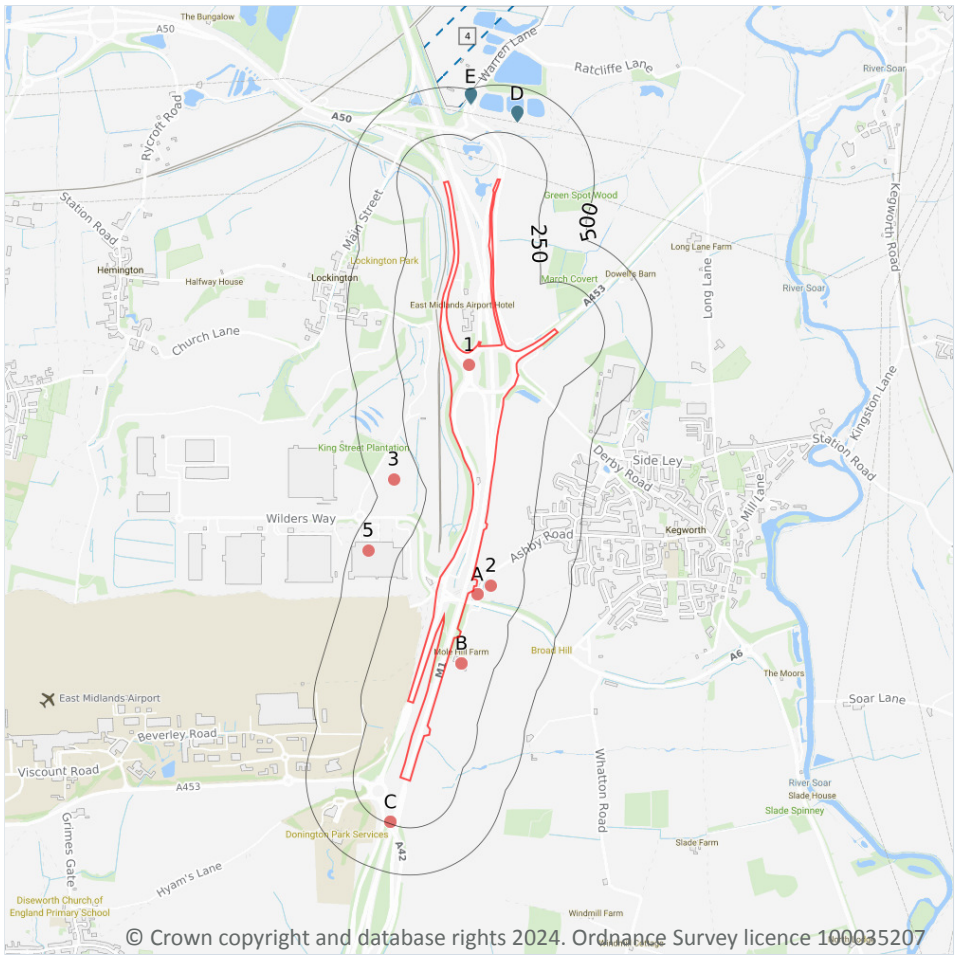
2.5 Historical garages

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



3.1 Active or recent landfill

Records within 500m	1

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

Features are displayed on the Waste and landfill map on **page 22 >**

ID	Location	Details	
4	399m N	Operator: Tarmac Aggregates Limited Site Address: Tarmac Aggregates Limited, Lockington Quarry Landfill Site, Warren Lane, Lockington, Leicestershire, DE74 2RG	WML Number: 210024 EPR Reference: 658291 Landfill type: L05: Inert LF Status: Issued IPPC Reference: - EPR Number: EA/EPR/FP3194ET

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	12

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

Features are displayed on the Waste and landfill map on **page 22 >**

ID	Location	Details		
D	358m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Derbyshire, DE74 2RG Correspondence Address: -	Type of Site: Management of inert or extractive waste at mine Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF043 EPR reference: EA/EPR/SP3094VZ/V002 Operator: Lafarge Aggregates Limited Waste Management licence No: 102317 Annual Tonnage: 0	Issue Date: 26/01/2011 Effective Date: - Modified: 15/11/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
D	358m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Derbyshire, DE74 2RG Correspondence Address: -	Type of Site: Management of inert or extractive waste at mine Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF043 EPR reference: EA/EPR/SP3094VZ/A001 Operator: Lafarge Aggregates Ltd Waste Management licence No: 102317 Annual Tonnage: 0	Issue Date: 26/01/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
D	358m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: Management of inert or extractive waste at mine Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 643290 EPR reference: EA/EPR/SP3094VZ Operator: Tarmac Aggregates Limited Waste Management licence No: 102317 Annual Tonnage: 0	Issue Date: 26/01/2011 Effective Date: 26/01/2011 Modified: 26/01/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

ID	Location	Details		
E	459m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: 75kte HCI Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF062 EPR reference: EA/EPR/GB3036AJ/V003 Operator: Lafarge Aggregates Limited Waste Management licence No: 104056 Annual Tonnage: 74999	Issue Date: 23/04/2012 Effective Date: - Modified: 17/06/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	459m N	Site Name: Lockington Recycling Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: 75kte HCI Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TAR018 EPR reference: EA/EPR/HB3904MJ/T001 Operator: Tarmac Trading Limited Waste Management licence No: 104056 Annual Tonnage: 74999	Issue Date: 23/04/2012 Effective Date: 19/11/2019 Modified: 08/01/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred
E	459m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: 75kte HCI Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF062 EPR reference: EA/EPR/GB3036AJ/V004 Operator: Tarmac Aggregates Limited Waste Management licence No: 104056 Annual Tonnage: 74999	Issue Date: 23/04/2012 Effective Date: - Modified: 08/01/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified

ID	Location	Details		
E	459m N	Site Name: Lockington Recycling Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: 75kte HCI Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GRS007 EPR reference: EA/EPR/HB3305HG/T001 Operator: G R S Earth Solutions Limited Waste Management licence No: 104056 Annual Tonnage: 74999	Issue Date: 23/04/2012 Effective Date: 21/05/2019 Modified: 08/01/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred
E	459m N	Site Name: Lockington Quarry Landfill Site Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: Inert LF Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF026 EPR reference: EA/EPR/FP3194ET/V003 Operator: Lafarge Aggregates Ltd Waste Management licence No: 210024 Annual Tonnage: 750000	Issue Date: 30/03/2007 Effective Date: - Modified: 22/07/2011 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	459m N	Site Name: Lockington Quarry Landfill Site Site Address: Lockington Quarry Landfill Site, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: Inert LF Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF026 EPR reference: EA/EPR/FP3194ET/V004 Operator: Lafarge Aggregates Limited Waste Management licence No: 210024 Annual Tonnage: 750000	Issue Date: 30/03/2007 Effective Date: - Modified: 20/11/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified
E	463m N	Site Name: Lockington Quarry Site Address: Warren Lane, Nr Lockington, Leicestershire, DE74 2RG Correspondence Address: Bradgate House, Groby, Leicester, Leicestershire, LE6 0FA	Type of Site: Landfill taking Non-Biodegradeable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF005 EPR reference: - Operator: Lafarge Redland Aggregates Ltd Waste Management licence No: 43491 Annual Tonnage: 375000	Issue Date: 13/07/2001 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

ID	Location	Details		
E	464m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: P O Box 7388, Syston, Leicester, Leicestershire, LE7 1WA	Type of Site: Landfill taking Non-Biodegradeable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAF005 EPR reference: - Operator: Lafarge Aggregates Limited Waste Management licence No: 43491 Annual Tonnage: 375000	Issue Date: 7/13/2001 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
E	464m N	Site Name: Lockington Quarry Site Address: Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG Correspondence Address: -	Type of Site: Landfill taking Non-Biodegradeable Wastes Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 627825 EPR reference: EA/EPR/MP3190CX Operator: Tarmac Aggregates Limited Waste Management licence No: 43491 Annual Tonnage: 375000	Issue Date: 13/07/2001 Effective Date: 13/07/2001 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired

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

3.7 Waste exemptions

Records within 500m **48**

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 22 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	**On site**	**A50 From M1 J24 To B5010 Roundabout Sk4741227636 To Sk4503929435**	**EPR/AE5387NS/A001**	**Using waste exemption**	**Non-agricultural waste only**	**Use of waste in construction**
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit

ID	Location	Site	Reference	Category	Sub-Category	Description
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Disposing of waste exemption	On a farm	Burning waste in the open
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Use of waste in construction
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Using waste exemption	On a farm	Incorporation of ash into soil
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX335795	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Use of waste in construction
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Incorporation of ash into soil

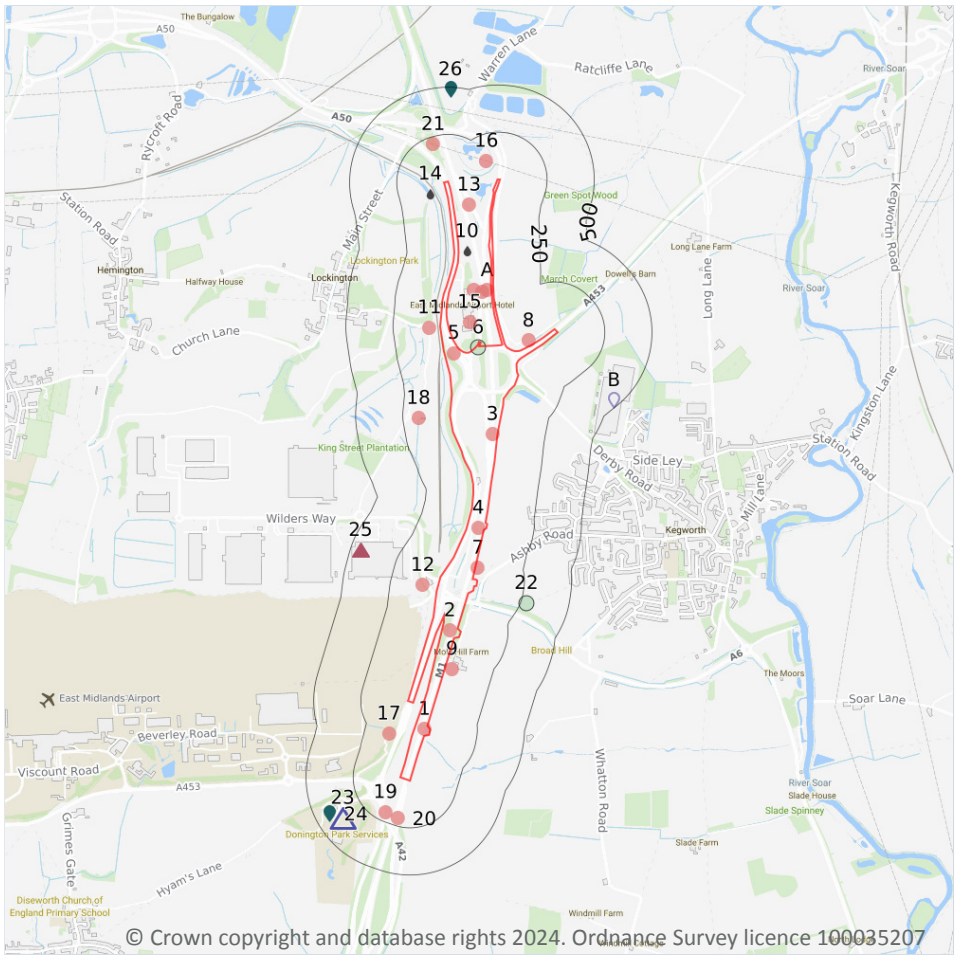
ID	Location	Site	Reference	Category	Sub-Category	Description
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Disposing of waste exemption	On a farm	Burning waste in the open
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Use of waste in construction
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Incorporation of ash into soil
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX054148	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Disposing of waste exemption	On a farm	Burning waste in the open

ID	Location	Site	Reference	Category	Sub-Category	Description
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Treating waste exemption	On a farm	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
A	31m S	Mole Hill Farm, Ashby Road, Kegworth, Derby, De74 2dl	WEX210406	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
2	75m S	-	WEX112348	Treating waste exemption	Not on a farm	Treatment of waste aerosol cans
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Burning waste in the open
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Treatment of non-hazardous pesticide washings by carbon filtration for disposal
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading waste on agricultural land to confer benefit
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Cleaning, washing, spraying or coating relevant waste
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Aerobic composting and associated prior treatment
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Using waste exemption	Both agricultural and non-agricultural waste	Incorporation of ash into soil
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230GH/A001	Using waste exemption	Both agricultural and non-agricultural waste	Burning of waste as a fuel in a small appliance
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Storing waste exemption	Not on a farm	Storage of waste in a secure place
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Using waste exemption	Not on a farm	Use of waste in construction
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Using waste exemption	Not on a farm	Spreading of plant matter to confer benefit
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Treating waste exemption	Not on a farm	Treatment of waste aerosol cans
C	244m S	Hemington Fields, The Cottage, Tamworth Road, Shardlow, Derby, De72 2hp	WEX086036	Using waste exemption	Not on a farm	Use of mulch
3	389m W	-	WEX376154	Using waste exemption	Not on a farm	Use of waste in construction
5	409m SW	19, Tenter Road, Moulton Park Industrial Estate, Northampton, Nn3 6pz	WEX093934	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



Site Outline

Search buffers in metres (m)

- Recent industrial land uses
- Current or recent petrol stations
- Hazardous substance storage/usage
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	21

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Company	Address	Activity	Category
1	**On site**	**Gantry**	**Leicestershire, DE74**	**Travelling Cranes and Gantries**	**Industrial Features**
2	**On site**	**Gantry**	**Leicestershire, DE74**	**Travelling Cranes and Gantries**	**Industrial Features**
3	**On site**	**Gantry**	**Leicestershire, DE74**	**Travelling Cranes and Gantries**	**Industrial Features**

ID	Location	Company	Address	Activity	Category
4	**On site**	**Gantry**	**Leicestershire, DE74**	**Travelling Cranes and Gantries**	**Industrial Features**
5	**On site**	**Gas Governor Station**	**Leicestershire, DE74**	**Gas Features**	**Infrastructure and Facilities**
7	13m S	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
A	22m N	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
8	28m NE	Electricity Sub Station	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
9	37m S	Masts (Telecommunication)	Leicestershire, DE74	Telecommunications Features	Infrastructure and Facilities
A	47m N	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
11	57m N	Electricity Sub Station	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
12	80m S	Electricity Sub Station	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
13	83m N	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
A	91m N	Mast (Telecommunication)	Leicestershire, DE74	Telecommunications Features	Infrastructure and Facilities
15	114m N	Green Motion	Hilton Hotels, Derby Road, Town Centre, Derby, Leicestershire, DE74 2YW	Vehicle Hire and Rental	Hire Services
16	114m N	Pylon	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
17	121m S	Pumping Station	Leicestershire, DE74	Water Pumping Stations	Industrial Features
18	168m NW	Electricity Sub Station	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities
19	201m S	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features
20	208m S	Gantry	Leicestershire, DE74	Travelling Cranes and Gantries	Industrial Features

ID	Location	Company	Address	Activity	Category
21	211m N	Pylon	Leicestershire, DE74	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Company	Address	LPG	Status
23	375m S	BP	M1 J23a, A453, Castle Donington, Derby, Leicestershire, DE74 2TN	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	1

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.

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Details	
25	447m SW	Application reference number: No Details Application status: Approved Application date: No Details Address: Gasrec Ltd, Zone B, East Midlands Gateway, Leicestershire, England, DE74 2DL	Details: No Details Enforcement: No Details Date of enforcement: No Details Comment: No Details

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	3

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

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Details	
B	468m NE	Operator: Refresco Drinks UK Ltd Installation Name: Cott Beverages - EPR/MP3735SN Process: ANIMAL VEGETABLE AND FOOD; TREATING ETC VEGETABLE RAW MATERIALS FOR FOOD >300T/D Permit Number: MP3730QS Original Permit Number: MP3735SN	EPR Reference: - Issue Date: 15/05/2018 Effective Date: 15/05/2018 Last date noted as effective: 21/03/2023 Status: Effective
B	468m NE	Operator: Refresco Drinks UK Ltd Installation Name: Cott Beverages - EPR/MP3735SN Process: ASSOCIATED PROCESS Permit Number: MP3730QS Original Permit Number: MP3735SN	EPR Reference: - Issue Date: 15/05/2018 Effective Date: 15/05/2018 Last date noted as effective: 21/03/2023 Status: Effective
B	468m NE	Operator: REFRESCO DRINKS UK LIMITED Installation Name: Kegworth Site Process: DIRECTLY ASSOCIATED ACTIVITY (INCLUDED) Permit Number: MP3735SN Original Permit Number: MP3735SN	EPR Reference: EPR/MP3735SN Issue Date: 15/05/2018 Effective Date: 15/05/2018 Last date noted as effective: 29/10/2024 Status: Effective

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

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

Records within 500m	2

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

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Address	Details	
24	422m S	Moto Hospitality Ltd (BP), Donington Park Service Station, Junction 23A, Ashby Road, Castle Donington, Derby, DE74 2TN	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No enforcements notified Date of enforcement: No enforcements notified Comment: No enforcements notified

ID	Location	Address	Details	
26	488m N	Lafarge Aggregates Ltd, Lockington Quarry, Warren Lane, Lockington, Leicestershire, DE74 2RG	Process: Use of Bulk Cement Status: Current Permit Permit Type: Part B	Enforcement: No enforcements notified Date of enforcement: No enforcements notified Comment: No enforcements notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	**2**

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

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Address	Details	
10	43m N	HILTONHOTELSTP,LOCKINGTON,LEICESTERSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: T/59/20516/S Permit Version: 1 Receiving Water: TRIB OF RIVER SOAR	Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 10/09/1990 Effective Date: 10/09/1990 Revocation Date: 09/09/2003
14	87m N	RAILTERMINALPHASE2,EAST MIDLANDSGATEWAY,KEGWORTH,DERBYSHIRE,DE742DL	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPREP3529PX Permit Version: 1 Receiving Water: LOCKINGTON BROOK	Status: NEW ISSUED UNDER EPR 2010 Issue date: 18/08/2023 Effective Date: 18/08/2023 Revocation Date: -

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	2

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

Features are displayed on the Current industrial land use map on **page 32 >**

ID	Location	Details	
6	**On site**	**Incident Date: 30/07/2001** **Incident Identification: 20190** **Pollutant: General Biodegradable Materials and Wastes** **Pollutant Description: Natural Organic Material**	**Water Impact: Category 4 (No Impact)** **Land Impact: Category 3 (Minor)** **Air Impact: Category 4 (No Impact)**
22	280m SE	Incident Date: 16/10/2003 Incident Identification: 196505 Pollutant: Inert Materials and Wastes Pollutant Description: Other Inert Material or Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

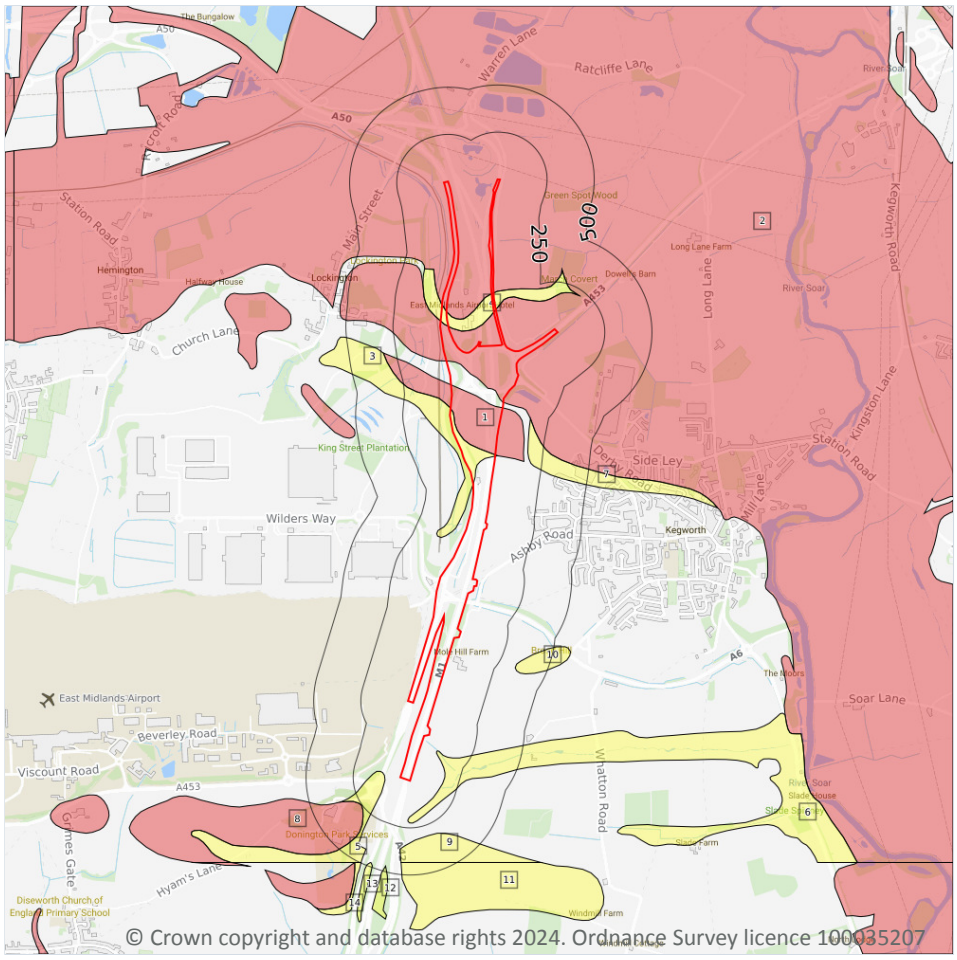
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



5.1 Superficial aquifer

Records within 500m	14

Aquifer status of groundwater held within superficial geology.

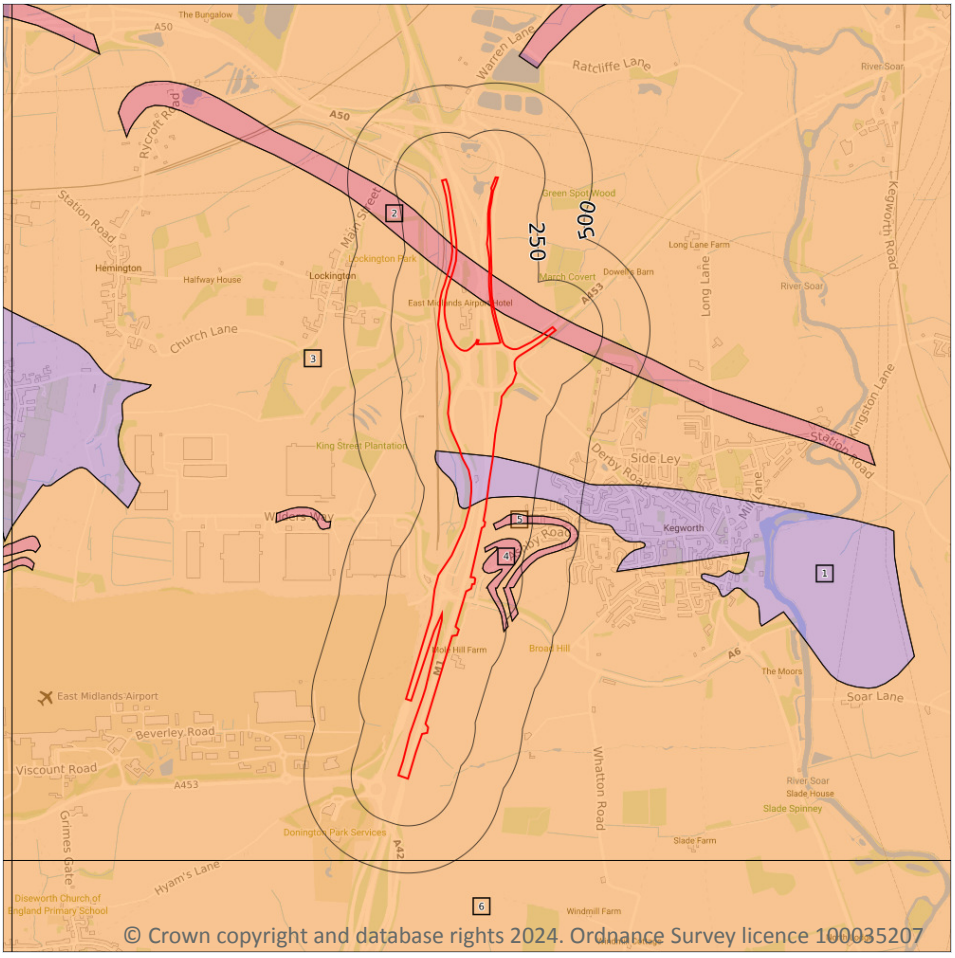
Features are displayed on the Hydrogeology map on **page 40 >**

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

ID	Location	Designation	Description
3	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
4	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
5	82m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	90m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
7	156m NE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
8	253m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
9	307m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
10	338m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
11	434m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
12	471m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
13	478m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
14	497m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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

Bedrock aquifer



5.2 Bedrock aquifer

Records within 500m	6

Aquifer status of groundwater held within bedrock geology.

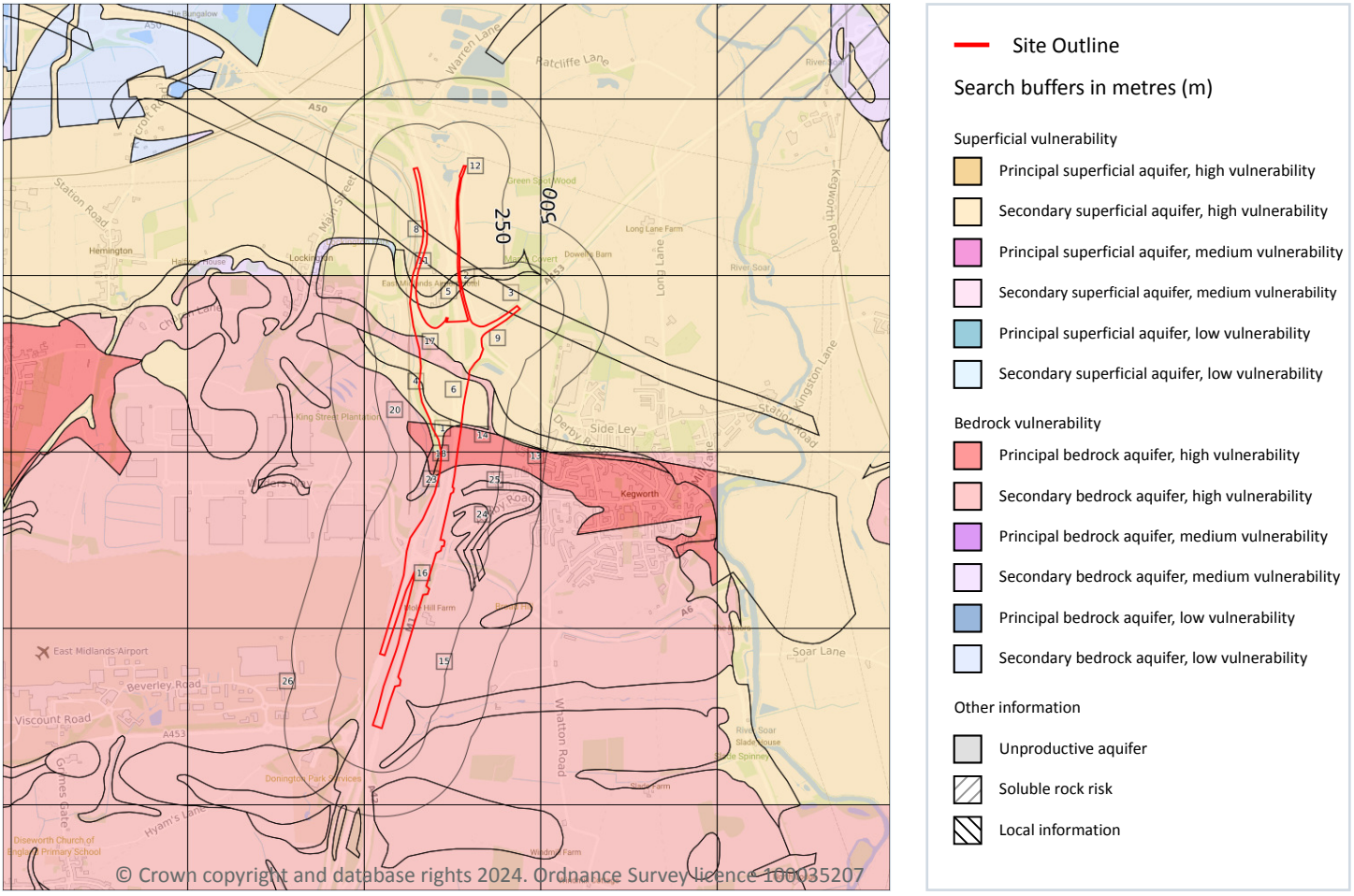
Features are displayed on the Bedrock aquifer map on **page 42 >**

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	**On site**	**Secondary B**	**Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers**
4	38m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	45m SE	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
6	434m S	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

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

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	26

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 44 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
4	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
5	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
6	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
7	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
8	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
9	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
10	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
11	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
12	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
13	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
14	**On site**	**Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**
15	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
16	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
17	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: <300mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
18	2m SE	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
19	21m N	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
20	23m N	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
21	25m N	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
22	27m N	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
23	34m S	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
24	38m S	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
25	45m SE	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
26	48m S	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

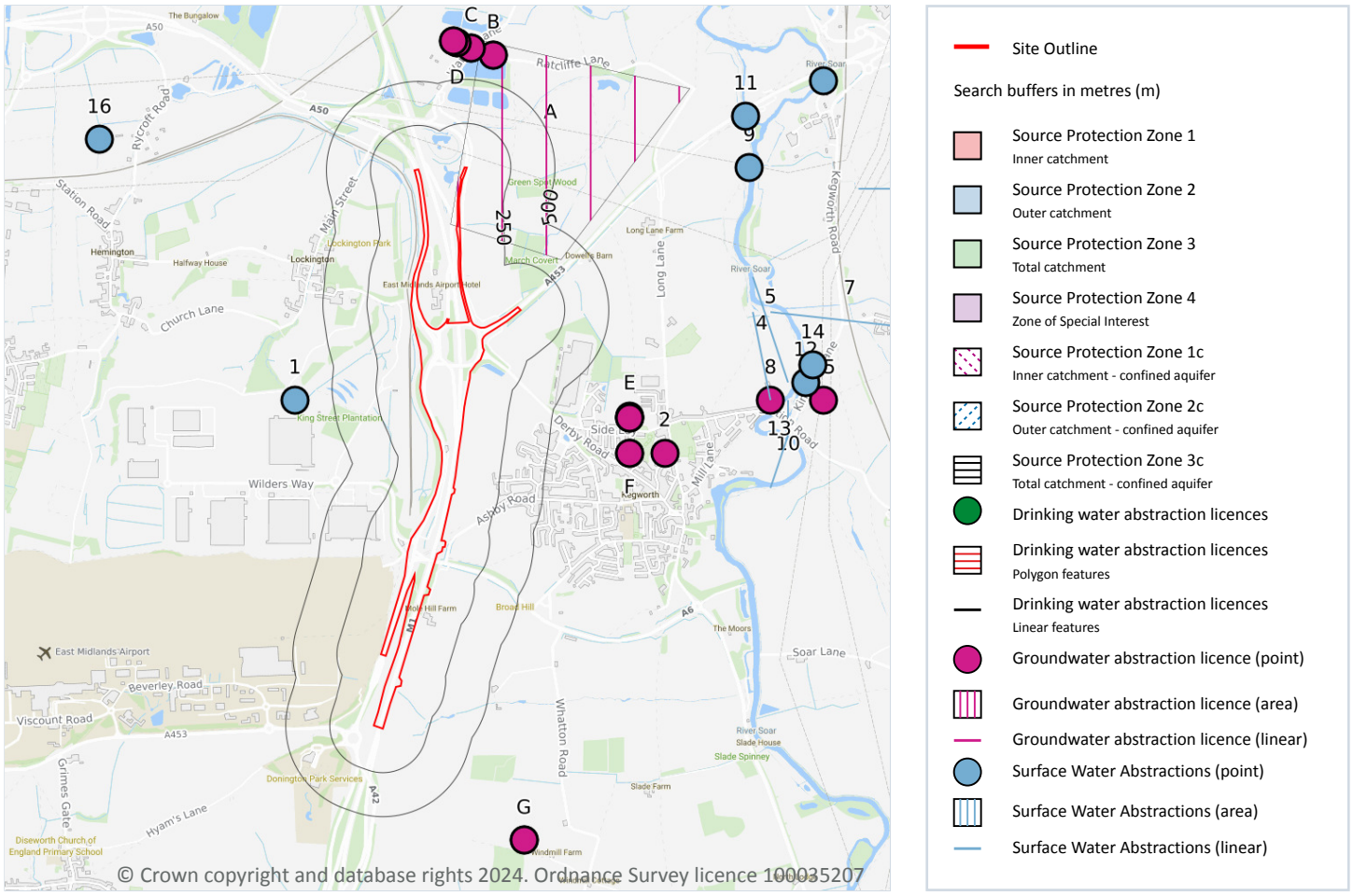
5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



5.6 Groundwater abstractions

Records within 2000m	22

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 50 >**

ID	Location	Details	
A	**On site**	**Status: Active** **Licence No: MD/028/0059/004** **Details: Dewatering** **Direct Source: Groundwater Midlands Region** **Point: LOCKINGTON QUARRY** **Data Type: Poly4** **Name: Tarmac Trading Limited** **Easting: 447660** **Northing: 329342**	**Annual Volume (m^3): 1760000** **Max Daily Volume (m^3): 6400** **Original Application No: NPS/NA/000749** **Original Start Date: 24/10/2022** **Expiry Date: 31/03/2037** **Issue No: 1** **Version Start Date: 24/10/2022** **Version End Date: -**
A	**On site**	**Status: Active** **Licence No: MD/028/0059/007** **Details: Dust Suppression** **Direct Source: Groundwater Midlands Region** **Point: LOCKINGTON QUARRY** **Data Type: Poly4** **Name: Tarmac Trading Limited** **Easting: 447660** **Northing: 329342**	**Annual Volume (m^3): 13750** **Max Daily Volume (m^3): 50** **Original Application No: NPS/NA/000748** **Original Start Date: 24/10/2022** **Expiry Date: 31/03/2037** **Issue No: 1** **Version Start Date: 24/10/2022** **Version End Date: -**
B	657m N	Status: Active Licence No: 03/28/59/0012/R01 Details: Mineral Washing Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - BORROW PIT Data Type: Point Name: Tarmac Trading Limited Easting: 447727 Northing: 329260	Annual Volume (m^3): 1036619 Max Daily Volume (m^3): 6829.1 Original Application No: NPS/WR/038710 Original Start Date: 01/04/2018 Expiry Date: 31/03/2025 Issue No: 3 Version Start Date: 26/08/2022 Version End Date: -
B	657m N	Status: Active Licence No: 03/28/59/0012/R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - BORROW PIT Data Type: Point Name: Tarmac Trading Limited Easting: 447727 Northing: 329260	Annual Volume (m^3): 1036619 Max Daily Volume (m^3): 6829.1 Original Application No: NPS/WR/038710 Original Start Date: 01/04/2018 Expiry Date: 31/03/2025 Issue No: 3 Version Start Date: 26/08/2022 Version End Date: -
C	679m N	Status: Historical Licence No: 03/28/59/0012 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - BORROW PIT Data Type: Point Name: Tarmac Aggregates Limited Easting: 447600 Northing: 329300	Annual Volume (m^3): 1878000 Max Daily Volume (m^3): 6829 Original Application No: - Original Start Date: 02/01/2001 Expiry Date: 31/03/2018 Issue No: 5 Version Start Date: 26/10/2015 Version End Date: -

ID	Location	Details	
C	679m N	Status: Historical Licence No: 03/28/59/0012 Details: Mineral Washing Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - BORROW PIT Data Type: Point Name: Tarmac Aggregates Limited Easting: 447600 Northing: 329300	Annual Volume (m^3): 1878000 Max Daily Volume (m^3): 6829 Original Application No: - Original Start Date: 02/01/2001 Expiry Date: 31/03/2018 Issue No: 5 Version Start Date: 26/10/2015 Version End Date: -
D	707m N	Status: Active Licence No: 03/28/59/0012/R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - SEEPAGE LAGOONS Data Type: Point Name: Tarmac Trading Limited Easting: 447520 Northing: 329327	Annual Volume (m^3): 1036619 Max Daily Volume (m^3): 6829.1 Original Application No: NPS/WR/038710 Original Start Date: 01/04/2018 Expiry Date: 31/03/2025 Issue No: 3 Version Start Date: 26/08/2022 Version End Date: -
D	707m N	Status: Active Licence No: 03/28/59/0012/R01 Details: Mineral Washing Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - SEEPAGE LAGOONS Data Type: Point Name: Tarmac Trading Limited Easting: 447520 Northing: 329327	Annual Volume (m^3): 1036619 Max Daily Volume (m^3): 6829.1 Original Application No: NPS/WR/038710 Original Start Date: 01/04/2018 Expiry Date: 31/03/2025 Issue No: 3 Version Start Date: 26/08/2022 Version End Date: -
D	721m N	Status: Historical Licence No: 03/28/59/0012 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - SEEPAGE LAGOONS Data Type: Point Name: Tarmac Aggregates Limited Easting: 447500 Northing: 329340	Annual Volume (m^3): 1878000 Max Daily Volume (m^3): 6829 Original Application No: - Original Start Date: 02/01/2001 Expiry Date: 31/03/2018 Issue No: 5 Version Start Date: 26/10/2015 Version End Date: -
D	721m N	Status: Historical Licence No: 03/28/59/0012 Details: Mineral Washing Direct Source: Groundwater Midlands Region Point: LOCKINGTON QUARRY - SEEPAGE LAGOONS Data Type: Point Name: Tarmac Aggregates Limited Easting: 447500 Northing: 329340	Annual Volume (m^3): 1878000 Max Daily Volume (m^3): 6829 Original Application No: - Original Start Date: 02/01/2001 Expiry Date: 31/03/2018 Issue No: 5 Version Start Date: 26/10/2015 Version End Date: -

ID	Location	Details	
E	862m E	Status: Historical Licence No: 03/28/59/0003 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: KEGWORTH - CATCHPIT Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327210	Annual Volume (m^3): 9999 Max Daily Volume (m^3): 227 Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2005 Version End Date: -
E	869m E	Status: Historical Licence No: 03/28/59/0003 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: KEGWORTH - WELLS Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 07/04/1970 Version End Date: -
E	869m E	Status: Historical Licence No: 03/28/59/0003 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: KEGWORTH-WELL Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327200	Annual Volume (m^3): 9999 Max Daily Volume (m^3): 227 Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2005 Version End Date: -
E	869m E	Status: Historical Licence No: 03/28/59/0003 Details: Process Water Direct Source: Groundwater Midlands Region Point: KEGWORTH - WELLS Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327200	Annual Volume (m^3): 9999 Max Daily Volume (m^3): 227 Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2005 Version End Date: -
F	961m E	Status: Historical Licence No: 03/28/59/0003 Details: Non-Evaporative Cooling Direct Source: Groundwater Midlands Region Point: KEGWORTH - CATCHPIT Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 07/04/1970 Version End Date: -

ID	Location	Details	
F	961m E	Status: Historical Licence No: 03/28/59/0003 Details: Process Water Direct Source: Groundwater Midlands Region Point: KEGWORTH - CATCHPIT Data Type: Point Name: SLACK & PARR LTD Easting: 448500 Northing: 327000	Annual Volume (m^3): 9999 Max Daily Volume (m^3): 227 Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2005 Version End Date: -
G	1021m S	Status: Active Licence No: 03/28/57/0108 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: WHATTON HOUSE, NR LONG WHATTON - B/HOLE Data Type: Point Name: LORD CRAWSHAW Easting: 447900 Northing: 324800	Annual Volume (m^3): 4773.3 Max Daily Volume (m^3): 45.46 Original Application No: - Original Start Date: 12/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
G	1021m S	Status: Active Licence No: 03/28/57/0108 Details: Spray Irrigation - Direct Direct Source: Groundwater Midlands Region Point: WHATTON HOUSE, NR LONG WHATTON - B/HOLE Data Type: Point Name: LORD CRAWSHAW Easting: 447900 Northing: 324800	Annual Volume (m^3): 4773.3 Max Daily Volume (m^3): 45.46 Original Application No: - Original Start Date: 12/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
2	1152m E	Status: Historical Licence No: 03/28/59/0006 Details: Spray Irrigation - Direct Direct Source: Groundwater Midlands Region Point: BOWLING GREEN - WELL Data Type: Point Name: KEGWORTH BOWLS CLUB Easting: 448700 Northing: 327000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -
-	1190m N	Status: Active Licence No: 03/28/59/0008/G Details: Spray Irrigation - Direct Direct Source: Groundwater Midlands Region Point: LOCKINGTON GROUNDS,NOTTS - POND Data Type: Point Name: R OLDERSHAW LTD Easting: 447400 Northing: 329800	Annual Volume (m^3): 2273 Max Daily Volume (m^3): 200.02 Original Application No: - Original Start Date: 18/08/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/08/1966 Version End Date: -

ID	Location	Details	
8	1507m E	Status: Historical Licence No: 03/28/57/0064 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: BRIDGE FARM - WELL (1) Data Type: Point Name: MELLORS Easting: 449300 Northing: 327300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 03/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -
15	1792m E	Status: Historical Licence No: 03/28/57/0064 Details: General Farming & Domestic Direct Source: Groundwater Midlands Region Point: BRIDGE FARM - WELL (2) Data Type: Point Name: MELLORS Easting: 449600 Northing: 327300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 03/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**12**

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 50 >**

ID	Location	Details	
1	715m W	Status: Historical Licence No: 03/28/59/0004 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Midlands Region Point: LOCKINGTON - SPRINGS Data Type: Point Name: EXECUTORS OF J CURZON Easting: 446600 Northing: 327300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 26/04/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -

ID	Location	Details	
4	1318m NE	Status: Active Licence No: 03/28/57/0123 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: BRIDGE FARM, KEGWORTH - RIVER SOAR Data Type: Line Name: MELLORS Easting: 449300 Northing: 327300	Annual Volume (m^3): 22730 Max Daily Volume (m^3): 655 Original Application No: - Original Start Date: 12/09/1977 Expiry Date: - Issue No: 100 Version Start Date: 12/09/1977 Version End Date: -
5	1331m NE	Status: Historical Licence No: 03/28/57/0090 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: CHURCH FARM,KINGSTON - RIVER SOAR Data Type: Line Name: N BEEBY & SON Easting: 449200 Northing: 328000	Annual Volume (m^3): 14879.058 Max Daily Volume (m^3): 654.62 Original Application No: - Original Start Date: 13/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/2005 Version End Date: -
-	1385m N	Status: Historical Licence No: 03/28/59/0008/S Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: LOCKINGTON GROUND, NOTTS - TRIBUTARY OF RIVER TRENT Data Type: Point Name: R OLDERSHAW LTD Easting: 447700 Northing: 330000	Annual Volume (m^3): 2273 Max Daily Volume (m^3): 200.024 Original Application No: - Original Start Date: 18/08/1966 Expiry Date: - Issue No: 100 Version Start Date: 18/08/1966 Version End Date: -
7	1418m E	Status: Historical Licence No: 03/28/57/0090 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: CHURCH FARM,KINGSTON - KINGSTON BROOK Data Type: Line Name: N BEEBY & SON Easting: 449300 Northing: 327800	Annual Volume (m^3): 14879.058 Max Daily Volume (m^3): 654.62 Original Application No: - Original Start Date: 13/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/2005 Version End Date: -
9	1529m NE	Status: Historical Licence No: 03/28/59/0011 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: LAND AT RATCLIFFE ON SOAR - RIVER SOAR Data Type: Point Name: WHITWORTH Easting: 449180 Northing: 328620	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/12/1996 Expiry Date: - Issue No: 100 Version Start Date: 12/12/1996 Version End Date: -

ID	Location	Details	
10	1602m E	Status: Historical Licence No: 03/28/57/0090 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: CHURCH FARM - SUTTON BONINGTON BROOK Data Type: Line Name: N BEEBY & SON Easting: 449400 Northing: 327300	Annual Volume (m^3): 14879.058 Max Daily Volume (m^3): 654.62 Original Application No: - Original Start Date: 13/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/2005 Version End Date: -
11	1611m NE	Status: Historical Licence No: MD/028/0059/001 Details: Dust Suppression Direct Source: Surface Water Midlands Region Point: POINT 'B' ON THE RIVER SOAR AT RATCLIFFE ON SOAR, NOTTS Data Type: Point Name: Laing O'Rourke Infrastructure Limited Easting: 449160 Northing: 328913	Annual Volume (m^3): 16000 Max Daily Volume (m^3): 200 Original Application No: - Original Start Date: 07/10/2013 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 07/10/2013 Version End Date: -
12	1669m E	Status: Historical Licence No: 03/28/58/0017 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: LAND AT KINGSTON ON SOAR - BLACK BROOK Data Type: Point Name: UNIVERSITY OF NOTTINGHAM Easting: 449500 Northing: 327400	Annual Volume (m^3): 45801 Max Daily Volume (m^3): 1350.18 Original Application No: - Original Start Date: 13/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 05/09/1977 Version End Date: -
13	1676m E	Status: Active Licence No: 03/28/57/0124 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: BRIDGE FARM, KEGWORTH - RIVER SOAR Data Type: Line Name: MELLORS Easting: 449300 Northing: 326800	Annual Volume (m^3): 22730 Max Daily Volume (m^3): 655 Original Application No: - Original Start Date: 12/09/1977 Expiry Date: - Issue No: 100 Version Start Date: 12/09/1977 Version End Date: -
14	1687m E	Status: Historical Licence No: 03/28/57/0131 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: SUTTON BONINGTON - RIVER SOAR Data Type: Point Name: UNIVERSITY OF NOTTINGHAM Easting: 449540 Northing: 327500	Annual Volume (m^3): 121500 Max Daily Volume (m^3): 2727 Original Application No: - Original Start Date: 25/03/1980 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1984 Version End Date: -

ID	Location	Details	
16	1798m NW	Status: Historical Licence No: 03/28/36/0161 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: RYECROFT ROAD,HEMINGTON - HEMINGTON BRK Data Type: Point Name: T C HIGGINS & SON Easting: 445490 Northing: 328780	Annual Volume (m^3): 1250 Max Daily Volume (m^3): 125 Original Application No: - Original Start Date: 29/10/1991 Expiry Date: - Issue No: 100 Version Start Date: 03/12/2018 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

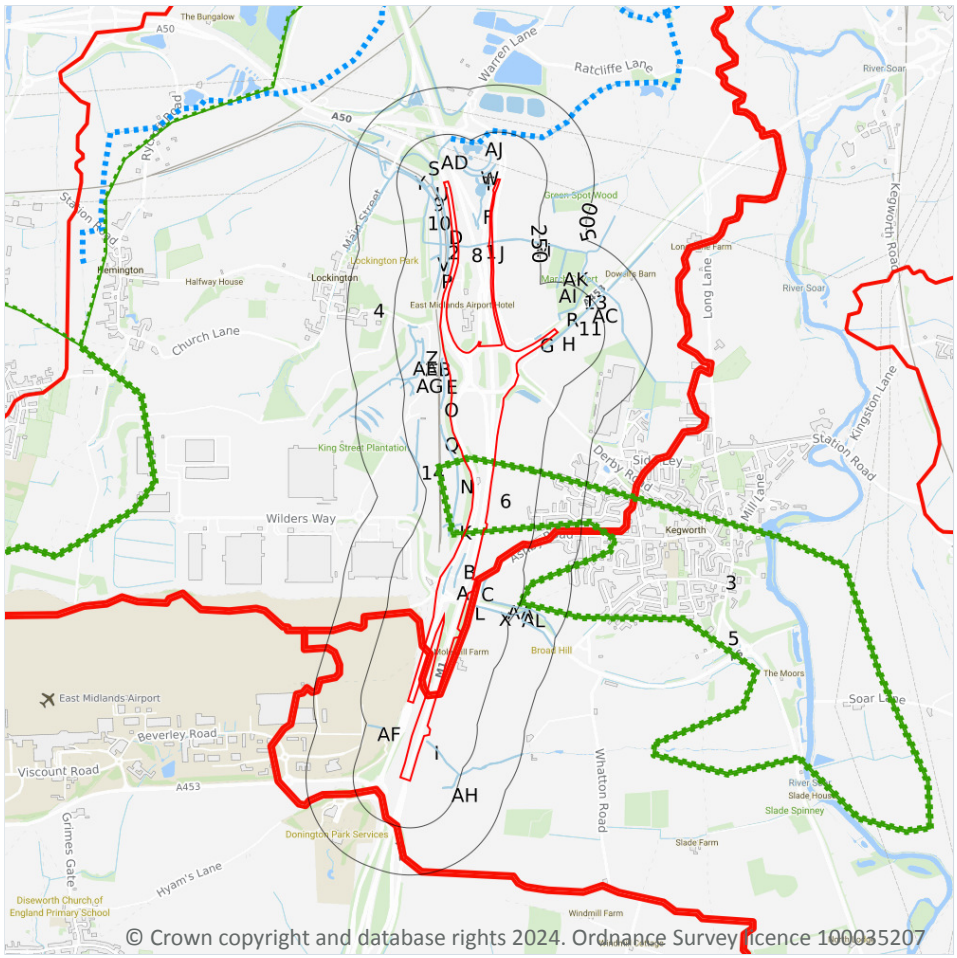
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology



- Site Outline

Search buffers in metres (m)

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

6.1 Water Network (OS MasterMap)

Records within 250m	109

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 59 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	-

ID	Location	Type of water feature	Ground level	Permanence	Name
2	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse may not contain water all year round**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**Underground**	**Watercourse may not contain water all year round**	**-**
A	**On site**	**Manmade watercourse for water transfer.**	**On ground surface**	**Watercourse may not contain water all year round**	**-**
B	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
C	14m S	Inland river not influenced by normal tidal action.	Underground	Watercourse may not contain water all year round	-
C	14m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-

ID	Location	Type of water feature	Ground level	Permanence	Name
D	15m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	15m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	15m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
G	17m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	21m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	22m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	24m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	31m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
K	32m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	34m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
L	38m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
M	39m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	43m S	Inland river not influenced by normal tidal action.	Underground	Watercourse may not contain water all year round	-

ID	Location	Type of water feature	Ground level	Permanence	Name
K	43m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	45m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
O	47m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
L	48m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
O	49m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
P	50m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	51m N	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	54m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
8	55m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	55m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	55m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
F	55m N	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Q	56m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
R	56m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Q	57m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
T	59m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	59m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
S	60m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	61m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	62m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	65m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	67m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
K	71m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
V	71m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	72m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
L	74m S	Inland river not influenced by normal tidal action.	Underground	Watercourse may not contain water all year round	-

ID	Location	Type of water feature	Ground level	Permanence	Name
9	82m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	83m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	88m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	89m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
X	92m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
10	92m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	93m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	94m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
U	99m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Y	99m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	102m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	102m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	102m N	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
Y	103m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
11	110m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AA	113m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse may not contain water all year round	-
AB	116m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	119m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AC	122m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AB	123m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	124m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AD	124m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	133m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AB	135m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
I	137m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AE	142m N	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
Z	143m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
13	156m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	157m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
Z	157m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AF	160m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	163m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
14	167m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AD	173m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AD	173m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AD	174m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
AH	175m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	201m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	202m NW	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
AG	206m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	214m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	215m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AG	215m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
W	215m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AI	216m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AI	219m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AG	220m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AJ	221m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
AK	221m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	231m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	232m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	237m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
AH	238m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AH	239m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
AL	242m S	Inland river not influenced by normal tidal action.	Underground	Watercourse may not contain water all year round	-
AG	249m NW	Manmade watercourse for water transfer.	On ground surface	Watercourse may not contain water all year round	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	60

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 59 >**

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 59 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
3	**On site**	**River**	**Soar from Long Whatton Brook to Trent**	**GB104028047212**	**Soar River**	**Soar**
4	**On site**	**River**	**Hemington Brook Catchment (trib of the Soar)**	**GB104028047410**	**Soar River**	**Soar**

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

6.4 WFD Surface water bodies

Records identified	2

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 59 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
16	216m N	River	Hemington Brook Catchment (trib of the Soar)	GB104028047410 ↗	Bad	Fail	Bad	2019
-	1286m NE	River	Soar from Long Whatton Brook to Trent	GB104028047212 ↗	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	2

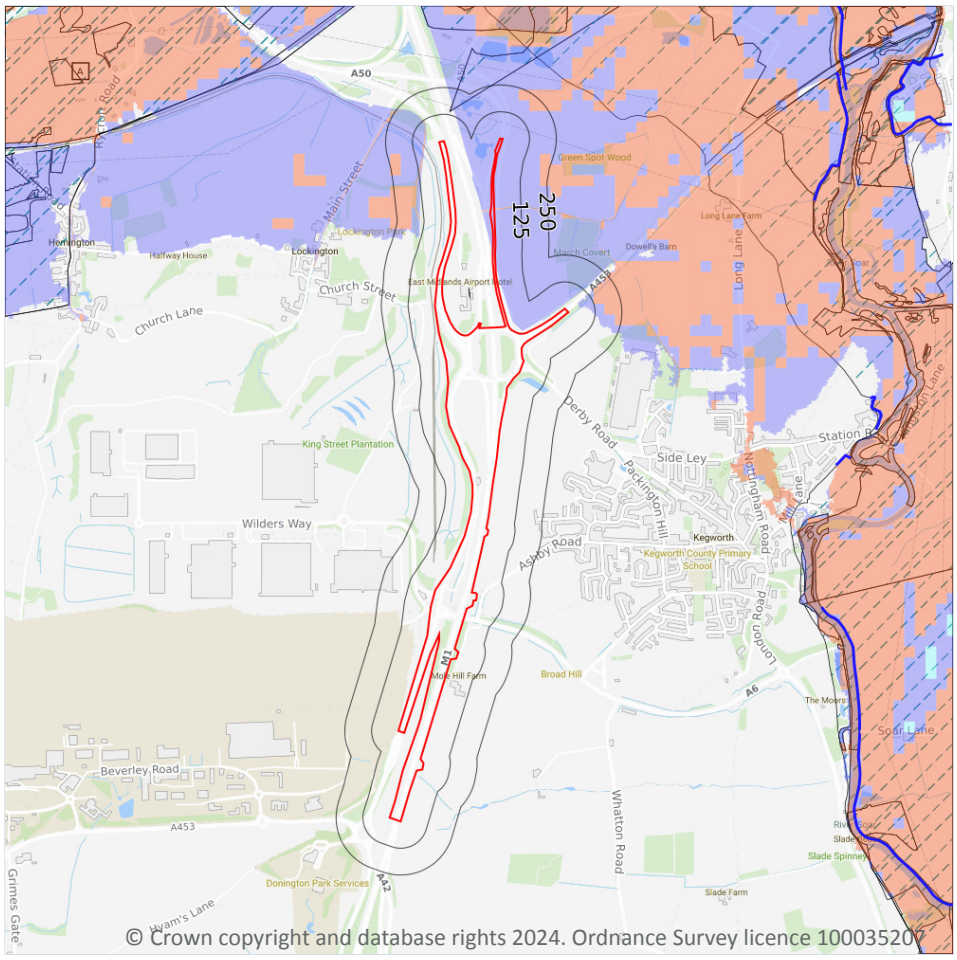
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 59 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
5	**On site**	**Soar - PT Sandstone**	**GB40401G302800 ↗**	**Poor**	**Poor**	**Good**	**2019**
6	**On site**	**Soar - Secondary Combined**	**GB40402G990600 ↗**	**Good**	**Good**	**Good**	**2019**

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

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

River and coastal flooding:

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

7.1 Risk of flooding from rivers and the sea

Records within 50m	3

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 70 >**

Distance	Flood risk category
On site	**High**
0 - 50m	High

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

7.2 Historical Flood Events

Records within 250m	**2**

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.

Features are displayed on the River and coastal flooding map on **page 70 >**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
A	142m N	Trent 1932 Shardlow & Notts	1932-01-01 1932-01-01	Main river	Channel capacity exceeded (no raised defences)	Fluvial
A	142m N	Trent 1932 Shardlow & Notts	1932-01-01 1932-01-01	Main river	Channel capacity exceeded (no raised defences)	Fluvial

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

7.3 Flood Defences

Records within 250m	**0**

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	**0**

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

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

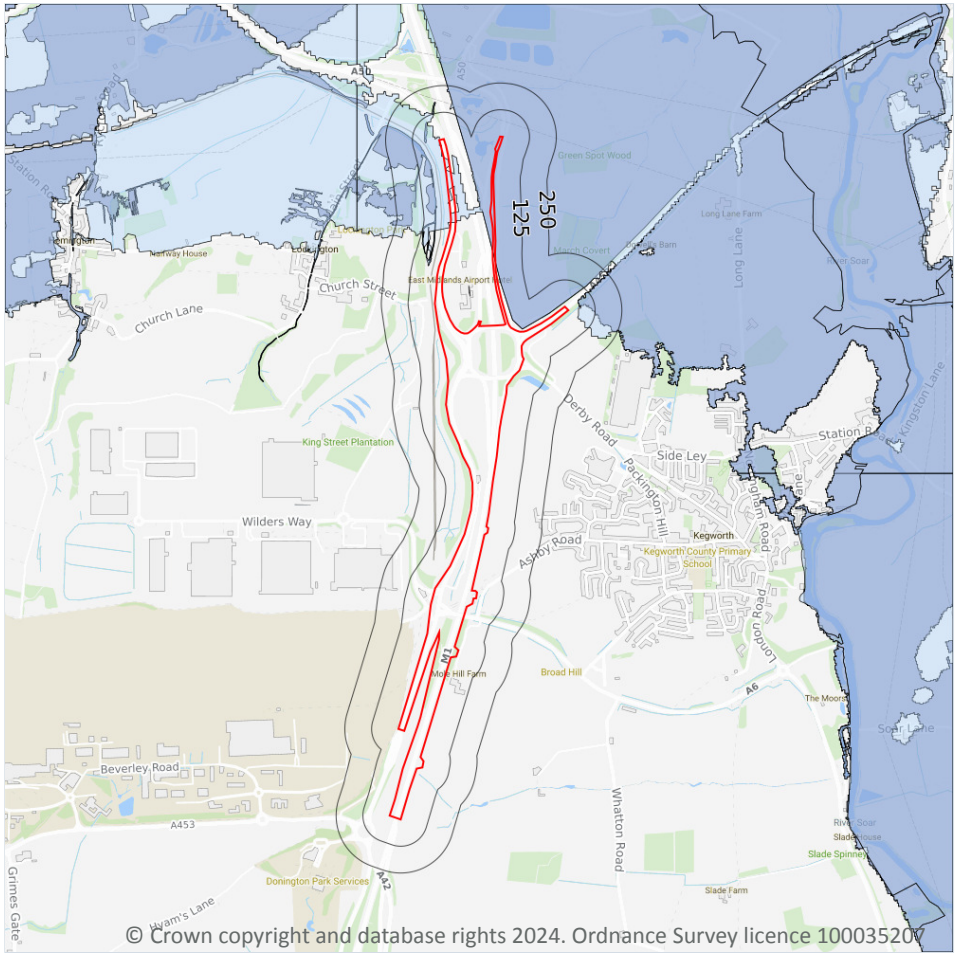
7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

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

Features are displayed on the River and coastal flooding map on **page 70 >**

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

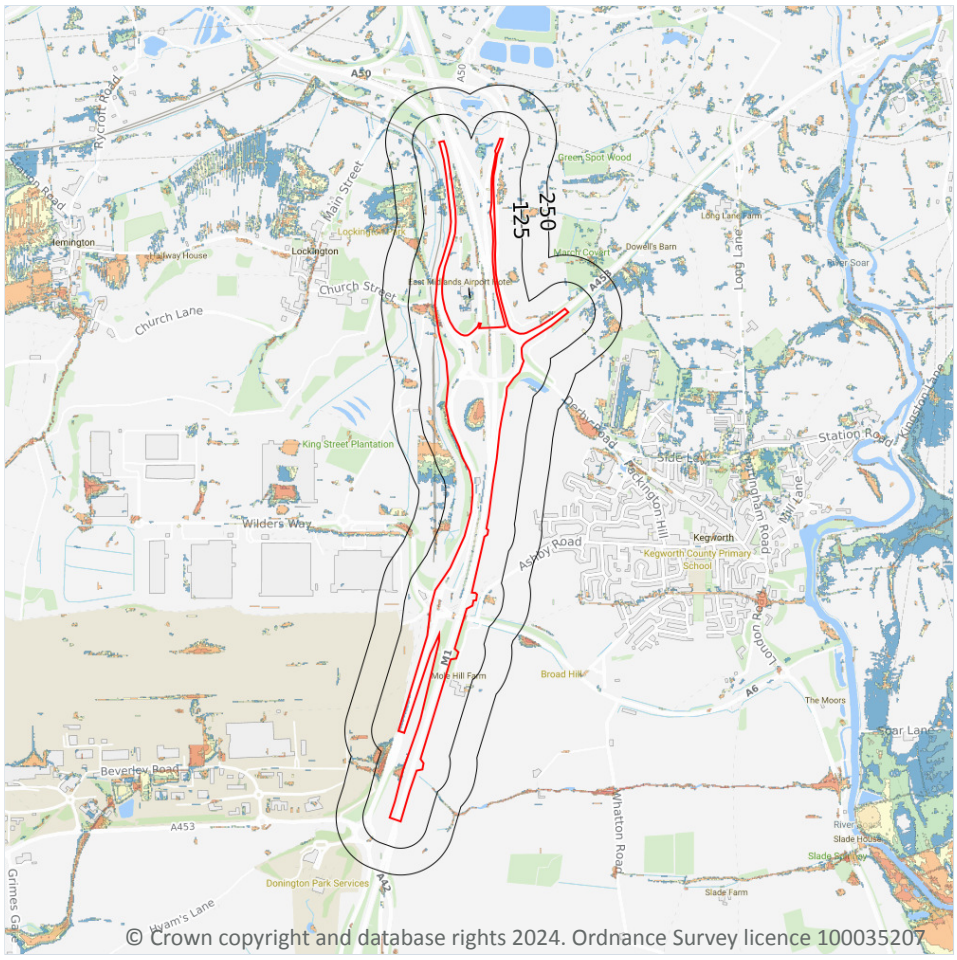
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 70 >**

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

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

8 Surface water flooding



Site Outline

Search buffers in metres (m)

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

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

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

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

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 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 75 >**

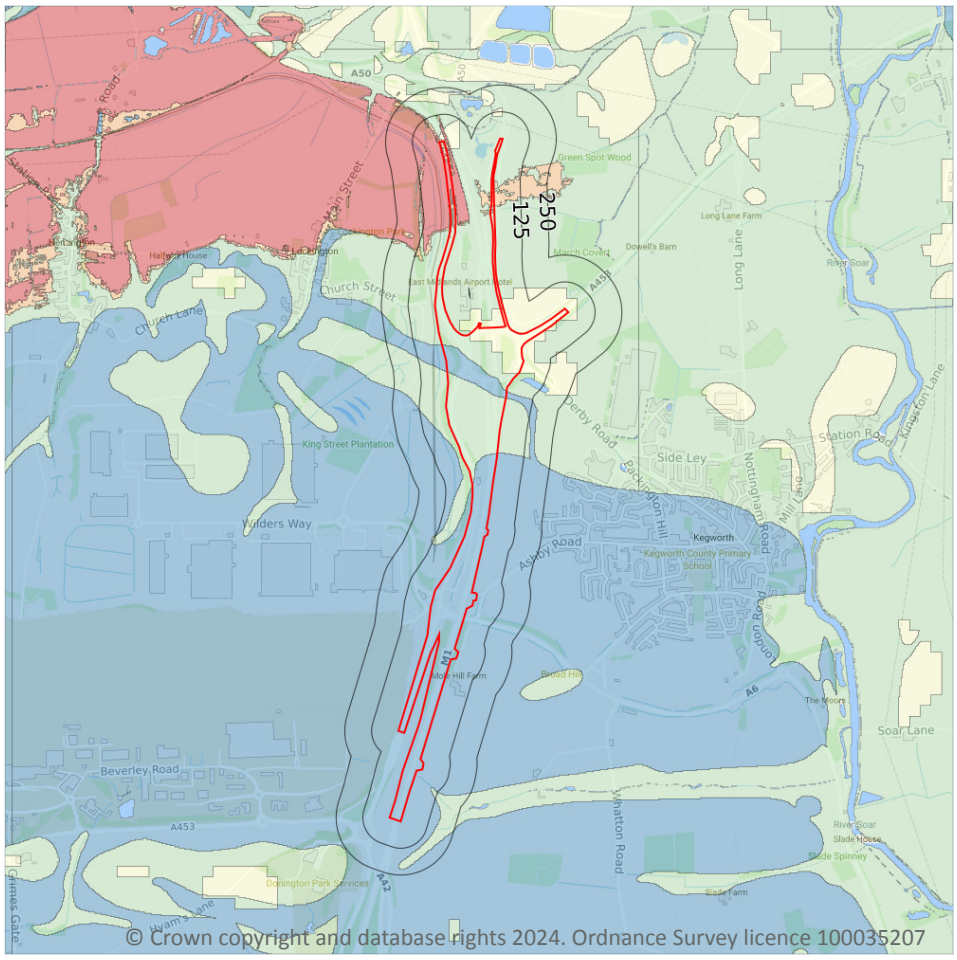
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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



Site Outline

Search buffers in metres (m)

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

9.1 Groundwater flooding

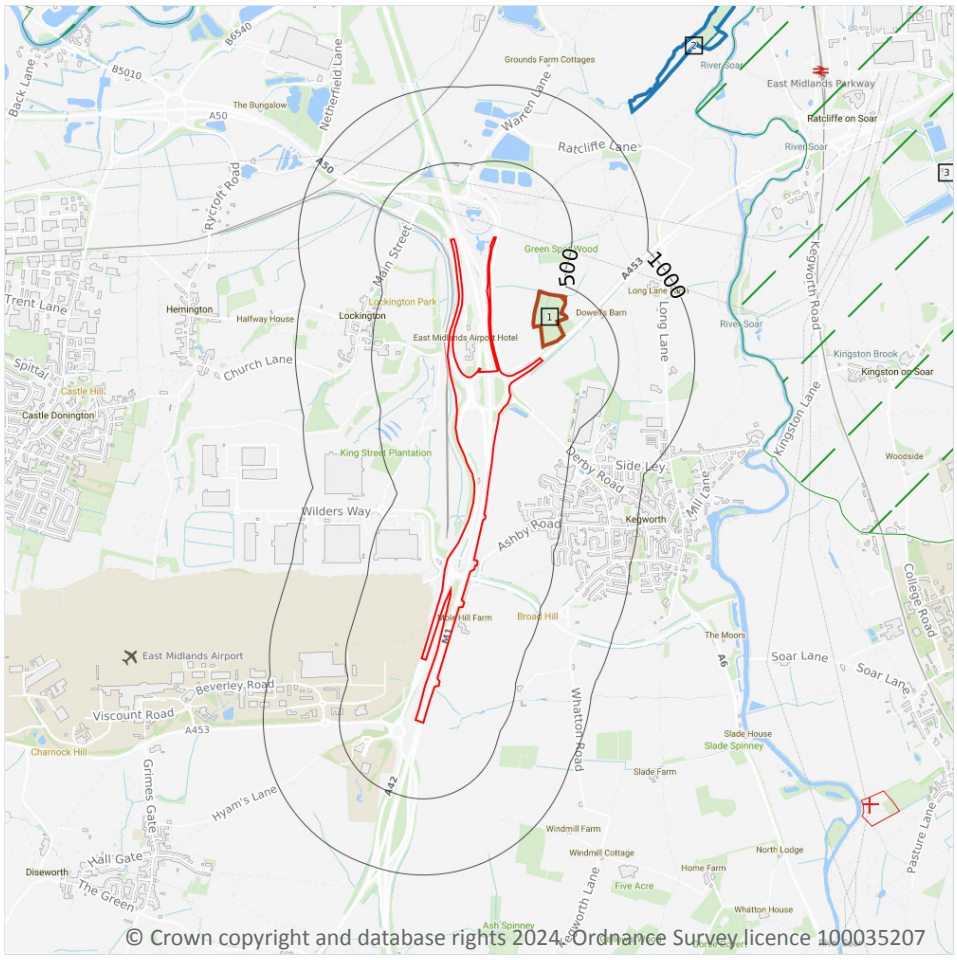
Highest risk on site	**High**
Highest risk within 50m	**High**

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

Features are displayed on the Groundwater flooding map on **page 77 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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Site Outline

Search buffers in metres (m)

- Sites of Special Scientific Interest (SSSI)
- Local Nature Reserves (LNR)
- Designated Ancient Woodland
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	1

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.

Features are displayed on the Environmental designations map on **page 78 >**

ID	Location	Name	Data source
2	1220m NE	Lockington Marshes	Natural England

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	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 78 >**

ID	Location	Name	Woodland Type
1	81m NE	March Covert	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	1

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

Features are displayed on the Environmental designations map on **page 78 >**

ID	Location	Name	Local Authority name
3	1279m NE	Derby and Nottingham Green Belt	Rushcliffe

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

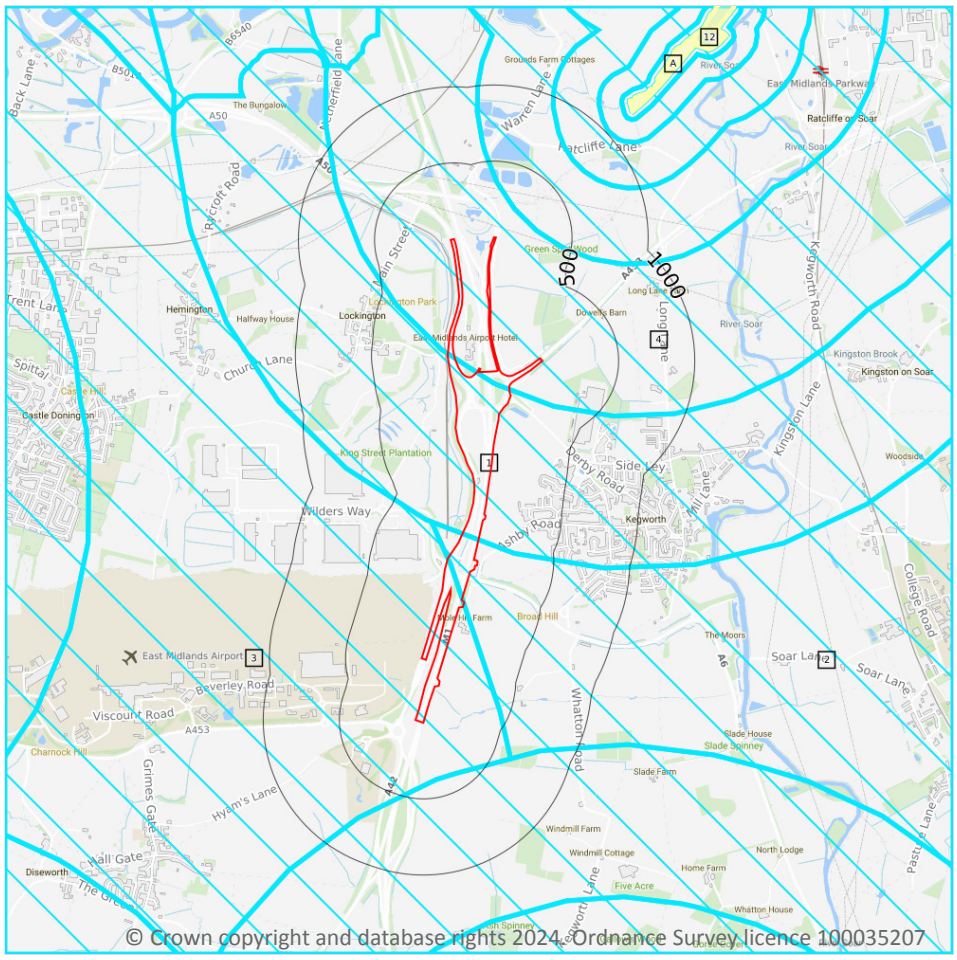
Records within 2000m	4

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

Location	Name	Type	NVZ ID	Status
On site	**SOAR R NVZ**	**Surface Water**	**309**	**Existing**
On site	**SOAR R NVZ**	**Surface Water**	**309**	**Existing**
On site	**Burton**	**Groundwater**	**34**	**Existing**
1322m SE	Burton	Groundwater	34	Existing

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 83 >**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**
2	On site	**Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**
3	On site	**Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**
4	On site	**Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Rural residential - Any residential development of 100 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	2

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.

Features are displayed on the SSSI Impact Zones and Units map on **page 83 >**

ID: A
Location: 1220m NE
SSSI name: Lockington Marshes
Unit name: South Marsh
Broad habitat: Neutral Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

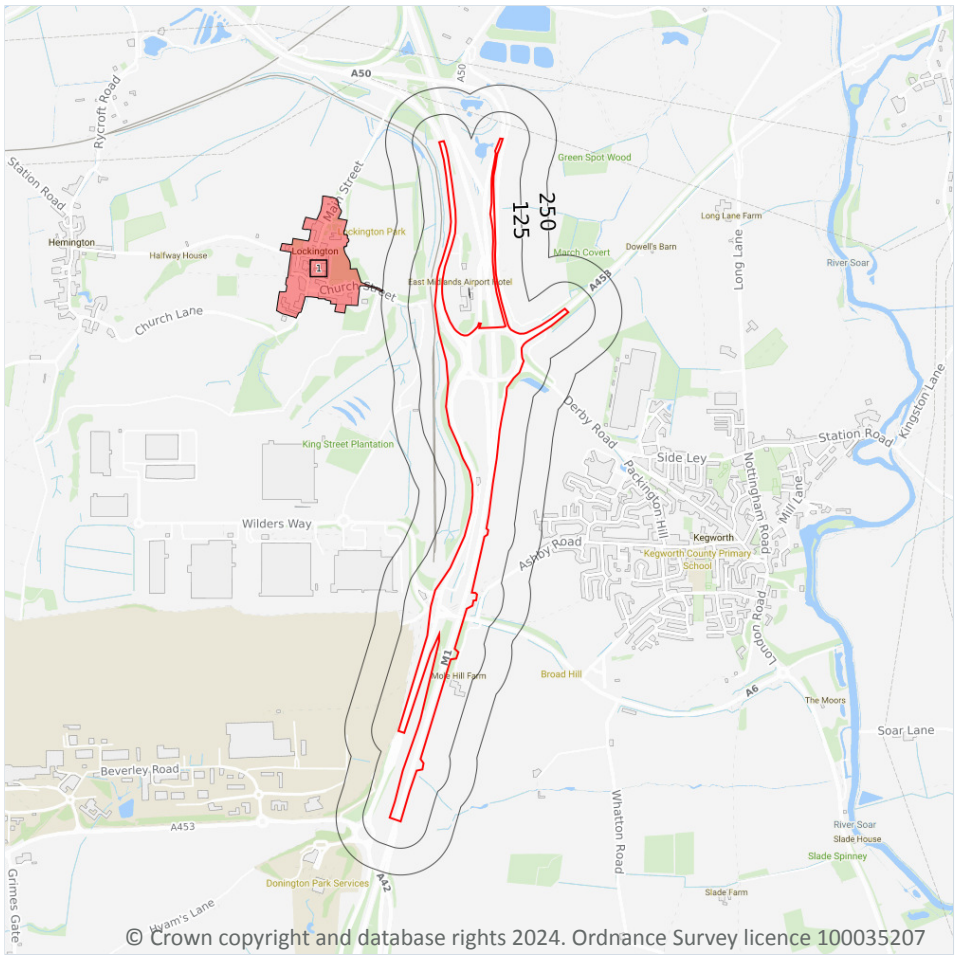
Feature name	Feature condition	Date of assessment
Invert. assemblage W3 permanent wet mire	Unfavourable - Recovering	01/07/2014
Lowland fens, including basin, flood-plain, open water transition and valley fens	Favourable	01/07/2014

ID: 12
Location: 1828m NE
SSSI name: Lockington Marshes
Unit name: South Carr
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Unfavourable - Recovering	01/07/2014

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

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	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	1

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.

Features are displayed on the Visual and cultural designations map on **page 86 >**

ID	Location	Name	District	Date of designation
1	250m NW	Lockington	North West Leicestershire	08/09/1992

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

11.6 Scheduled Ancient Monuments

Records within 250m	**0**

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

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

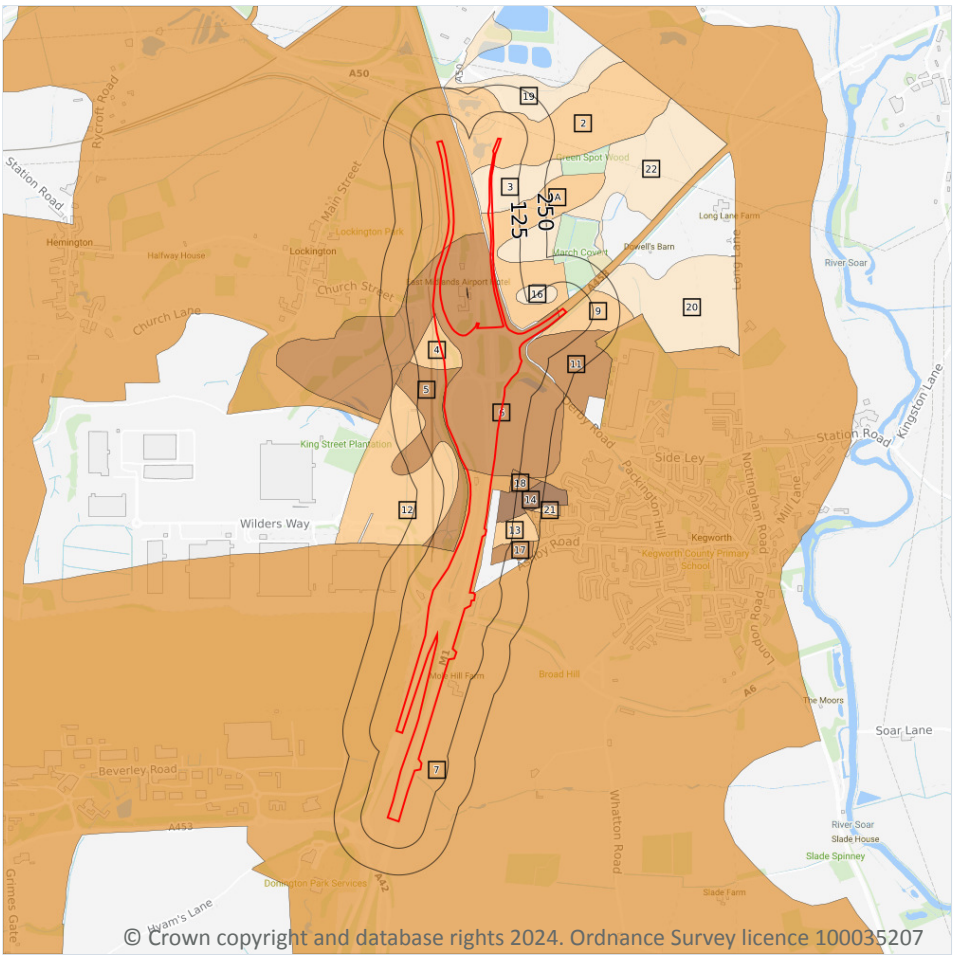
11.7 Registered Parks and Gardens

Records within 250m	**0**

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	20

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 89 >**

ID	Location	Classification	Description
2	**On site**	**Grade 3a**	**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.**

ID	Location	Classification	Description
3	**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.**
4	**On site**	**Grade 3a**	**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.**
5	**On site**	**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.**
6	**On site**	**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.**
7	**On site**	**Grade 3**	**Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.**
A	**On site**	**Grade 3a**	**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.**
9	3m NE	Grade 3a	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.
11	16m NE	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.
A	19m 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.
12	20m N	Grade 3a	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.

ID	Location	Classification	Description
13	42m SE	Grade 3a	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.
14	49m SE	Grade 1	Excellent quality agricultural land. Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.
16	56m NE	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.
17	59m SE	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.
18	90m E	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
19	127m 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.
20	162m NE	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.
21	205m SE	Grade 3a	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.
22	215m NE	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	5

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.

Location	Reference	Scheme	Start Date	End date
13m E	AG00659932	Entry Level plus Higher Level Stewardship	01/09/2011	31/08/2021
16m N	AG00659932	Entry Level plus Higher Level Stewardship	01/09/2011	31/08/2021
28m NE	AG00659932	Entry Level plus Higher Level Stewardship	01/09/2011	31/08/2021
77m N	AG00659932	Entry Level plus Higher Level Stewardship	01/09/2011	31/08/2021
190m S	AG00591636	Entry Level plus Higher Level Stewardship	01/10/2014	30/09/2024

This data is sourced from Natural England.

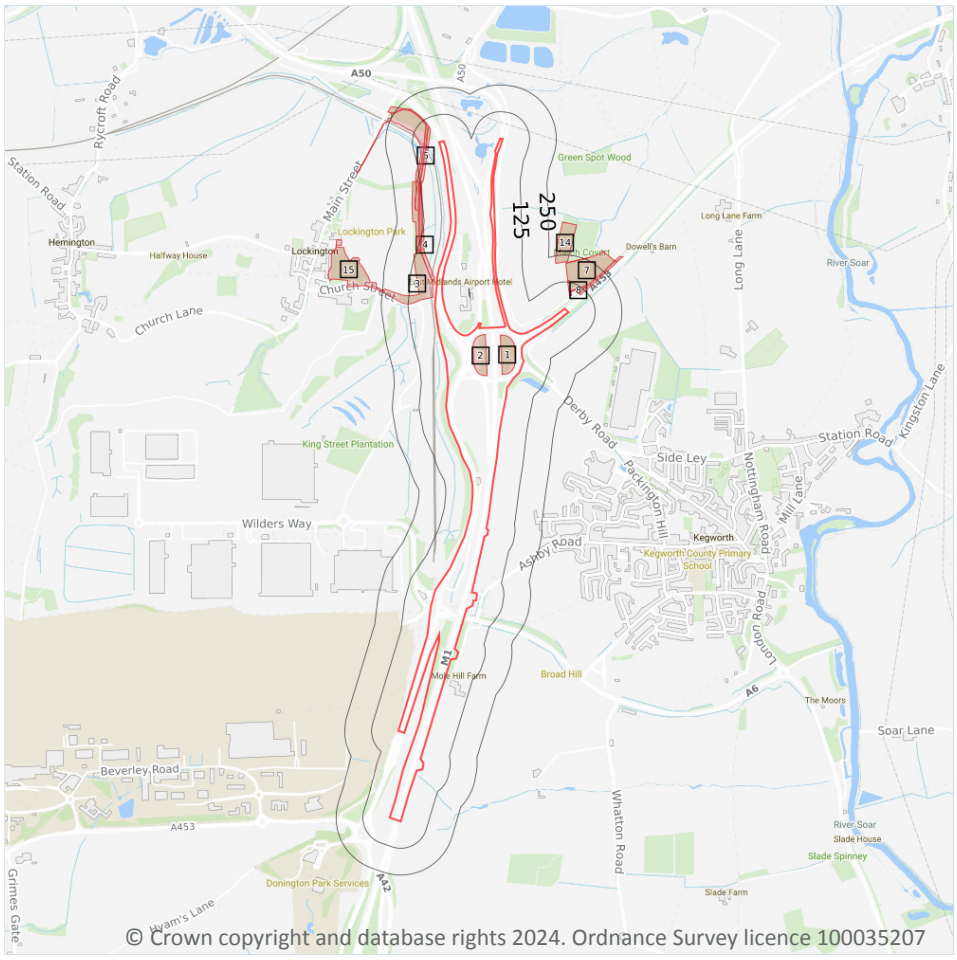
12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders

Habitat Networks

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

13.1 Priority Habitat Inventory

Records within 250m	15

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 94 >**

ID	Location	Main Habitat	Other habitats
1	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
2	**On site**	**Deciduous woodland**	**Main habitat: DWOOD (INV > 50%)**
3	12m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	13m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
5	48m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	61m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	64m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	66m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	70m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	96m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
11	109m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
12	127m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
13	213m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
14	215m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
15	250m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**0**

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	**0**

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

This data is sourced from Natural England.

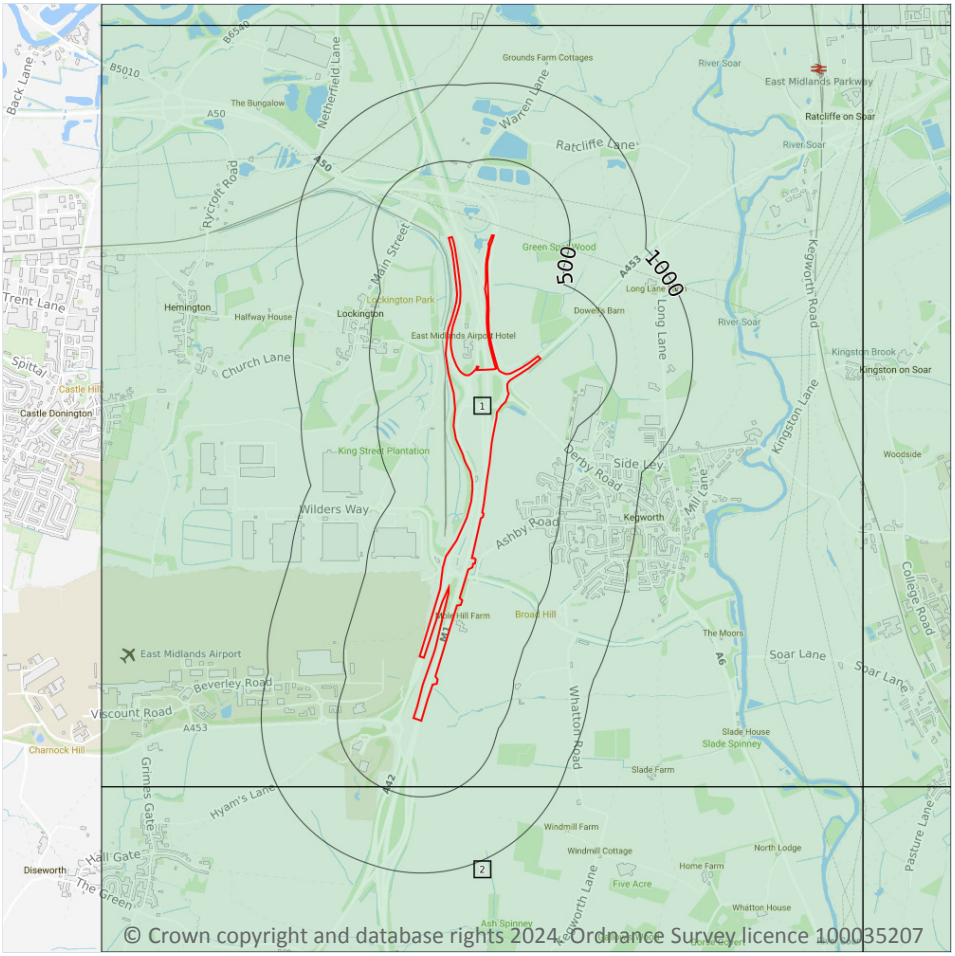
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	2

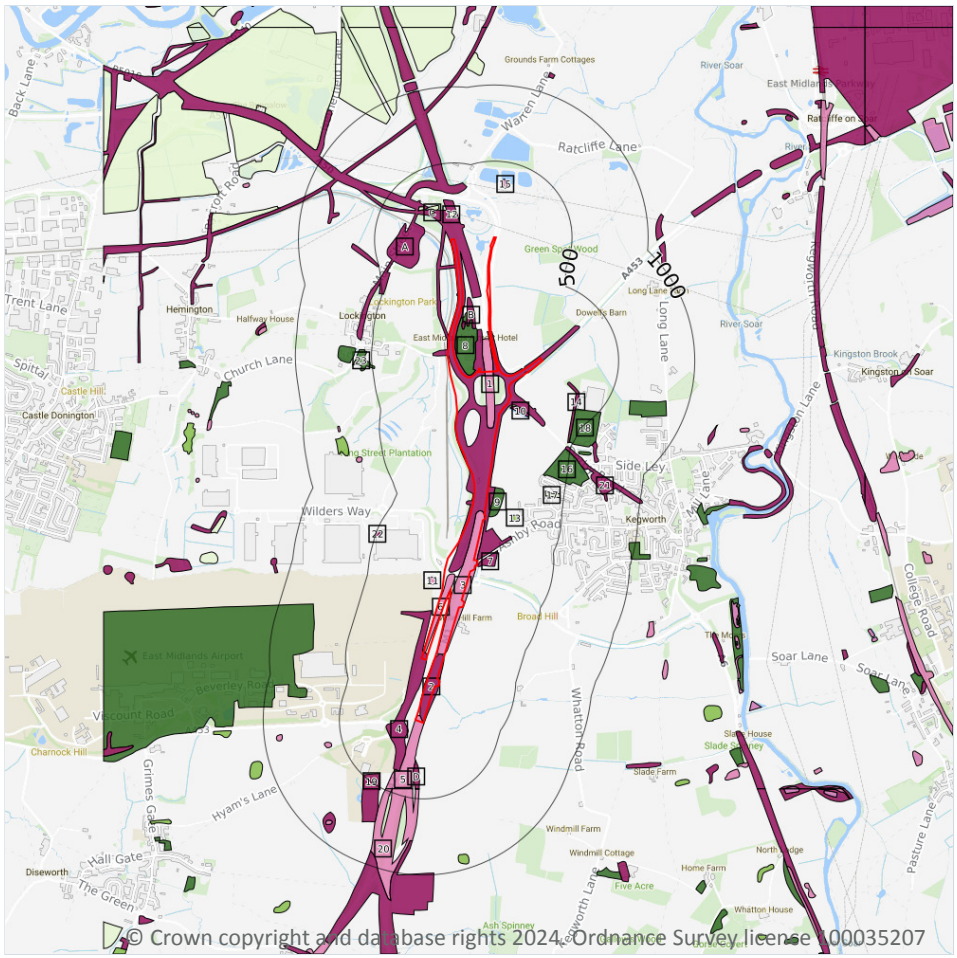
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 97 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**SK42NE**
2	434m S	Full	Full	Full	No coverage	SK42SE

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m	32

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

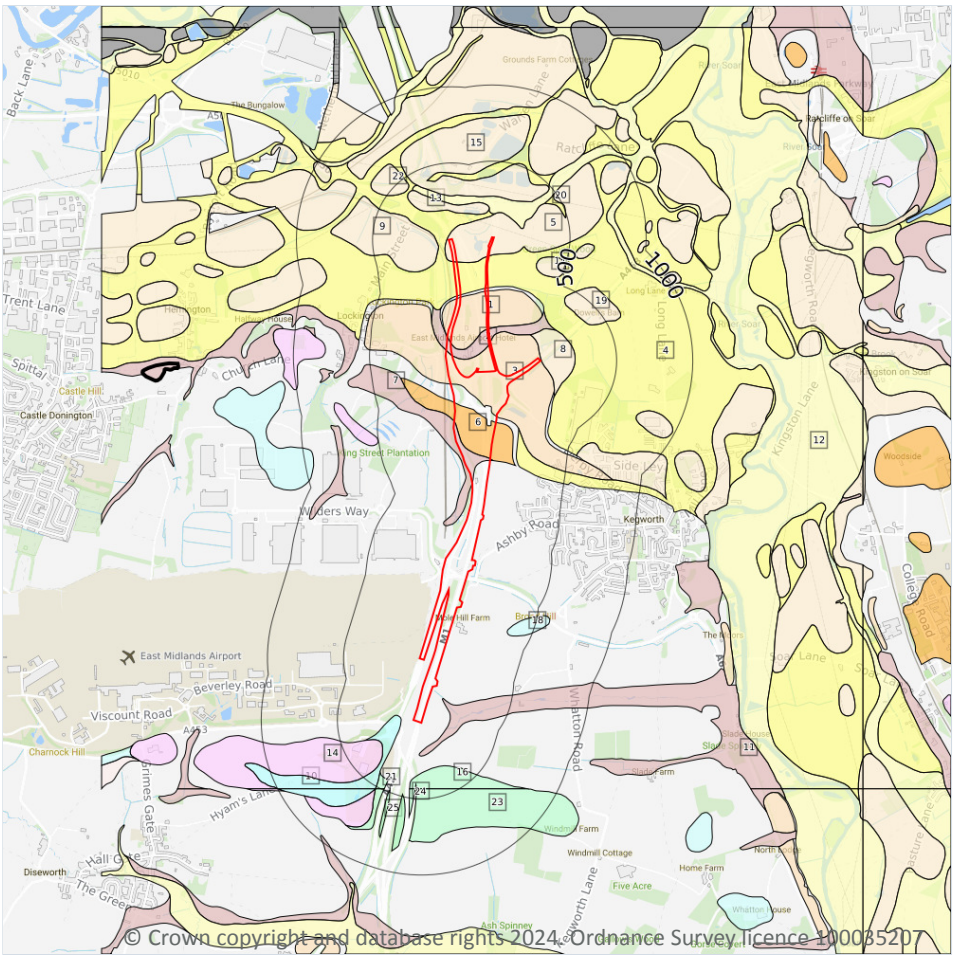
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 98 >**

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

ID	Location	LEX Code	Description	Rock description
5	**On site**	**WGR-VOID**	**Worked Ground (Undivided)**	**Void**
6	**On site**	**WGR-VOID**	**Worked Ground (Undivided)**	**Void**
A	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**
7	4m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	12m N	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
9	21m SE	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
10	30m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	33m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	35m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11	46m S	WGR-VOID	Worked Ground (Undivided)	Void
12	149m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
13	167m SE	DDGR-UKNOWN	Disturbed Ground (Undivided)	Unknown/unclassified Entry
C	207m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
C	216m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
14	222m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
D	253m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
C	267m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
15	329m N	WGR-VOID	Worked Ground (Undivided)	Void
16	346m E	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
17	376m E	WMGR-ARTDP	Infilled Ground	Artificial Deposit
18	382m NE	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
19	424m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
D	435m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
20	437m S	WGR-VOID	Worked Ground (Undivided)	Void
21	469m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
22	474m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
23	485m NW	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
A	499m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m	27

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 100 >**

ID	Location	LEX Code	Description	Rock description
1	On site	WASG-XSV	Wanlip Member - Sand And Gravel	Sand And Gravel
2	On site	HEAD-DMTN	Head - Diamicton	Diamicton
3	On site	WASG-XSV	Wanlip Member - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
4	**On site**	**HETD-XSV**	**Hemington Member - Sand And Gravel**	**Sand And Gravel**
5	**On site**	**HPSG-XSV**	**Holme Pierrepont Sand And Gravel Member - Sand And Gravel**	**Sand And Gravel**
6	**On site**	**EGSG-XSV**	**Egginton Common Sand And Gravel Member - Sand And Gravel**	**Sand And Gravel**
7	**On site**	**HEAD-DMTN**	**Head - Diamicton**	**Diamicton**
8	6m NE	SYSG-XSV	Syston Member - Sand And Gravel	Sand And Gravel
9	76m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
10	81m S	ODT-DMTN	Oadby Member - Diamicton	Diamicton
11	87m S	HEAD-DMTN	Head - Diamicton	Diamicton
12	154m N	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
13	163m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
14	260m S	GFDUA-XSV	Glaciofluvial Deposits, Anglian - Sand And Gravel	Sand And Gravel
15	267m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
16	307m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
17	317m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
18	344m S	THT-DMTN	Thrussington Member - Diamicton	Diamicton
19	380m NE	SYSG-XSV	Syston Member - Sand And Gravel	Sand And Gravel
20	402m N	HETD-XSV	Hemington Member - Sand And Gravel	Sand And Gravel
21	406m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
22	425m N	HPSG-XSV	Holme Pierrepont Sand And Gravel Member - Sand And Gravel	Sand And Gravel
23	434m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
24	436m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
25	479m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton
26	486m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton

ID	Location	LEX Code	Description	Rock description
27	491m S	ODTT-DMTN	Oadby Member (trias-rich) - Diamicton	Diamicton

This data is sourced from the British Geological Survey.

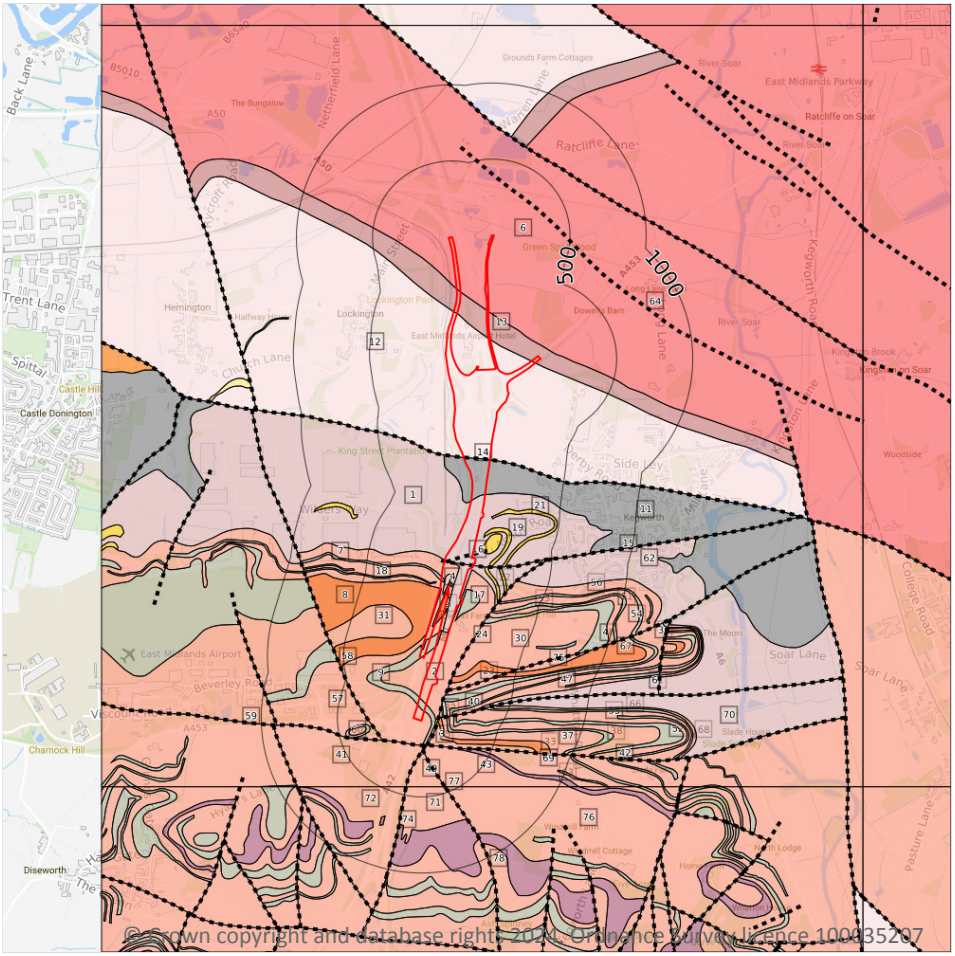
14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



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Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m	62

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 103 >**

ID	Location	LEX Code	Description	Rock age
1	On site	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
2	On site	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
3	On site	GUN-SDST	Gunthorpe Member - Sandstone	Ladinian Age - Anisian Age

ID	Location	LEX Code	Description	Rock age
4	**On site**	**TPSF-MDSS**	**Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone**	**Anisian Age - Olenekian Age**
5	**On site**	**GUN-DSLST**	**Gunthorpe Member - Dolomitic Siltstone**	**Ladinian Age - Anisian Age**
6	**On site**	**BCMU-MDST**	**Branscombe Mudstone Formation - Mudstone**	**Rhaetian Age - Norian Age**
7	**On site**	**GUN-DSLST**	**Gunthorpe Member - Dolomitic Siltstone**	**Ladinian Age - Anisian Age**
8	**On site**	**GUN-SDST**	**Gunthorpe Member - Sandstone**	**Ladinian Age - Anisian Age**
9	**On site**	**GUN-DSLST**	**Gunthorpe Member - Dolomitic Siltstone**	**Ladinian Age - Anisian Age**
10	**On site**	**TPSF-MDSS**	**Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone**	**Anisian Age - Olenekian Age**
11	**On site**	**BMS-SDST**	**Bromsgrove Sandstone Formation - Sandstone**	**Anisian Age - Early Triassic Epoch**
12	**On site**	**EDW-MDST**	**Edwalton Member - Mudstone**	**Carnian Age**
13	**On site**	**AS-SDST**	**Arden Sandstone Formation - Sandstone**	**Carnian Age**
17	4m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
18	33m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
19	47m S	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
20	50m S	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
21	56m SE	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
22	70m S	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
23	80m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
25	81m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
27	84m S	GUN-SDST	Gunthorpe Member - Sandstone	Ladinian Age - Anisian Age
28	90m S	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
29	93m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
30	98m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
31	99m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
32	100m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
33	103m S	GUN-SDST	Gunthorpe Member - Sandstone	Ladinian Age - Anisian Age
35	103m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age

ID	Location	LEX Code	Description	Rock age
36	117m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
37	119m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
38	153m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
39	158m S	TPSF-SDST	Tarporley Siltstone Formation - Sandstone	Anisian Age - Olenekian Age
40	159m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
41	161m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
43	163m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
45	168m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
46	172m S	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
47	181m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
48	187m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
49	189m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
51	192m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
52	197m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
53	203m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
54	206m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
55	210m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
56	242m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
57	252m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
60	293m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
61	293m S	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
62	297m SE	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
63	297m S	DIS-SDST	Diseworth Sandstone - Sandstone	Ladinian Age
65	320m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
66	351m S	GUN-DSLST	Gunthorpe Member - Dolomitic Siltstone	Ladinian Age - Anisian Age
67	373m S	GUN-SDST	Gunthorpe Member - Sandstone	Ladinian Age - Anisian Age
68	380m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age

ID	Location	LEX Code	Description	Rock age
69	381m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
70	411m S	TPSF-MDSS	Tarporley Siltstone Formation - Mudstone, Siltstone And Sandstone	Anisian Age - Olenekian Age
71	434m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
72	445m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
75	453m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age
76	460m S	GUN-MDST	Gunthorpe Member - Mudstone	Ladinian Age - Anisian Age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**16**

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

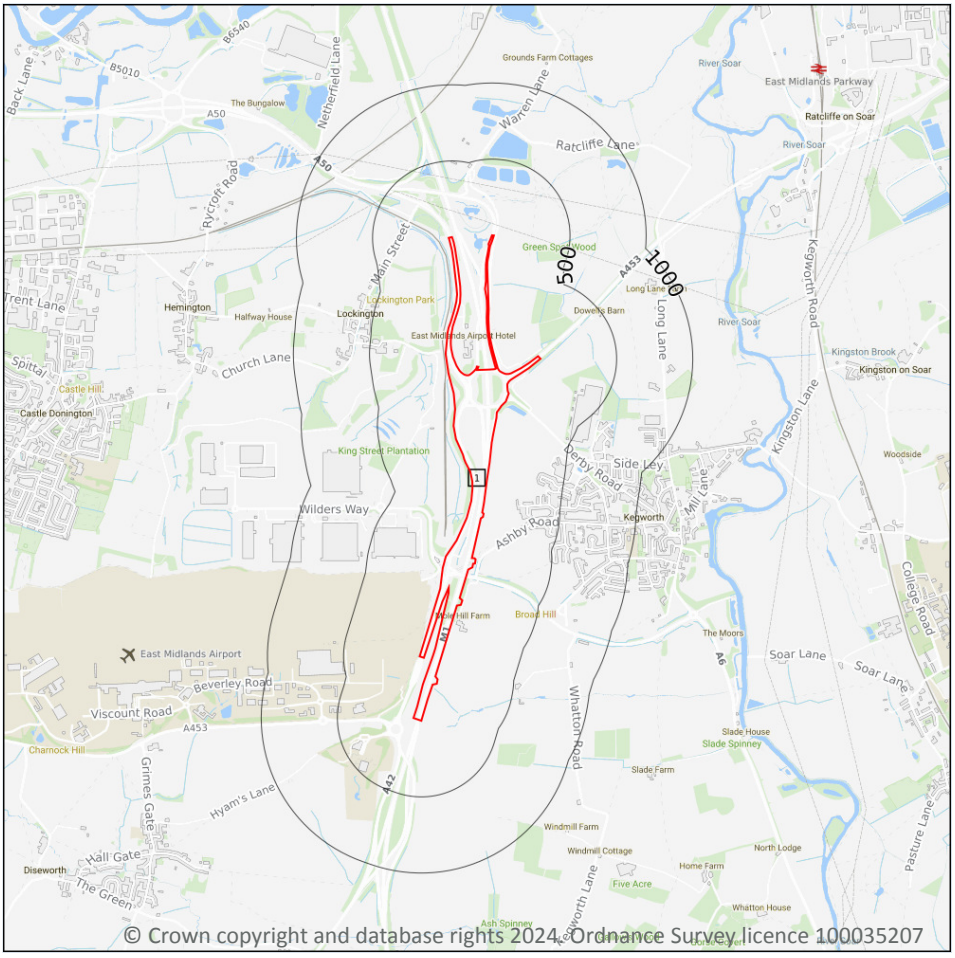
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 103 >**

ID	Location	Category	Description
14	**On site**	**FAULT**	**Normal fault, inferred**
15	**On site**	**FAULT**	**Normal fault, inferred**
16	**On site**	**FAULT**	**Normal fault, inferred**
24	80m S	FAULT	Normal fault, inferred
26	81m S	FAULT	Normal fault, inferred
34	103m S	FAULT	Normal fault, inferred
42	161m S	FAULT	Normal fault, inferred
44	163m S	FAULT	Normal fault, inferred
50	189m S	FAULT	Normal fault, inferred
58	252m S	FAULT	Normal fault, inferred
59	252m S	FAULT	Normal fault, inferred
64	313m N	FAULT	Normal fault, inferred
73	445m S	FAULT	Normal fault, inferred

ID	Location	Category	Description
74	448m S	FAULT	Normal fault, inferred
77	460m S	FAULT	Normal fault, inferred
78	470m S	FAULT	Normal fault, inferred

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 108 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW141_loughborough_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.

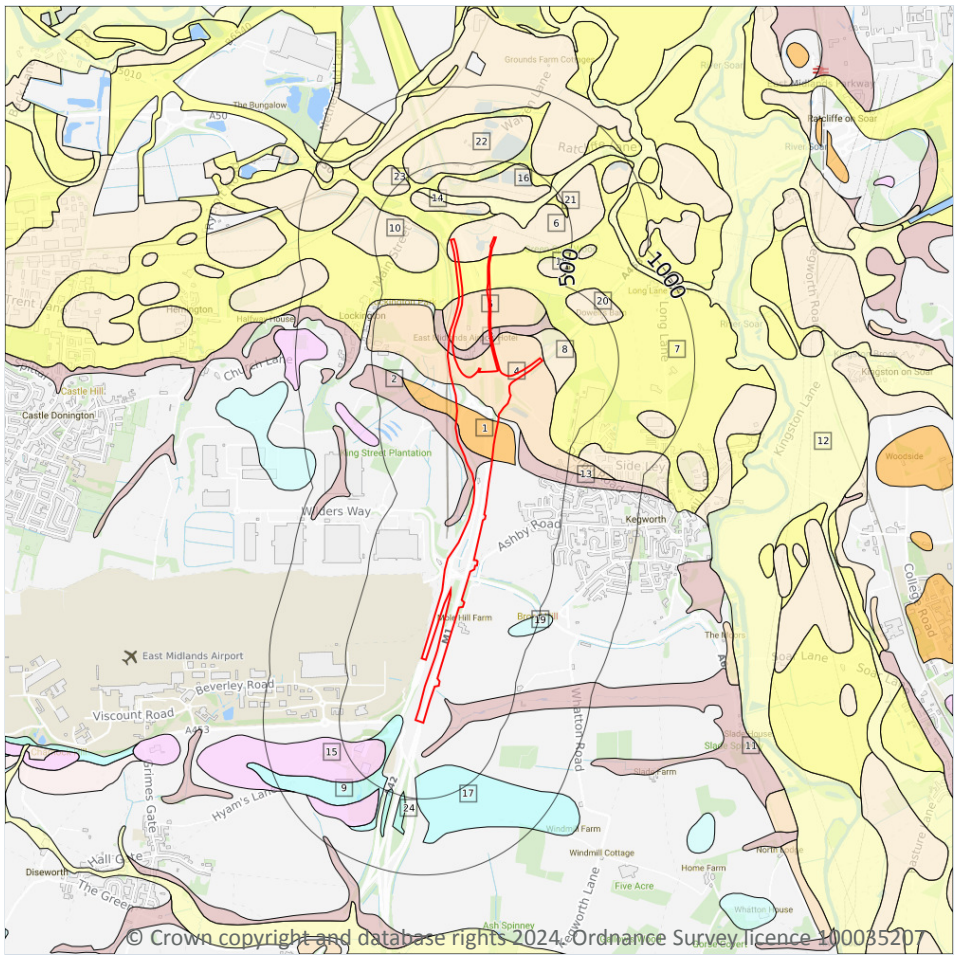
15.3 Artificial ground permeability (50k)

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	25

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 110 >**

ID	Location	LEX Code	Description	Rock description
1	On site	EGSG-XSV	EGGINTON COMMON SAND AND GRAVEL MEMBER	SAND AND GRAVEL
2	On site	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
3	On site	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	**On site**	**WASG-XSV**	**WANLIP MEMBER**	**SAND AND GRAVEL**
5	**On site**	**WASG-XSV**	**WANLIP MEMBER**	**SAND AND GRAVEL**
6	**On site**	**HPSG-XSV**	**HOLME PIERREPONT SAND AND GRAVEL MEMBER**	**SAND AND GRAVEL**
7	**On site**	**HETD-XZV**	**HEMINGTON MEMBER**	**SILT AND GRAVEL**
8	11m NE	SYSG-XSV	SYSTON MEMBER	SAND AND GRAVEL
9	82m S	ODT-DMTN	OADBY MEMBER	DIAMICTON
10	85m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
11	90m S	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
12	151m N	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
13	156m NE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
14	163m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
15	253m S	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL
16	260m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
17	307m S	ODT-DMTN	OADBY MEMBER	DIAMICTON
18	313m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
19	338m S	THT-DMTN	THRUSSINGTON MEMBER	DIAMICTON
20	375m NE	SYSG-XSV	SYSTON MEMBER	SAND AND GRAVEL
21	393m N	HETD-XZV	HEMINGTON MEMBER	SILT AND GRAVEL
22	410m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
23	429m N	HPSG-XSV	HOLME PIERREPONT SAND AND GRAVEL MEMBER	SAND AND GRAVEL
24	471m S	ODT-DMTN	OADBY MEMBER	DIAMICTON
25	478m S	ODT-DMTN	OADBY MEMBER	DIAMICTON

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	8

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**Very High**	**High**
On site	**Intergranular**	**Very High**	**High**
On site	**Mixed**	**High**	**Very Low**
On site	**Mixed**	**High**	**Very Low**
On site	**Intergranular**	**High**	**Moderate**
On site	**Intergranular**	**Very High**	**High**
11m NE	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

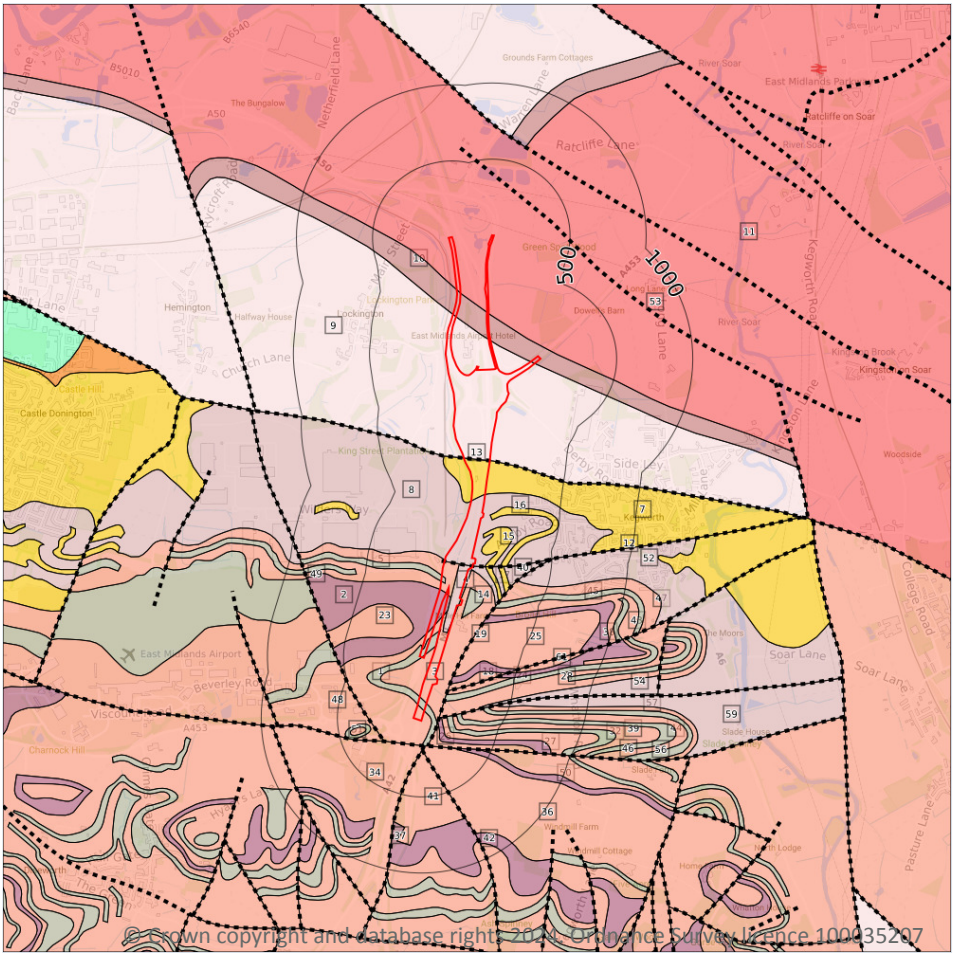
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m	51

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 113 >**

ID	Location	LEX Code	Description	Rock age
1	On site	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
2	On site	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
3	On site	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN

ID	Location	LEX Code	Description	Rock age
4	**On site**	**TPSF-SIMS**	**TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE**	**OLENEKIAN**
5	**On site**	**GUN-DSLST**	**GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC**	**ANISIAN**
6	**On site**	**GUN-MDST**	**GUNTHORPE MEMBER - MUDSTONE**	**ANISIAN**
7	**On site**	**HEY-SDST**	**HELSBY SANDSTONE FORMATION - SANDSTONE**	**ANISIAN**
8	**On site**	**TPSF-SIMS**	**TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE**	**OLENEKIAN**
9	**On site**	**EDW-MDST**	**EDWALTON MEMBER - MUDSTONE**	**CARNIAN**
10	**On site**	**AS-SDST**	**ARDEN SANDSTONE FORMATION - SANDSTONE**	**CARNIAN**
11	**On site**	**BCMU-MDST**	**BRANSCOMBE MUDSTONE FORMATION - MUDSTONE**	**NORIAN**
14	28m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
15	38m S	TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE	OLENEKIAN
16	45m SE	TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE	OLENEKIAN
17	72m S	TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE	OLENEKIAN
18	82m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
20	85m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
22	86m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
23	93m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
24	95m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
25	101m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
26	106m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
27	106m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
28	107m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
30	113m S	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
31	122m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
32	154m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
33	155m S	TPSF-SDST	TARPORLEY SILTSTONE FORMATION - SANDSTONE	OLENEKIAN
34	162m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN

ID	Location	LEX Code	Description	Rock age
36	167m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
38	186m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
39	187m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
40	189m S	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
41	193m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
43	196m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
44	210m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
45	215m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
46	238m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
47	239m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
48	246m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
50	280m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
51	290m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
52	299m SE	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
54	320m S	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
55	321m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
56	340m S	GUN-DSLST	GUNTHORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
57	370m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
58	377m S	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
59	412m S	TPSF-SIMS	TARPORLEY SILTSTONE FORMATION - SILTSTONE, MUDSTONE AND SANDSTONE	OLENEKIAN
60	423m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN
61	452m S	GUN-MDST	GUNTHORPE MEMBER - MUDSTONE	ANISIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	13

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**	**Moderate**	**Low**
On site	**Fracture**	**Moderate**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**Low**	**Low**
On site	**Fracture**	**Low**	**Low**
On site	**Mixed**	**High**	**Moderate**
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**Low**	**Low**
28m S	Fracture	Moderate	Low
38m S	Fracture	High	Moderate
45m SE	Fracture	High	Moderate

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	10

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.

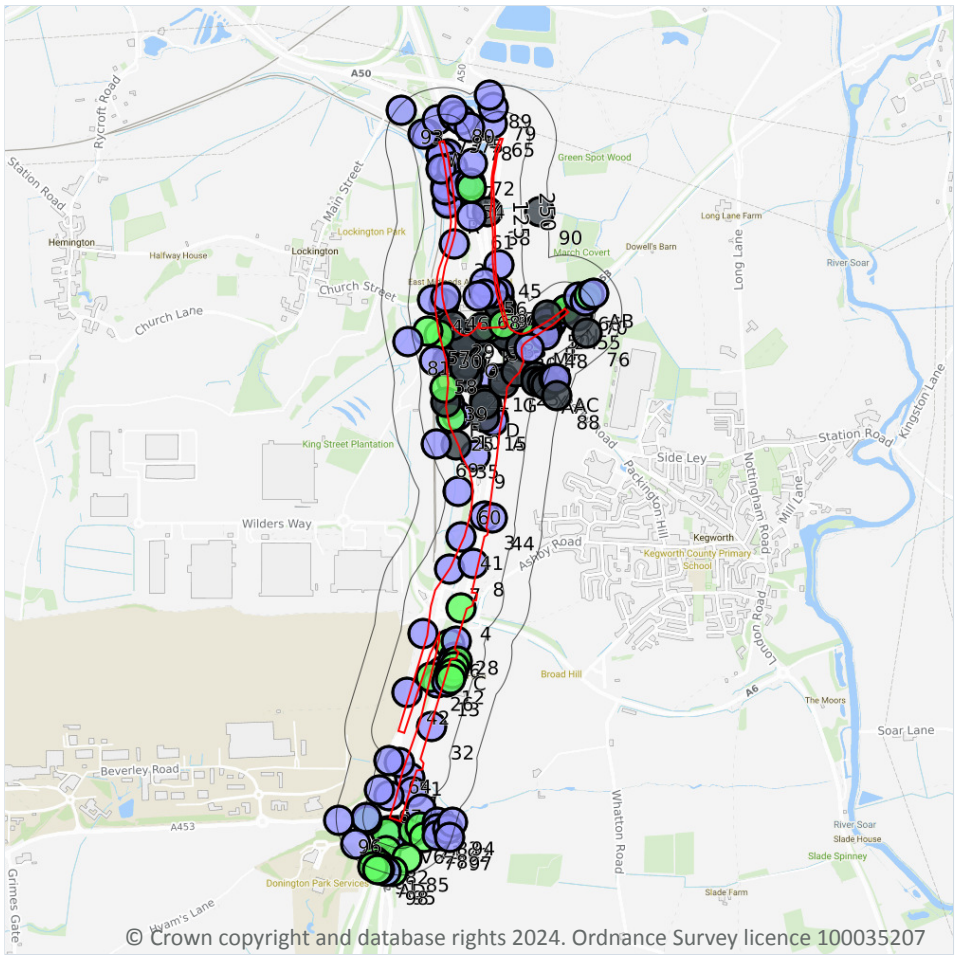
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 113 >**

ID	Location	Category	Description
12	**On site**	**FAULT**	**Fault, inferred**
13	**On site**	**FAULT**	**Fault, inferred**

ID	Location	Category	Description
19	82m S	FAULT	Fault, inferred
21	85m S	FAULT	Fault, inferred
29	107m S	FAULT	Fault, inferred
35	162m S	FAULT	Fault, inferred
37	167m S	FAULT	Fault, inferred
42	193m S	FAULT	Fault, inferred
49	246m S	FAULT	Fault, inferred
53	309m N	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

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

16.1 BGS Boreholes

Records within 250m	186

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 118 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	447140 325640	M1 EXTENSIONS BH306 KEGWORTH	9.14	N	218144 ↗
2	On site	447321 327682	A564 DERBY S BYPASS/SPUR BH139	24.45	N	218279 ↗
3	On site	447491 326858	A42 CASTLE DONINGTON 749	4.0	N	218211 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
4	On site	447380 326430	M1 EXTENSIONS BH309 KEGWORTH	12.19	N	218147 ↗
5	On site	447339 327496	A564 DERBY S BYPASS/SPUR BH140	30.2	N	218280 ↗
6	On site	447330 326260	M1 EXTENSIONS BH308 KEGWORTH	15.24	N	218146 ↗
7	On site	447330 326610	A42 CASTLE DONINGTON BH279	4.0	N	218251 ↗
8	On site	447440 326640	M1 EXTENSIONS BH310 KEGWORTH	7.62	N	218148 ↗
9	On site	447446 327143	A564 DERBY S BYPASS/SPUR TP234	3.0	N	218291 ↗
10	On site	447365 327327	A564 DERBY S BYPASS/SPUR TP233	3.0	N	218290 ↗
11	On site	447530 327500	M1 EXTENSIONS BH312 KEGWORTH	9.14	N	218150 ↗
12	On site	447292 326133	A42 CASTLE DONINGTON 748	5.0	N	218210 ↗
13	On site	447270 326080	M1 EXTENSIONS BH307 KEGWORTH	9.14	N	218145 ↗
14	On site	447300 327850	M1 JUNCTION 24 SCHEME 164 WS19	-	Y	N/A
15	On site	447490 327320	M1 JUNCTION 24 SCHEME 164 WS27	-	Y	N/A
16	On site	447560 327880	M1 JUNCTION 24 SCHEME 164 WS32	-	Y	N/A
17	On site	447340 327720	M1 JUNCTION 24 SCHEME 164 TP4	-	Y	N/A
18	On site	447430 327640	M1 JUNCTION 24 SCHEME 164 WS12	-	Y	N/A
19	On site	447620 327660	M1 JUNCTION 24 SCHEME 164 TP8	-	Y	N/A
20	On site	447630 327690	M1 JUNCTION 24 SCHEME 164	-	Y	N/A
21	On site	447410 327510	M1 JUNCTION 24 SCHEME 164 WS10	-	Y	N/A
22	On site	447660 327650	M1 JUNCTION 24 SCHEME 164 WS15	-	Y	N/A
23	On site	447640 327530	M1 JUNCTION 24 SCHEME 164 WS16	-	Y	N/A
24	On site	447820 327790	A453 WIDENING MI JUNCTION 24-A52 NOTTINGHAM WS01-06	1.6	N	18189587 ↗
25	On site	447337 327319	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1085	11.17	N	18913750 ↗
26	On site	447240 326105	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1079	15.5	N	18913771 ↗
27	On site	447556 327905	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D120L	3.2	N	19511278 ↗
28	On site	447358 326274	M1 J23a to J25 Ground Investigation CPT01	6.45	N	21246666 ↗
A	On site	447530 327315	A42 CASTLE DONINGTON BH751	7.0	N	218213 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	On site	447530 327300	M1 EXTENSIONS BH311 KEGWORTH	6.09	N	218149 ↗
B	On site	447773 327733	A453 CLIFTON TO M1 4	12.6	N	218319 ↗
B	On site	447738 327733	A453 CLIFTON TO M1 2	16.4	N	218317 ↗
B	On site	447756 327746	A453 CLIFTON TO M1 108	14.0	N	218375 ↗
C	On site	447349 326201	A42 CASTLE DONINGTON BH737R	8.0	N	218206 ↗
D	On site	447500 327380	M1 JUNCTION 24 SCHEME 164 WS29	-	Y	N/A
D	On site	447490 327400	M1 JUNCTION 24 SCHEME 164 WS28	-	Y	N/A
D	On site	447490 327380	M1 JUNCTION 24 SCHEME 164 PIT 01	-	Y	N/A
E	On site	447400 327560	M1 JUNCTION 24 SCHEME 164 TP1A	-	Y	N/A
E	On site	447430 327570	M1 JUNCTION 24 SCHEME 164 WS11	-	Y	N/A
E	On site	447400 327580	M1 JUNCTION 24 SCHEME 164 WS2	-	Y	N/A
E	On site	447400 327580	M1 JUNCTION 24 SCHEME 164 TP2	-	Y	N/A
E	On site	447400 327550	M1 JUNCTION 24 SCHEME 164 WS1	-	Y	N/A
E	On site	447410 327570	M1 JUNCTION 24 SCHEME 164	-	Y	N/A
E	On site	447400 327550	M1 JUNCTION 24 SCHEME 164 TP1B	-	Y	N/A
F	On site	447330 327380	M1 JUNCTION 24 SCHEME 164 WS20	-	Y	N/A
G	On site	447580 327500	M1 JUNCTION 24 SCHEME 164 WS17	-	Y	N/A
G	On site	447580 327480	M1 JUNCTION 24 SCHEME 164 WS18	-	Y	N/A
H	On site	447590 327700	M1 JUNCTION 24 SCHEME 164 WS7	-	Y	N/A
H	On site	447580 327710	M1 JUNCTION 24 SCHEME 164 TP7	-	Y	N/A
H	On site	447590 327700	M1 JUNCTION 24 SCHEME 164 WS6	-	Y	N/A
I	On site	447320 327580	M1 JUNCTION 24 SCHEME 164 TP11	-	Y	N/A
I	On site	447320 327580	M1 JUNCTION 24 SCHEME 164 WS5	-	Y	N/A
J	On site	447570 327830	M1 JUNCTION 24 SCHEME 164 WS30	-	Y	N/A
K	On site	447480 327720	M1 JUNCTION 24 SCHEME 164 WS13	-	Y	N/A
L	On site	447800 327760	M1 JUNCTION 24 SCHEME 164 WS33	-	Y	N/A
M	On site	447720 327710	M1 JUNCTION 24 SCHEME 164 WS26	-	Y	N/A
M	On site	447720 327710	M1 JUNCTION 24 SCHEME 164 SERVICE PIT TP12	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
N	**On site**	**447870 327820**	**M1 JUNCTION 24 SCHEME 164 WS25**	**-**	**Y**	**N/A**
O	**On site**	**447400 327660**	**M1 JUNCTION 24 SCHEME 164 WS3**	**-**	**Y**	**N/A**
O	**On site**	**447390 327680**	**M1 JUNCTION 24 SCHEME 164 TP3**	**-**	**Y**	**N/A**
P	**On site**	**447340 328370**	**SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP3/WS3**	**3.5**	**N**	**18127251**
29	**On site**	**447340 327750**	**M1 JUNCTION 24 SCHEME 164 WS4**	**-**	**Y**	**N/A**
30	**On site**	**447280 327705**	**A564 DERBY S BYPASS/SPUR BH137**	**30.0**	**N**	**218278**
Q	**On site**	**447320 328540**	**SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP1A**	**1.2**	**N**	**18127234**
L	1m NE	447780 327767	A453 CLIFTON TO M1 TP1	1.0	N	218301
31	2m N	447510 327740	M1 EXTENSIONS BH313 KEGWORTH	12.19	N	218151
Q	2m N	447320 328550	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP1/WS1	3.6	N	18127227
J	3m N	447560 327840	M1 JUNCTION 24 SCHEME 164 WS31	-	Y	N/A
K	3m N	447480 327740	M1 JUNCTION 24 SCHEME 164 WS14	-	Y	N/A
F	3m N	447310 327390	M1 JUNCTION 24 SCHEME 164 WS21	-	Y	N/A
M	3m NE	447720 327690	A648 CLIFTON TO M1 BH1 LOCKINGTON	10.06	N	218160
N	3m NE	447874 327824	A453 CLIFTON TO M1 5	15.0	N	218320
32	4m S	447243 325878	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1078	3.02	N	18913749
33	4m N	447582 327754	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1086	12.94	N	18913751
P	5m N	447350 328370	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP8	1.2	N	18127722
R	5m N	447320 328330	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP4/WS4	3.8	N	18127253
R	6m N	447320 328320	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT01	1.2	N	18127864
S	6m N	447290 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP6	5.0	N	18127259
S	6m N	447290 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT04	1.2	N	18127866

ID	Location	Grid reference	Name	Length	Confidential	Web link
B	7m NE	447786 327728	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS01-07	-	Y	N/A
T	7m N	447300 328480	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT03	1.2	N	18127865 ↗
U	7m N	447310 328400	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP5/WS5	5.0	N	18127257 ↗
34	8m N	447340 328460	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP2/WS2	2.9	N	18127235 ↗
35	8m N	447360 327190	M1 JUNCTION 24 SCHEME 164 WS23	-	Y	N/A
U	10m N	447310 328380	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP9	1.25	N	18127724 ↗
36	11m N	447351 328129	A564 DERBY S BYPASS/SPUR TP231	3.0	N	218288 ↗
C	11m S	447322 326116	A42 CASTLE DONINGTON BH731	8.0	N	218200 ↗
C	11m S	447331 326144	A42 CASTLE DONINGTON BH733	8.0	N	218202 ↗
C	11m S	447340 326173	A42 CASTLE DONINGTON BH735R	8.0	N	218204 ↗
C	12m S	447314 326087	A42 CASTLE DONINGTON BH729R	8.0	N	218198 ↗
37	12m N	447340 328490	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP7	1.2	N	18127721 ↗
38	13m N	447506 328279	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS15-07	-	Y	N/A
39	13m N	447306 327458	A564 DERBY S BYPASS/SPUR BH142	17.65	N	218281 ↗
40	14m S	447155 325573	A42 CASTLE DONINGTON 747	7.0	N	218209 ↗
C	14m S	447362 326181	A42 CASTLE DONINGTON BH736	14.0	N	218205 ↗
41	14m S	447380 326760	A42 CASTLE DONINGTON BH280	6.0	N	218252 ↗
42	15m S	447129 326038	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1080	1.2	N	18913778 ↗
43	15m N	447247 327868	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1089	4.0	N	18913784 ↗
44	16m SE	447525 326851	A42 CASTLE DONINGTON BH750	7.0	N	218212 ↗
45	16m N	447558 328033	A42 CASTLE DONINGTON BH752	7.05	N	218214 ↗
46	17m N	447312 327881	A564 DERBY S BYPASS/SPUR TP232	3.0	N	218289 ↗
47	17m N	447531 327899	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D1B	3.0	N	19513368 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
T	17m N	447290 328480	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP10	1.2	N	18127725 ↗
48	20m NE	447774 327705	A453 CLIFTON TO M1 3	10.0	N	218318 ↗
49	22m S	447203 326311	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1082	2.4	N	18913780 ↗
50	23m NE	447786 327797	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS13-07	-	Y	N/A
C	26m S	447349 326154	A42 CASTLE DONINGTON BH734	14.0	N	218203 ↗
C	26m S	447341 326126	A42 CASTLE DONINGTON BH732/R	14.14	N	218201 ↗
C	27m S	447333 326097	A42 CASTLE DONINGTON BH730	14.0	N	218199 ↗
51	27m S	447094 325709	A42 CASTLE DONNINGTON TP 826	2.0	N	218295 ↗
52	29m NE	447699 327645	A453 CLIFTON TO M1 1	10.0	N	218316 ↗
53	32m S	447046 325552	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1076	1.9	N	18913776 ↗
V	44m S	447100 325390	A42 CASTLE DONINGTON BH289	25.0	N	218242 ↗
54	46m N	447387 328402	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D2A	1.7	N	19513369 ↗
V	48m S	447080 325390	A42 CASTLE DONINGTON BH286	20.0	N	218239 ↗
55	48m NE	447927 327793	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS05-07	-	Y	N/A
56	49m N	447490 327950	M1 EXTENSIONS BH314 KEGWORTH	9.14	N	218152 ↗
57	50m N	447226 327722	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1088	14.54	N	18913752 ↗
58	52m N	447258 327586	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1083	4.0	N	18913781 ↗
V	54m S	447060 325390	A42 CASTLE DONINGTON BH284	20.0	N	218237 ↗
59	55m N	447493 327893	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D1A	3.1	N	19513367 ↗
V	61m S	447040 325390	A42 CASTLE DONINGTON BH282	20.0	N	218235 ↗
V	64m S	447090 325370	A42 CASTLE DONINGTON BH287	15.0	N	218241 ↗
60	66m SW	447369 326976	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1084	3.0	N	18913782 ↗
V	67m S	447080 325370	A42 CASTLE DONINGTON BH287	20.0	N	218240 ↗

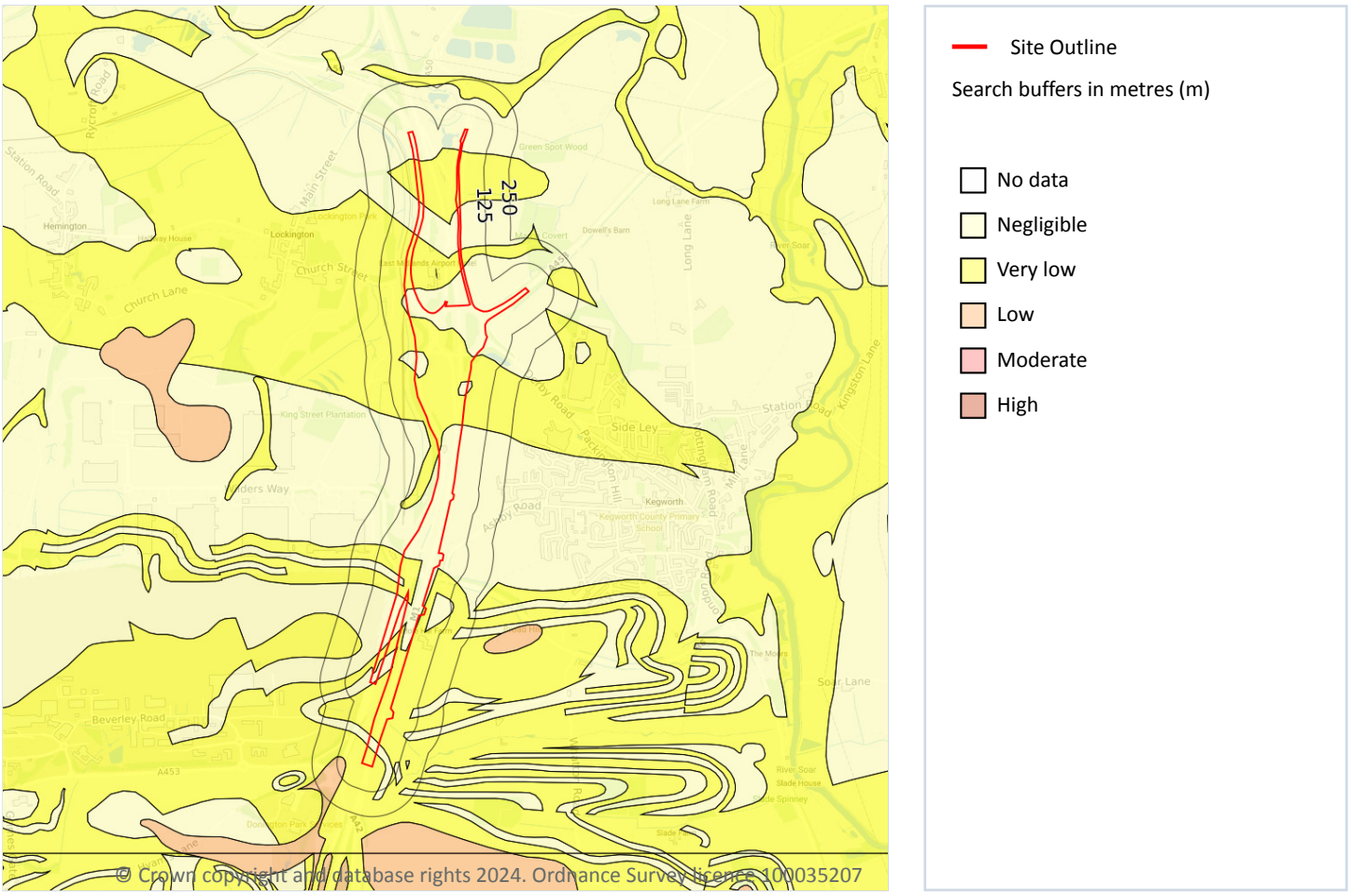
ID	Location	Grid reference	Name	Length	Confidential	Web link
W	67m N	447223 328641	A564 DERBY S BYPASS/SPUR BH136	8.0	N	218277 ↗
V	70m S	447040 325380	A42 CASTLE DONINGTON BH283	20.0	N	218236 ↗
V	73m S	447060 325370	A42 CASTLE DONINGTON BH285	7.0	N	218238 ↗
V	74m S	447030 325380	A42 CASTLE DONINGTON BH281	20.0	N	218234 ↗
61	74m N	447430 328260	M1 EXTENSIONS BH315 LOCKINGTON	9.14	N	218153 ↗
62	74m S	447161 325392	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1283	15.0	N	18913773 ↗
63	75m S	447194 325490	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1077	2.4	N	18913777 ↗
64	78m S	447044 325719	A42 CASTLE DONNINGTON TP 825	2.0	N	218294 ↗
X	78m NE	447730 327510	M1 JUNCTION 24 SCHEME 164	-	Y	N/A
65	80m N	447526 328692	A564 DERBY SOUTH'BYPASS BH5664	10.0	N	218534 ↗
66	82m NE	447930 327880	A453 WIDENING MI JUNCTION 24-A52 NOTTINGHAM WS01A-06	1.3	N	18189586 ↗
67	84m S	447000 325580	A42 CASTLE DONINGTON BH278	5.0	N	218243 ↗
Y	85m N	447425 328411	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D2B	3.0	N	19513370 ↗
W	85m N	447203 328642	A564 DERBY S BYPASS/SPUR TP230	2.0	N	218287 ↗
X	86m NE	447730 327490	M1 JUNCTION 24 SCHEME 164 TP9	-	Y	N/A
68	89m N	447460 327885	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D119K	2.0	N	19511277 ↗
Y	89m N	447432 328391	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1090	11.39	N	18913753 ↗
69	92m NW	447265 327196	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1081	3.4	N	18913779 ↗
70	93m NE	447960 327862	A453 CLIFTON TO M1 6	6.0	N	218321 ↗
71	93m S	447190 325410	A42 CASTLE DONINGTON BH290	16.0	N	218244 ↗
72	101m N	447433 328508	A42 CASTLE DONINGTON BH757	3.0	N	218215 ↗
73	104m N	447272 328710	A564 DERBY SOUTH'BYPASS TP5633	4.0	N	218559 ↗
Z	105m S	446944 325439	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1075	17.2	N	18913770 ↗
Z	108m S	446940 325450	A42 CASTLE DONINGTON BH277	5.0	N	218233 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
AA	113m NE	447760 327490	M1 JUNCTION 24 SCHEME 164 WS9	-	Y	N/A
AA	117m NE	447760 327480	M1 JUNCTION 24 SCHEME 164 WS8	-	Y	N/A
AB	126m NE	447980 327890	A453 WIDENING MI JUNCTION 24-A52 NOTTINGHAM 01A-06	12.0	N	18189548 ↗
74	126m N	447352 328725	A564 DERBY SOUTH'BYPASS TP5674	2.0	N	218566 ↗
75	128m N	447380 328710	M1 EXTENSION BH316 LOCKINGTON	6.4	N	218159 ↗
76	132m NE	447970 327713	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS02-07	-	Y	N/A
77	133m S	447210 325360	A42 CASTLE DONINGTON BH291S	16.0	N	218245 ↗
78	137m N	447421 328675	A564 DERBY SOUTH'BYPASS TP5665	3.0	N	218564 ↗
AA	139m NE	447780 327470	M1 JUNCTION 24 SCHEME 164 WS24	-	Y	N/A
AB	148m NE	448000 327900	A648 CLIFTON TO M1 BH3 LOCKINGTON	5.18	N	218161 ↗
79	150m N	447533 328768	A564 DERBY SOUTH'BYPASS TP5663	3.0	N	218563 ↗
80	150m N	447340 328755	A564 DERBY SOUTH'BYPASS BH5666	10.0	N	218535 ↗
81	151m N	447133 327673	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1087	3.5	N	18913783 ↗
82	153m S	447031 325296	A42 CASTLE DONINGTON BH728R	20.0	N	218197 ↗
AC	163m NE	447817 327501	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS03-07	-	Y	N/A
83	165m S	447270 325430	A42 CASTLE DONINGTON TP445	3.0	N	218247 ↗
AC	170m NE	447825 327502	SOAR VALLEY SAND AND GRAVEL	7.5	N	218262 ↗
84	173m S	447270 325400	A42 CASTLE DONINGTON TP444	3.0	N	218246 ↗
85	175m S	447127 325261	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1074	15.0	N	18913769 ↗
86	182m S	447270 325370	A42 CASTLE DONINGTON TP446	4.0	N	218248 ↗
87	200m S	446890 325330	A42 CASTLE DONINGTON BH275	5.0	N	218221 ↗
88	207m NE	447830 327420	M1 JUNCTION 24 SCHEME 164 TP12	-	Y	N/A
89	210m N	447513 328825	A564 DERBY SOUTH'BYPASS BH5662	10.0	N	218533 ↗
90	211m N	447748 328282	A453 WIDENING M1 JUNCTION 24 TO A52 NOTTINGHAM WS14-07	-	Y	N/A
91	213m S	446980 325250	A42 CASTLE DONINGTON BH274	20.0	N	218231 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
92	221m S	447320 325400	A42 CASTLE DONINGTON TP447	3.0	N	218249 ↗
AD	225m S	447000 325230	A42 CASTLE DONINGTON BH272	25.0	N	218229 ↗
93	231m N	447101 328752	A564 DERBY S BYPASS/SPUR TP229	2.0	N	218286 ↗
94	232m S	447340 325430	A42 CASTLE DONINGTON TP448	3.0	N	218250 ↗
95	235m S	447064 325201	A42 CASTLE DONINGTON BH727	15.0	N	218196 ↗
AD	238m S	447006 325214	A42 CASTLE DONINGTON 744	7.0	N	218207 ↗
96	239m S	446810 325440	A42 CASTLE DONINGTON BH276	5.0	N	218232 ↗
97	239m S	447327 325361	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1278	2.6	N	18913787 ↗
98	244m S	447030 325200	A42 CASTLE DONINGTON BH268	10.0	N	218225 ↗
AD	244m S	447000 325210	A42 CASTLE DONINGTON BH270	10.0	N	218227 ↗
AD	244m S	446970 325220	A42 CASTLE DONINGTON BH273	20.0	N	218230 ↗
AD	247m S	446990 325210	A42 CASTLE DONINGTON BH271	20.0	N	218228 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m	3

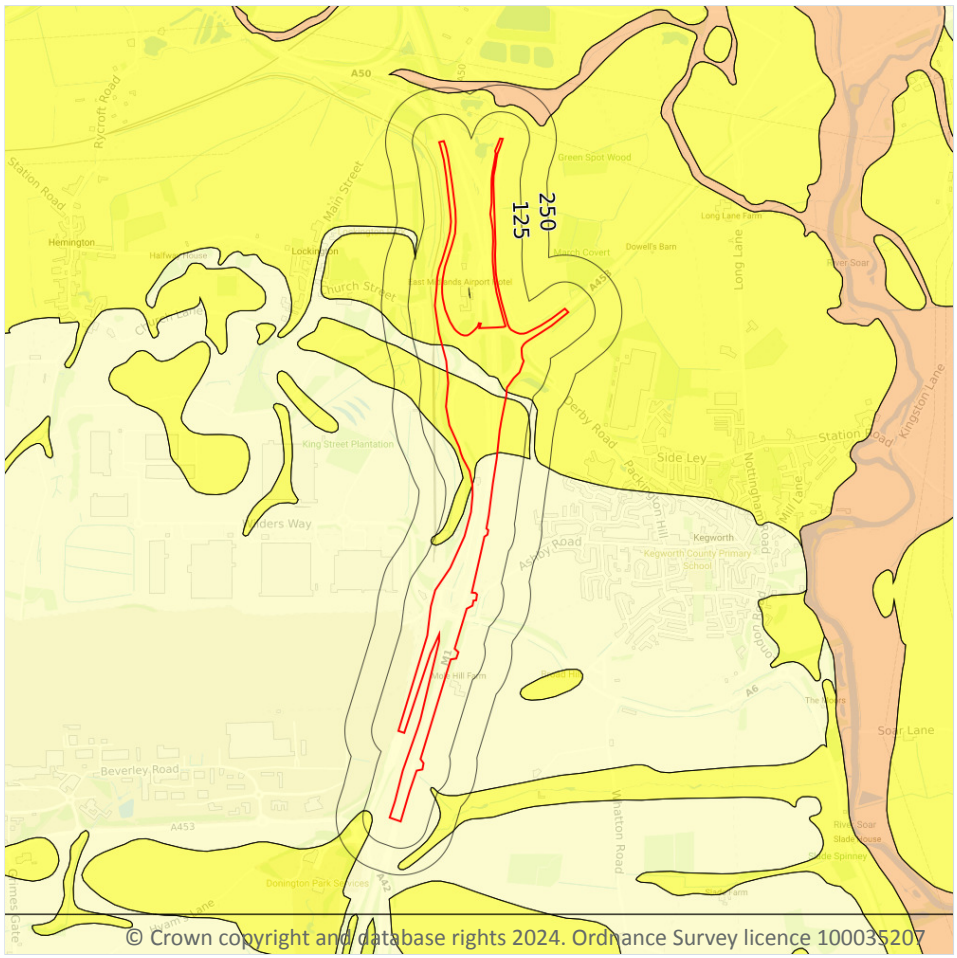
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 127 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Very low**	**Ground conditions predominantly low plasticity.**
28m S	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	2

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

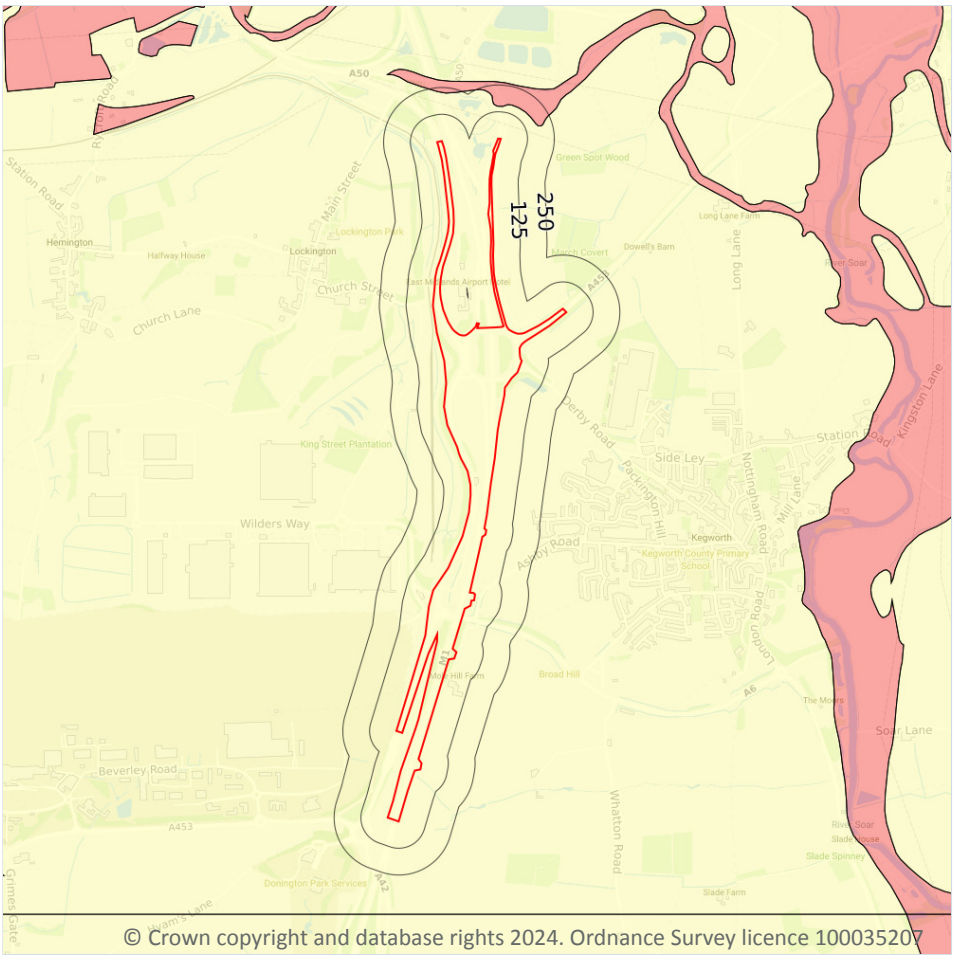
Features are displayed on the Natural ground subsidence - Running sands map on **page 129 >**

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

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



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Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

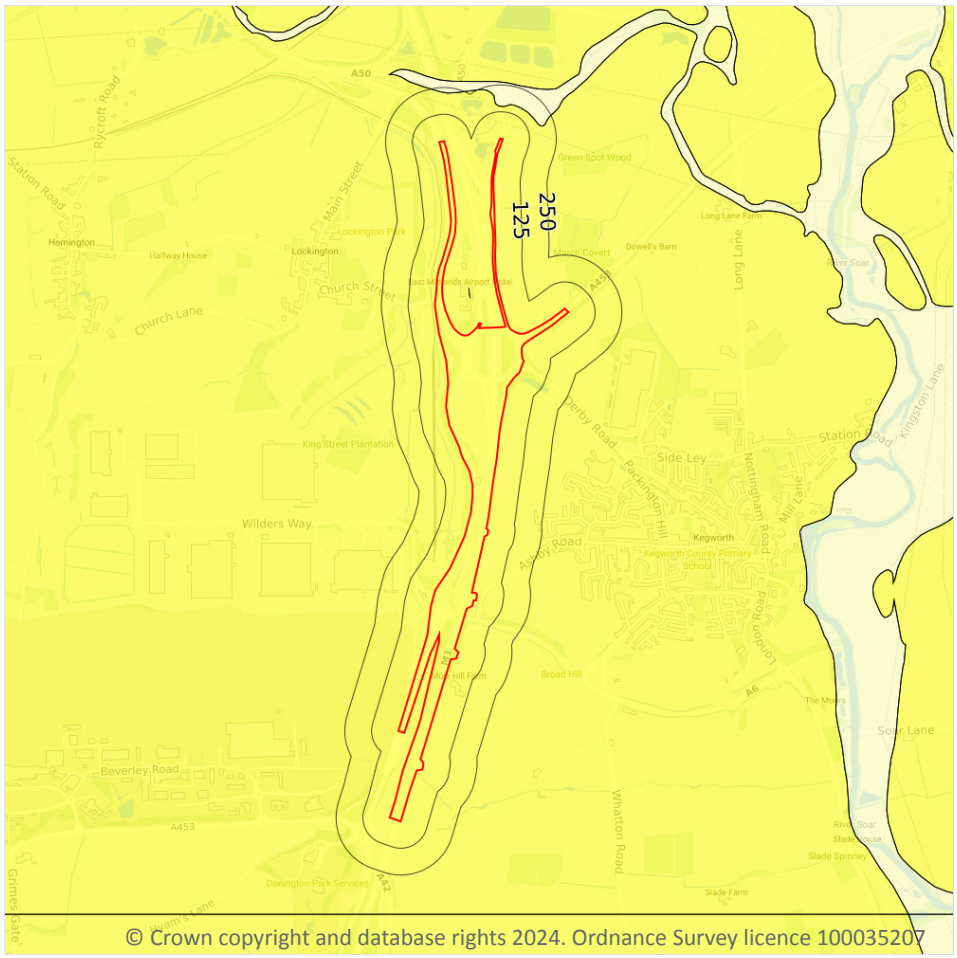
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 131 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

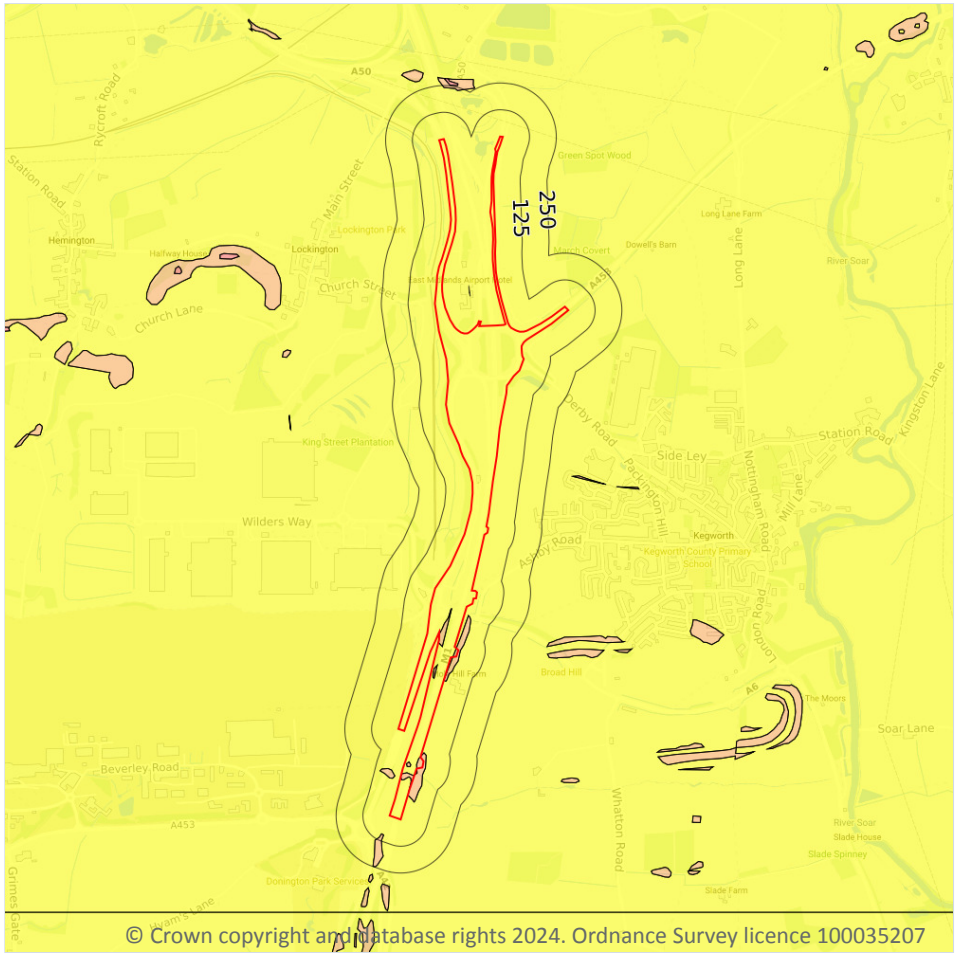
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 132 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	3

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.

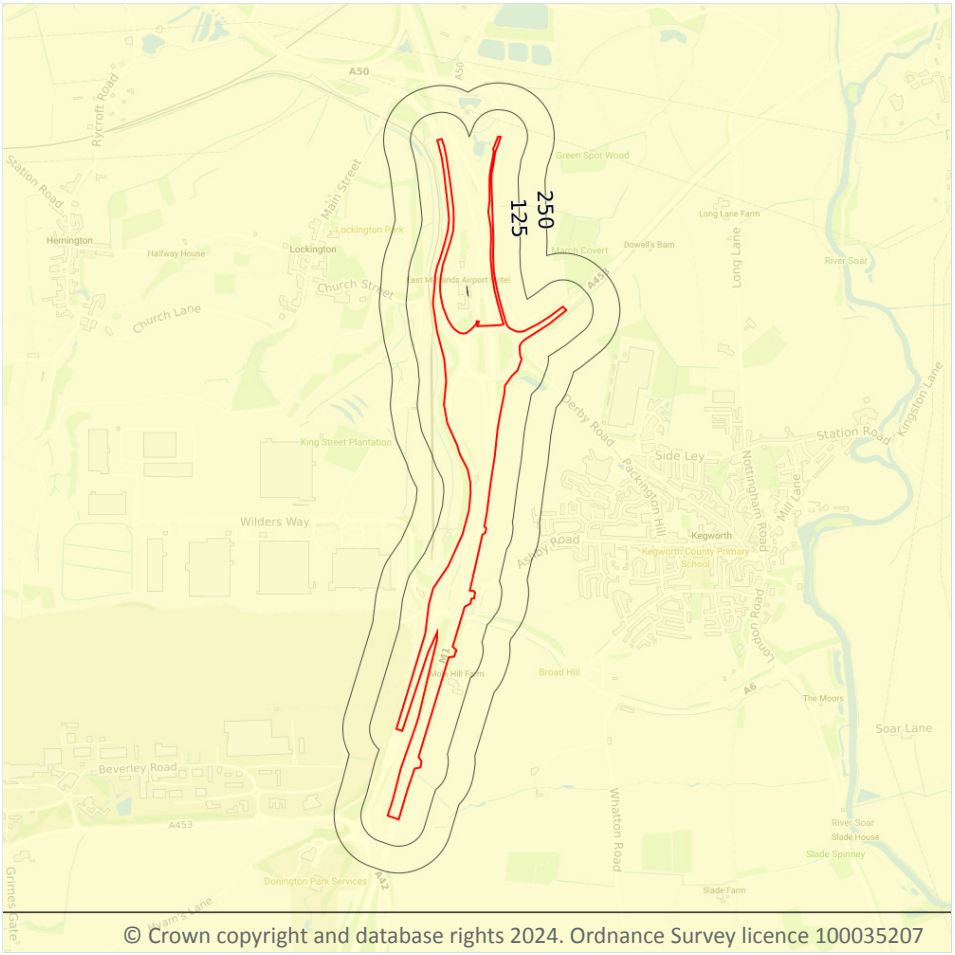
Features are displayed on the Natural ground subsidence - Landslides map on **page 133 >**

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

Location	Hazard rating	Details
On site	**Low**	**Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.**
28m S	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



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Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

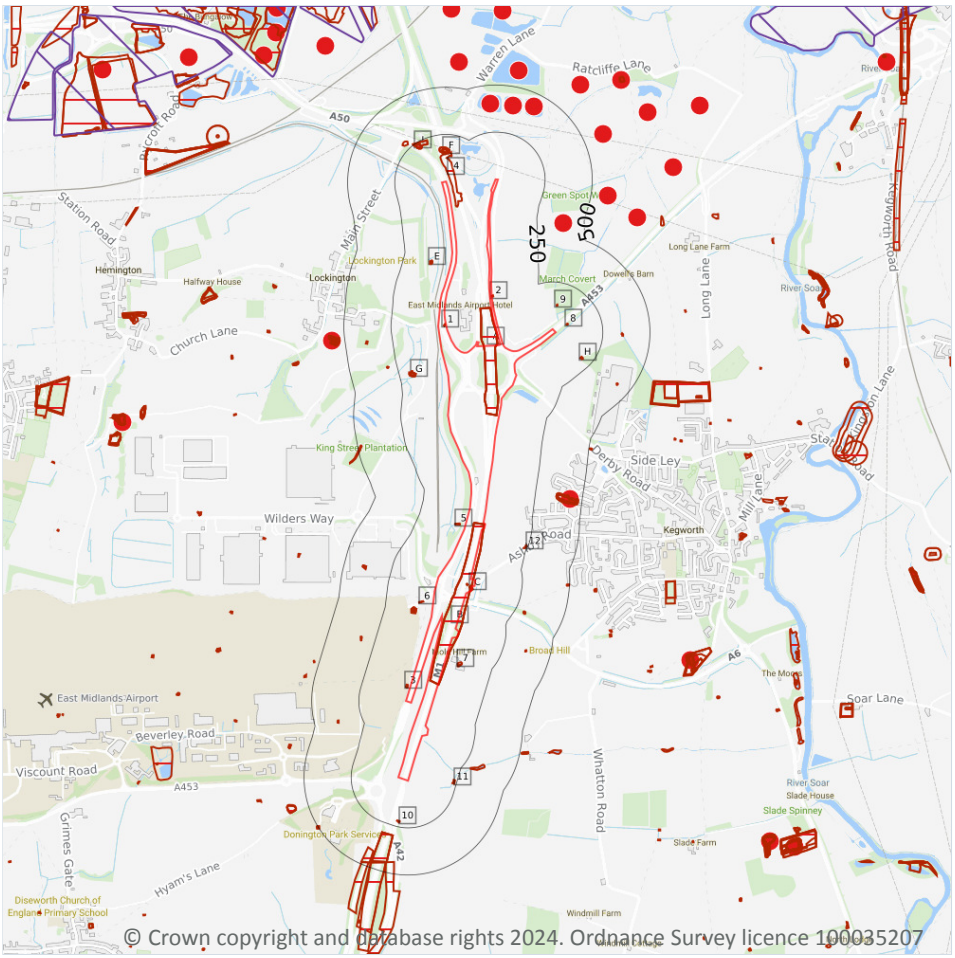
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 135 >**

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

This data is sourced from the British Geological Survey.

18 Mining and ground workings



18.1 BritPits

Records within 500m	5

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

Features are displayed on the Mining and ground workings map on **page 137 >**

ID	Location	Details	Description
22	391m N	Name: Lockington Quarry Address: Lockington, KEGWORTH, Leicestershire Commodity: Sand & Gravel Status: Inactive	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, is not extracting minerals, but which still has a valid planning permission to do so, and can restart at any time. May be considered Mothballed by operator.May be considered to have Active or Dormant planning permission
23	400m N	Name: Lockington Quarry Address: Lockington, KEGWORTH, Leicestershire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
24	402m N	Name: Lockington Quarry Address: Lockington, KEGWORTH, Leicestershire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
26	431m N	Name: Lockington Quarry Address: Lockington, KEGWORTH, Leicestershire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
K	437m E	Name: Kegworth Address: KEGWORTH, Leicestershire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	**48**

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

Features are displayed on the Mining and ground workings map on **page 137 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	**On site**	**Pond**	**1922**	**1:10560**
2	**On site**	**Pond**	**1922**	**1:10560**
A	**On site**	**Cuttings**	**1971**	**1:10000**
A	**On site**	**Cuttings**	**1982**	**1:10000**
A	**On site**	**Cuttings**	**1992**	**1:10000**
B	**On site**	**Cuttings**	**1971**	**1:10000**
B	**On site**	**Cuttings**	**1982**	**1:10000**
B	**On site**	**Cuttings**	**1992**	**1:10000**
C	**On site**	**Pond**	**1922**	**1:10560**
C	**On site**	**Pond**	**1922**	**1:10560**
C	**On site**	**Pond**	**1901**	**1:10560**
3	13m S	Pond	1922	1:10560
4	22m N	Ponds	1955	1:10560
5	29m S	Pond	1922	1:10560
6	52m S	Pond	1922	1:10560
7	68m S	Pond	1901	1:10560
8	71m NE	Pond	1922	1:10560
D	85m S	Reservoir	1922	1:10560
D	85m S	Covered Reservoir	1901	1:10560
D	85m S	Reservoir	1922	1:10560
D	88m S	Unspecified Heap	1971	1:10000
D	88m S	Unspecified Heap	1982	1:10000
D	88m S	Unspecified Heap	1992	1:10000
D	90m S	Reservoir	1955	1:10560
D	93m S	Covered Reservoir	1901	1:10560
E	97m N	Pond	1922	1:10560
E	97m N	Pond	1901	1:10560
9	126m NE	Pond	1922	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
F	151m N	Unspecified Pit	1921	1:10560
F	151m N	Unspecified Pit	1921	1:10560
F	151m N	Unspecified Pit	1938	1:10560
F	151m N	Unspecified Pit	1938	1:10560
F	152m N	Gravel Pit	1883	1:10560
F	154m N	Unspecified Heap	1899	1:10560
F	157m N	Unspecified Pit	1955	1:10560
G	164m NW	Pond	1971	1:10000
G	164m NW	Pond	1982	1:10000
G	170m NW	Pond	1922	1:10560
G	170m NW	Pond	1901	1:10560
H	189m NE	Pond	1922	1:10560
H	195m NE	Pond	1922	1:10560
I	212m N	Ponds	1921	1:10560
I	212m N	Ponds	1921	1:10560
I	213m N	Ponds	1899	1:10560
I	215m N	Ponds	1883	1:10560
10	218m S	Pond	1922	1:10560
11	229m S	Pond	1922	1:10560
12	234m SE	Pond	1922	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	**0**

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

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	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 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.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the

Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	0

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

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

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

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

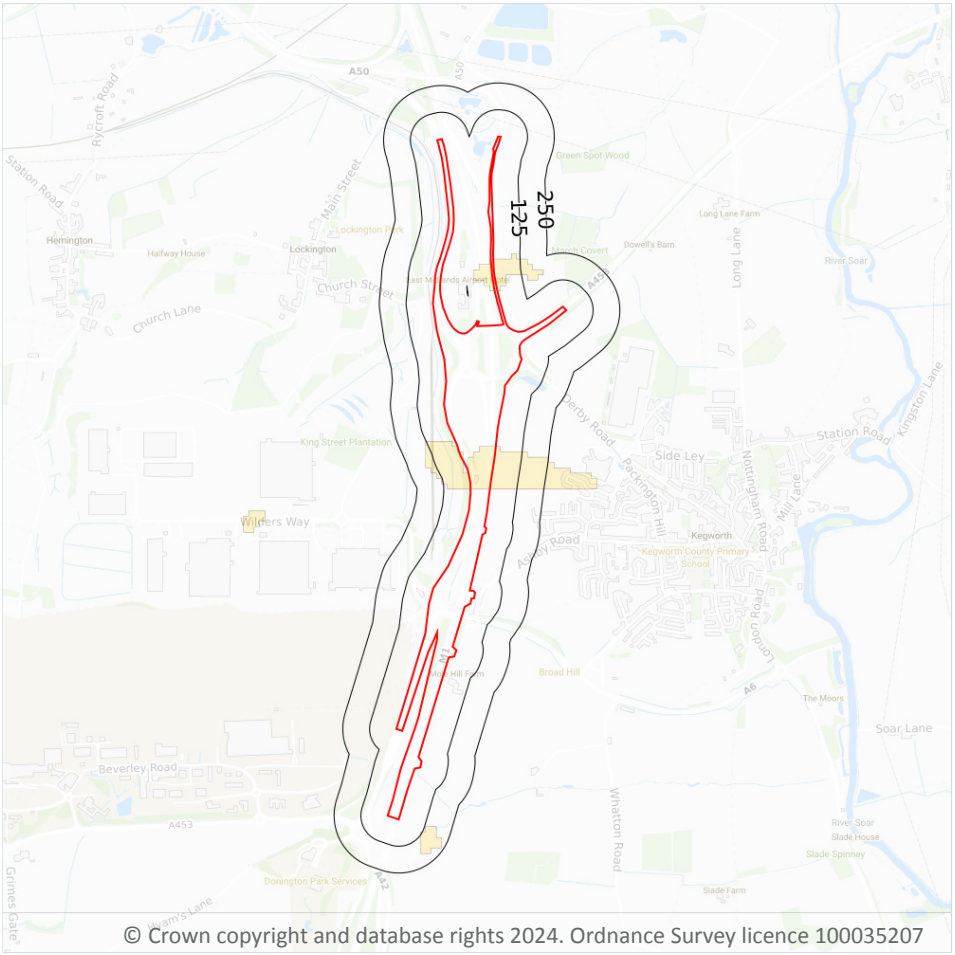
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



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Site Outline

Search buffers in metres (m)

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

20.1 Radon

Records on site	2

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 146 >**

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

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

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

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	77

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 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**	**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**	**40 - 60 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	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	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 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	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 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**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 - 30 mg/kg**
2m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
3m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
4m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
5m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
11m NE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
12m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
18m S	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	40 - 60 mg/kg	15 - 30 mg/kg
23m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
25m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
25m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
27m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
27m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
28m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
33m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
33m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
34m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
34m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
38m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
44m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
44m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
45m SE	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
48m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
50m S	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

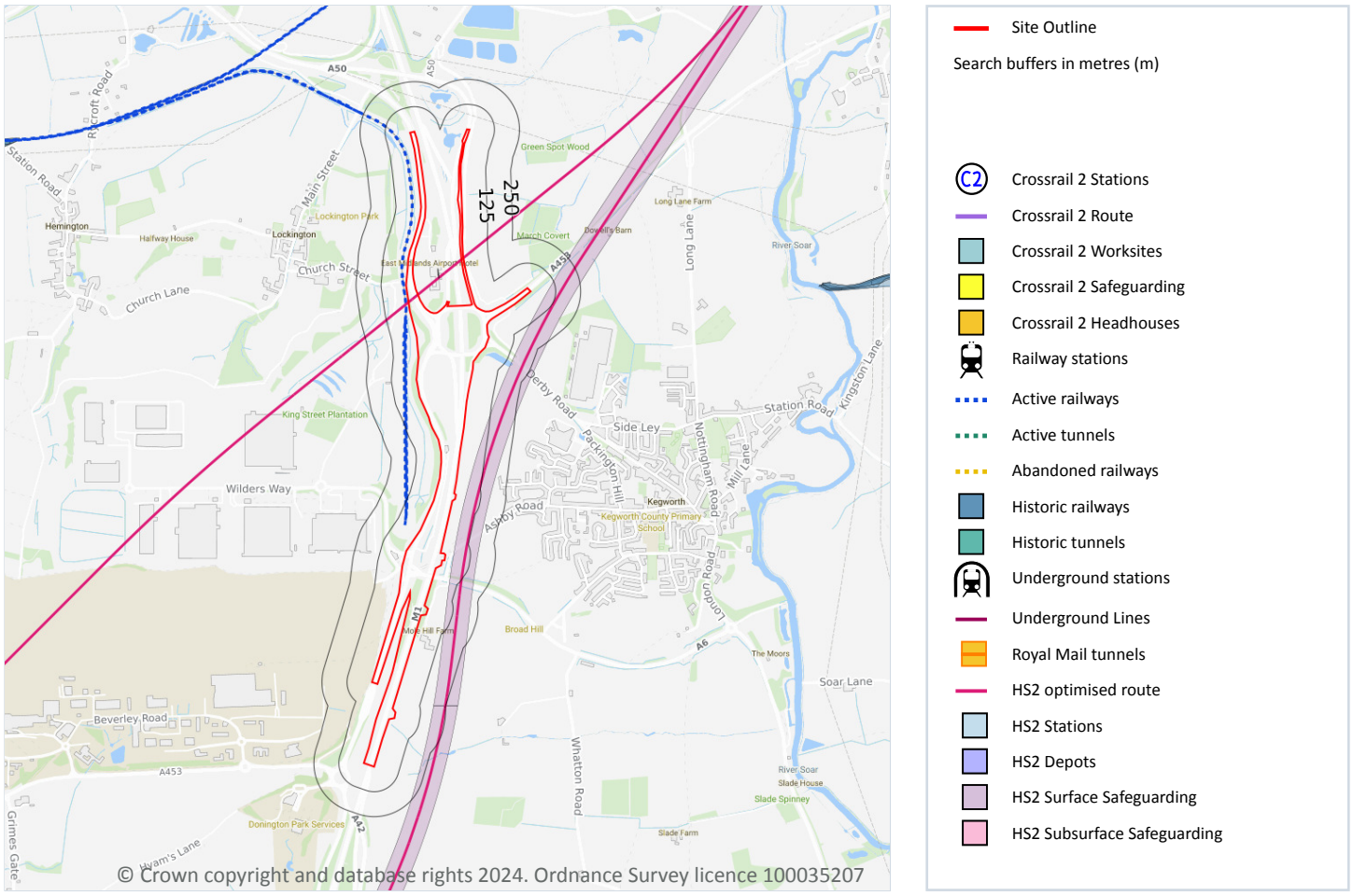
21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



22.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	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.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	12

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 154 >**

Location	Name	Type
12m N	Not given	Single Track
14m N		rail
23m N		rail
24m N		rail
35m N		rail
38m N	Not given	Single Track
38m N	Not given	Single Track
41m N	Not given	Single Track
44m N		rail
50m N		rail
78m S		rail
79m S	Not given	Single Track

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 2

Records within 500m	**0**

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

This data is sourced from publicly available information by Groundsure.

22.9 HS2

Records within 500m	**18**

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.

Features are displayed on the Railway infrastructure and projects map on **page 154 >**

Location	Track Type	Speed (mph)	Speed (km/h)	Status
On site	**Surface Running Track**	**249mph**	**400kph**	**Section is scheduled for cancellation**

Location	Track Type	Speed (mph)	Speed (km/h)	Status
On site	**Bridge/Viaduct**	**249mph**	**400kph**	**Section is scheduled for cancellation**
On site	**Bridge/Viaduct**	**199mph**	**320kph**	**Section is scheduled for cancellation**
3m N	Surface Running Track	249mph	400kph	Section is scheduled for cancellation
98m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
131m NE	Bridge/Viaduct	171mph	275kph	Section is scheduled for cancellation
131m NE	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
132m SE	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
148m S	Tunnel	171mph	275kph	Section is scheduled for cancellation
149m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
239m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
242m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
315m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
334m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation
339m NW	Surface Running Track	249mph	400kph	Section is scheduled for cancellation
380m NW	Surface Running Track	249mph	400kph	Section is scheduled for cancellation
396m NW	Surface Running Track	249mph	400kph	Section is scheduled for cancellation
419m S	Surface Running Track	171mph	275kph	Section is scheduled for cancellation

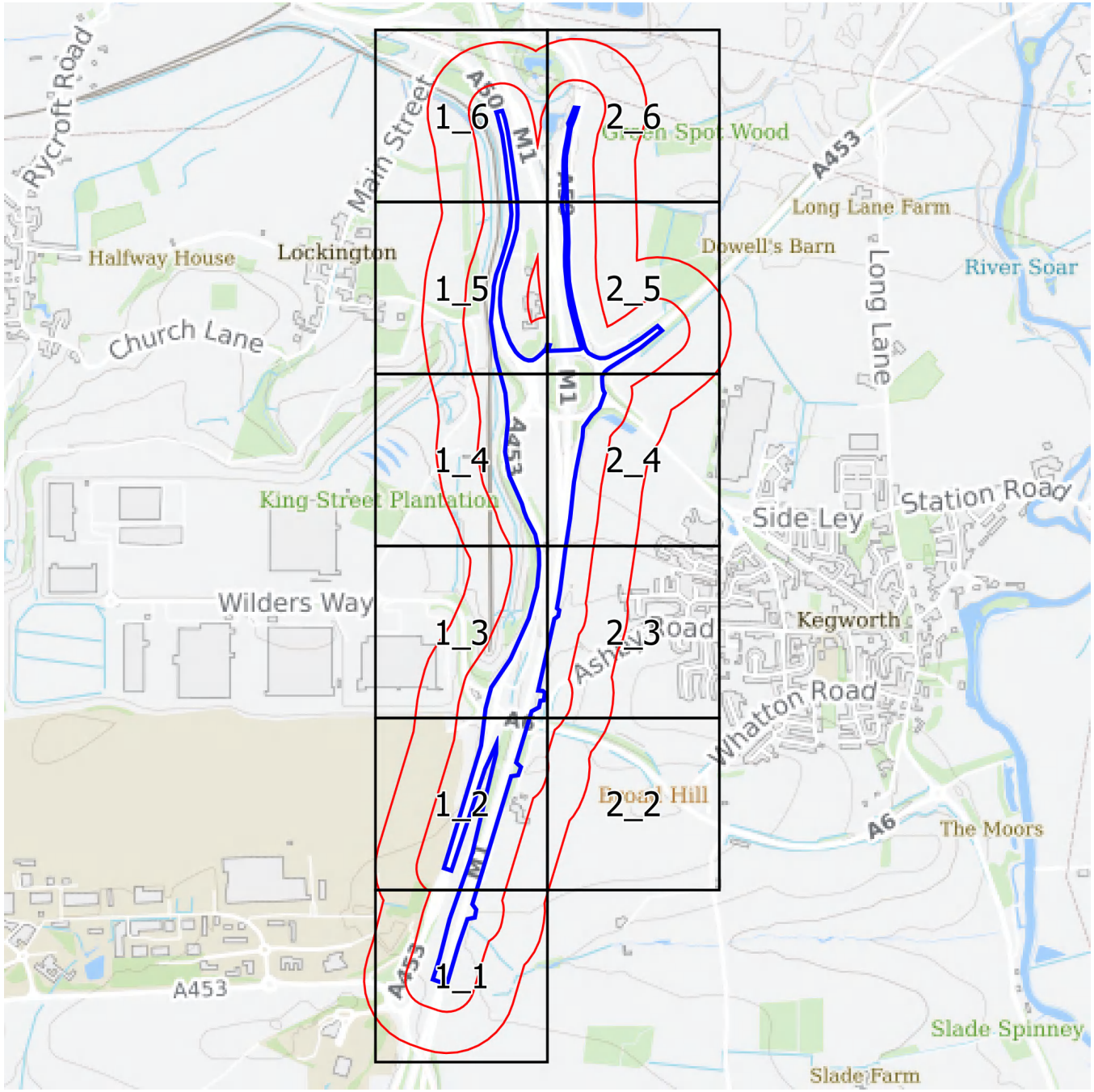
This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

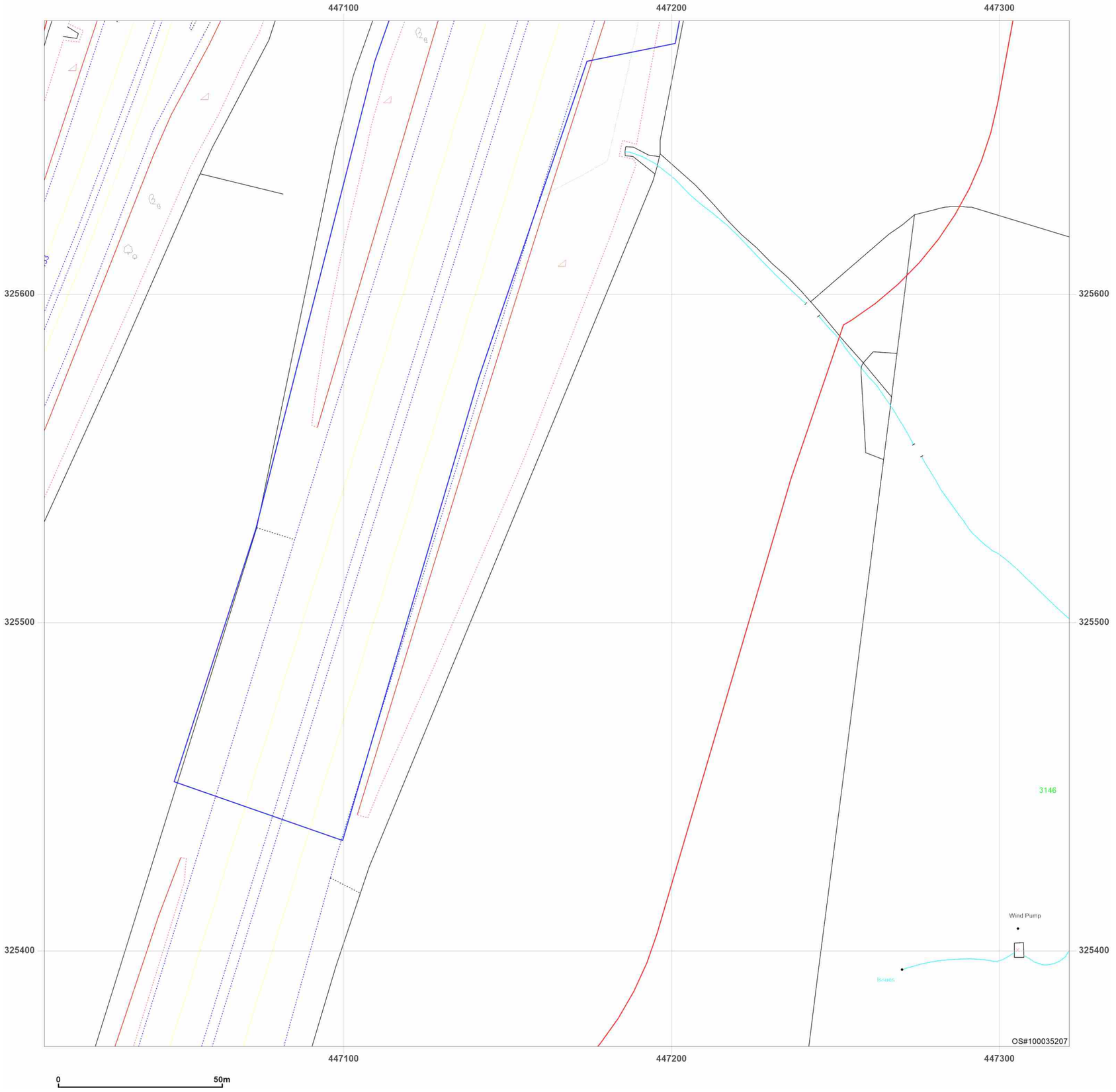
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1:2,500 Scale Grid Index

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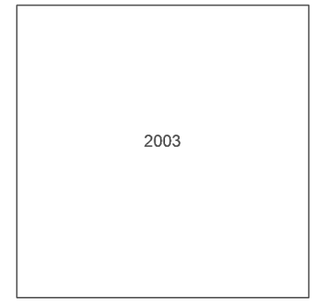
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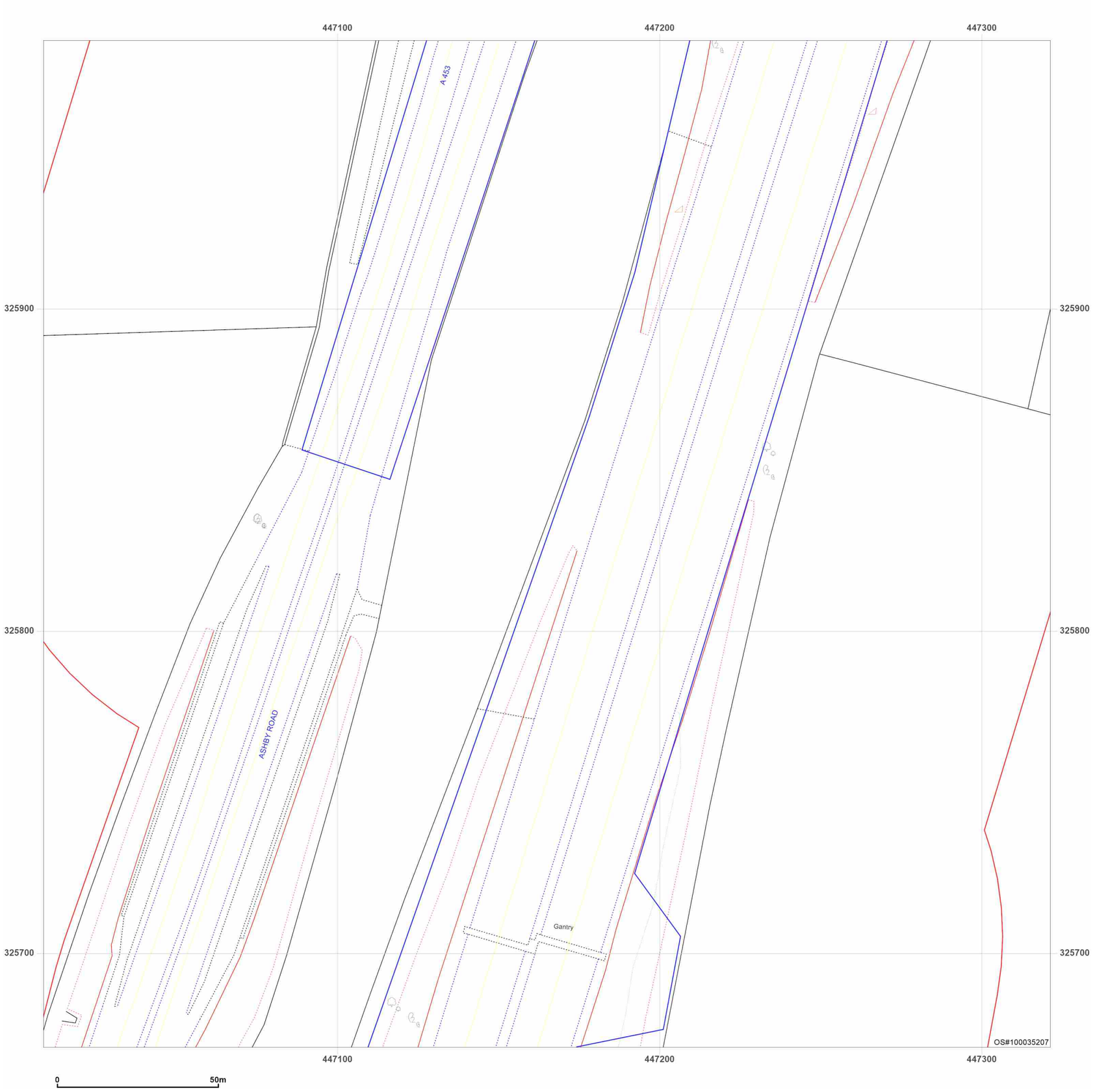
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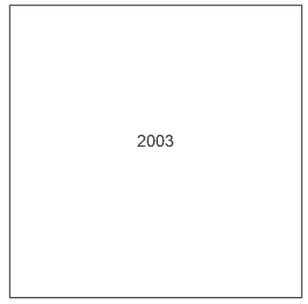
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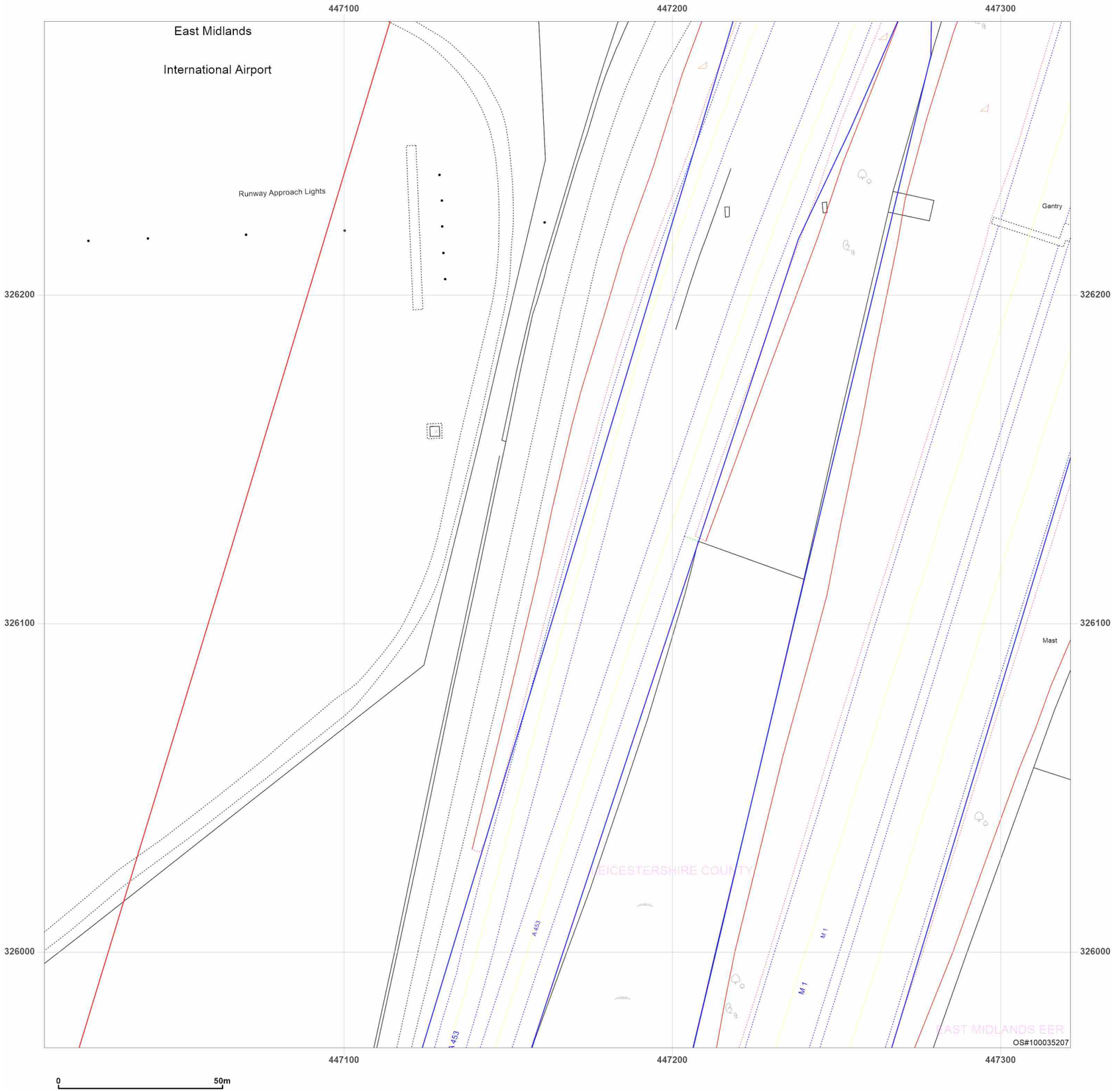
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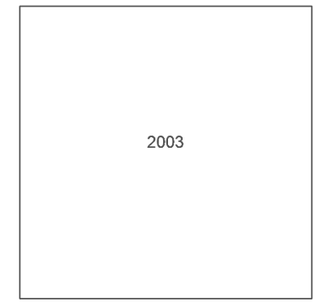
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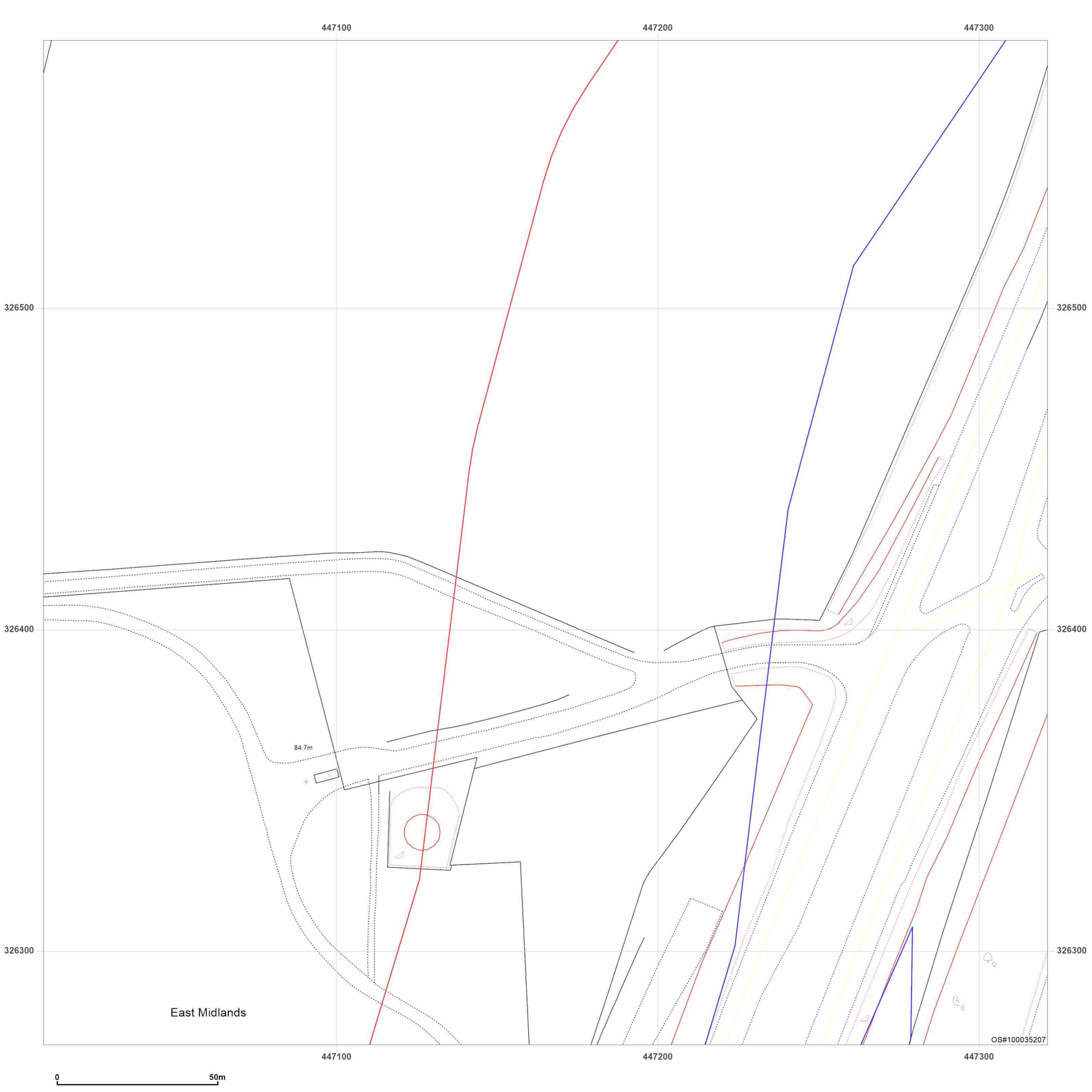
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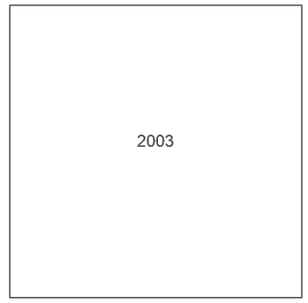
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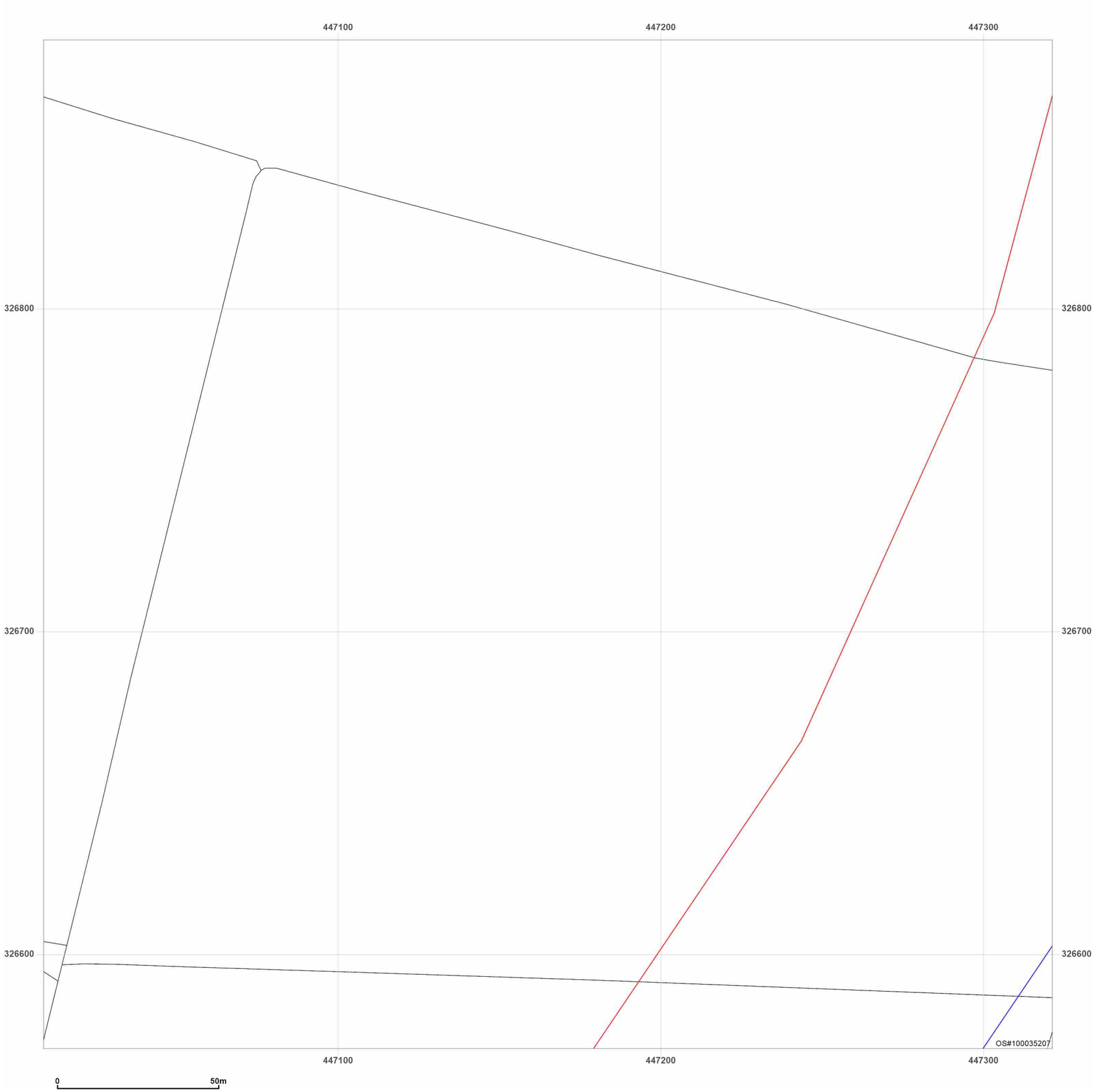
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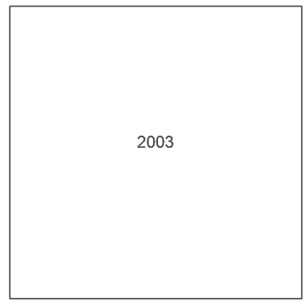
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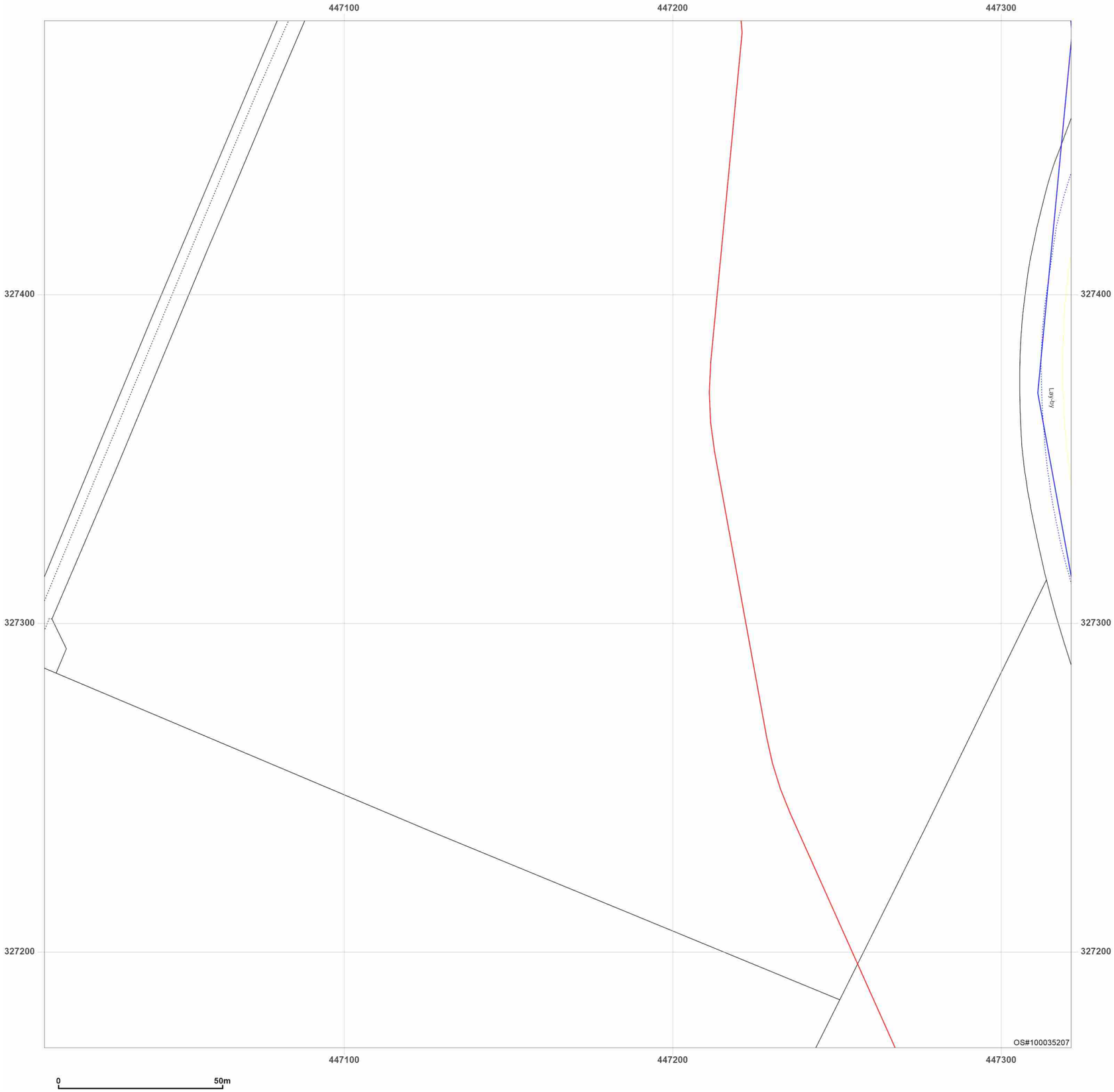
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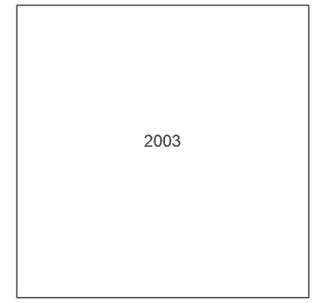
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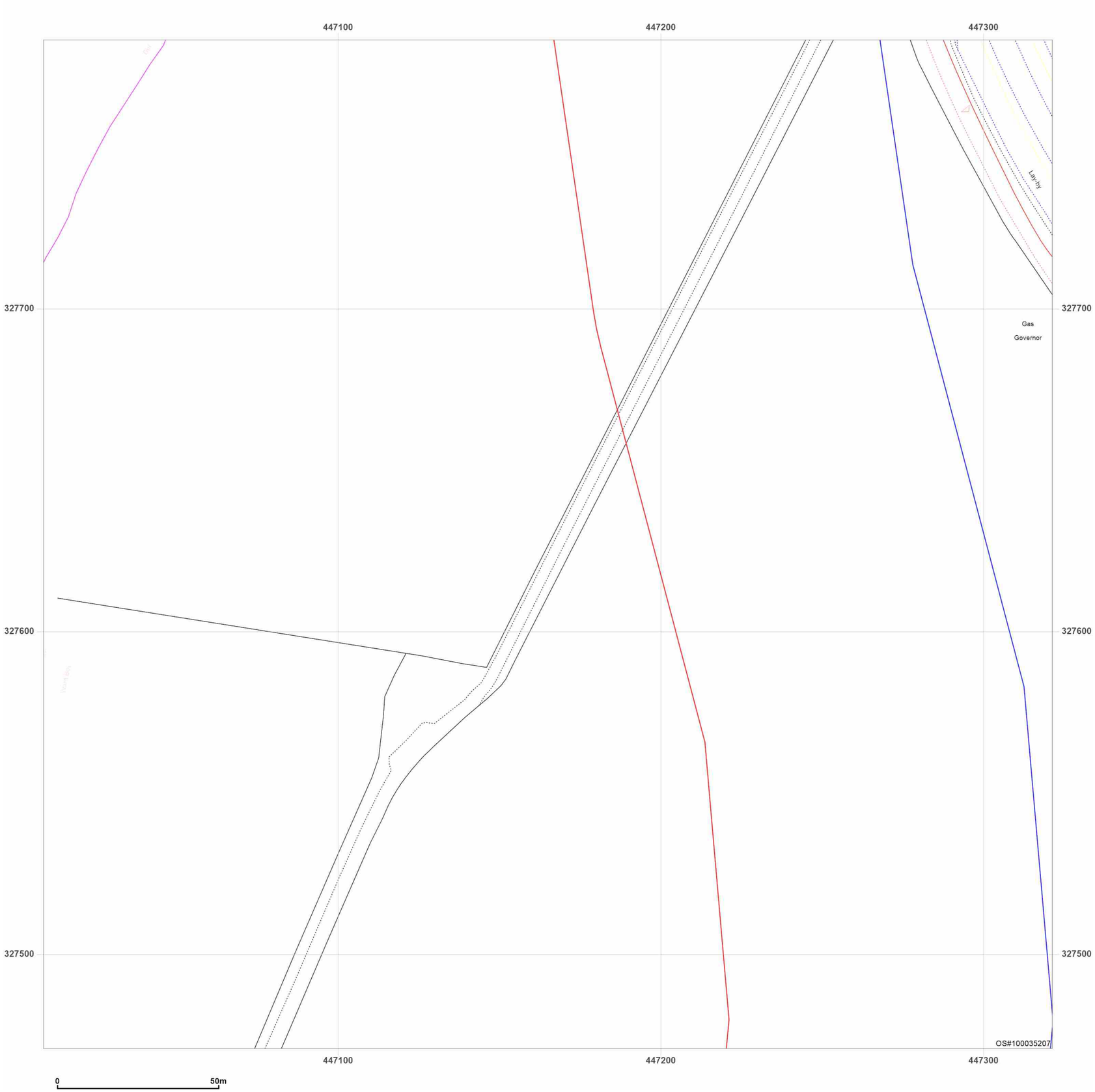
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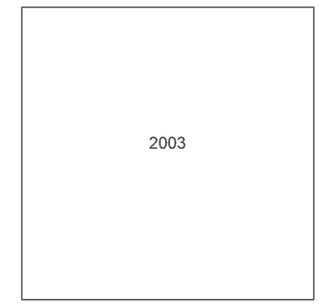
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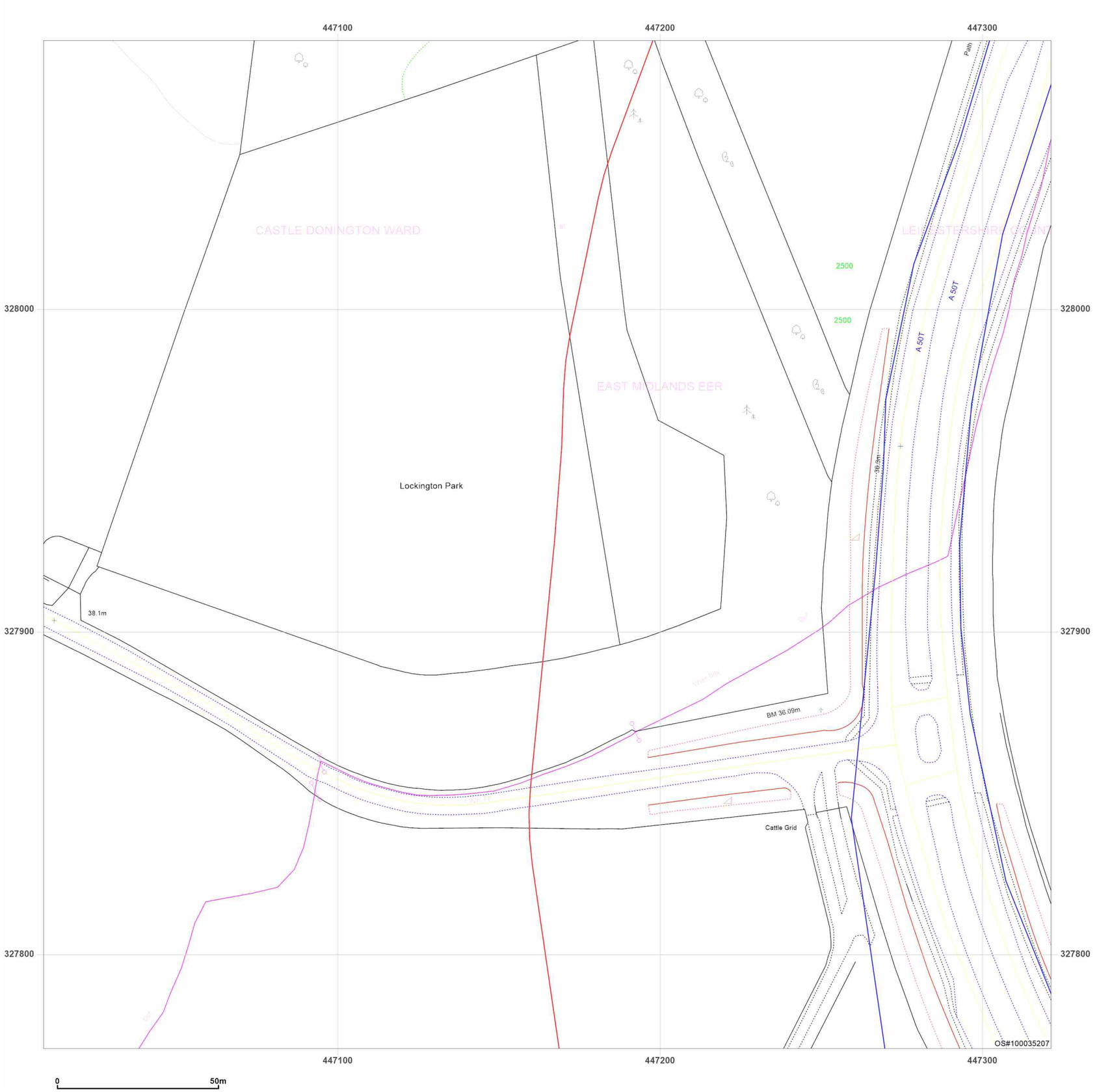
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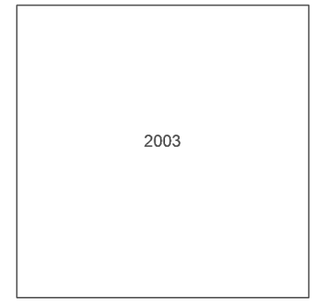
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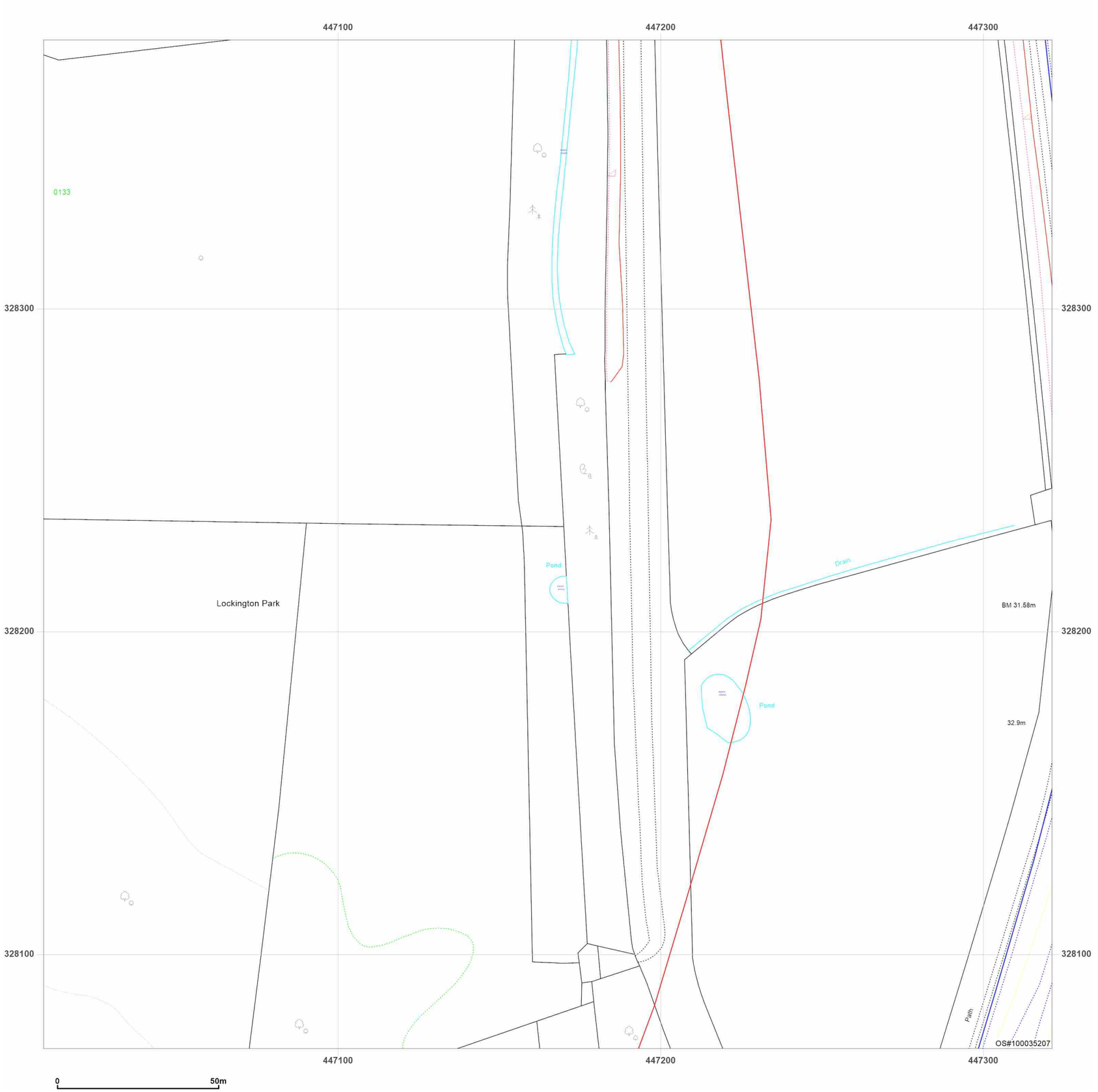
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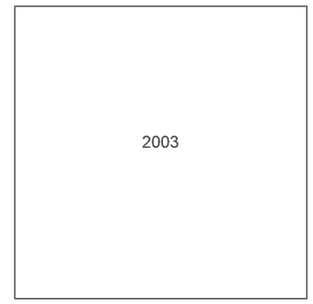
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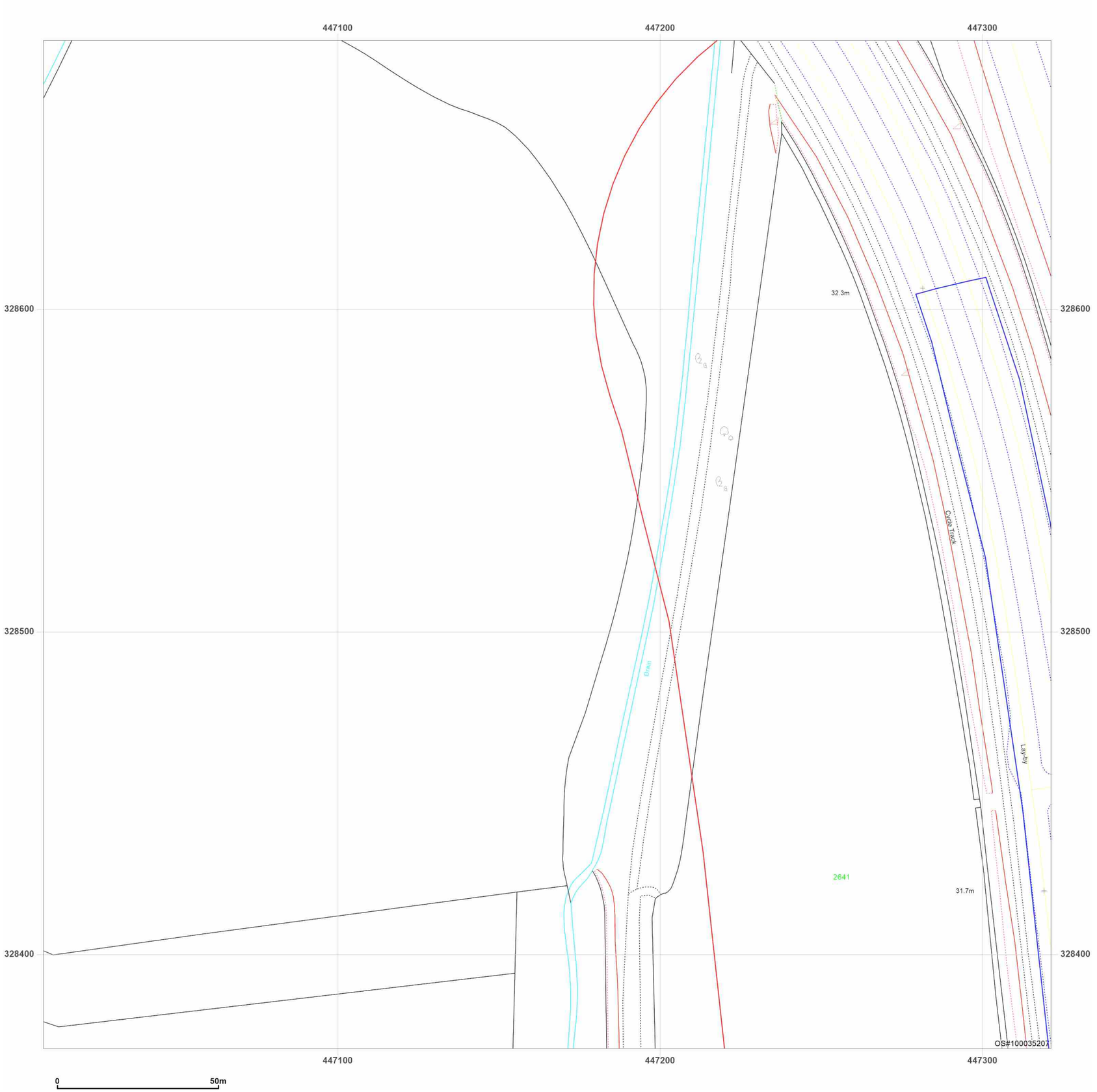
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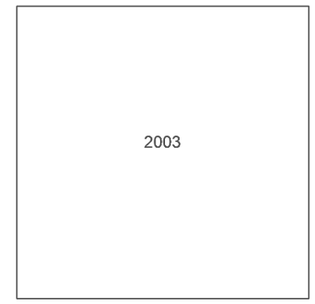
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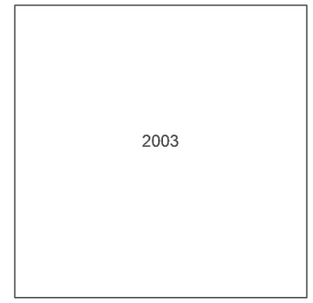
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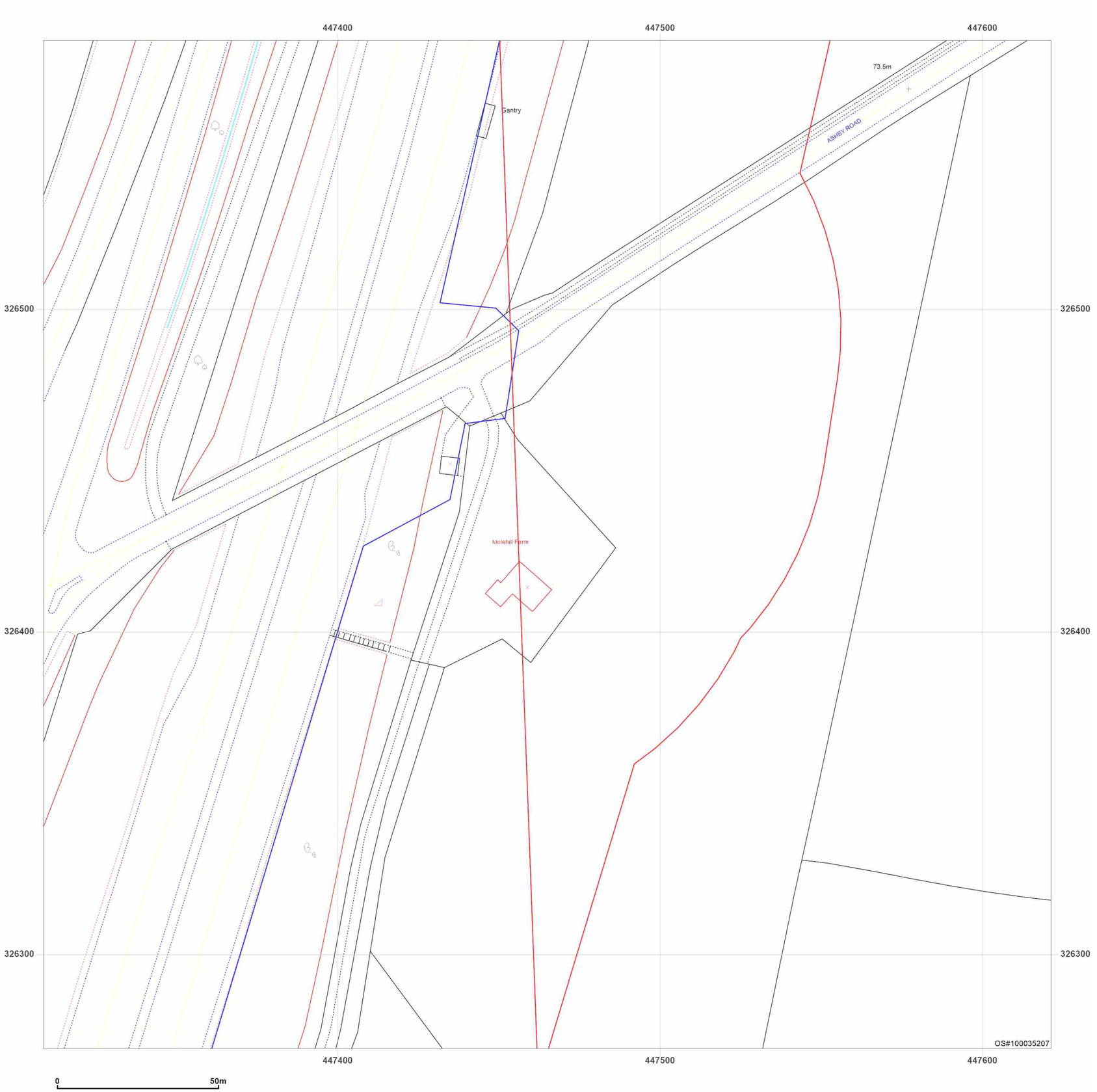
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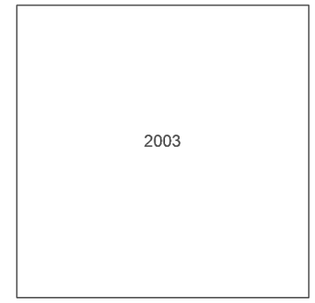
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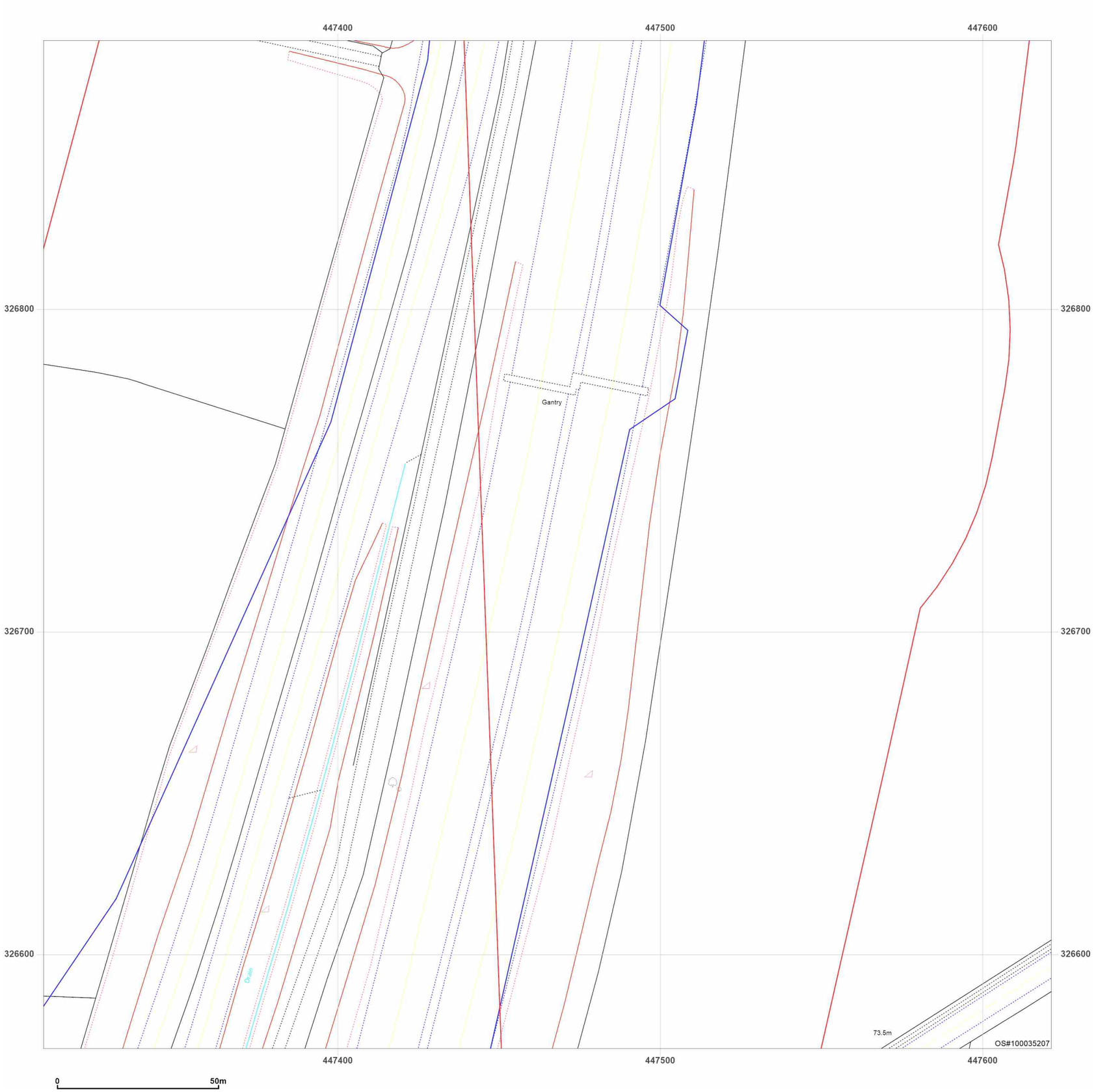
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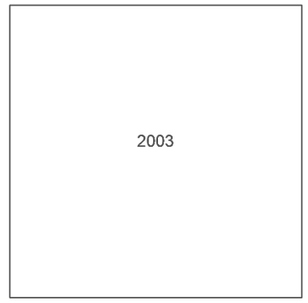
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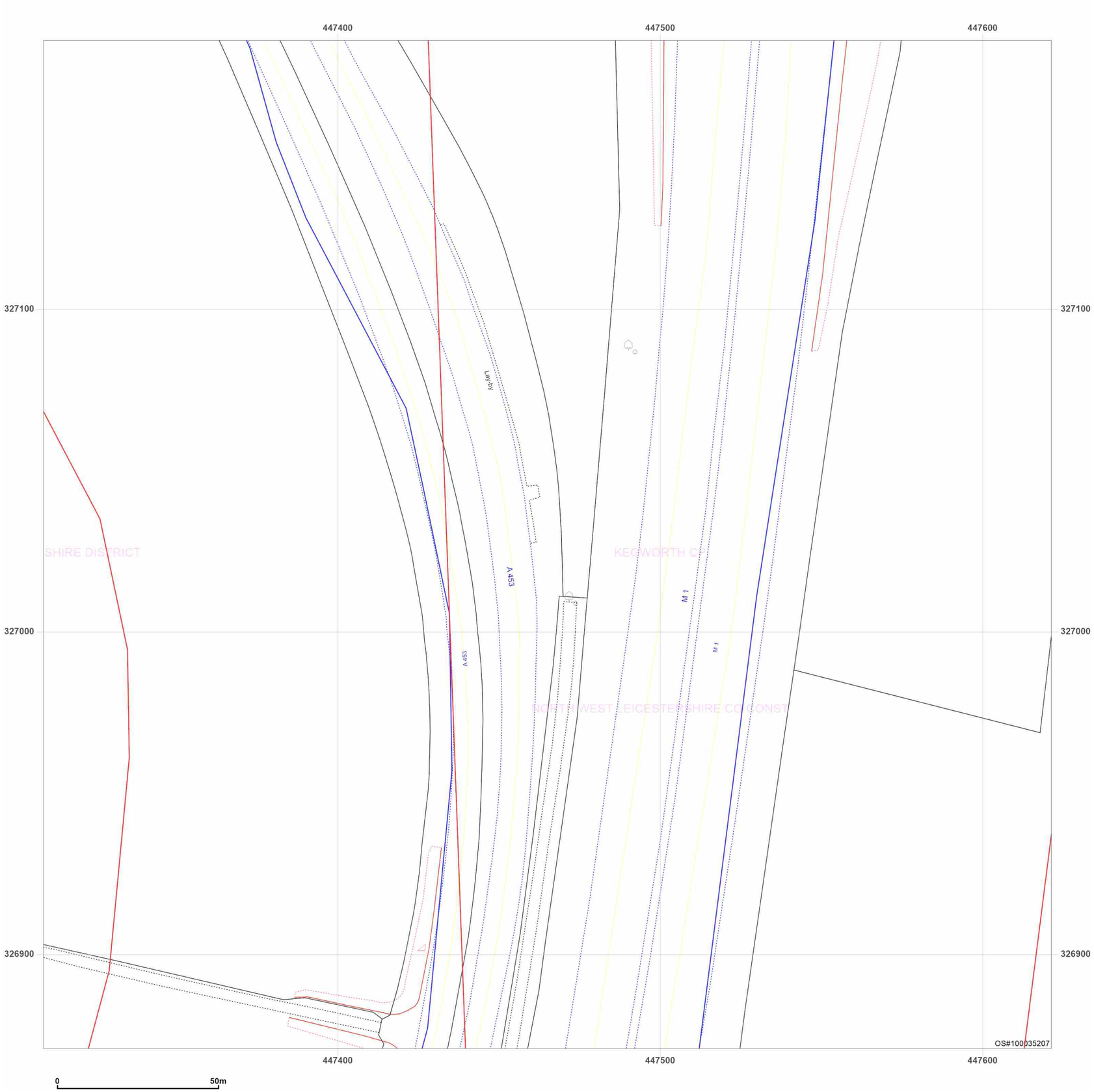
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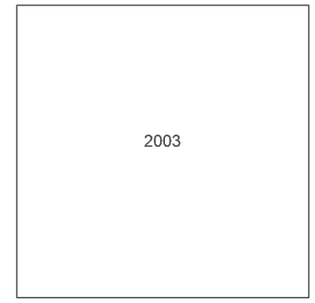
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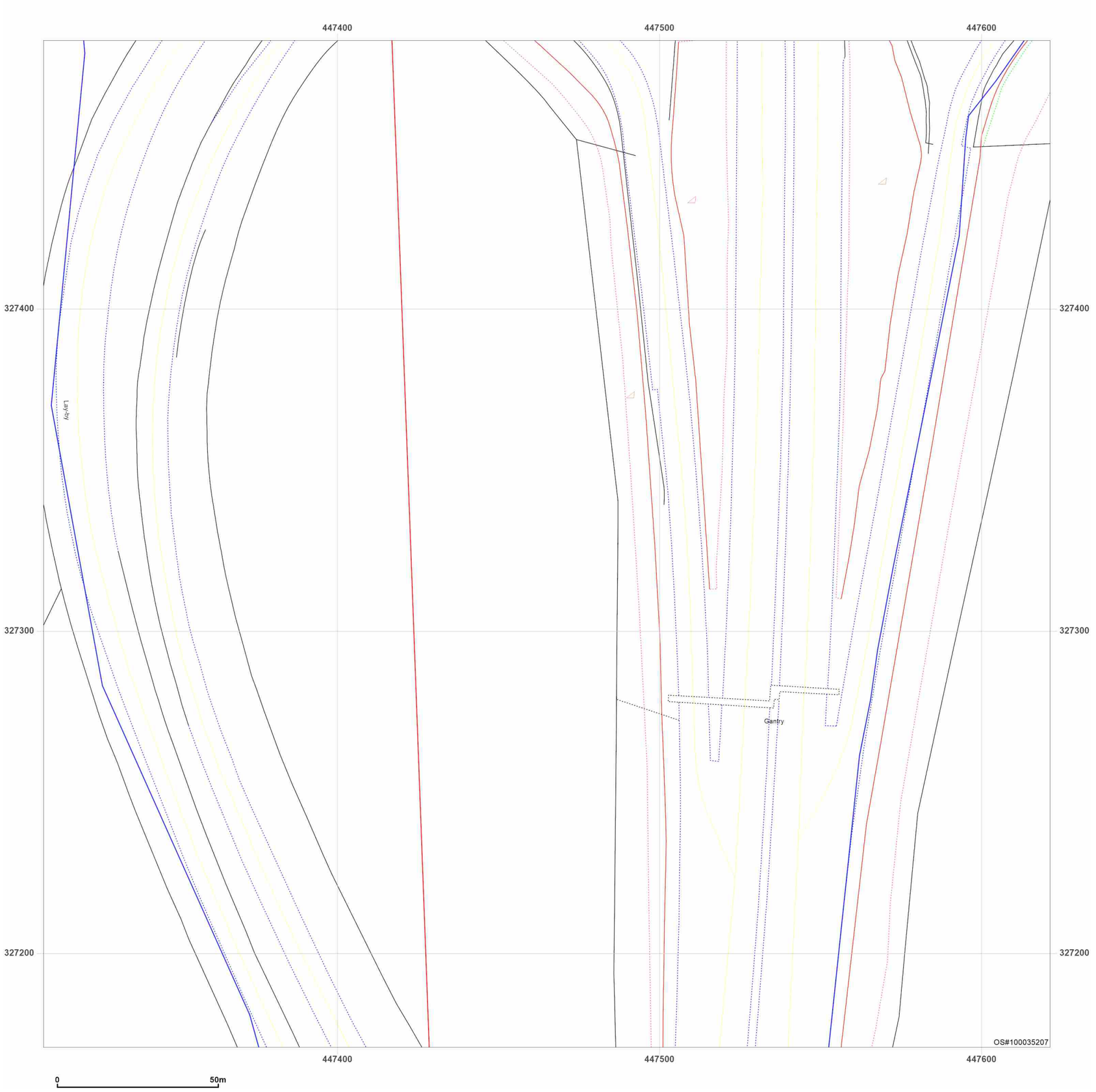
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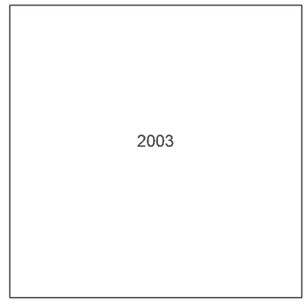
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Grid Ref: 447465, 327327

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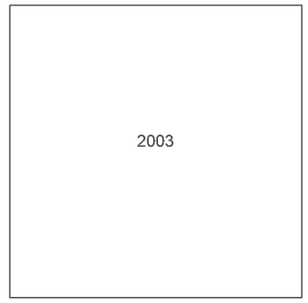
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_Landline_2_8
Grid Ref: 447465, 327627

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

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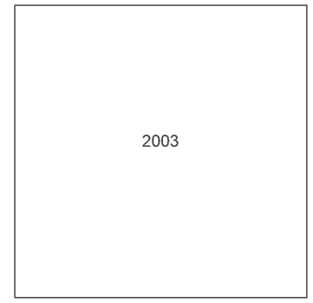
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_Landline_2_9
Grid Ref: 447465, 327927

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

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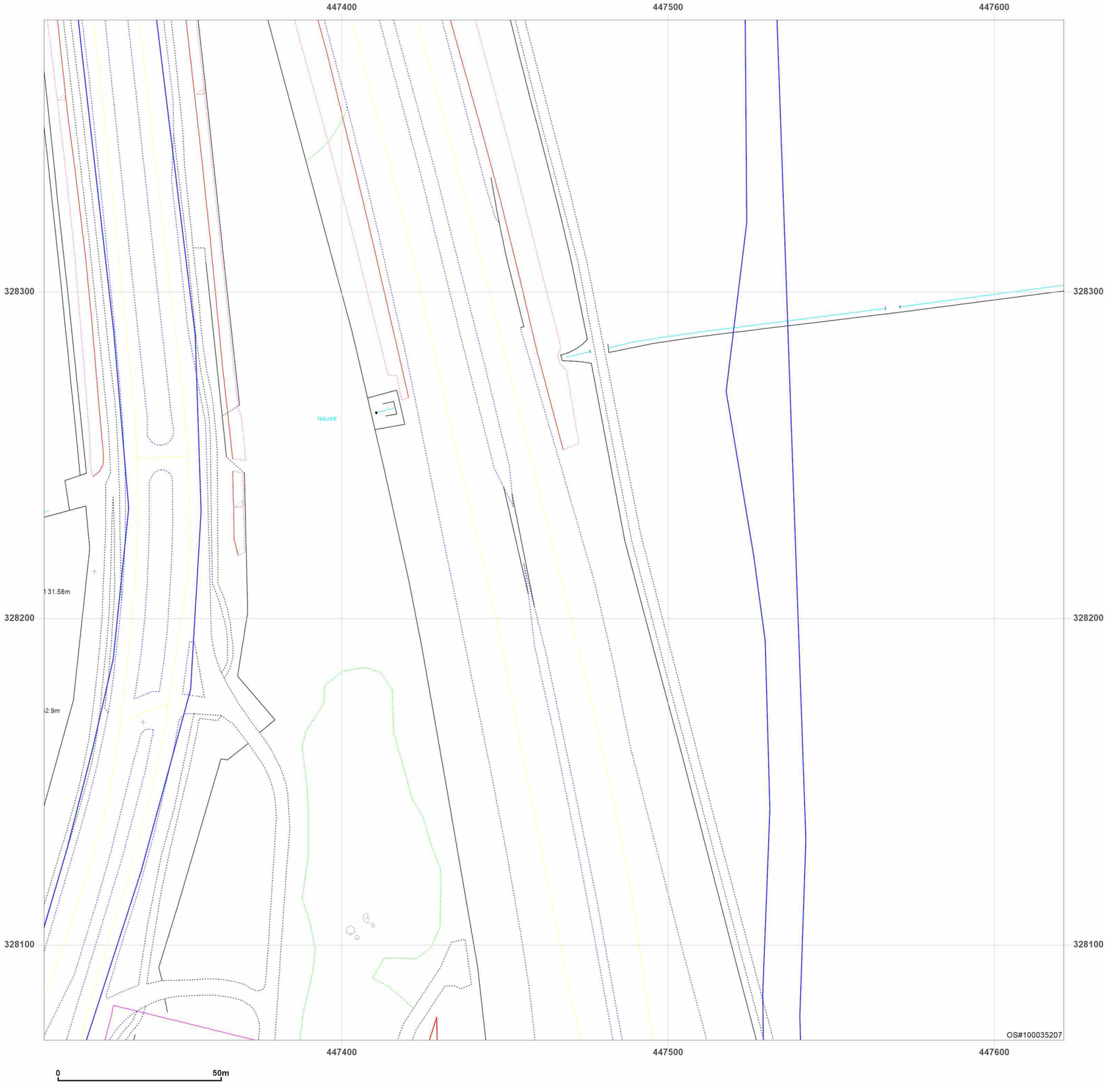
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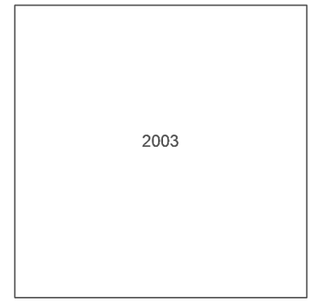
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_Landline_2_10
Grid Ref: 447465, 328227

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

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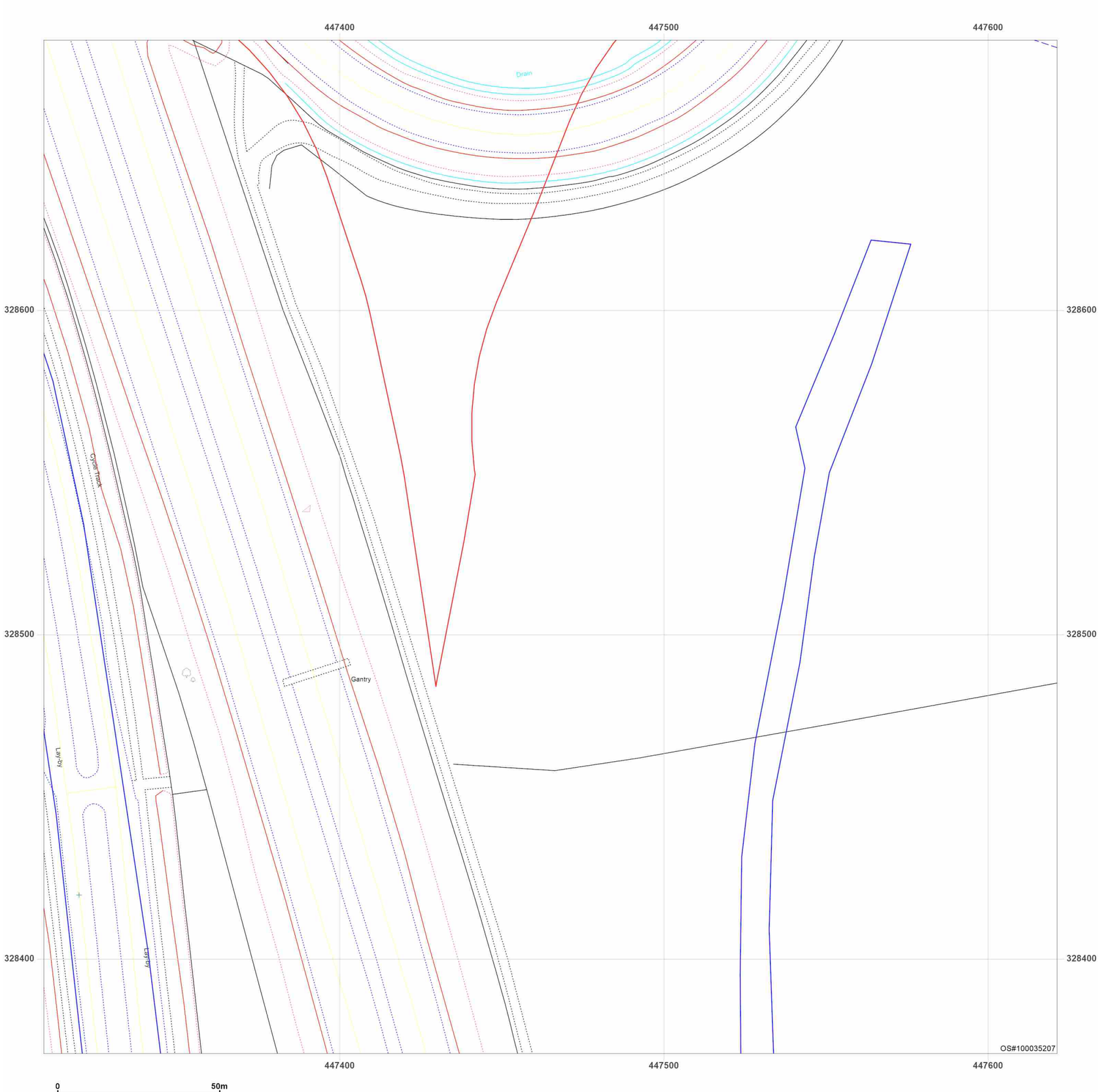
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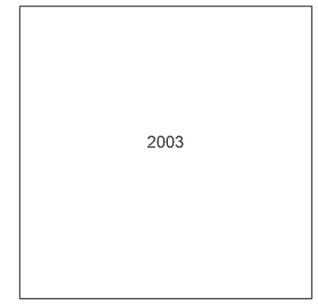
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_Landline_2_11
Grid Ref: 447465, 328527

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

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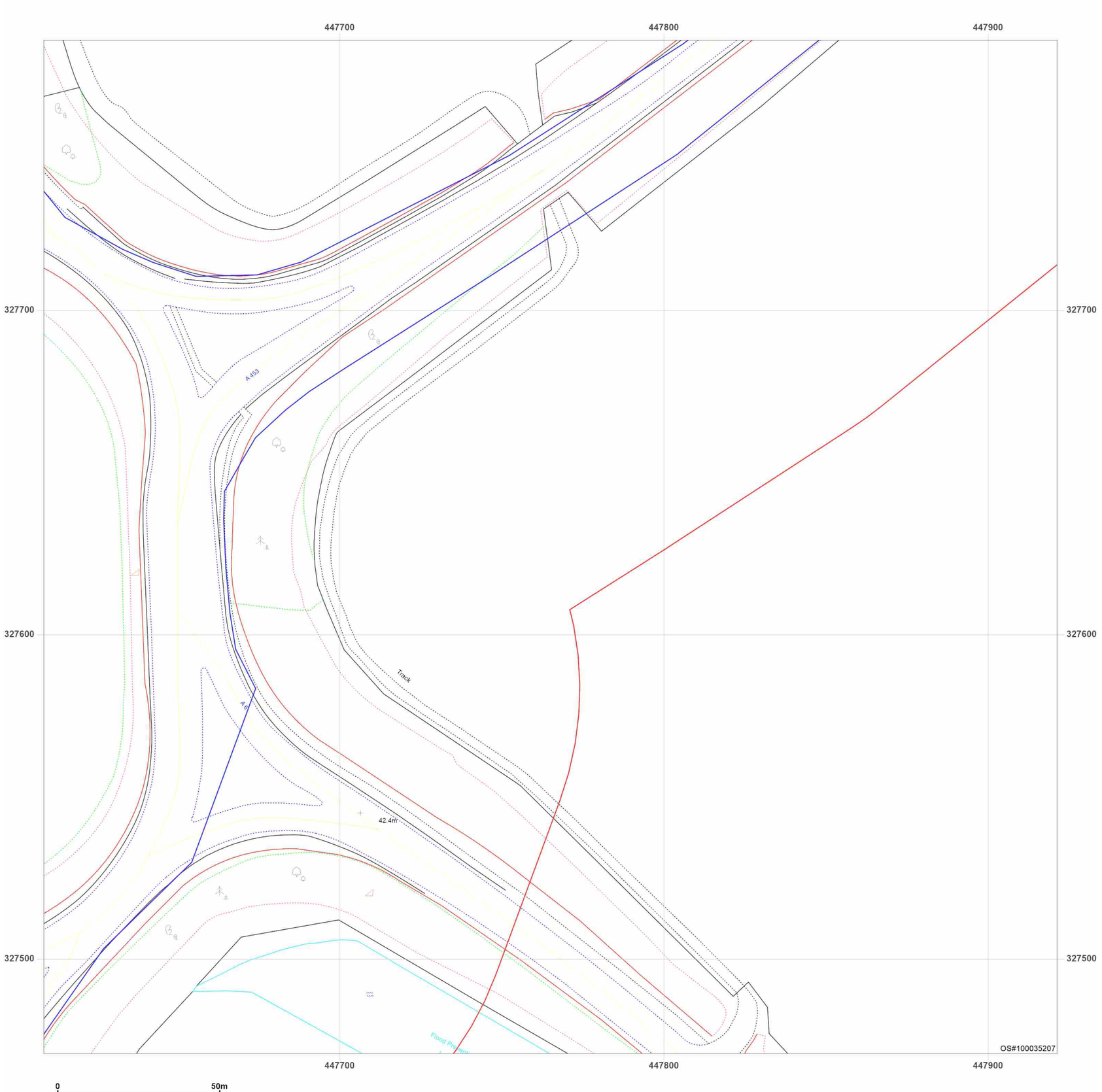
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_Landline_3_8
Grid Ref: 447765, 327627

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

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2003

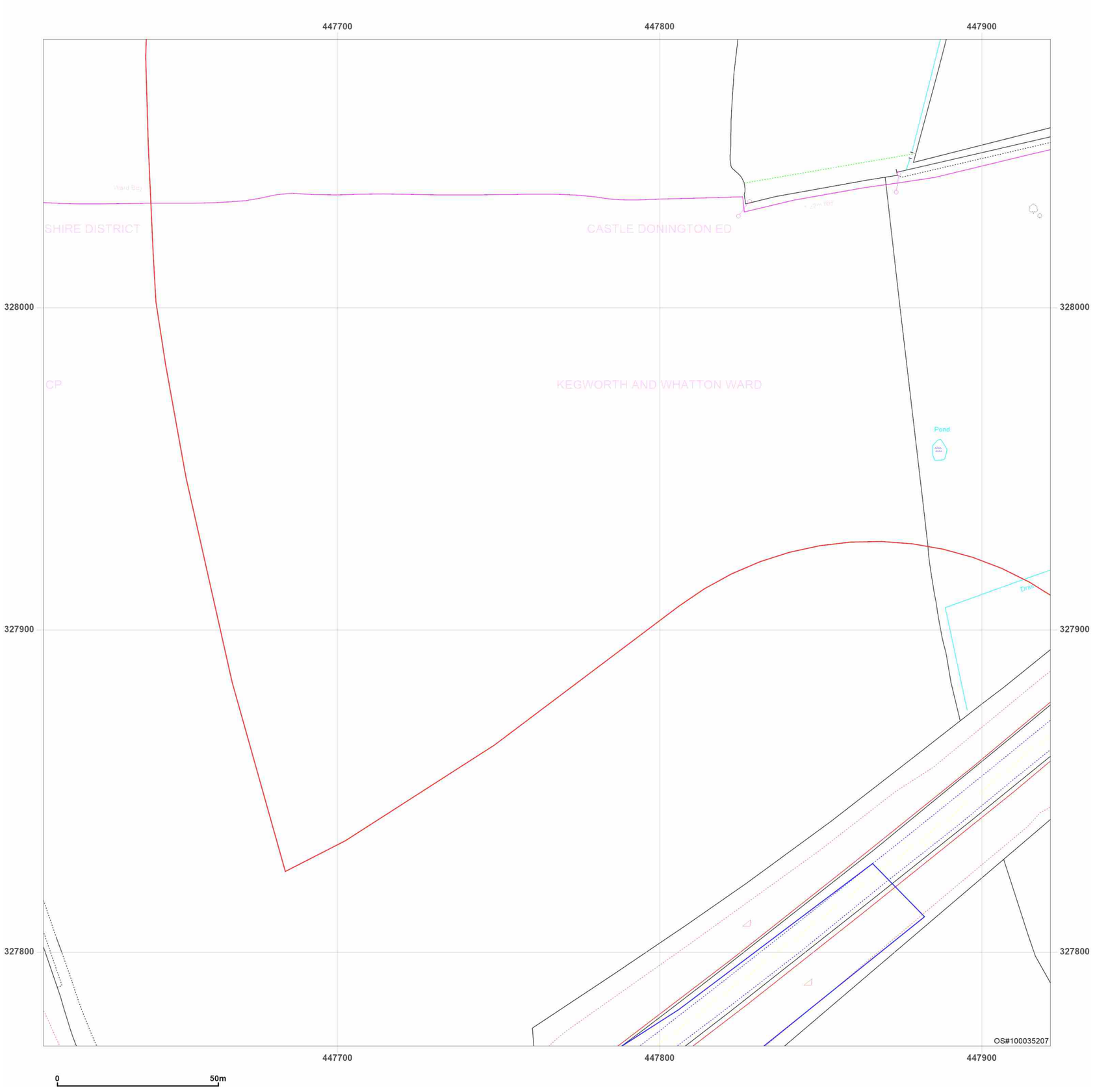
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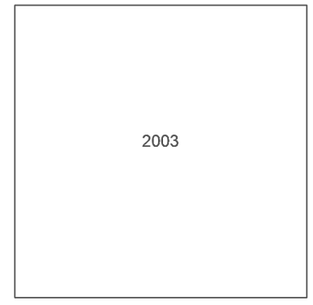
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_Landline_3_9
Grid Ref: 447765, 327927

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

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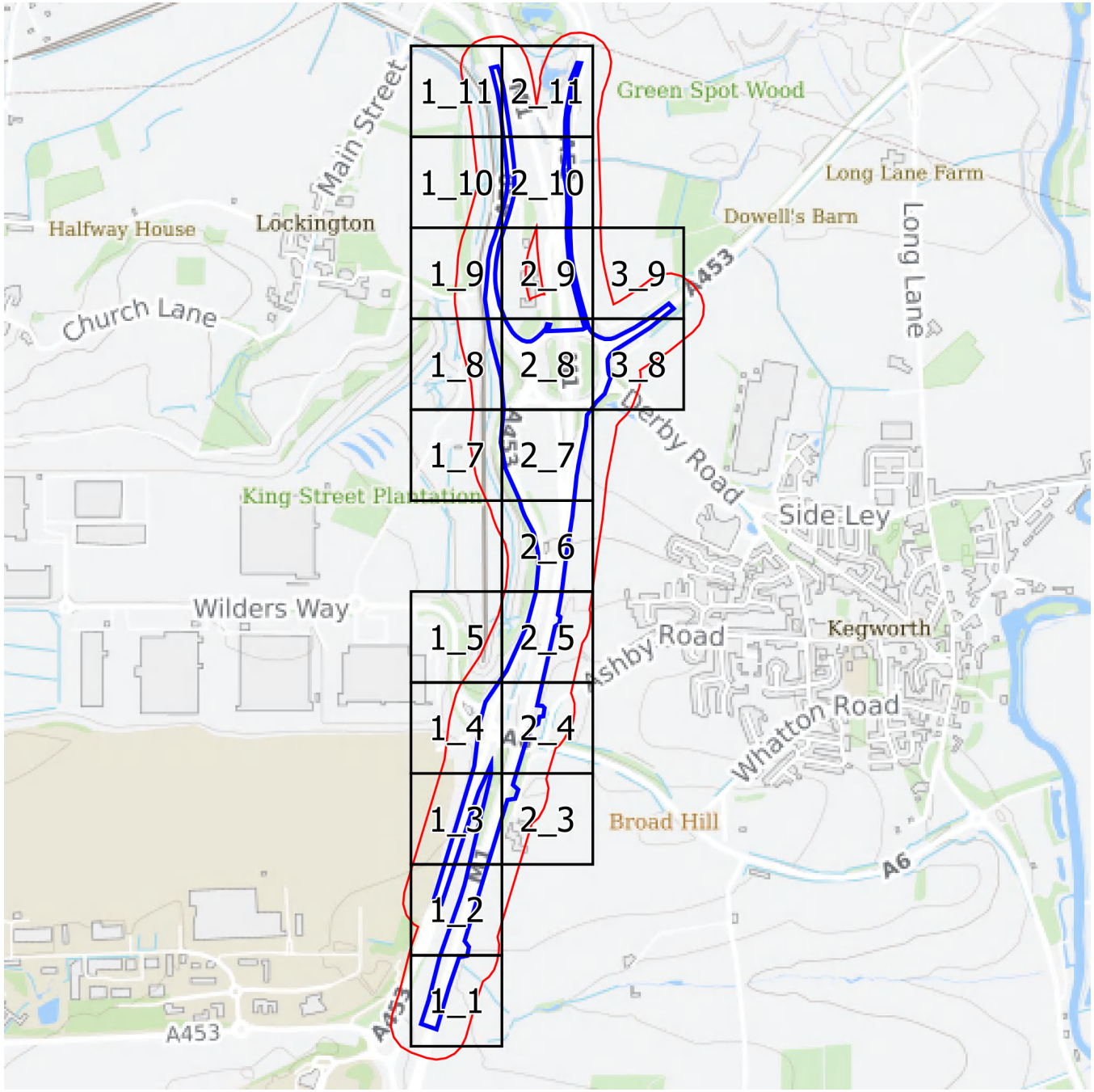
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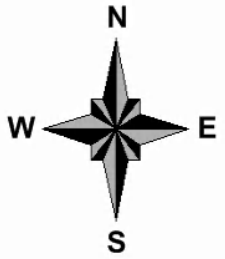
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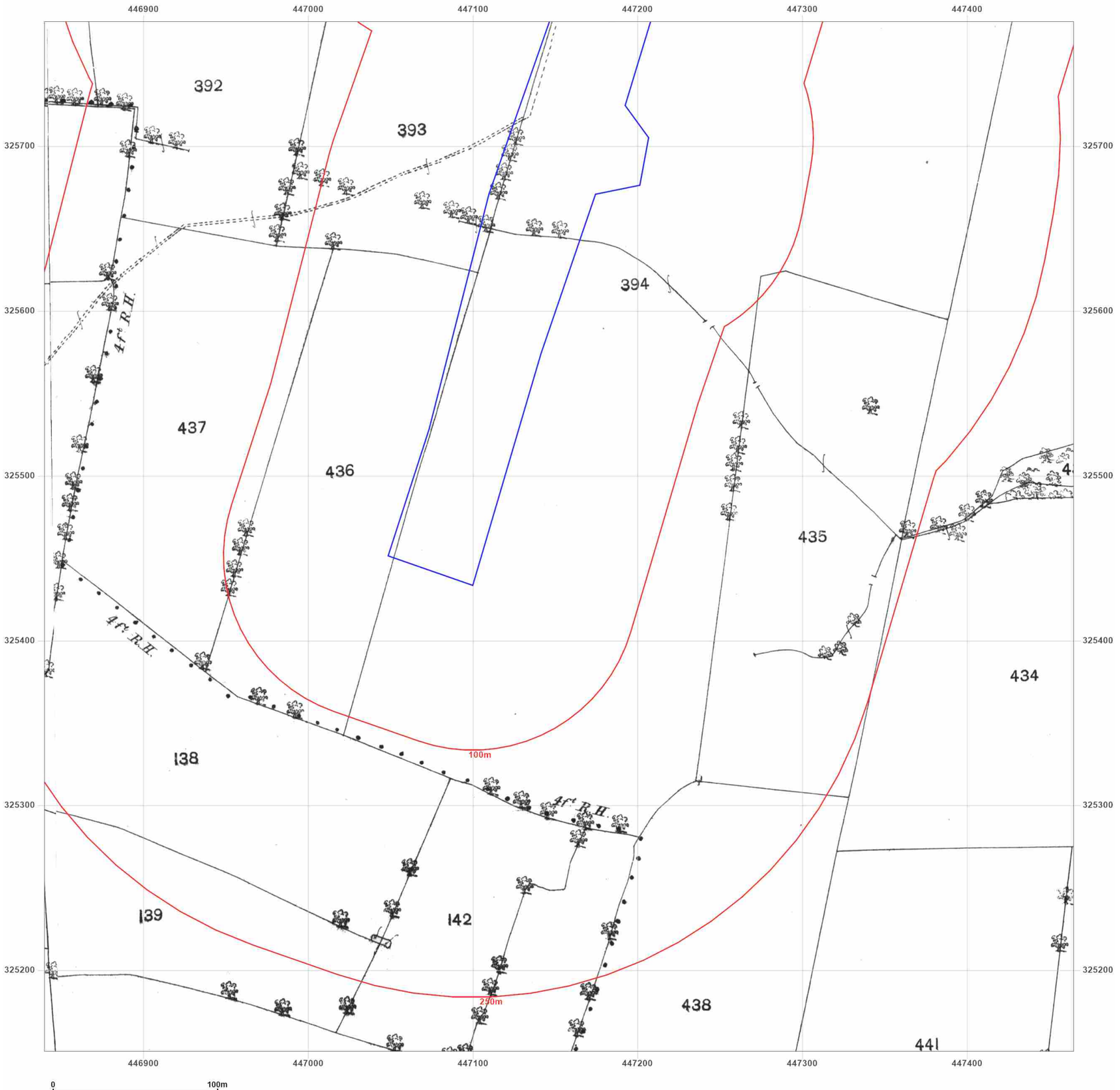
Map legend available at:
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Landline Scale Grid Index





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East Midlands Gateway 2, J24
M1 (NH Land)

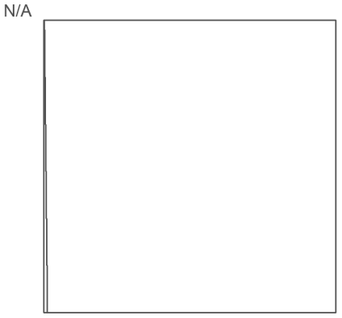
Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

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

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

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



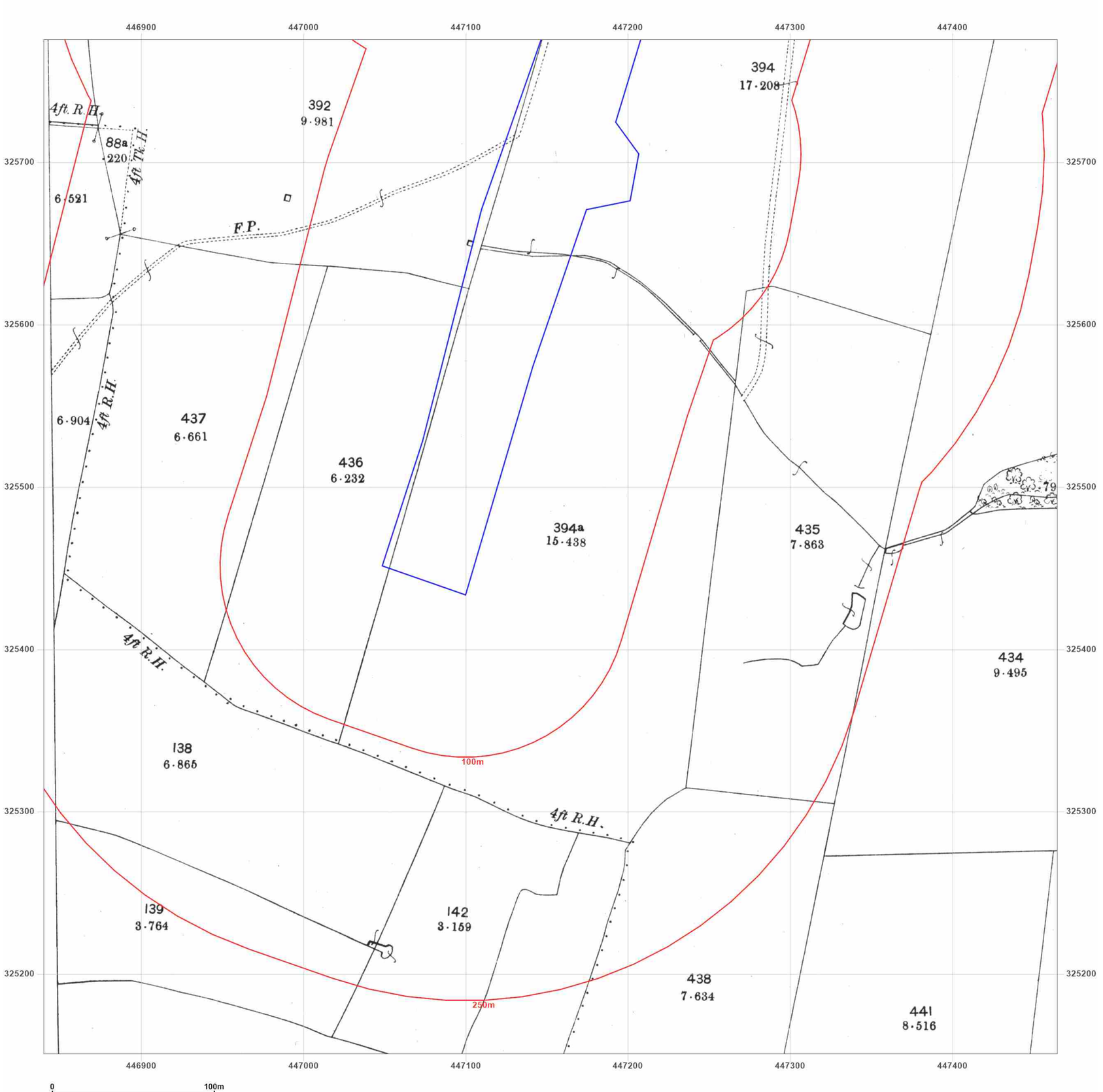
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Production date: 13 December 2024

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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

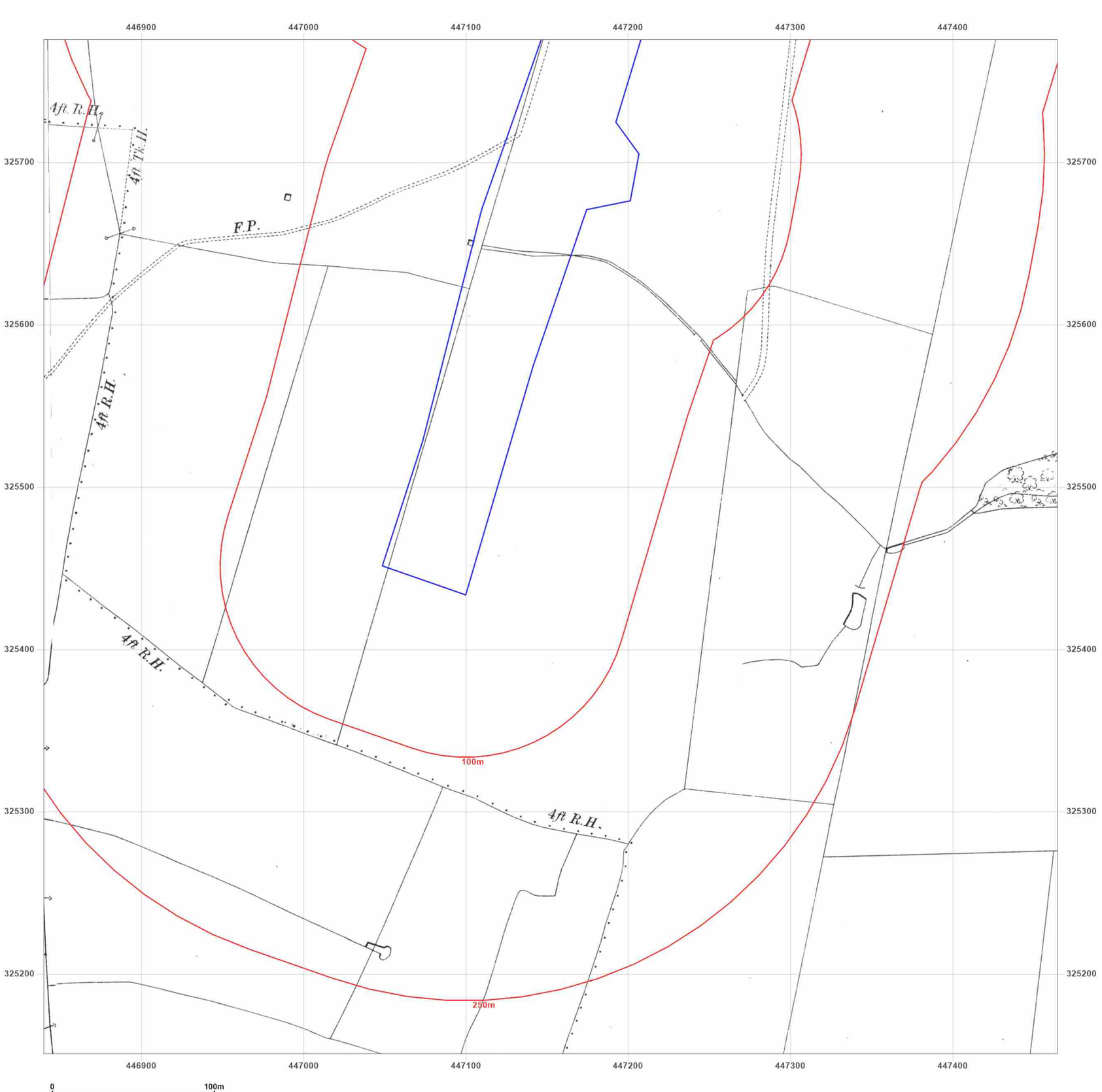
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: County Series

Map date: **1900-1903**

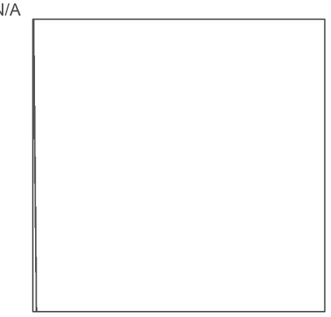
Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A



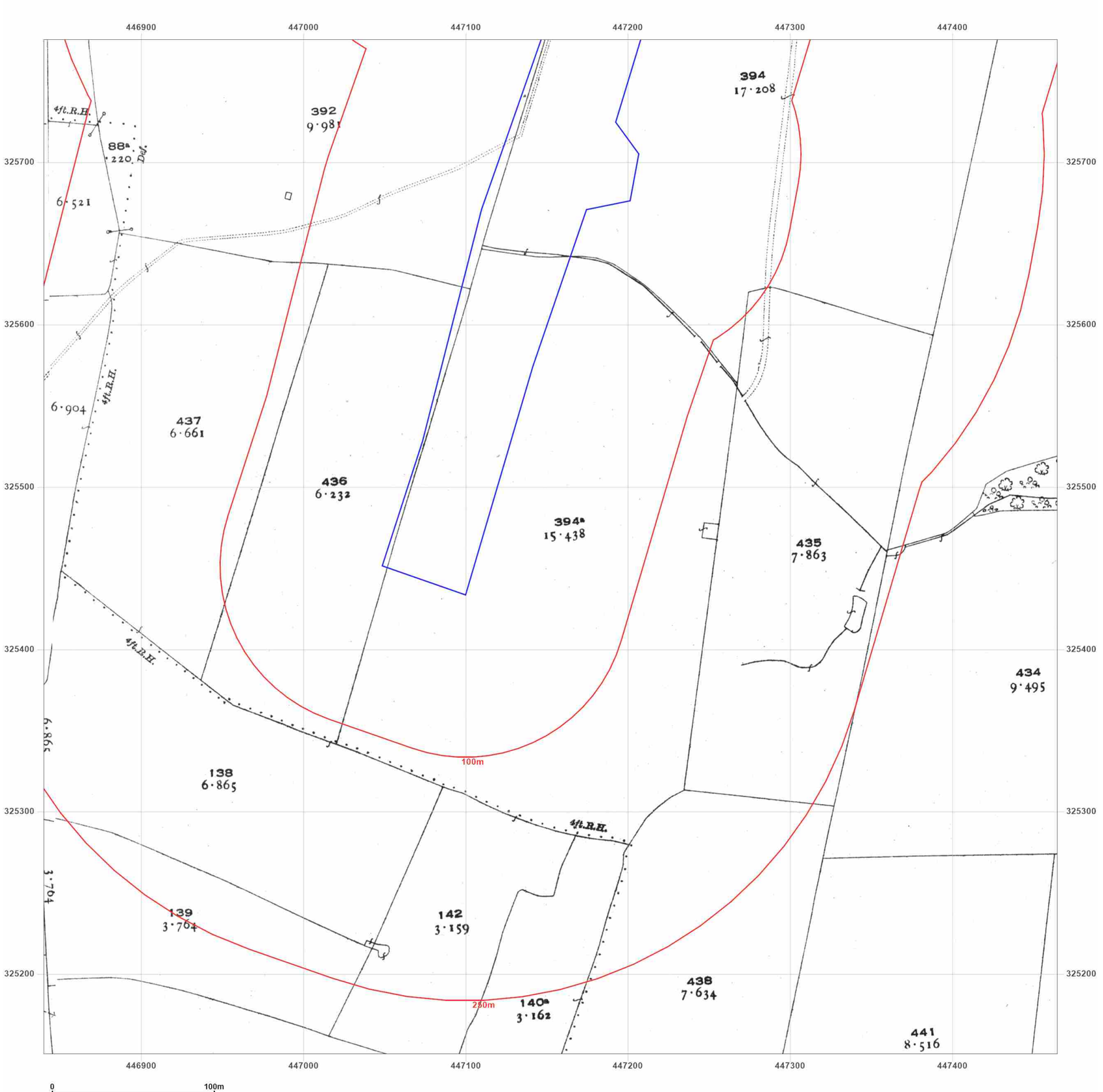
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Site Details:

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M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: County Series

Map date: **1921**

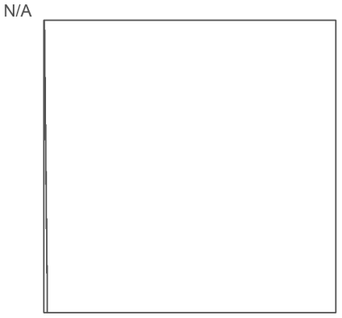
Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A



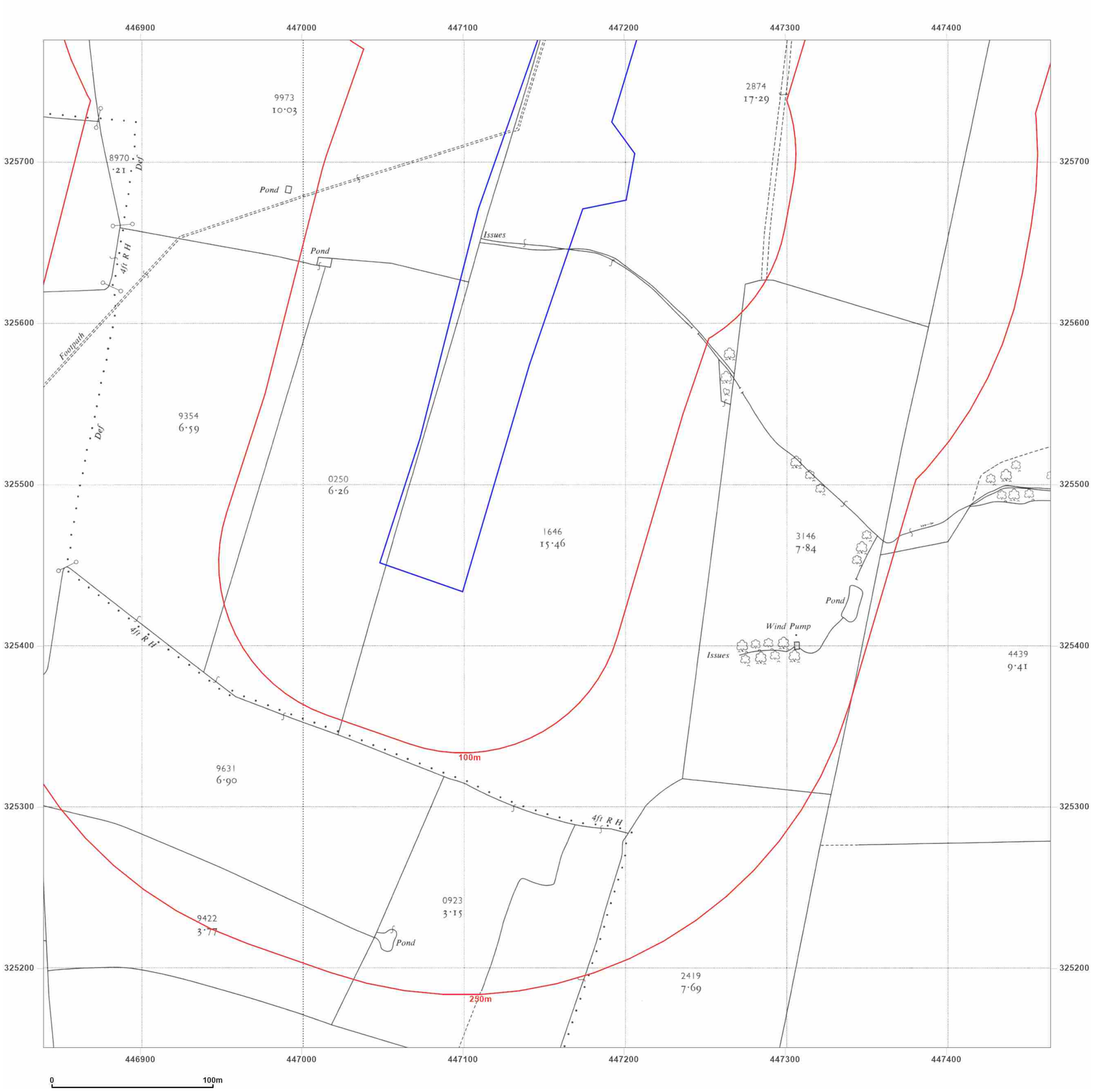
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Site Details:

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M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

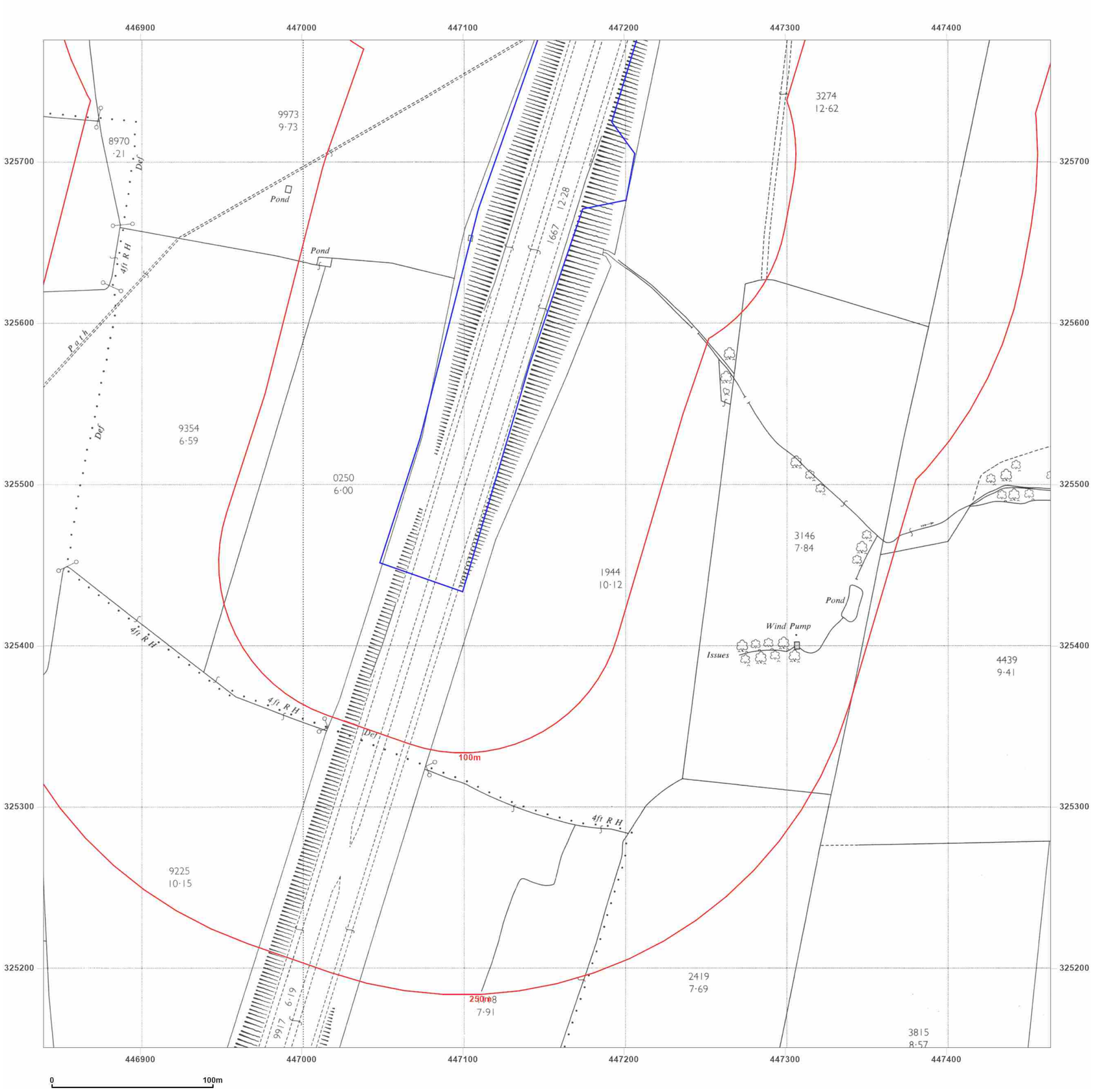
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1944

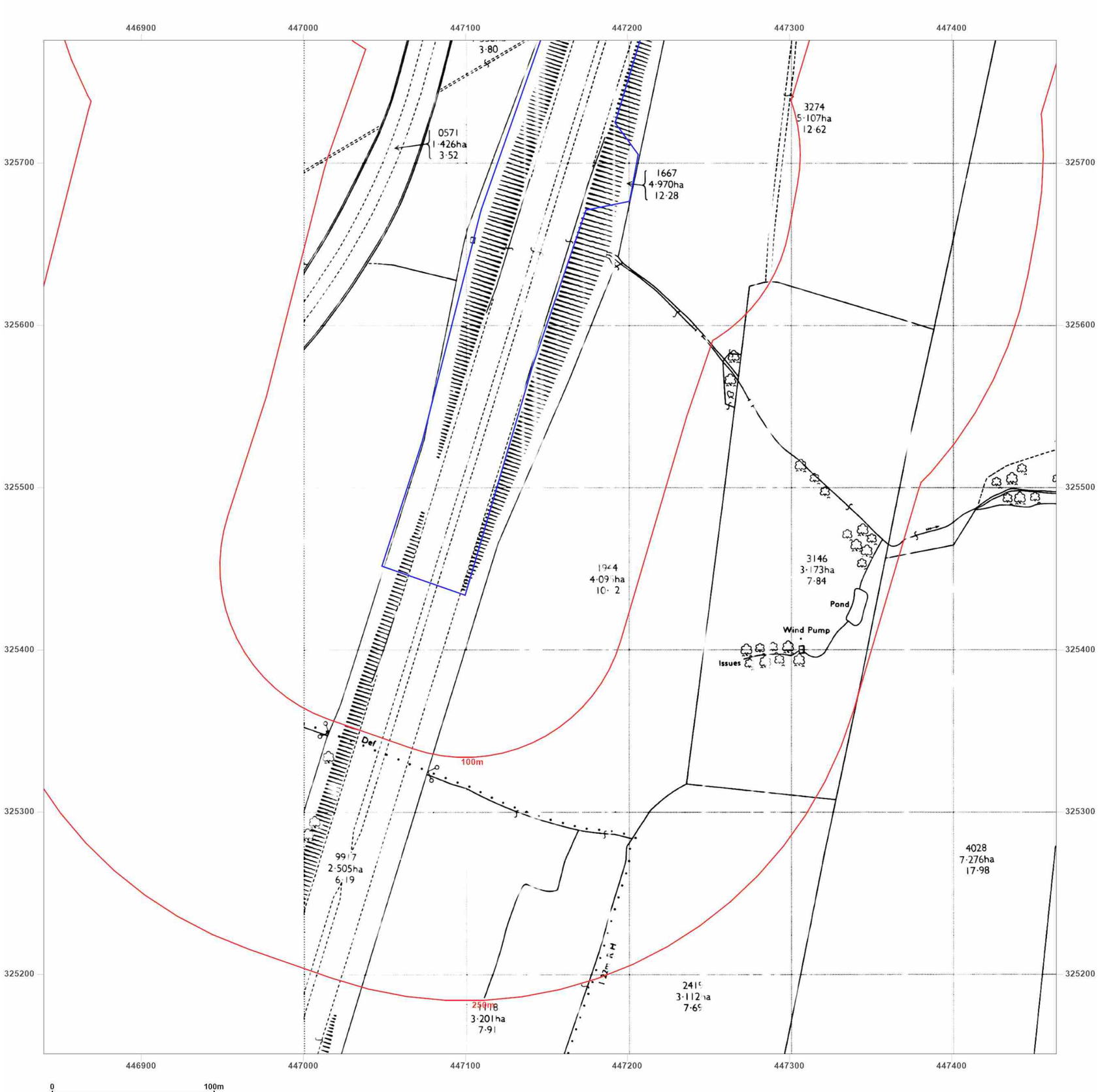
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: National Grid
Map date: **1972**
Scale: 1:2,500
Printed at: 1:2,500

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

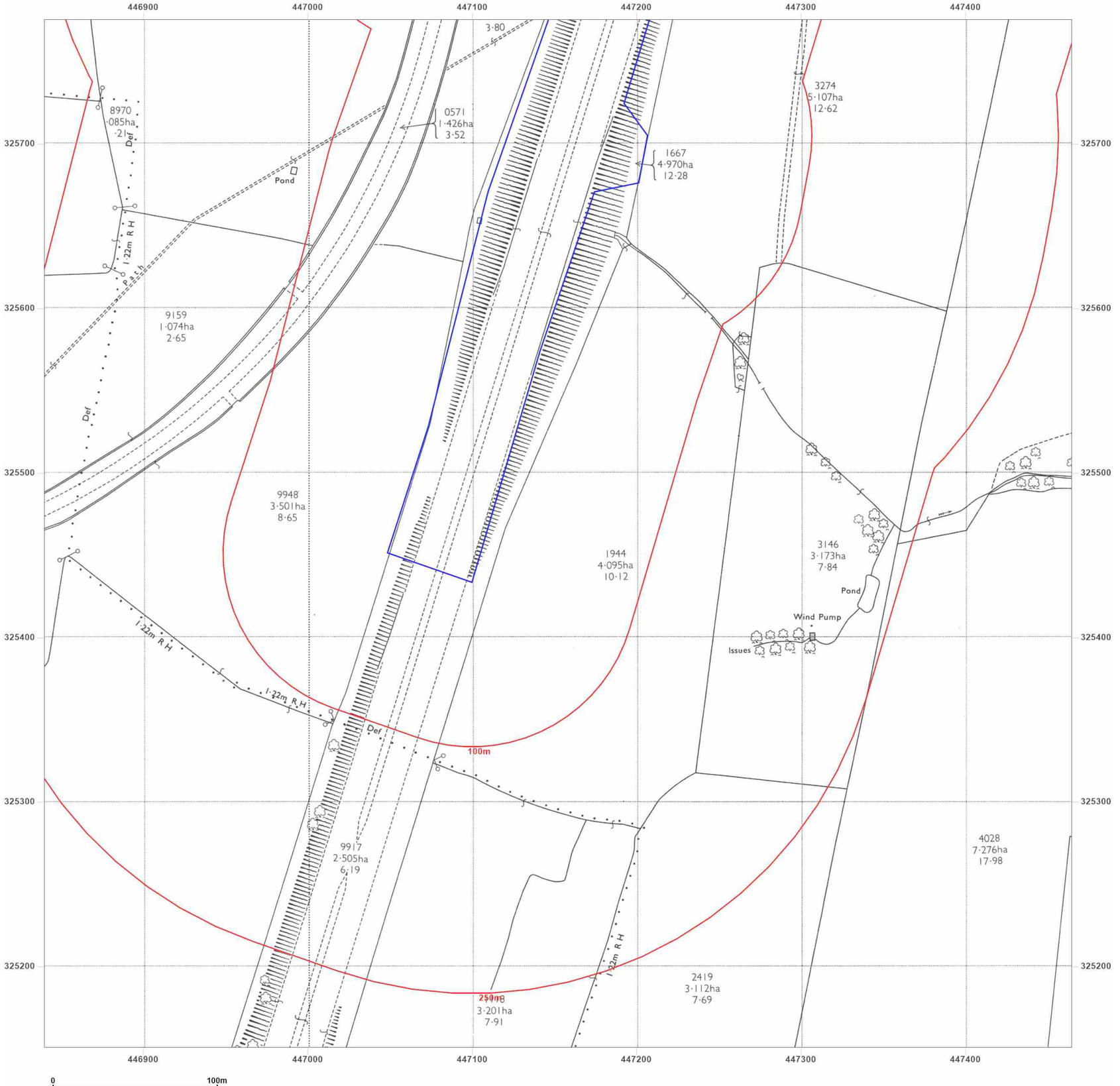
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1966

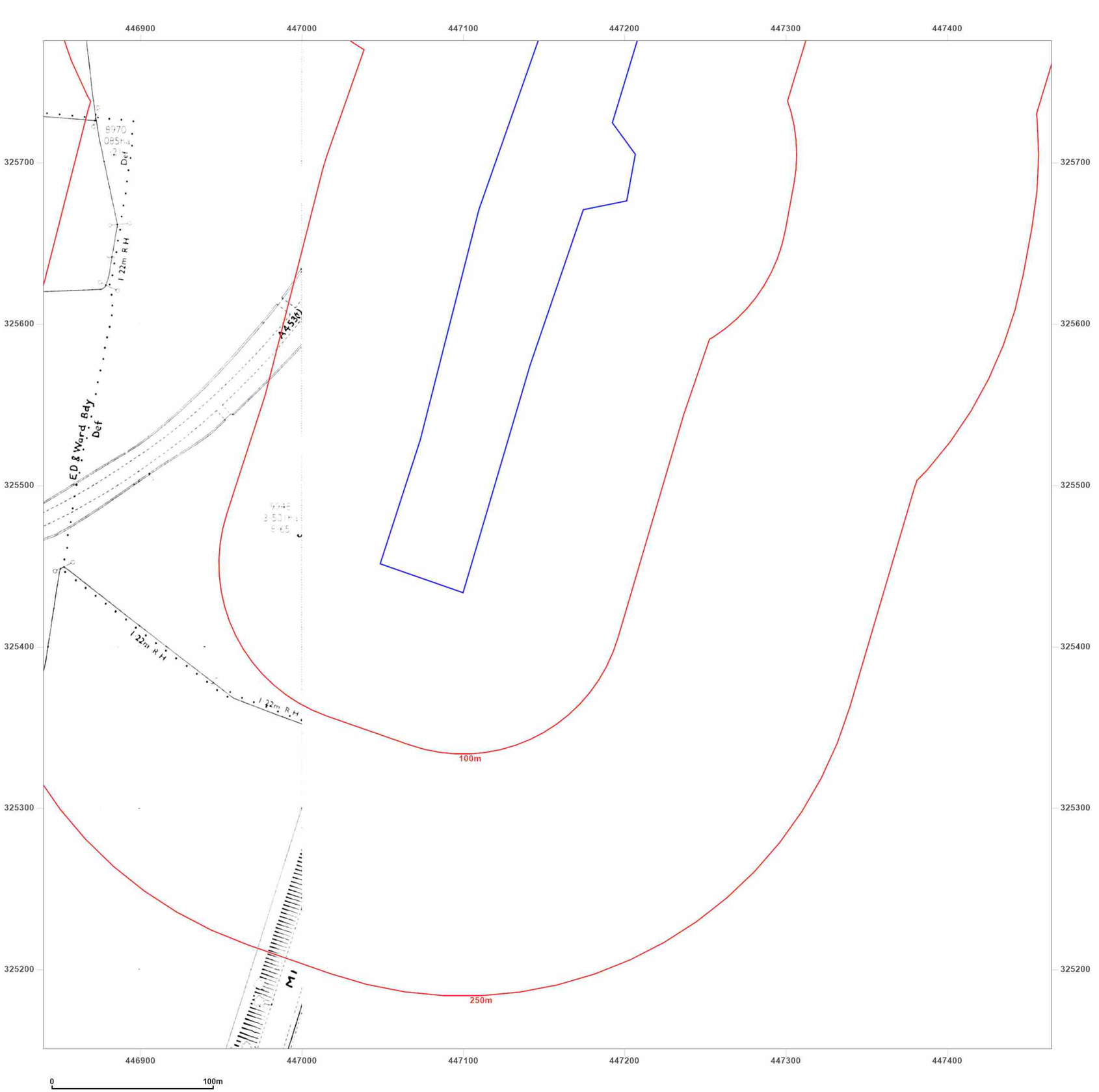
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: National Grid

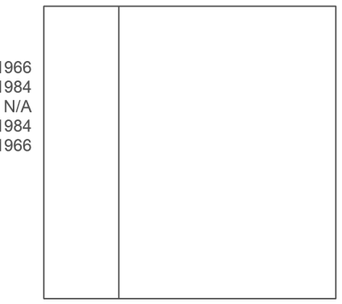
Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1966
Revised 1984
Edition N/A
Copyright 1984
Levelled 1966



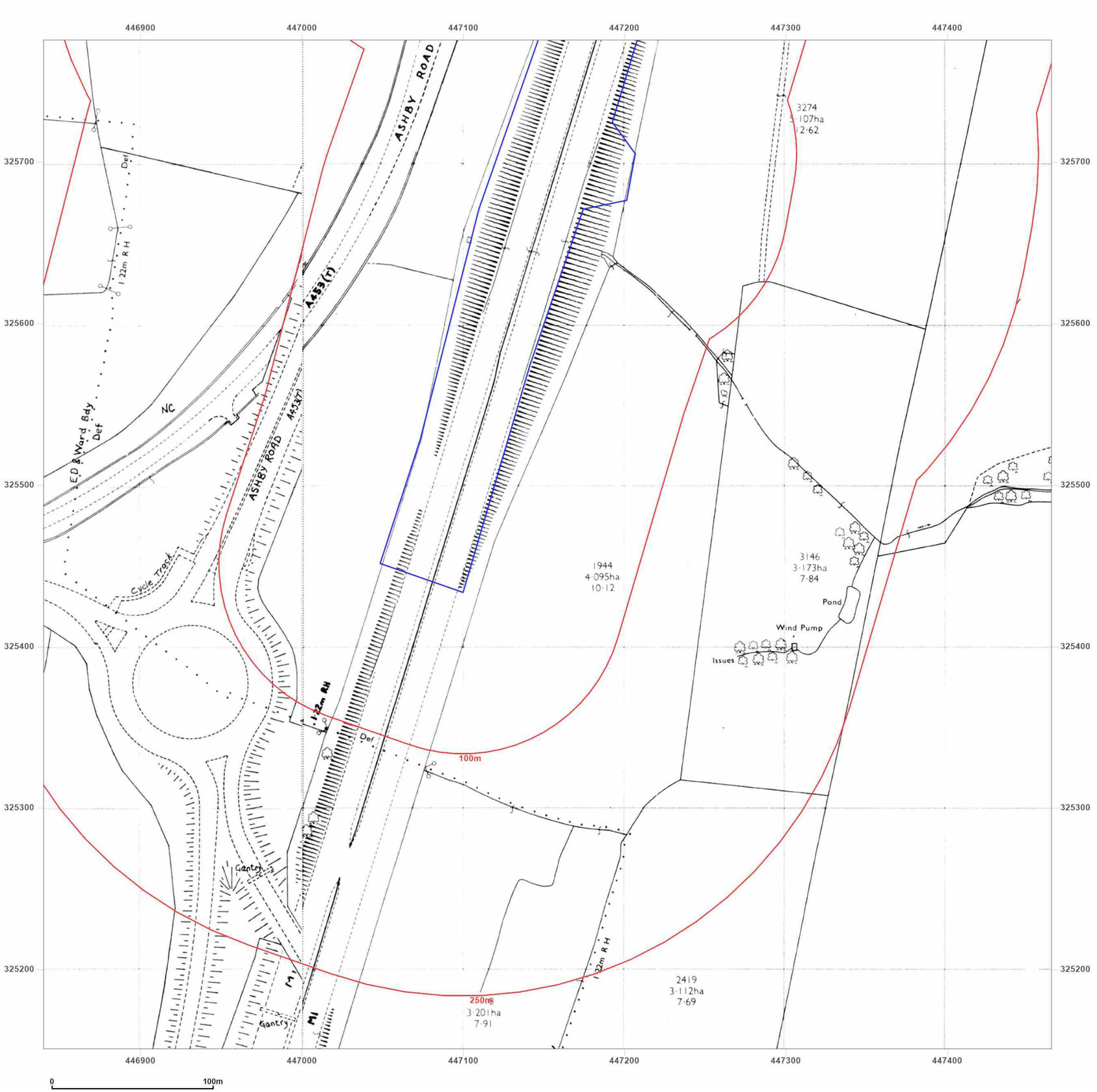
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: National Grid

Map date: **1988-1991**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed 1966
Revised 1988
Edition N/A
Copyright 1988
Levelled 1966

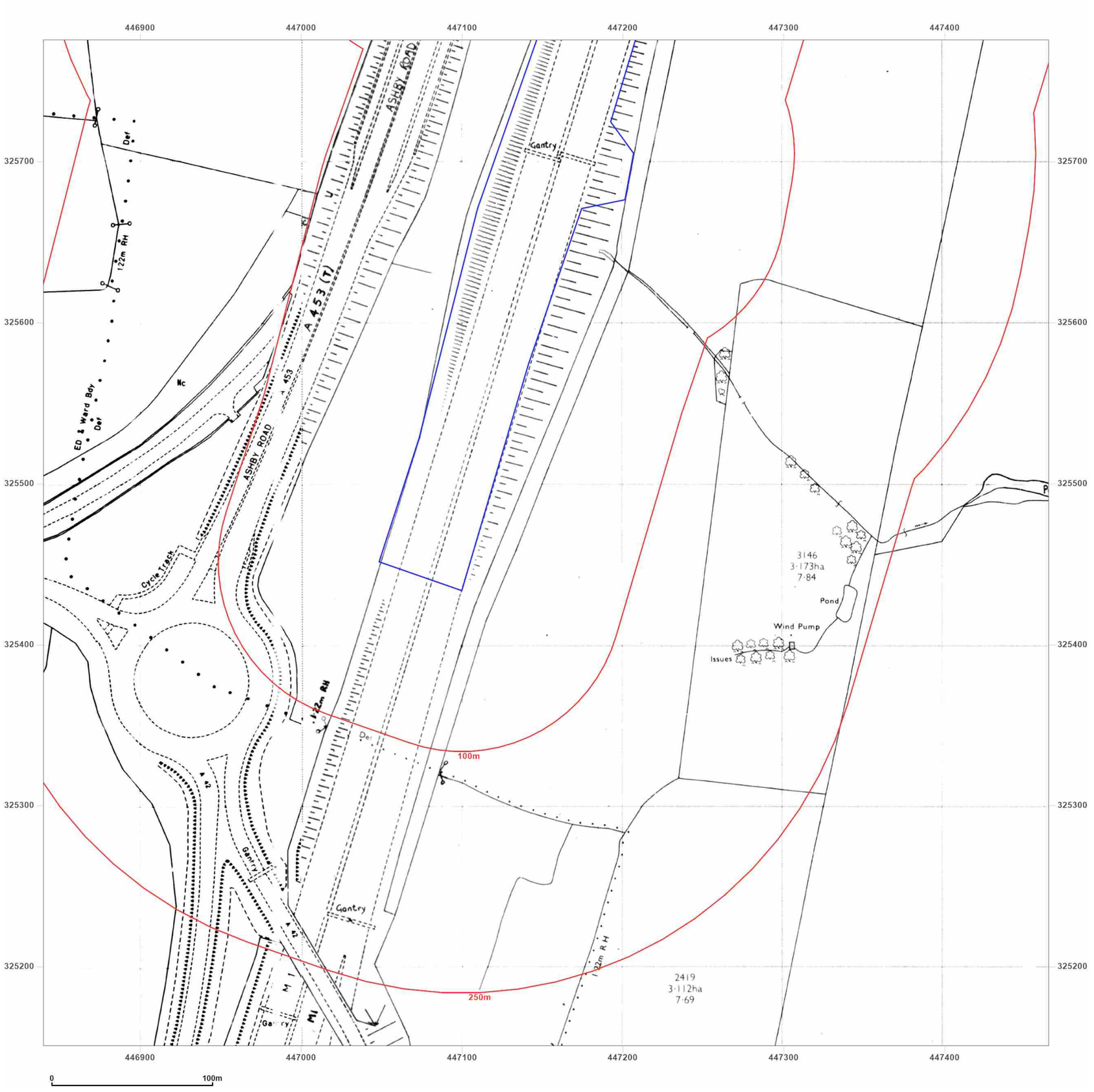
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

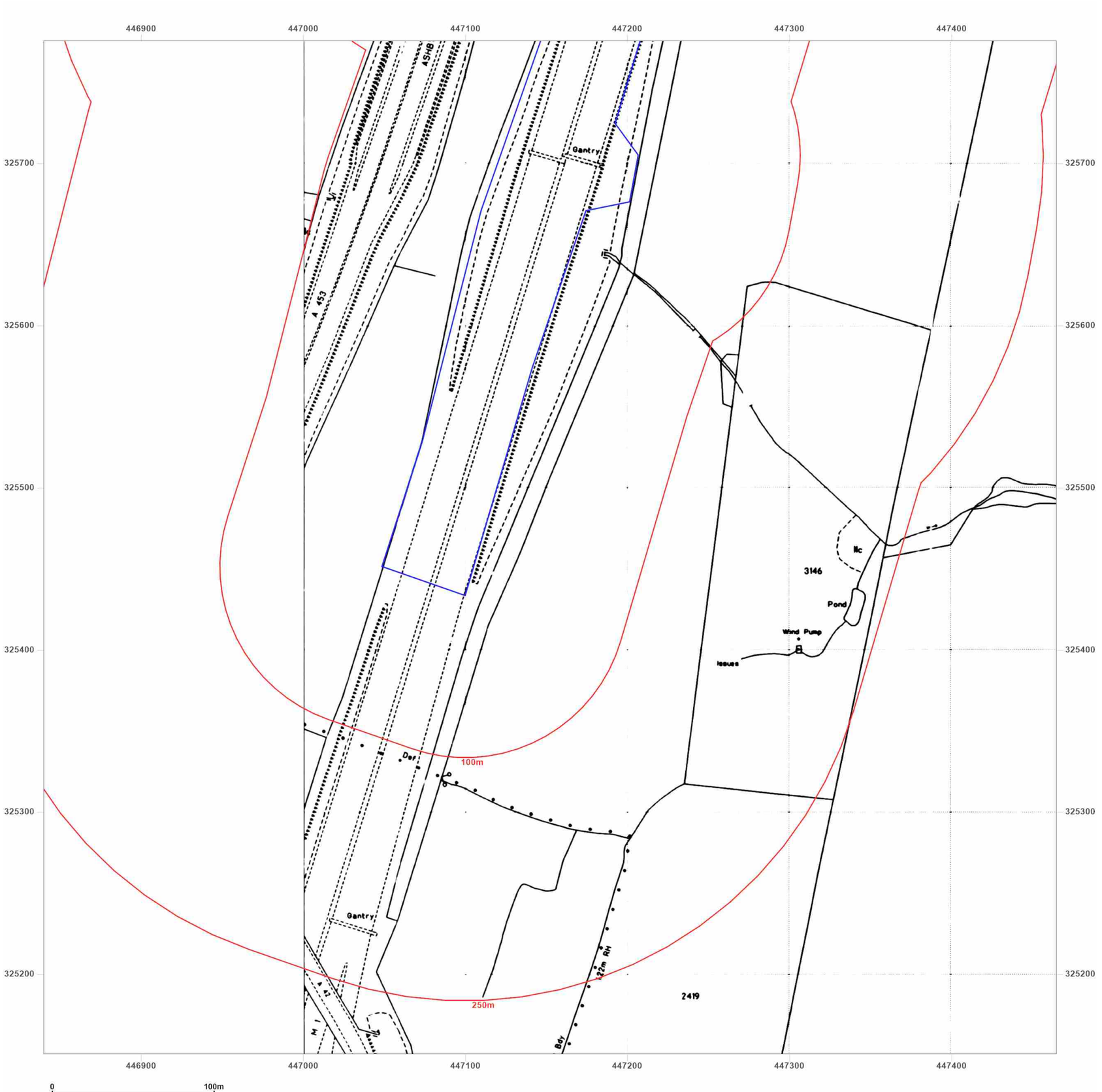
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_1
Grid Ref: 447152, 325463

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

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

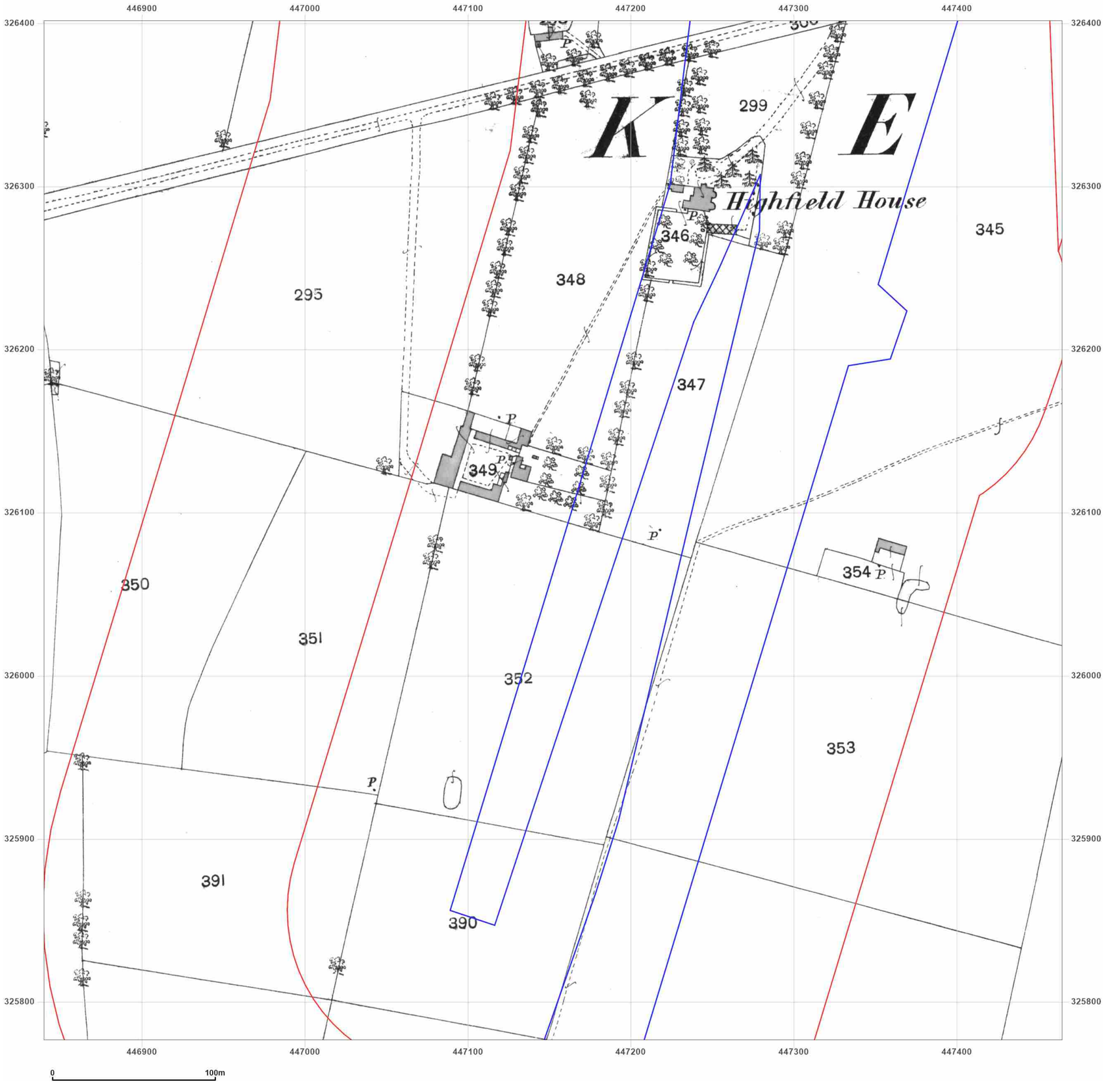
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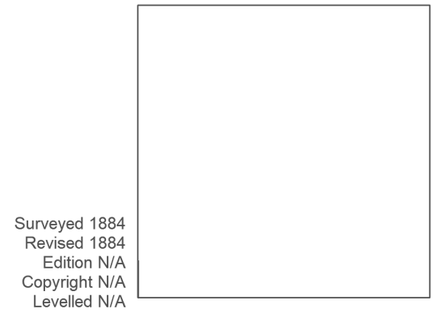
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

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

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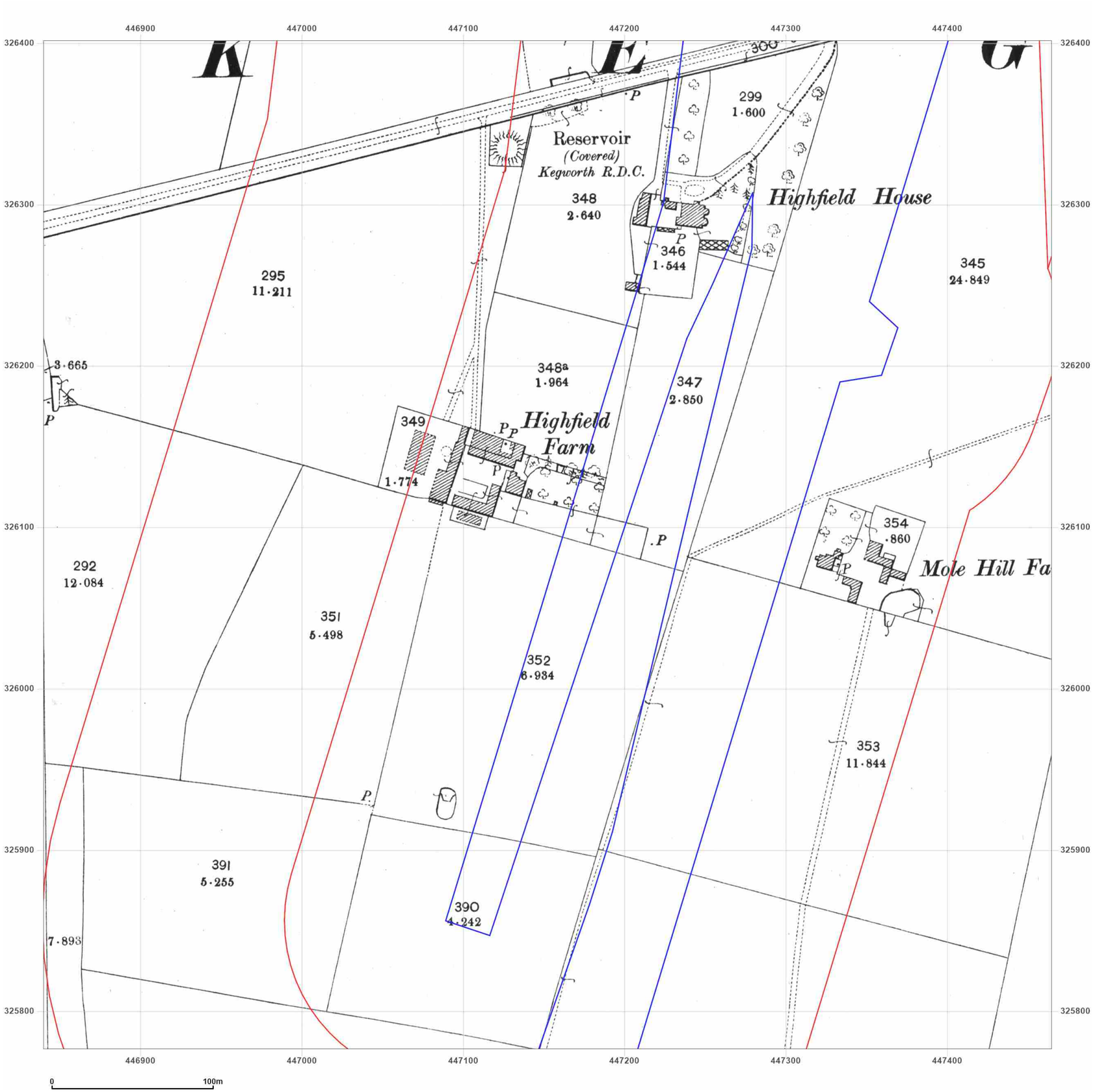
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: County Series

Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

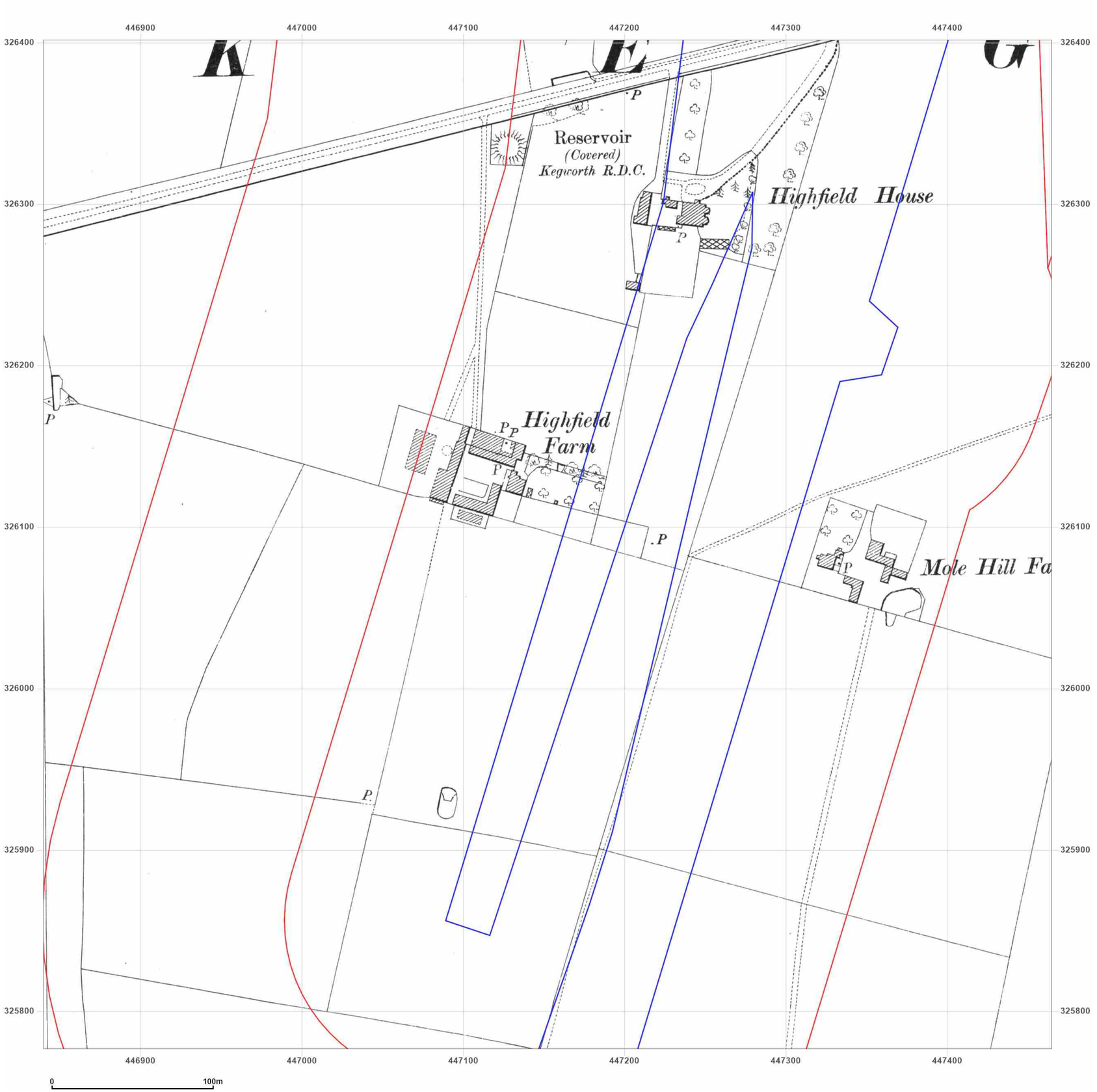
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: County Series
Map date: **1900-1903**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

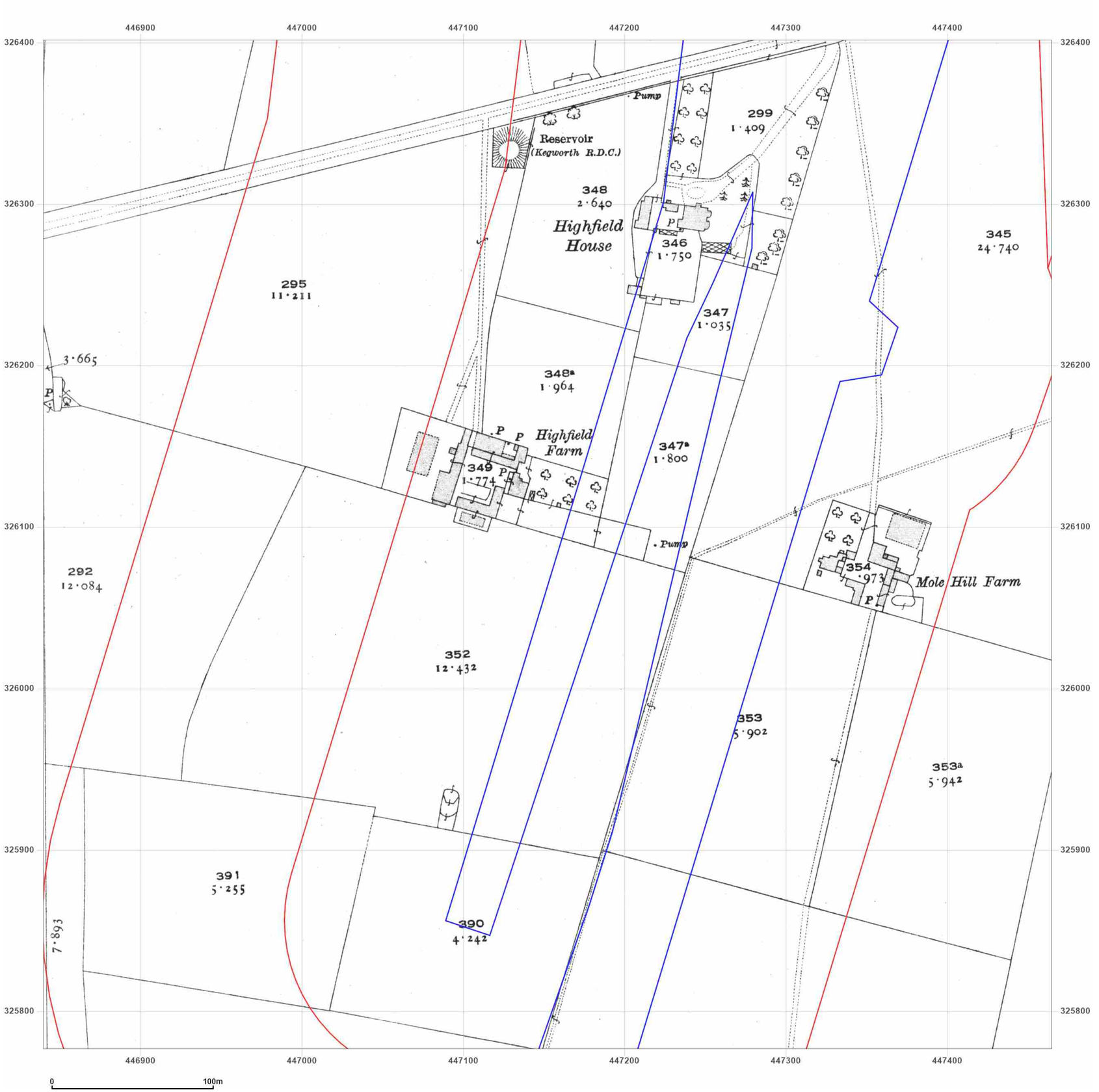
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: County Series

Map date: **1921**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

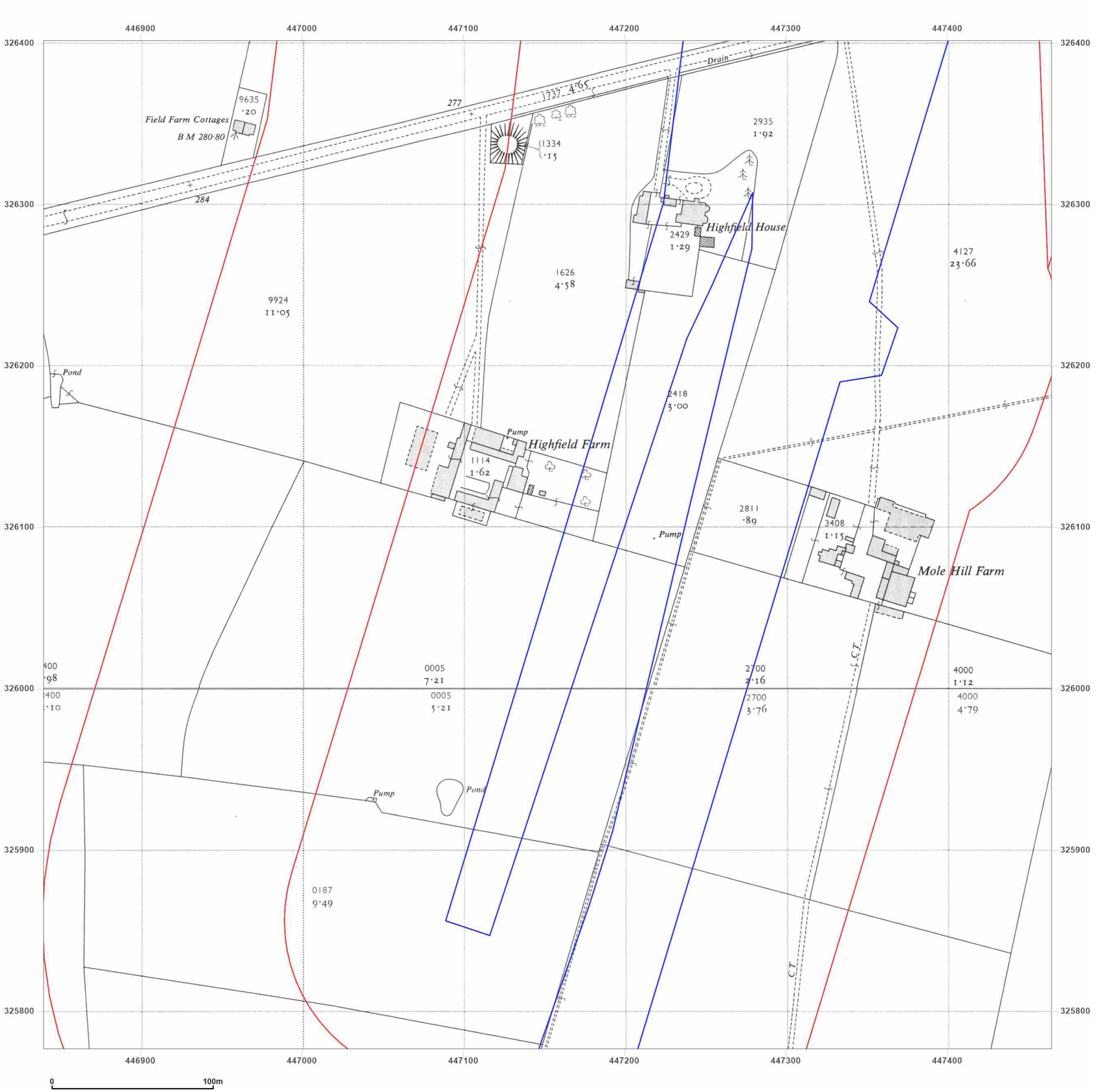
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

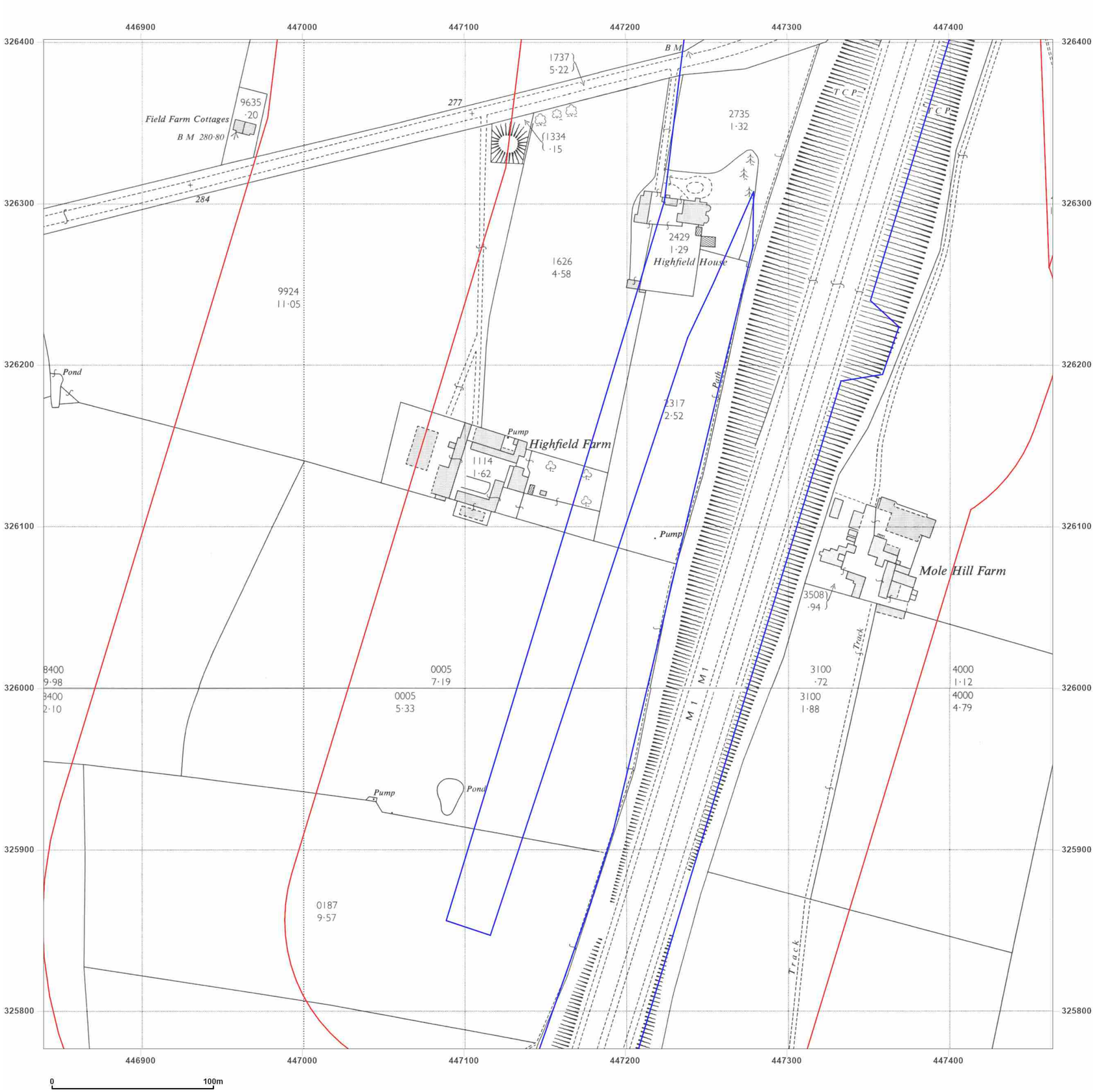
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1944

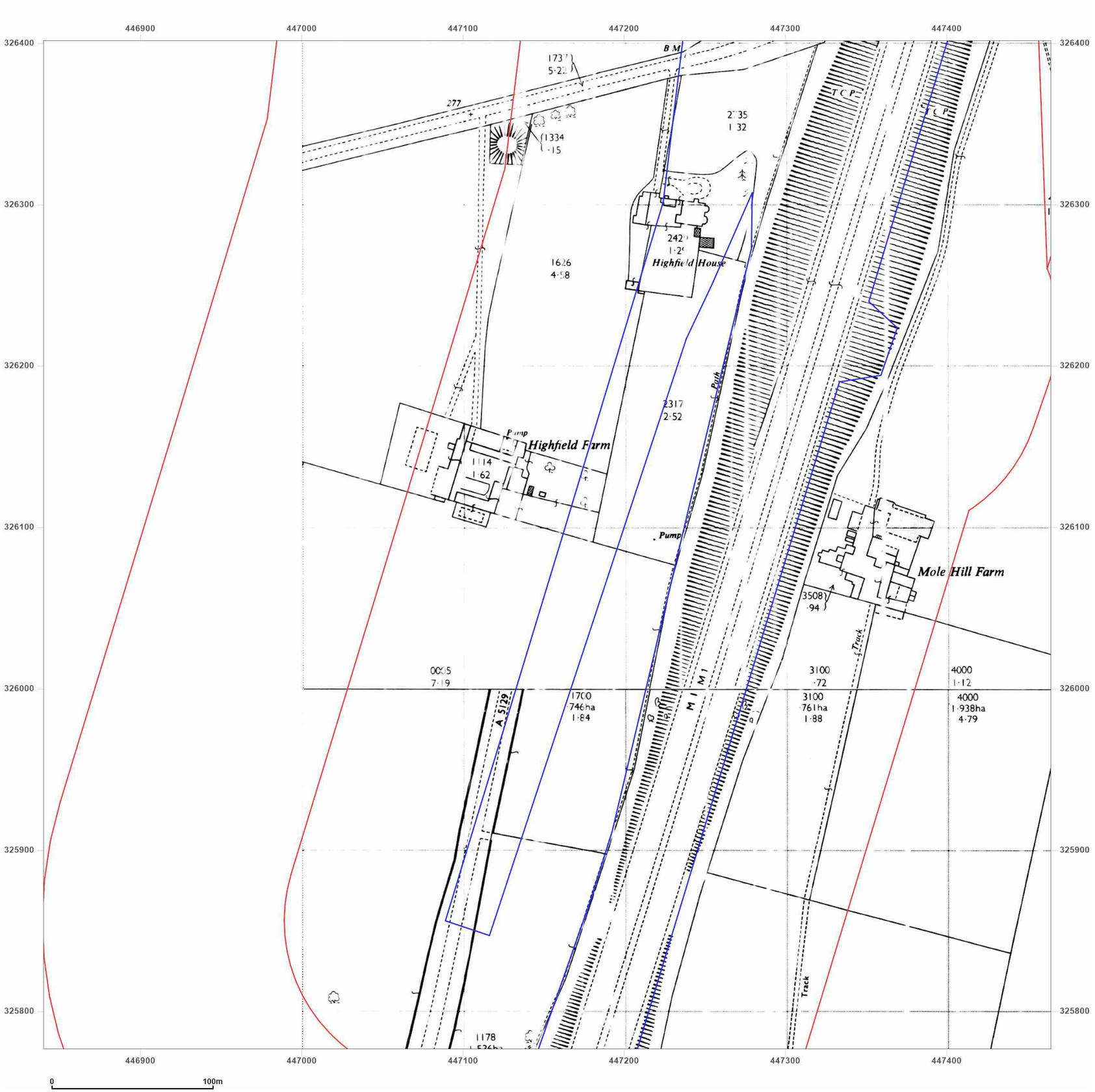
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Production date: 13 December 2024

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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: National Grid

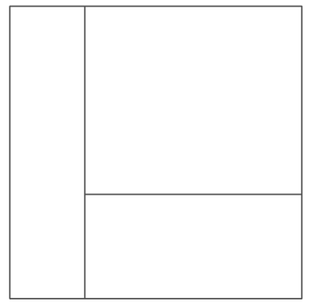
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Scale: 1:2,500

Printed at: 1:2,500

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



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

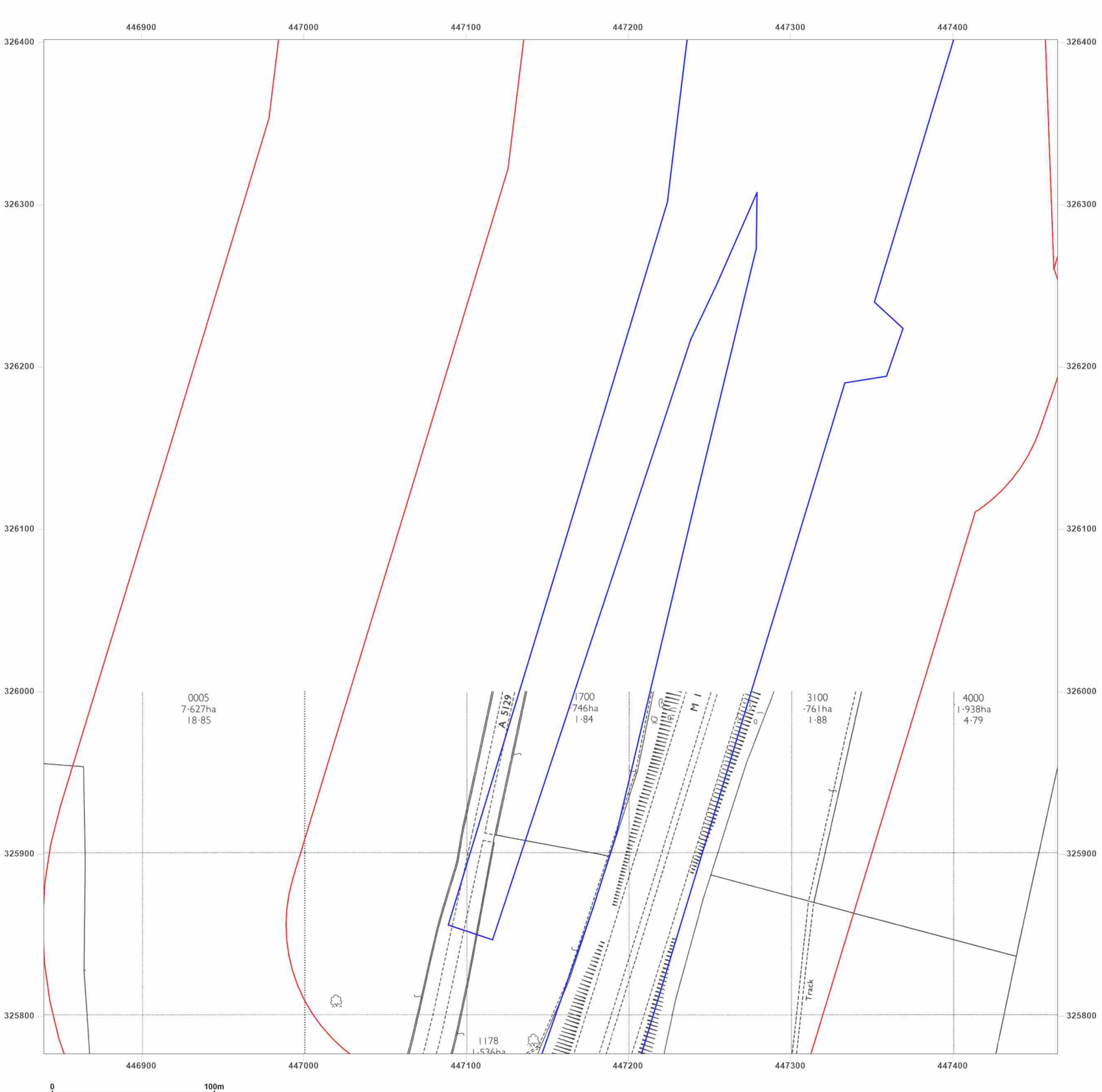
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1966

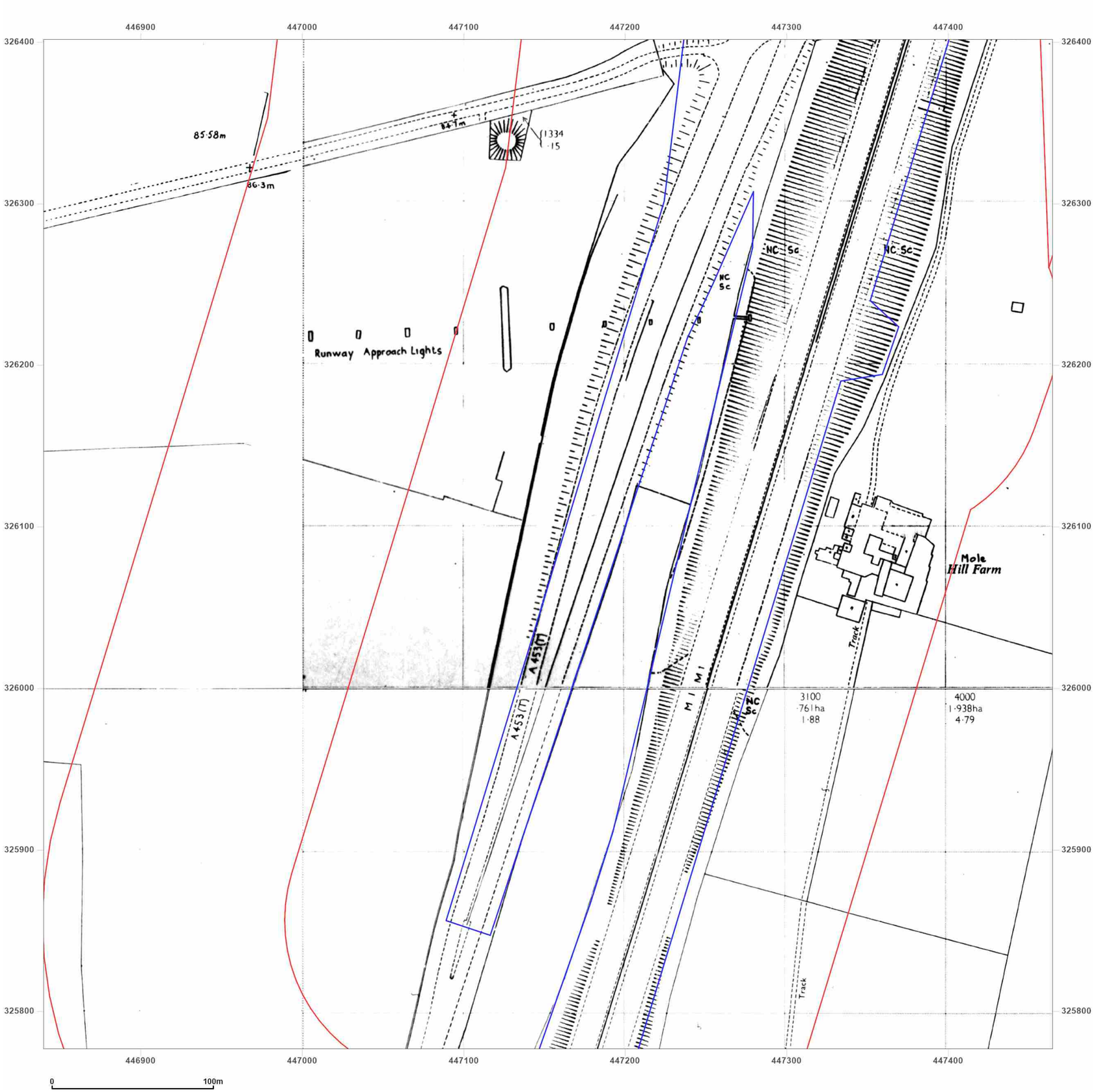
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: National Grid

Map date: **1984-1988**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1984
Levelled 1966

Surveyed 1966
Revised 1988
Edition N/A
Copyright 1988
Levelled 1966

Surveyed 1966
Revised 1984
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Surveyed 1966
Revised 1988
Edition N/A
Copyright 1988
Levelled 1966

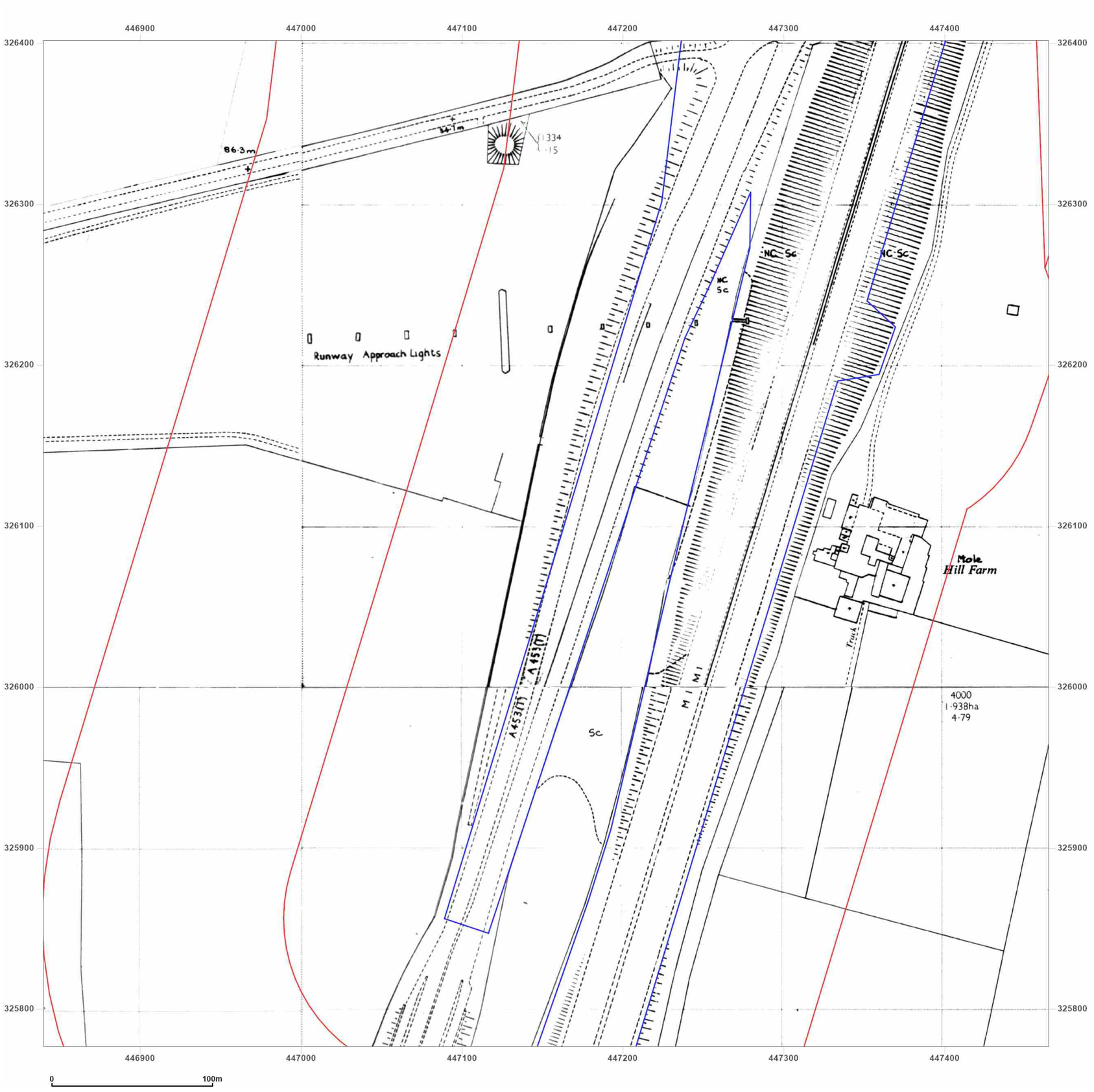
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: National Grid
Map date: **1989-1991**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

Surveyed 1966
Revised 1989
Edition N/A
Copyright 1989
Levelled 1966

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

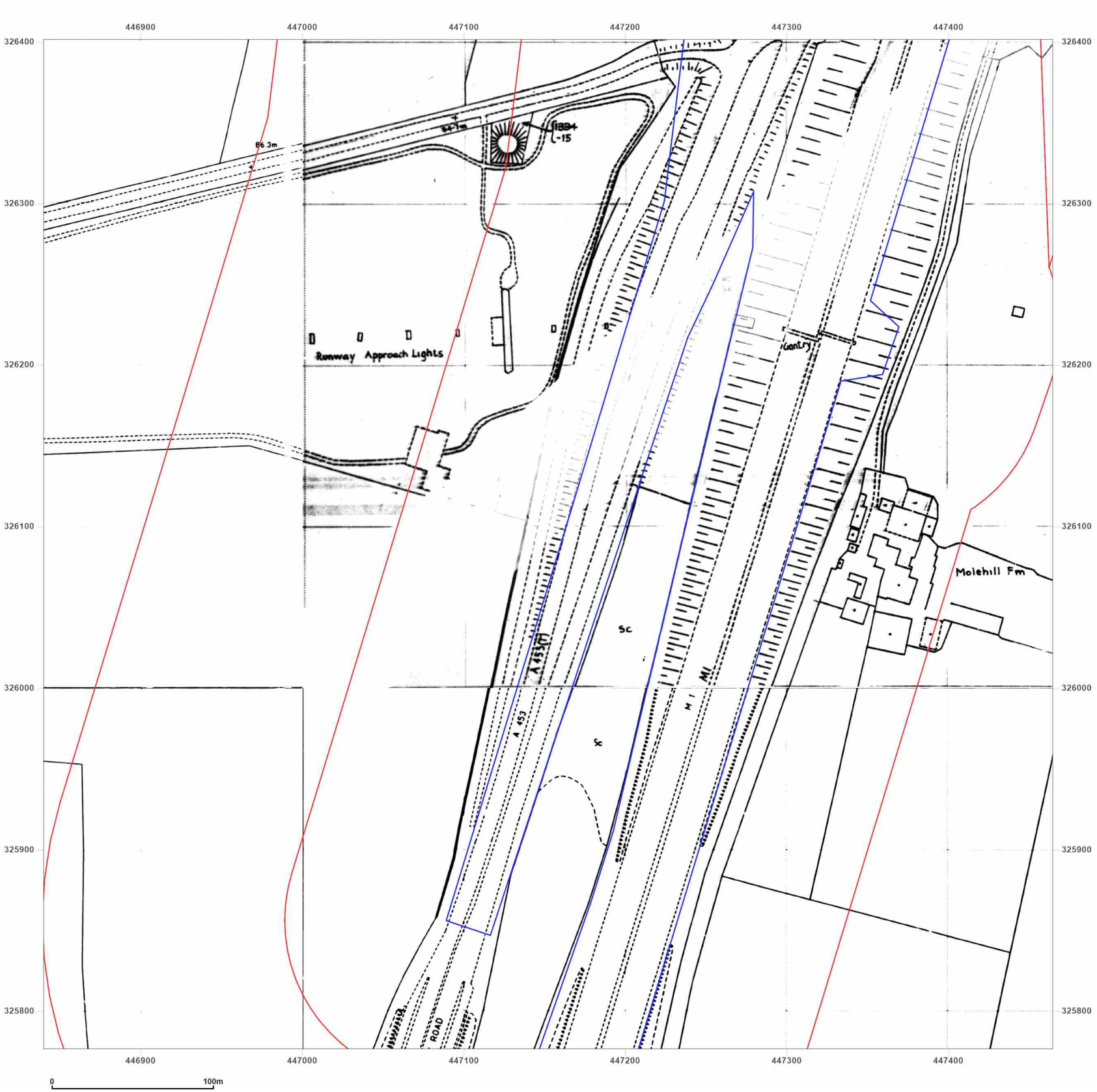
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Site Details:

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M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed N/A
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

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

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Revised N/A
Edition N/A
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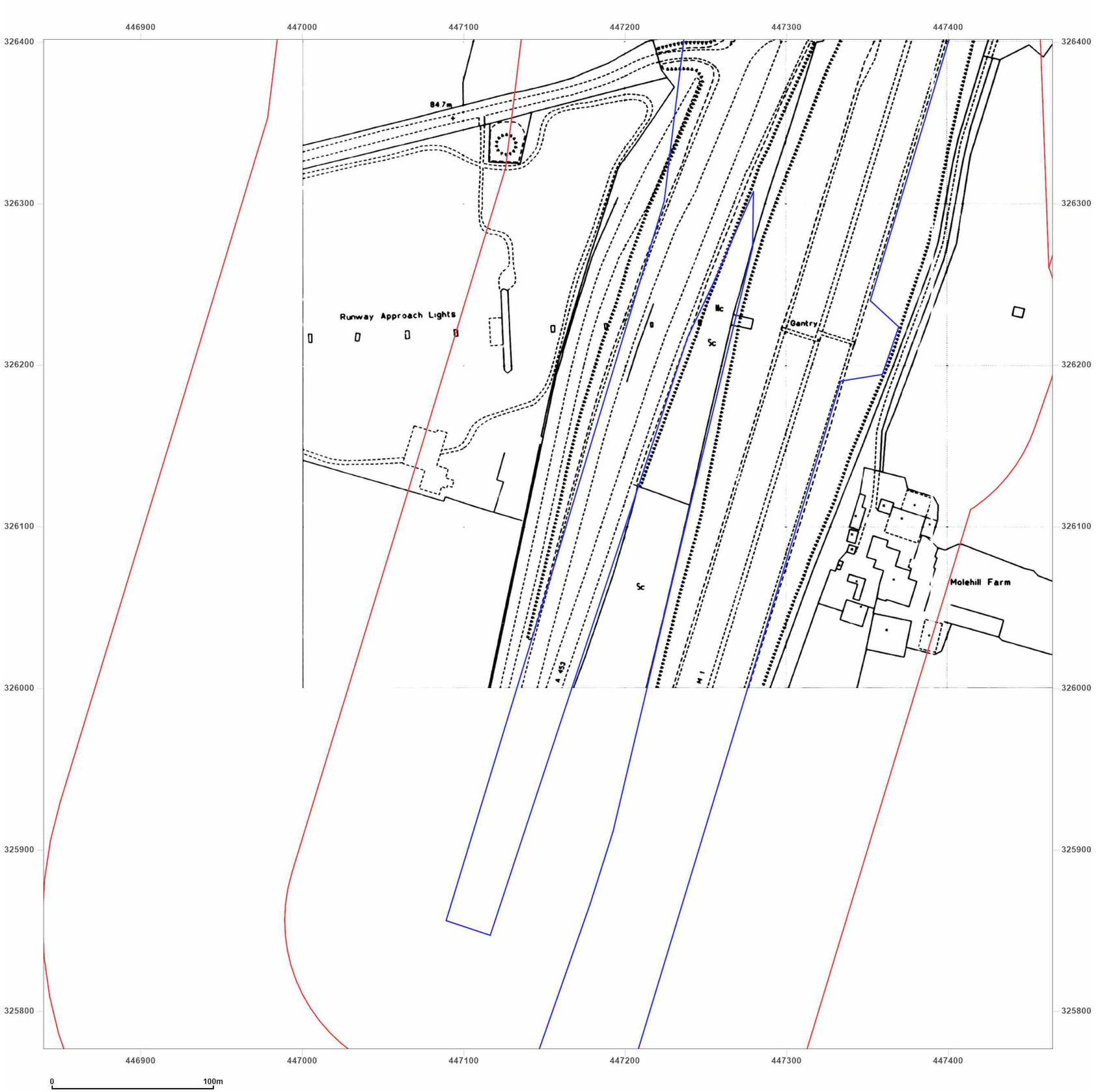
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_2
Grid Ref: 447152, 326089

Map Name: National Grid

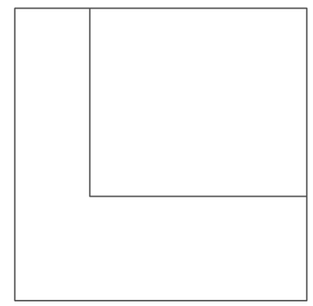
Map date: **1993**

Scale: 1:2,500

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



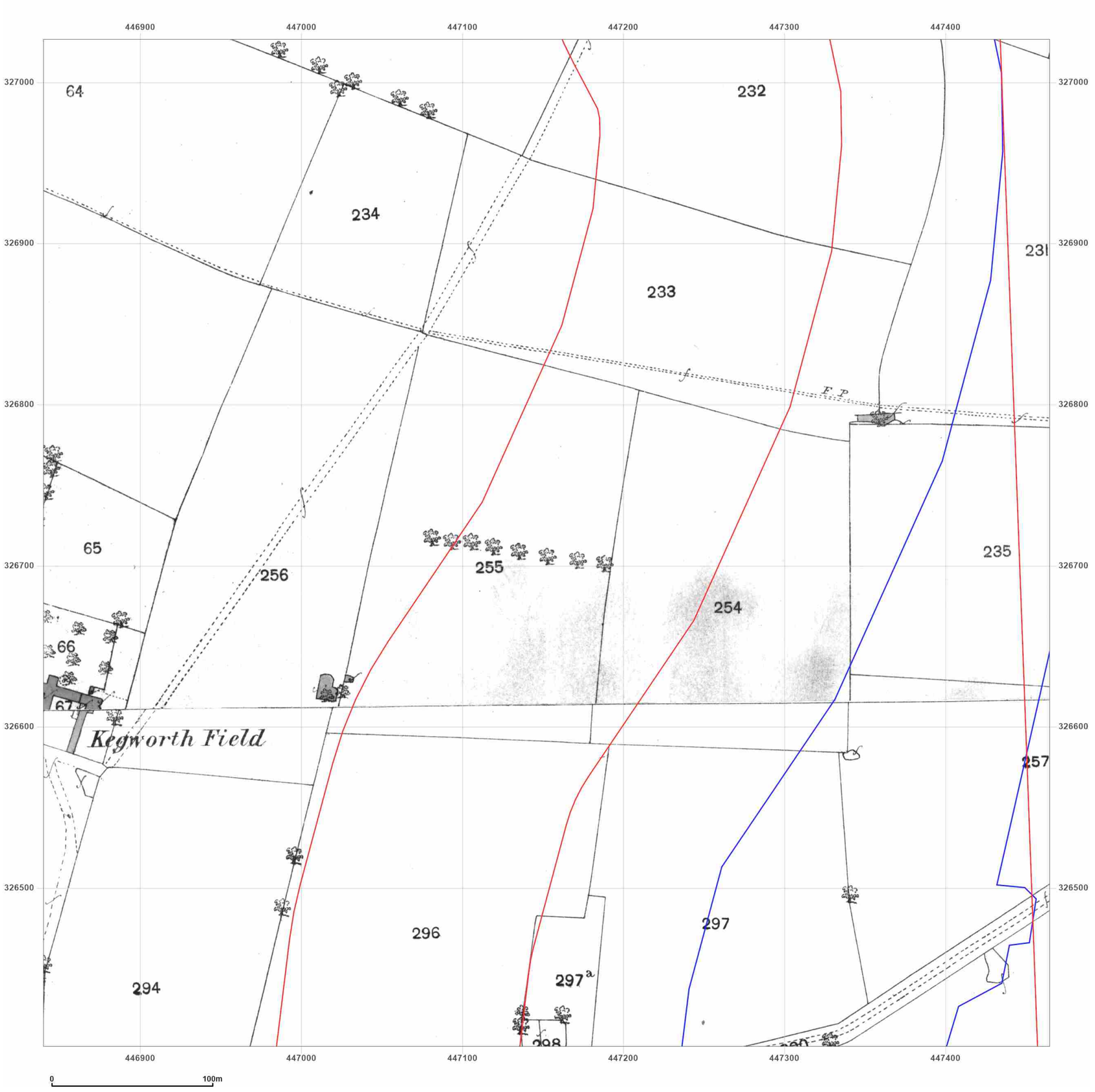
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: County Series

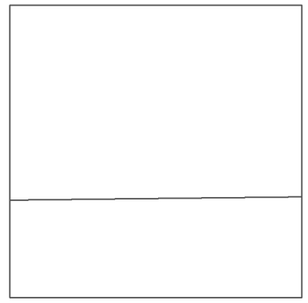
Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

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



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

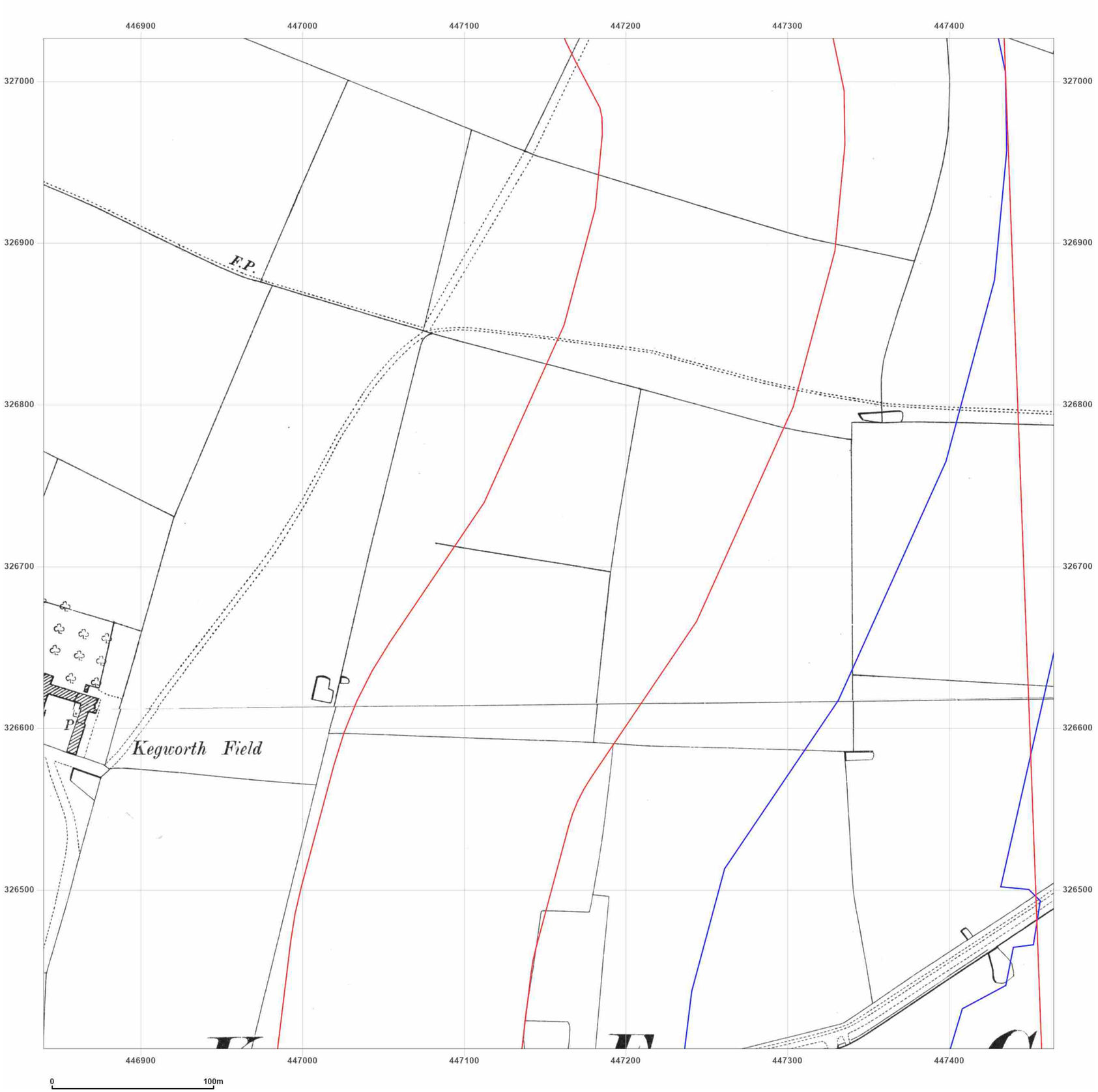
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: County Series

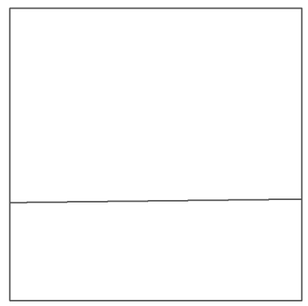
Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

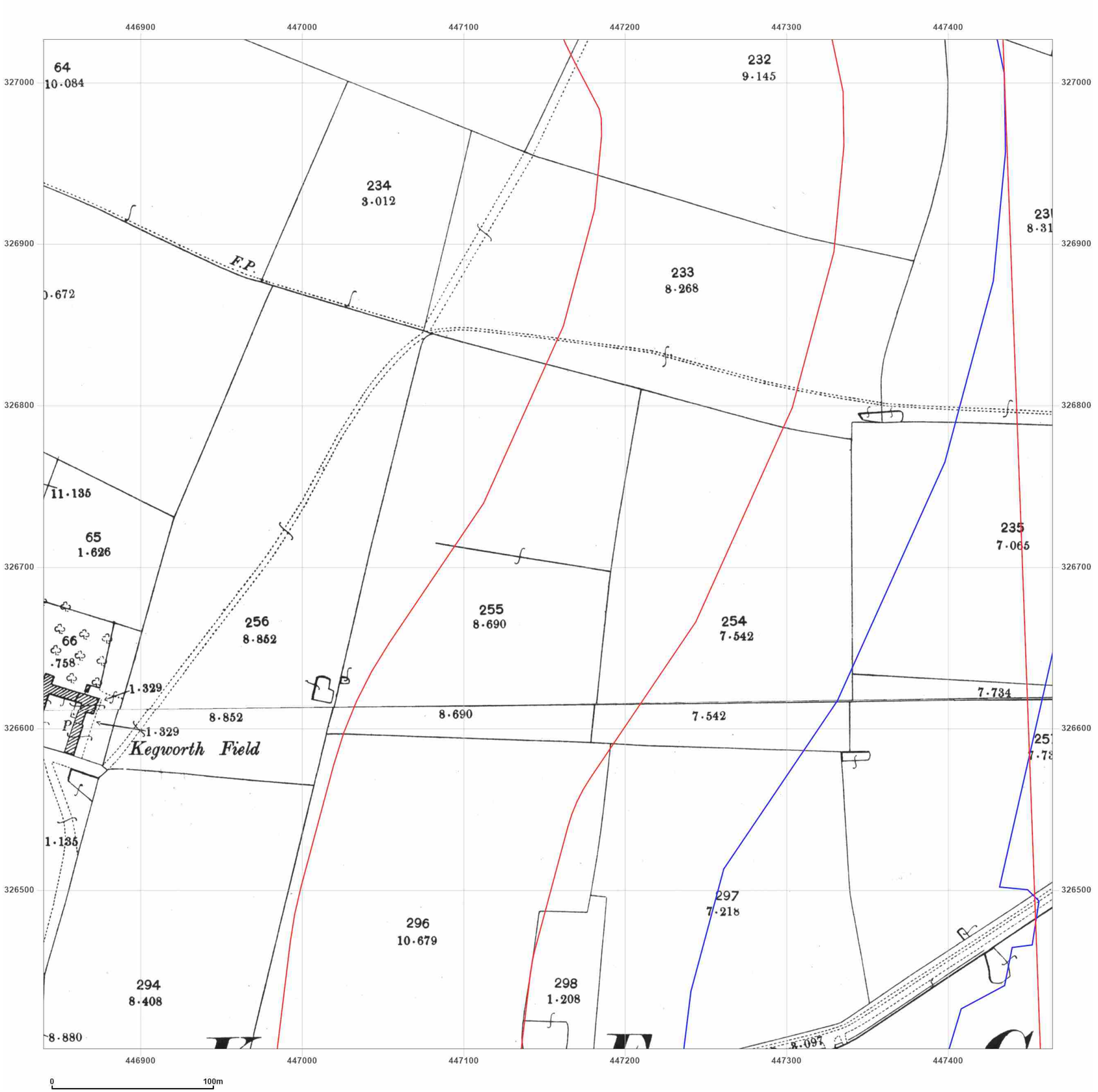
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Groundsure INSIGHTS

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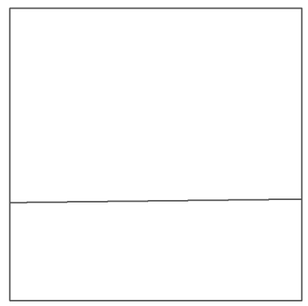
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M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

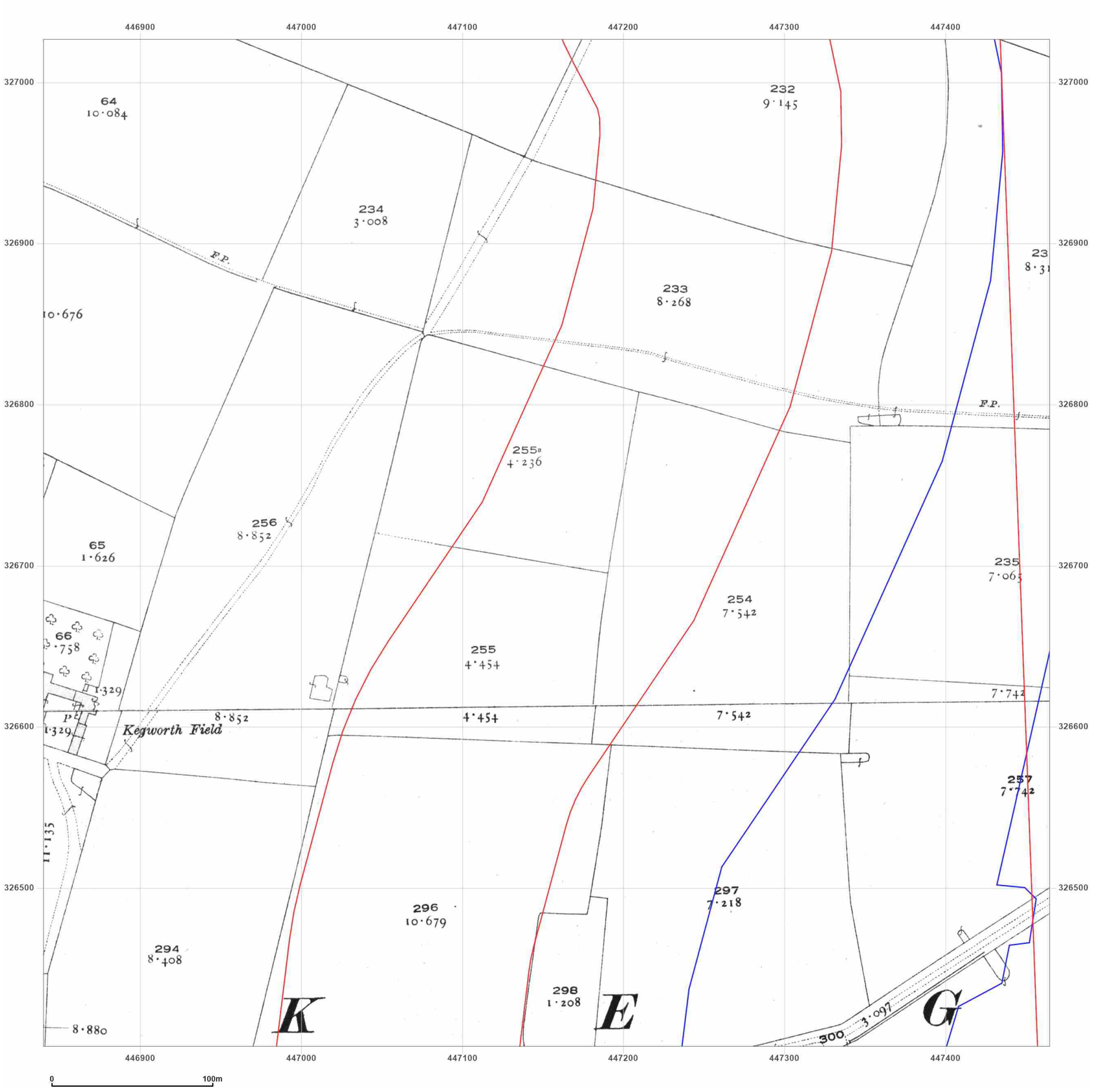
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: County Series

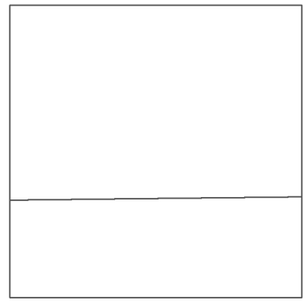
Map date: **1921**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

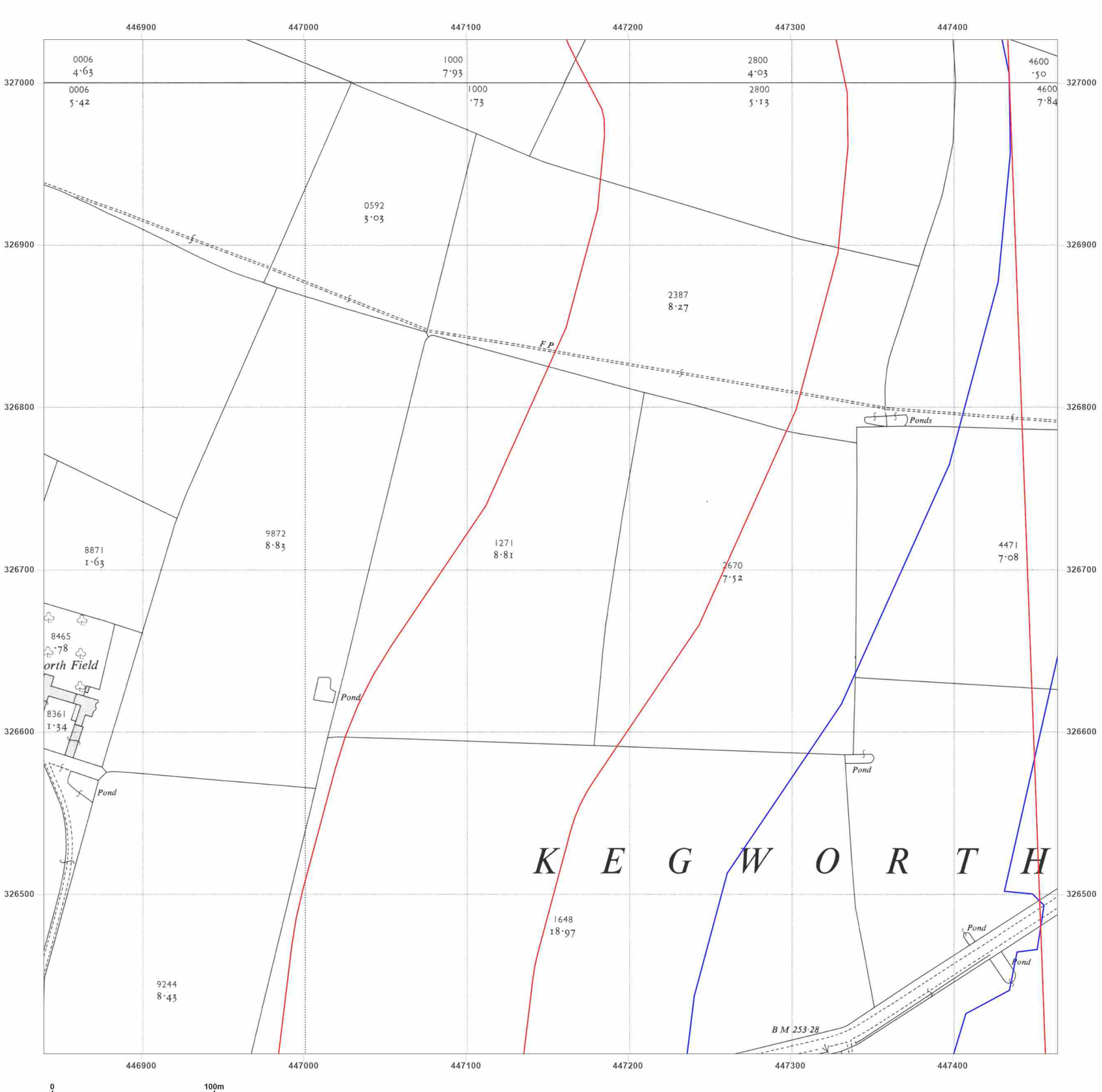
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Map legend available at:
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: National Grid

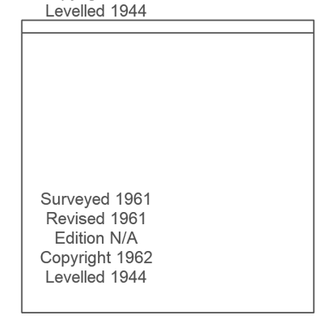
Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944



Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

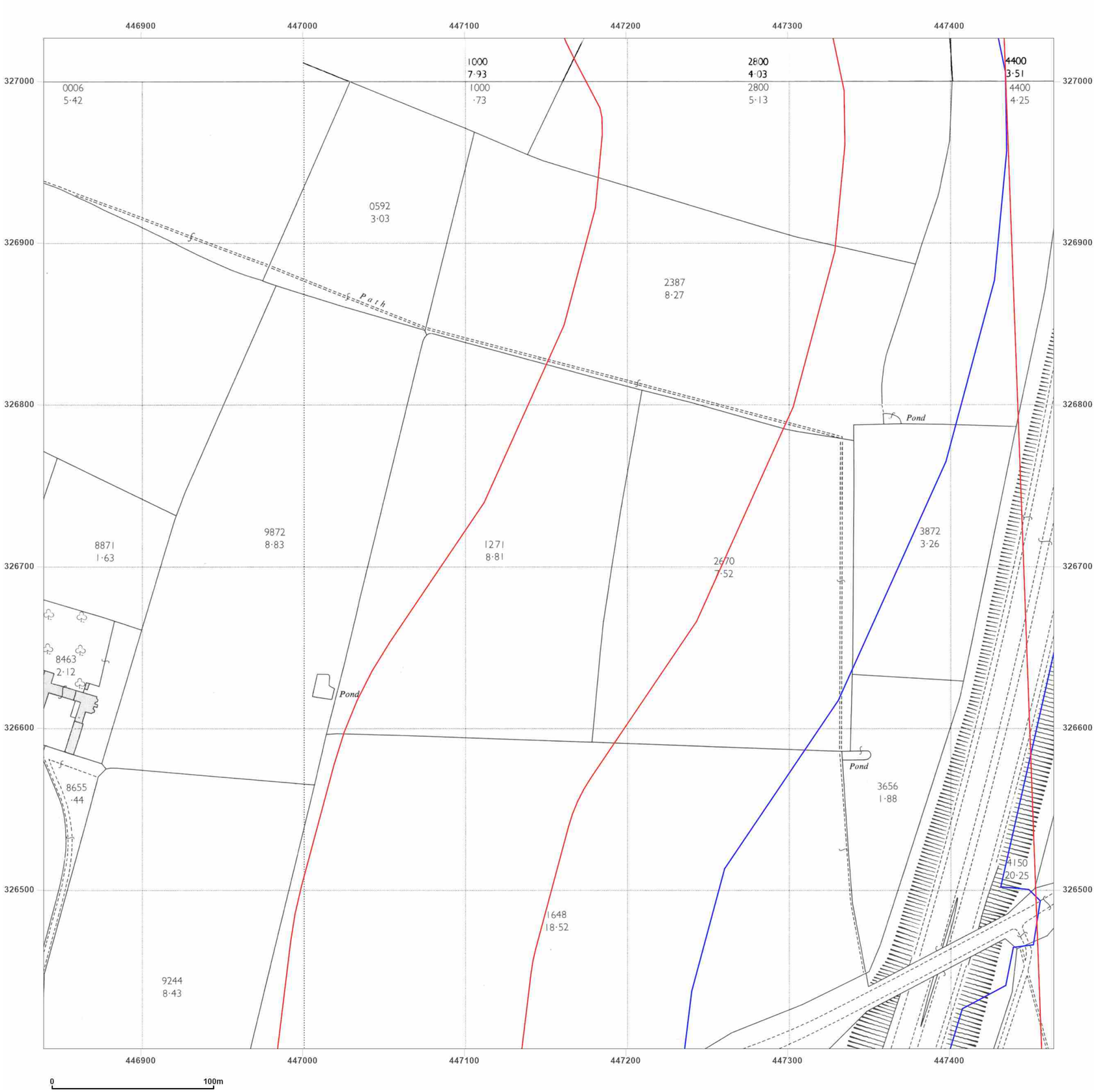
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

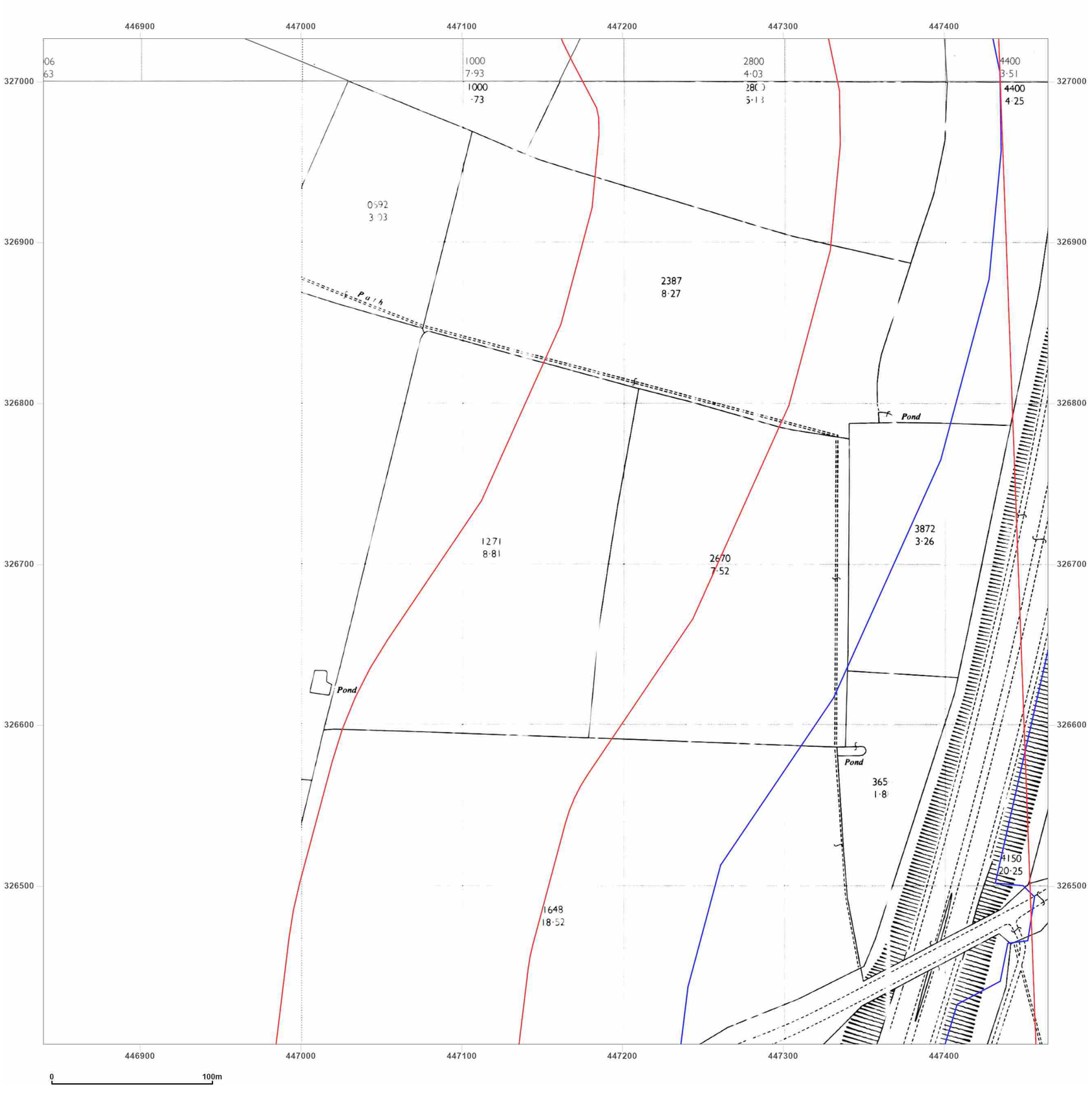
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

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

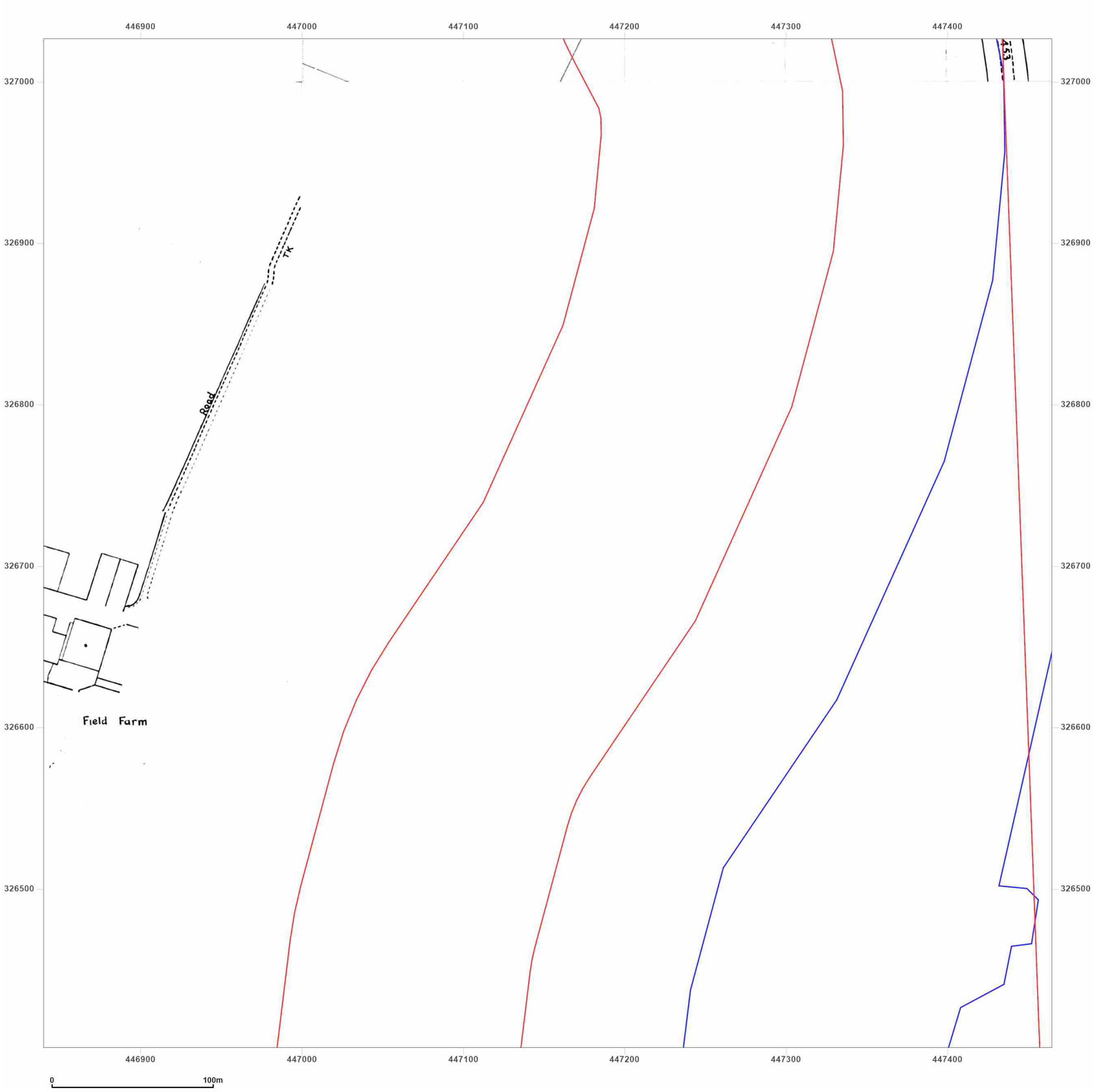
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: National Grid

Map date: **1982-1984**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1982
Levelled 1966

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1984
Levelled 1966

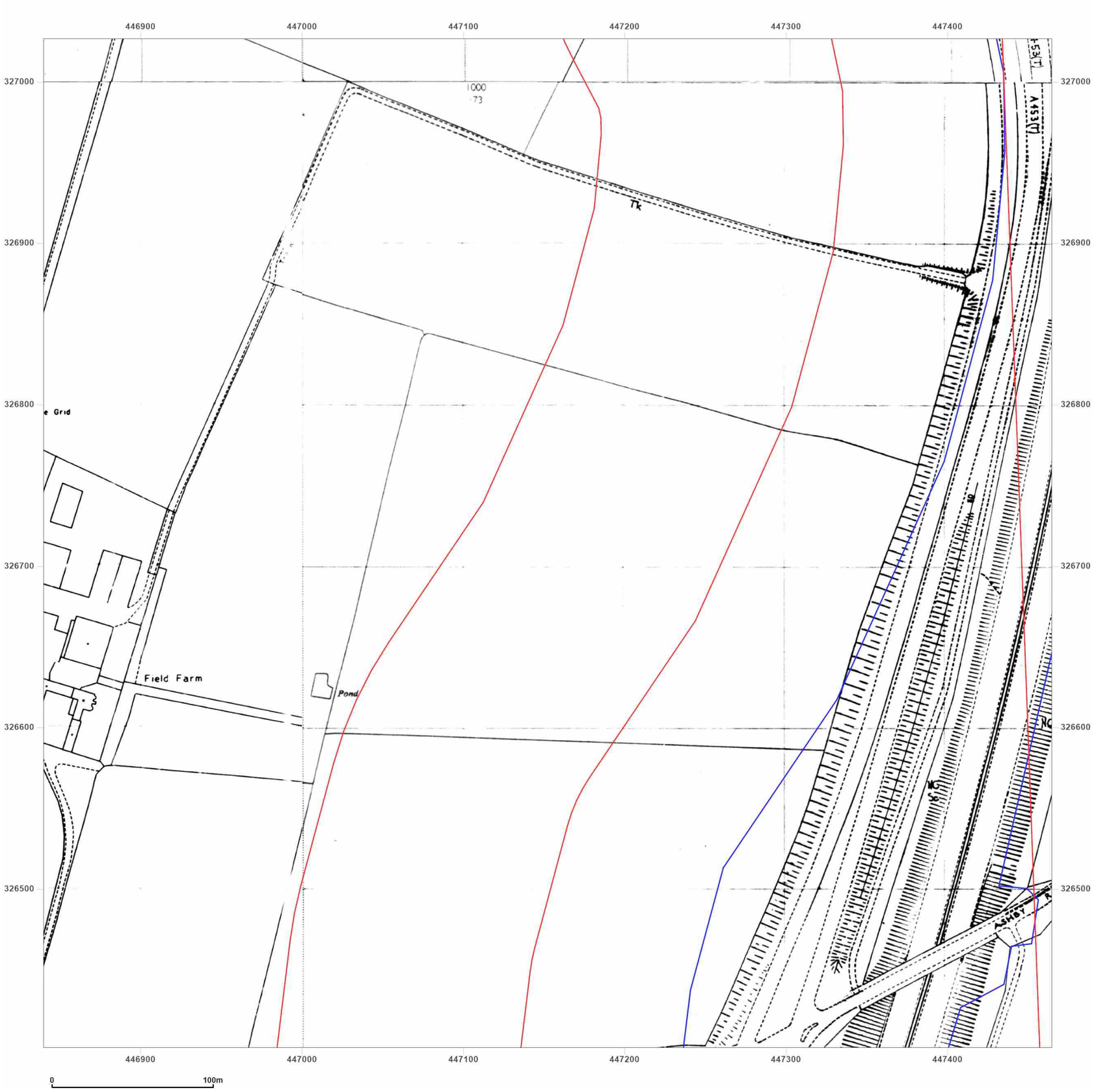
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: National Grid
Map date: **1989-1993**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1966 Revised 1991 Edition N/A Copyright 1991 Levelled 1966	Surveyed N/A Revised N/A Edition N/A Copyright 1991 Levelled 1966
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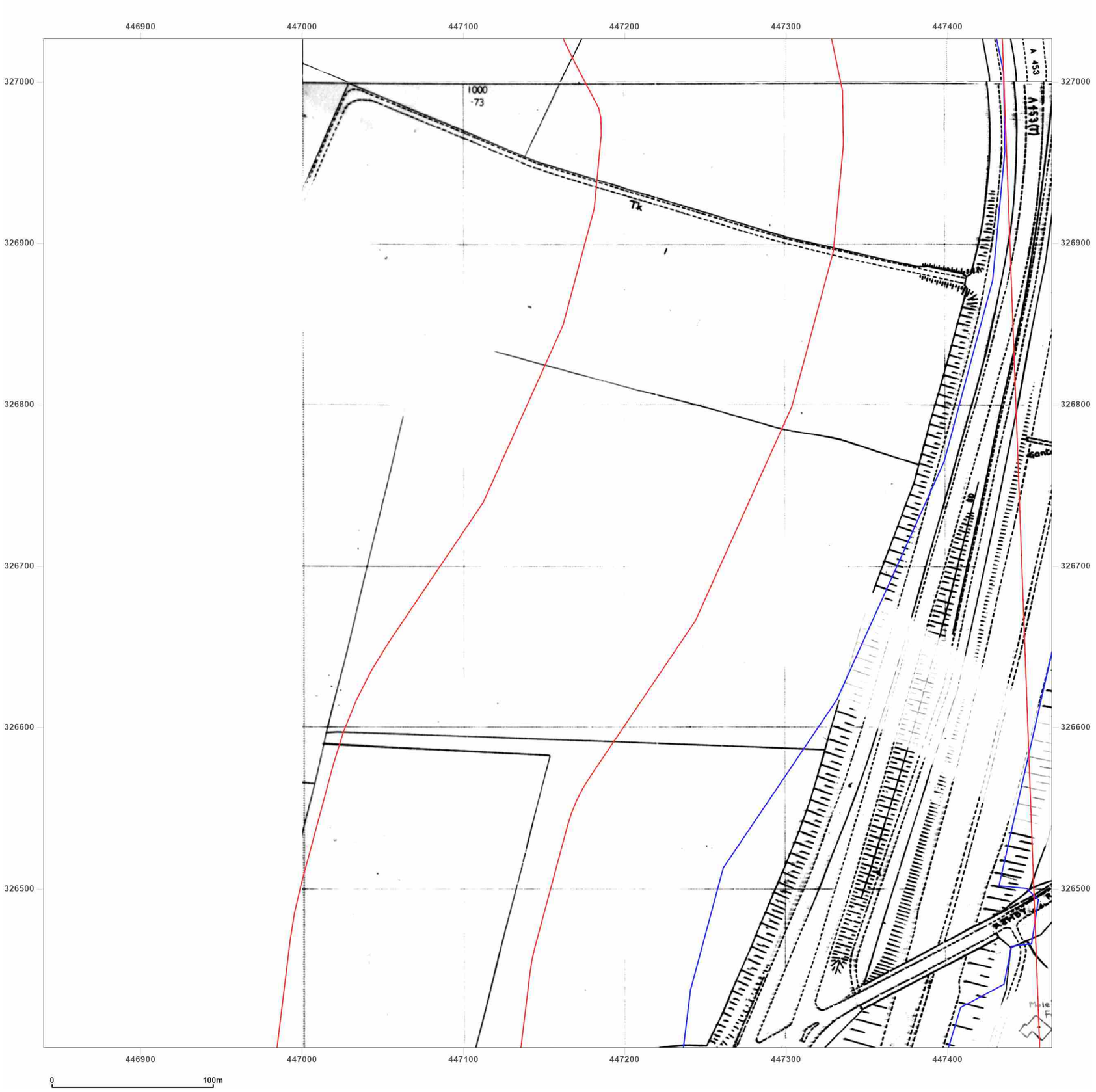
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed N/A
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

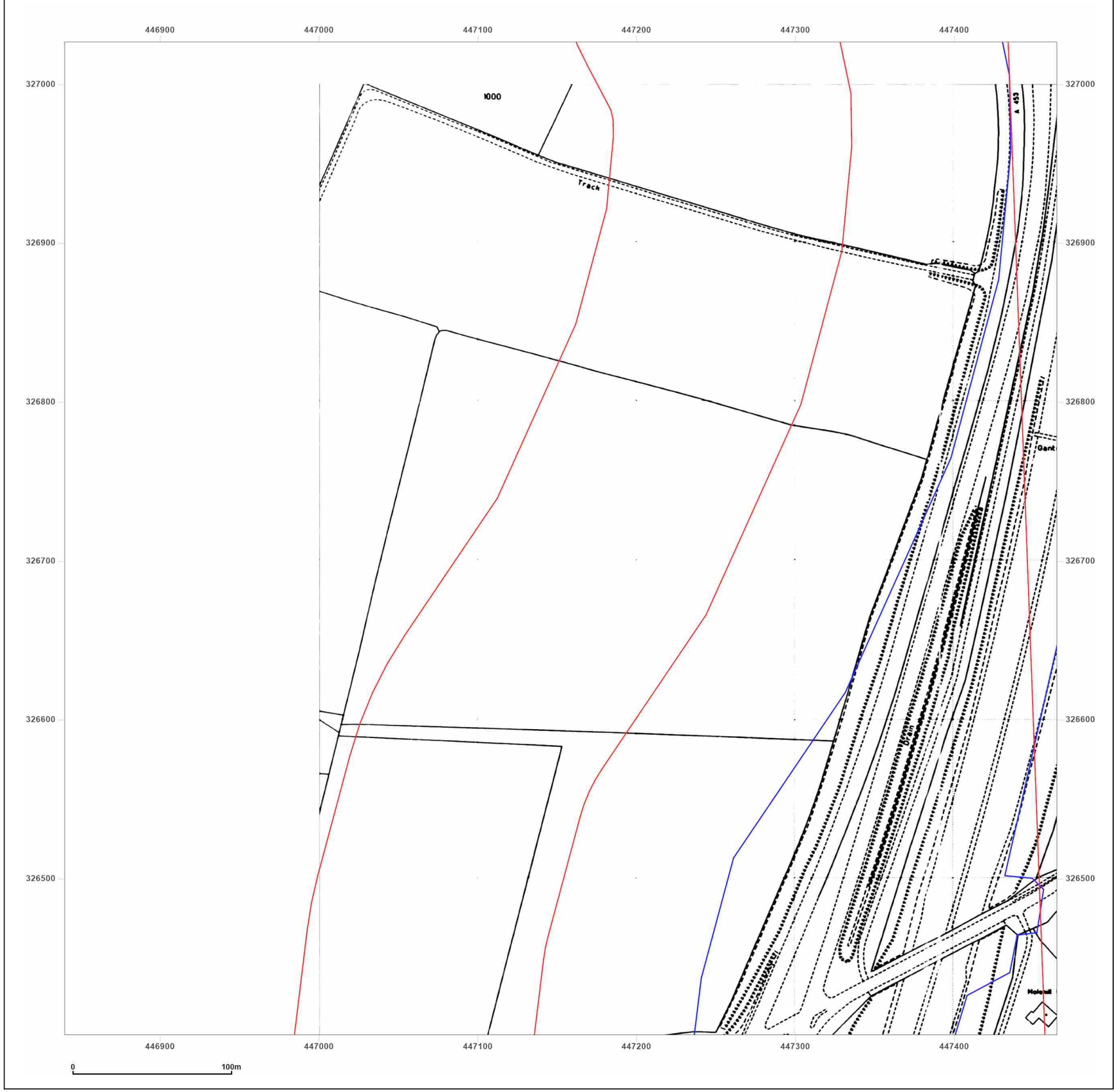
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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

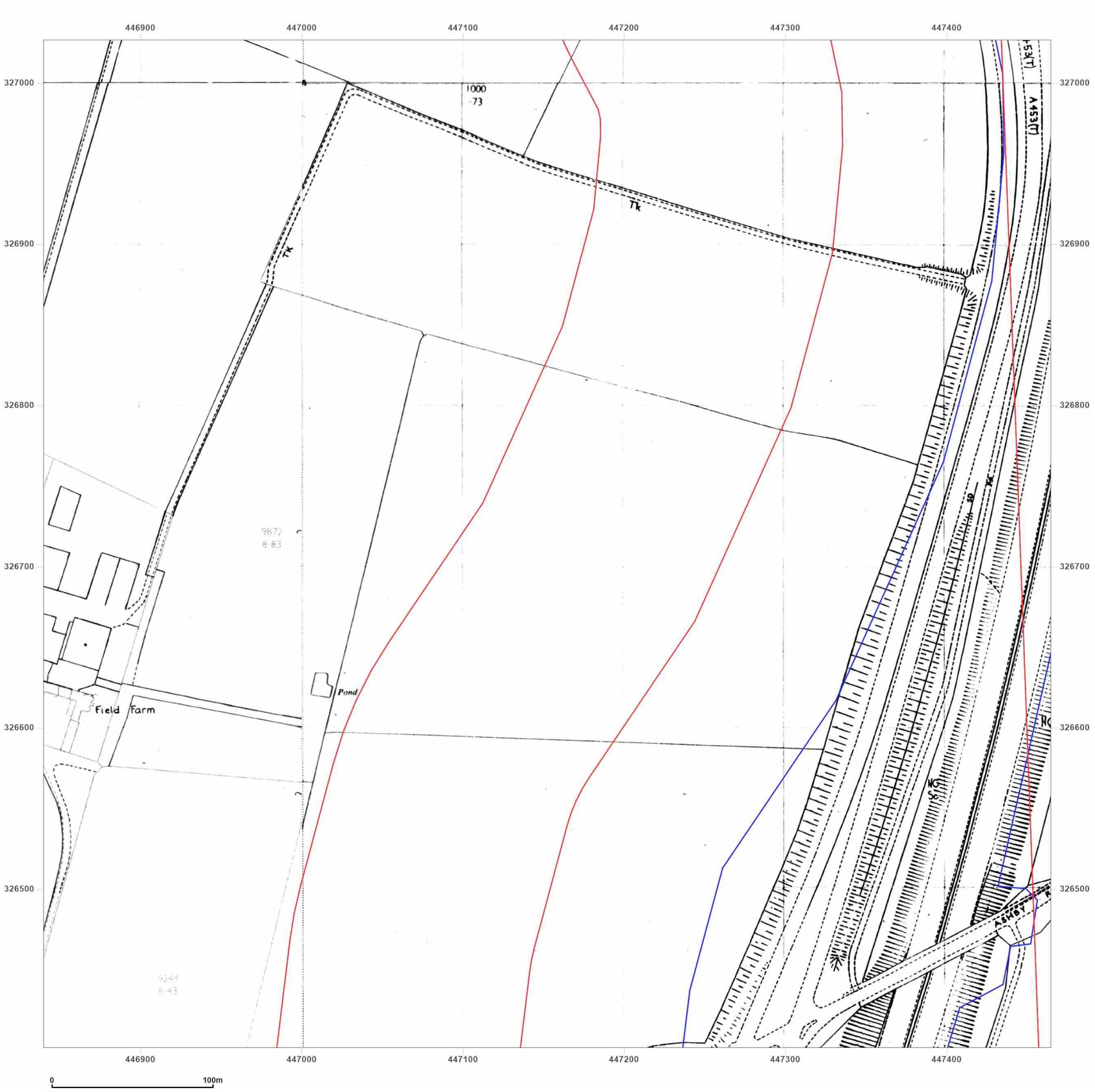
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_3
Grid Ref: 447152, 326714

Map Name: National Grid
Map date: **1988-1993**
Scale: 1:2,500
Printed at: 1:2,500

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1988
Levelled 1966

Surveyed 1966
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Edition N/A
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Levelled 1966

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Edition N/A
Copyright 1988
Levelled 1966

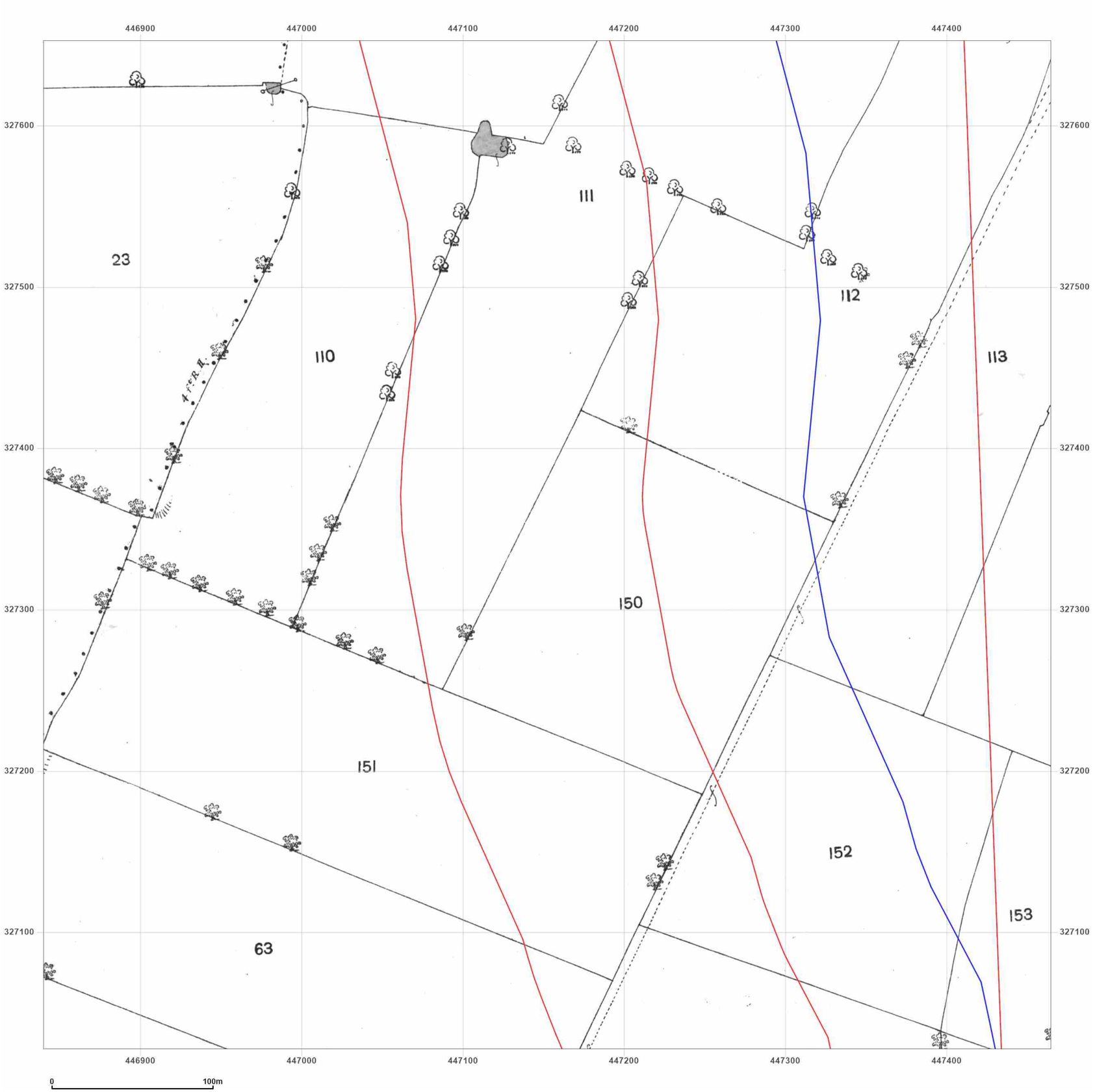
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

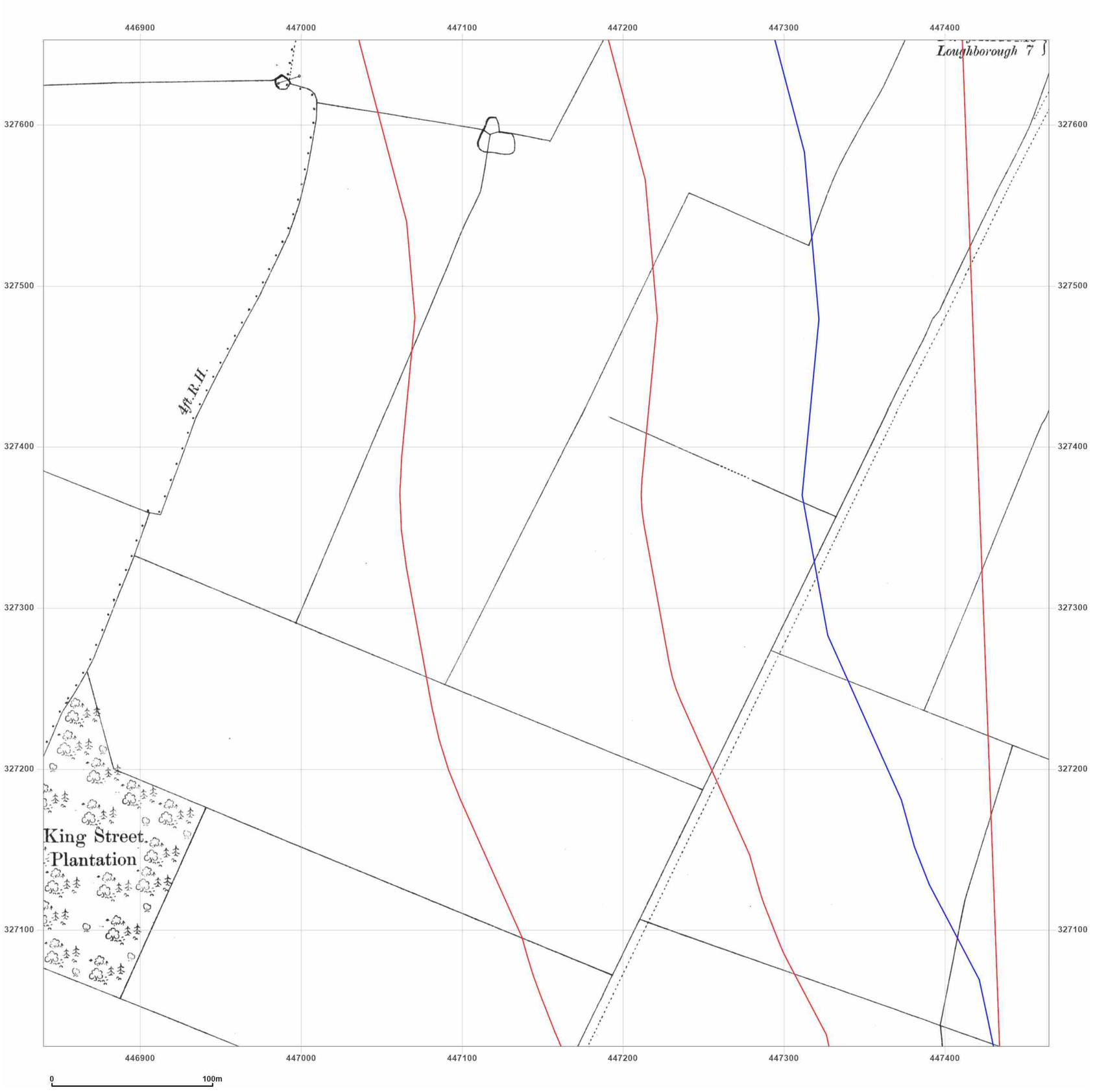
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

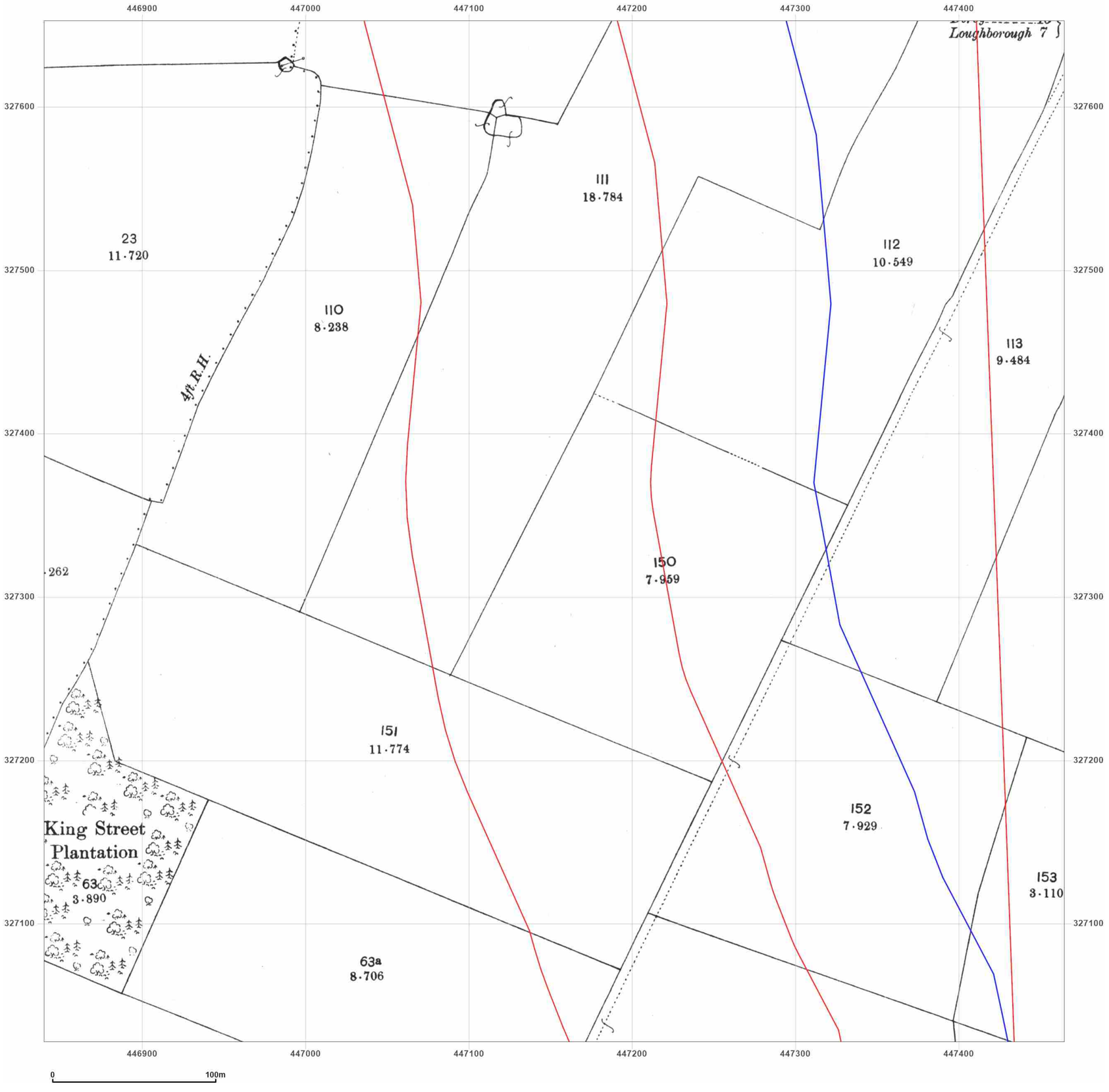
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

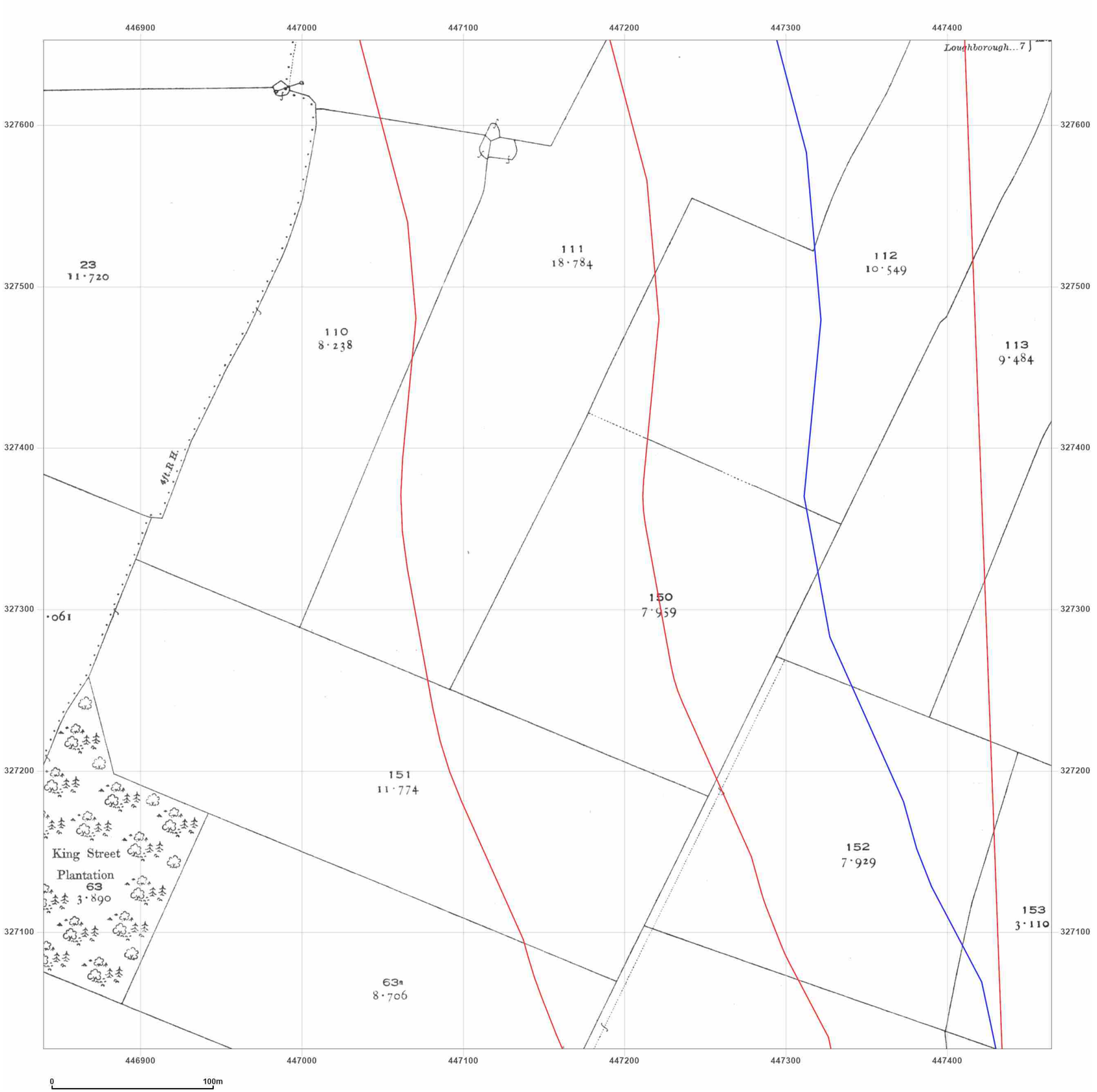
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: County Series
Map date: **1921**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

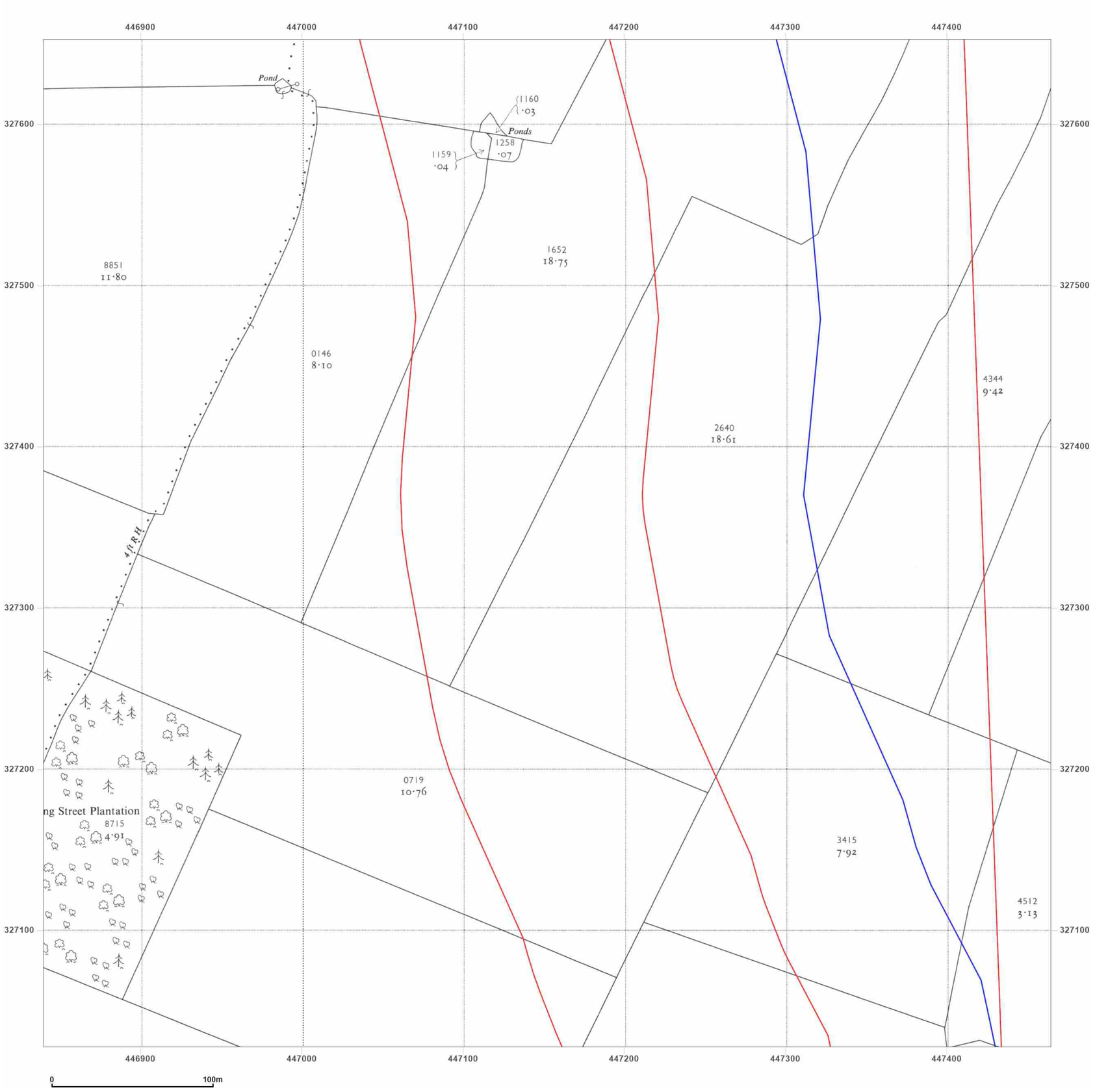
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

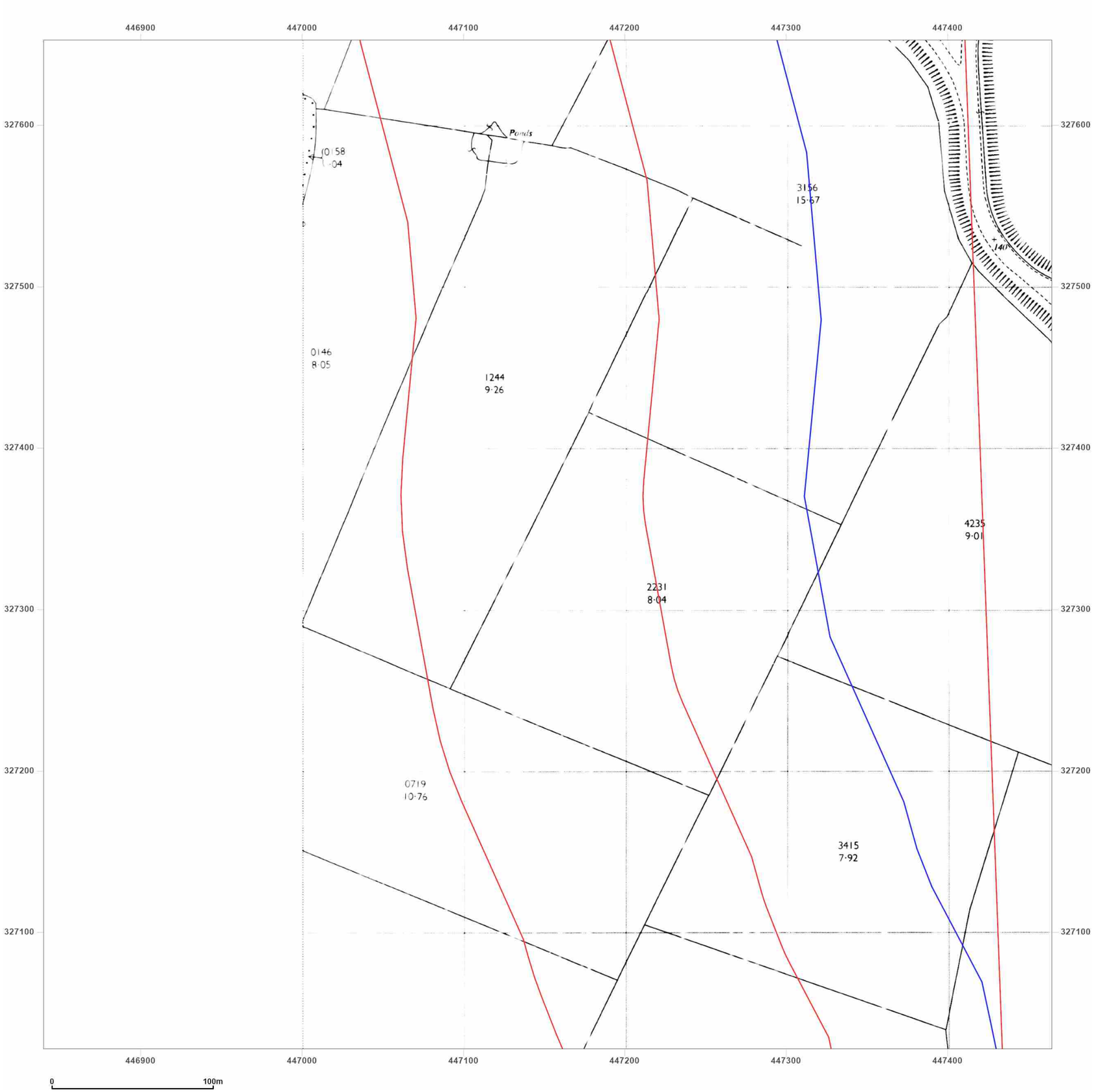
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

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

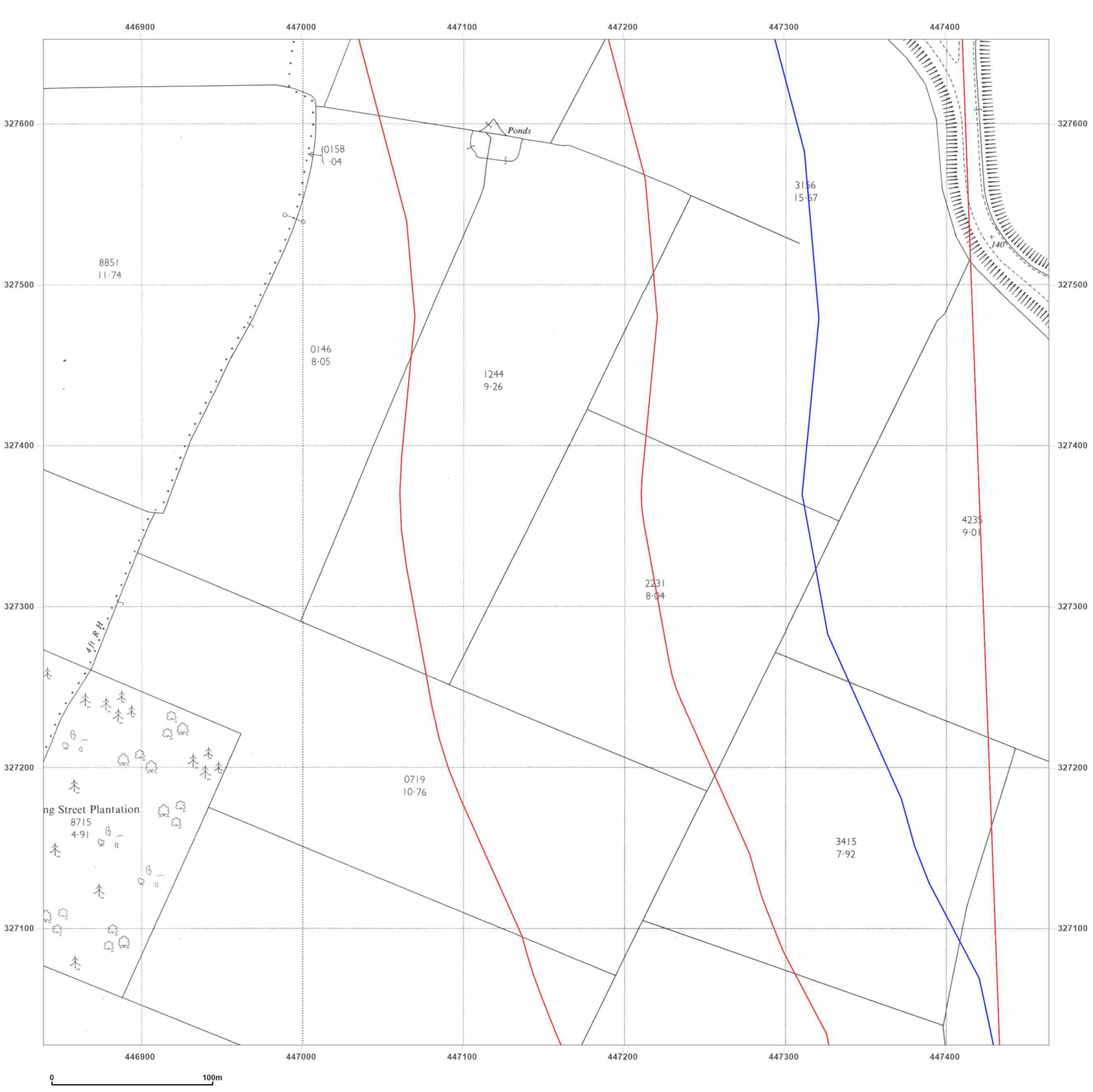
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

N
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S

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

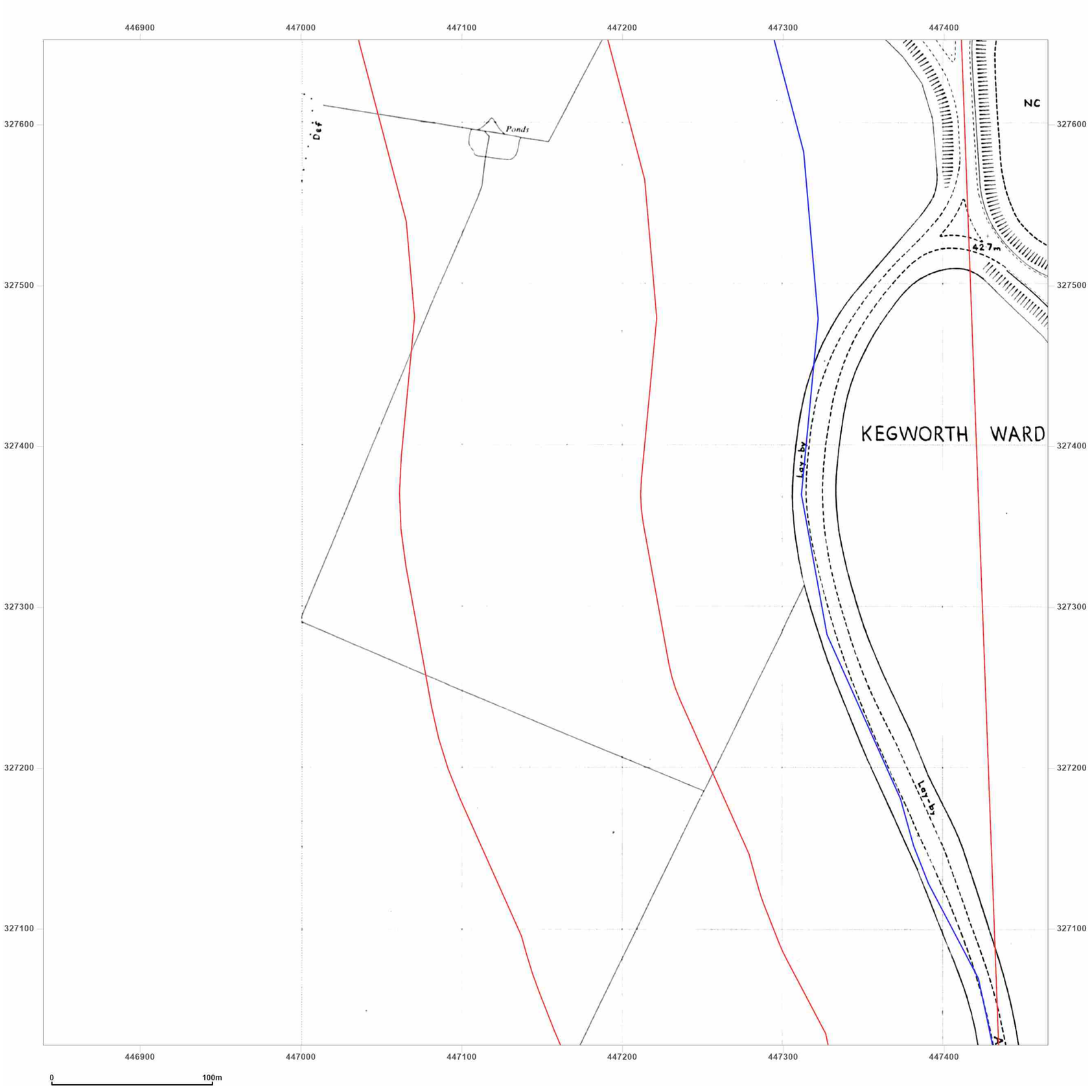
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: National Grid
Map date: **1982**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1982
Levelled 1966

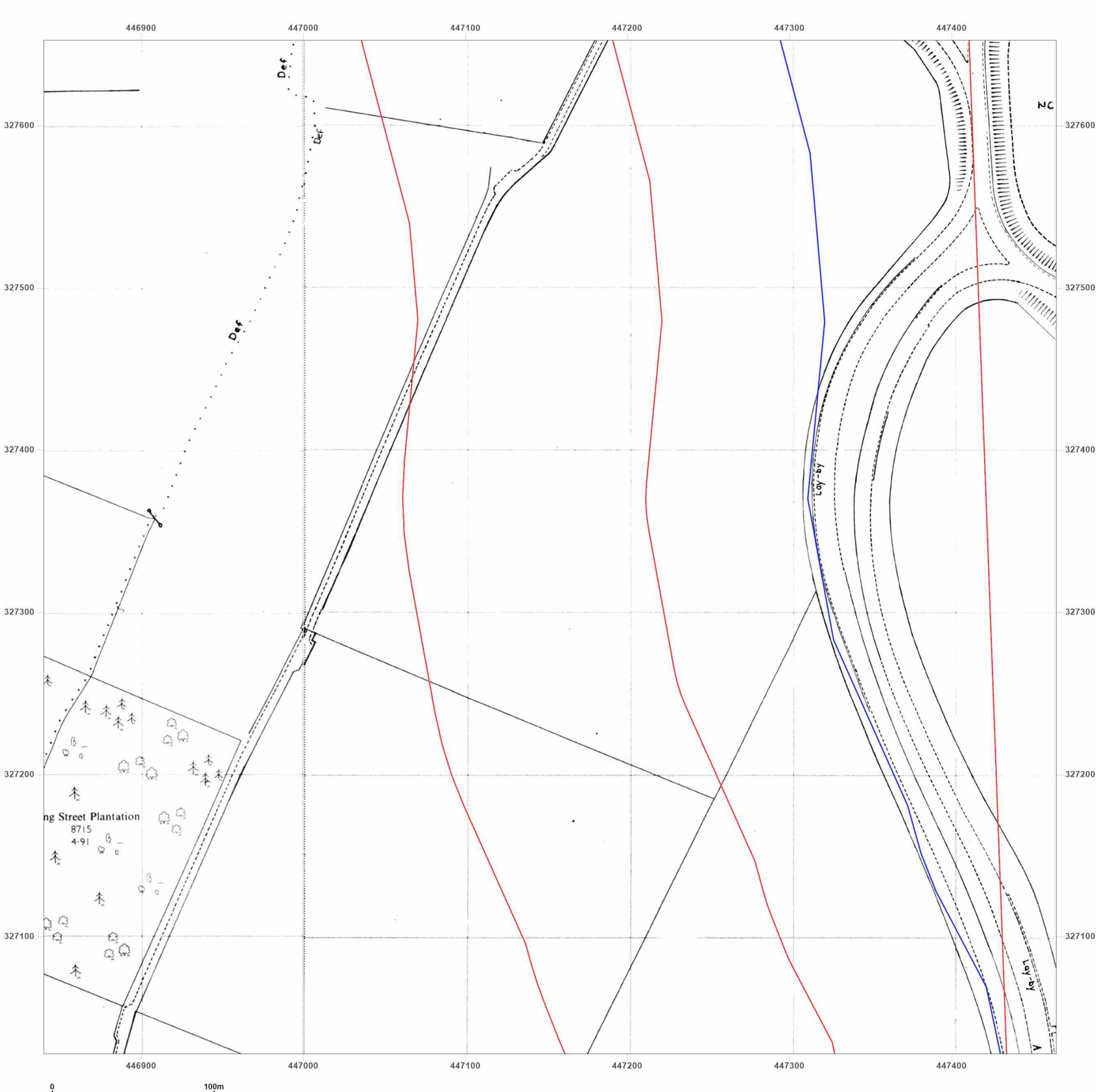
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: National Grid

Map date: **1991**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1966	Surveyed N/A
Revised 1991	Revised N/A
Edition N/A	Edition N/A
Copyright 1991	Copyright 1991
Levelled 1966	Levelled 1966

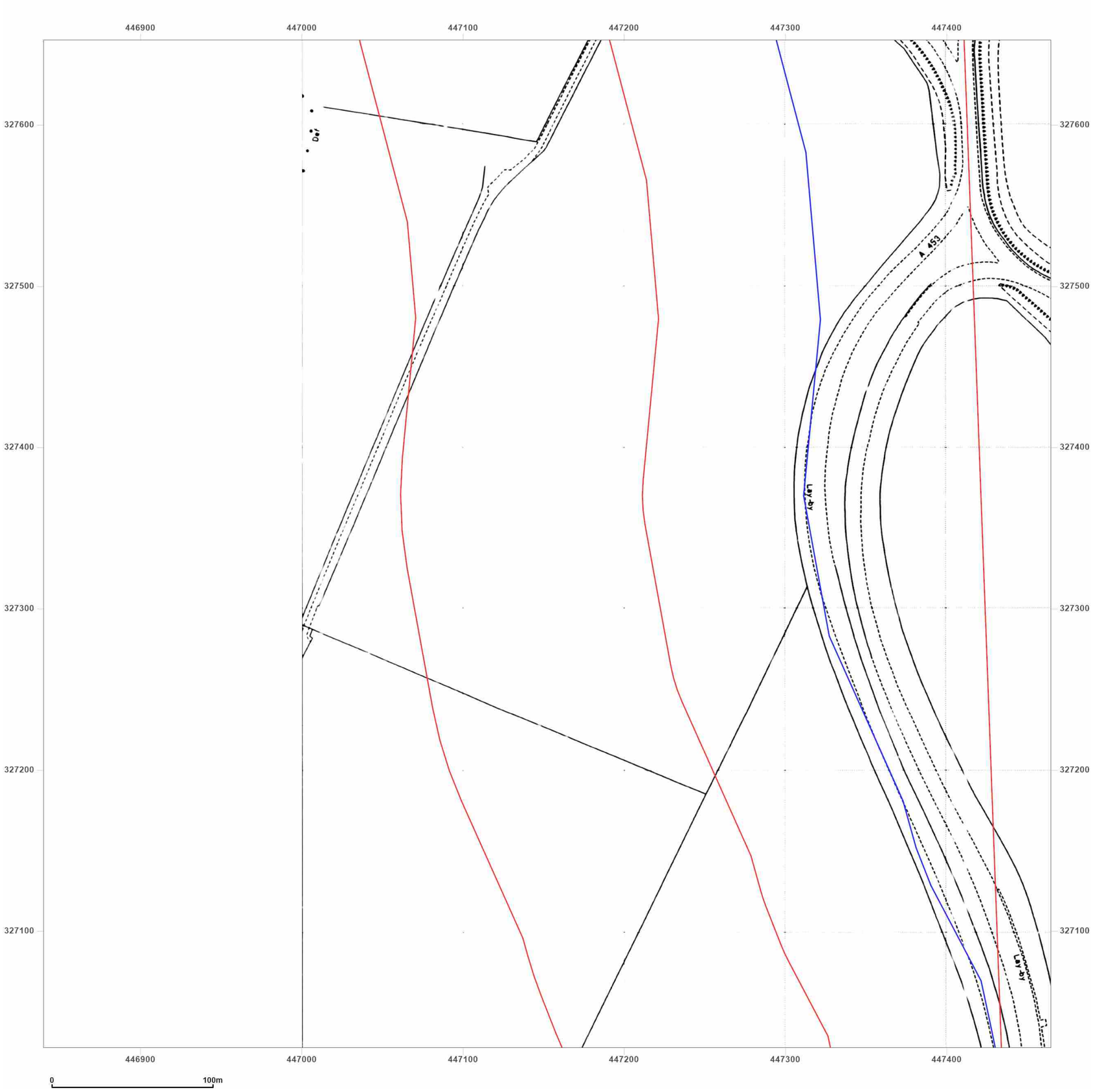
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

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

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

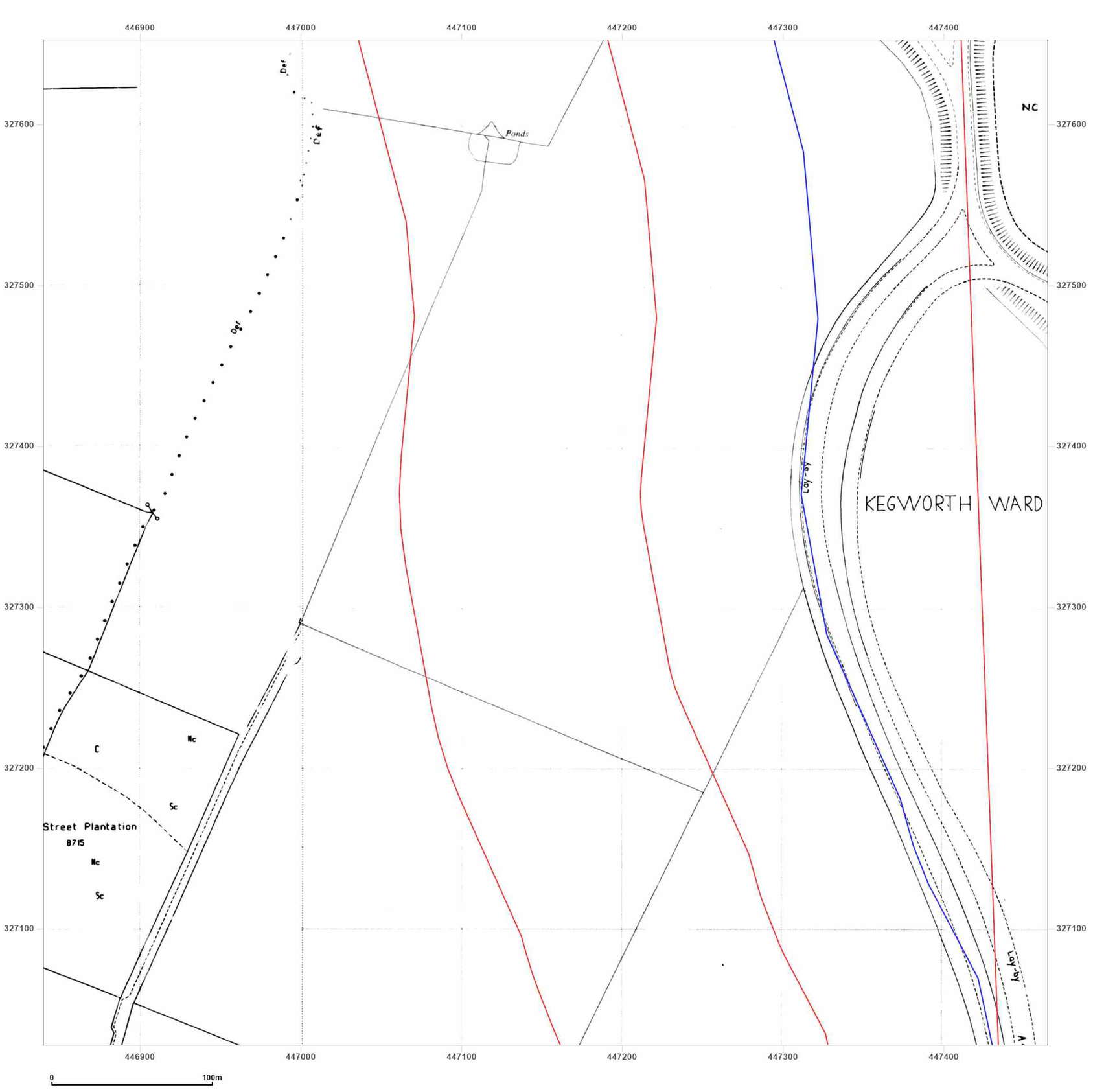
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_4
Grid Ref: 447152, 327340

Map Name: National Grid
Map date: **1988-1993**
Scale: 1:2,500
Printed at: 1:2,500

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1988
Levelled 1966

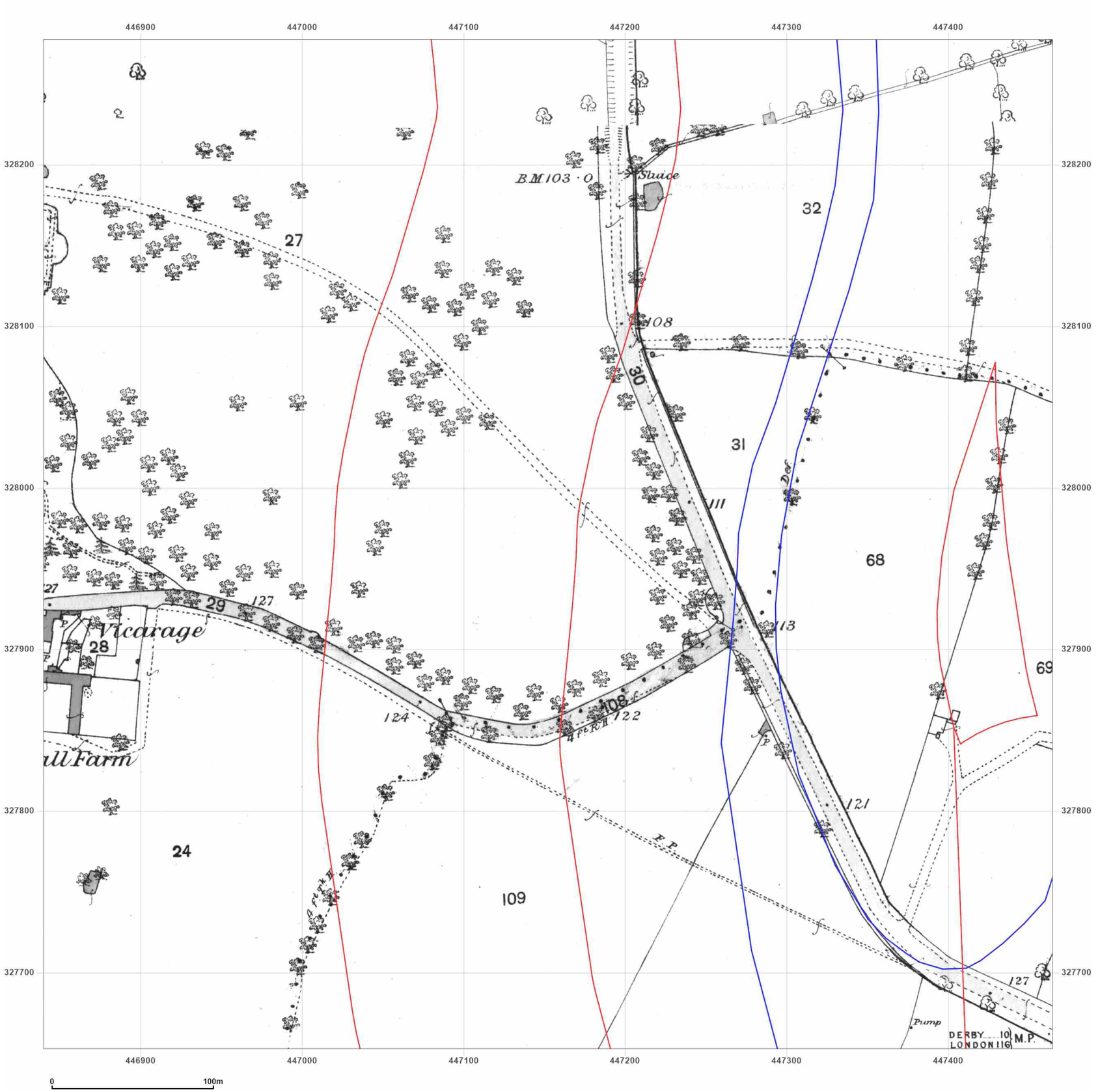
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

Map Name: County Series

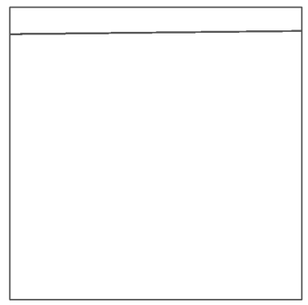
Map date: **1884-1885**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A



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

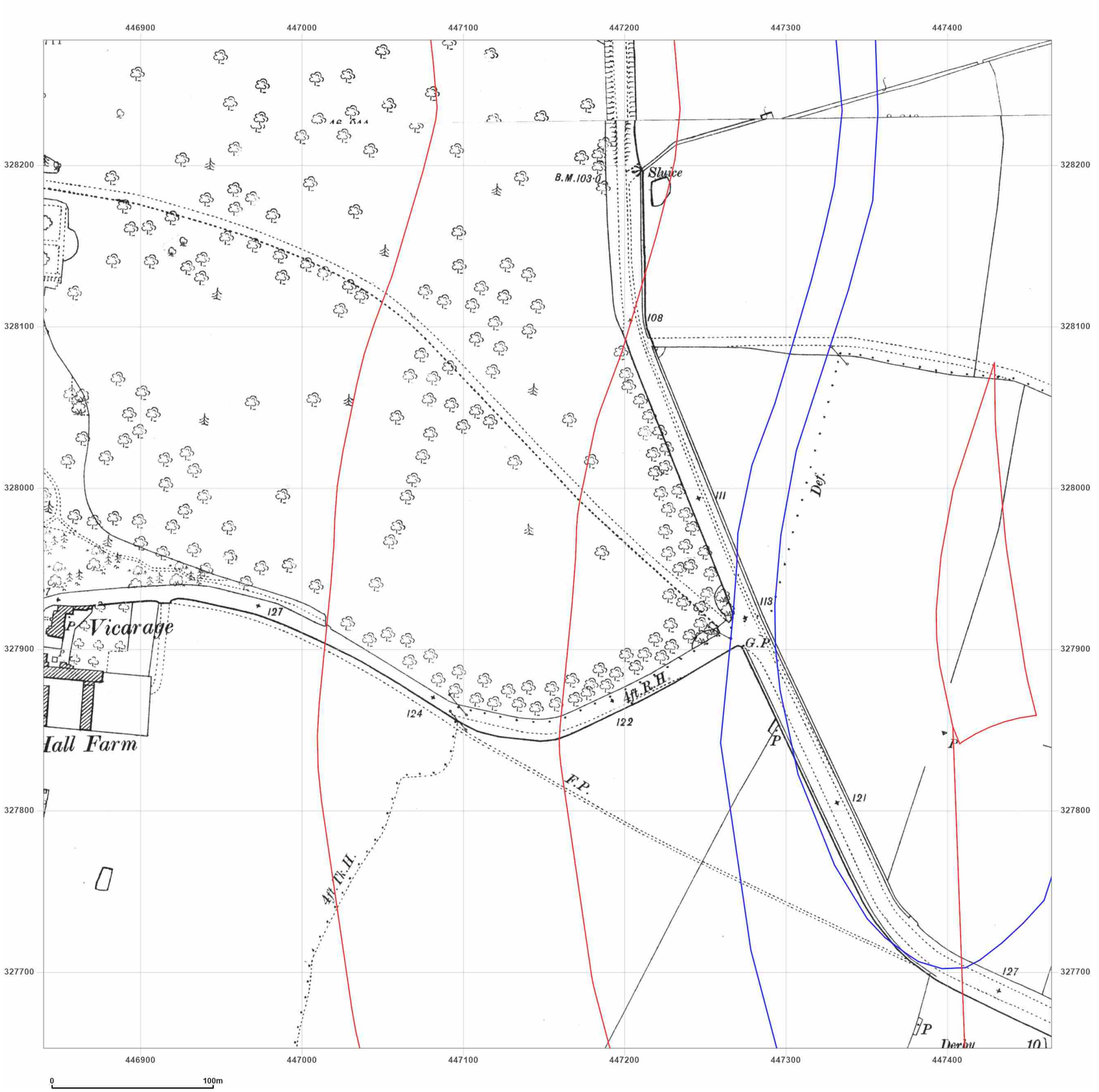
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

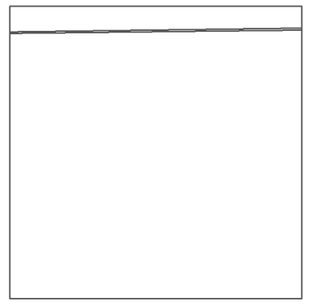
Map Name: County Series

Map date: **1899-1900**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

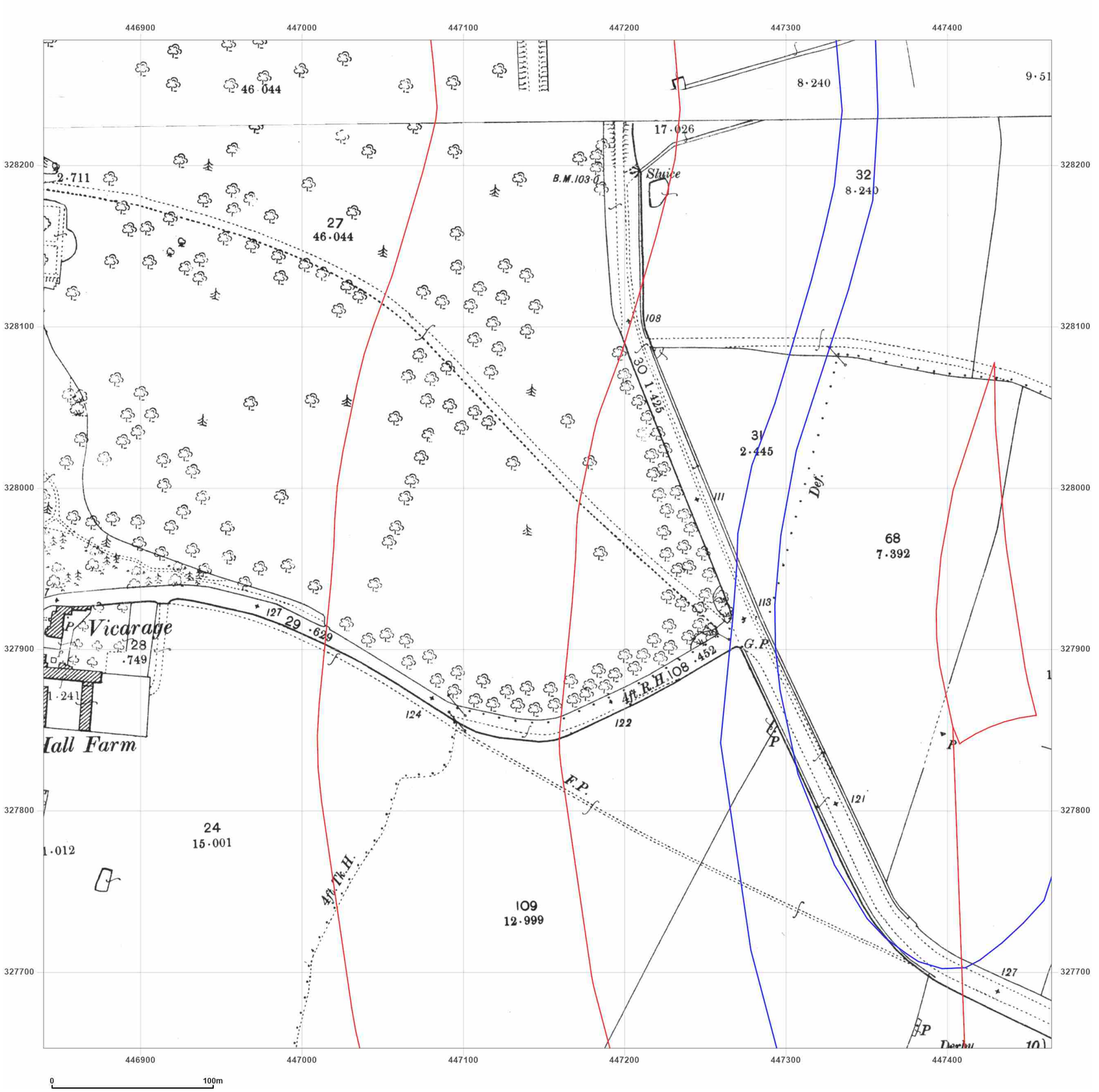
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

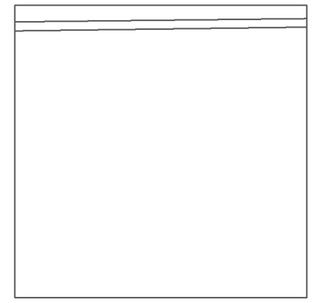
Map Name: County Series

Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

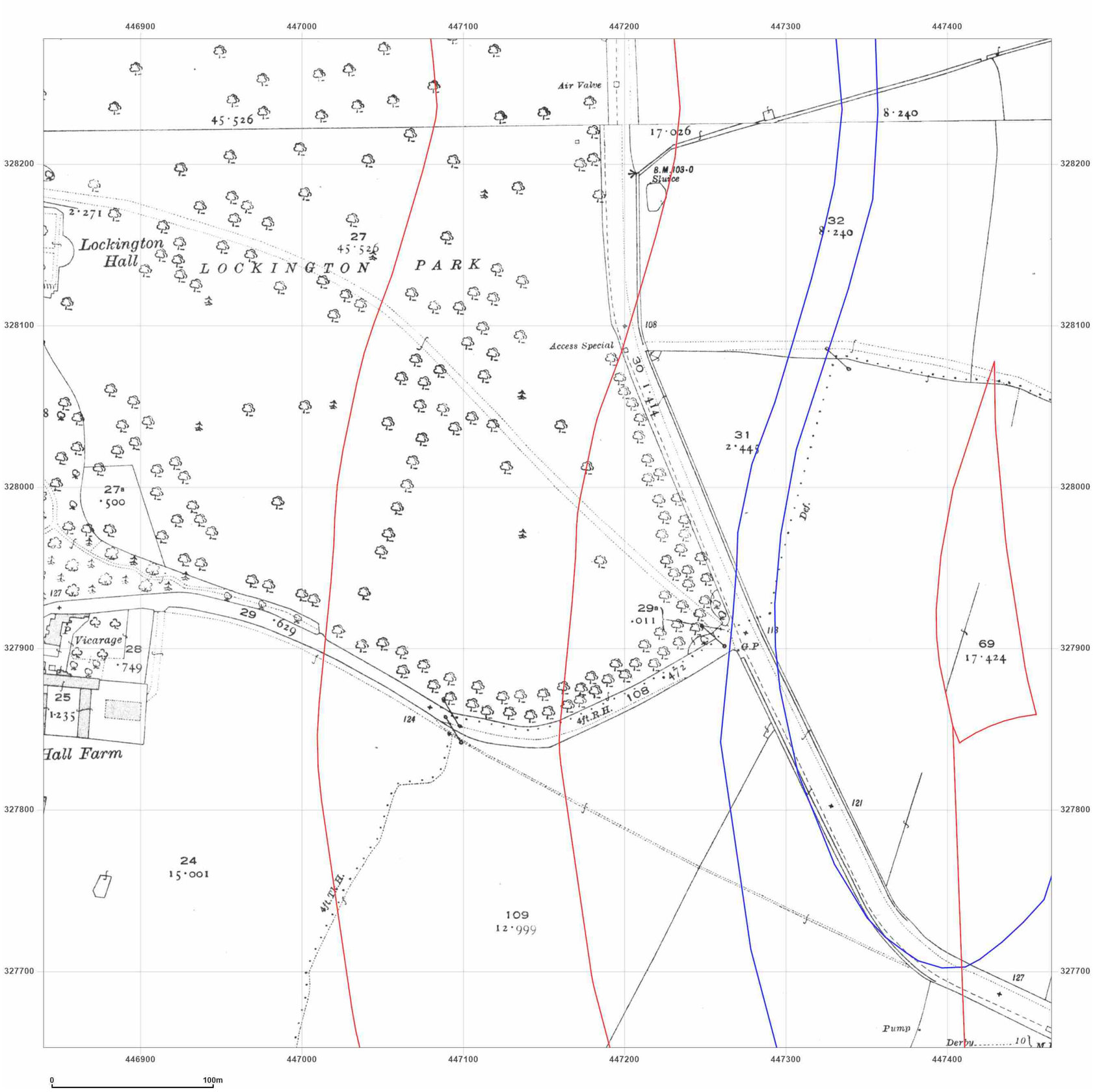
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

Map Name: County Series

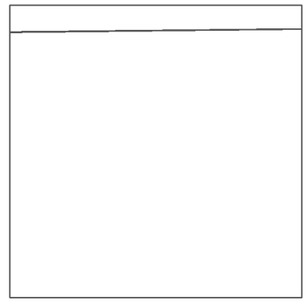
Map date: **1921**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

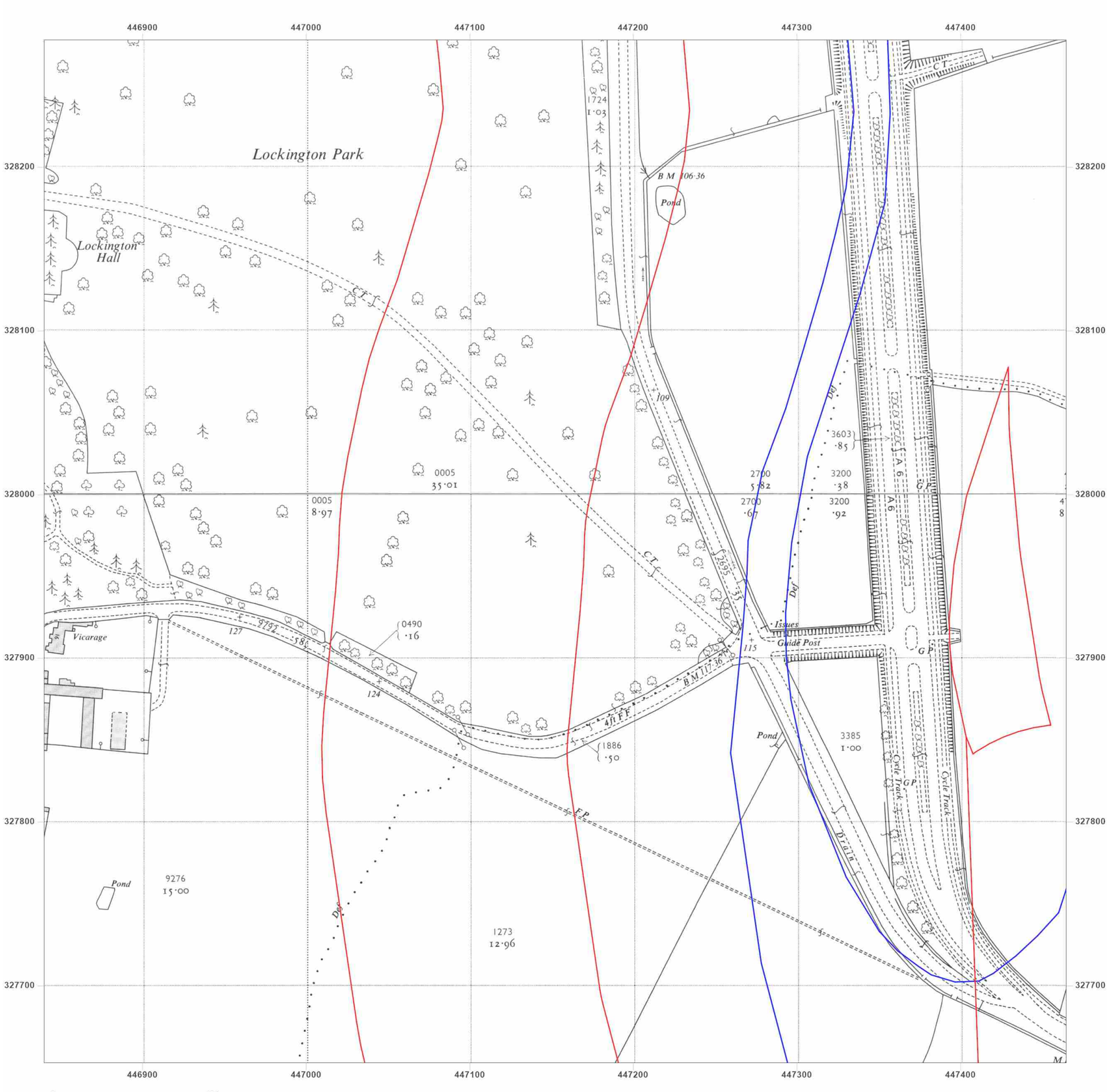
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

Map Name: National Grid

Map date: **1962-1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1944

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

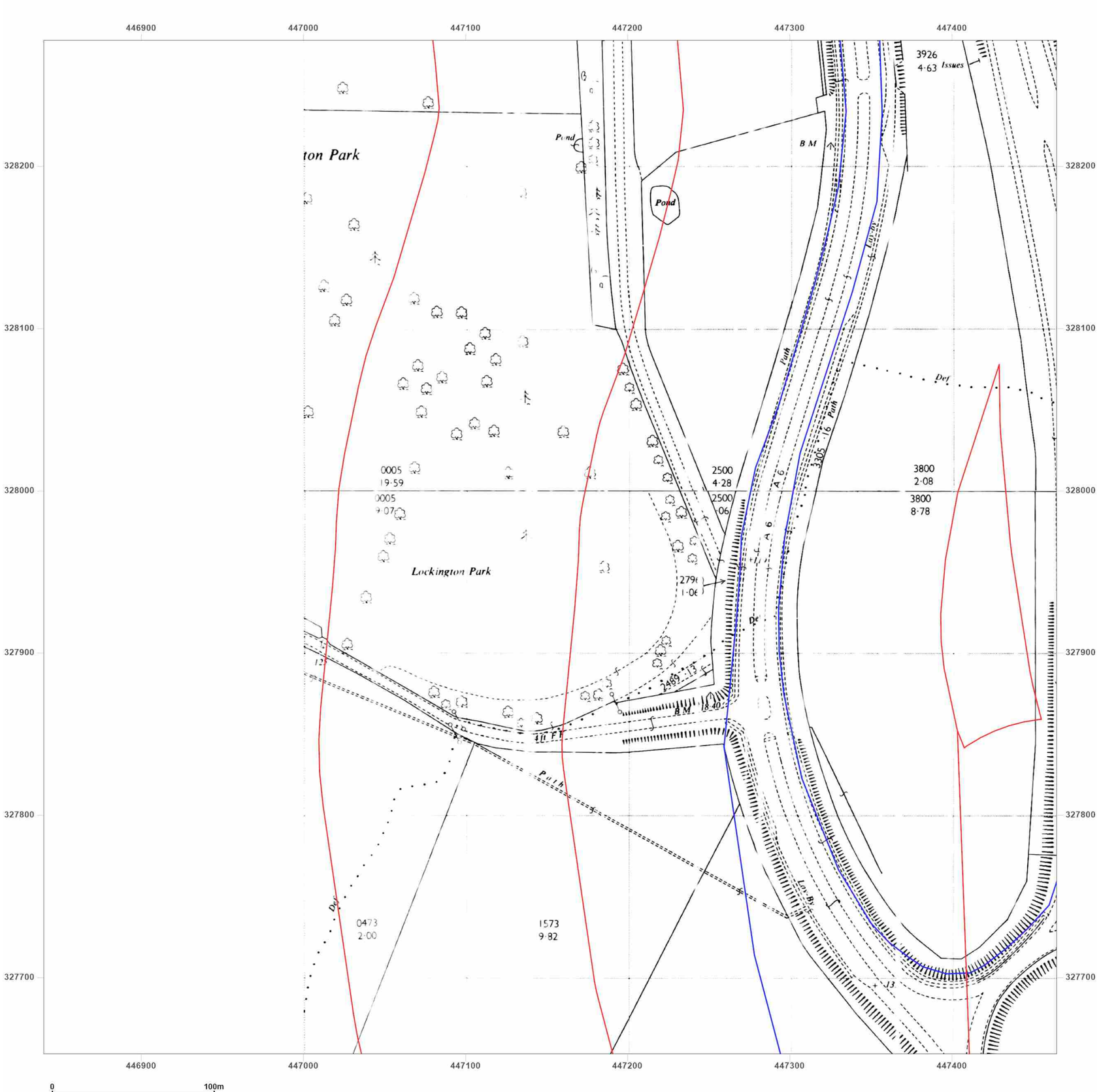
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

Map Name: National Grid

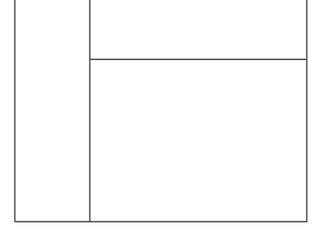
Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

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



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

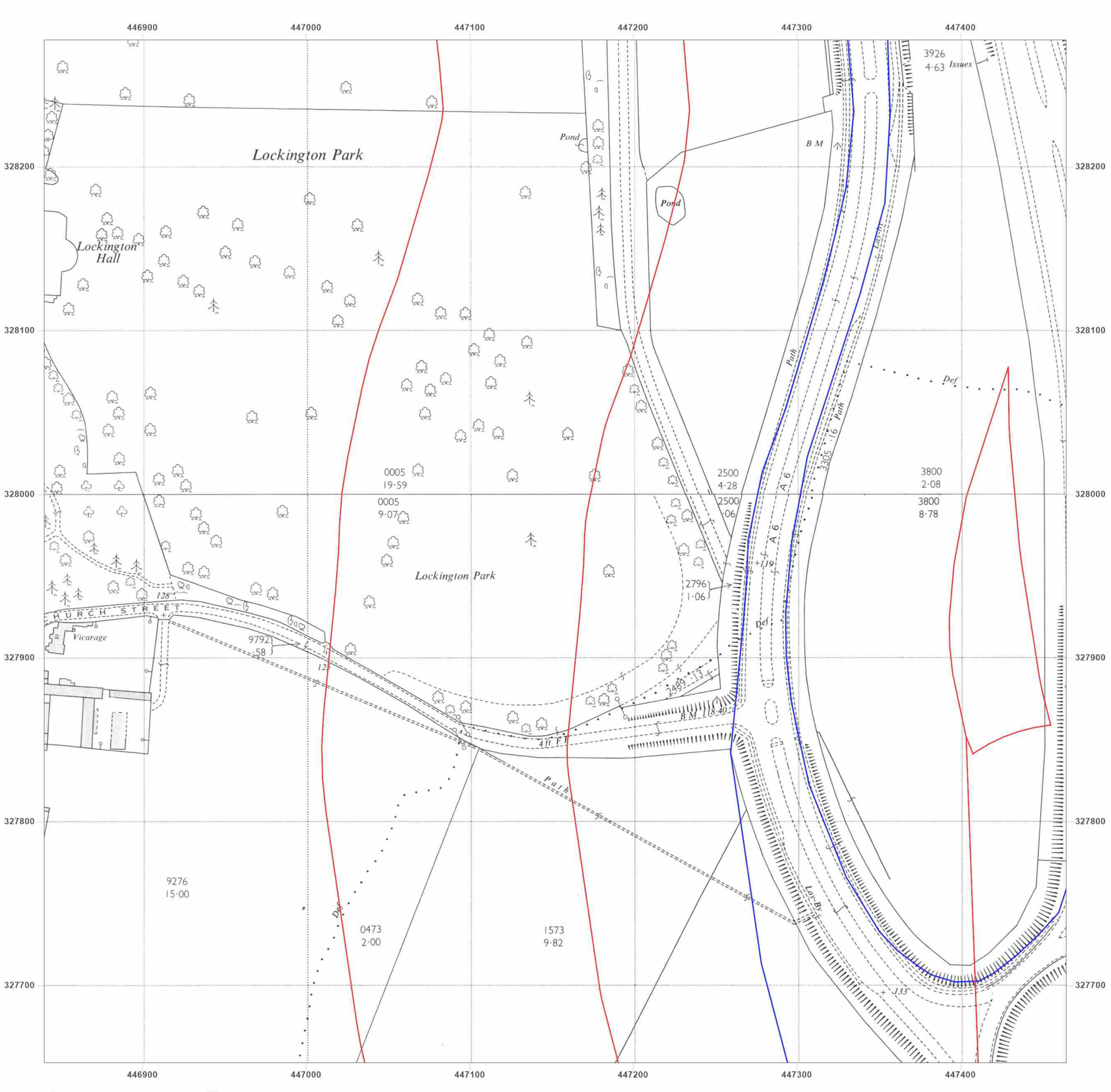
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

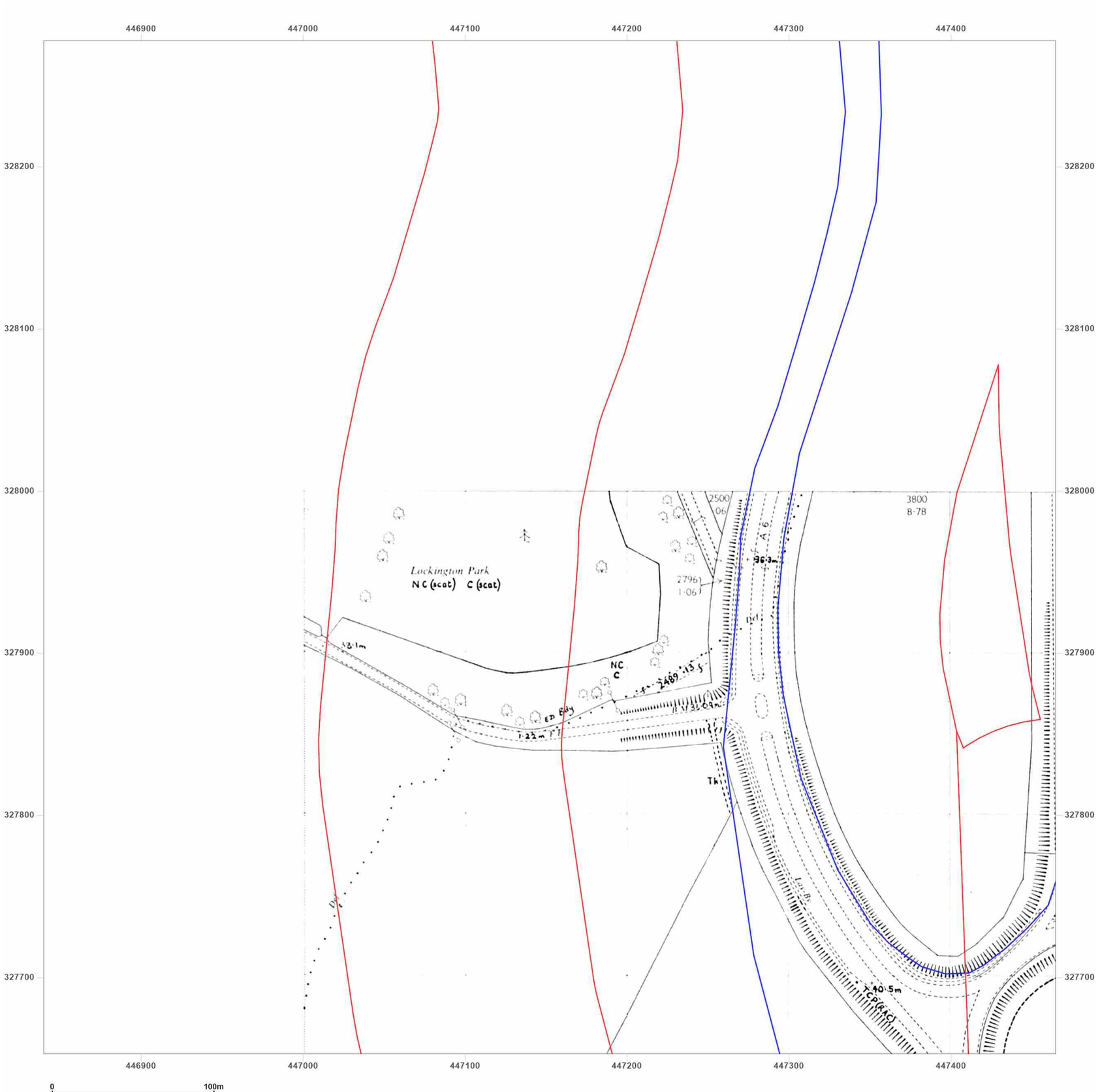
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

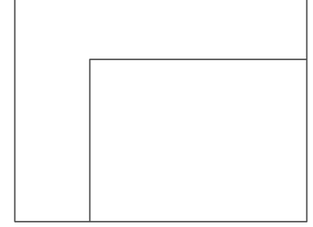
Map Name: National Grid

Map date: **1982**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1982
Levelled 1966

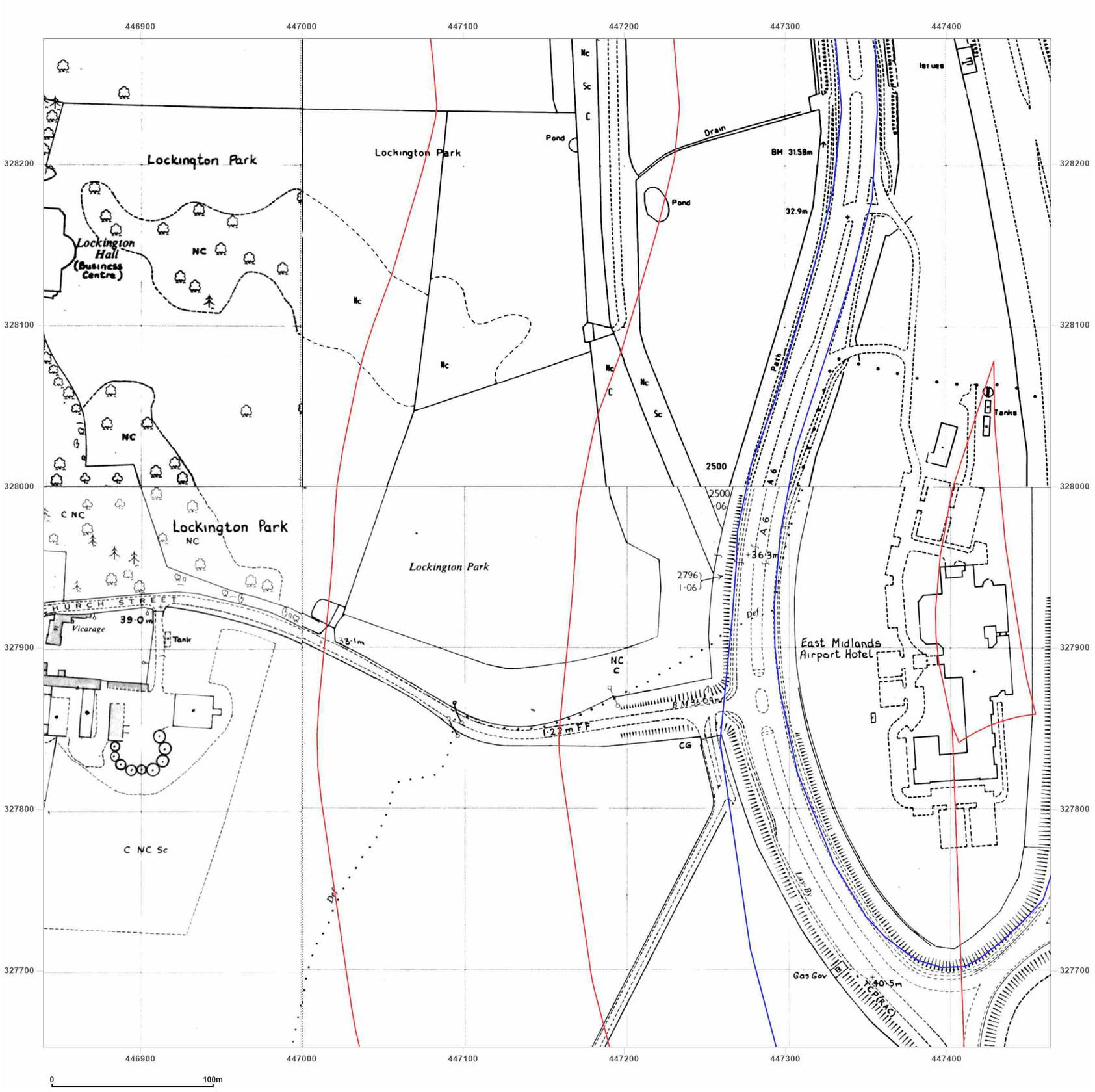
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

Map Name: National Grid
Map date: **1991-1993**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1966 Revised 1991 Edition N/A Copyright 1991 Levelled 1966	Surveyed N/A Revised N/A Edition N/A Copyright 1993 Levelled N/A
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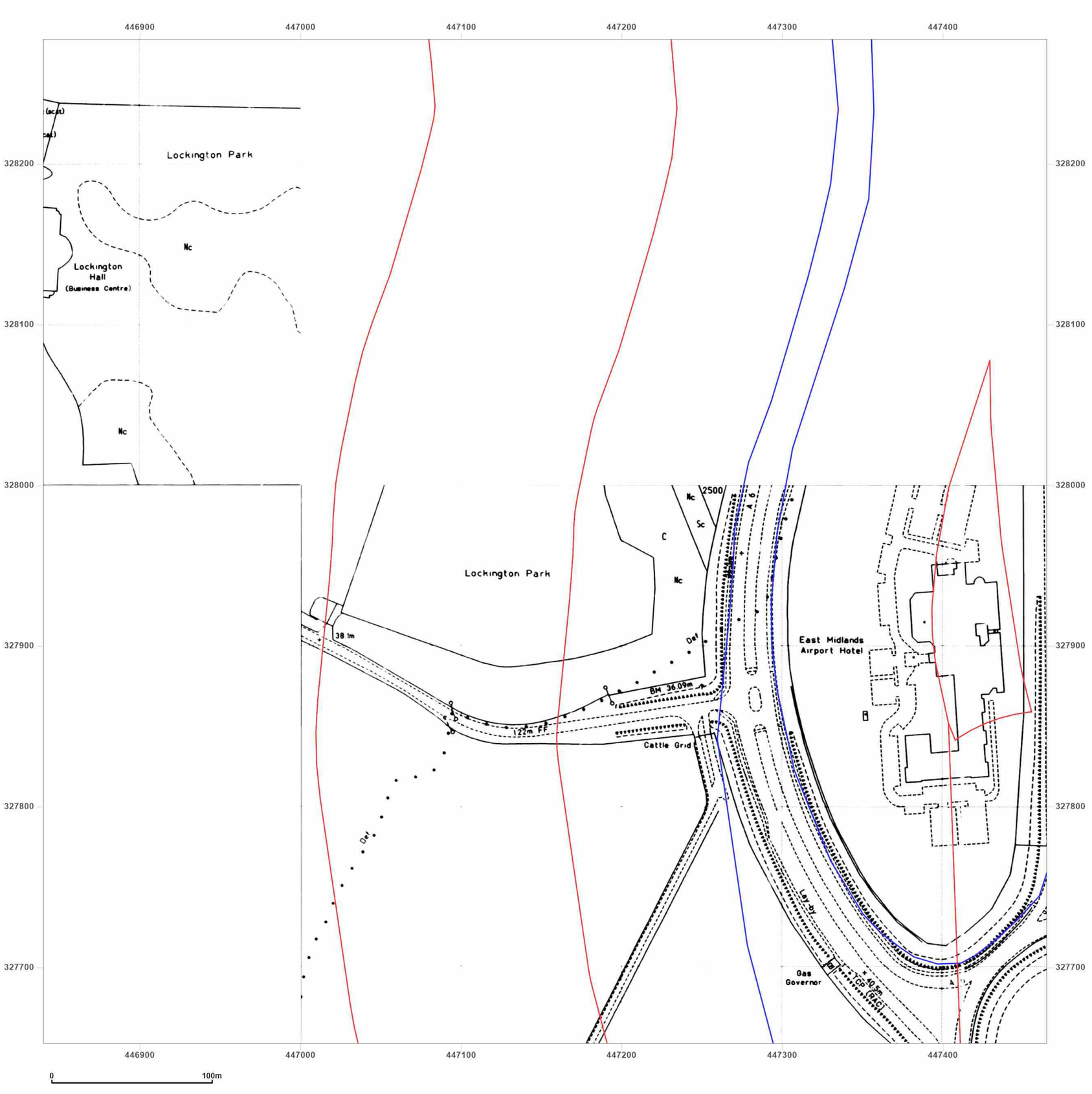
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Site Details:

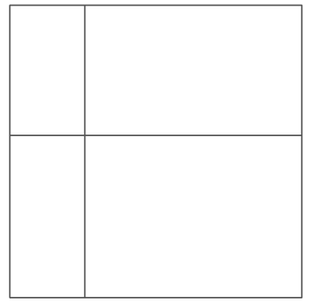
East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

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

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



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

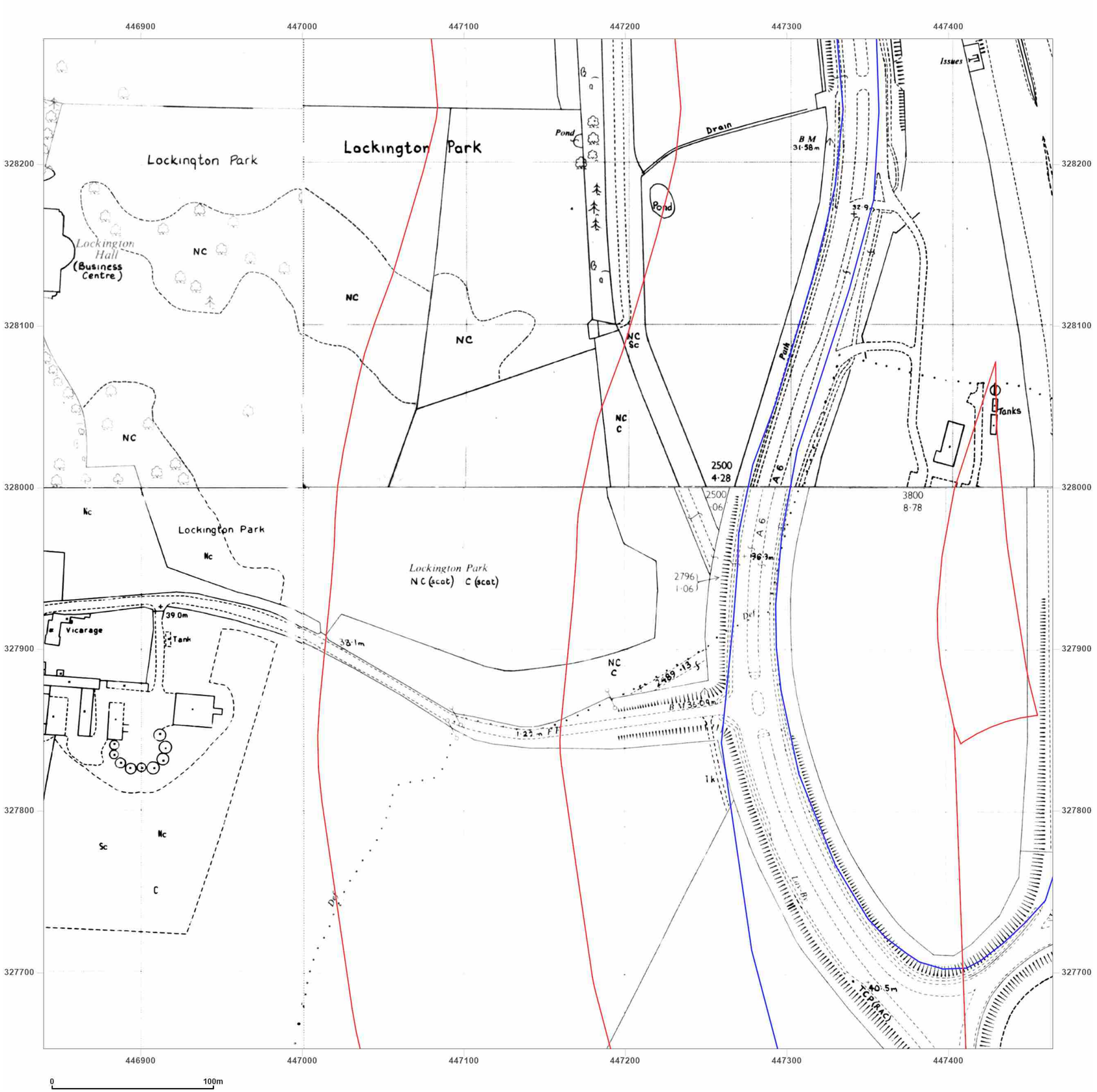
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_5
Grid Ref: 447152, 327965

Map Name: National Grid
Map date: **1988-1993**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed N/A Revised N/A Edition N/A Copyright 1991 Levelled 1966	Surveyed 1966 Revised 1991 Edition N/A Copyright 1991 Levelled 1966
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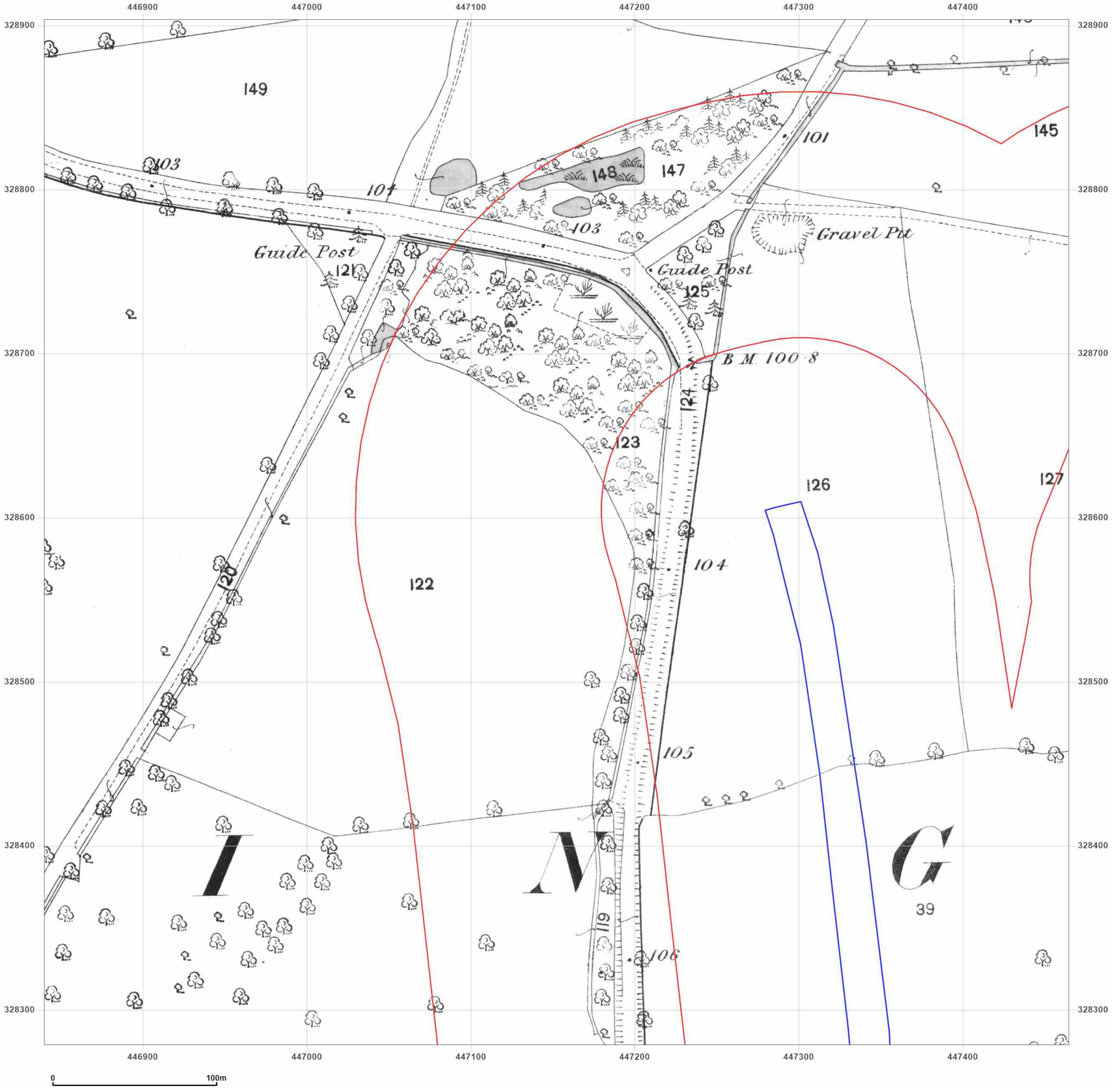
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: County Series

Map date: **1885**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A

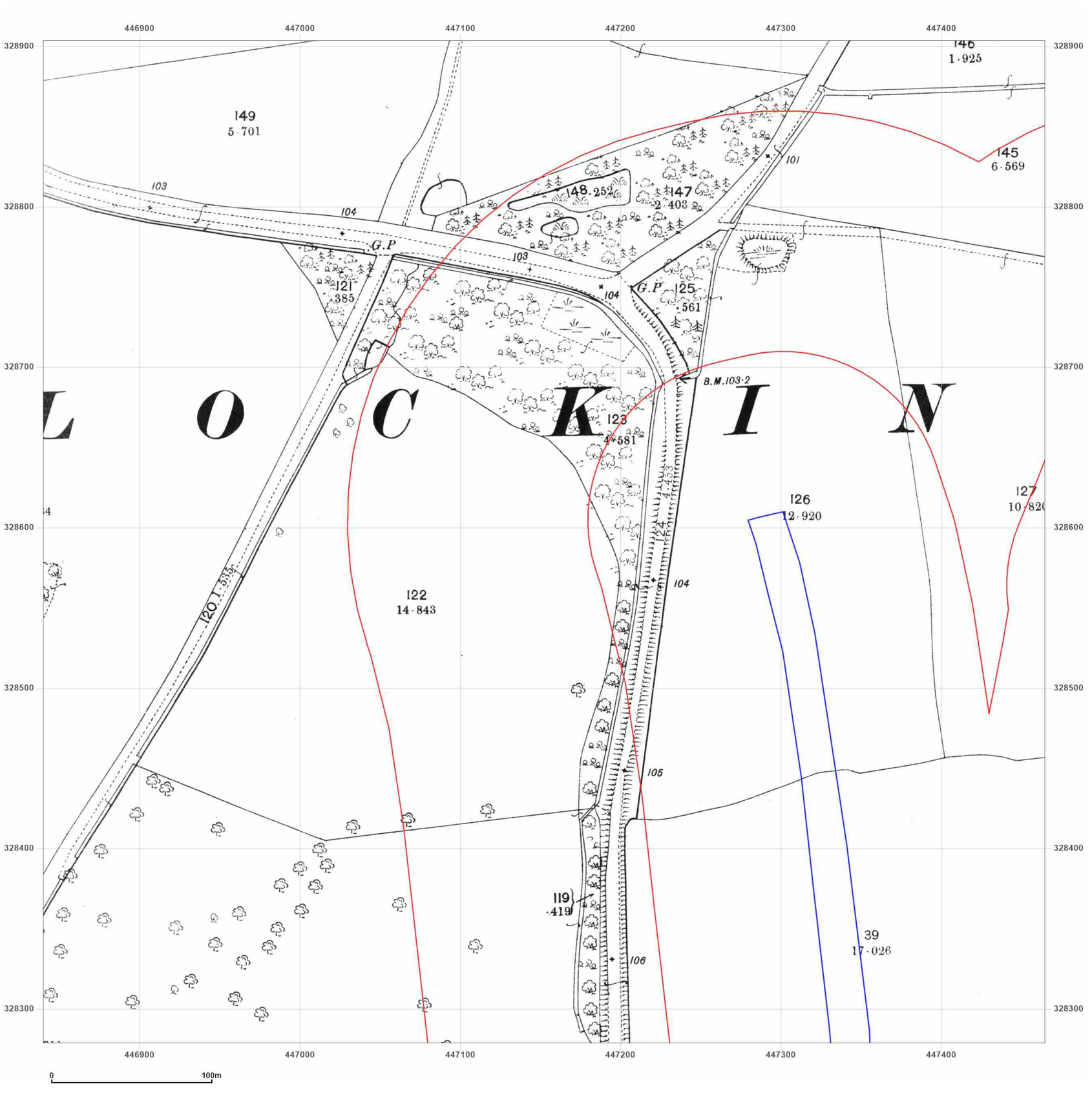
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: County Series

Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

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

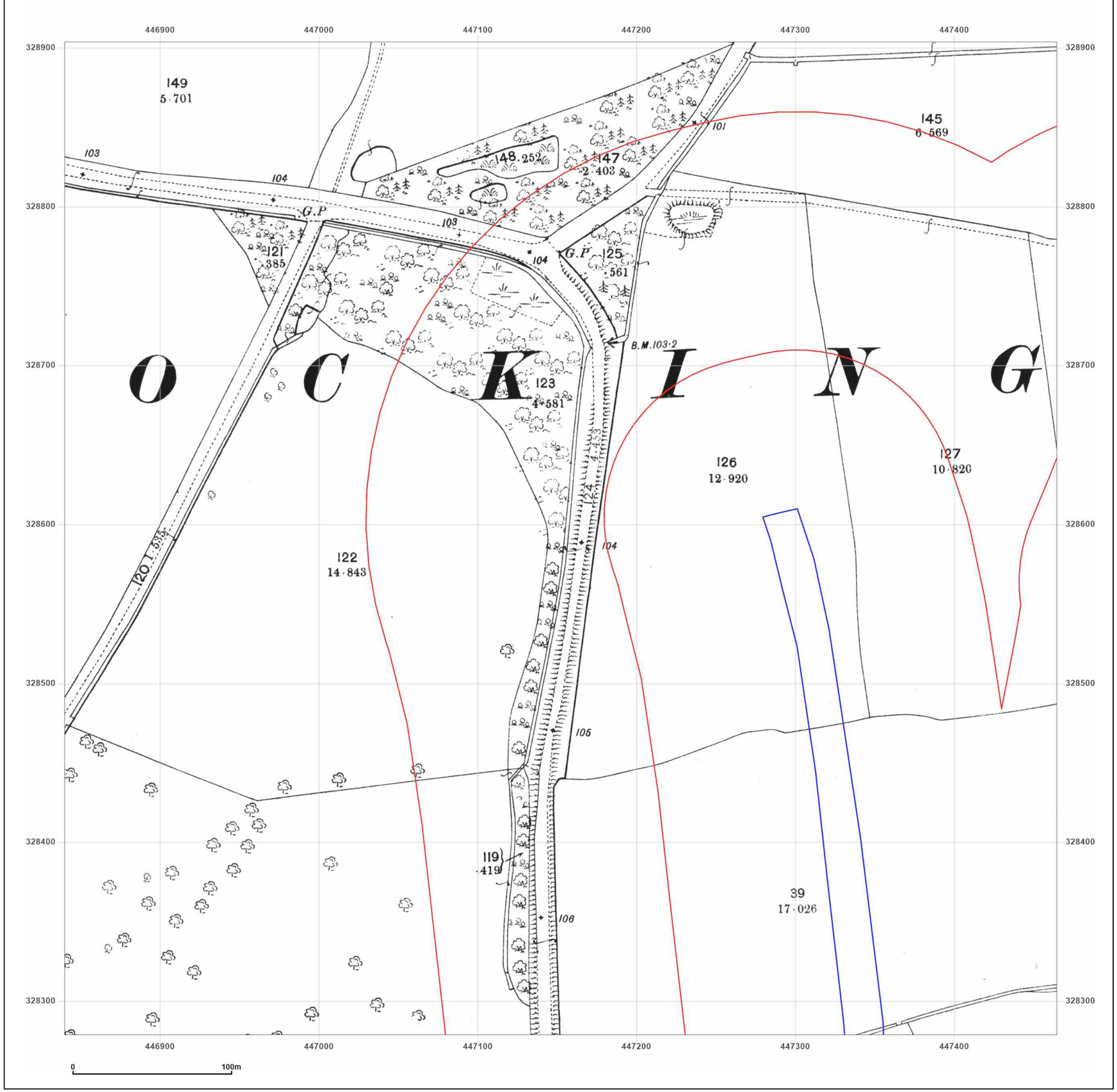
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

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

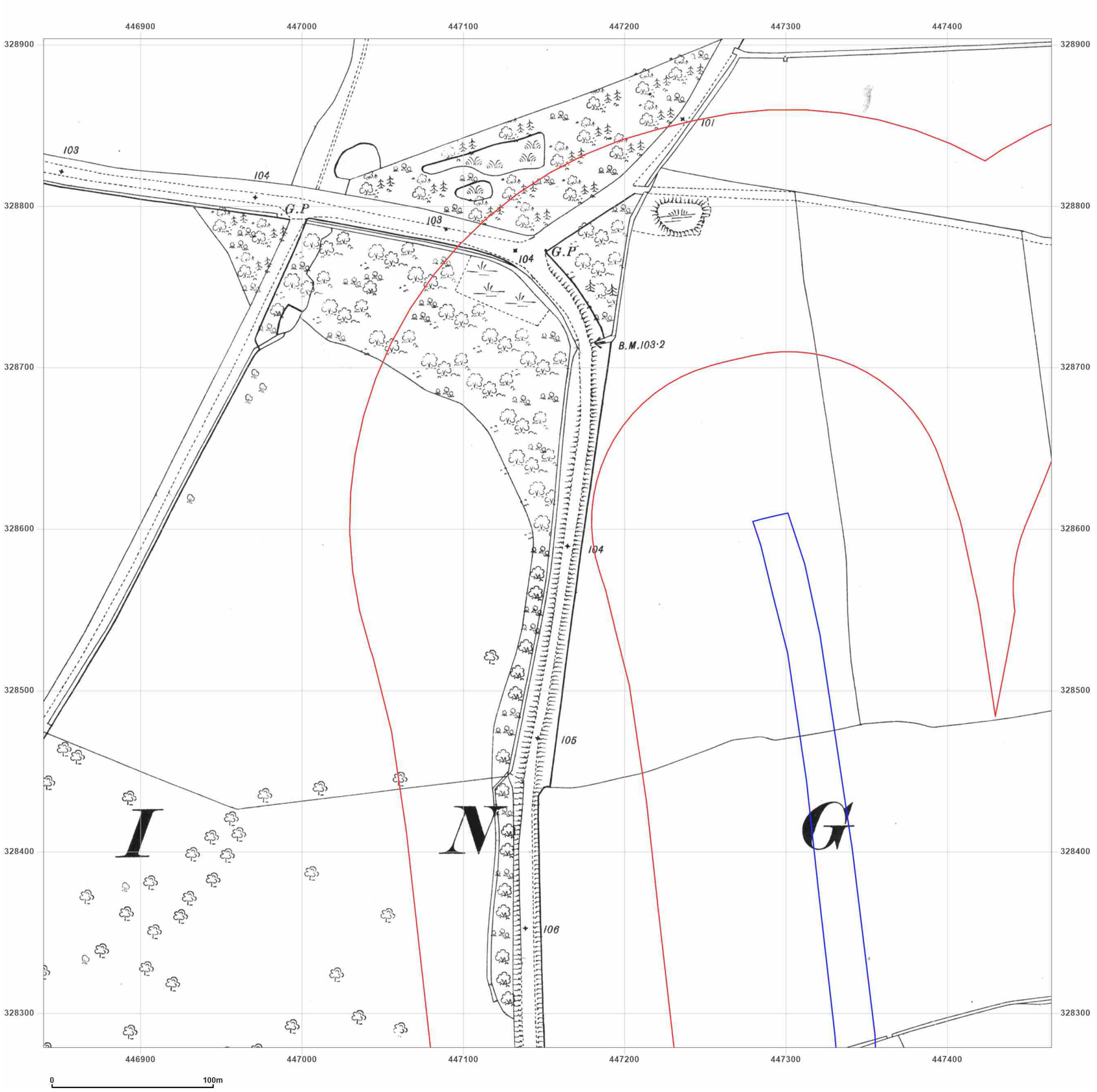
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: County Series

Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

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

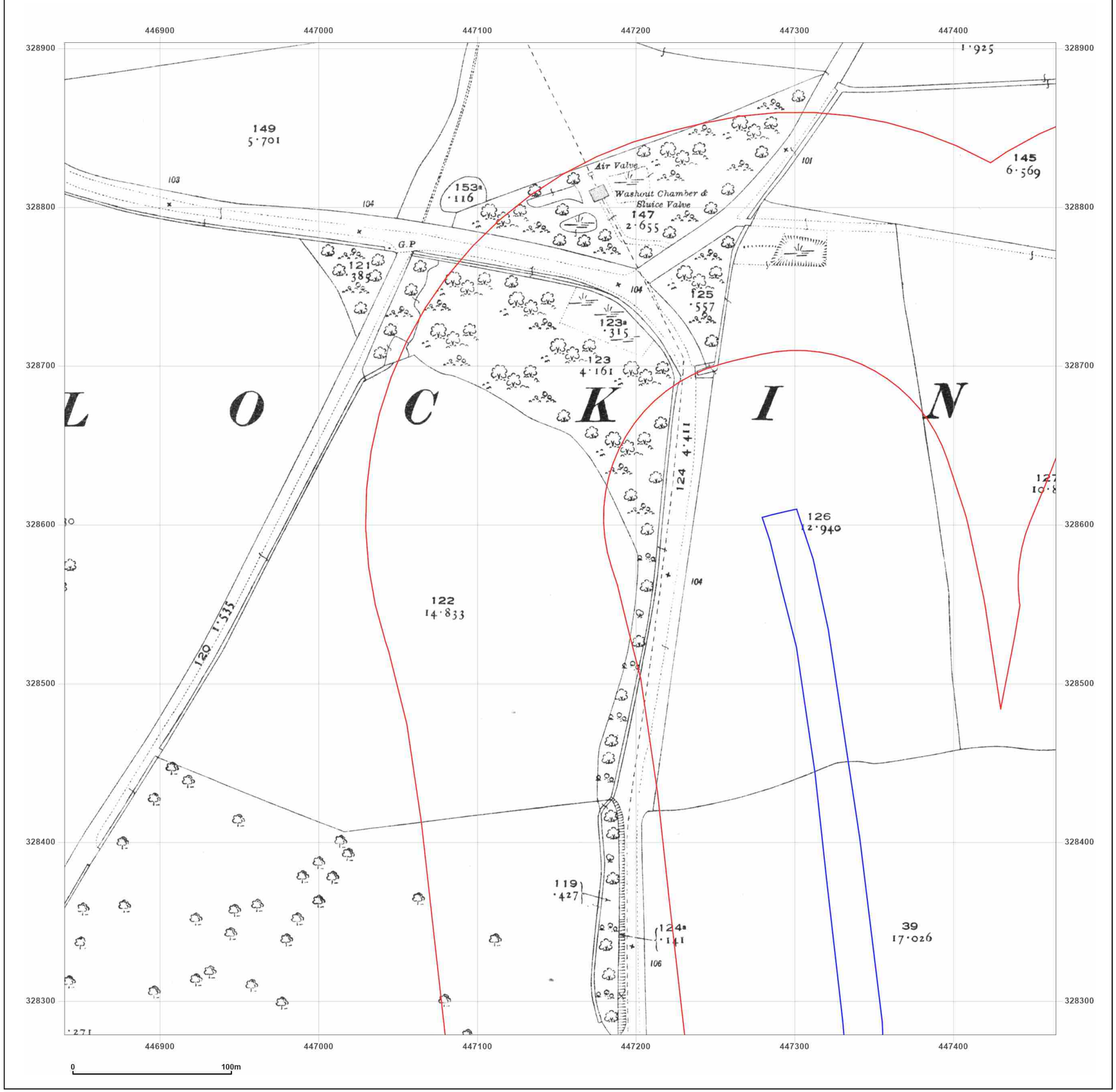
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: County Series

Map date: **1921**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

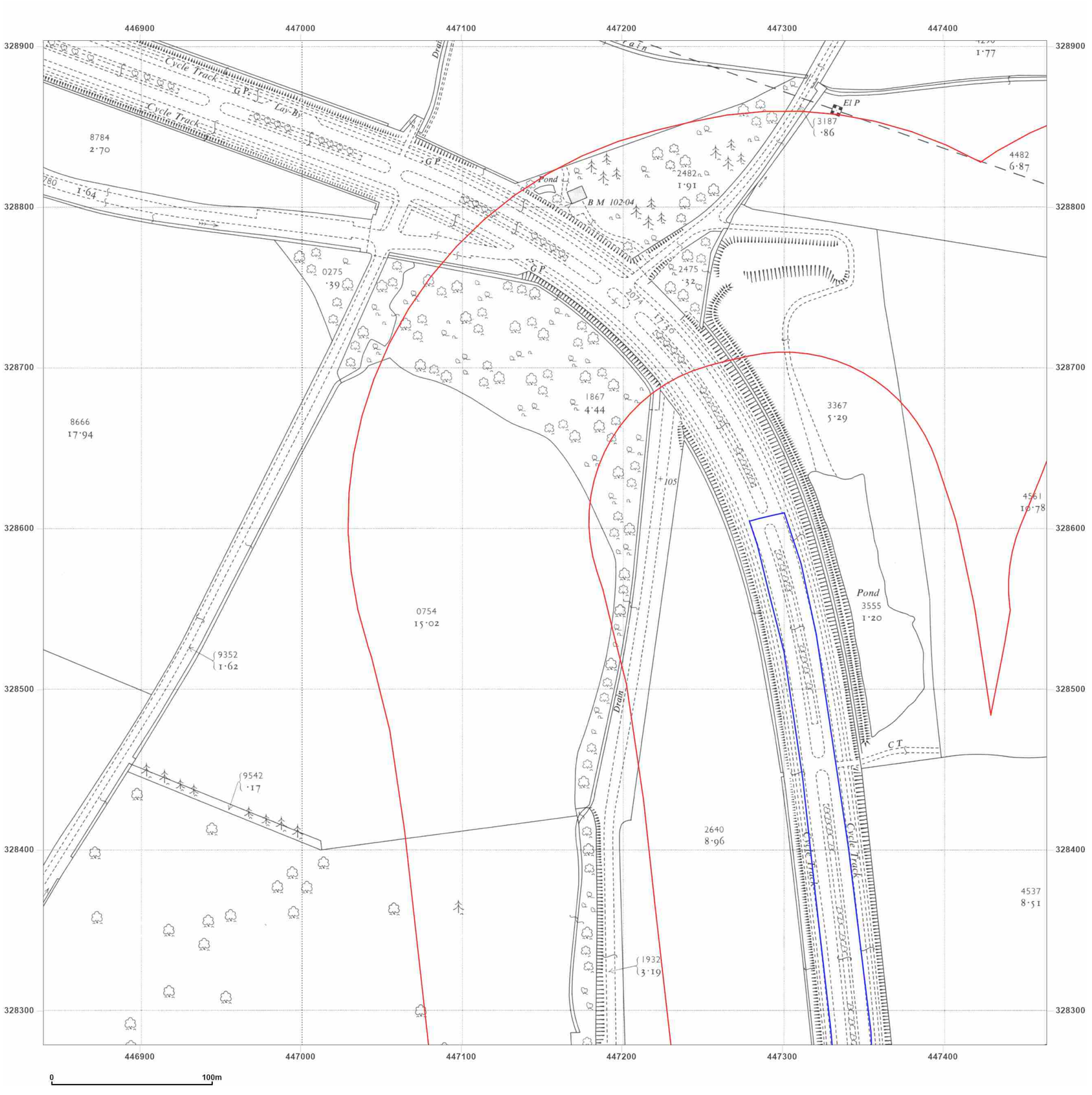
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1944

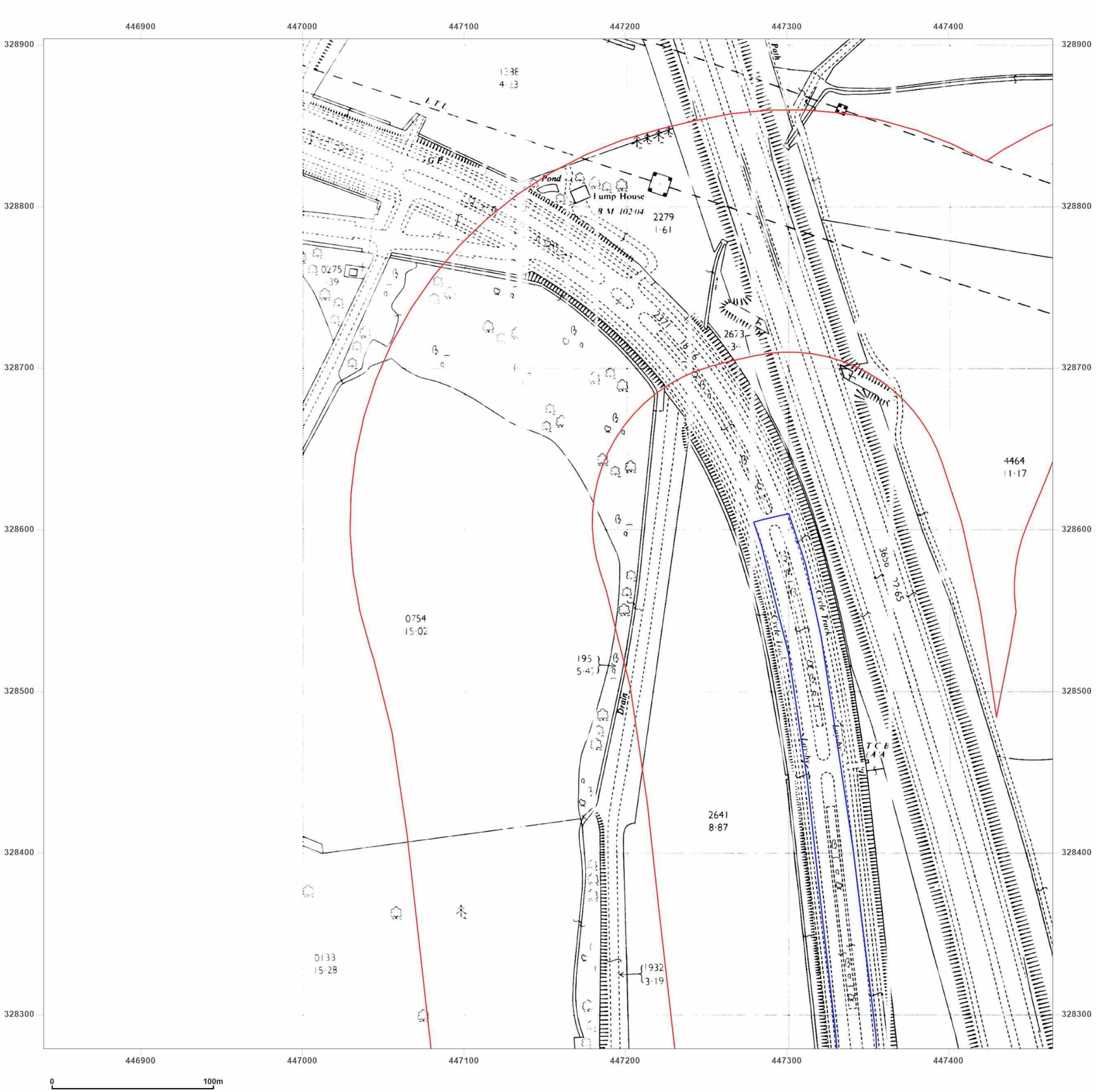
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

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

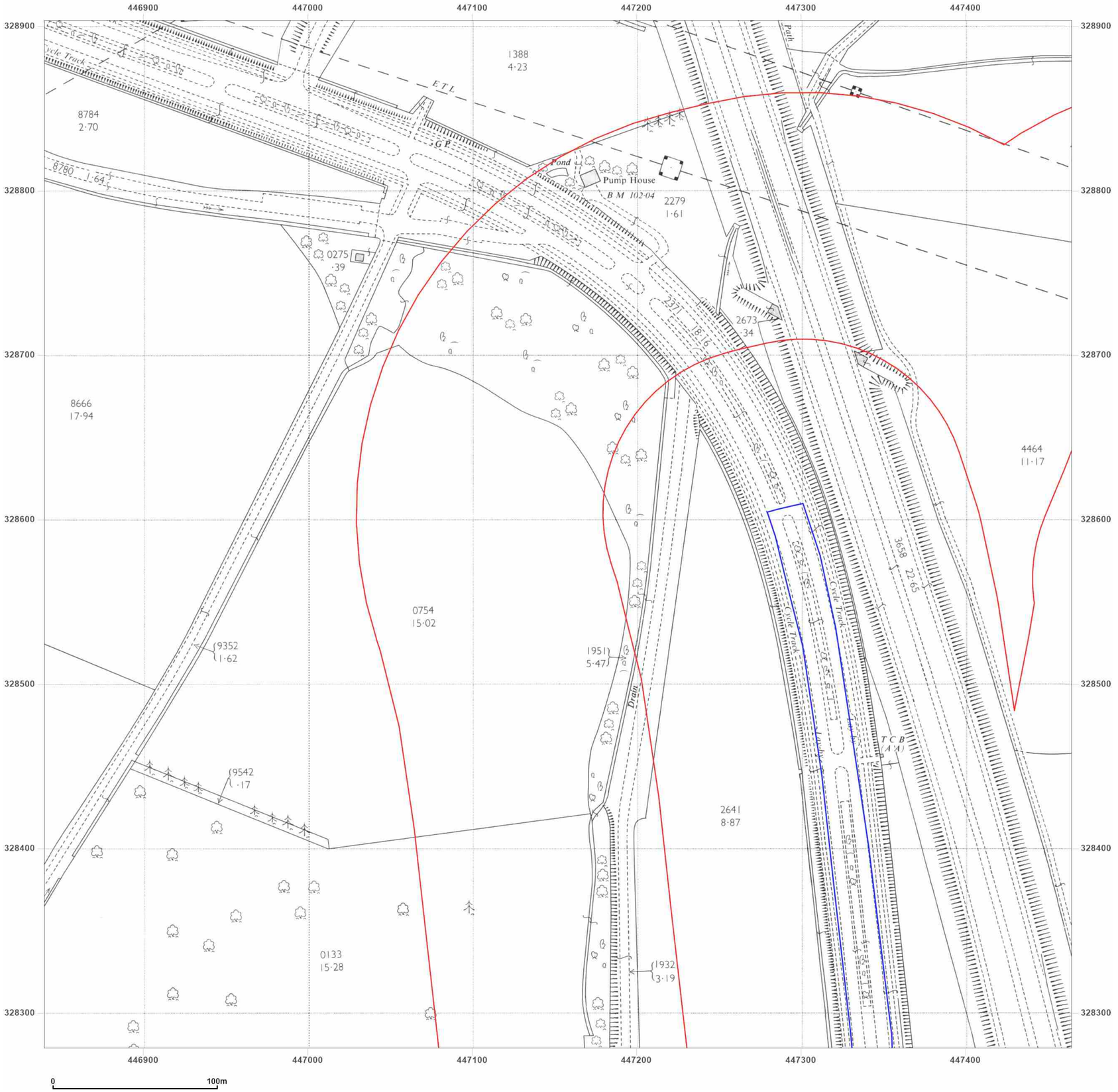
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: National Grid

Map date: **1967**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

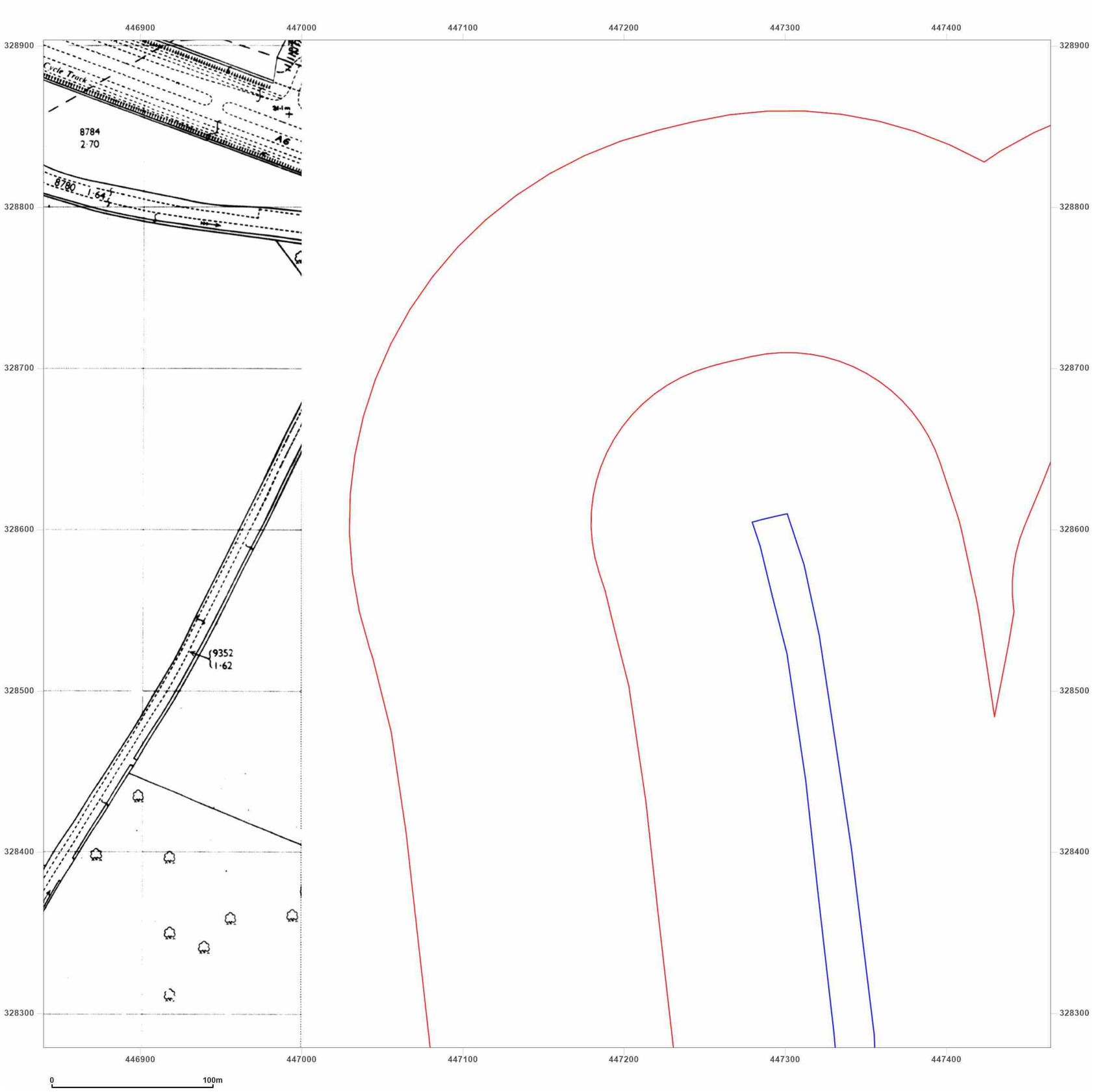
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: National Grid

Map date: **1991**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

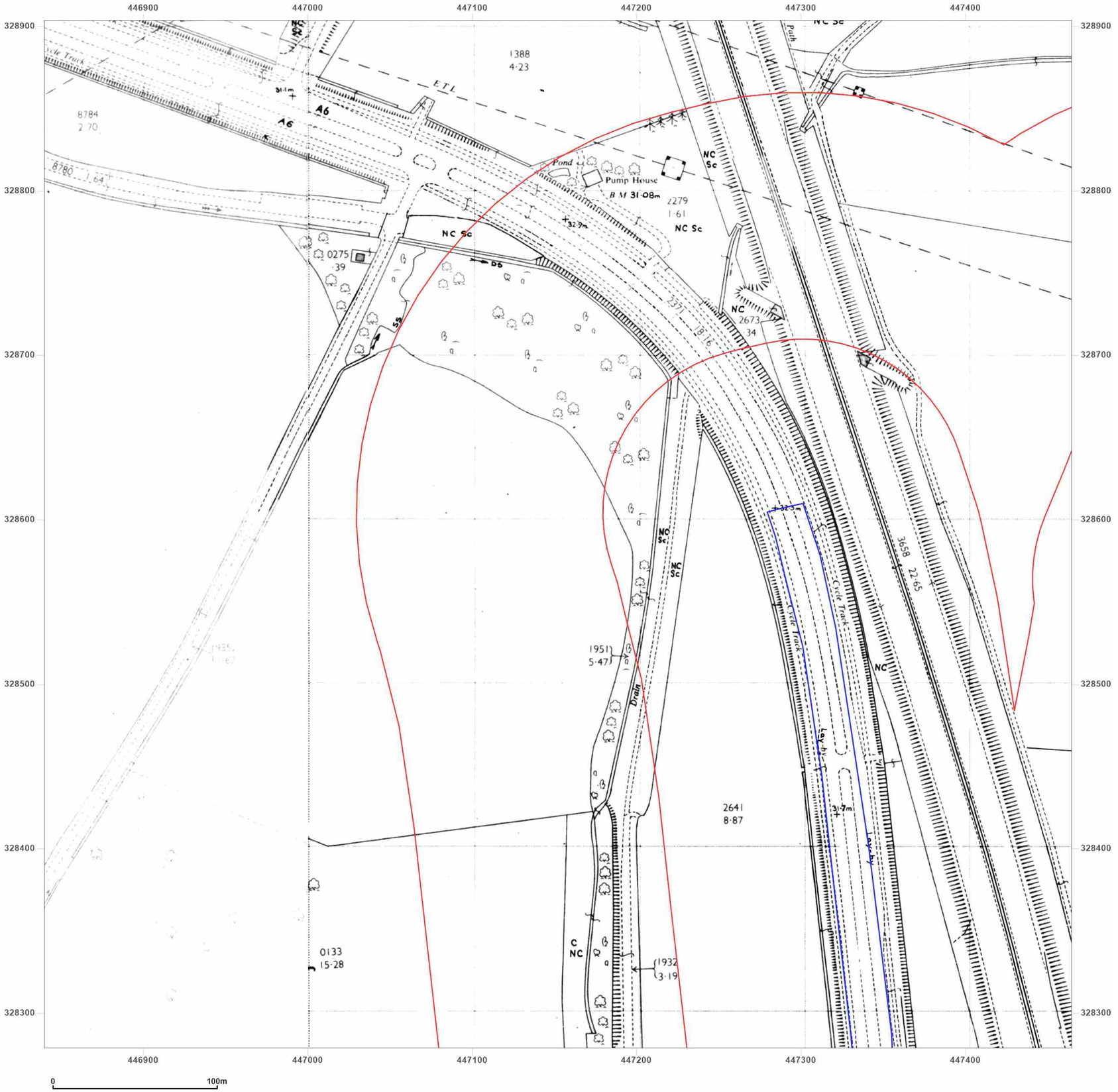
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: National Grid

Map date: **1991**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled 1966

Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

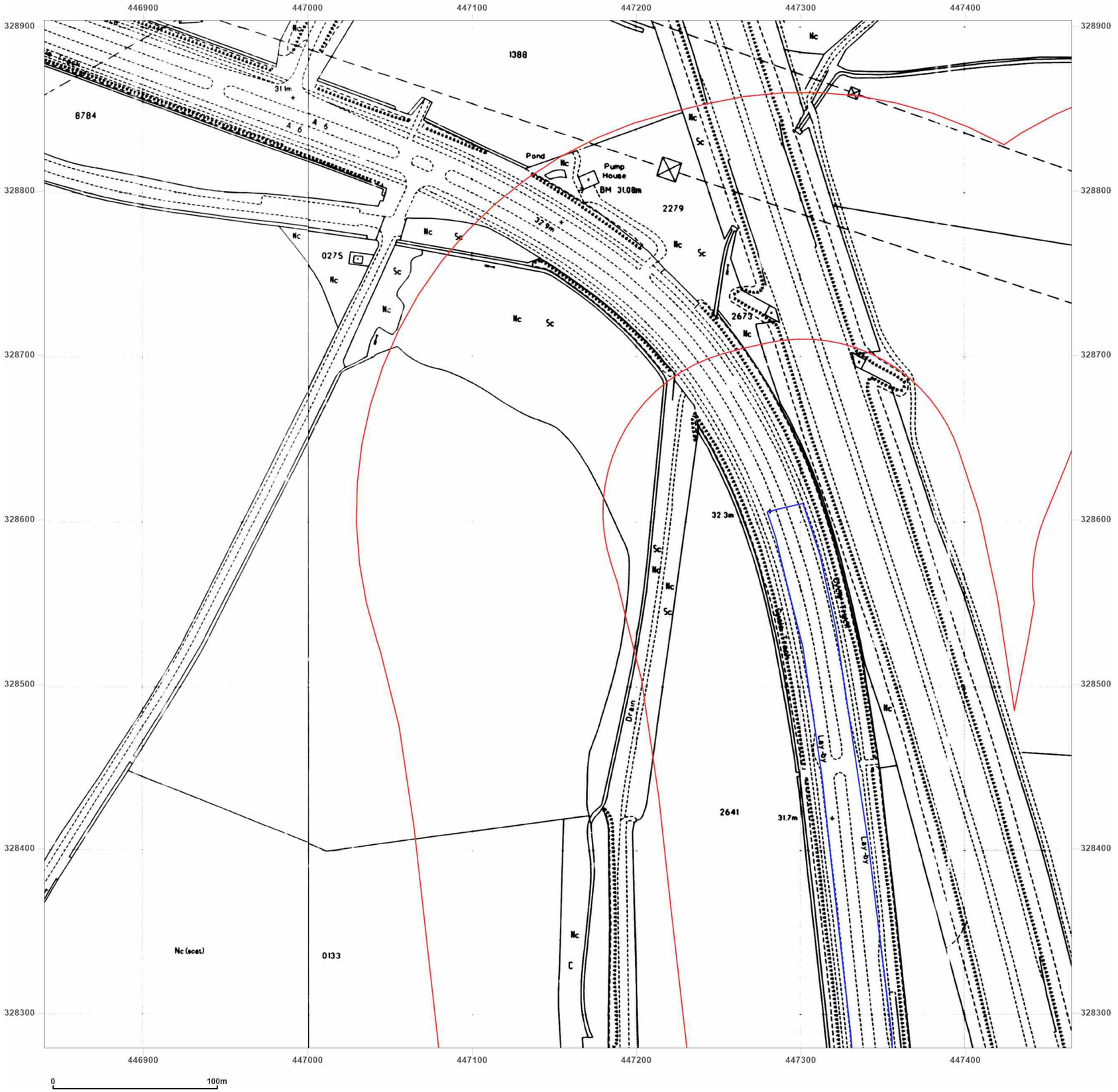
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_1_6
Grid Ref: 447152, 328591

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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

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

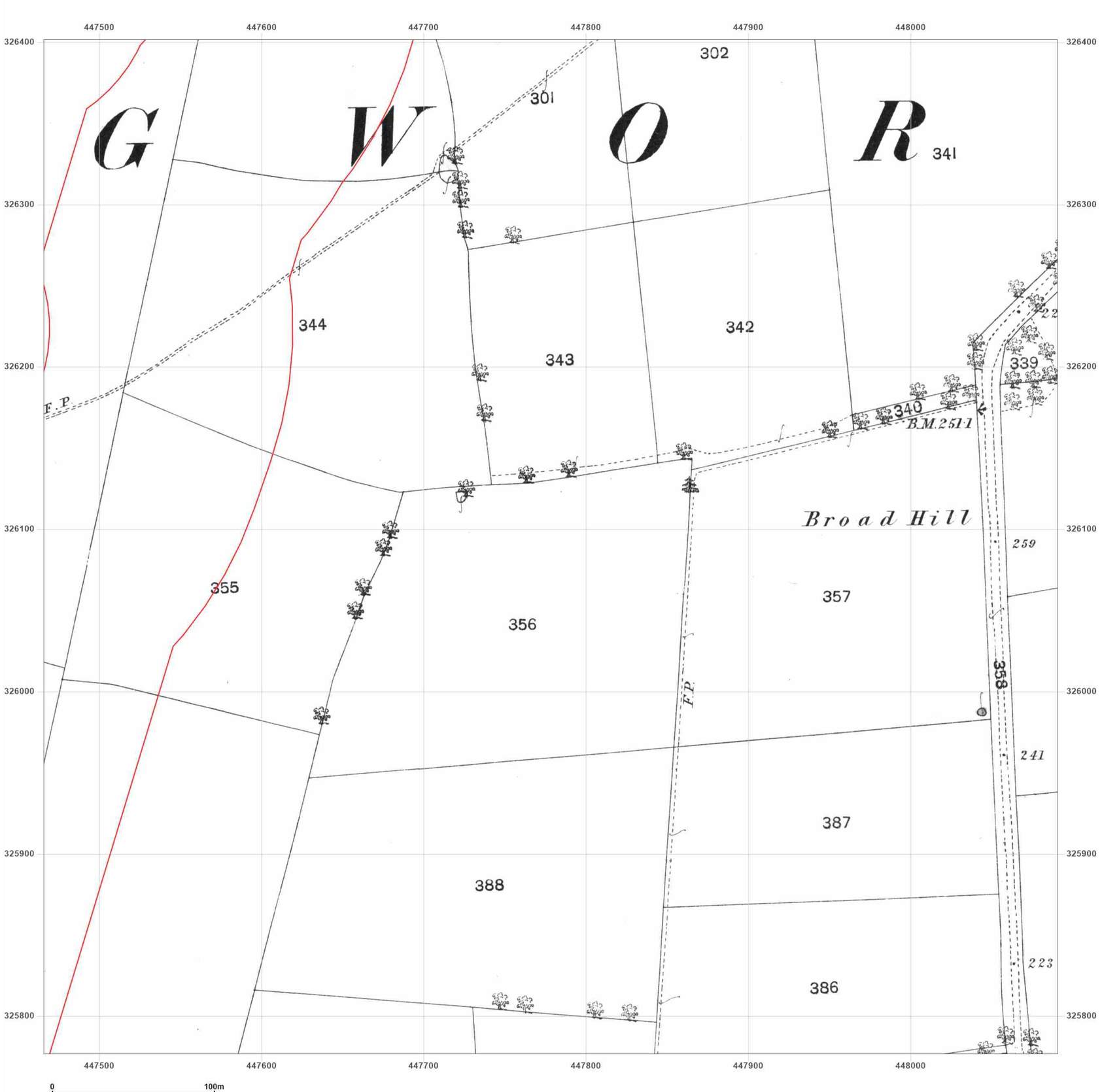
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

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

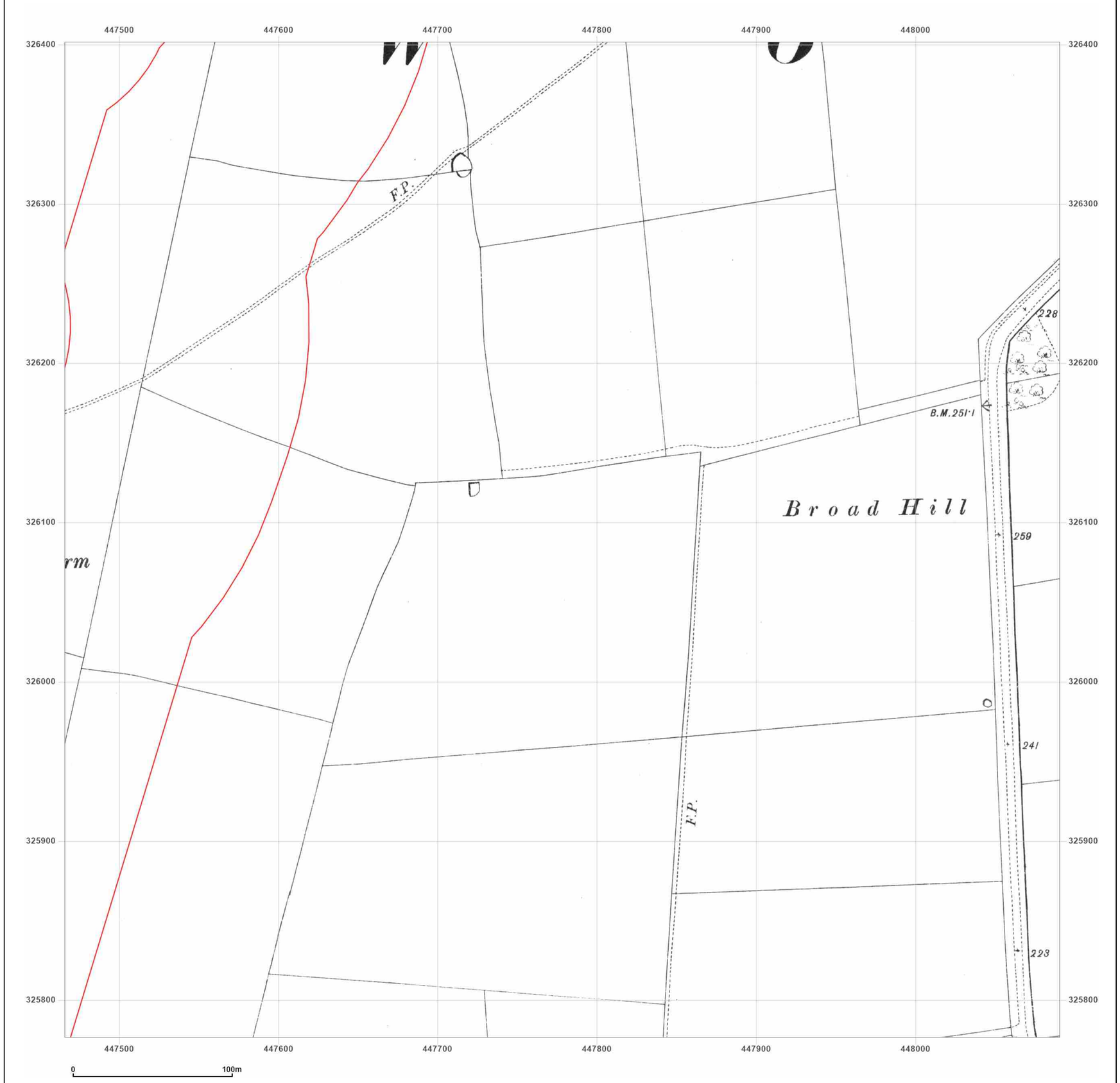
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Groundsure INSIGHTS

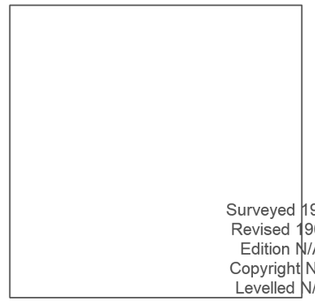
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

N
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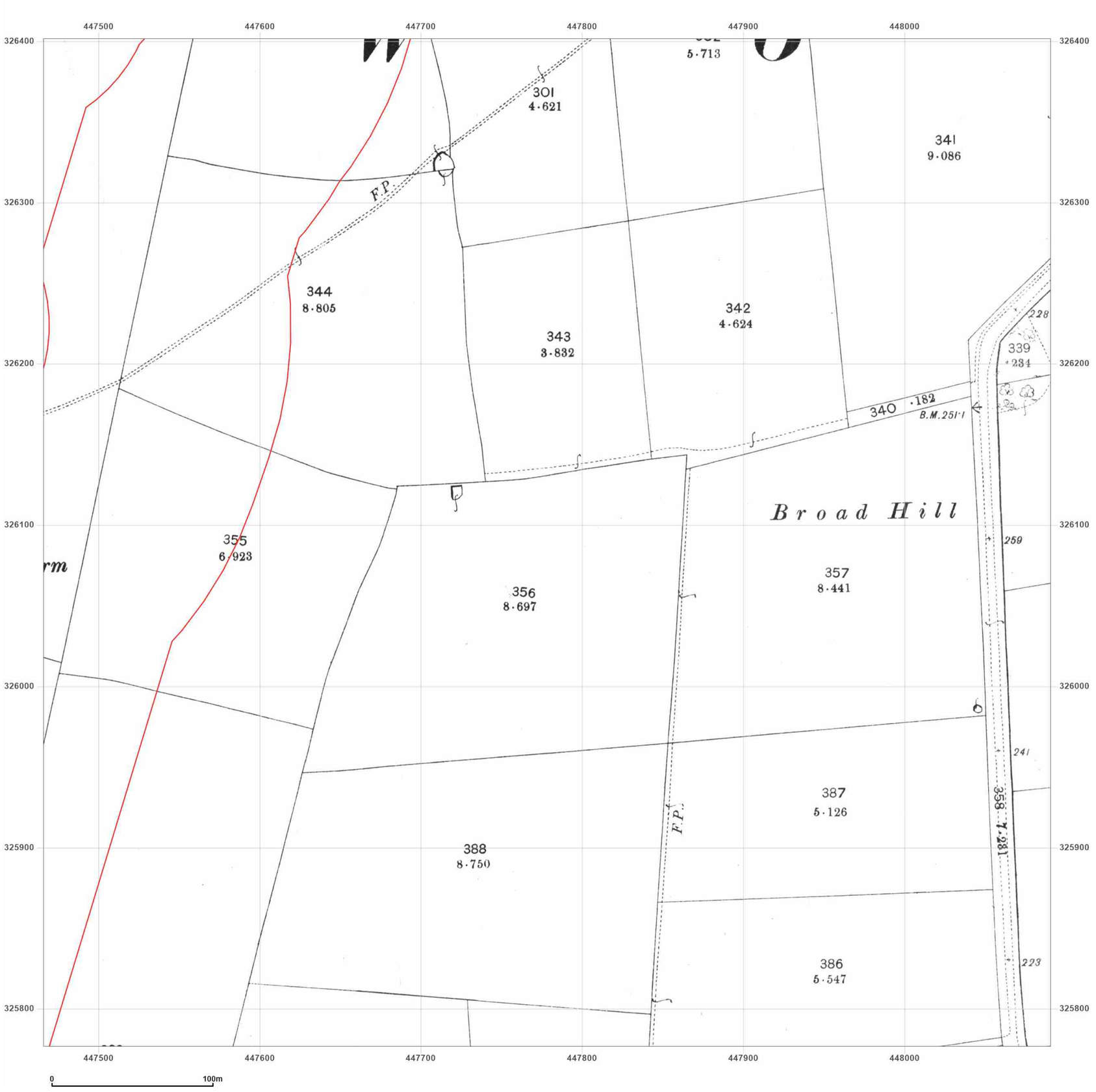
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

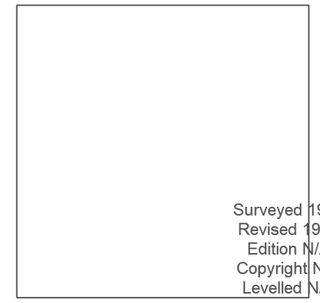
Map Name: County Series

Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

N
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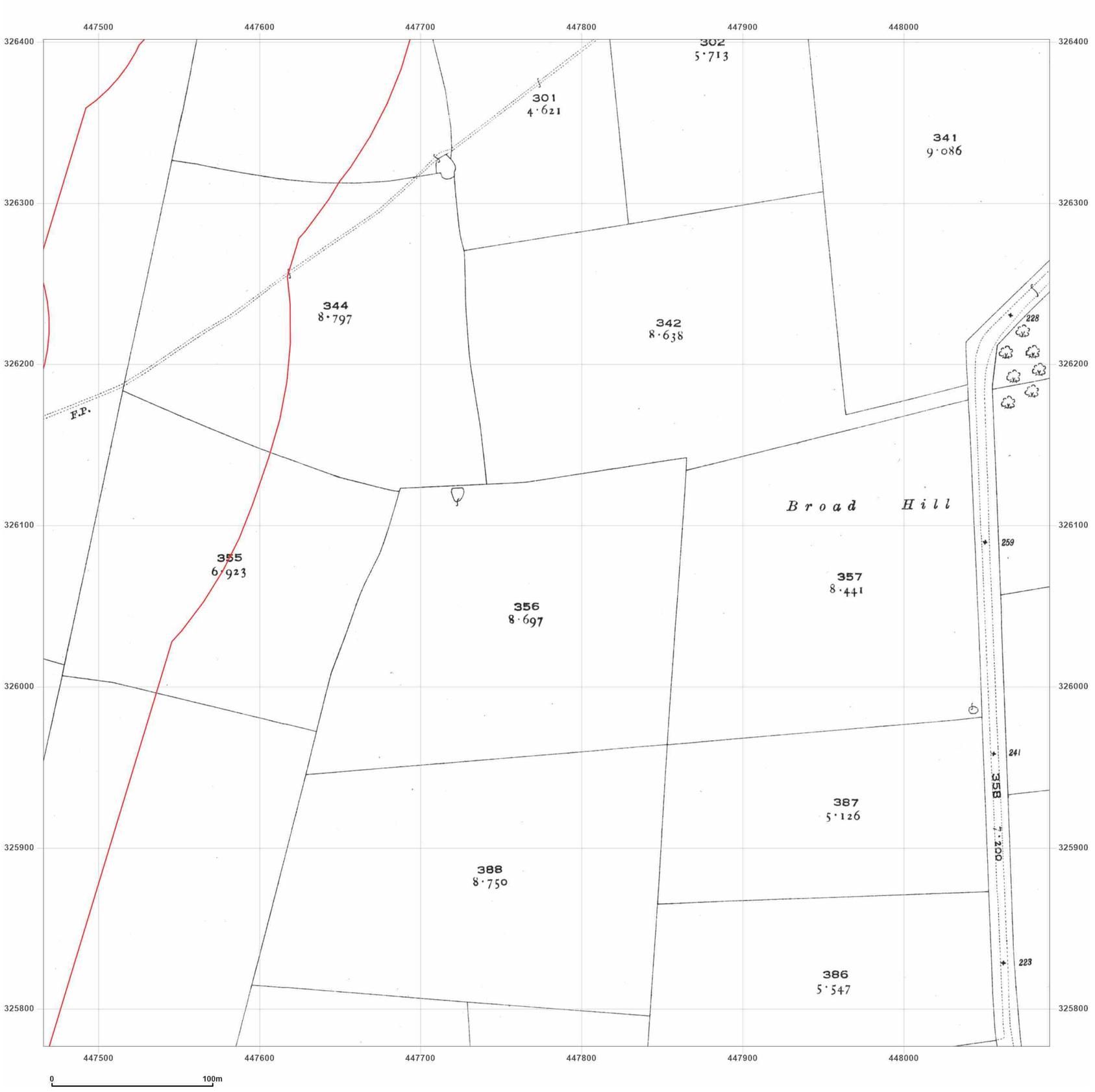
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: County Series

Map date: **1921**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

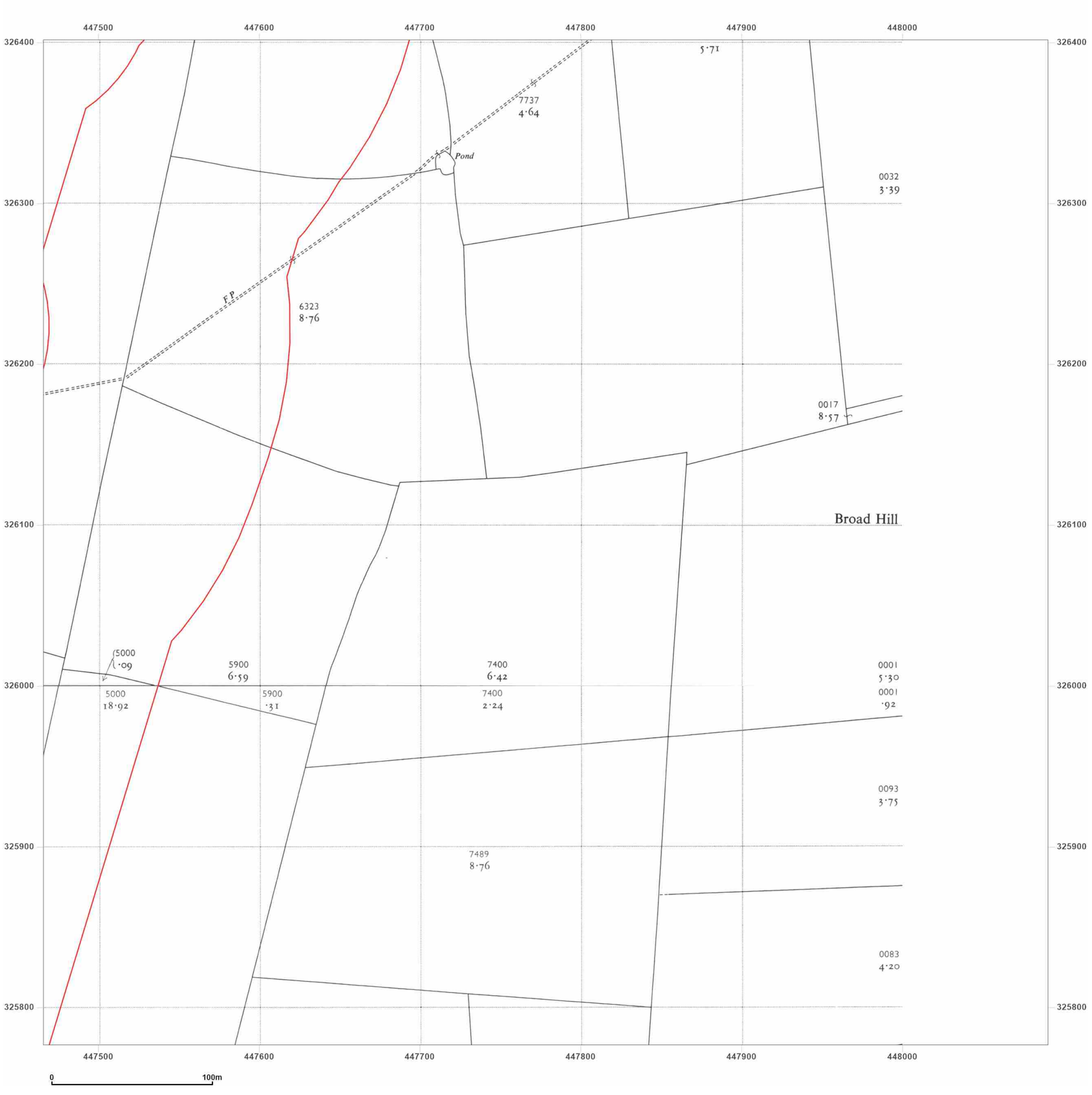
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: National Grid

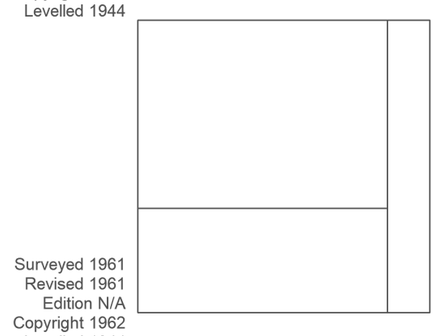
Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
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Revised 1961
Edition N/A
Copyright 1962
Levelled 1944



Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: National Grid

Map date: **1967-1969**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

Surveyed 1968
Revised 1968
Edition N/A
Copyright N/A
Levelled 1966

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1944

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1966

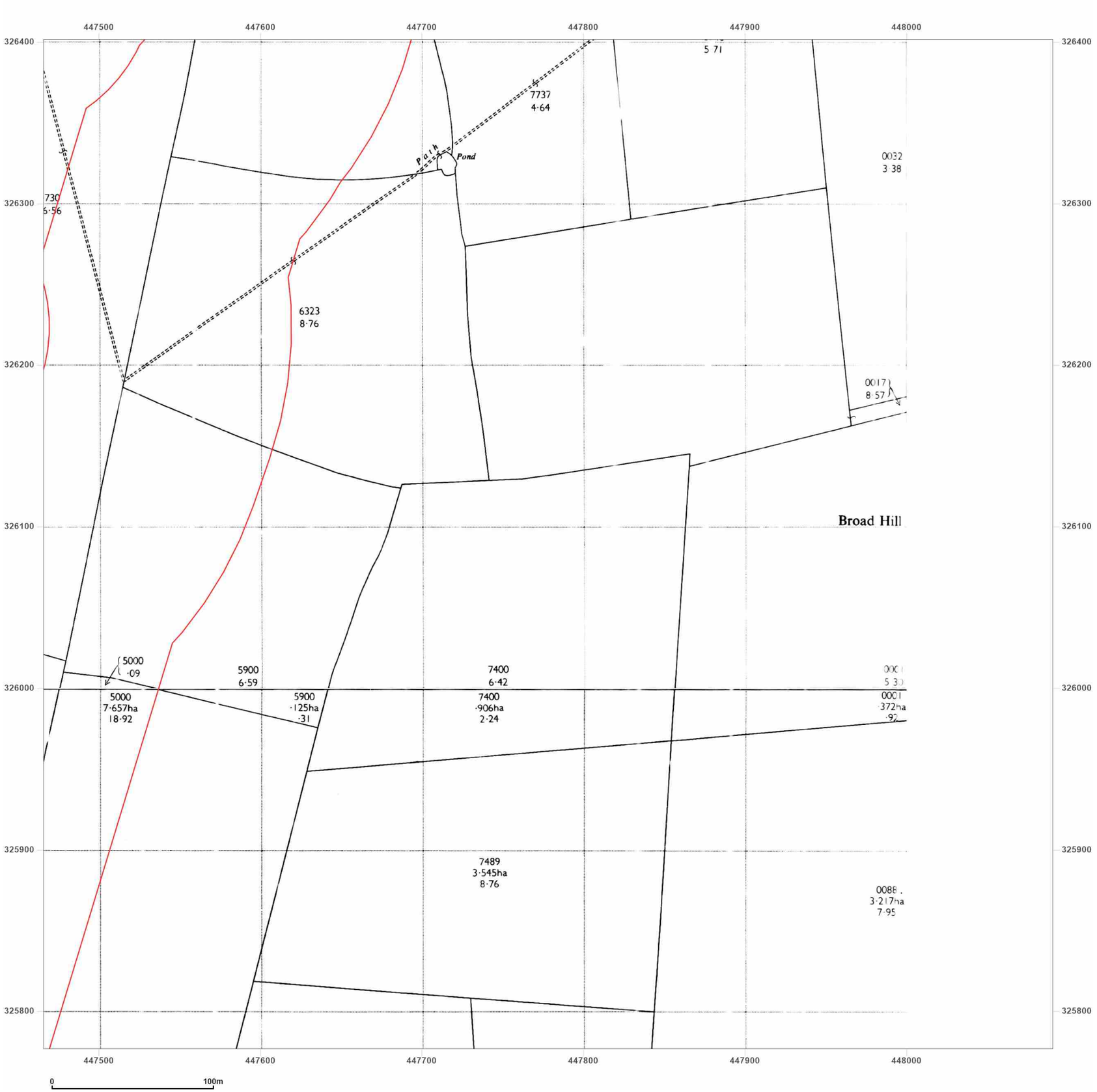
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: National Grid

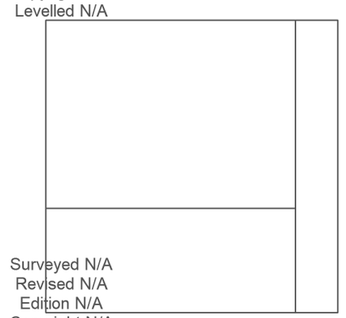
Map date: **1967-1972**

Scale: 1:2,500

Printed at: 1:2,500

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



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

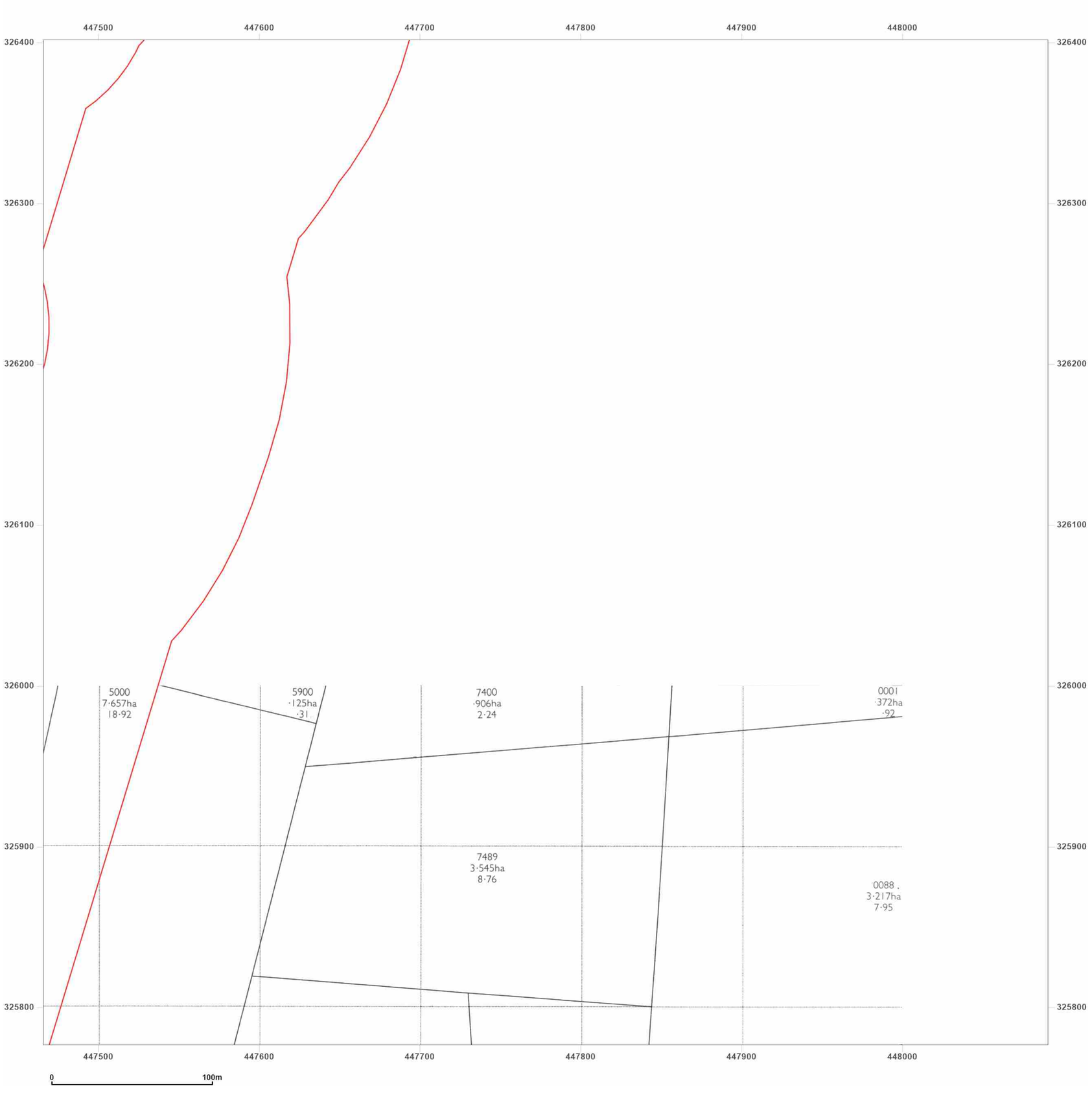
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

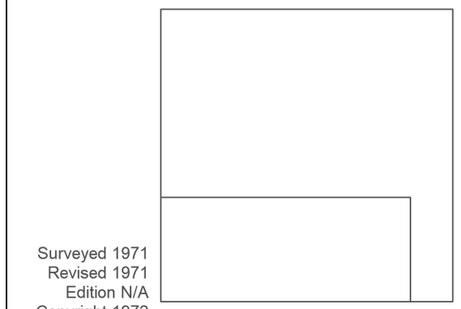
Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

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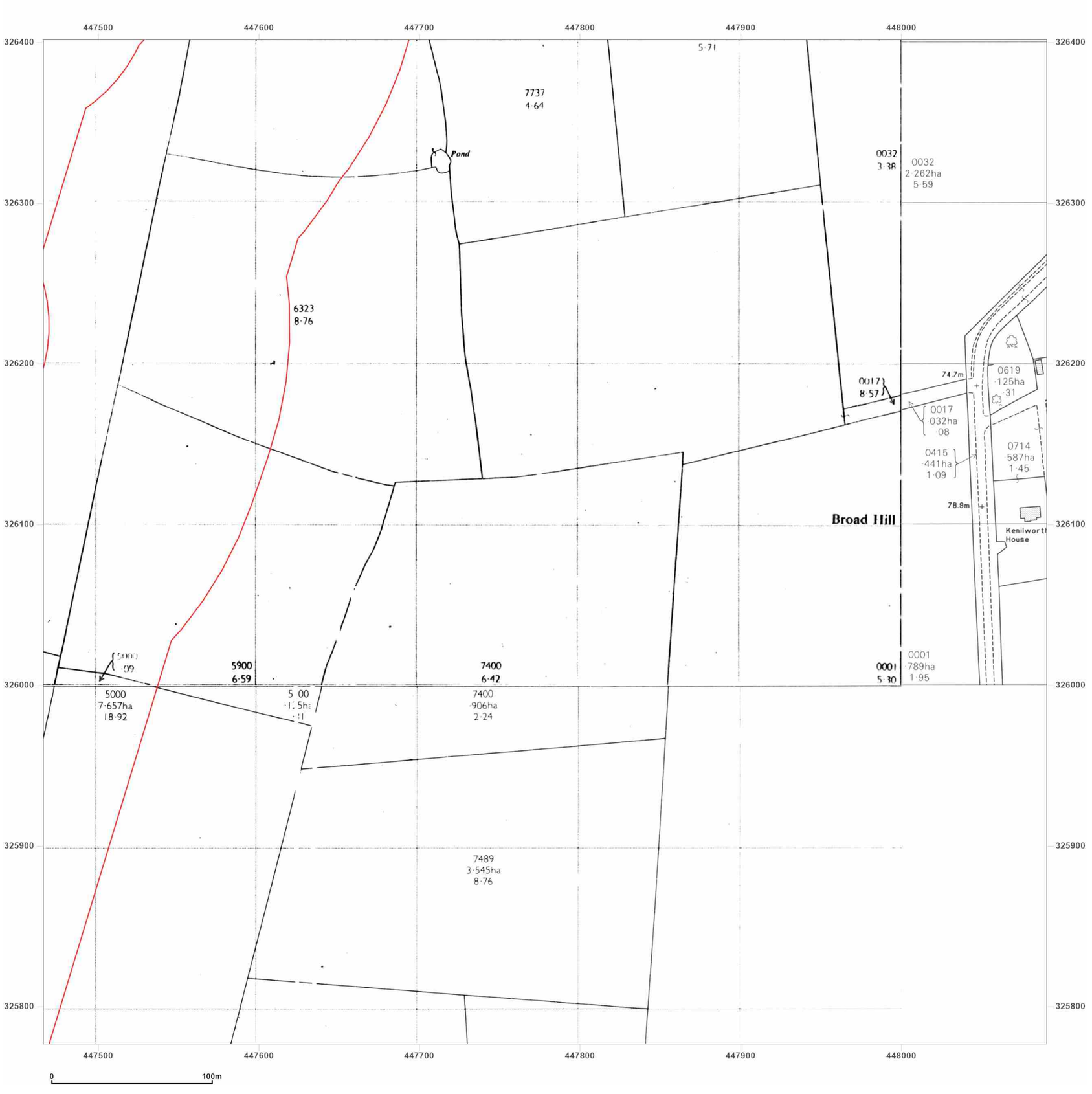
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: National Grid

Map date: **1983-1988**

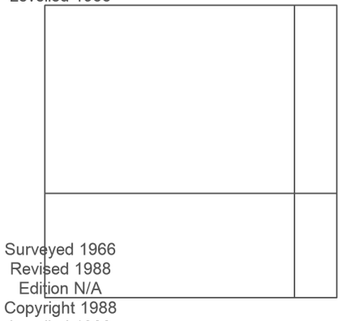
Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1966
Revised 1988
Edition N/A
Copyright 1988
Levelled 1966

Surveyed 1981
Revised 1981
Edition N/A
Copyright 1983
Levelled 1966



Surveyed 1966
Revised 1988
Edition N/A
Copyright 1988
Levelled 1966

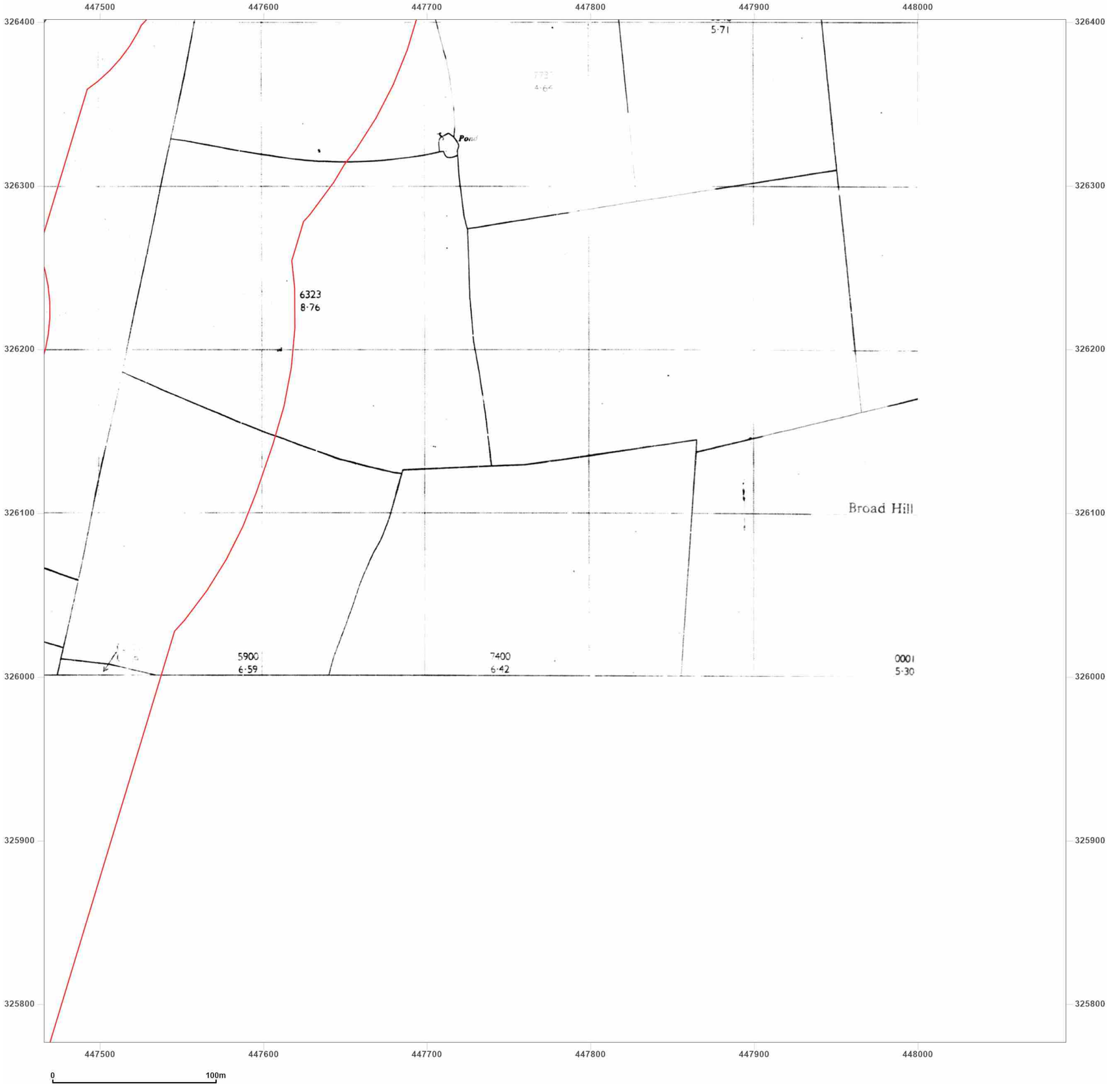
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: National Grid

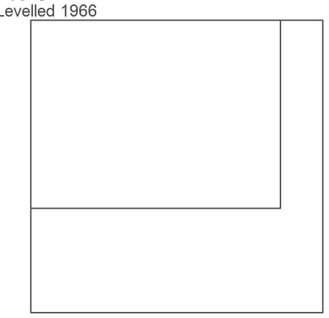
Map date: **1991**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966



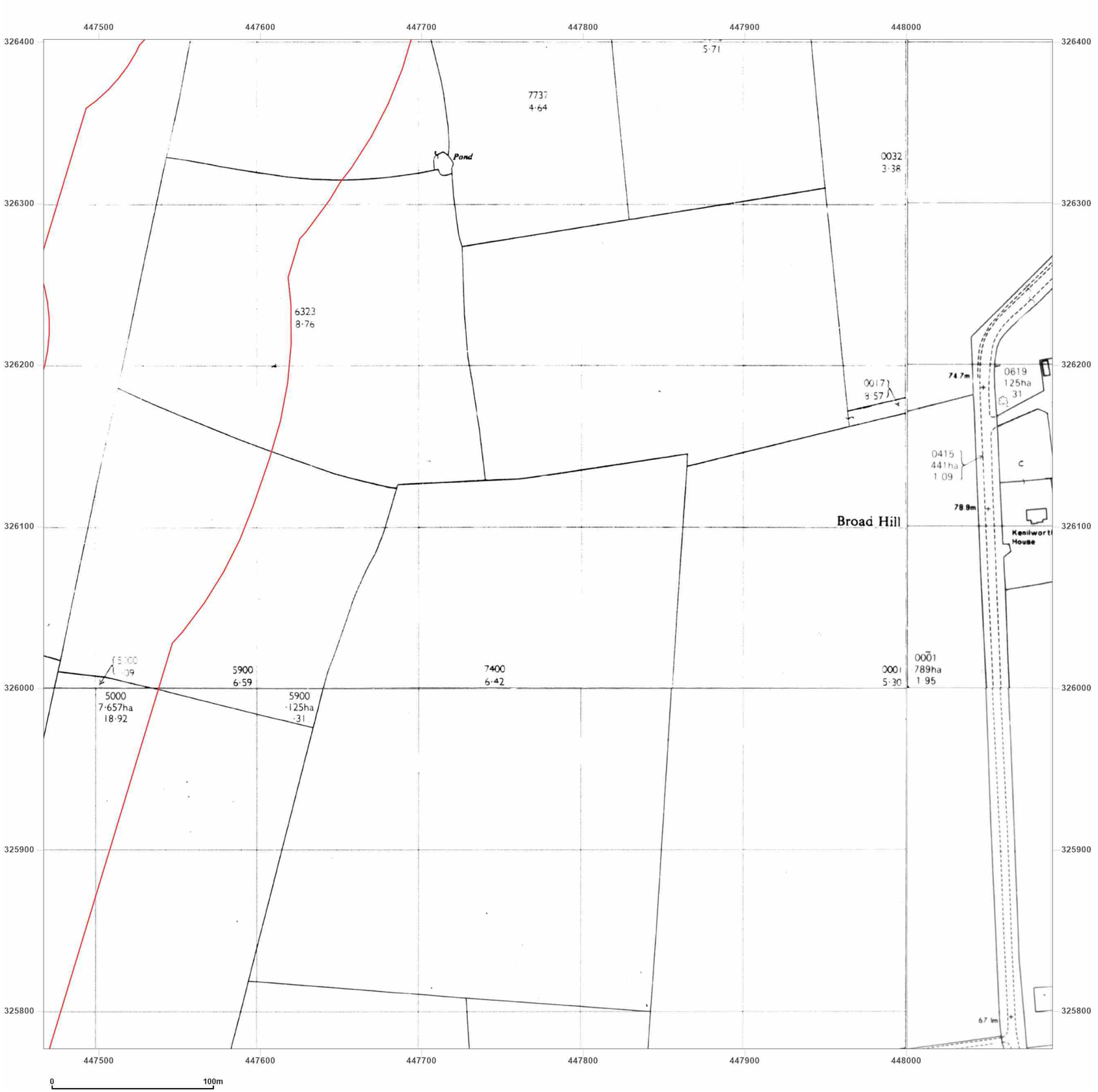
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

Map Name: National Grid

Map date: **1989-1993**

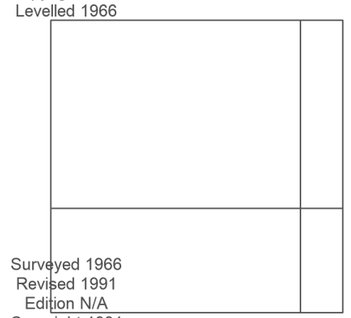
Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1966
Revised 1989
Edition N/A
Copyright 1989
Levelled 1966

Surveyed 1966
Revised 1981
Edition N/A
Copyright 1991
Levelled 1966



Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

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

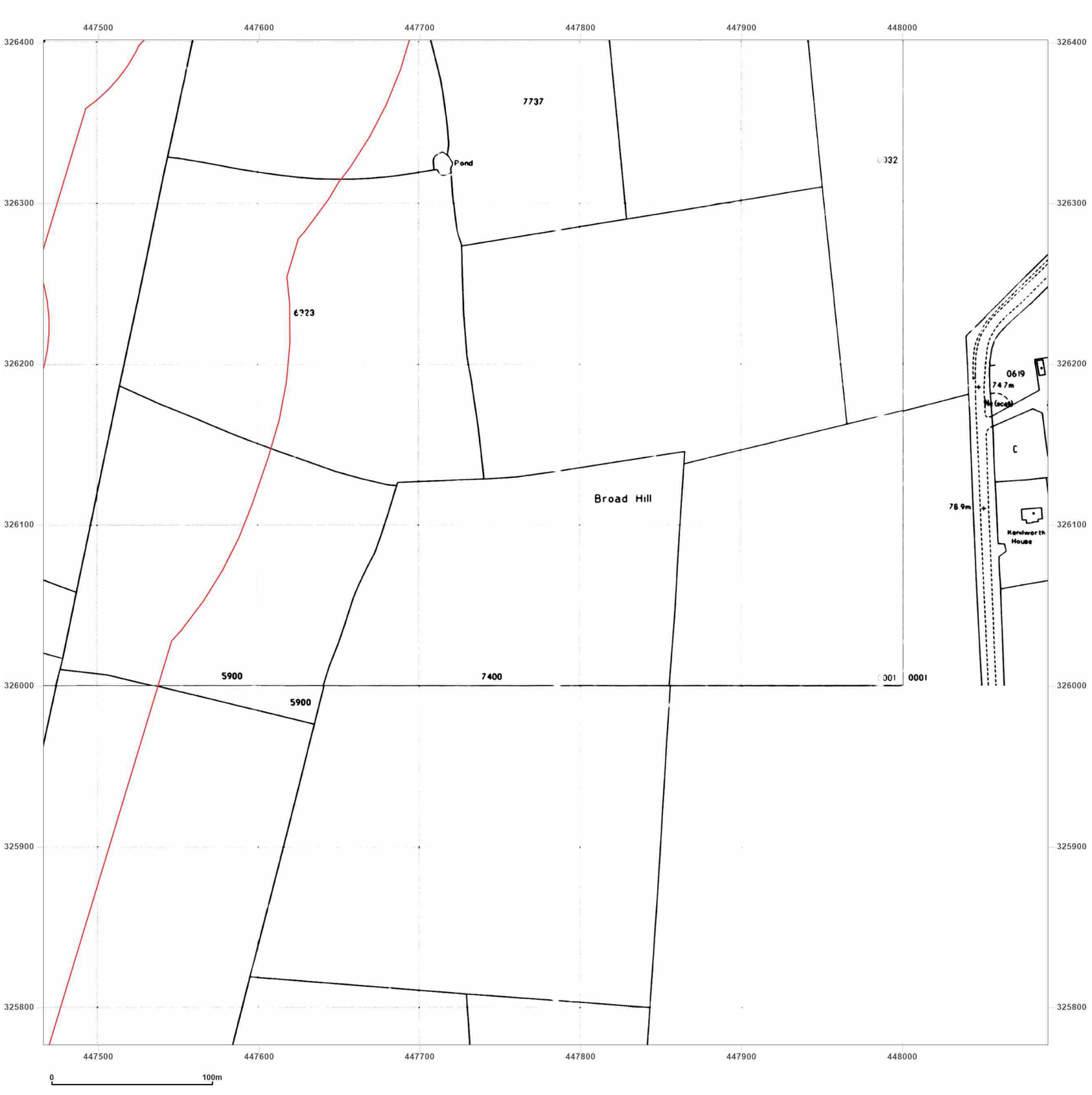
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_2
Grid Ref: 447778, 326089

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

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

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

Surveyed N/A
Revised N/A
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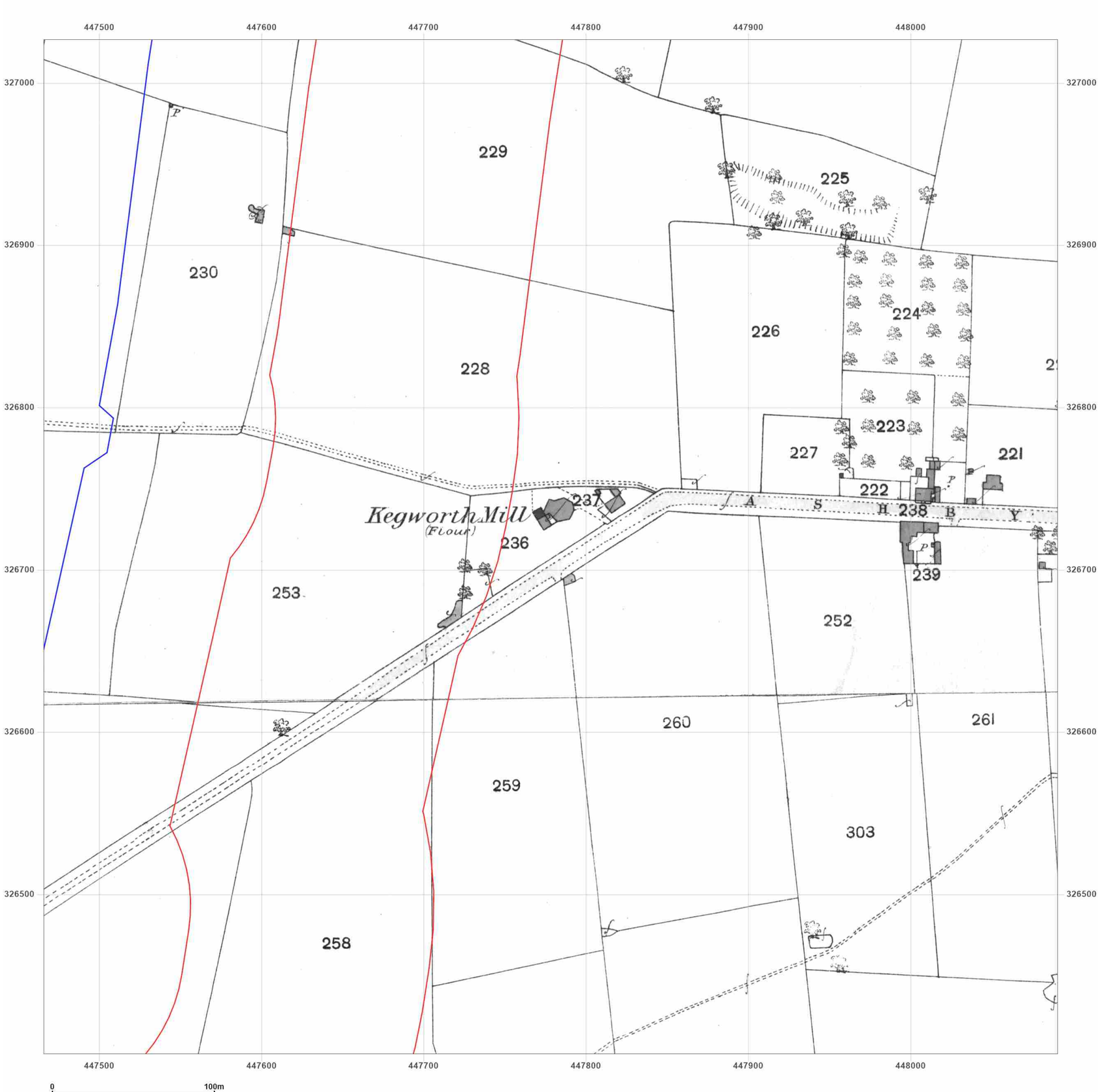
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Production date: 13 December 2024

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

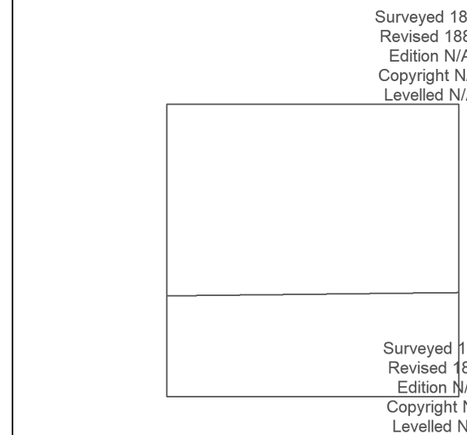
Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

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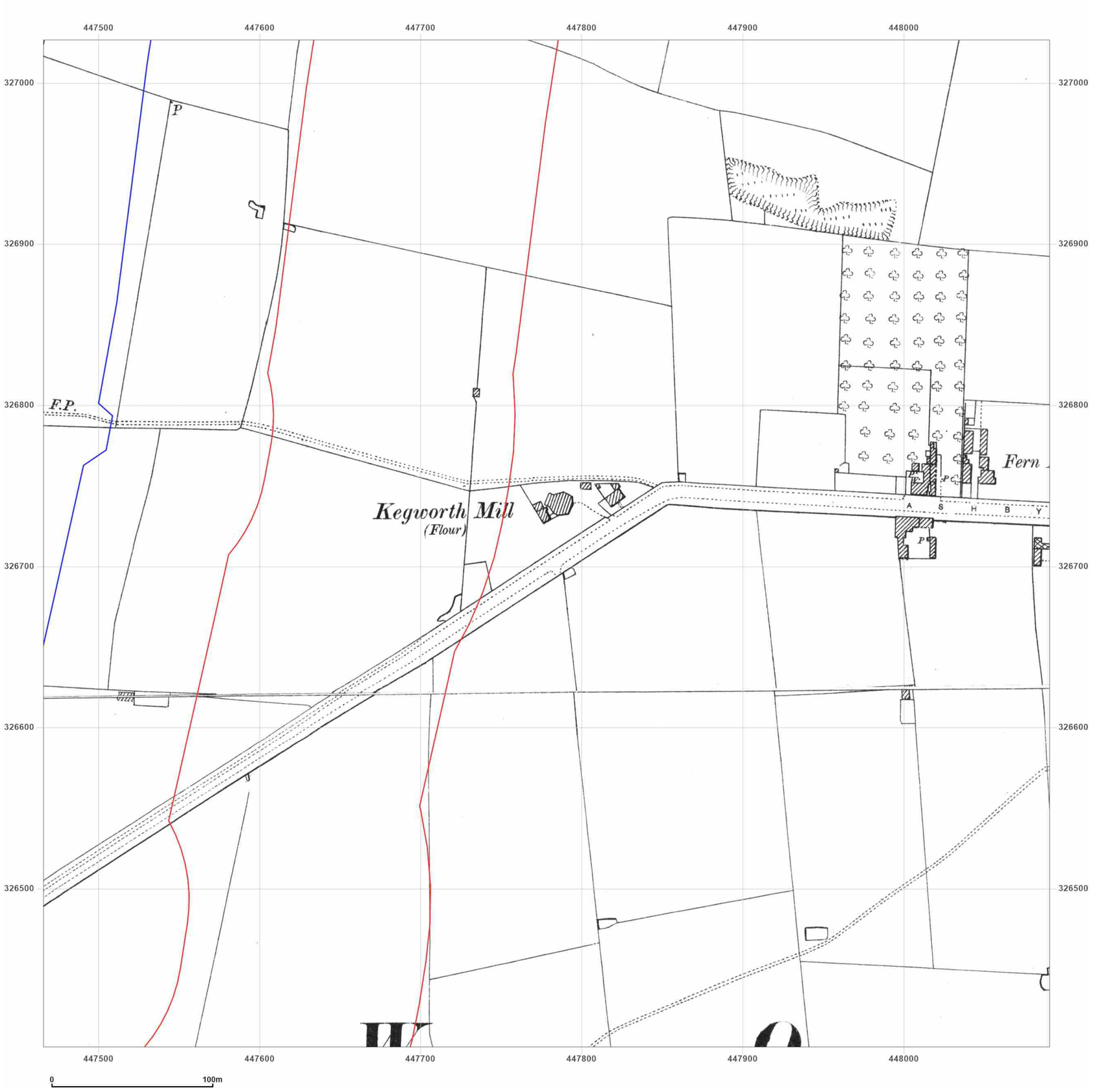
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Production date: 13 December 2024

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: County Series

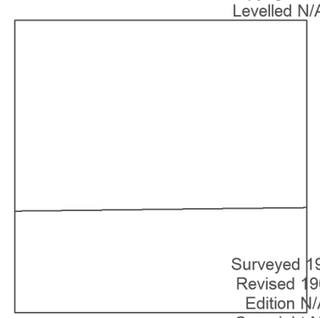
Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

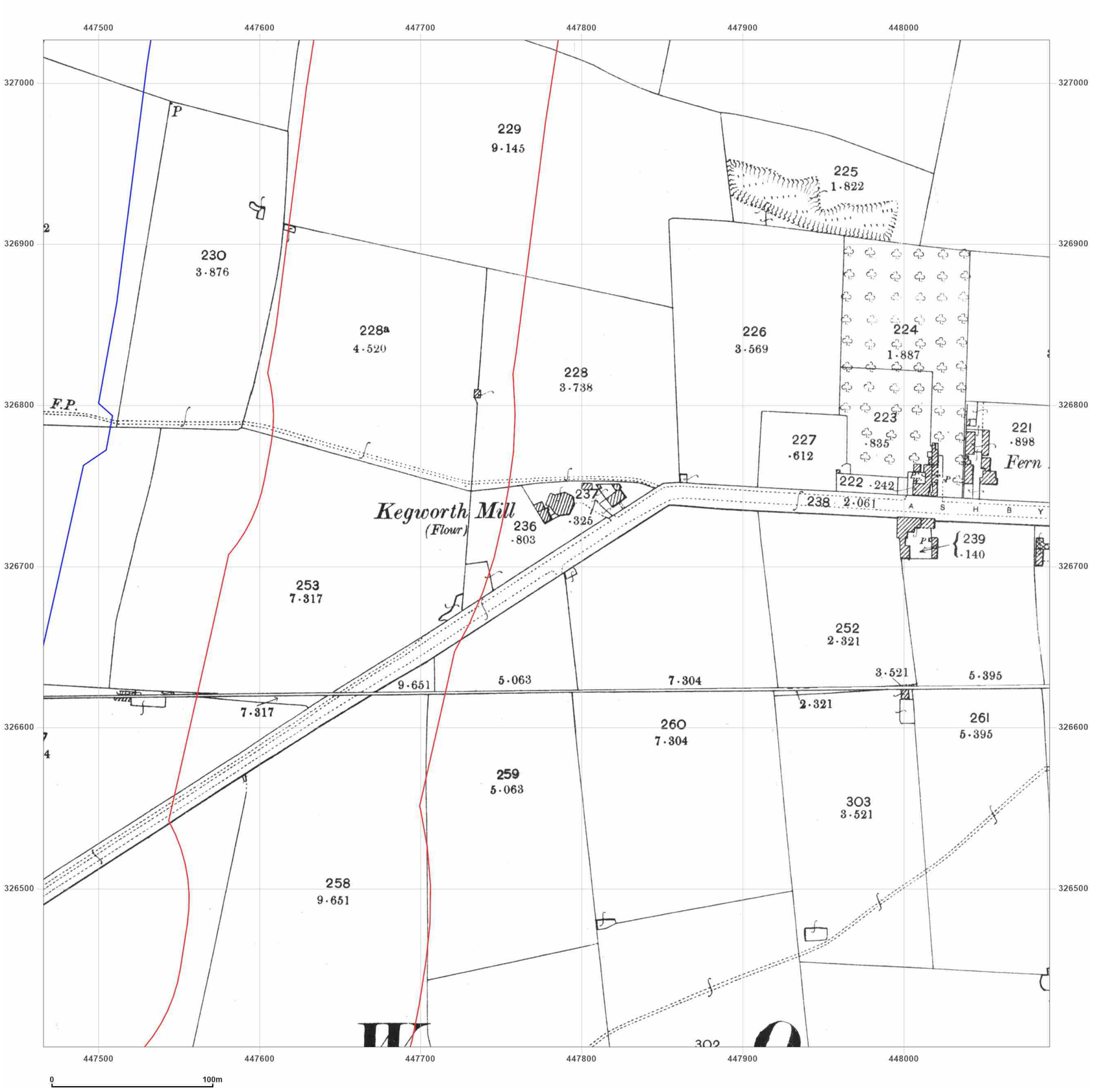
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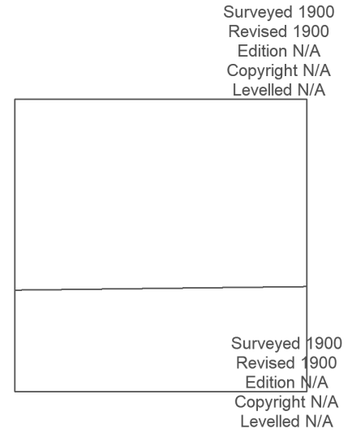
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East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

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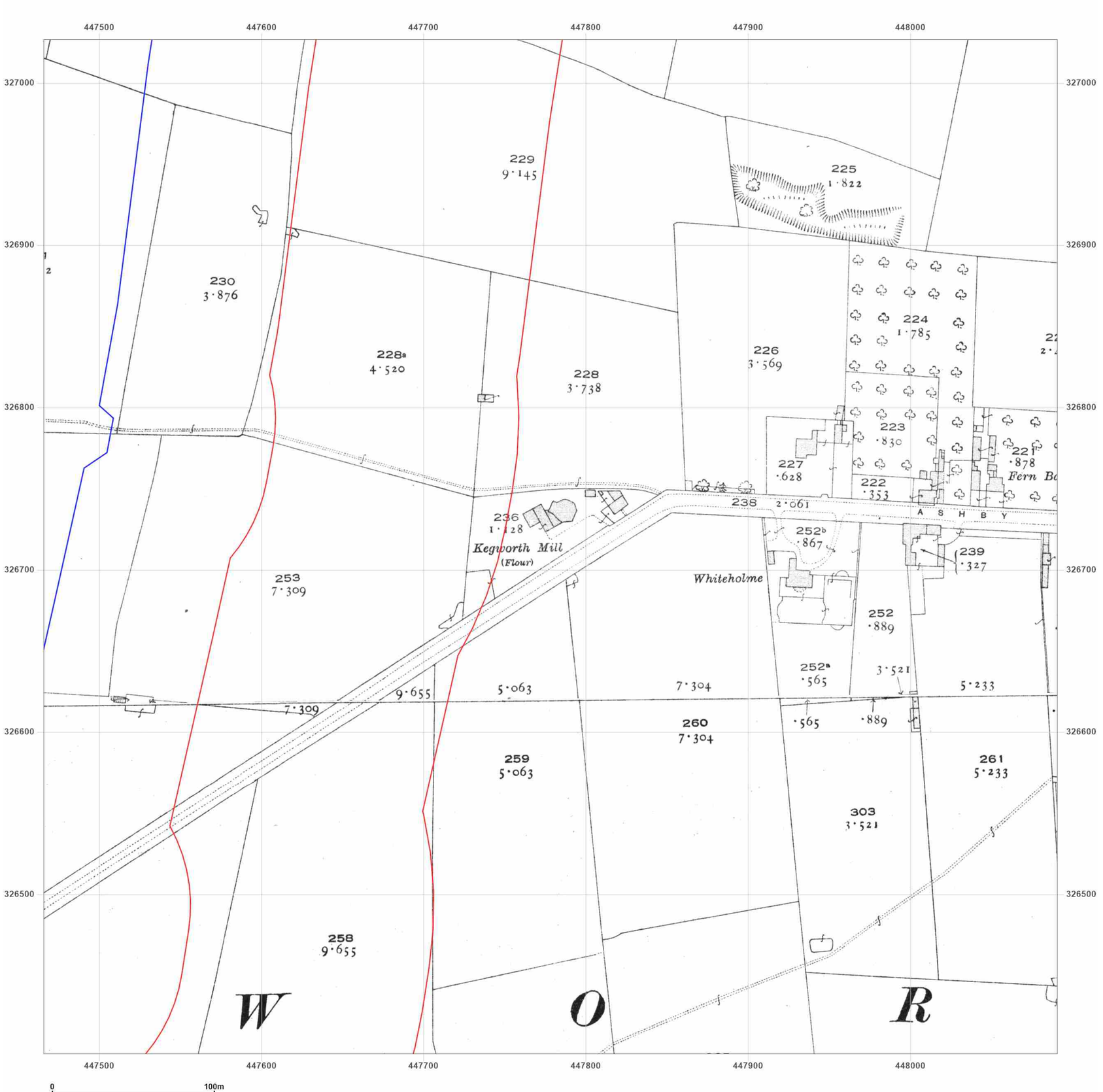
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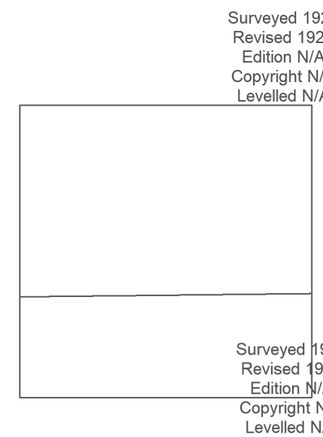
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: County Series
Map date: **1921**
Scale: 1:2,500
Printed at: 1:2,500

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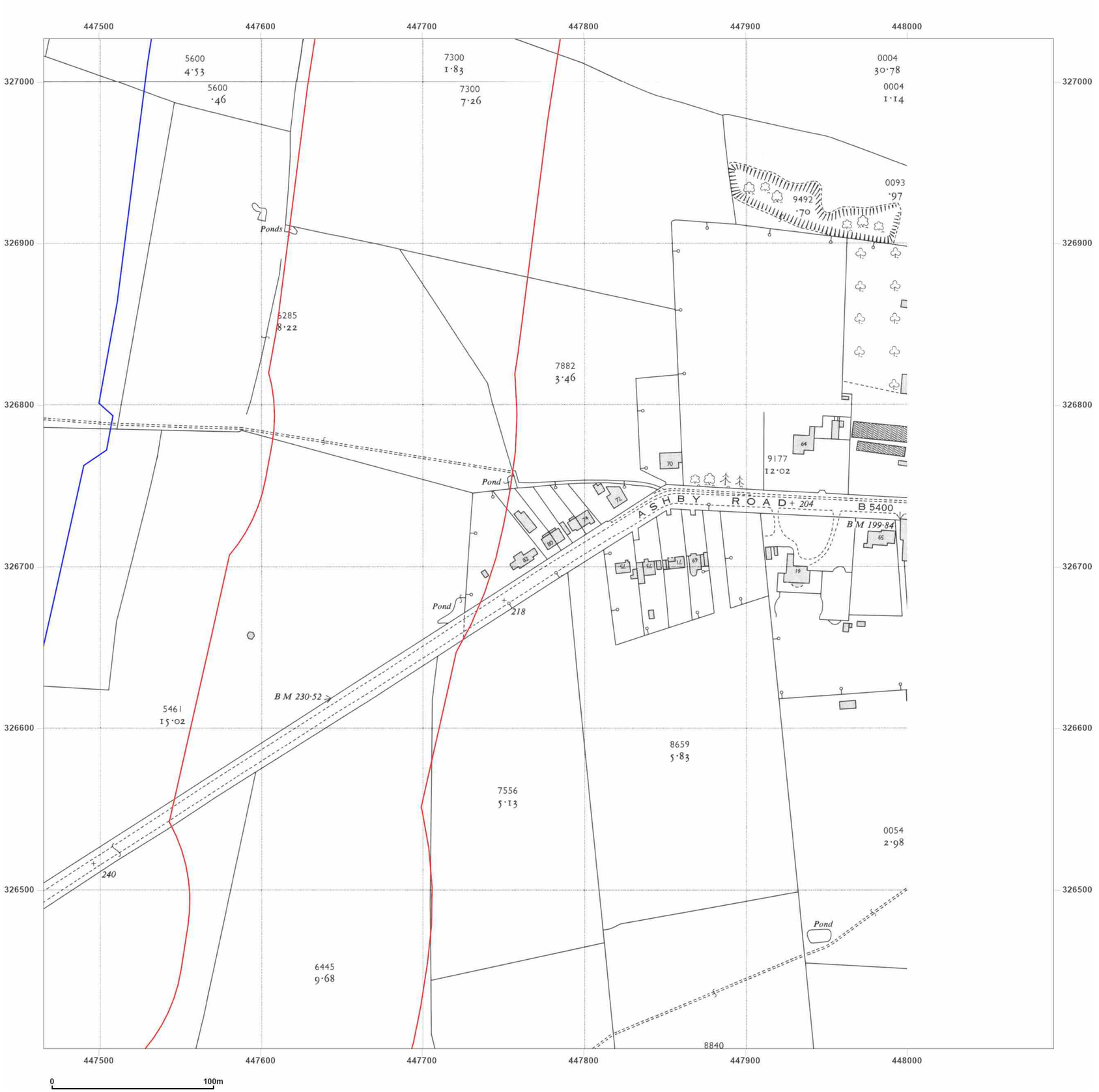
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: National Grid

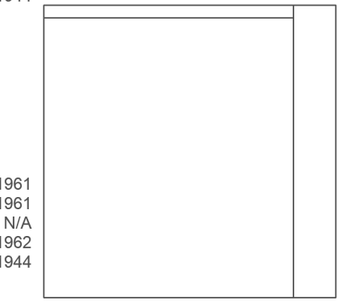
Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944



Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: National Grid

Map date: **1967-1970**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1966

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

Surveyed 1968
Revised 1968
Edition N/A
Copyright N/A
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: National Grid

Map date: **1967-1970**

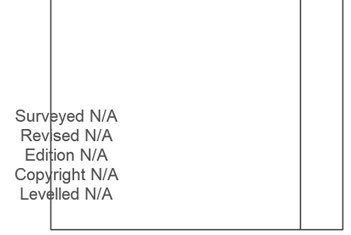
Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

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



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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: National Grid

Map date: **1986-1991**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1988
Levelled 1966

Surveyed 1966
Revised 1986
Edition N/A
Copyright 1986
Levelled 1966

Surveyed 1966
Revised 1988
Edition N/A
Copyright 1988
Levelled 1966

Surveyed 1966
Revised 1981
Edition N/A
Copyright 1991
Levelled 1966

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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:2,500

Printed at: 1:2,500

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

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

Surveyed N/A
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_3
Grid Ref: 447778, 326714

Map Name: National Grid

Map date: **1989-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled 1966

Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

Surveyed 1966
Revised 1989
Edition N/A
Copyright 1989
Levelled 1966

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

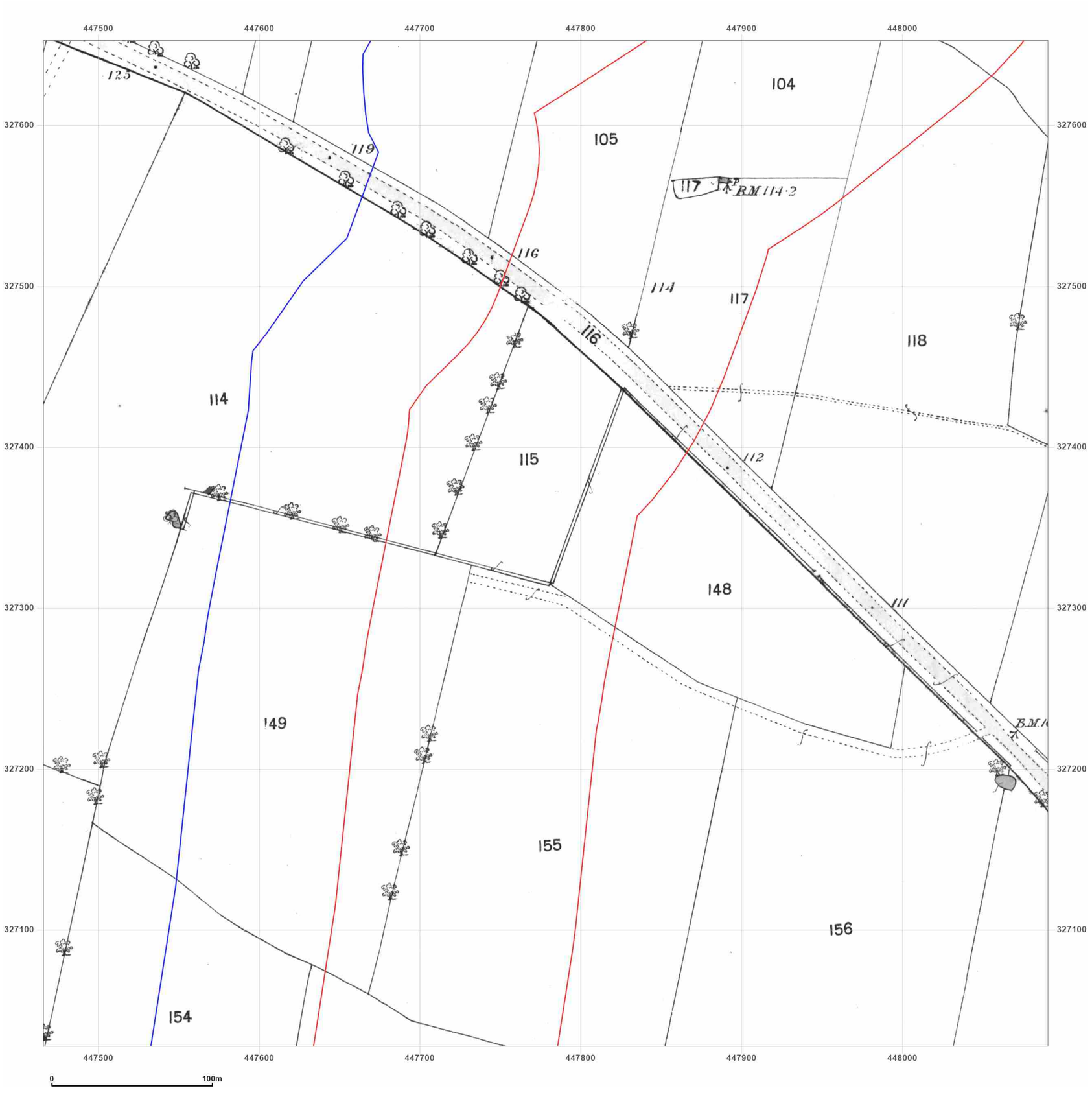
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

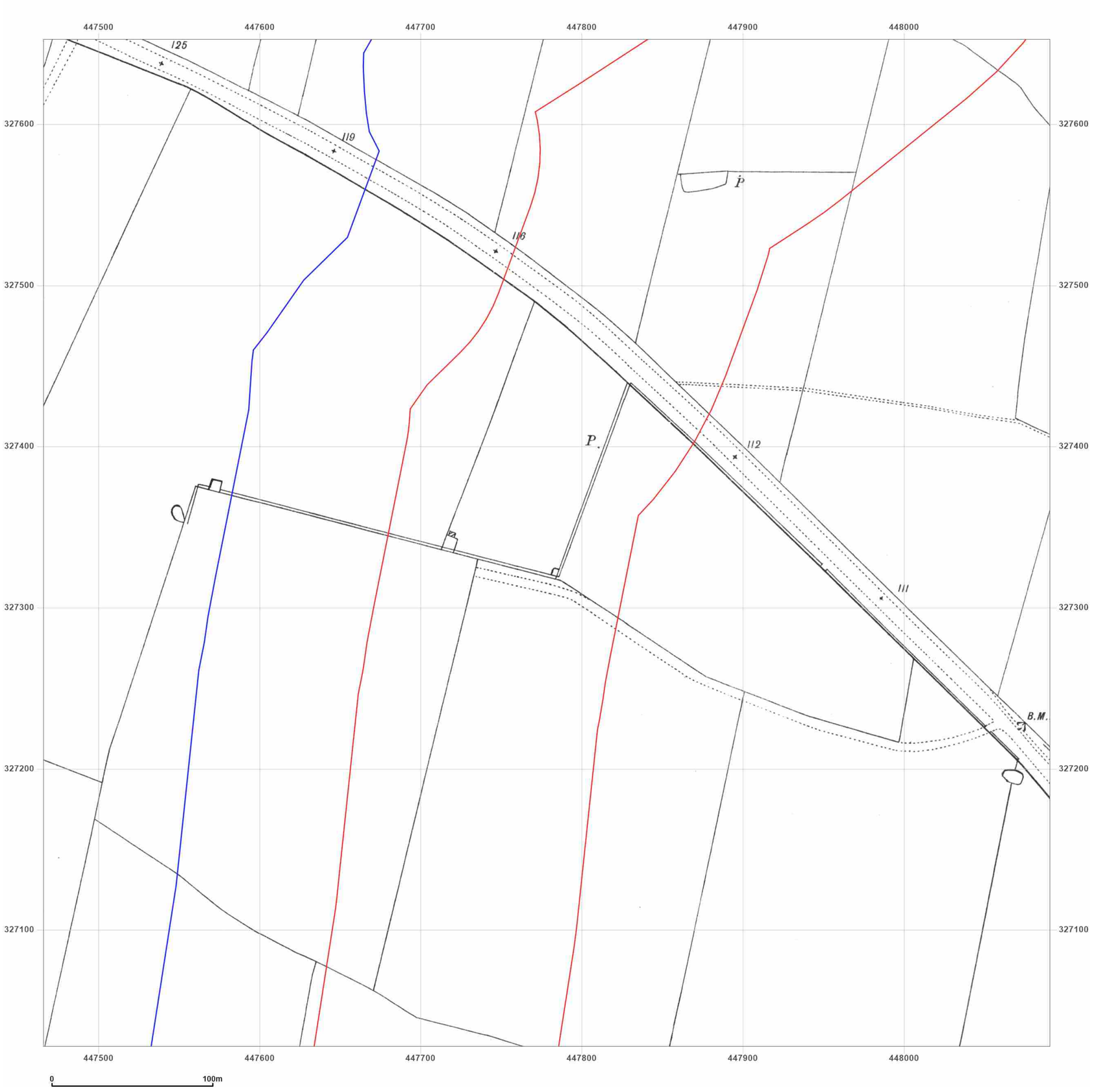
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: County Series

Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

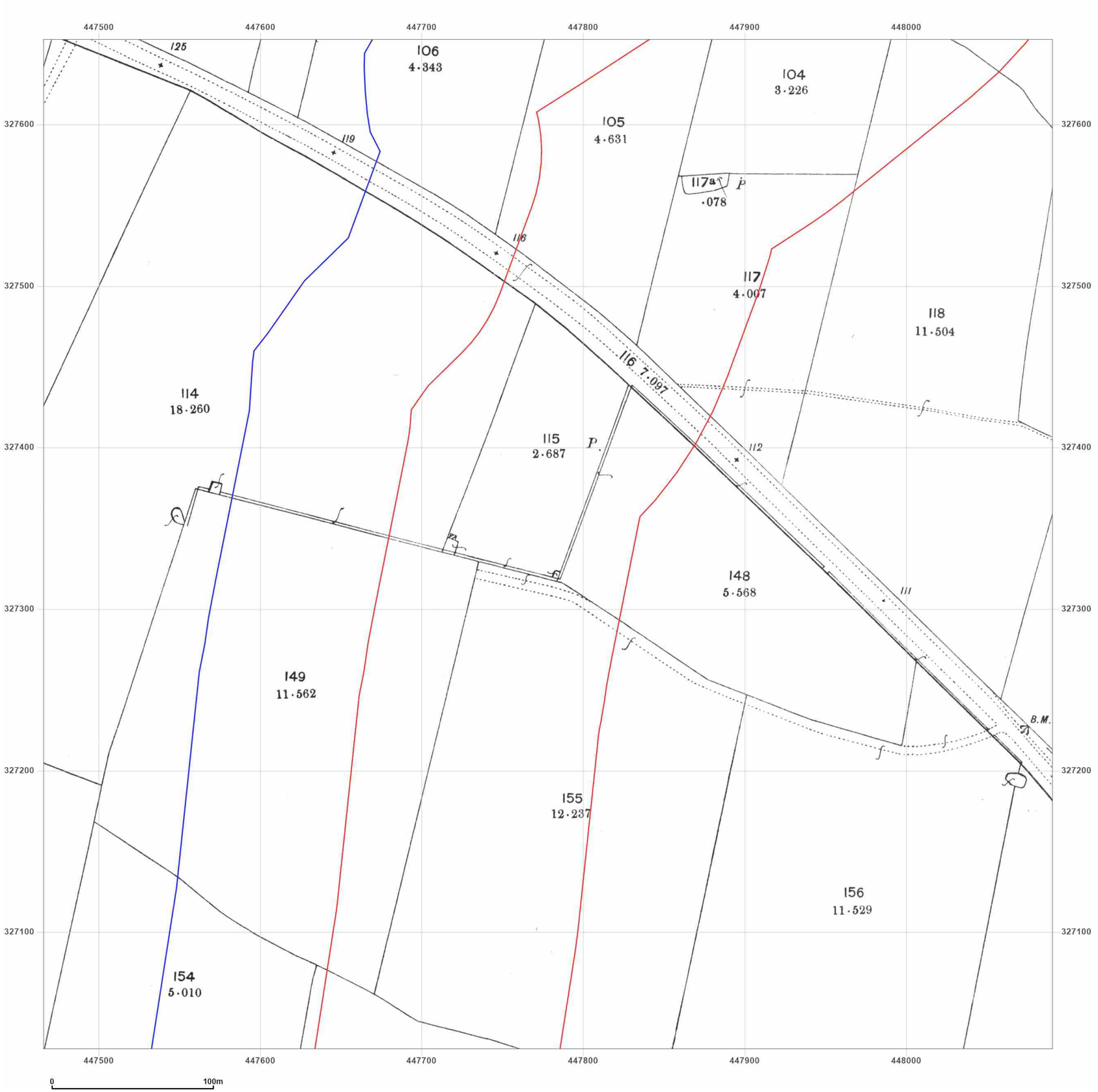
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

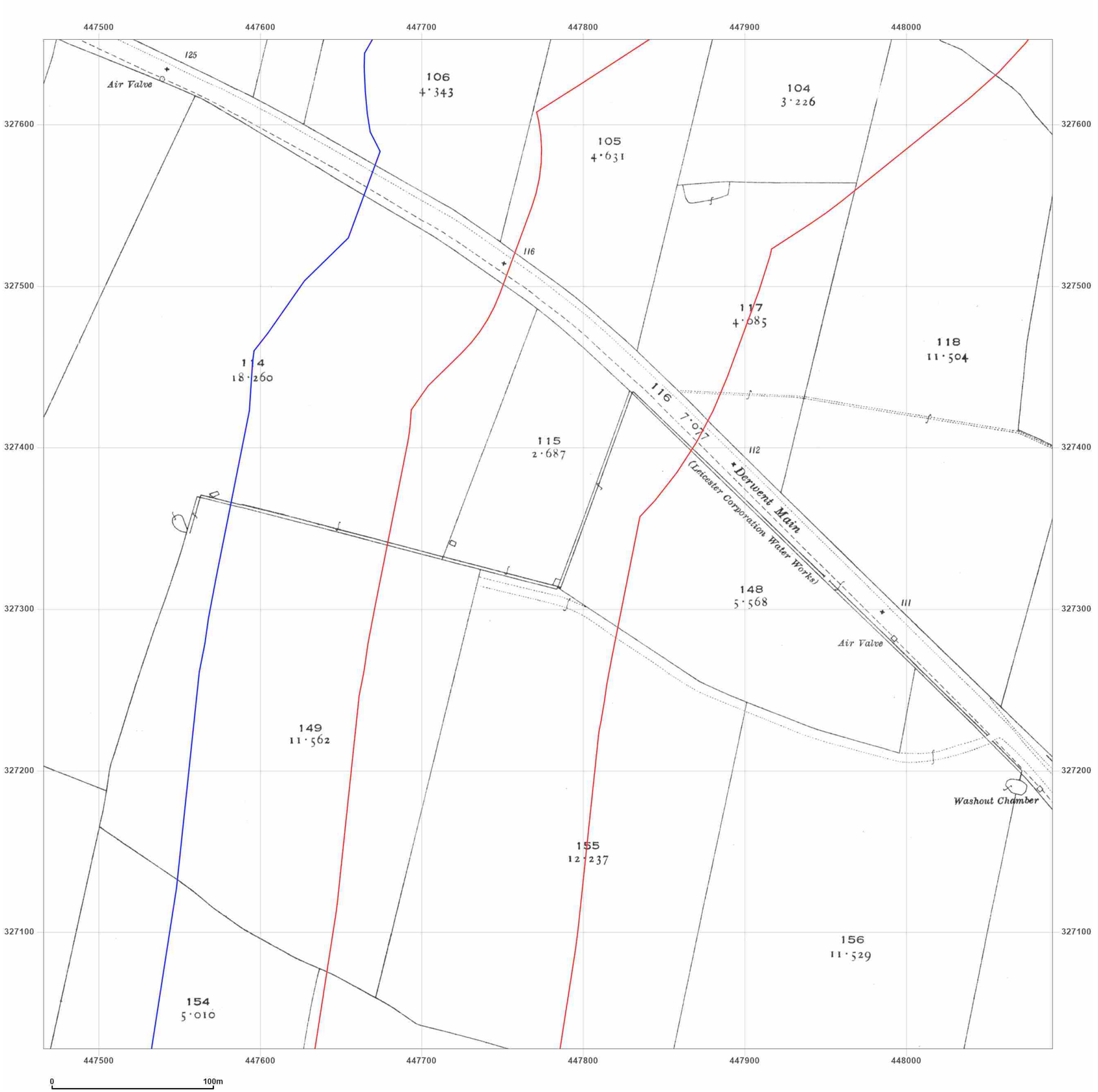
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Site Details:

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M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: County Series

Map date: **1921**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

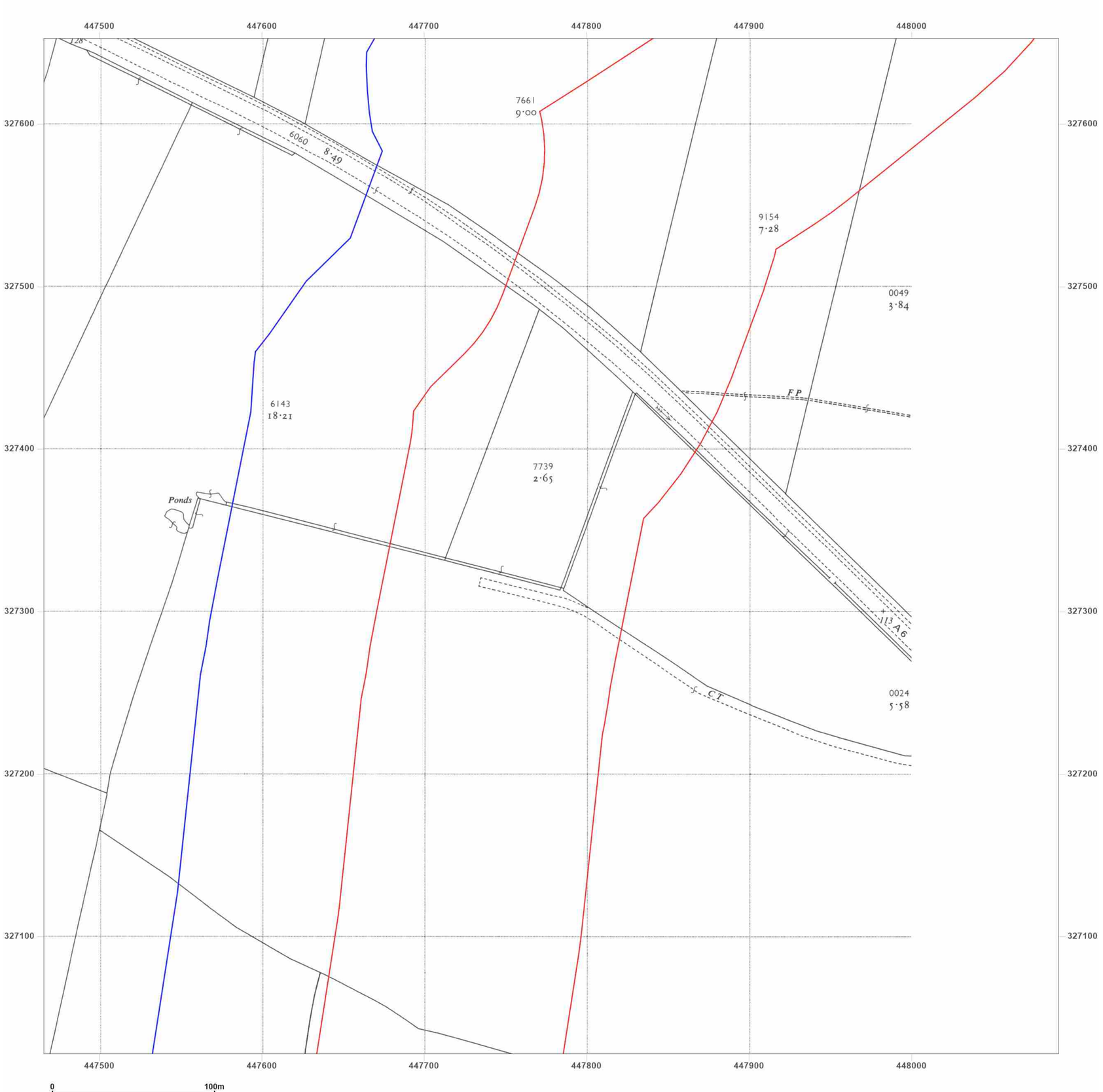
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: National Grid

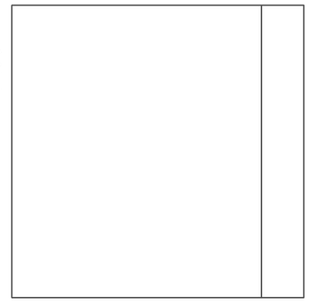
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Printed at: 1:2,500

N
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944



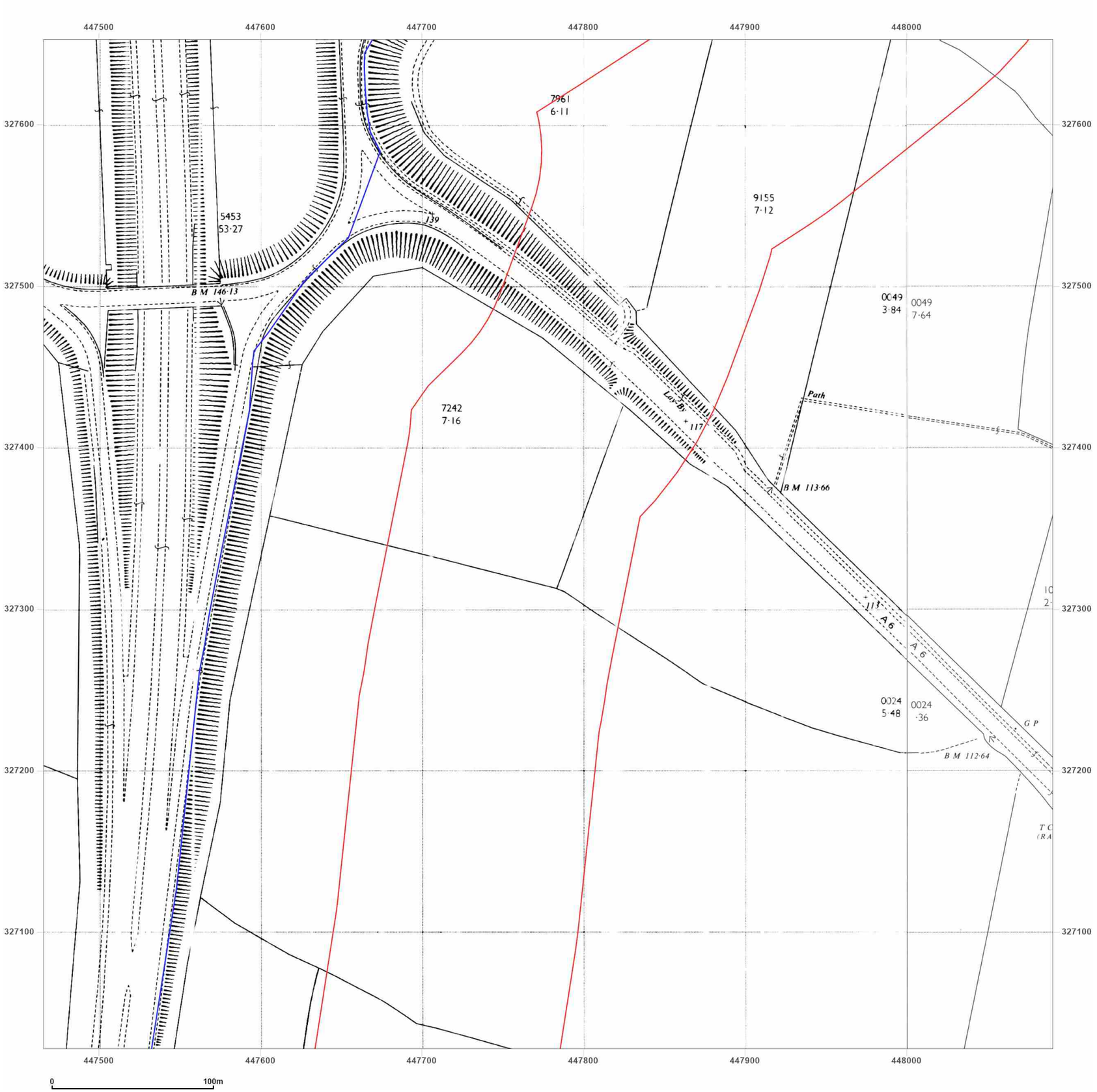
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: National Grid

Map date: **1967-1970**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A	Surveyed 1968
Revised N/A	Revised 1968
Edition N/A	Edition N/A
Copyright N/A	Copyright 1970
Levelled N/A	Levelled 1966

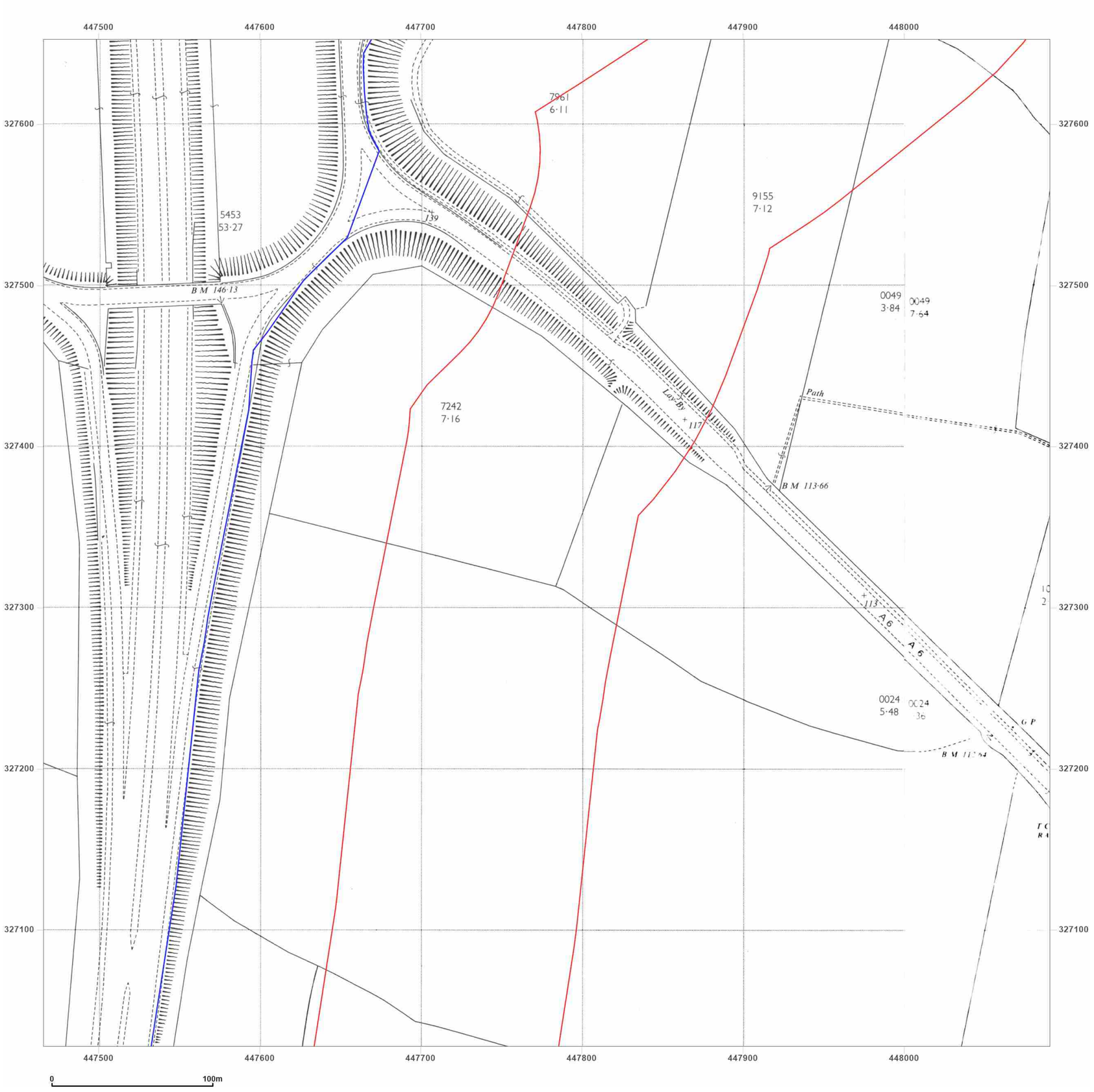
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: National Grid

Map date: **1967-1970**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1966	Surveyed N/A
Revised 1966	Revised N/A
Edition N/A	Edition N/A
Copyright 1967	Copyright N/A
Levelled 1966	Levelled N/A

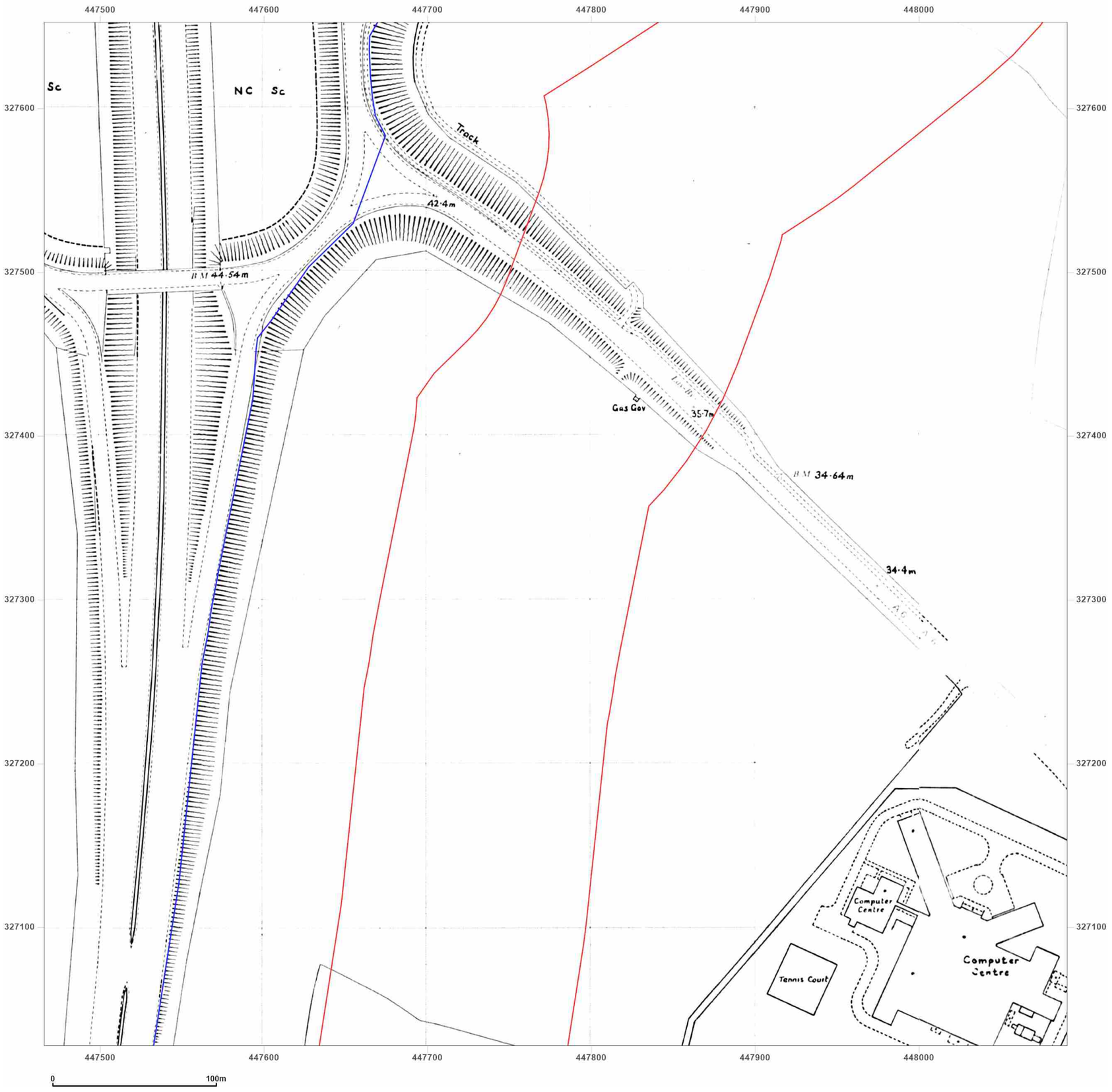
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: National Grid

Map date: **1982**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1982
Levelled 1966

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1982
Levelled 1966

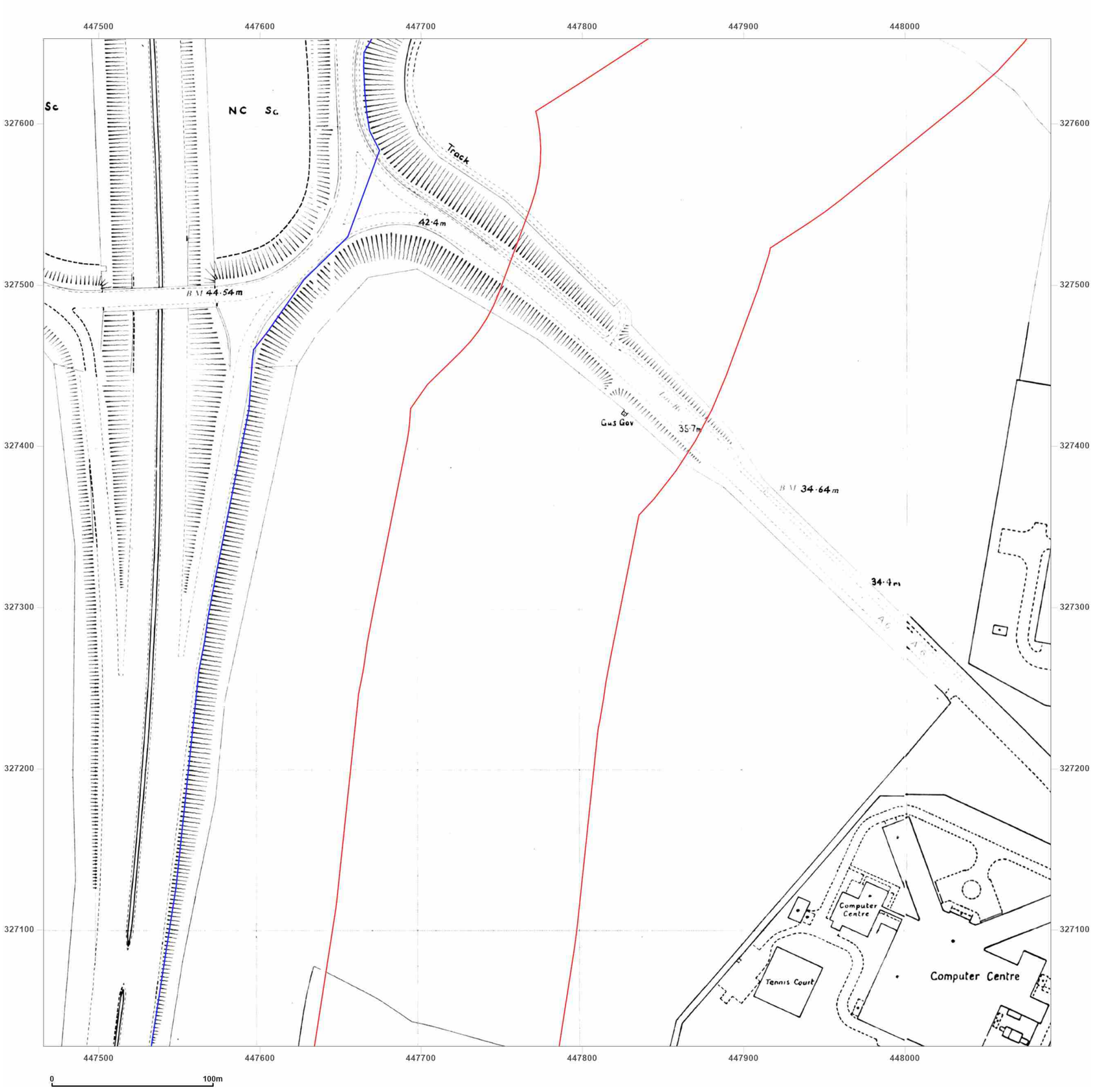
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: National Grid
Map date: **1986-1988**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1988
Levelled 1966

Surveyed 1966
Revised 1986
Edition N/A
Copyright 1986
Levelled 1966

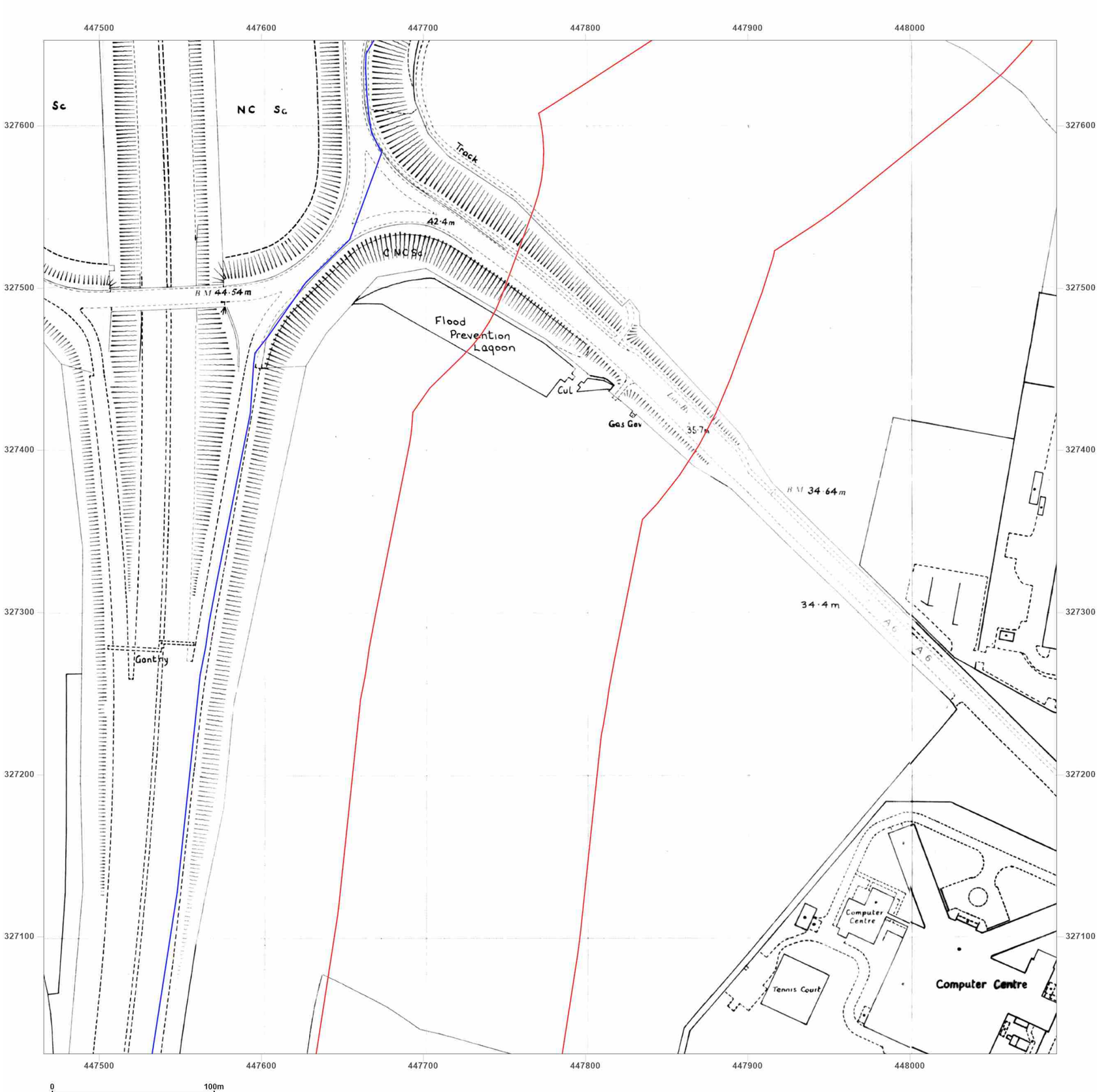
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: National Grid
Map date: **1991**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled 1966

Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

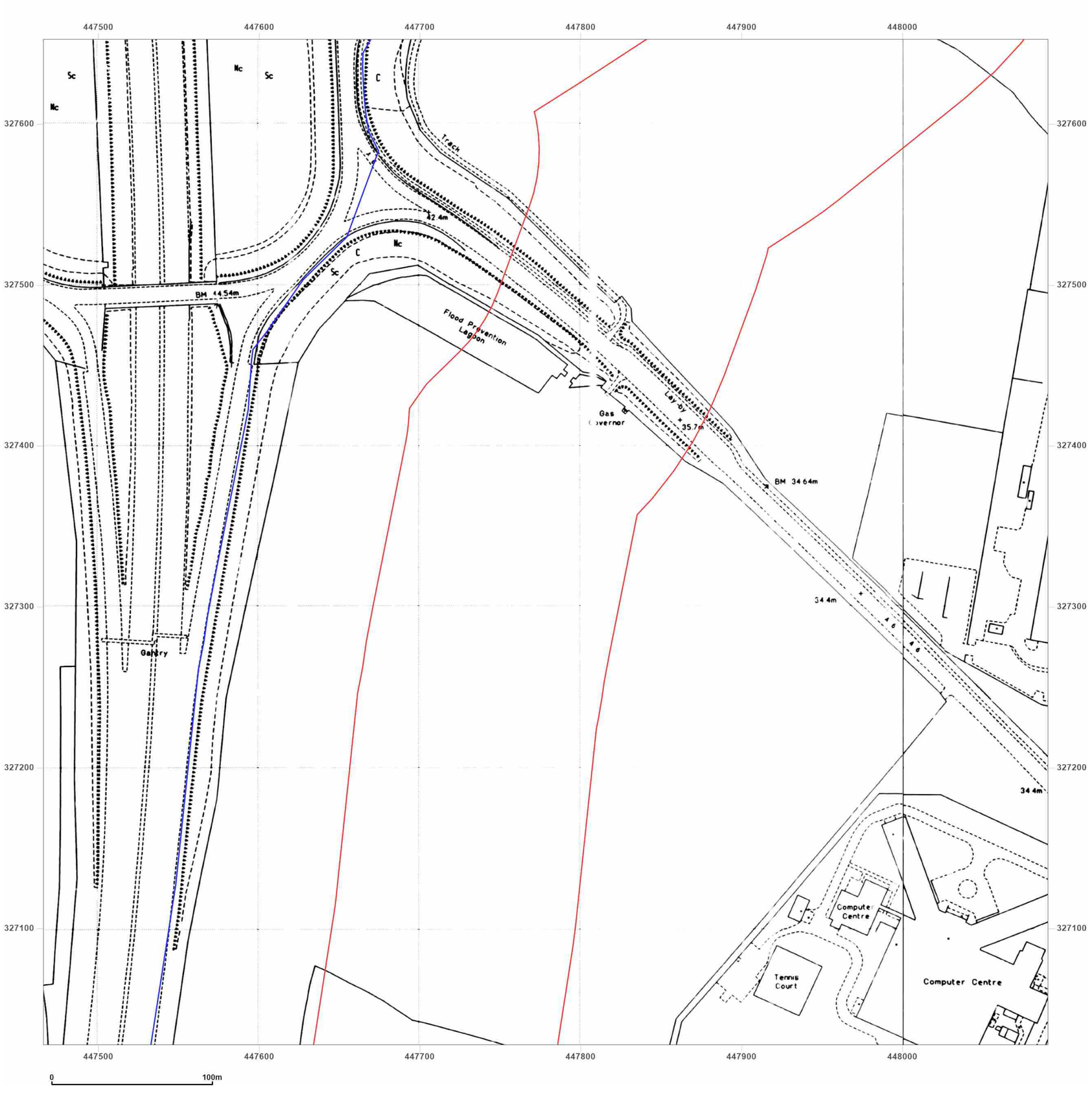
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Production date: 13 December 2024

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_4
Grid Ref: 447778, 327340

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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

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

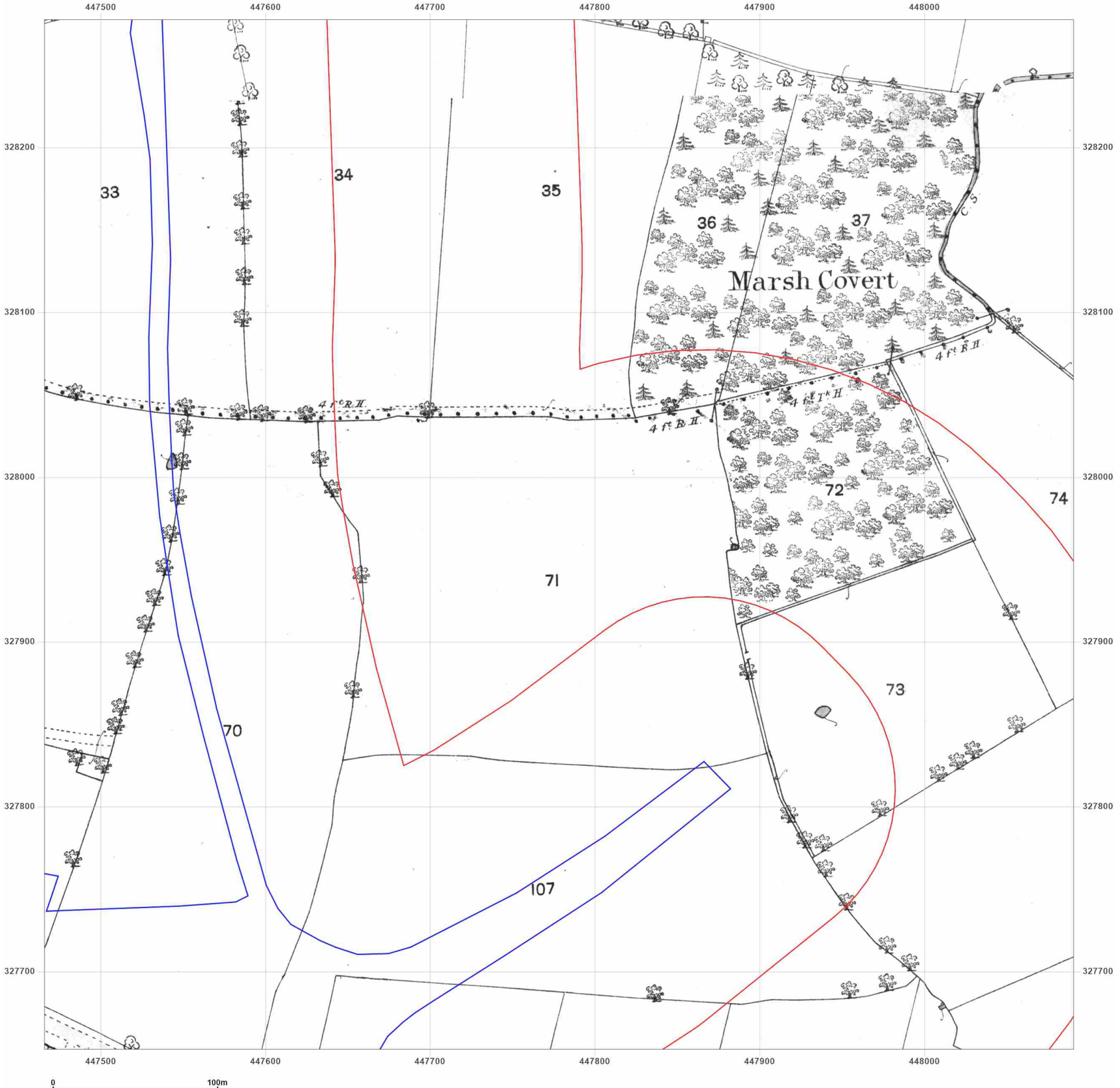
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

Map Name: County Series

Map date: **1884-1885**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A

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

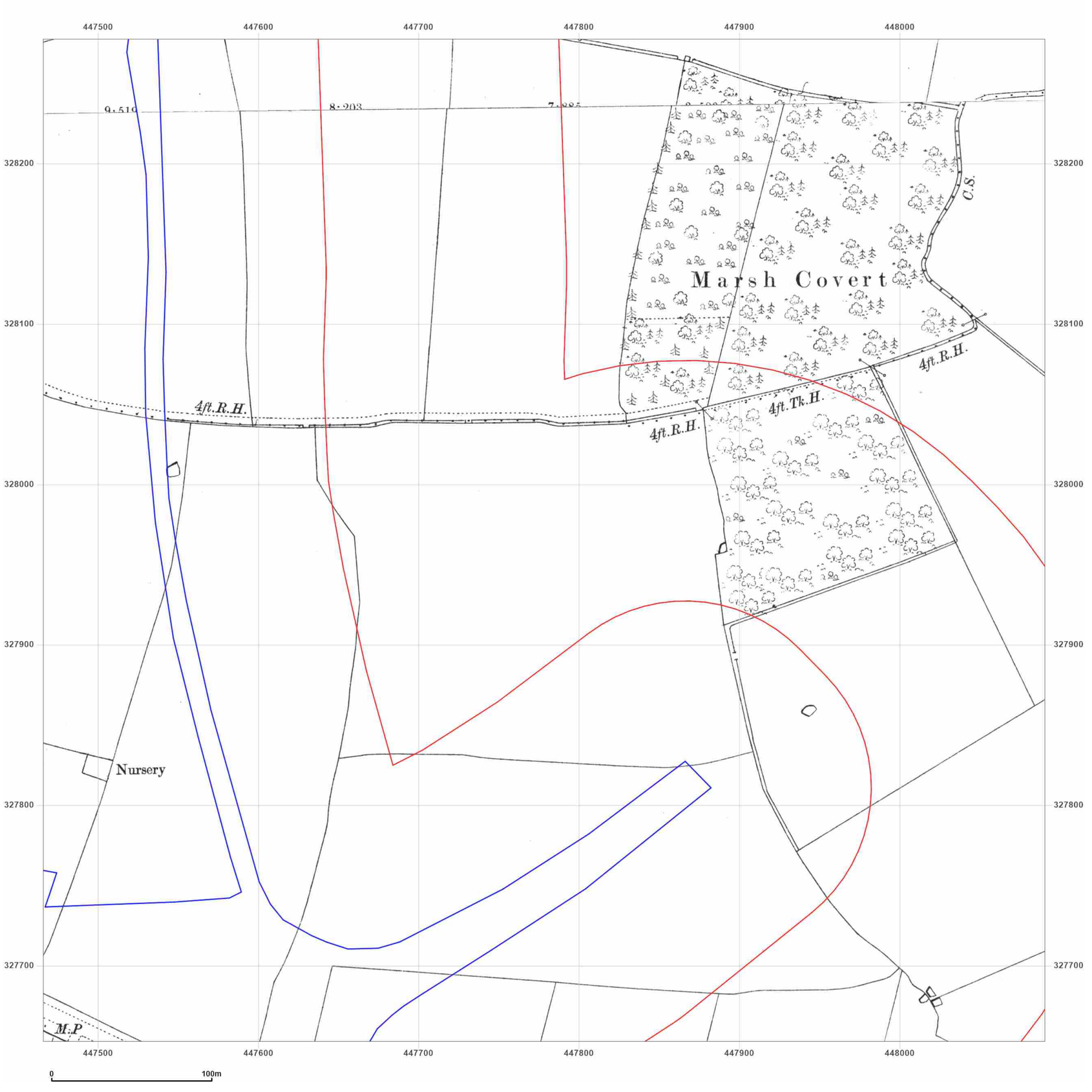
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

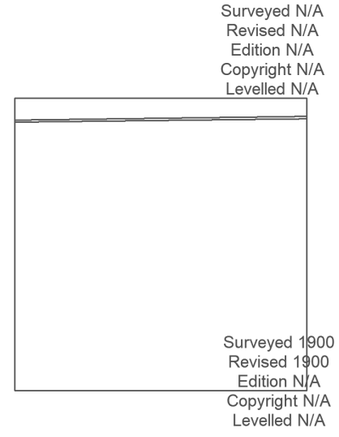
Map Name: County Series

Map date: **1899-1900**

Scale: 1:2,500

Printed at: 1:2,500

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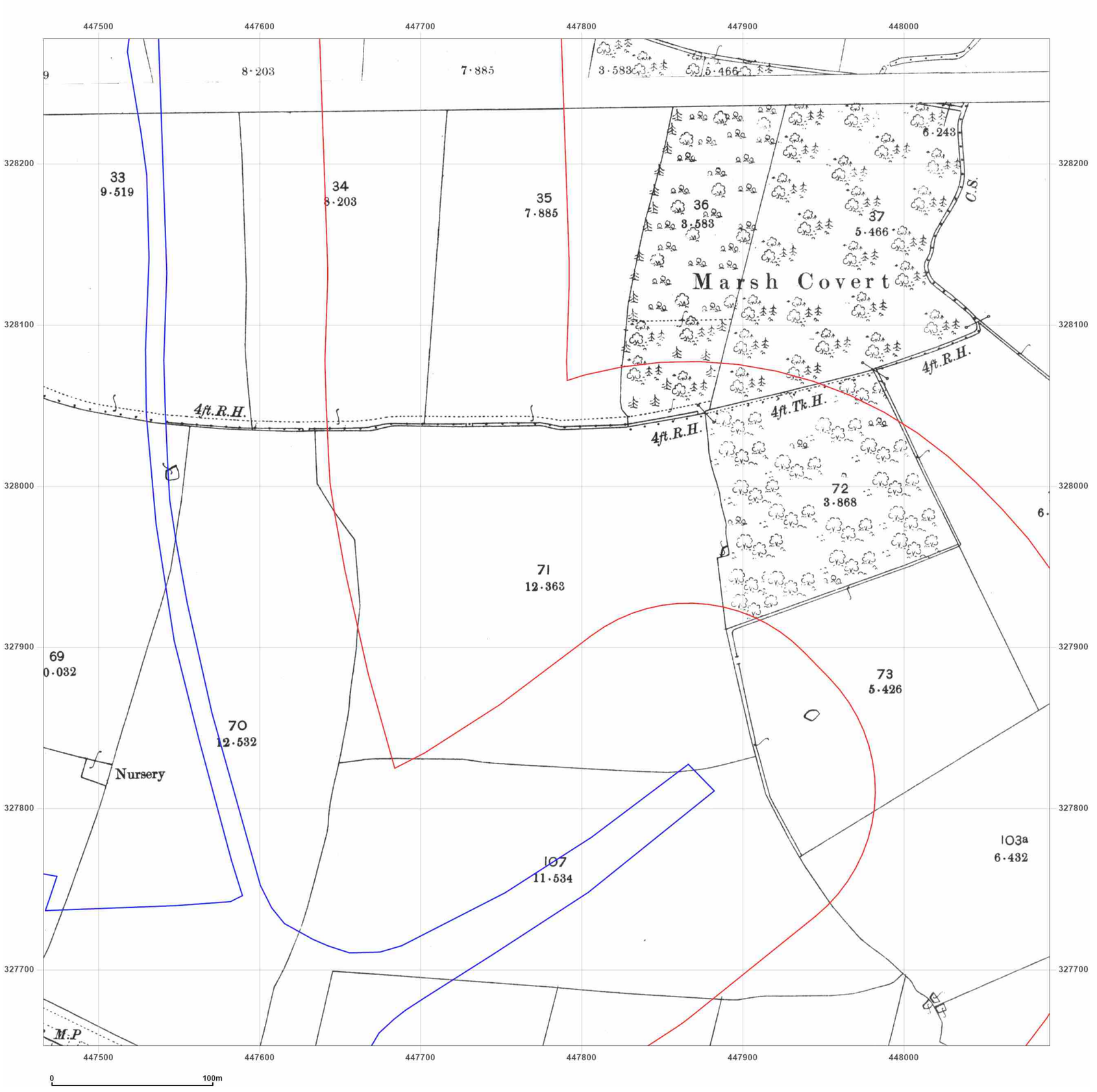
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

Map Name: County Series

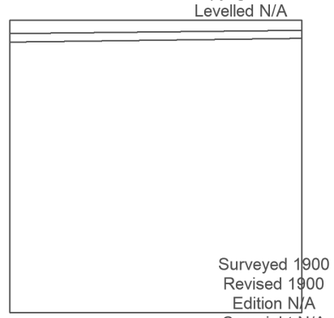
Map date: **1900**

Scale: 1:2,500

Printed at: 1:2,500

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



Surveyed 1900
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

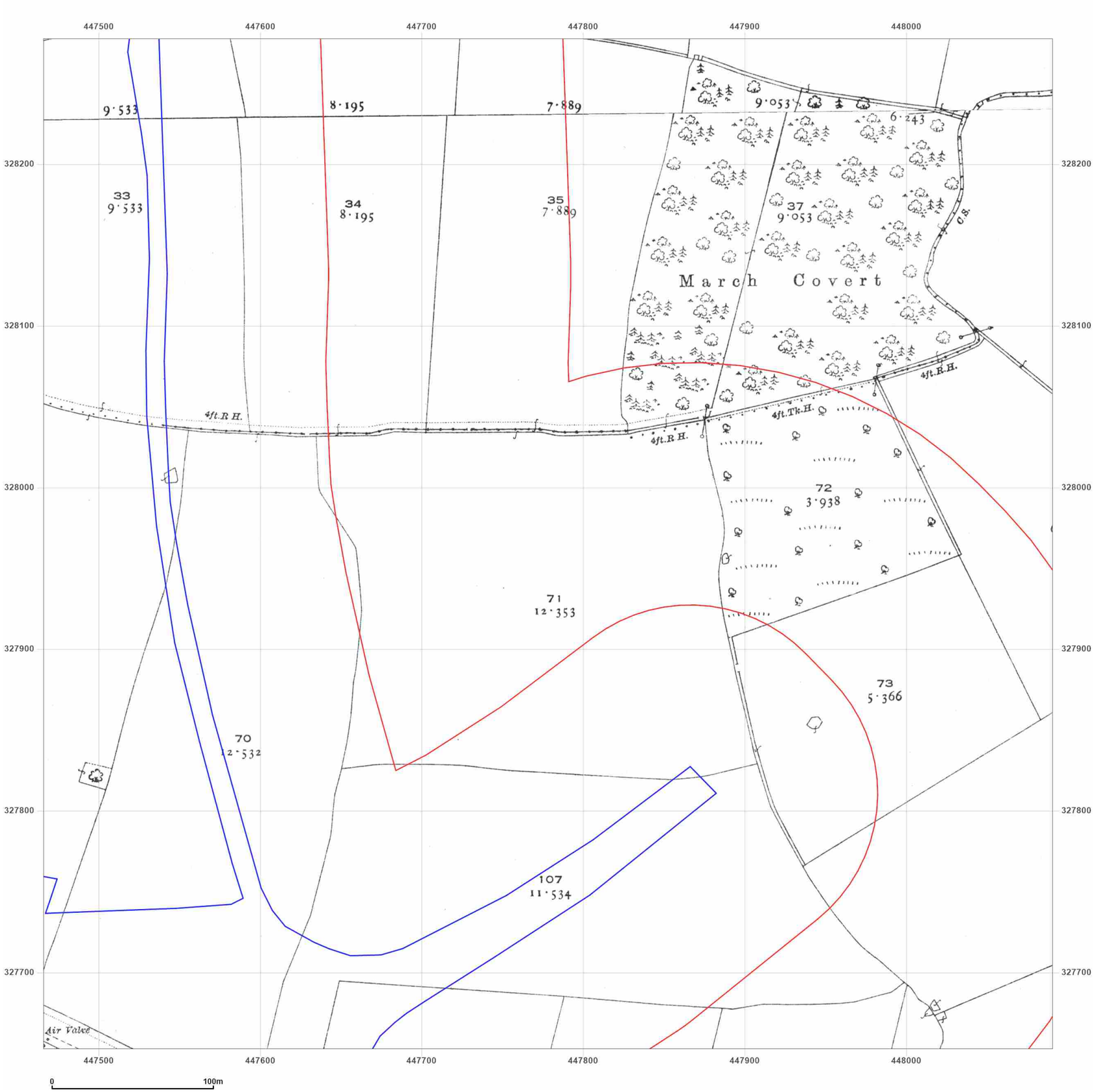
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

Map Name: County Series

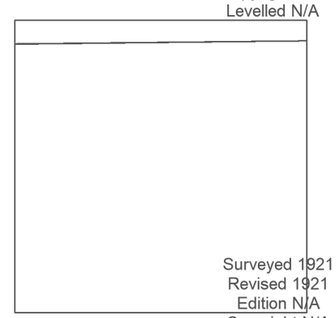
Map date: **1921**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

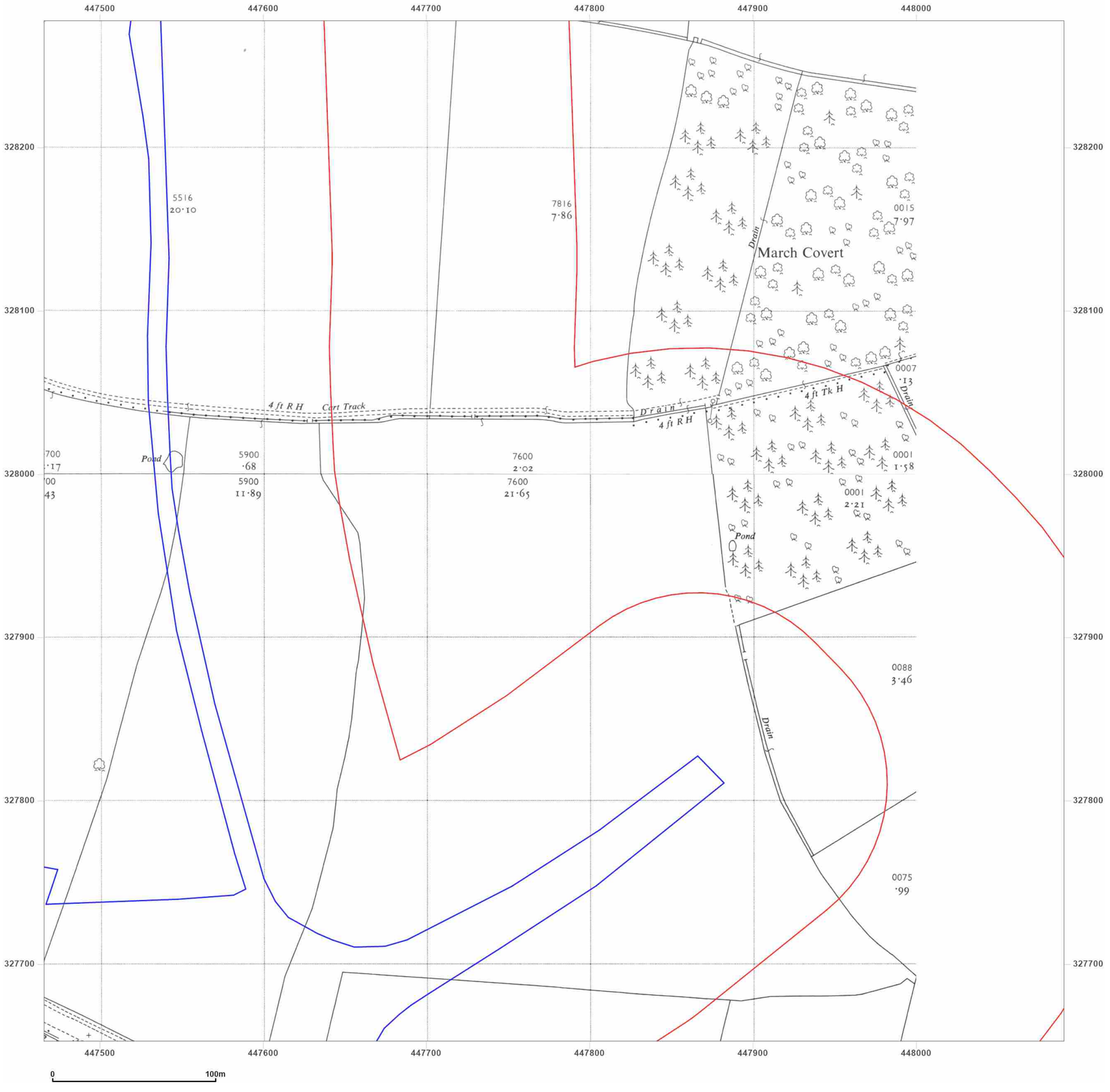
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

Map Name: National Grid

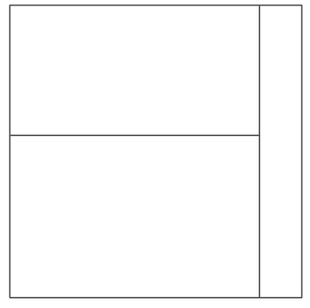
Map date: **1962-1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1944



Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1944

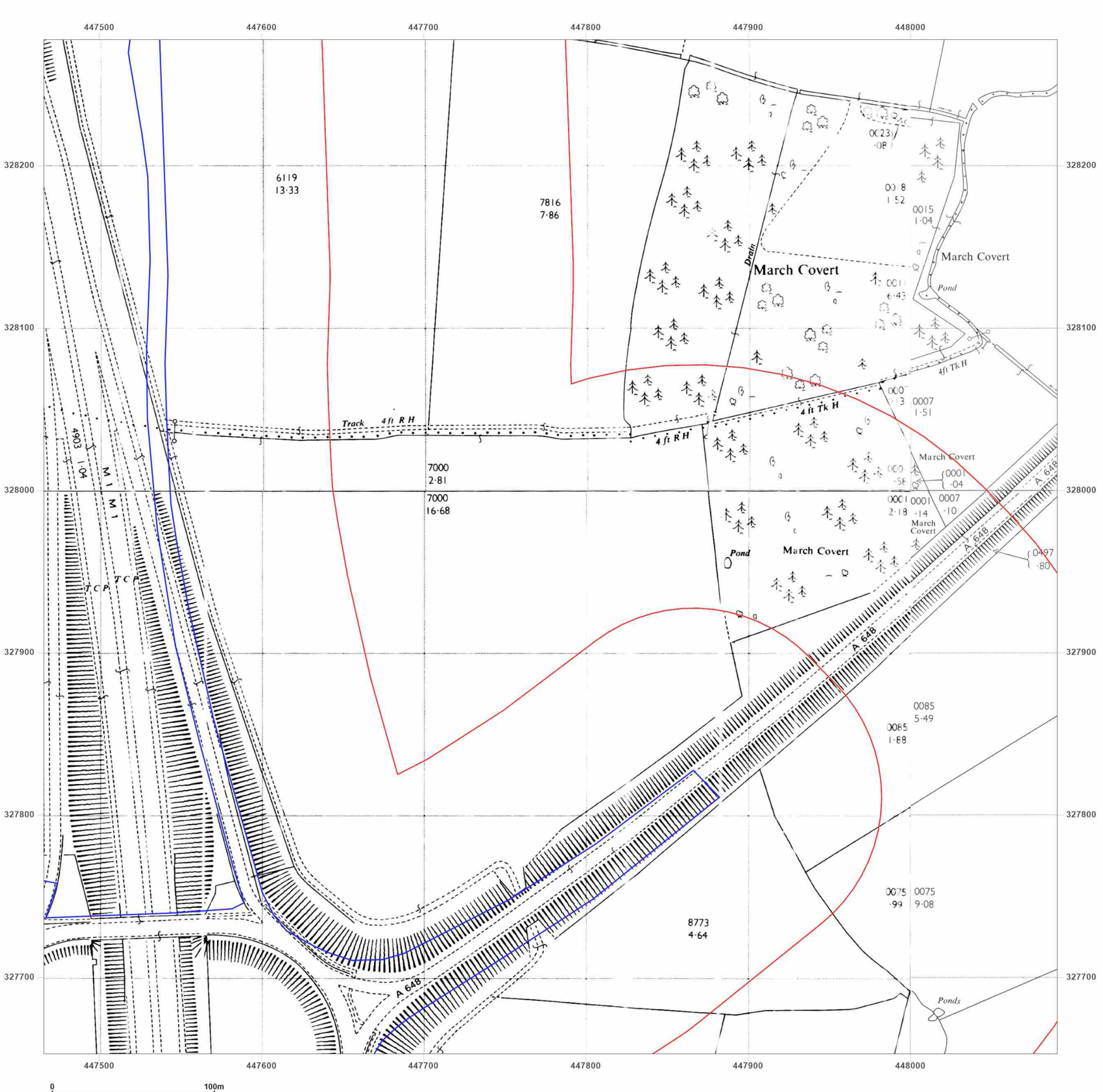
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

Map Name: National Grid

Map date: **1967-1970**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1966

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

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1966

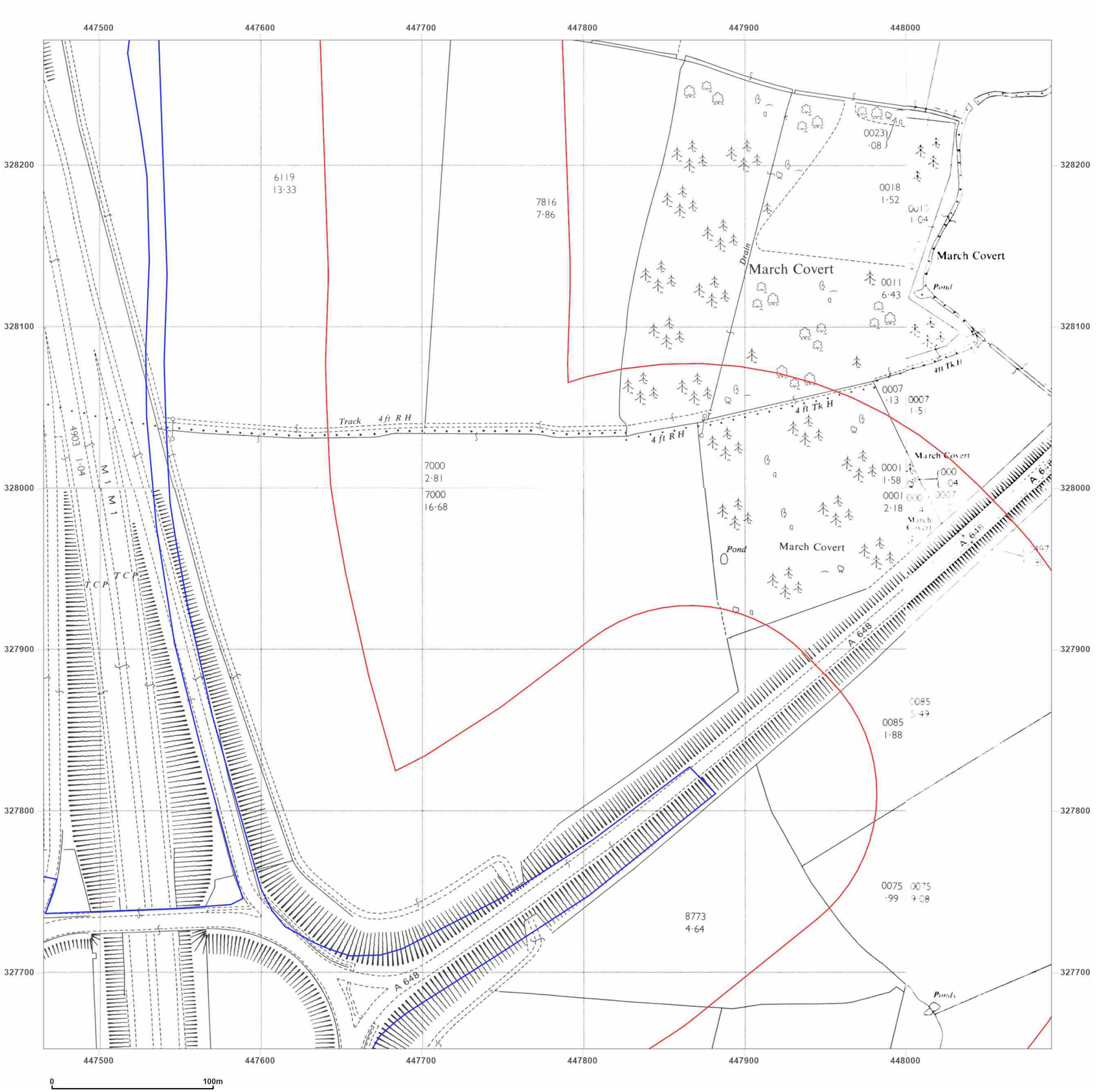
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

Map Name: National Grid

Map date: **1967-1970**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1966 Revised 1966 Edition N/A Copyright 1967 Levelled 1966	Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A
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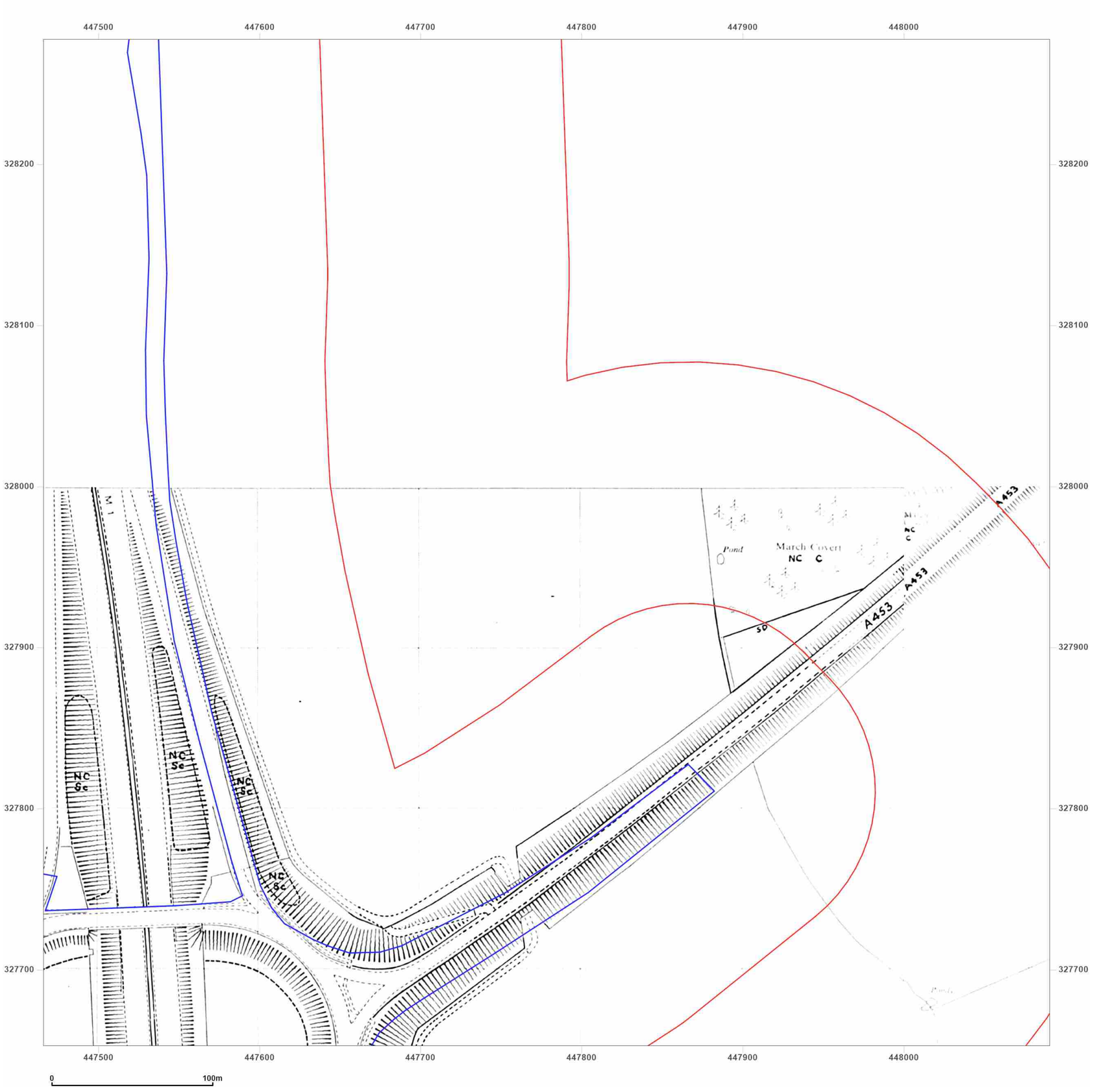
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

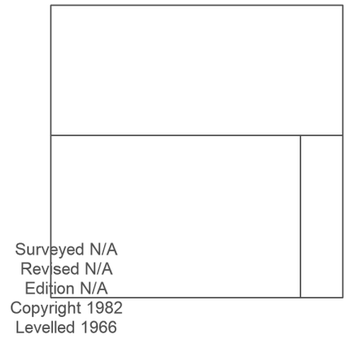
Map Name: National Grid

Map date: **1982**

Scale: 1:2,500

Printed at: 1:2,500

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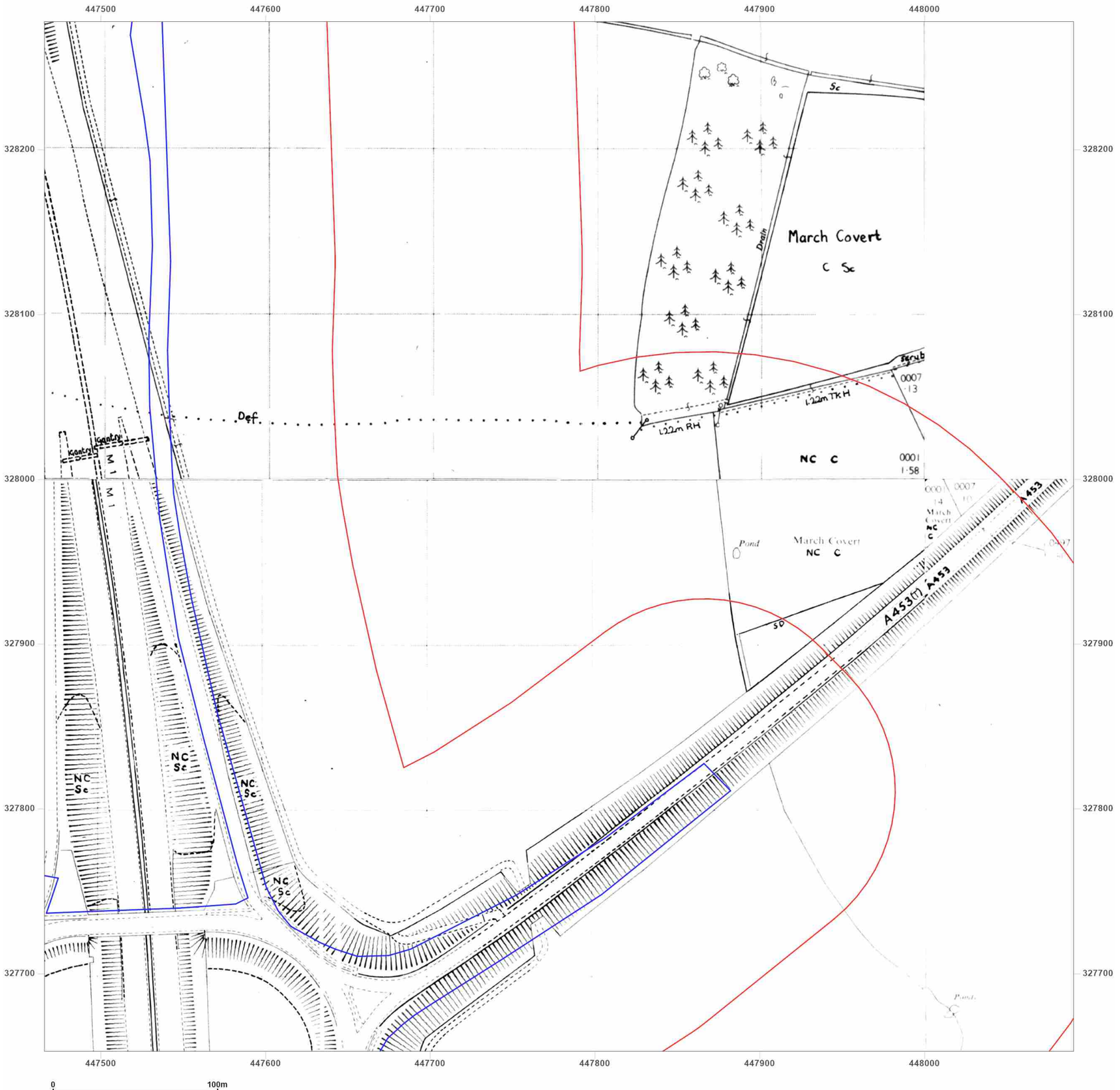
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

Map Name: National Grid

Map date: **1986-1991**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1988
Levelled 1966

Surveyed 1966
Revised 1986
Edition N/A
Copyright 1986
Levelled 1966

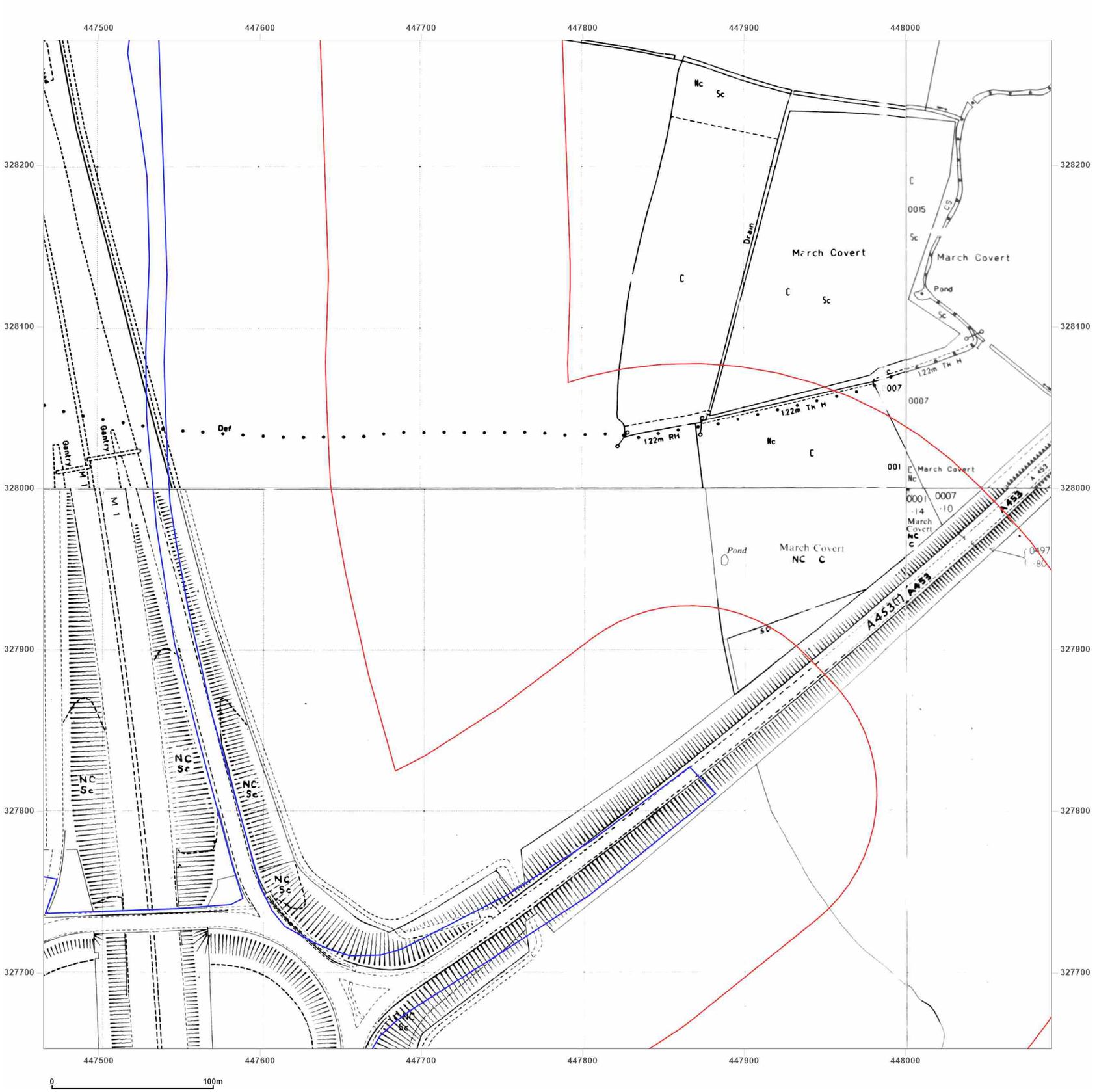
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

Map Name: National Grid
Map date: **1991-1993**
Scale: 1:2,500
Printed at: 1:2,500

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

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled 1966

Surveyed 1966
Revised 1991
Edition N/A
Copyright 1991
Levelled 1966

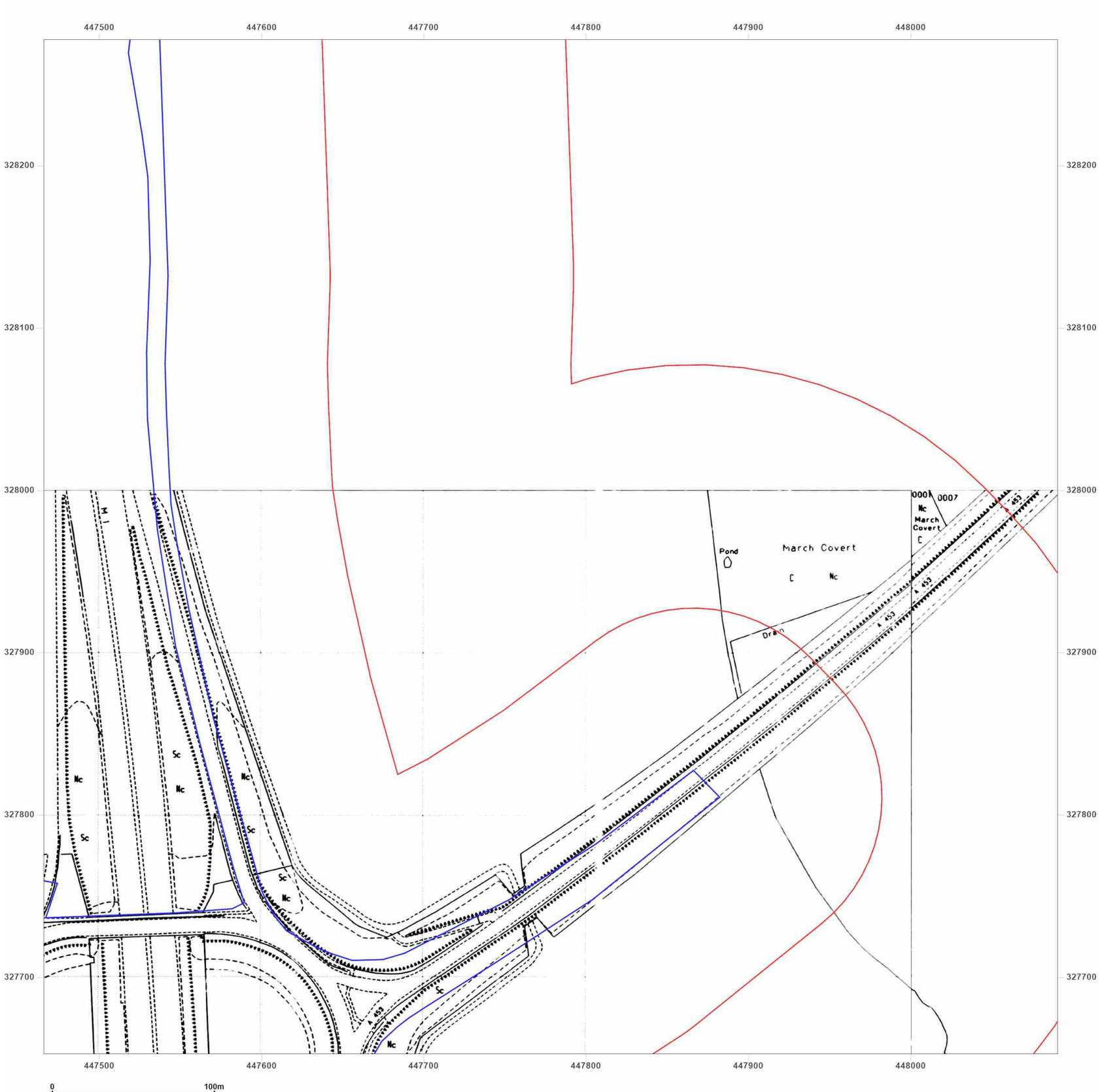
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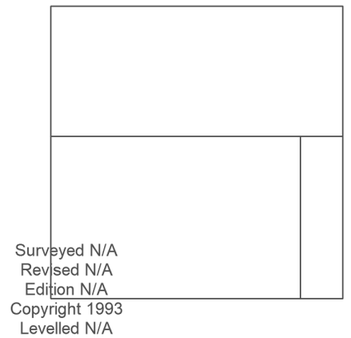
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East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_5
Grid Ref: 447778, 327965

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

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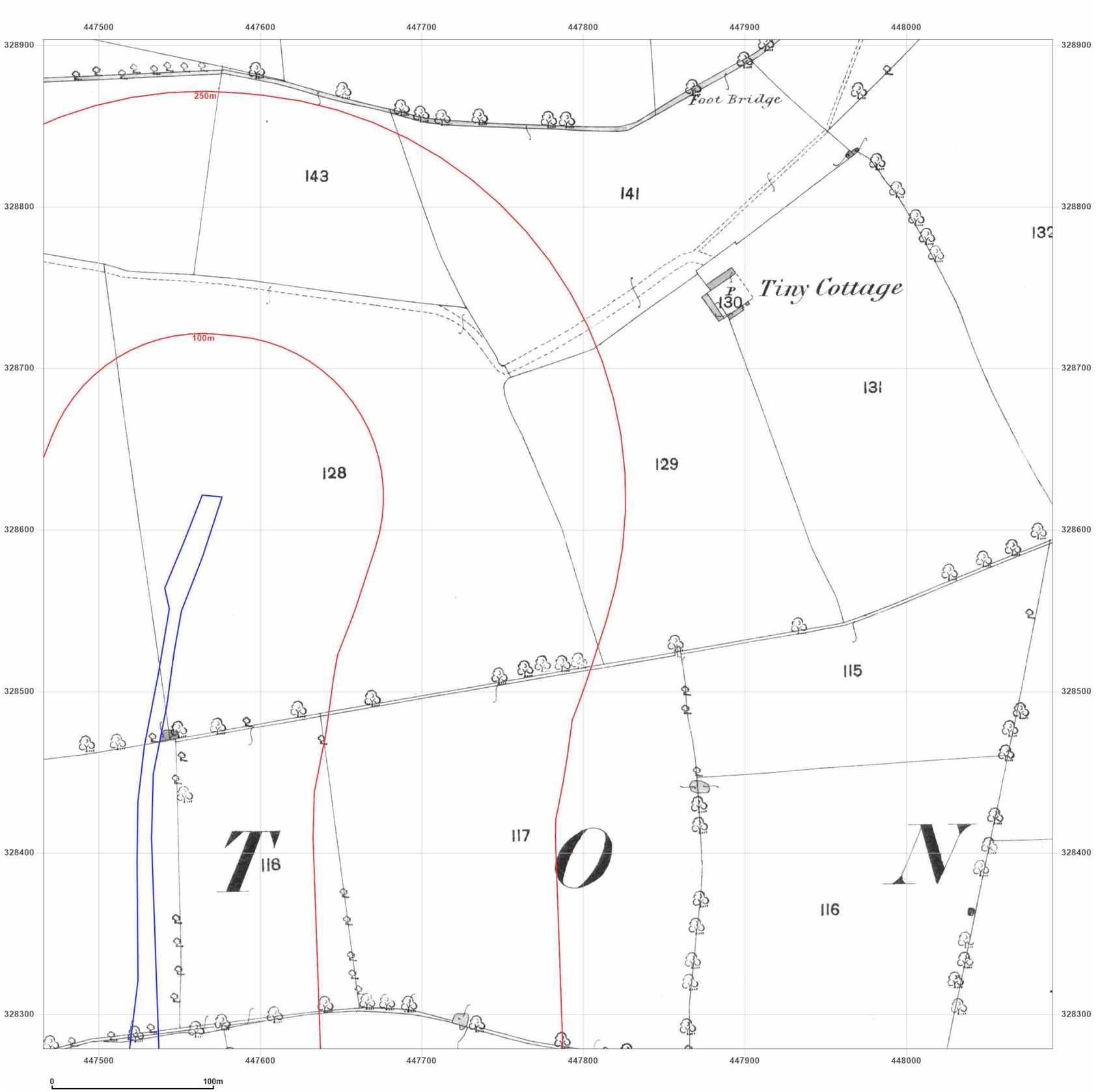
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Site Details:

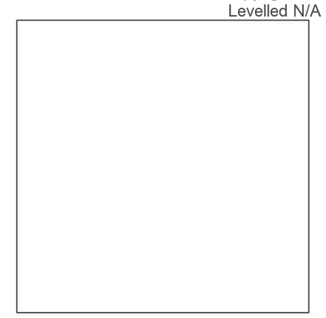
East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

Map Name: County Series
Map date: **1885**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A



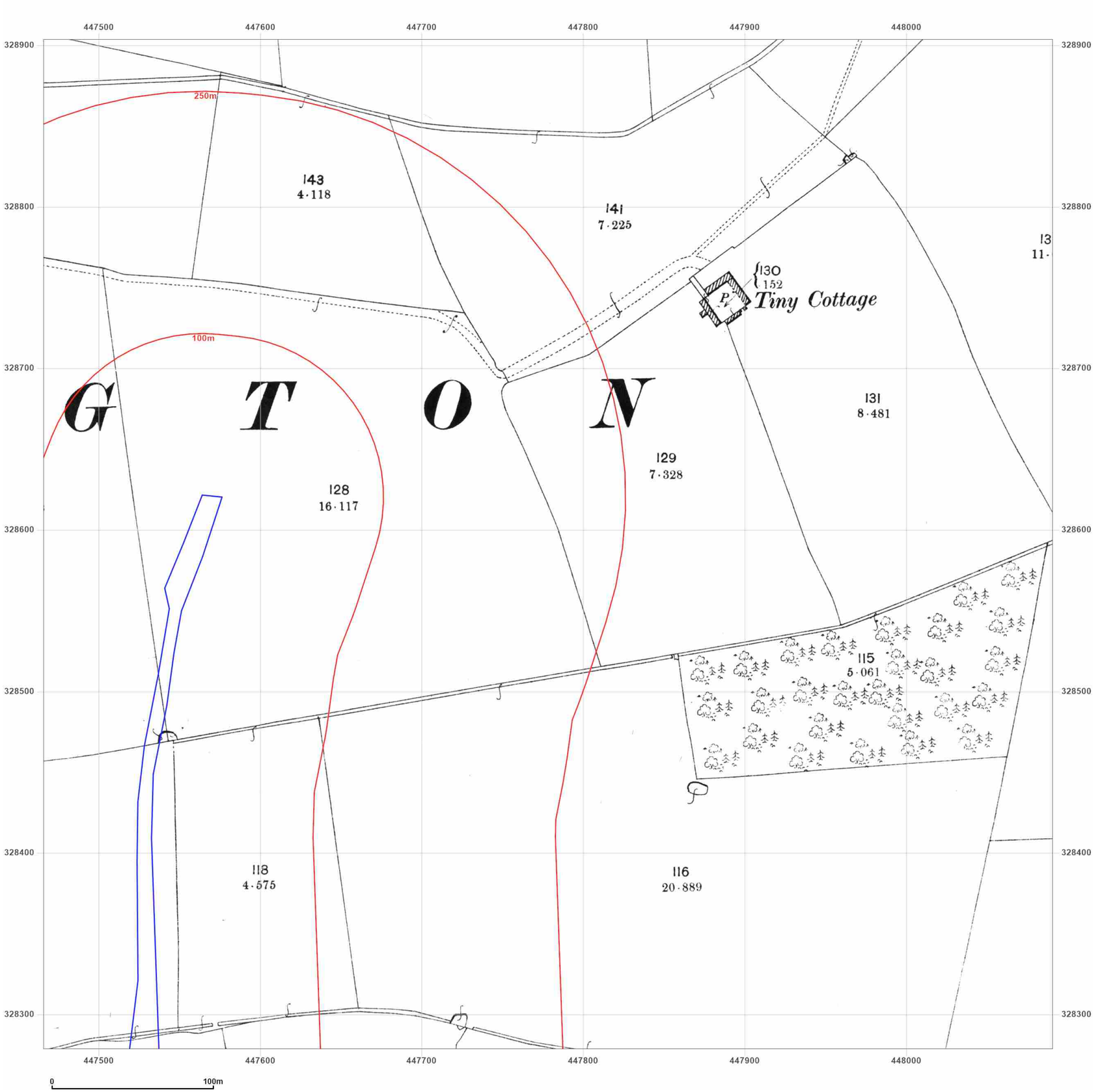
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

Map Name: County Series
Map date: **1899**
Scale: 1:2,500
Printed at: 1:2,500

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

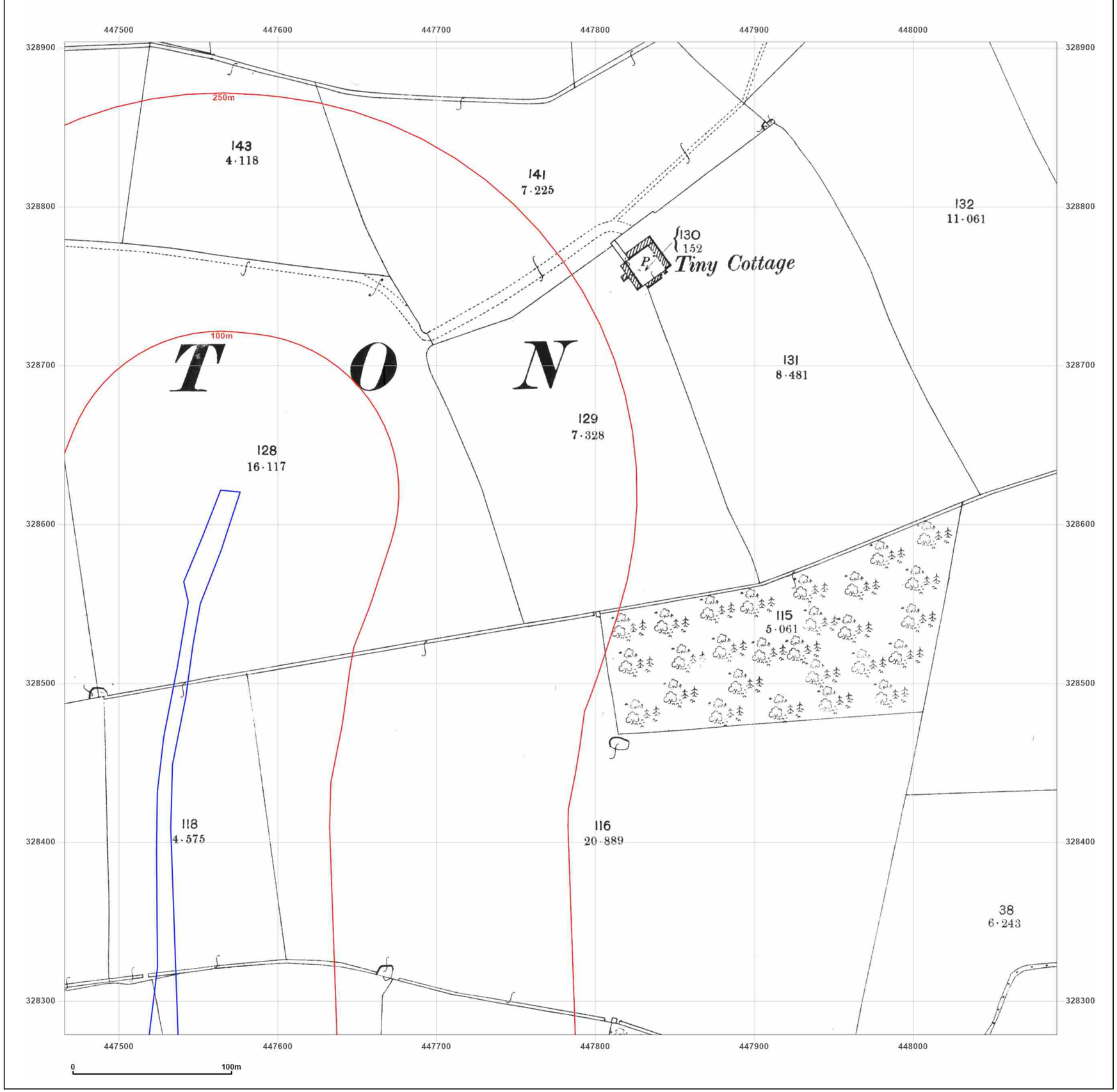
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

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

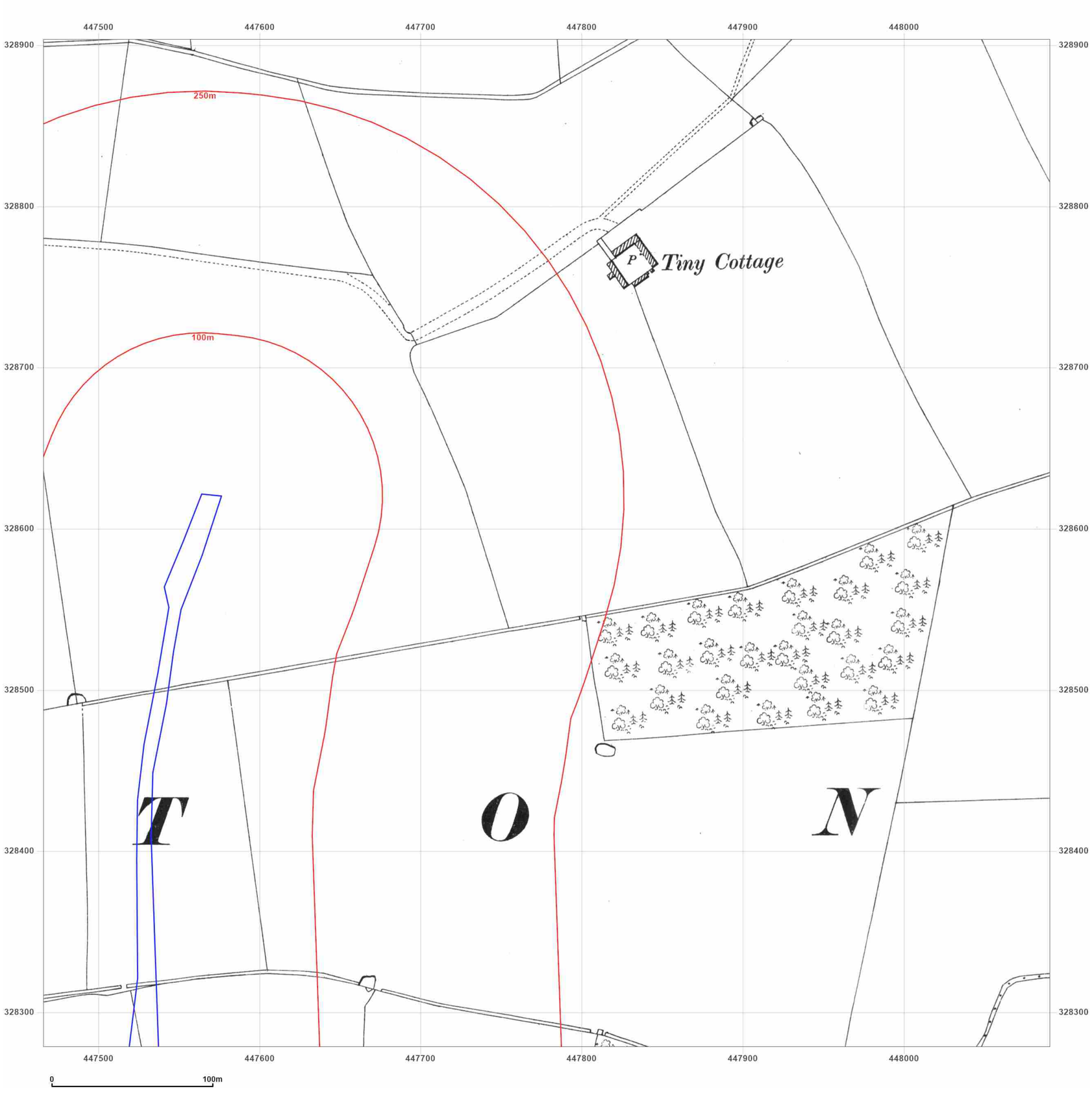
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

Map Name: County Series
Map date: **1900**
Scale: 1:2,500
Printed at: 1:2,500

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

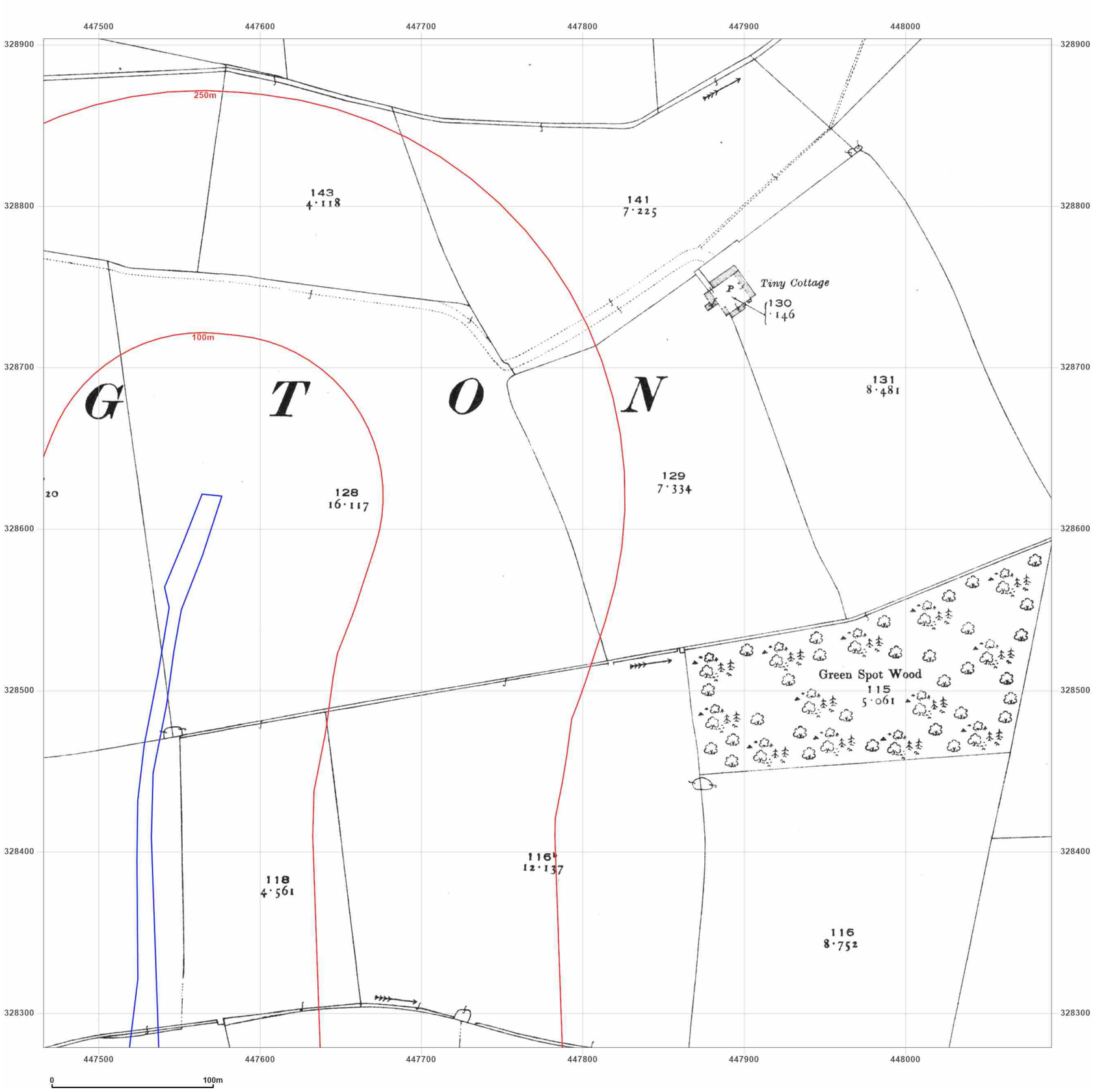
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

Map Name: County Series
Map date: **1921**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1921
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

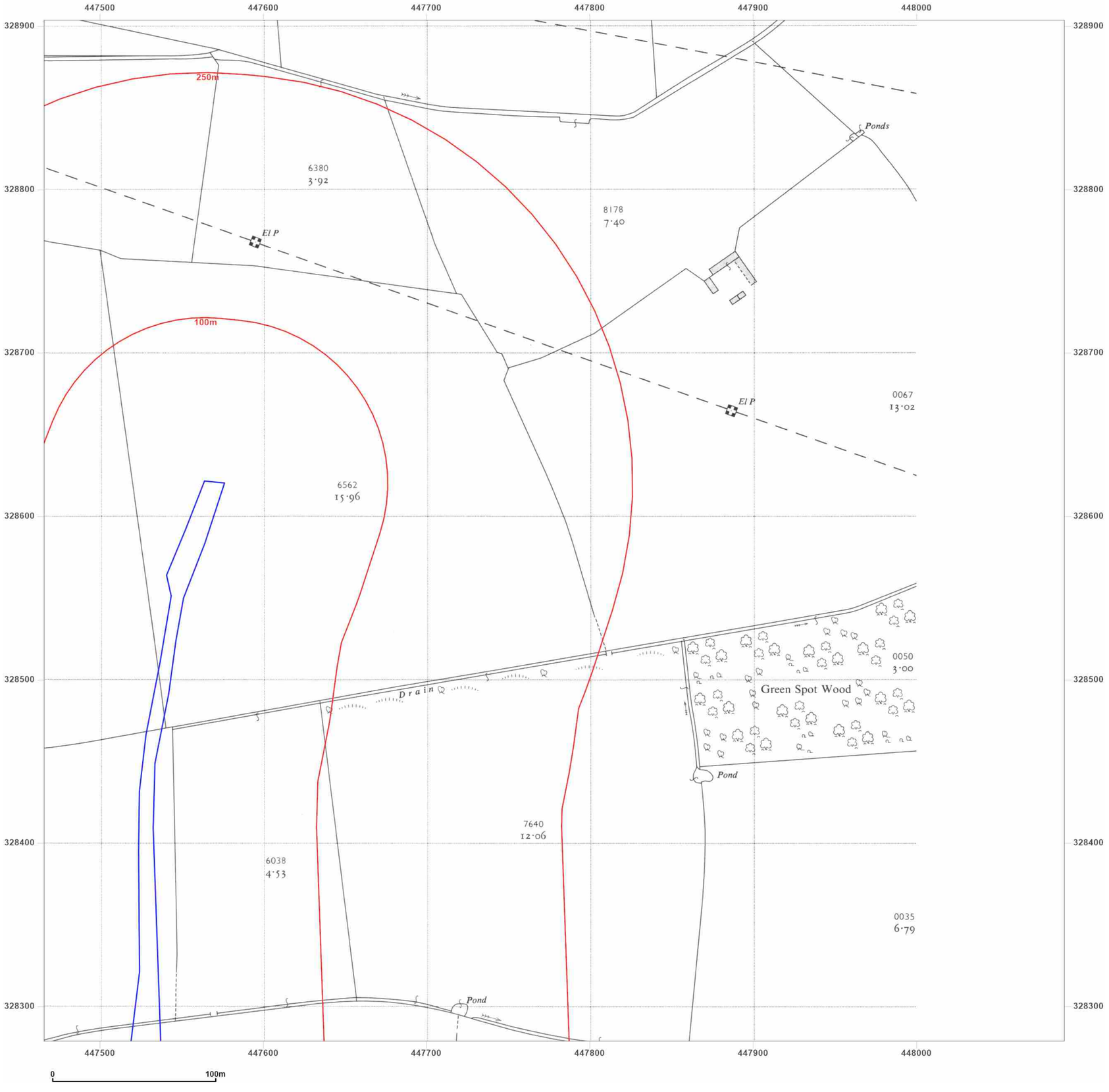
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Production date: 13 December 2024

Map legend available at:
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

Map Name: National Grid

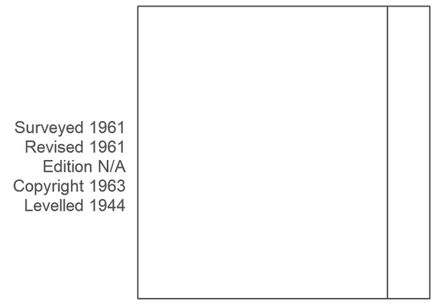
Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

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W E
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Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1944



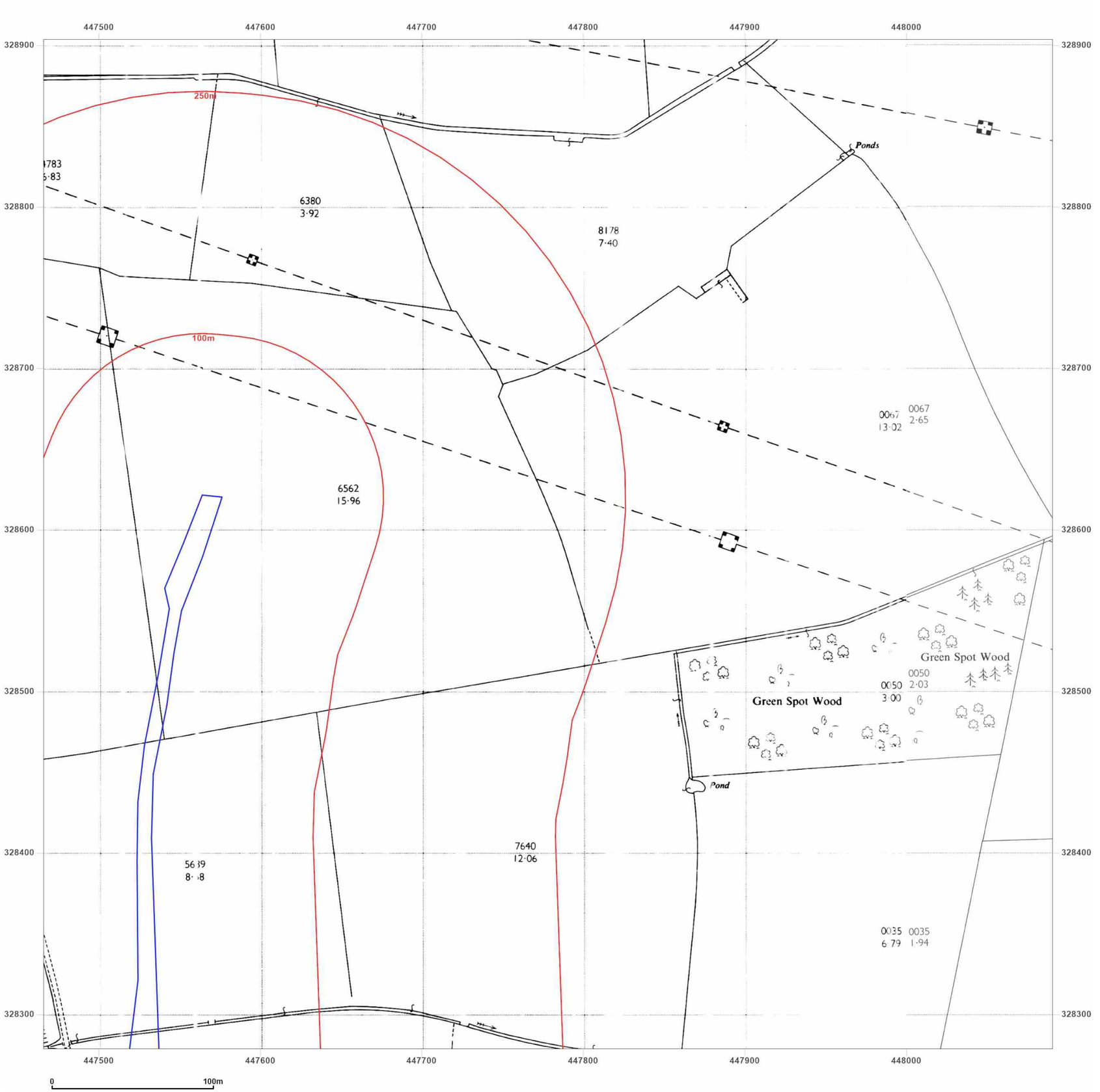
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

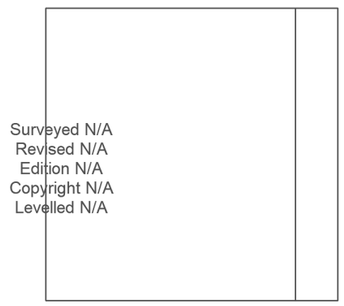
Map Name: National Grid

Map date: **1967-1970**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



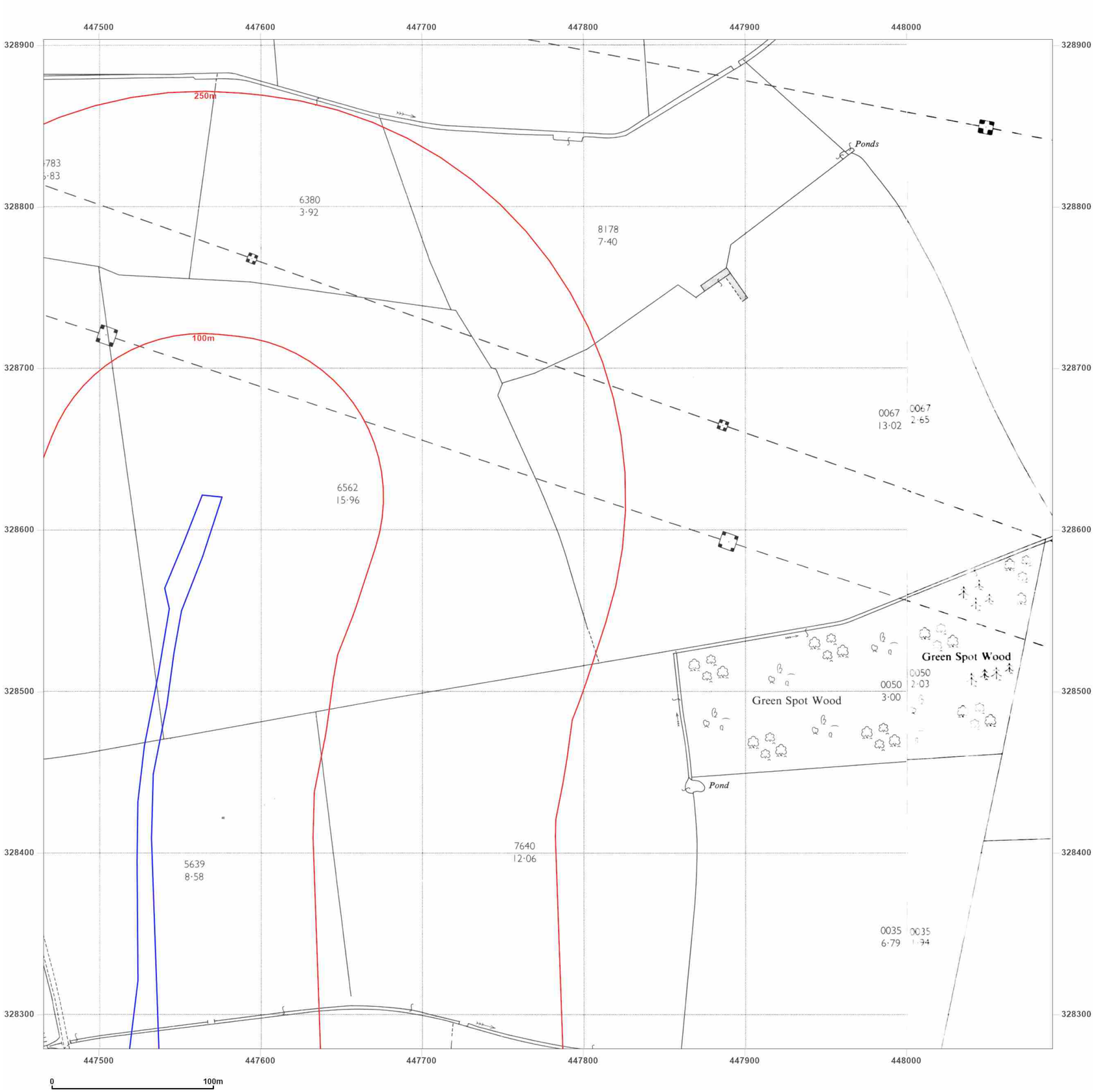
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

Map Name: National Grid

Map date: **1967-1970**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1966

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

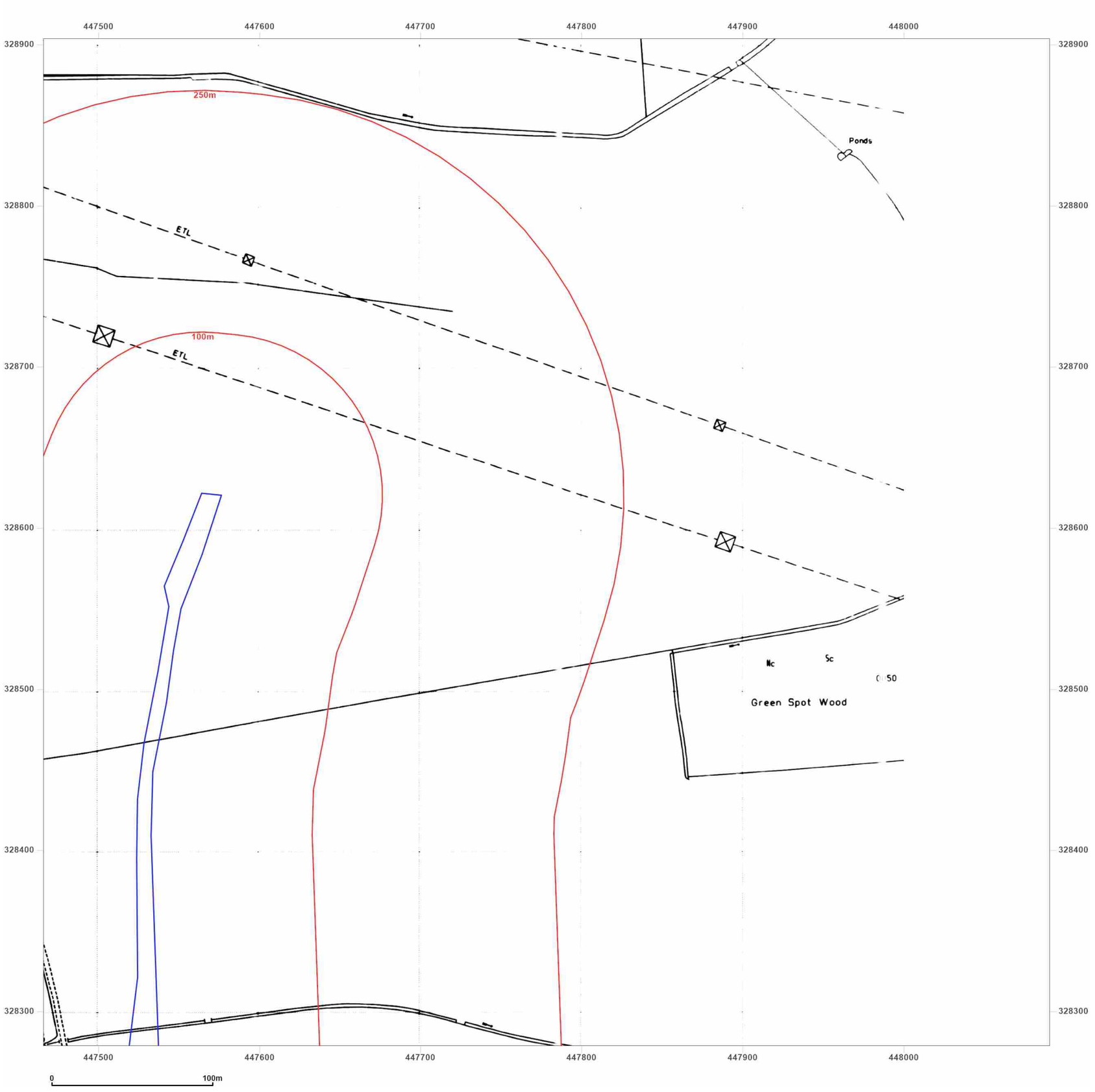
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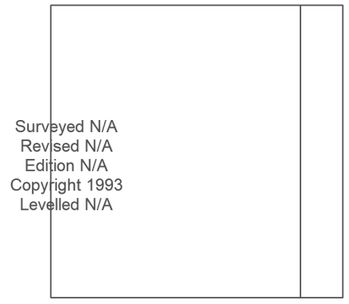
Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

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

N
W E
S



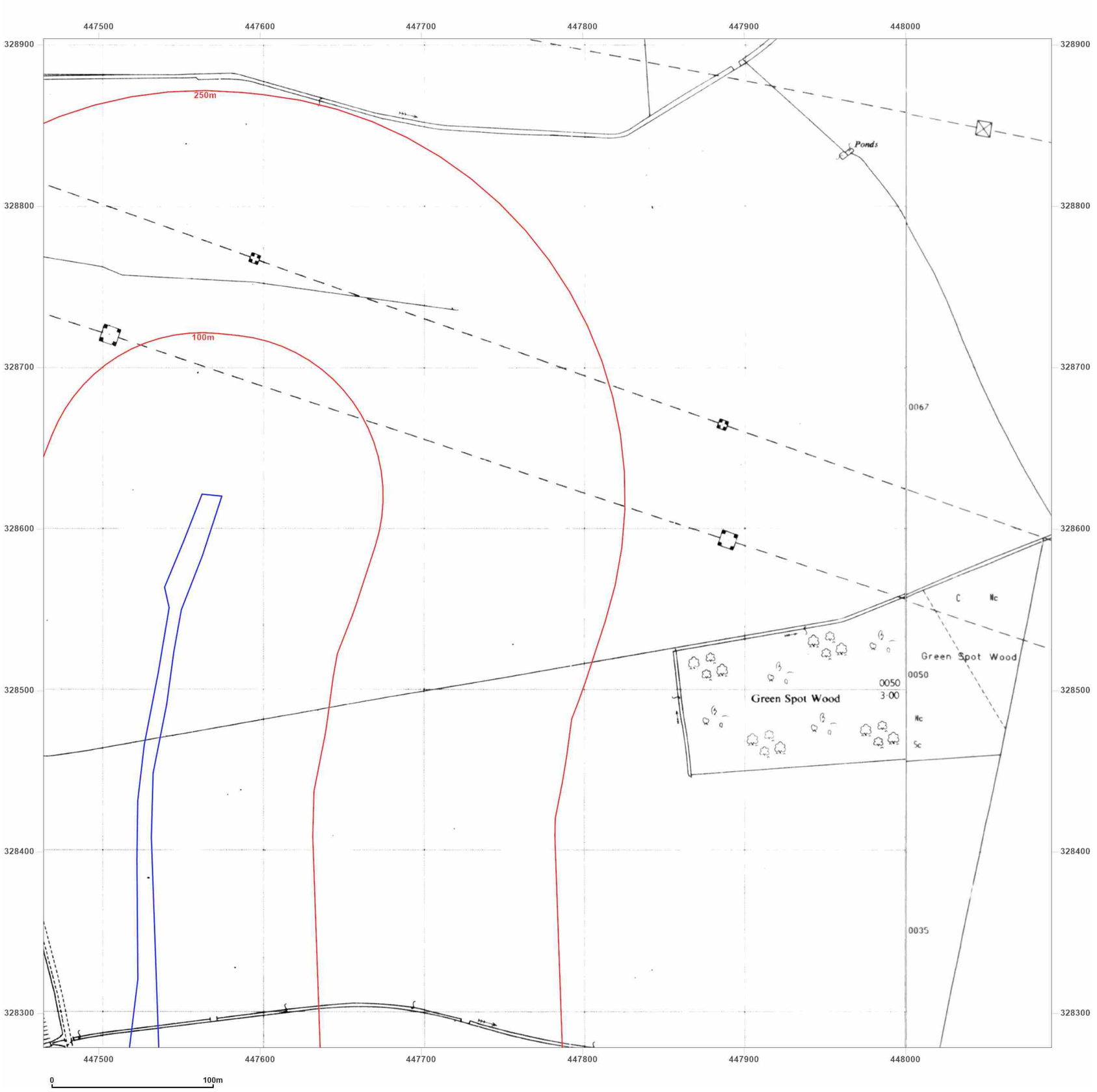
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_LS_2_6
Grid Ref: 447778, 328591

Map Name: National Grid
Map date: **1991-1993**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1966	Surveyed 1993
Revised 1991	Revised 1993
Edition N/A	Edition N/A
Copyright 1991	Copyright N/A
Levelled 1966	Levelled N/A

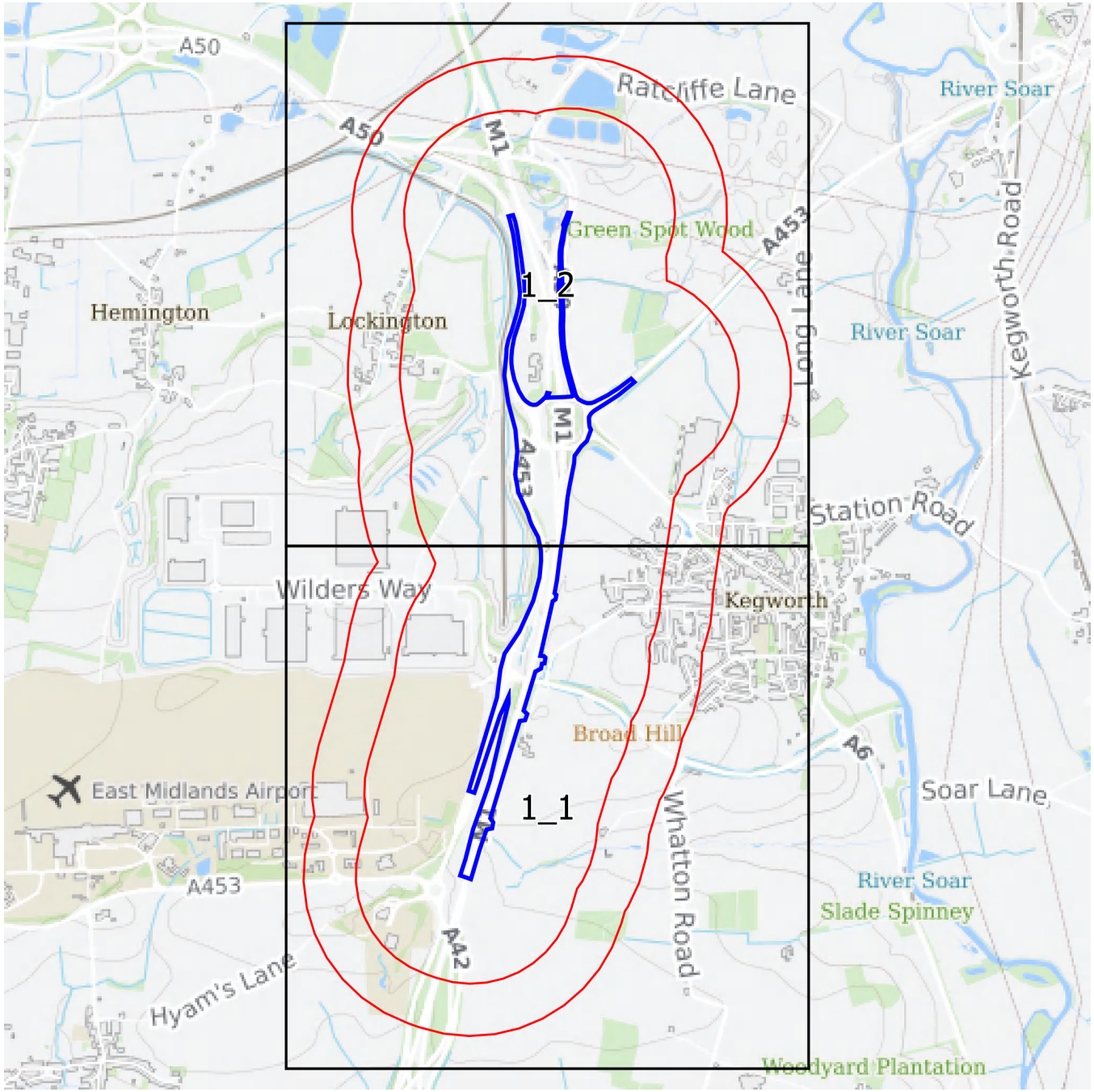
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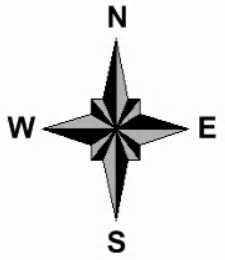
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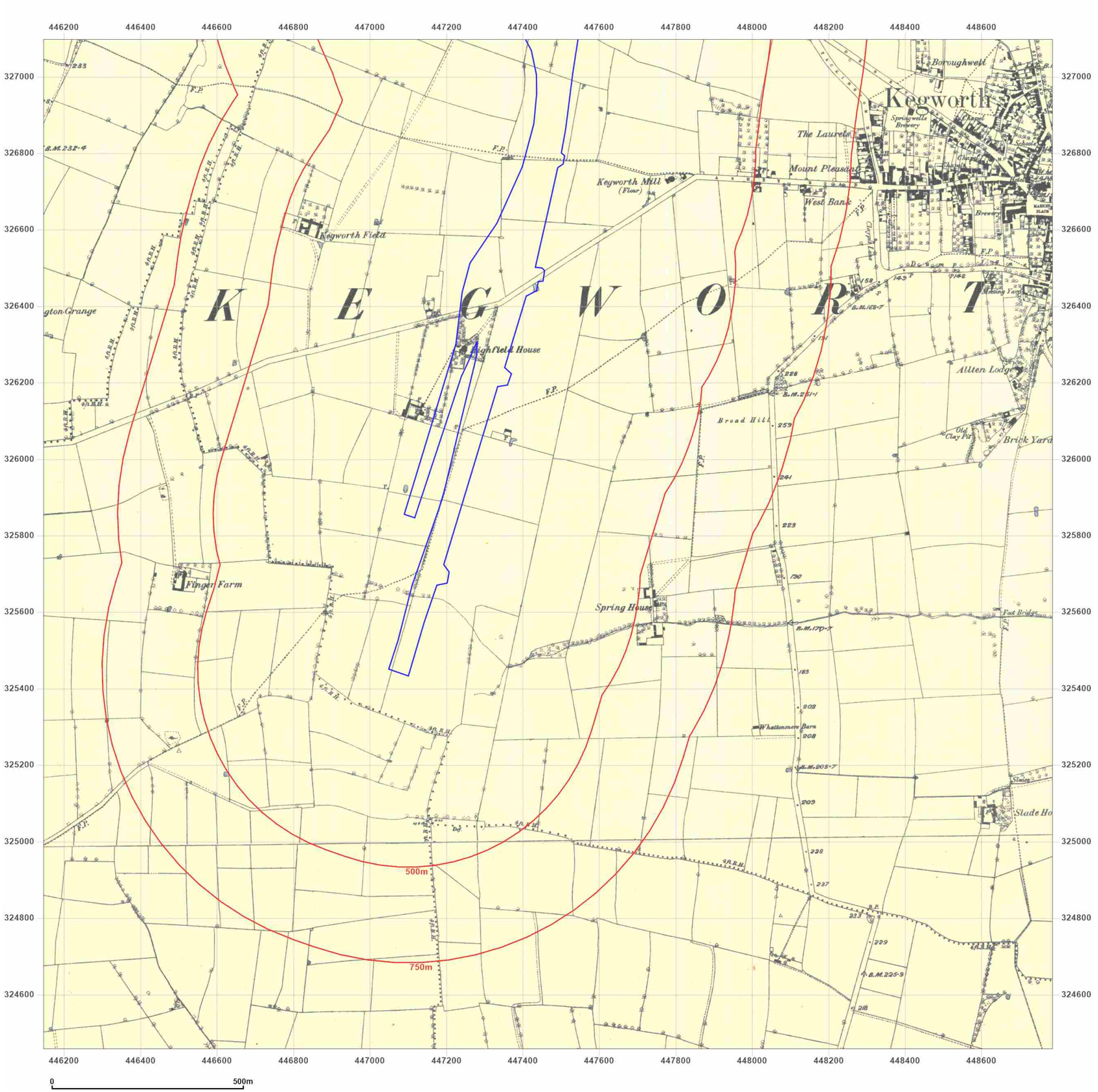
Map legend available at:
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Groundsure INSIGHTS

Small Scale Grid Index





Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: County Series

Map date: **1883**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1883
Revised 1883
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1883
Revised 1883
Edition N/A
Copyright N/A
Levelled N/A

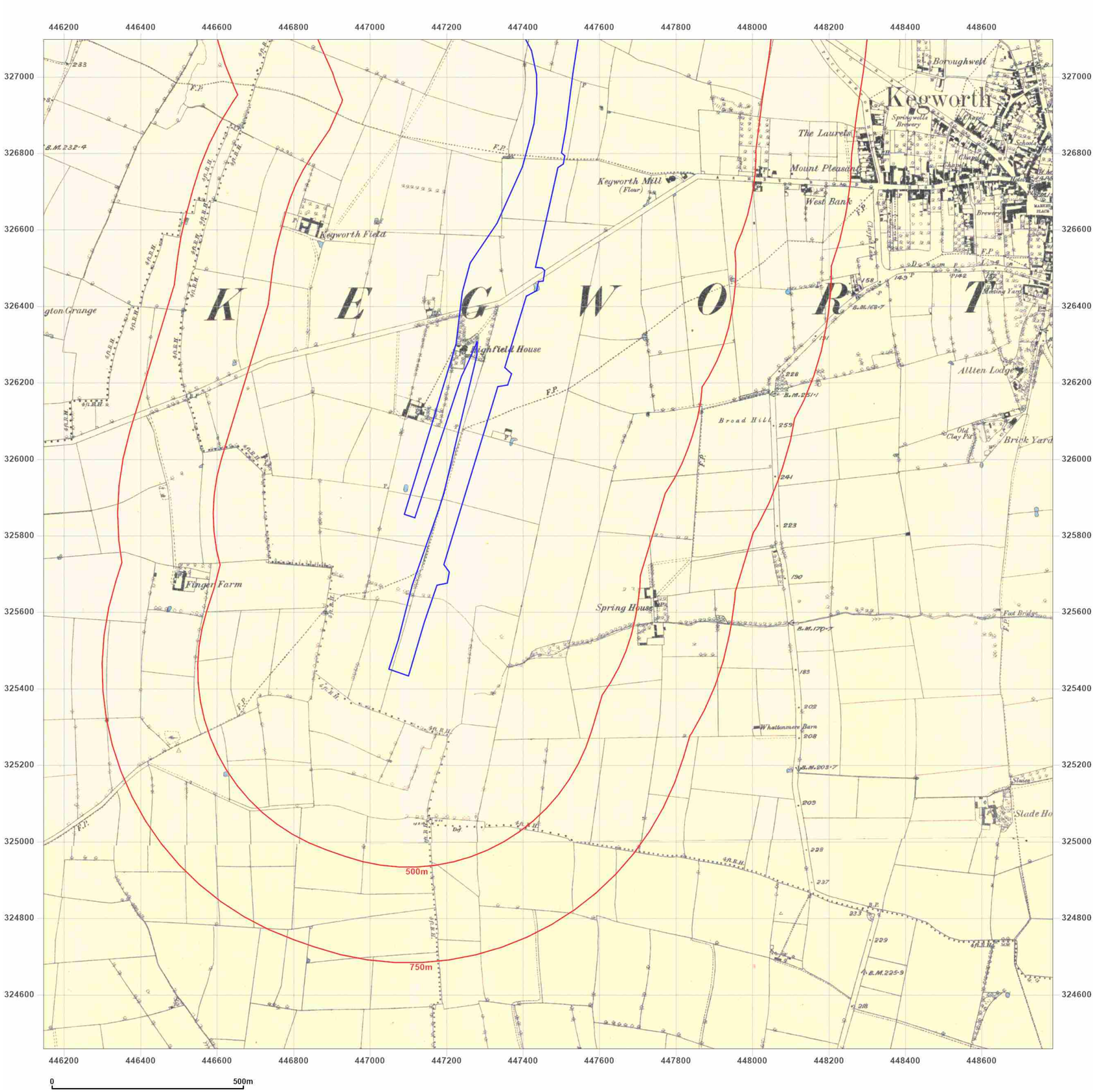
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Production date: 13 December 2024

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: County Series

Map date: **1883**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1883
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1883
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

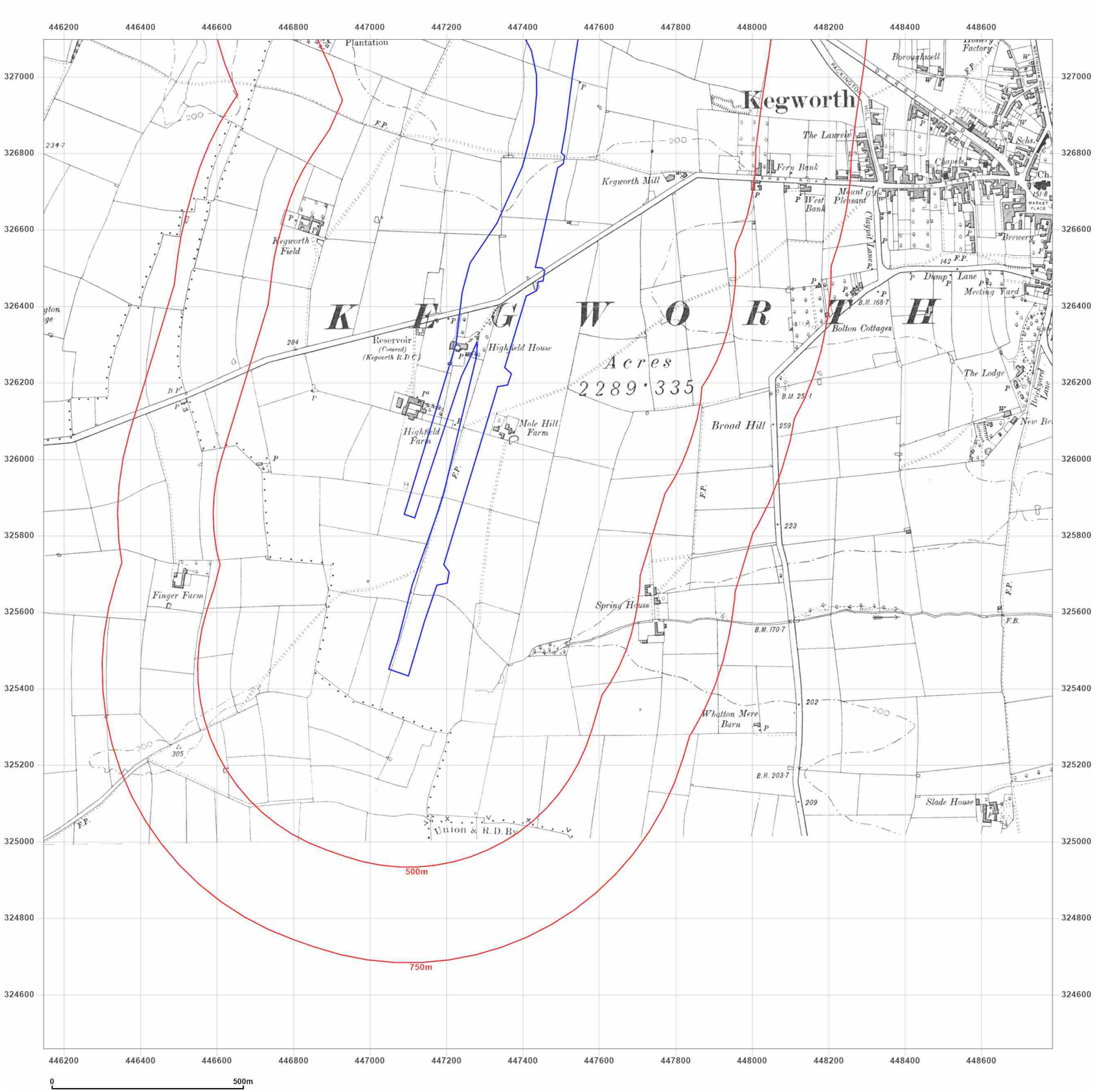
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: County Series

Map date: **1901**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1883
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

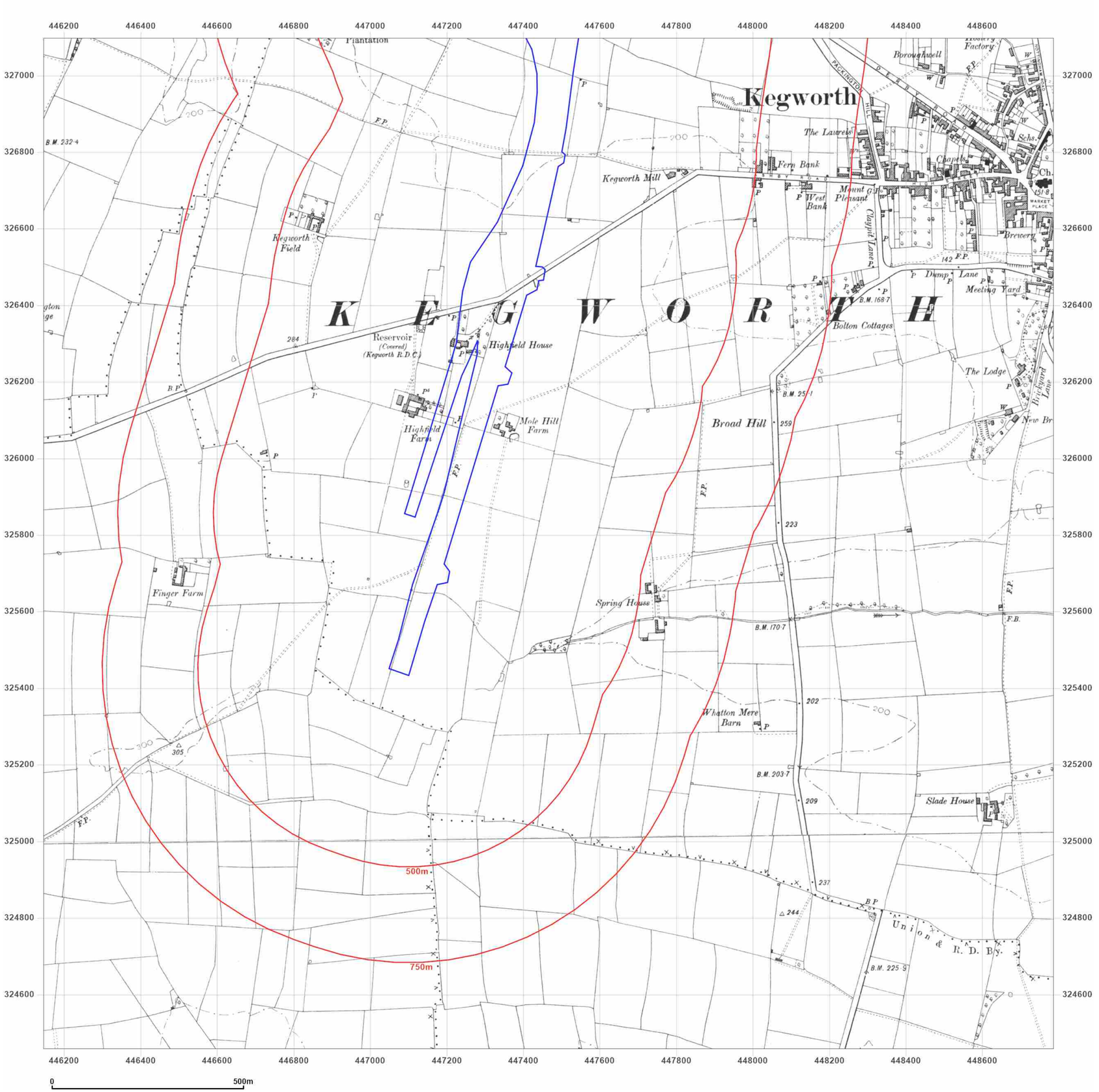
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: County Series

Map date: **1901-1903**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1882
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

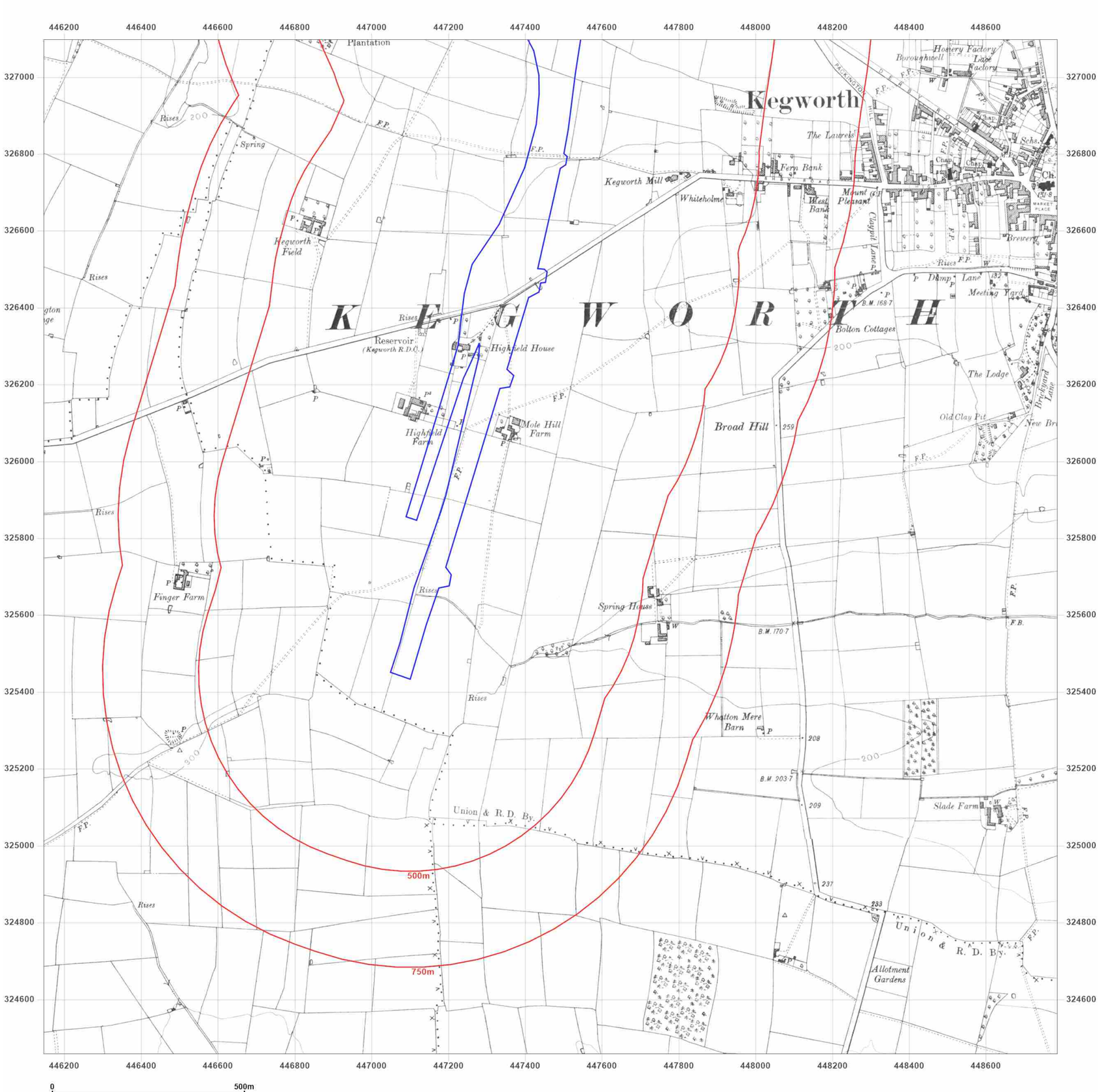
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: County Series

Map date: **1919-1922**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1882
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1919
Edition N/A
Copyright N/A
Levelled N/A

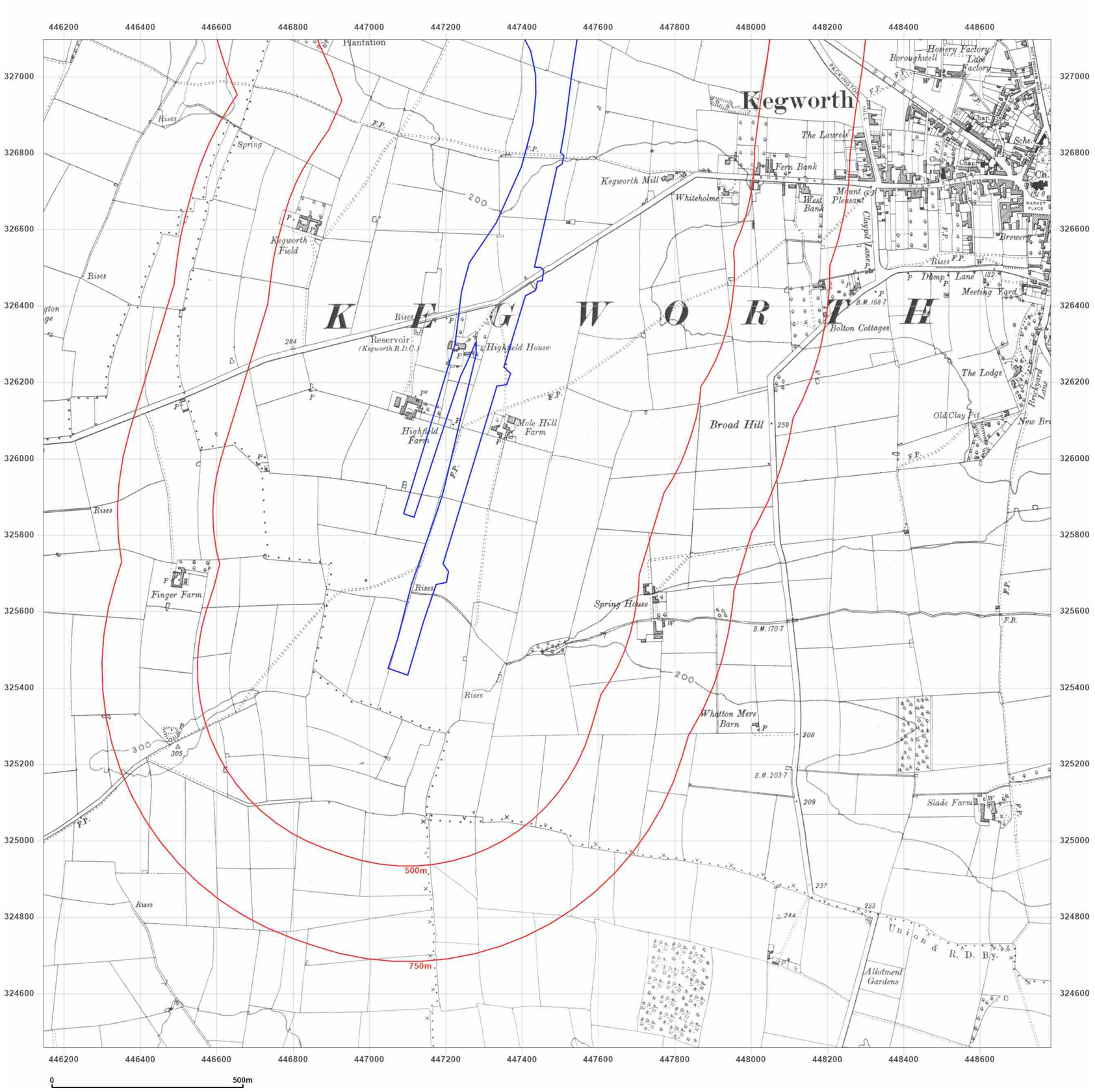
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: County Series

Map date: **1922**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1883
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

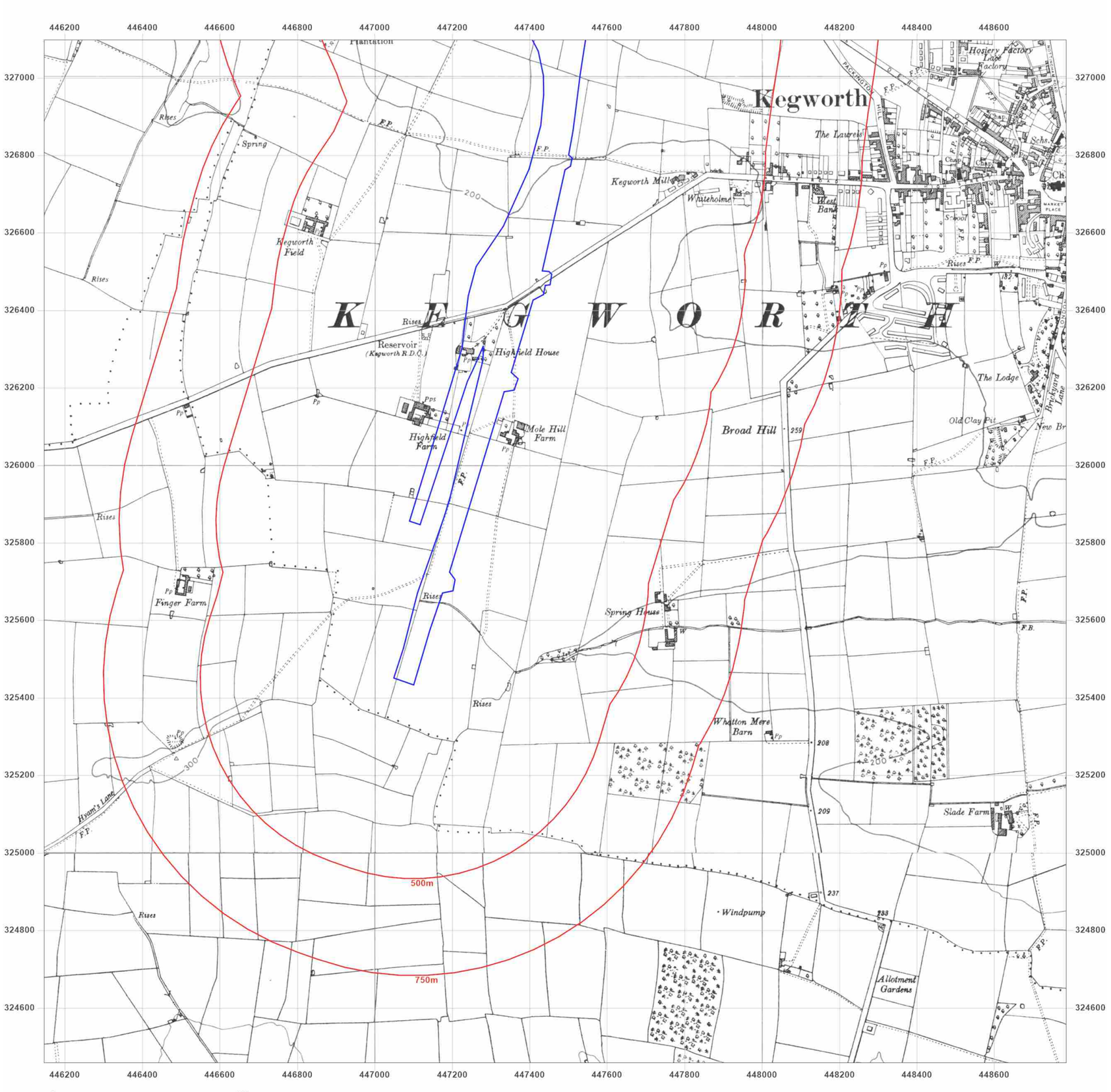
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Site Details:

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M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: Provisional

Map date: **1955**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed N/A
Revised 1954
Edition 1955
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1954
Edition 1955
Copyright N/A
Levelled N/A

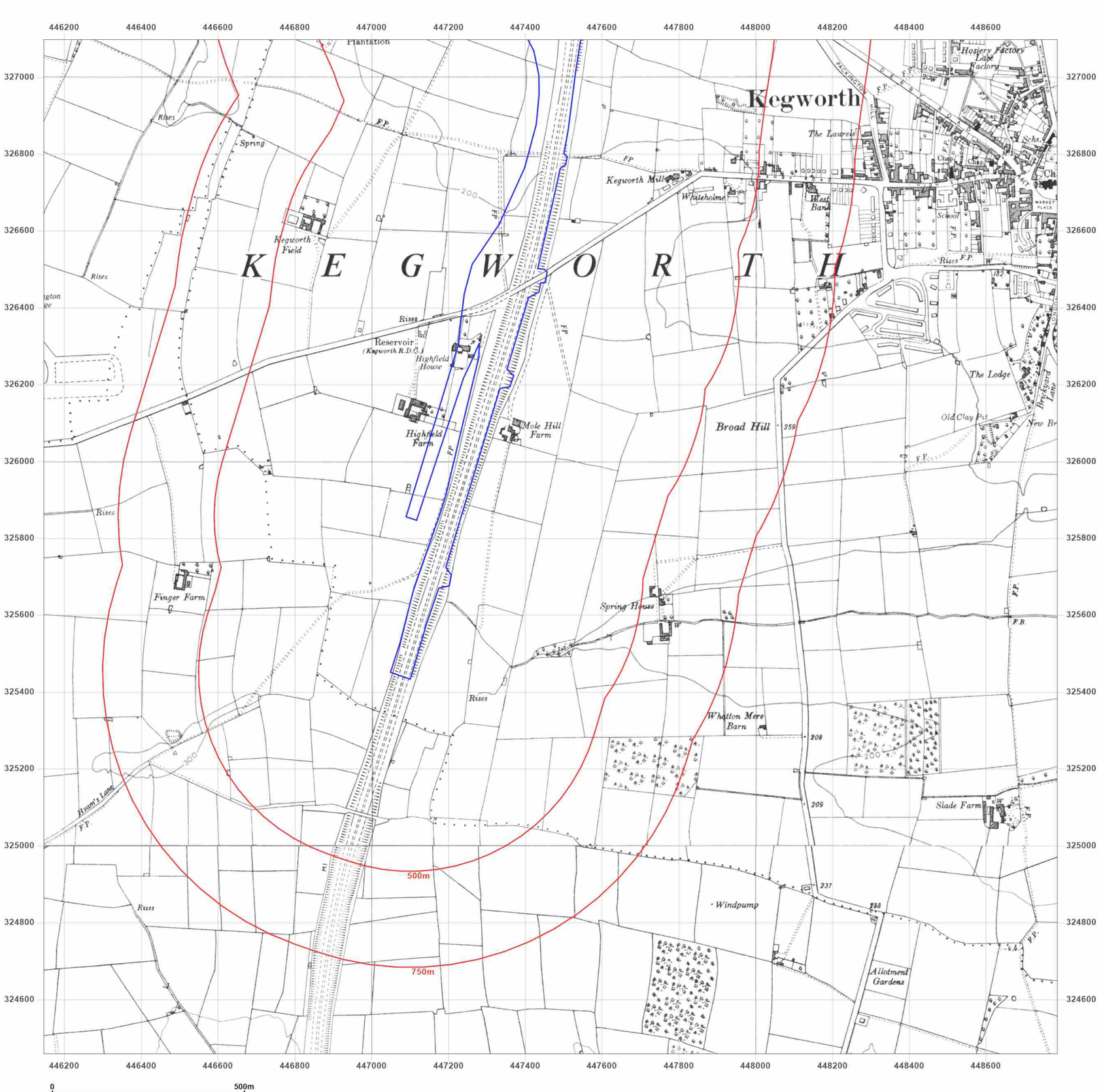
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: Provisional

Map date: **1966**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1950
Revised 1965
Edition 1955
Copyright 1966
Levelled N/A

Surveyed N/A
Revised 1966
Edition 1955
Copyright N/A
Levelled N/A

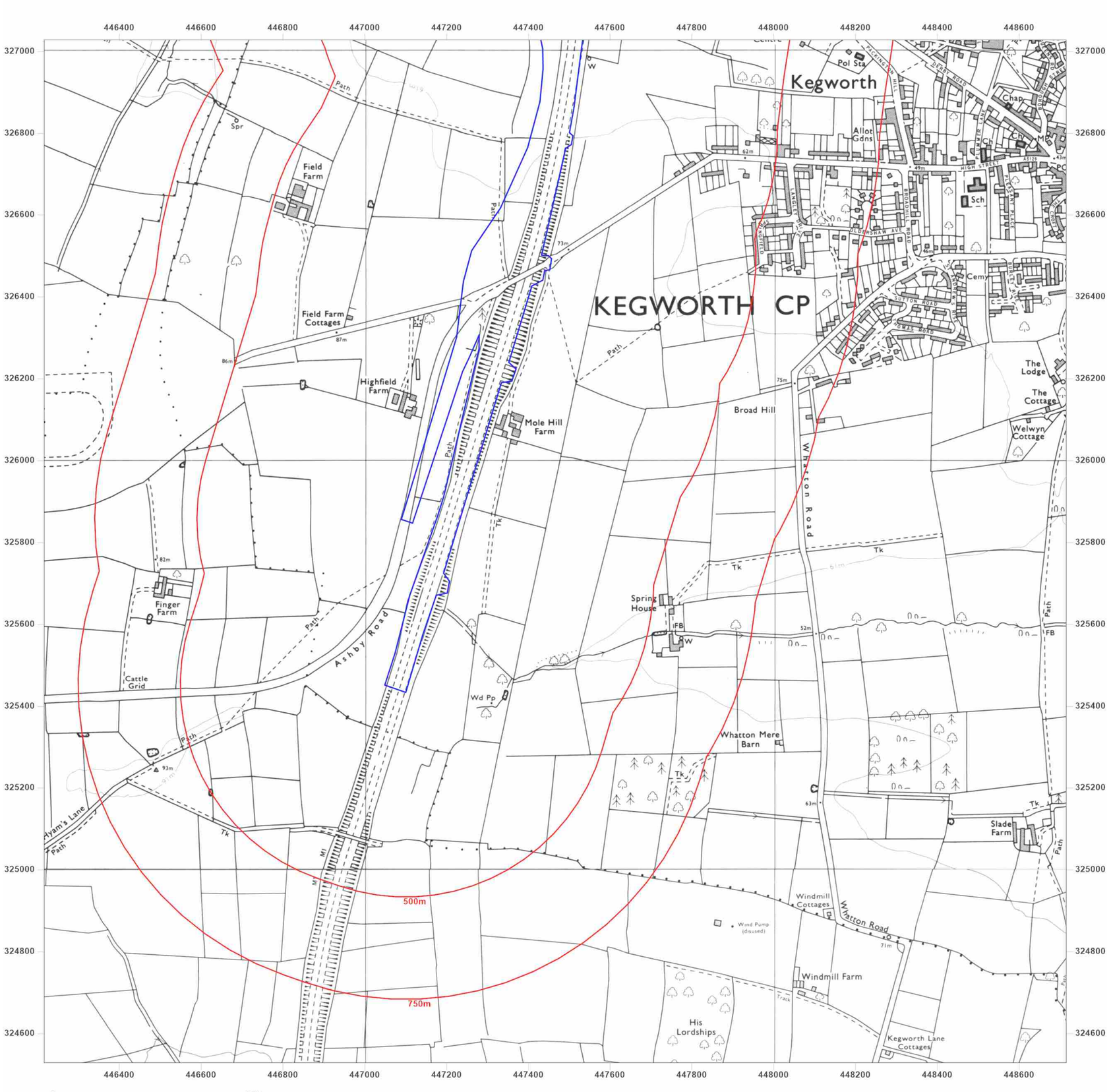
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: National Grid

Map date: **1971-1975**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1969
Revised 1975
Edition N/A
Copyright 1975
Levelled N/A

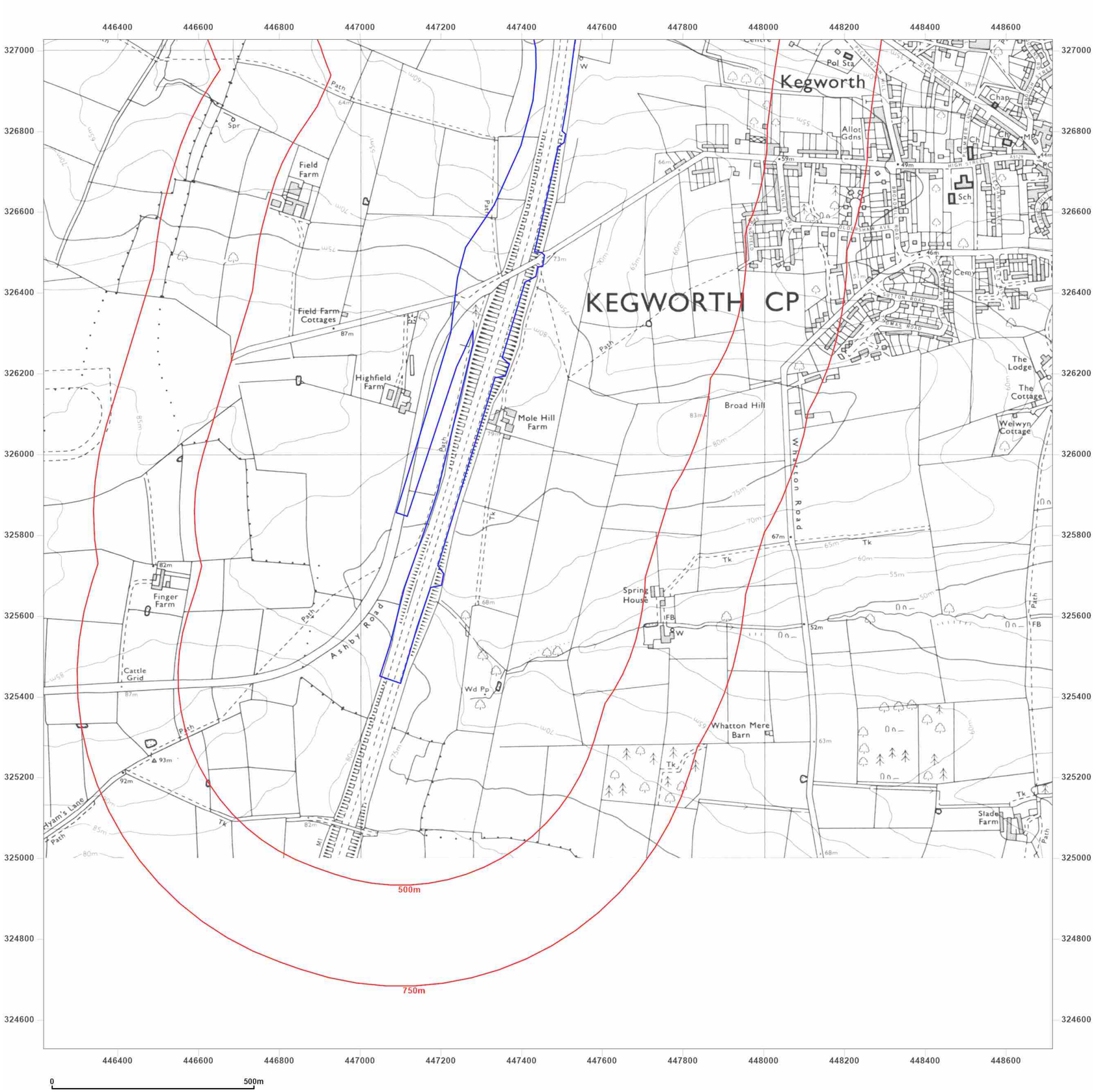
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: National Grid

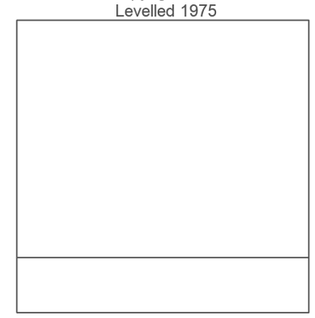
Map date: **1978**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1971
Revised 1978
Edition N/A
Copyright 1972
Levelled 1975



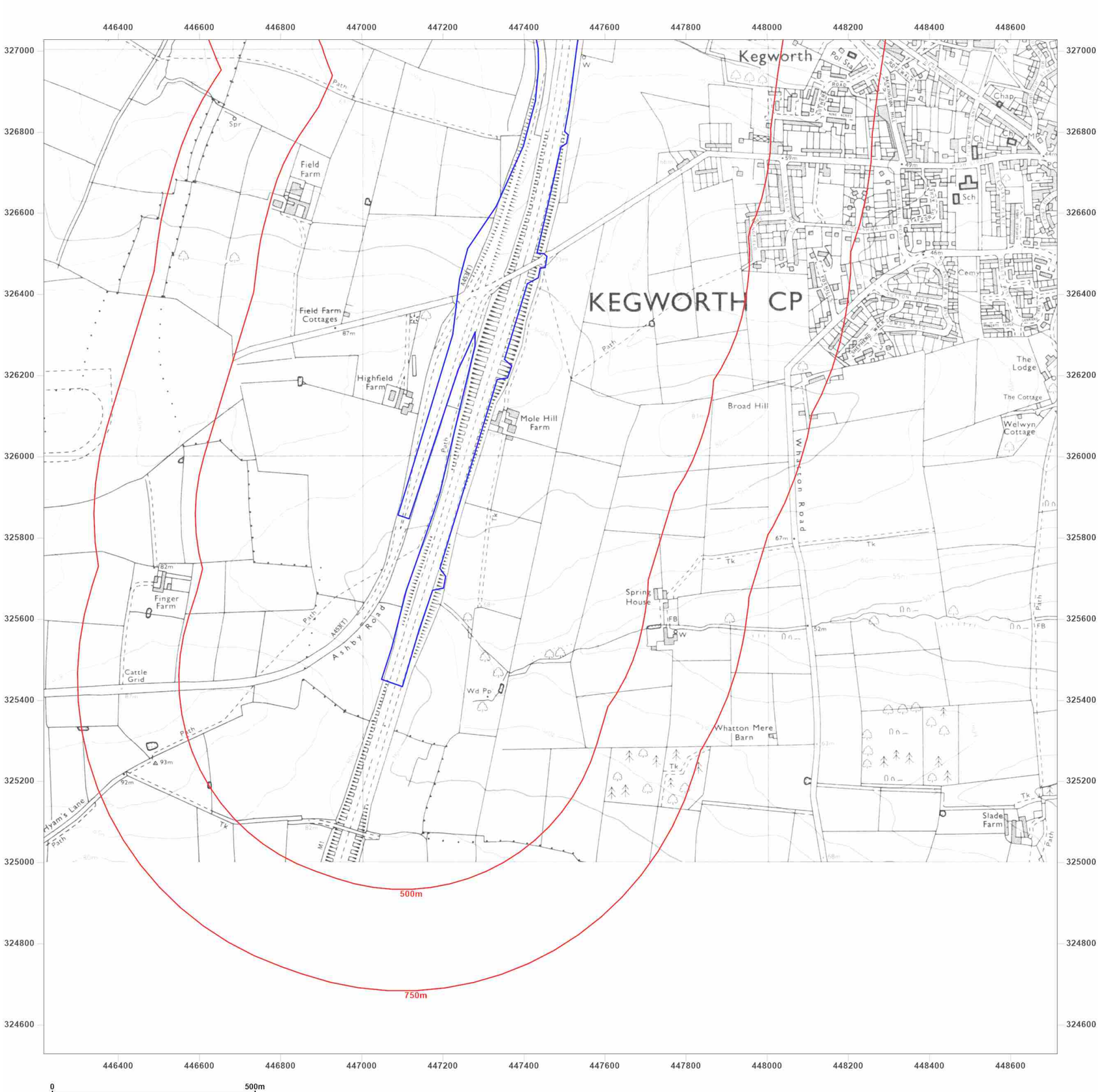
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: National Grid

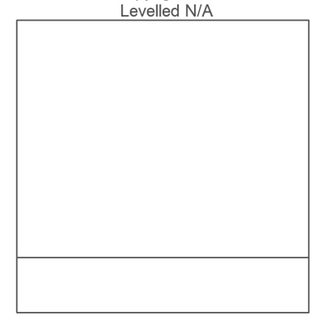
Map date: **1982**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Surveyed 1971
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A



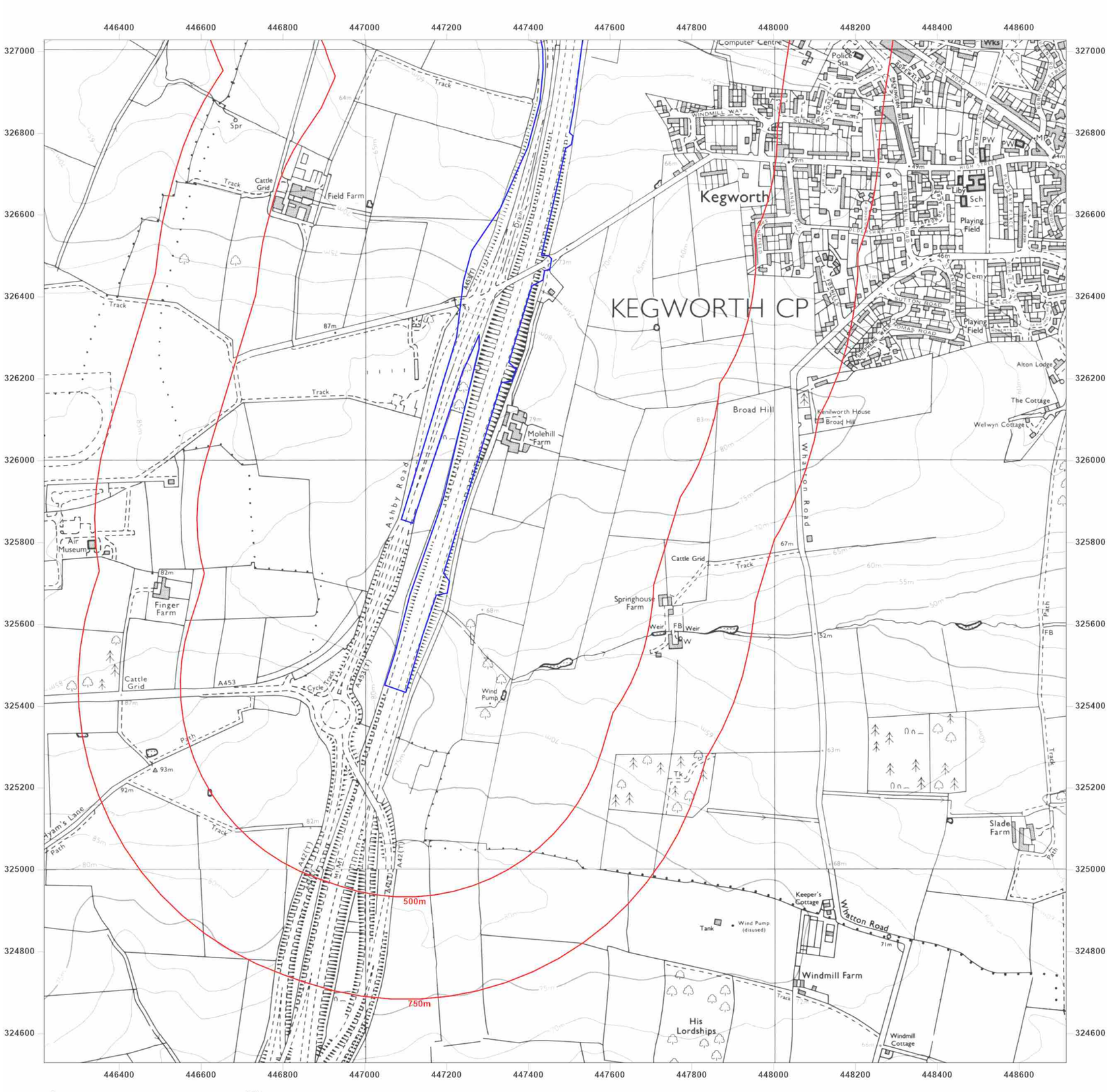
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: National Grid

Map date: **1992-1993**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1991
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1969
Revised 1993
Edition N/A
Copyright N/A
Levelled N/A

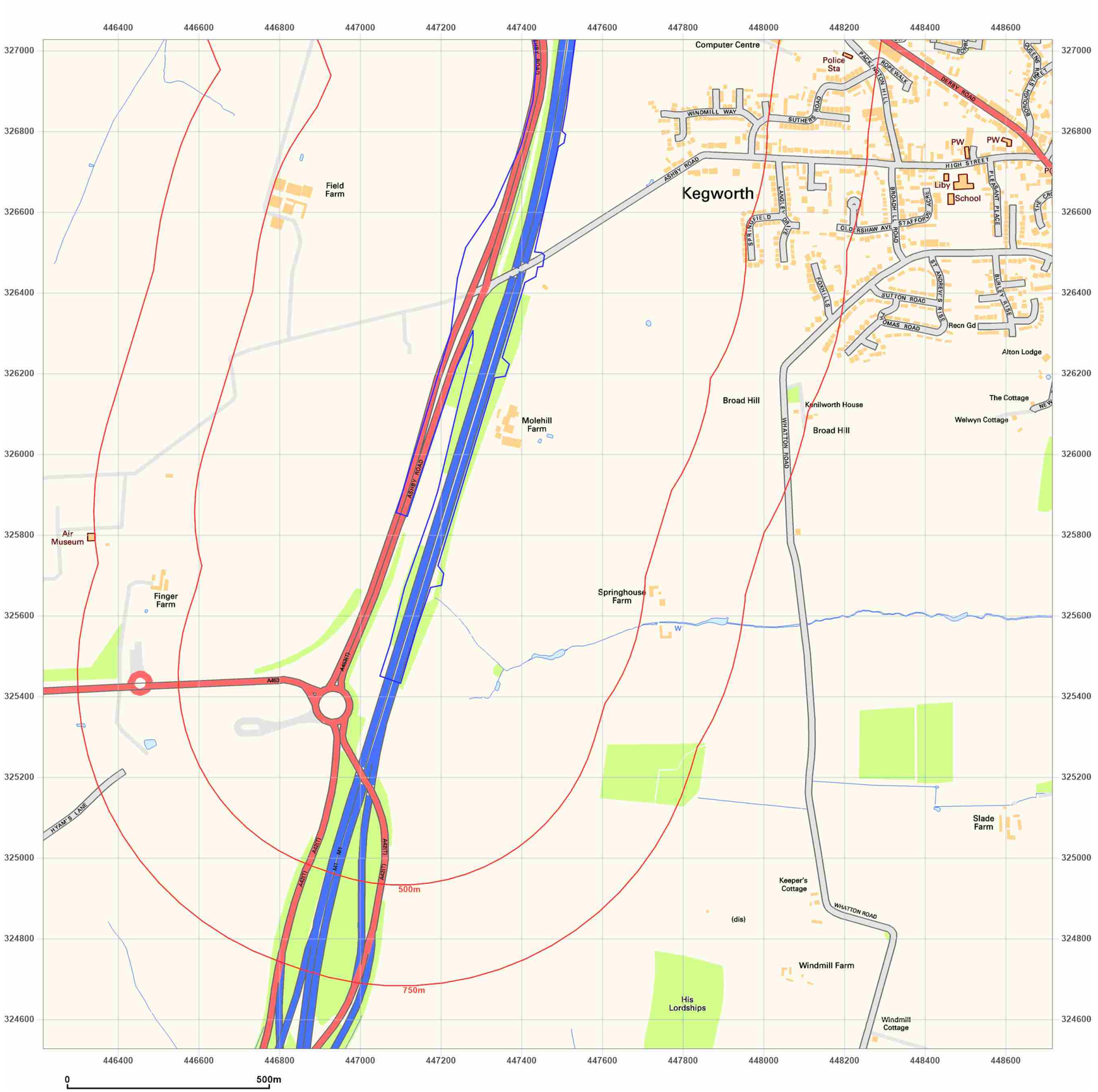
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

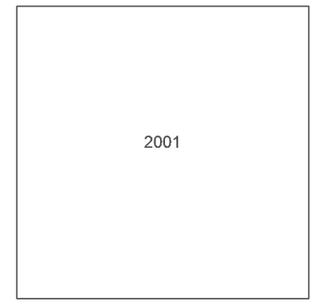
Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S



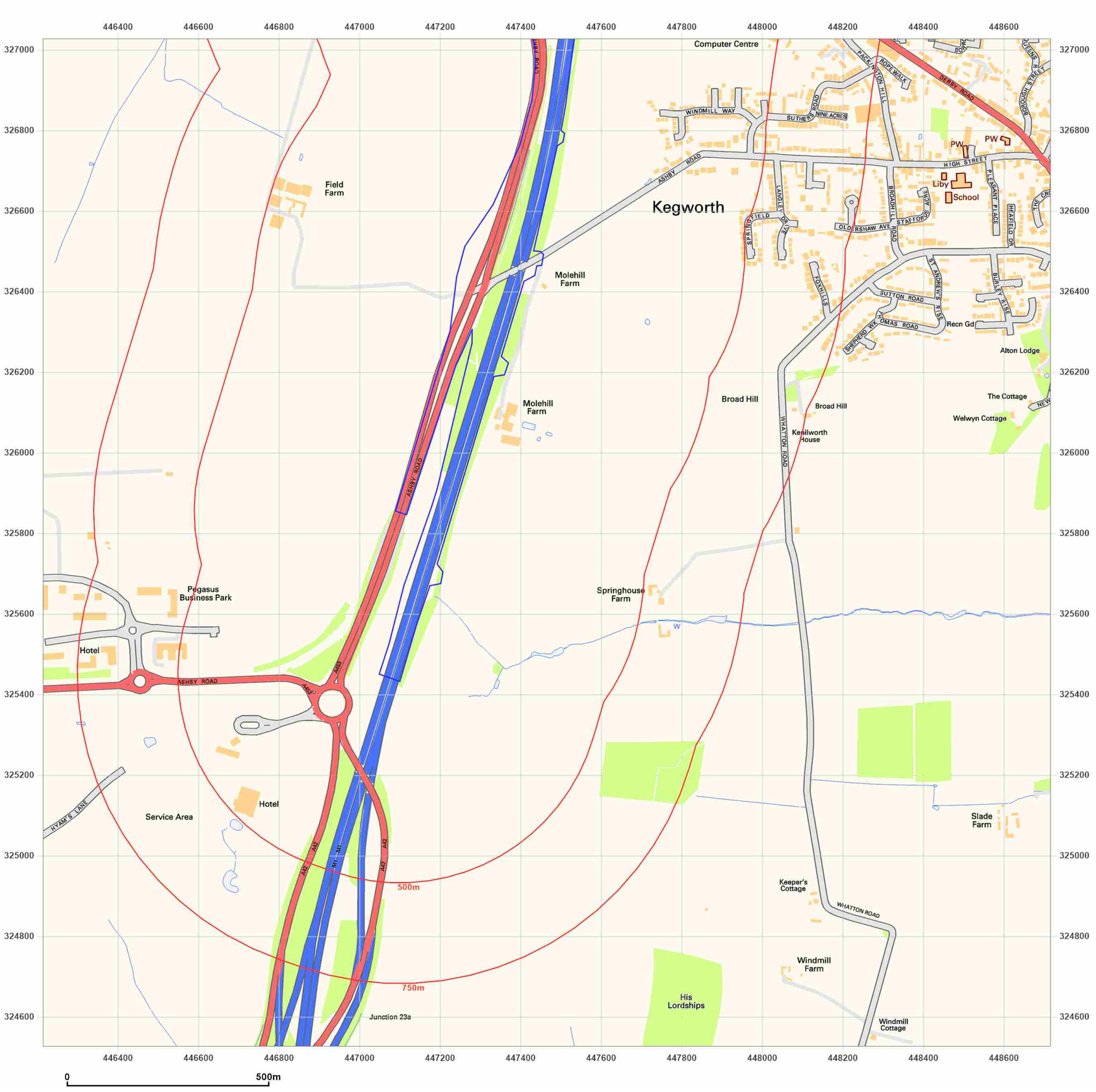
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2010

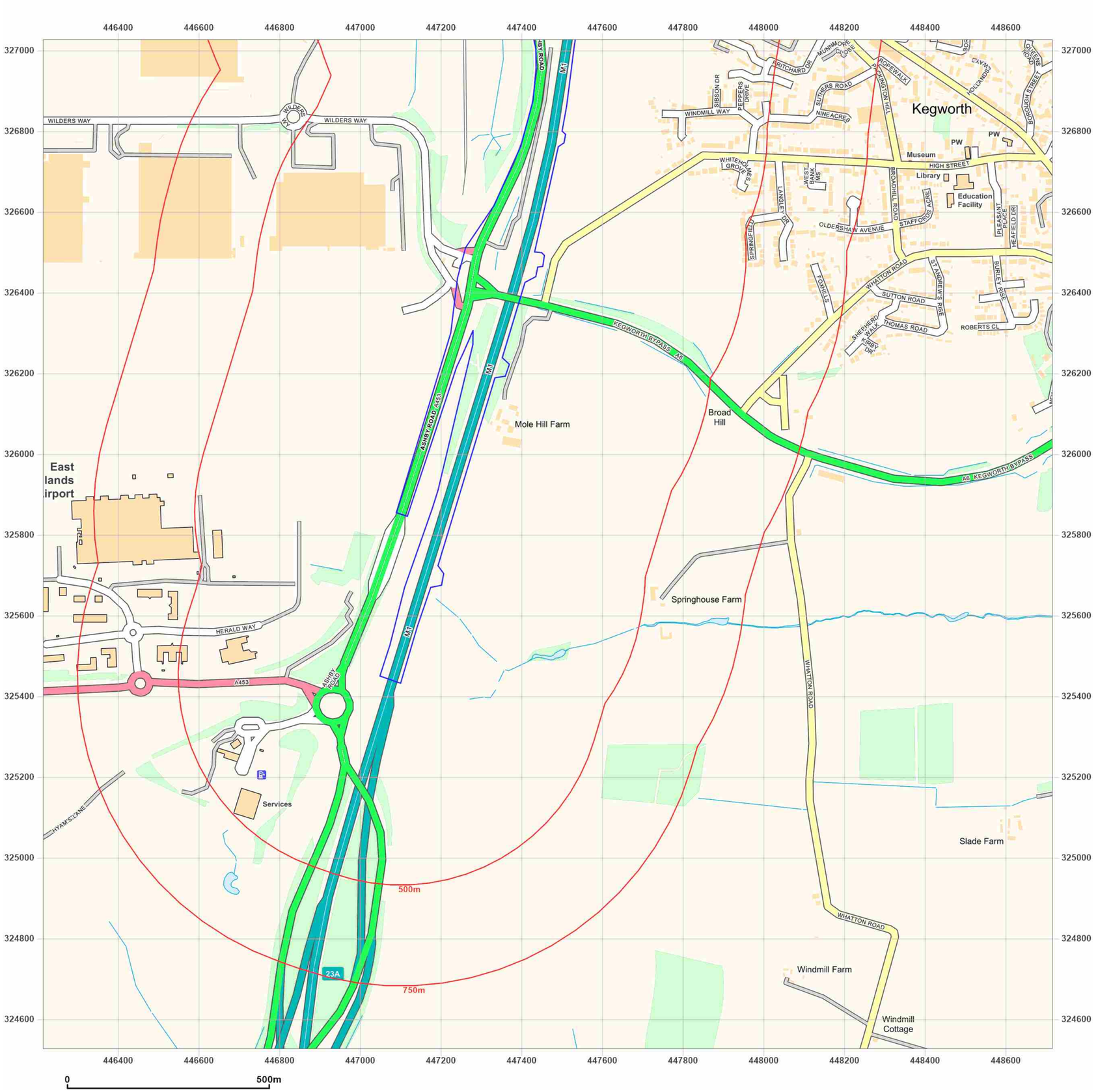
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Production date: 13 December 2024

Map legend available at:
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_1
Grid Ref: 447465, 325777

Map Name: National Grid

Map date: **2024**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

2024

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: County Series

Map date: **1883**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1883
Revised 1883
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1883
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

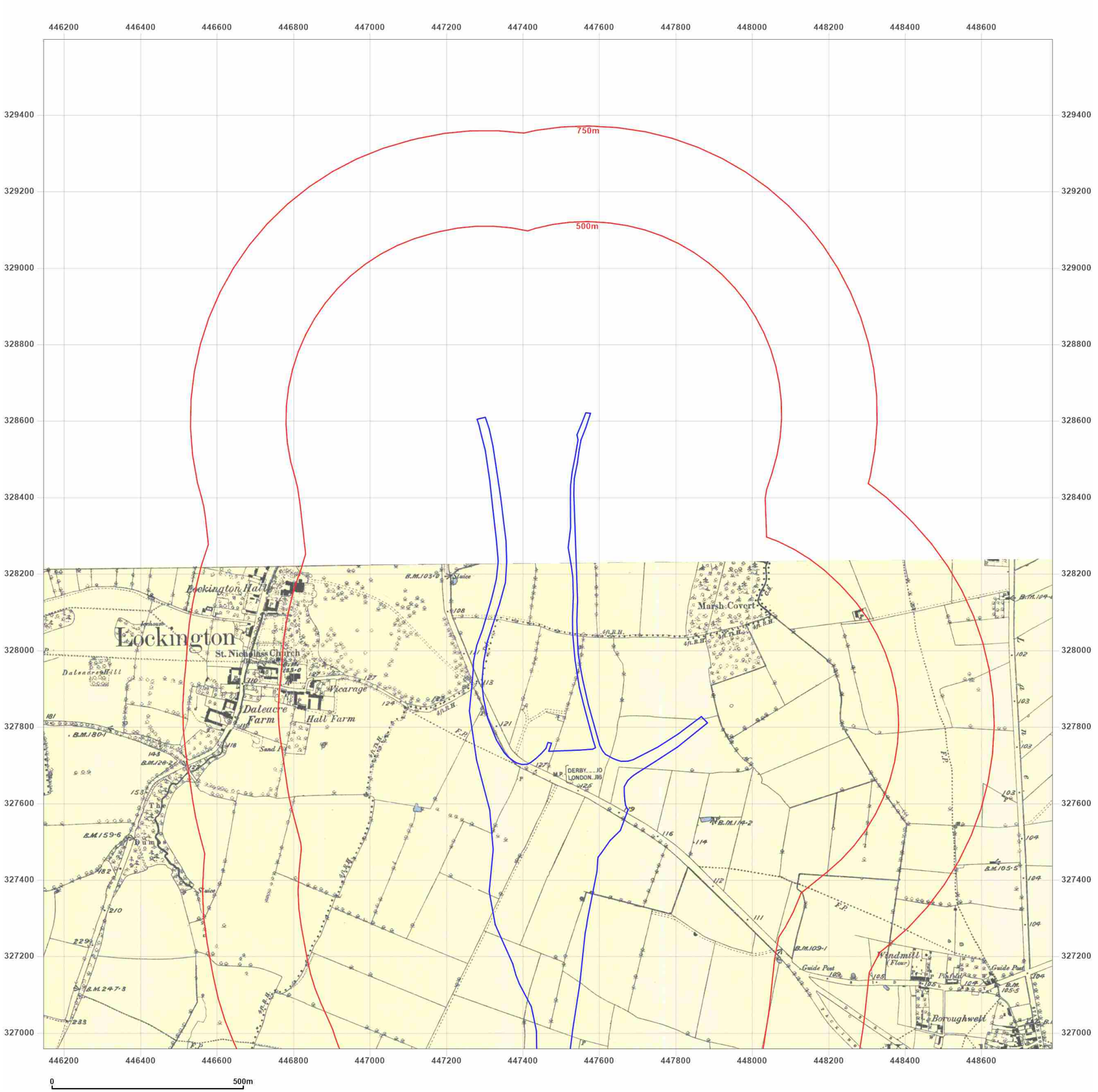
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: County Series

Map date: **1883**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1883
Revised 1883
Edition N/A
Copyright N/A
Levelled N/A

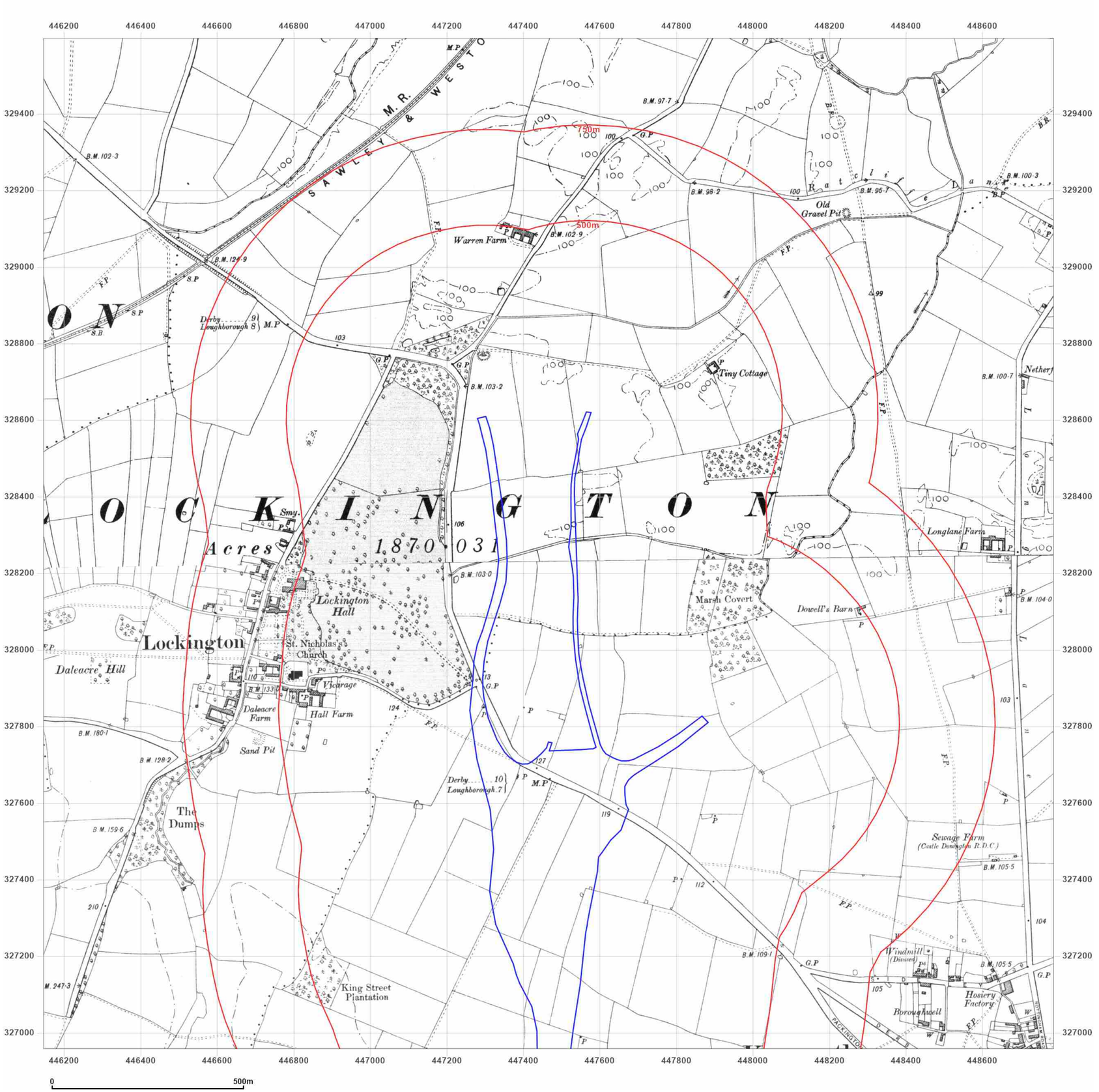
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: County Series

Map date: **1899-1901**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

Surveyed 1882
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

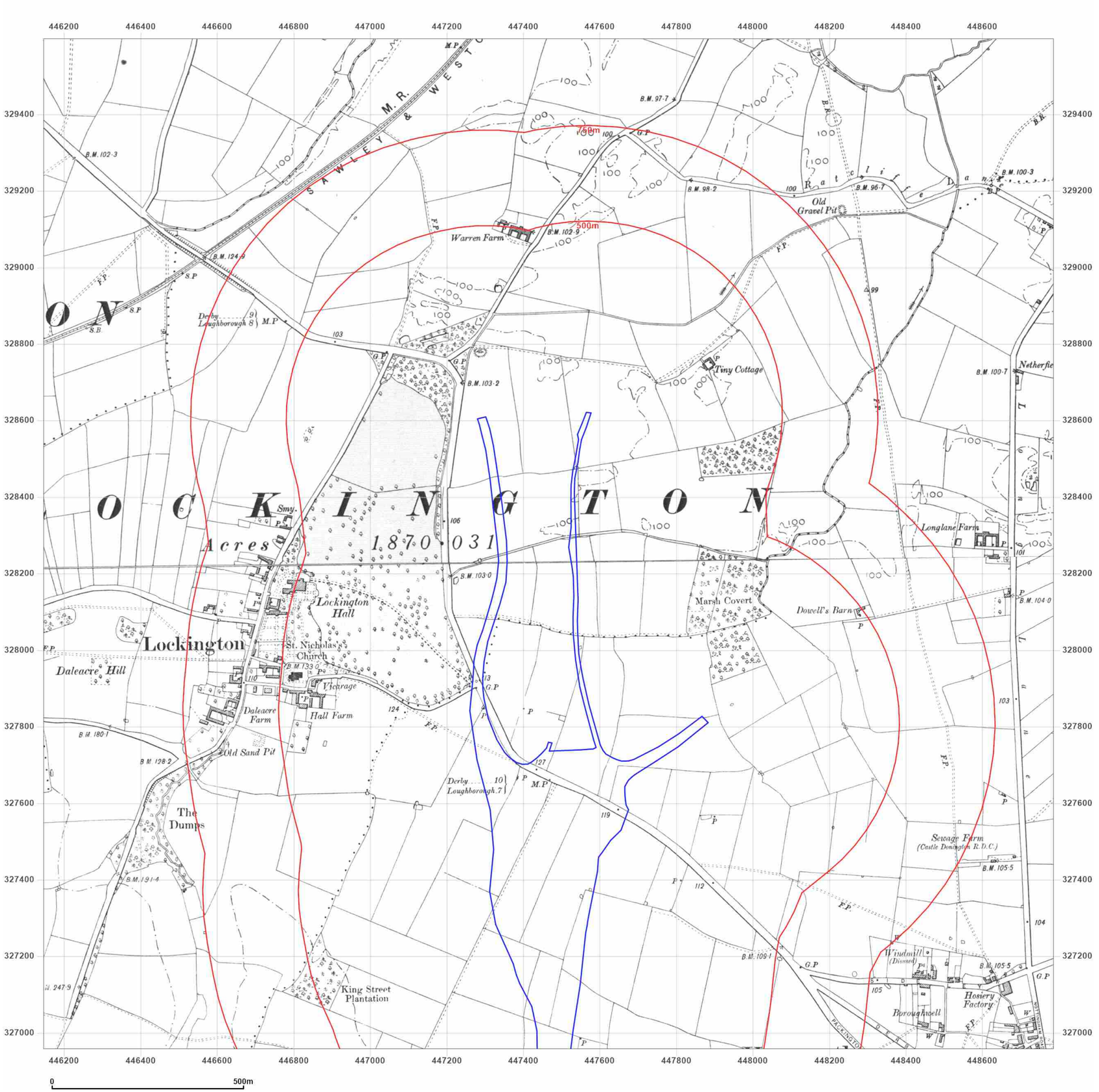
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: County Series

Map date: **1899-1901**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1881
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1883
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: County Series

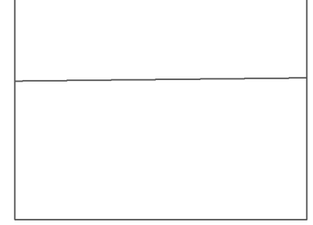
Map date: **1921**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1881
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A



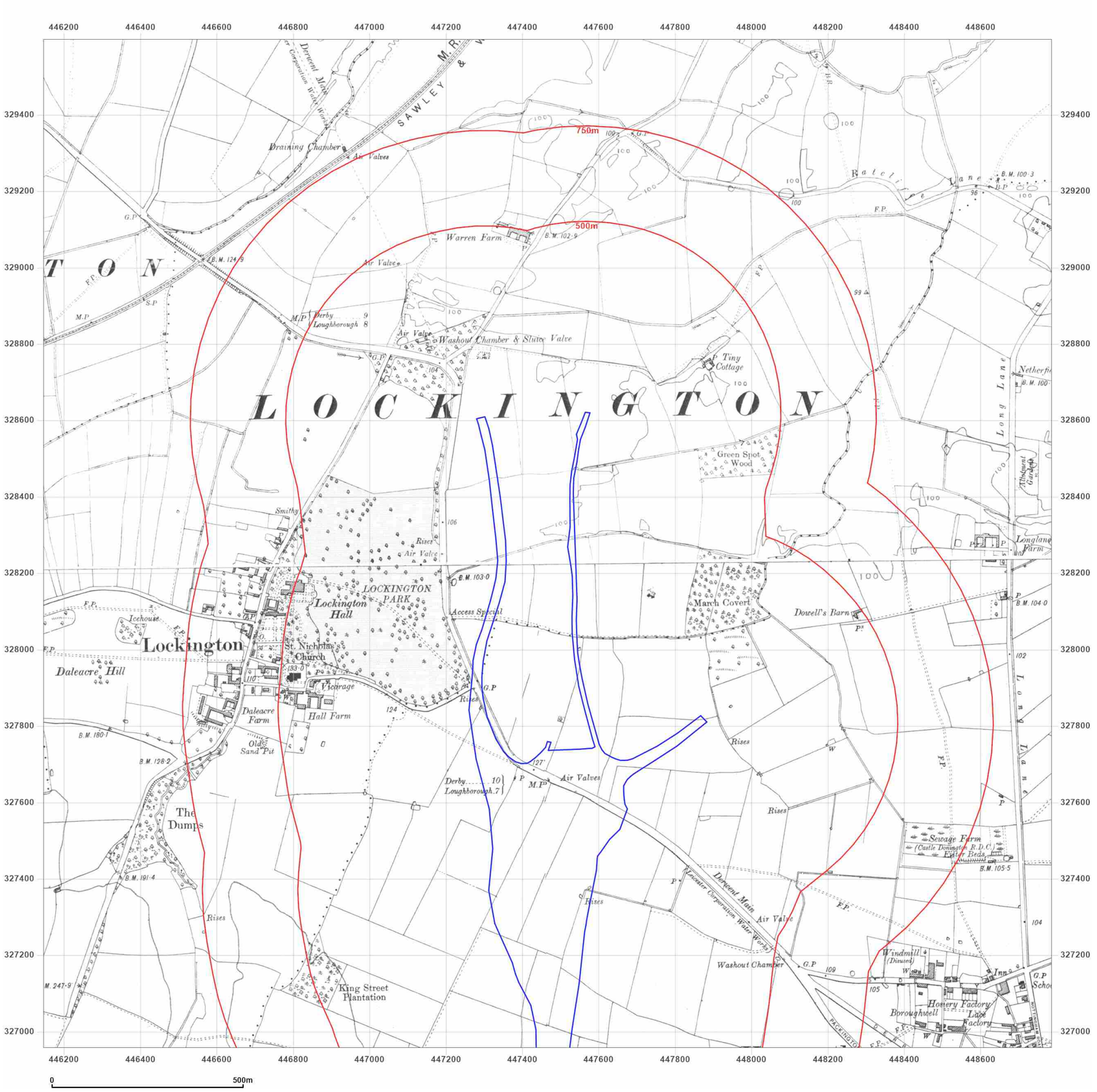
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Production date: 13 December 2024

Map legend available at:
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: County Series

Map date: **1921-1922**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1882
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1883
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

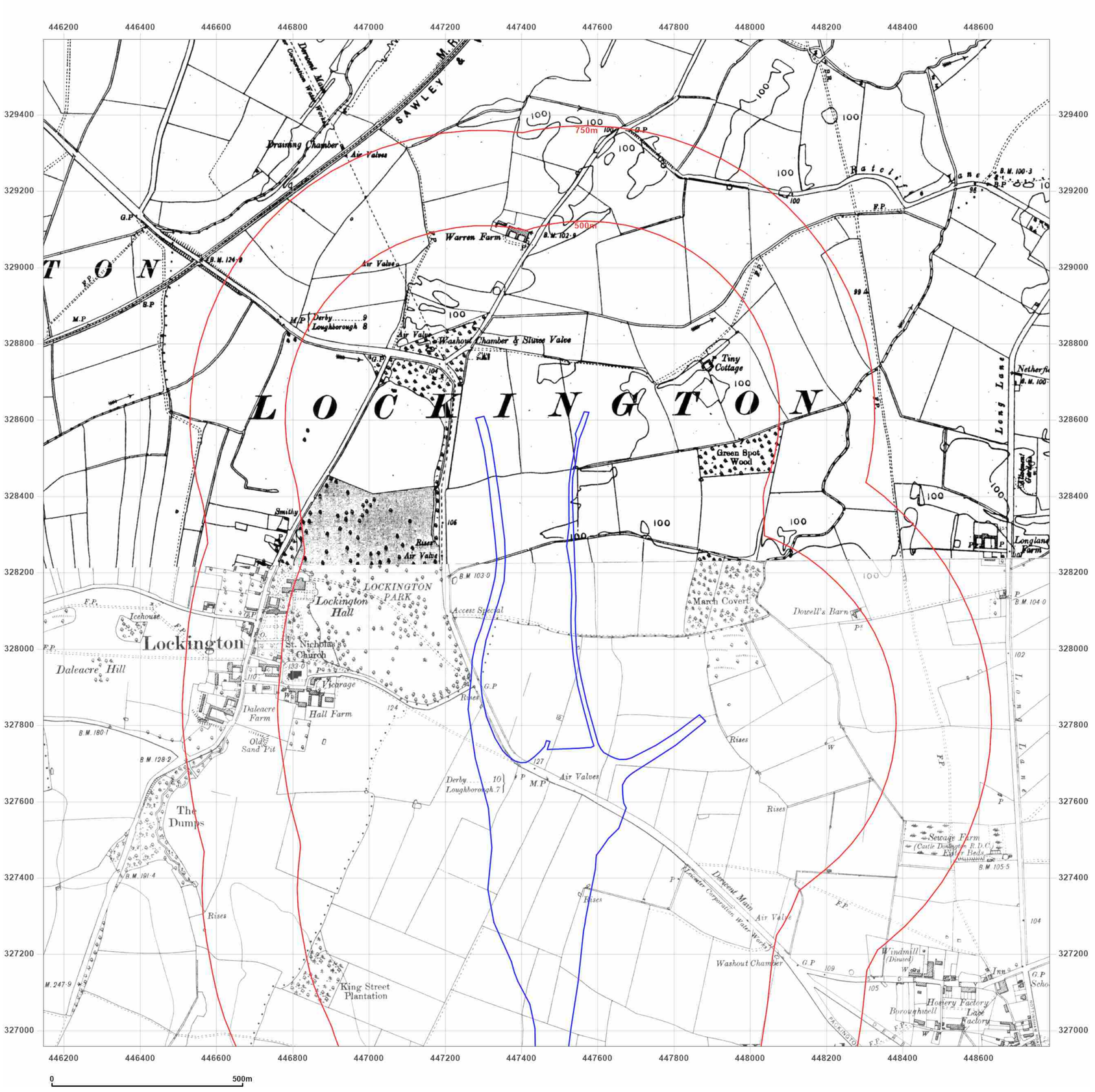
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Production date: 13 December 2024

Map legend available at:
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: County Series

Map date: **1921-1922**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

Surveyed 1882
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1881
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

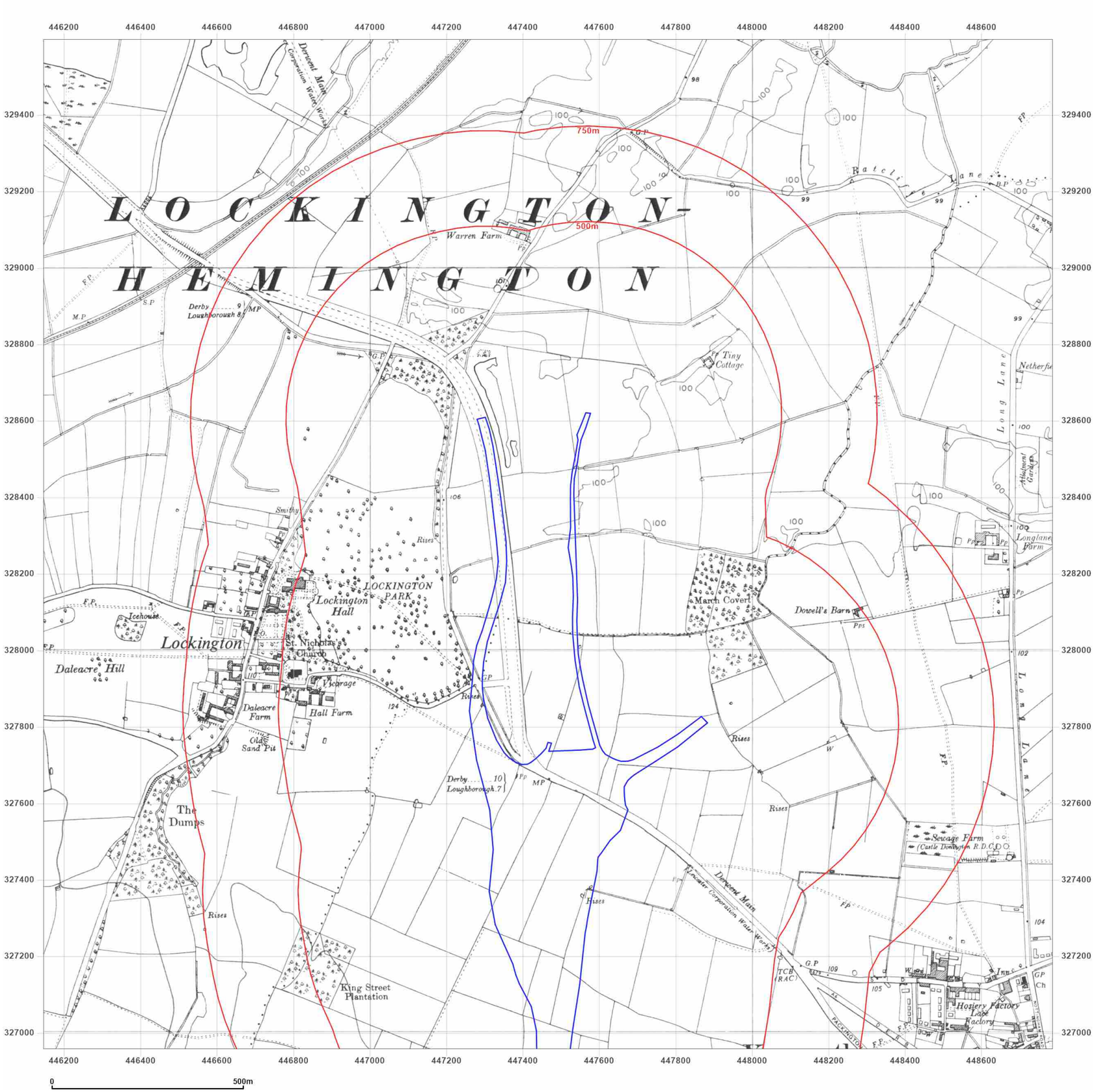
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: Provisional

Map date: **1955**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed N/A
Revised 1954
Edition 1955
Copyright N/A
Levelled N/A

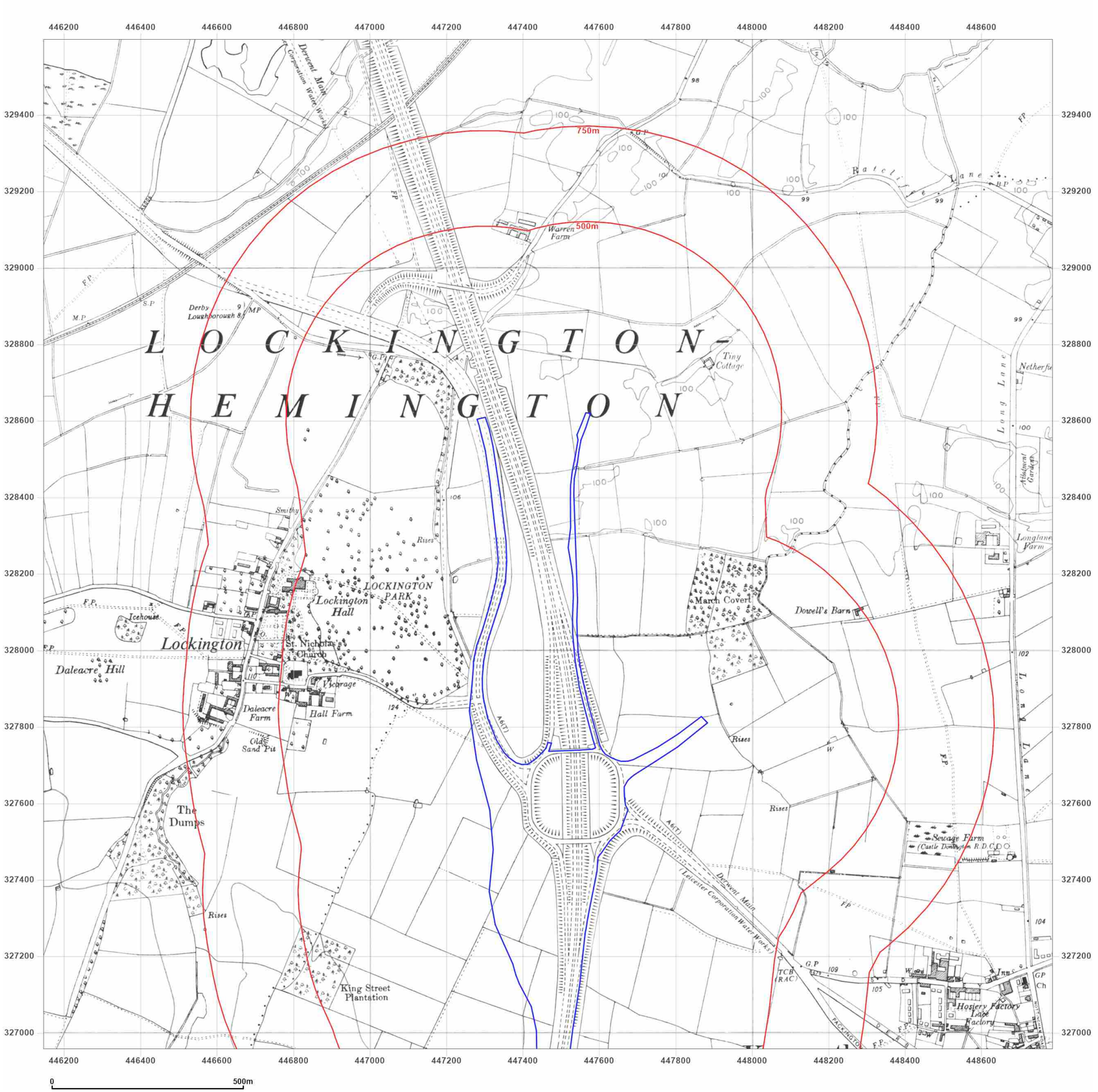
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Production date: 13 December 2024

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: Provisional

Map date: **1966**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1950
Revised 1965
Edition 1955
Copyright 1966
Levelled N/A

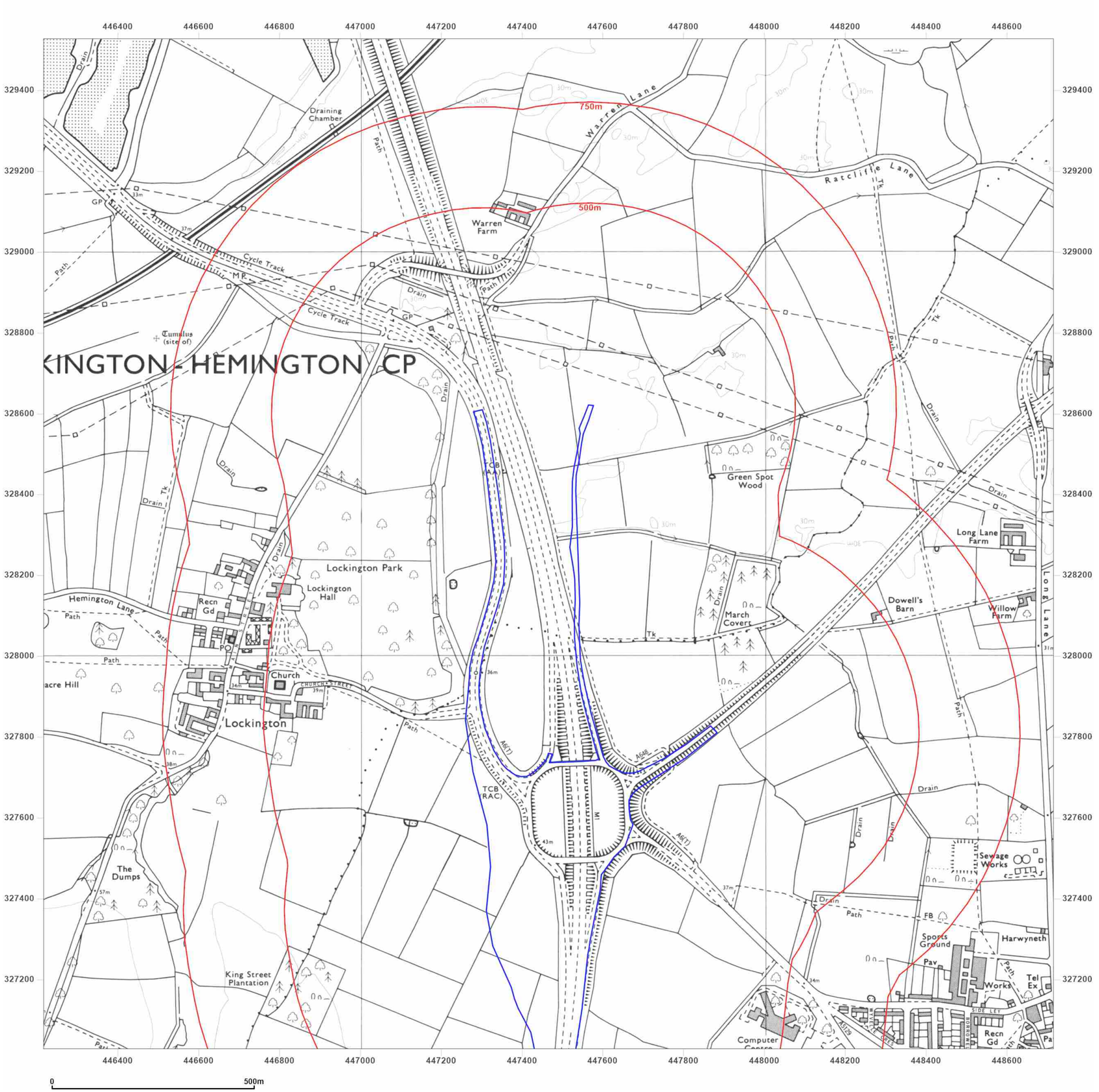
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Production date: 13 December 2024

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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: National Grid

Map date: **1971**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1971
Revised 1971
Edition N/A
Copyright N/A
Levelled N/A

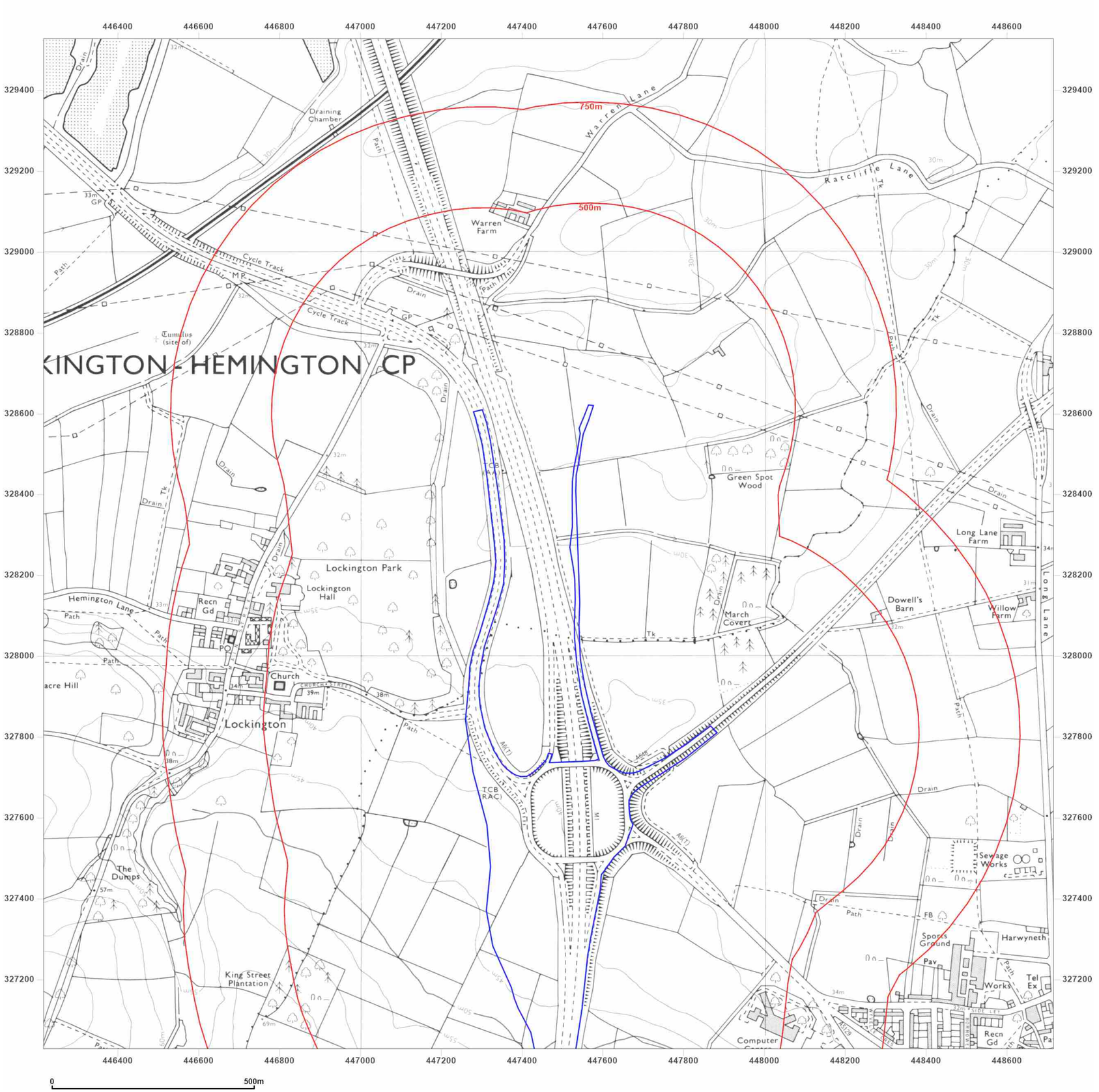
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: National Grid

Map date: **1978**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1971
Revised 1978
Edition N/A
Copyright 1972
Levelled 1975

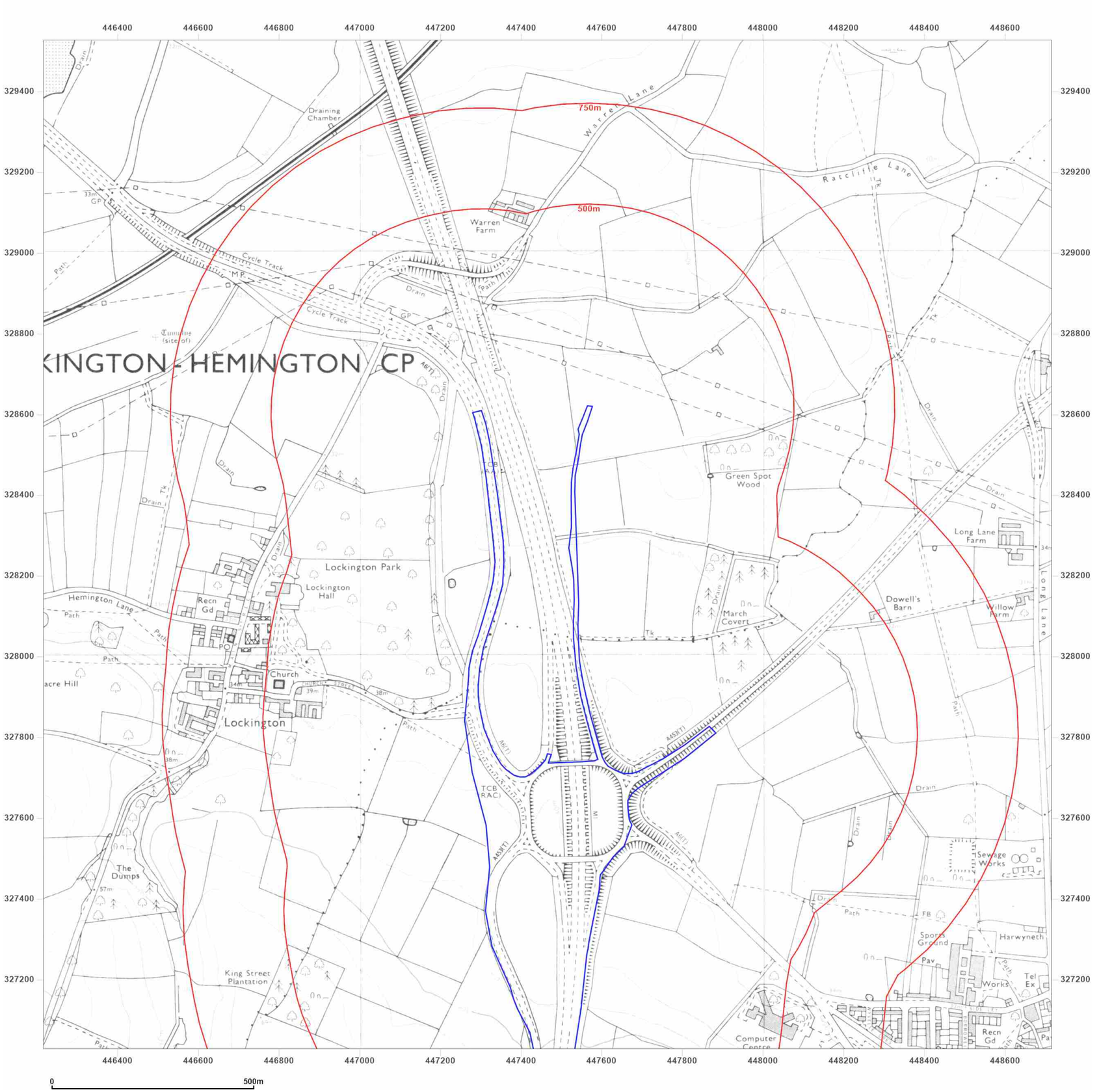
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: National Grid

Map date: **1982**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1971
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

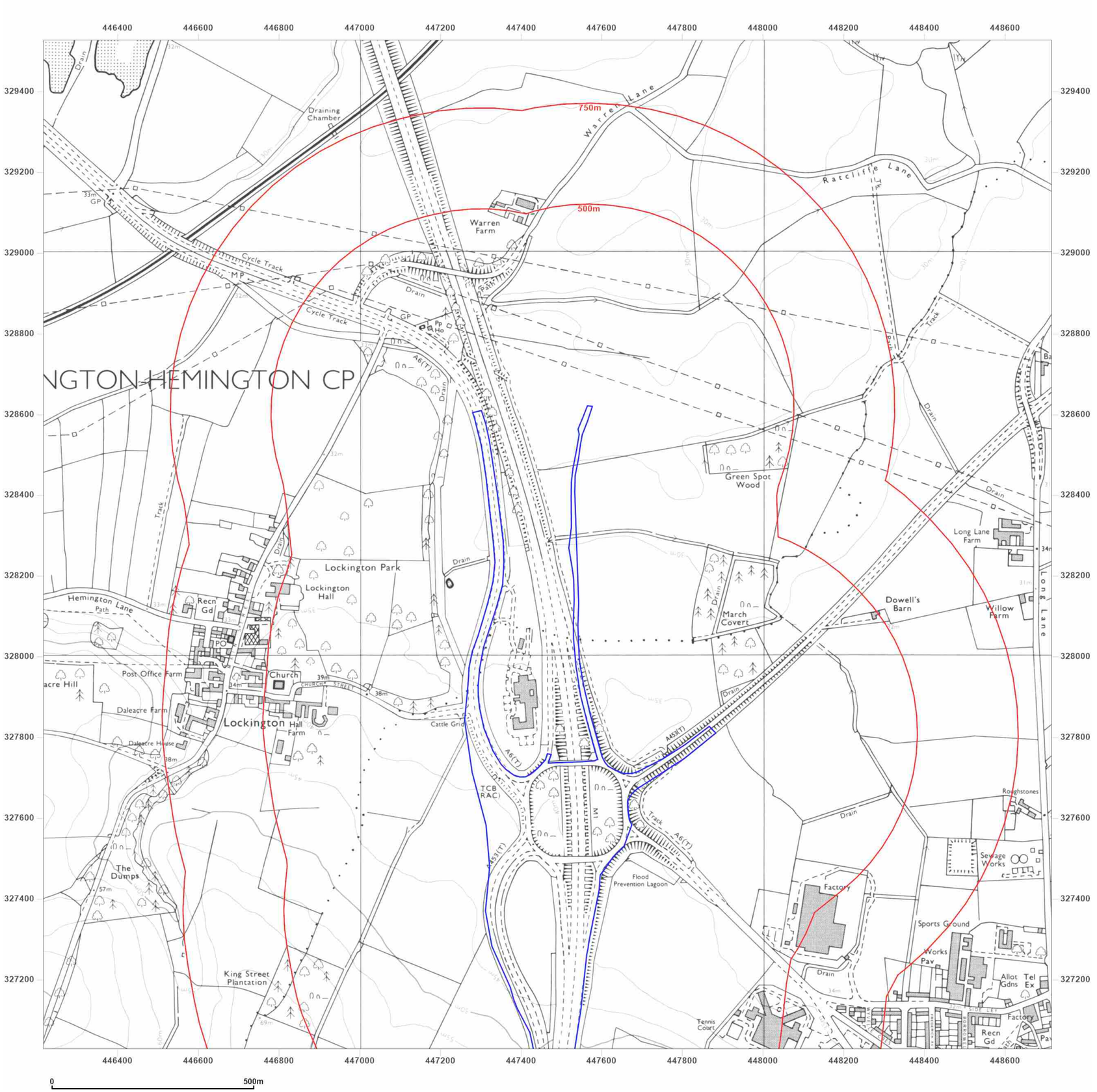
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1991
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

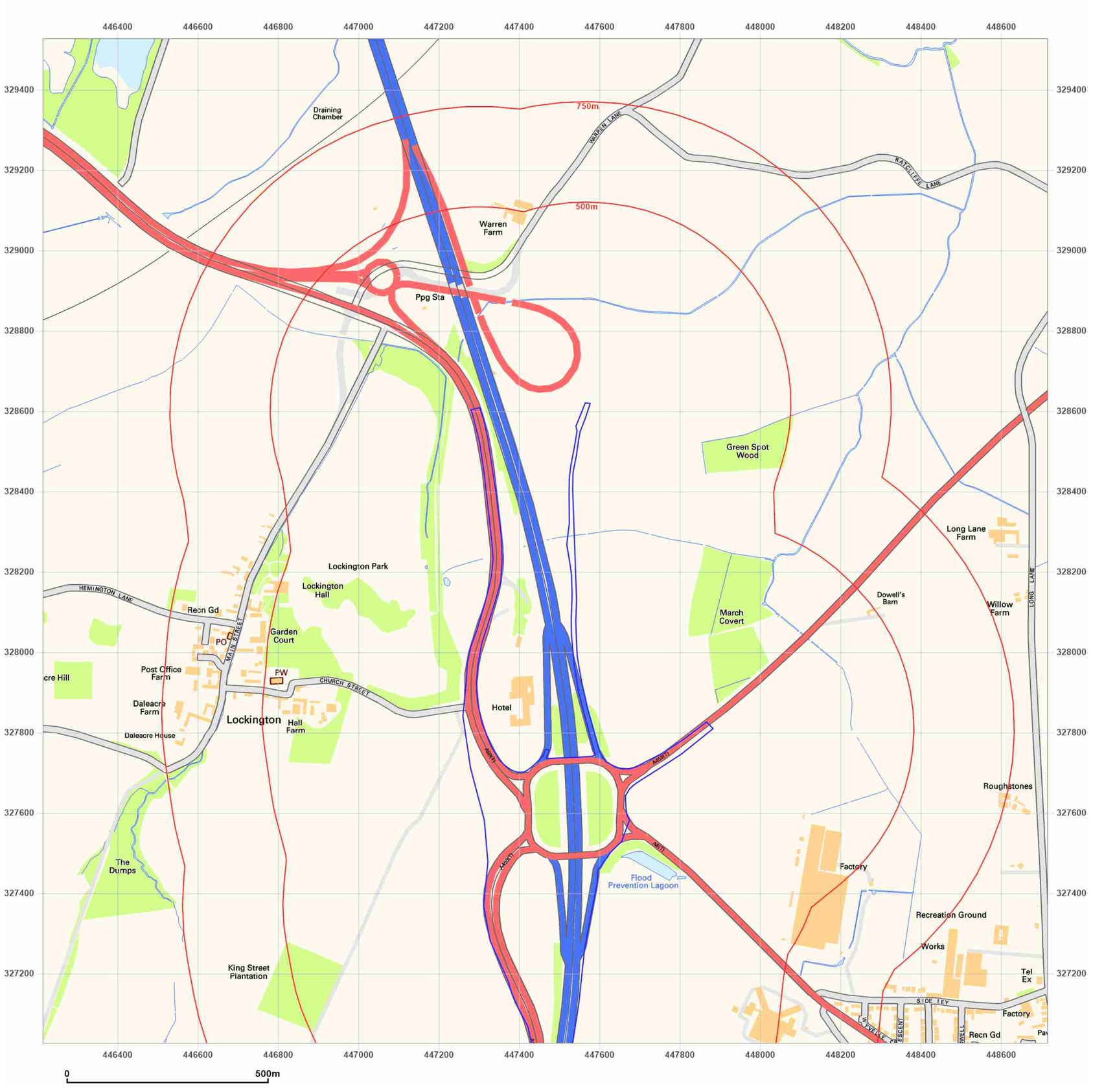
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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: National Grid
Map date: **2001**
Scale: 1:10,000
Printed at: 1:10,000

N
W E
S

2001

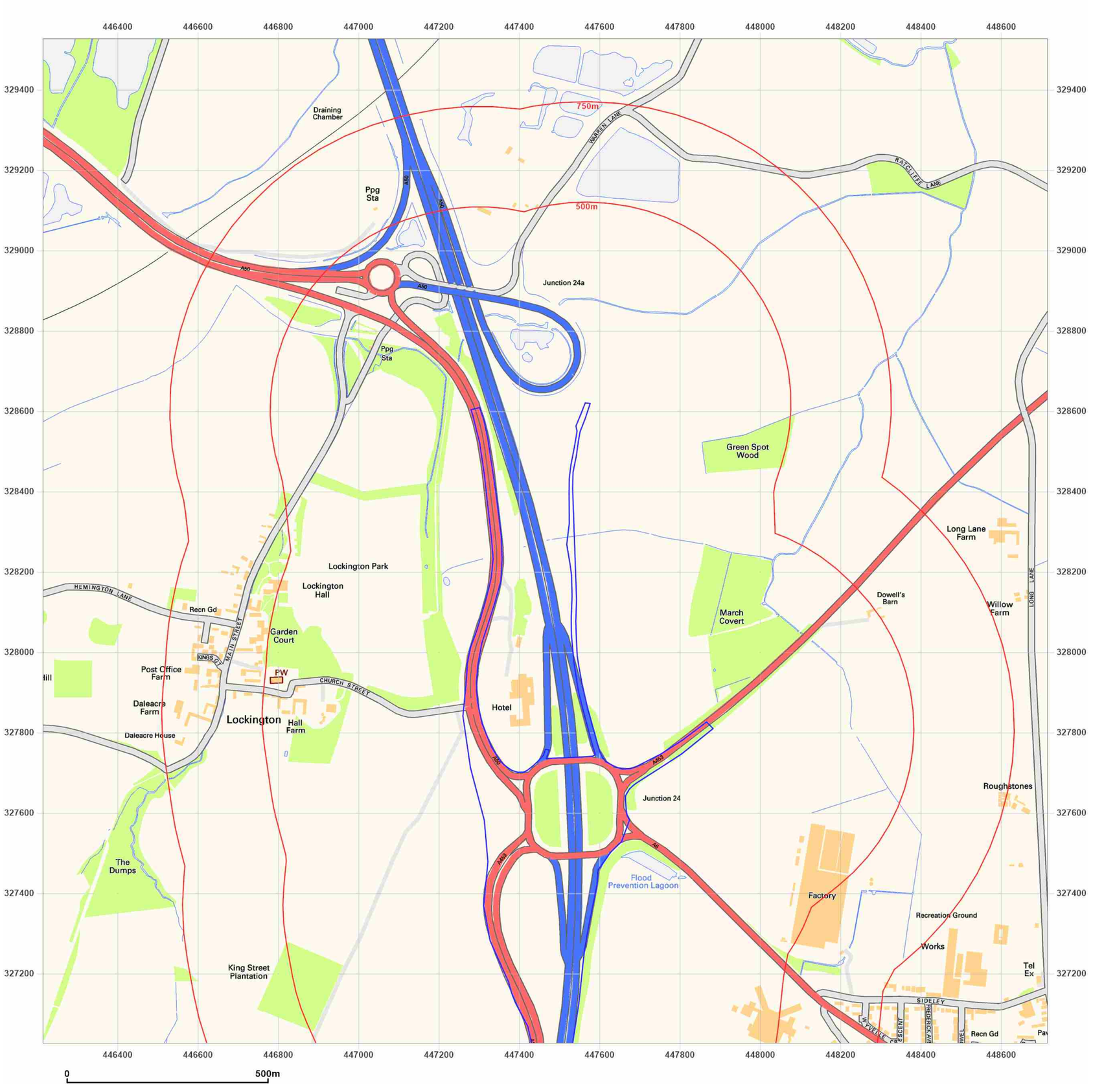
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Production date: 13 December 2024

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Groundsure INSIGHTS

Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: National Grid
Map date: **2010**
Scale: 1:10,000
Printed at: 1:10,000

N
W E
S

2010

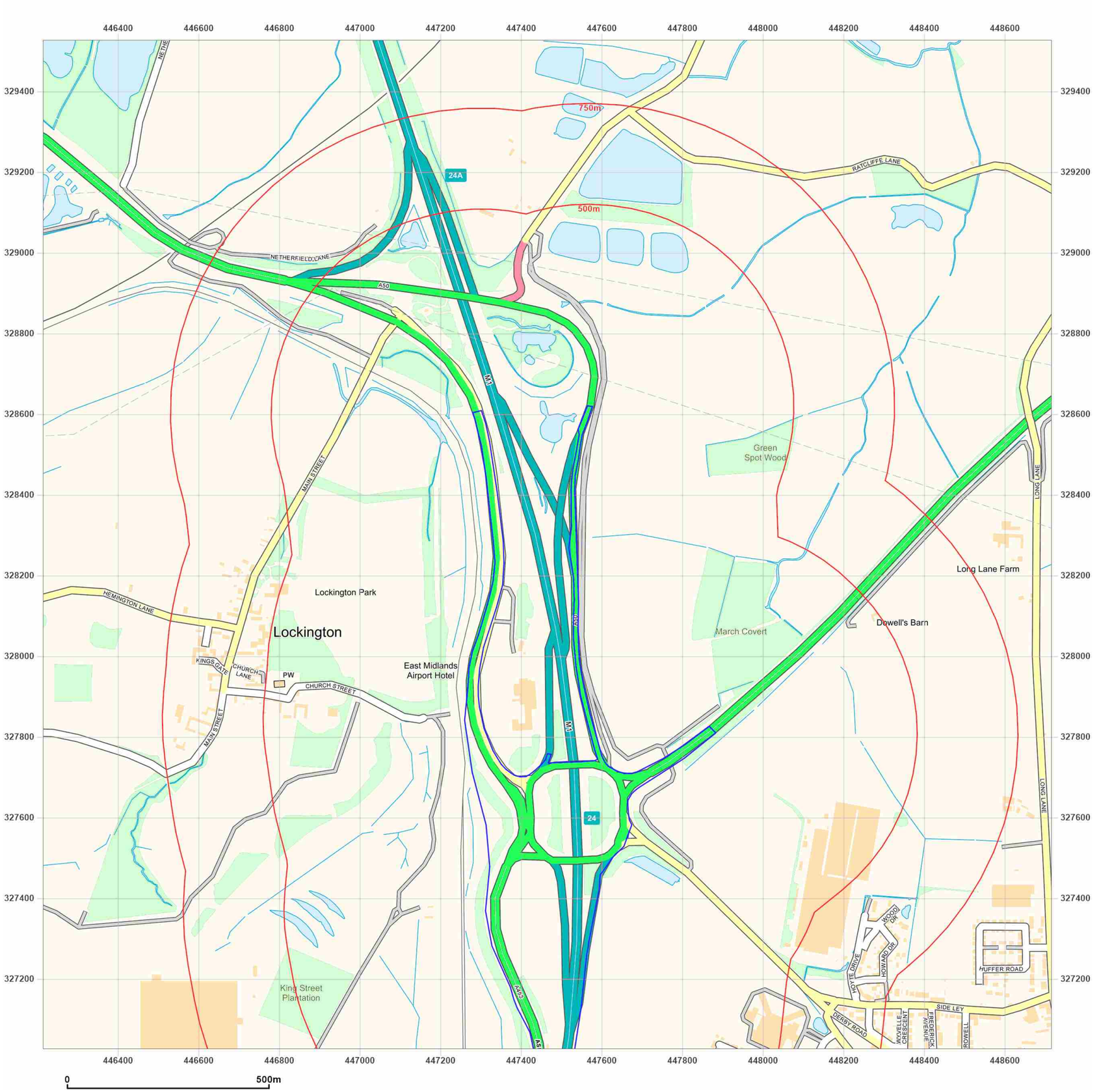
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Production date: 13 December 2024

Map legend available at:
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Site Details:

East Midlands Gateway 2, J24
M1 (NH Land)

Client Ref: 220500 - 10250
Report Ref: GS-RVB-OMG-RQL-AYQ_SS_1_2
Grid Ref: 447465, 328277

Map Name: National Grid

Map date: **2024**

Scale: 1:10,000

Printed at: 1:10,000

N
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2024

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Production date: 13 December 2024

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Appendix 3: Historical Boreholes

British Geological Survey

BGS ID: 218145 : BGS Reference: SK42NE5
British National Grid (27700) : 447270,326080

ALTERNATIVE LOG.

SK/42NE/5
4727 2608

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 307 at Enderby - Lockington. 141

For ~~Sir~~ Owen Williams and Partners. (Ministry of Transport).

O/No. 1941 Boring Completed on 24.8.61. O.D. Level 262

Boring lined to a Depth of Diameter 6"

BORING FOREMAN'S STRATA RECORD		THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Topsoil	(0.30)	1	0	1	0				
Red sandy marl	(1.98)	6	6	7	6	22.8.		10'0"	15'0"
Red marl	(6.86)	22	6	30	0	(8.14)			
TOTAL DEPTH				30	0				

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218145 : BGS Reference: SK42NE5
British National Grid (27700) : 447270,326080

1063 Wt. 22438/0384 10M 7/45 (51) F.&S.

397.

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
1-inch Map Registered No. 141

Name and Number of Shaft or Bore 2

For Messrs.

Town or Village

County Six-inch quarter sheet

6-inch Map Registered No. SK/42NE/5

Exact site Nat Grid Ref: 4727 2608. Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Extension to M1 Motorway

Level at which shaft / bore commenced relative to O.D. State if shaft / bore is up, down, horizontal or inclined; in latter cases give angle of inclination and direction

Made by

Information from Percussion Samples Date of Sinking 1961

Specimens

Additional Notes in Space Overleaf

(For Survey use only) Geological Classification	Nature of Strata	Thickness			Depth		
	Friable brown sandy clay	(0.76)	2	6	(0.76)	2	6
	Dull brown and grey silty marl	(1.52)	5	0	(2.28)	7	6
Keuper Marl	Chocolate brown silty marl; with green band from 10ft 6 to 12 ft 6 in:	(.92)	5	0	(3.20)	12	6
	Sandstone, very fine grained grey green silty	(1.22)	4	0	(5.03)	16	6
	Reddish brown micaceous marl	(3.35)	11	0	(8.38)	27	6

British Geological Survey

BGS ID: 218146 : BGS Reference: SK42NE6
British National Grid (27700) : 447330,326260

[redacted]

ALTERNATIVE LOG

LE GRAND ADSCO LIMITED

SK/42NE/6
4783 2626
141

RECORD OF TEST BORING No. 308 **at** Enderby - Lockington.

For Sir Owen Williams and Partners. (Ministry of Transport).

O/No. 1941 Boring Completed on 22.8.61. O.D. Level 270

Boring lined to a Depth of 14'0" Diameter 8"

BORING FOREMAN'S STRATA RECORD		THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Topsoil	(0-23)		9	(0 23)		18.8.		15'0"	
Red Marl	(6.63)	21	9	(6.86) 22	6				
Hard Red Marl	(8.36)	27	6	50	-	22.8.			15'0"
				(15 24)				after tubes withdrawn.	
TOTAL DEPTH				50	0				

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218146 : BGS Reference: SK42NE6
British National Grid (27700) : 447330,326260

1063 Wt. 22438/0384 10M 7/45 (51) F.&S.

308

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
1-inch Map Registered No. 141

Name and Number of Shaft or Bore 308.

For Messrs.

Town or Village

County Six-inch quarter sheet

6-inch Map Registered No. SK/42NE/6

Exact site Grid Ref. 4733 2626

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Extension to M1 Motorway

Level at which shaft bore commenced relative to O.D. State if shaft bore is up, down, horizontal or inclined; in latter cases give angle of inclination and direction

Made by

Information from Percussion samples Date of Sinking 1961

Specimens

Additional Notes in Space Overleaf

(For Survey use only) Geological Classification	Nature of Strata	Thickness			Depth		
Keuper Marl	Reddish brown silty marl; occ. small pebbles to 2ft 6in; green bands to 7ft 6in; massive to 11ft; Sandy to 12ft 6in; silty to 15ft; solter to 17ft 6in; Sandy to 22ft 6in; non silty to 26ft; very solt silty to 32ft 6in; more massive to 36ft 6in;	(1448)	47	6		47	6

British Geological Survey

BGS ID: 218147 : BGS Reference: SK42NE7
British National Grid (27700) : 447380,326430



ALTERNATIVE LOG

LE GRAND ADSCO LIMITED

SK/42NE/7
4738 2643
141

RECORD OF TEST BORING No. 309 at Enderby - Lockington.

For Sir Owen Williams and Partners. (Ministry of Transport).

O/No. 1941 Boring Completed on 17.8.61. O.D. Level 246

Boring lined to a Depth of 14'0" Diameter 8"

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Topsoil	0	9	0	9	16.8.	7.30 a.m.	14'6"	
Sandy soil	3	3	4	-				15'0"
Sandy Marl	11	-	15	-	17.8.	after tubes withdrawn.		
Hard red Marl.	25	-	40	-				
TOTAL DEPTH			40	0				

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218147 : BGS Reference: SK42NE7
British National Grid (27700) : 447380,326430

1963 Wt. 28438/0384 10M 7/45 (51) F.&S.

309

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
1-inch Map Registered No. 141

Name and Number of Shaft or Bore 309.

For Messrs.

Town or Village

County Six-inch quarter sheet

6-inch Map Registered No. SK/42 NE/7

Exact site Nat Grid Ref: 4738 2643

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Extension to M1 Motorway

Level at which shaft / bore commenced relative to O.D. State if shaft / bore is up, down, horizontal or inclined; in latter cases give angle of inclination and direction

Made by

Information from Percussion samples Date of Sinking 1961

Specimens

Additional Notes in Space Overleaf

(For Survey use only) Geological Classification	Nature of Strata	Thickness			Depth		
	Pale brown fine loam	(0.76)	2	6	(0.76)	2	6
	Soft brown silty clay	(0.46)	1	6	(1.22)	4	0
	Yellow brown clayey silt.	(0.30)	1	0	(1.52)	5	0
Keuper Marl	Reddish brown soft silty marl	(2.29)	7 12	6	(3.81)	8 12	6
	Reddish brown silty clay mottled green	(0.91)	3	0	(4.72)	15	6
	Chocolate brown silty marl, rare silty bands 25 to 32 ft 6 in; green bands 6 to 35 ft; more silty to 40 ft	(7.47)	24	6	(12.19)	40	0

Continued Overleaf

Geological Survey and Museum, South Kensington, London, S.W.7.	Date received	Correspondence File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map	on 6" Map

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218148 : BGS Reference: SK42NE8
British National Grid (27700) : 447440,326640



ALTERNATIVE LOG

LE GRAND ADSCO LIMITED

SK/42NE/8
4744 2664
1941

RECORD OF TEST BORING No. 310 **at** Enderby - Lockington.

For Sir Owen Williams and Partners. (Ministry of Transport)

O/No. 1941 Boring Completed on 18.8.61. O.D. Level 217

Boring lined to a Depth of 10'0" Diameter 6"

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Top Soil	(0	15) 6	(0	15) 6				
Red/Brown Marl with traces grey sandstone	24	6	25	0			Nil	
	(7	47)	(7	62)				
TOTAL DEPTH			25	0				

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218148 : BGS Reference: SK42NE8
British National Grid (27700) : 447440,326640

1063 Wt. 22438/0384 10m 7/45 (51) F.&S.

RECORD OF SHAFT OR BORE FOR MINERALS

310

Name and Number of Shaft or Bore 310

For Messrs.

Town or Village

County Six-inch quarter sheet

Exact site Nat Grid Ref: 4744 2664

Purpose for which made Extension to M1 Motorway

Level at which shaft bore commenced relative to O.D. State if shaft bore is up, down, horizontal or inclined; in latter cases give angle of inclination and direction

Made by

Information from Percussion Samples Date of Sinking 1961

Specimens

Additional Notes in Space Overleaf

(For Survey use only)
1-inch Map Registered No.
141

6-inch Map Registered No. SK/42 NE/8

Attach a tracing from a map, or a sketch-map, if possible.

(For Survey use only) Geological Classification	Nature of Strata	Thickness			Depth		
Keuper Marl	Yellow brown silty marl	(0.61)	2	0	(0.61)	2	0
	Reddish brown silty marl	(3.96)	13	0	(4.57)	15	0
	Reddish brown silty marl with siltstone bands.	(2.05)	10	0	(7.62)	25	0

Continued Overleaf

Geological Survey and Museum, South Kensington, London, S.W.7.	Date received	Correspondence File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map	on 6" Map

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218149 : BGS Reference: SK42NE9
British National Grid (27700) : 447530,327300

ALTERNATIVE LOG.

LE GRAND ADSCO LIMITED

SK/42NE/9
9753 2730
141

RECORD OF TEST BORING No. 311 at Enderby - Lockington.

For Sir Owen Williams and Partners. (Ministry of Transport).

O/No. 1941. Boring Completed on 17.8.61. O.D. Level 131

Boring lined to a Depth of 10'0" Diameter 6"

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Top Soil	(0 30) 1	0	(0 30) 1	0	16.8.	Damp down.	from	4 ft.
Earth, sand stones (dry)	(0 61) 2	0	(0 91) 3	0				
Brown sand, clay and stones (Damp)	(1 52) 5	0	(2 44) 8	0	17.8.		4'0"	
Red/Brown Marl, traces of grey sandstone.	~~(3 66)~~ 12	0	~~4 10~~ 20	0				
TOTAL DEPTH			20	0				

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218149 : BGS Reference: SK42NE9
British National Grid (27700) : 447530,327300

1053 WG-22438/0384 10m 7/45 (51) F.&S.

RECORD OF SHAFT OR BORE FOR MINERALS

311

(For Survey use only)
1-inch Map Registered No. 141

Name and Number of Shaft or Bore 311

For Messrs.

Town or Village

County Six-inch quarter sheet

6-inch Map Registered No. SK/42NE/9

Exact site Nat Grid Ref: 4753 2730 { Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Extension to M1 Motorway

Level at which shaft / bore commenced relative to O.D. State if shaft / bore is up, down, horizontal or inclined; in latter cases give angle of inclination and direction

Made by

Information from Percussion Samples Date of Sinking 1961

Specimens

Additional Notes in Space Overleaf

(For Survey use only) Geological Classification	Nature of Strata	Thickness			Depth		
Drift	Soil	(0.30)	1	0	(0.30)	1	0
	Pale brown silty loam	(0.30)	1	0	(0.61)	2	0
	Yellowish brown clayey gravel. All sorted	(0.81)	3	0	(1.52)	5	0
Keuper Marl	Reddish brown silty marl;	(4.57)	15	0	(6.10)	20	0

Continued Overleaf

Geological Survey and Museum, South Kensington, London, S.W.7.	Date received	Correspondence File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map	on 6" Map

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218150 : BGS Reference: SK42NE10
British National Grid (27700) : 447530,327500

ALTERNATIVE LOG.

LE GRAND ADSCO LIMITED

SK/42NE/10
47533 27850
141.

RECORD OF TEST BORING No. 312 **at** Enderby - Lockington

For Sir Owen Williams and Partners. (Ministry of Transport).

O/No. 1941 Boring Completed on 15.8.61. O.D. Level 128

Boring lined to a Depth of 15'-6" Diameter

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Top Soil (0·30)	1	0	1	0 (0·30)	14.8.		13'0"	damp
Sand, soil and stones (0·61)	2	0	3	0 (0·91)	15.8.	final water level 13'0" sample taken		
Brown sand, clay and stones becoming gravelly at 10'0" (3·05)	10	0	13	0 (3·96)				
Red/brown marl and grey sandstone (5·18)	17	0	30	0 (9·14)				
TOTAL DEPTH			30	0				

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218150 : BGS Reference: SK42NE10
British National Grid (27700) : 447530,327500

1063. WG 2438/0384 10M 7/45 (51) F.&S.

RECORD OF SHAFT OR BORE FOR MINERALS

312

(For Survey use only)
1-inch Map Registered No. 141

Name and Number of Shaft or Bore

For Messrs.

Town or Village Kegworth

County Six-inch quarter sheet

6-inch Map Registered No. SK/42 NE/10

Exact site National Grid Reference : 4753 2750

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Extension to M1 Motorway

Level at which shaft / bore commenced relative to O.D. State if shaft / bore is up, down, horizontal or inclined; in latter cases give angle of inclination and direction

Made by

Information from Percussion samples Date of Sinking 1961

Specimens

Additional Notes in Space Overleaf

(For Survey use only) Geological Classification	Nature of Strata	Thickness			Depth		
	Sandy soil	(0.61)	2	0	(0.61)	2	0
Drift	Pebbly sandy gravel ill sorted	(0.91)	3	0	(1.52)	5	0
.....	Brown pebbly sand	(1.52)	5	0	(3.03)	10	0
	Sandstone v. fine grained						
Keuper	Salt grey green	(1.22)	4	0	(4.27)	14	0
Marl	Marl wet ? slurry	(1.83)	6	0	(6.10)	20	0
	Reddish brown silty marl ;	(1.52)	5	0	(7.62)	25	0
	" " w. green patches	(1.52)	5	0	(9.14)	30	0

Continued Overleaf

Geological Survey and Museum, South Kensington, London, S.W.7.	Date received	Correspondence File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map	on 6" Map

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218151 : BGS Reference: SK42NE11
British National Grid (27700) : 447510,327740

ALTERNATIVE LOG

SK/42NE/11
4751 2774
141.

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 313 at Enderby - Lockington.

For Sir Owen Williams and Partners. (Ministry of Transport).

O/No. 1941 Boring Completed on 11.8.61. O.D. Level 122

Boring lined to a Depth of 19'0". Diameter 6"

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Top Soil	1 (0 46)	6	1 (0 46)	6	10.8. seepage at 10'0"			
Red/Brown sandy clay and sand	8 (2 59)	6	10 (3 05)	0	Shut off with casing			
Red/Brown sand and fine gravel (Soggy from 15'0").	8 (2 44)	0	18 (5 49)	0	11.8. 10ft. after casing pulled.			
Red/brown sandy clay traces grey sandstone.	22 (6 71)	0	40 (12 19)	0	Unable to get water sample.			
			TOTAL DEPTH 40	0				

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218151 : BGS Reference: SK42NE11
British National Grid (27700) : 447510,327740

313

GEOLOGICAL SURVEY OF GREAT BRITAIN

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
6-inch Map Registered No. SK/42 NE/11

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner: 313

For whom made

Town or Village Keyworth County

Exact site

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Extension to M1 Motorway

Nat. Grid Reference 4751 2774

1"N.S. Map No.	1"O.S. Map No.	Confidential or not
141.		

Ground Level at shaft bore relative to O.D. If not ground level give O.D. of beginning of shaft bore

Made by Date of sinking 1961

Information from Percussion samples Date received

Examined by

SPECIMEN NUMBERS AND ADDITIONAL NOTES

(For Survey use only) Geological Classification	Description of Strata	Thickness Ft	Thickness in.	Depth Ft	Depth in.
	Soil, brown sandy loam	2	0	2	0
	Yellowish brown pebbly clayey sand with thin reddish brown clay wisps	(0.61)		(0.61)	
DRIFT		15	0	17	0
	Dull reddish brown marl, silty with green & pebbly with green sandstone from 20 ft to 25 ft also small bands of "race".	(4.57)		(5.18)	
Keuper Marl		(2.44)		(7.62)	
		8	0	25	0
	Reddish brown silty marl? clayey	15	0	40	0
		(4.57)		(12.19)	

C.B.H. 32896

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218152 : BGS Reference: SK42NE12
British National Grid (27700) : 447490,327950

ALTERNATIVE LOG

LE GRAND ADSCO LIMITED

SK/42NE/12
4749 2795

141.

RECORD OF TEST BORING No. 314 at Enderby Lockington.
For Sir. O. Williams Partners (Ministry of Transport.)

O/No. 1941 Boring Completed on 10 Aug. 1961. O.D. Level 114
Boring lined to a Depth of 12' Diameter 6"

BORING FOREMAN'S STRATA RECORD		THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Top soil.	(0.23)		9	(0.23)	9	9/8/		8'0"	
Redish sand.	(0.89)	3	3	(1.22) 4	-	10/8.			10'3"
Loamy sand and gravel.	(7.62)	2	6	6	6. (1.98)				
Red marl.	(3.43)	11	3	17	9 (5.41)	-			
Red sandstone.	(0.38)	1	3	19	- (5.79)				
Layers of marl and soft sandstone.	(3.35)	11	-	30	- (9.14)				
				TOTAL DEPTH	30' -				

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218152 : BGS Reference: SK42NE12
British National Grid (27700) : 447490,327950

314

GEOLOGICAL SURVEY OF GREAT BRITAIN

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)

6-inch Map Registered No. SK/42 NE/12

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner: 314

For whom made

Town or Village Kegworth County

Exact site

Attach a tracing from a map, or a sketch-map, if possible.

Nat. Grid Reference 4749 2795

1"N.S. Map No.	1"O.S. Map No.	Confidential or not
141		

Purpose for which made Extension to M1 Motorway

Ground Level at shaft bore relative to O.D. If not ground level give O.D. of beginning of shaft bore

Made by Date of sinking 1961

Information from Percussion Samples Date received

Examined by

SPECIMEN NUMBERS AND ADDITIONAL NOTES

(For Survey use only) Geological Classification	Description of Strata	Thickness Ft	Thickness in.	Depth Ft	Depth in.
	Brown sandy loam	2 (0.76)	6	2 (0.76)	6
	Dull brown pebbly clayey sand	1 (0.46)	6	4 (1.22)	0
DRIFT	Reddish brown sandy clay, ~~with green spots~~	2 (0.76)	6	6 (1.98)	6
	Dull brown and green sandy clay	1	6	8	6
	Reddish brown silty marl	(0.46)		(2.44)	
Keuper Marl	with green bands	3 (1.07)	6	12 (3.81)	6
	Sandstone fine grained grey green	5 (1.60)	3	17 (5.41)	9
	Reddish brown marl, slightly sandy	3 (1.14)	9	21 (6.55)	6
	(Bottom 6 feet missing)			27 (8.38)	6

C.B.H.32896

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218160 : BGS Reference: SK42NE20
British National Grid (27700) : 447720,327690

1" : 141 SK 42 NE 20

LEONARD [illegible] BOROUGH LIMITED.
Ground Engineering Site Investigation
Contract [illegible] TO M1 DUALLING
4772 . 2769
Location
Client [illegible]hire C.C.
Casing.
dia: 254 mm to [illegible] dia: to

Borehole No. 1
Sheet No. 1
No. of Sheets 1 of 2
Ground Level. 34.1m
Commenced. 7.6.73
Completed. 8.6.73

Weather Conditions.
Type of Rig
254 mm Shell & Auger

Depth M	Sample No.	S.P.T Blow Cont. (N)	Legend	M.C at L&PC %	INDEX PROPERTIES LL	PL	PI	Grading % Passing 75 mm	40 mm	20 mm	10 mm	5 mm	Triaxial Test BULK DENSITY Kg/M³	C Kn/M²	φ°	Water Remarks
Thickness																
0.80	UL1															
Sandy CLAY																
0.76				12.03									1848	71	0°	
0.91	D1															
	B1 P1															
GRAVEL	W	21														S.W.L 1.52
1.83	B2 P2															
2.29																
2.74	UL2				23	30	—	—								
3.20	D2 B2 P3	15		27.46									2322	46	0	
4.27	UL3															
Red & grey MARL													1954	141	0	
4.72	D3 PL	36		31.67												
5.79	UL4												1787	84	0	
6.25	D4 P5	58		25.24												
7.32	UL5															
7.77	D5 P6												1863	130	0	
8.00		78														

REMARKS.

Rate of water entry Slow

Sample	Depth	Soil Type

C.B.R

MC %	PL	Surcharge	Top 0 1	Top 0 2	Bottom 0 1	Bottom 0 2	Value

Compaction

BS 1377 No	Maximum Dry Density	Optim M.C

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218160 : BGS Reference: SK42NE20
British National Grid (27700) : 447720,327690

SK 42 NE / 20

LEONARD FAIRCLOUGH LIMITED.
Ground Engineering Site Investigation

Borehole No. 1

Contract. CLIFTON TO M1 DUALLING

Sheet No. 2

Location.

No. of Sheets. 2 of 2

Client. Nottinghamshire C.C.

Casing. dia: 254mm to 10.06m dia: to:

Ground Level. 34.41m

Commenced. 7-6-78

Completed. 8-6-78

Weather Conditions.

Type of Rig 254mm Shell + Auger

Grading % Passing

Triaxial Test

Water Remarks

Stratum Scale 1:50 Thickness	Depth M	Sample No.	S.P.T Blow Cont. (N)	Legend	M.C O.N.C %	INDEX PROPERTIES. LL	PL	PI	Clay %	Grading % Passing 75 mm	40 mm	20 mm	10 mm	5 mm	Triaxial Test BULK DENSITY Kg/M³	C Kn/M²	ϕ°
										600 µm	210 µm	150 µm	75 µm				
Red & grey MARL	8.84	B4				24	—	—	—						1985	183	0
	9.30	U4 6															
		D 6															
		P7															
	7.77 10.06		125														

End of Borehole

REMARKS.

Sample	Depth	Soil Type	C.B.R M.C %	PL	Swelling	Top 0.1	Top 0.2	Bottom 0.1	Bottom 0.2	Volts	Compaction BS 1377 No	Maximum Dry Density	Optm M.C

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218198 : BGS Reference: SK42NE58
British National Grid (27700) : 447314,326087

Soil Mechanics

BOREHOLE No. 7292

Sheet 1 of 2

Equipment & Methods
Hand dug inspection pit from ground level to 0.40m. Rotary core drilling, air flush, producing 92mm diameter core, from 0.40m to 8.10m

Location No. 7382 SK42NE58

Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 74.35 m A.O.D.
Coordinates: 447314.0 mE, 326067.5 mN
Date: 28.01.88 to 29.01.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
Inspection pit dug to 0.40m	74.35		(0.40)							
very stiff red brown CLAY	73.95		0.40							
Red brown slightly to moderately weathered locally very clayey SILTSTONE weak to very weak with frequent pockets and lenses of light grey green silt and siltstone Closely spaced sub-horizontal often tight fractures with occasional black speckled staining (KEUPER MARL 2) assessed zone of core loss				0.40 – 1.50		95	82	64	NI 150 200	
				1.50 – 3.00		77	60	56	NI NI 60 50 200 340	at 1.50m S:N=30 11,10/8,7,7 8
From 0.55m to 0.65m, 2.00m to 2.20m and from 3.20m to 3.40m completely weathered altered to a dense clayey silt with occasional lithorelics assessed zone of core loss			(6.25)	3.00 – 4.20		83	67	58	NI 130 190	
From 2.70m to 3.00m very thinly interbedded with light grey green slightly fine sandy SILTSTONE strong stiff becoming very stiff very silty clay light green grey siltstone band very weak assessed zone of core loss light grey green locally mottled red brown and grey green siltstone weak to very weak				4.20 – 6.65		95	93	80	20 120 250	
Assessed zone of core loss light grey green siltstone strong with lenses of red brown mudstone	67.70		6.65							
Very stiff (hard) in parts firm to stiff red brown CLAY locally very silty with occasional bands of highly weathered siltstone weak: occasional pockets of light grey green silt (weathered MUDSTONE) (KEUPER MARL 3)	67.40		(0.30) 6.95							
non intact			(1.15 pen)	6.65 – 8.00		78	59	54	NI 150 250	
BOREHOLE ENDS AT 8.10 m.	66.25		8.10							at 8.00m S:(68) 18,50 for 75mm

Remarks

Logged by: AMC

Scale: 1:50

Fig. 52

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 18.04.88/10.18 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218198 : BGS Reference: SK42NE58
British National Grid (27700) : 447314,326087

Soil Mechanics

BOREHOLE No. 729R

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382

Location SK42NE58 447314.0 326087.5

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level | Coordinates | Date

As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	Mechanical core log: SCR	Mechanical core log: RQD	Mechanical core log: If	Field Records and Test Results

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
28.01	1800	3.00		DRY	
29.01	0800	3.00		DRY	

Remarks

Logged by: AAC

Scale: 1:50

Fig. 52

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column 15.04.88 09.52 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218199 : BGS Reference: SK42NE59
British National Grid (27700) : 447333,326097

Soil Mechanics SK42NE 58

BOREHOLE No. 738

Sheet 1 of 2

Equipment & Methods
Cable tool boring, 200mm diameter, from ground level to 7.75m

Location No. 7382
Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 79.26 m A.O.D.
Coordinates: 447333.0 mE, 326097.0 mN
Date: 02.02.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
Light brown and dark brown mottled locally very clayey slightly fine sandy SILT with rare sub-rounded fine to medium gravel and occasional plant roots (TOPSOIL)	79.26		(0.40)	0.30	D	1		
	78.86		0.40	0.50 – 0.95	U	2		52 blows
band of light green grey fine sandy siltstone moderately weak				1.00	D	3		
Dense light grey green in parts mottled red brown fine sandy SILT locally with occasional fine to medium gravel sized lithorelics (KM 4a)			(1.80)	1.00 – 1.45	D	4	S N=25	
	77.06		2.20	2.00 – 2.45	U	5		100 blows
band of light greenish grey fine sandy siltstone strong				2.50	D	6		
				2.50 – 2.95	D	7	S N=57	
				3.50 – 3.95	U	8		140 blows
light greenish grey and reddish brown mottled fine sandy silt with rare fine gravel sized lithorelics				4.00	D	9		
Very stiff (hard) red brown very silty CLAY with frequent becoming occasional fine to medium gravel sized mudstone lithorelics and occasional pockets and lenses of light greenish grey silt				4.00 – 4.45	D	10	S N=75	
			(5.55 part)	5.00 – 5.45	D	11	S N=77	
(KEUPER MARL 3/4a)				6.00 – 6.28	D	12	S 85	15,21/35,50 for 50 mm
				7.00 – 7.27	D	13	S 90	21,33/40,50 for 45mm
								Chiselling from 7.10m to 7.60m 1.00 hour
				7.60 – 7.71	D	14	S (72)	22,50 for 30mm
BOREHOLE ENDS AT 7.75 m.	71.51		7.75					

Remarks

Logged by: AMC
Scale: 1:50
Fig. 53

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics 14.04.88/14.03 (Ver 3.1.0)
All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218199 : BGS Reference: SK42NE59
British National Grid (27700) : 447333,326097

Soil Mechanics

BOREHOLE No. 730

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382

Location SK42NE58 447333.0 326097.0

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level | Coordinates | Date

As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample: Type	Sample: No.	Test	Field Records

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
02.02	-	2.10	1.50	DRY	
02.02	-	3.60	3.00		DMP
02.02	-	5.10	4.50		DMP
02.02	-	7.75	4.50		DMP, end of borehole

Remarks

Logged by AMC

Scale 1:50

Fig. 52

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics

All depths and reduced levels in metres. Thicknesses given in brackets are [illegible]

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218199 : BGS Reference: SK42NE59
British National Grid (27700) : 447333,326097

Soil Mechanics

BOREHOLE No. 730B

Sheet 1 of 2

Equipment & Methods
Open hole drilling, air flush, using 6.75in rock bit, from ground level to 7.00m. Rotary core drilling, air flush, producing 92mm diameter core, from 7.00m to 14.14m.

Location No. 7382
Location SK42NE 58 2
447333.0 346097.0 ?
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 79.26 m A.O.D.
Coordinates: 447333.0 mE, 346097.0 mN
Date: 04.02.88 to 05.02.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
	79.26									
Cable Tool Boring to 7.75m			(7.00)							
Assessed zone of core loss										
	72.26		7.00							
Red brown moderately weathered SILTSTONE weak to moderately weak with closely spaced sub-horizontal fractures with black speckled staining thinly interbedded with very stiff red brown silty CLAY with frequent fine to medium gravel sized lithorelics (weathered MUDSTONE) Occasional bands of light grey green fine sandy siltstone and silt (KEUPER MARL 2/3)			(1.10)	7.00 – 8.40		21	6	0		at 7.00m S:122 6,14/30,42, 50 for 75mm
non intact	71.16		8.10						W W 50	
assessed zone of core loss										
sub-vertical joint with speckled black stain										
			(2.90)	8.40 – 9.40		70	60	60	NI 190 240	
disturbed by SPT				9.40 – 11.40		85	63	15		at 9.40m S:Mail4 15,17/28,32 28,45

Remarks
1. Water added to assist drilling below 7.00m.

Logged by: AMC
Scale: 1:50
Fig.

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218199 : BGS Reference: SK42NE59
British National Grid (27700) : 447333,326097

Soil Mechanics

BOREHOLE No. 730R

Sheet 2 of 2

Equipment & Methods: As sheet 1

Location No. 7382 SK42NE59

Location 447333.0 96097.0 ?

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: As sheet 1 | Coordinates: As sheet 1 | Date: As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
Thinly interbedded SILTSTONE and very stiff CLAY (as sheet 1)										
non intact due to 2 intersecting sub-vertical joints with speckled black stain (a) as (a)			(2.90)	9.40 – 11.40		85	63	15	NI 80 300	
Red brown slightly weathered SILTSTONE moderately weak with closely spaced sub-horizontal fractures (KM 2)	68.26		11.00							
assessed zone of core loss			(0.55)						30 70 90	at 11.40m S:(50) 50 for 60mm
	67.71		11.55							
Dense red brown clayey SILT with occasional fine becoming medium to coarse gravel sized lithorelics and occasional pockets and lenses of light grey green silt and siltstone thinly interbedded with red brown locally reddish green moderately weathered SILTSTONE very weak with extremely closely spaced fractures with black speckled staining (KEUPER MARL 2/3)			(2.59 pen)	11.40 – 14.00		98	69	54	NI 250 320	
non intact										
non intact									NI NI 170	
light grey green slightly fine sandy siltstone moderately weak	65.12		14.14							at 14.00m S:(82) 32,50 for 60mm

BOREHOLE ENDS AT 14.14 m.

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
04.02	1800	7.00	7.00		cased off
05.02	0800	7.00	7.00		cased off
05.02	1730	14.00	9.40	11.70	

Remarks

Logged by: AAC

Scale: 1:50

Fig. F4

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 11.04.88(2.11) (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218200 : BGS Reference: SK42NE60
British National Grid (27700) : 447322,326116

Soil Mechanics

BOREHOLE No. 731R

Sheet 1 of 2

Equipment & Methods

Hand dug inspection pit from ground level to 0.30m. Rotary core drilling, air flush, producing 92mm diameter core, from 0.30m to 8.30m.

Location No. 7382 SK42NE60

Location

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level	Coordinates	Date
74.00 m A.O.D.	447322.0 mE 326116.0 mN	26.01.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
Hand dug inspection pit to 0.30m	74.00		(0.30)							
assessed zone of core loss	73.70		0.30							
Stiff red brown friable very silty CLAY with fine to medium occasionally coarse gravel sized lithorelics (weathered MUDSTONE). Occasional pockets and bands of light grey green silt and siltstone (KEUPER MARL 3)			(1.00)	0.30 – 1.30		85	10	10		
Assessed zone of core loss	72.70		1.30							at 1.30m S:52 9,30/52 for 75mm
highly to completely weathered; medium to coarse lithorelics in a silt matrix			(0.50)							
Red brown slightly to moderately weathered SILTSTONE moderately weak to moderately strong Closely locally very closely spaced sub-horizontal fractures with speckled black stain (KM 2)	72.20		1.80							
			(1.10)	1.30 – 2.90		69	47	14	NI 65 110	
	71.10		2.90							
occasional bands of moderately weathered SILTSTONE weak to very weak			(0.35)							at 2.90m S:77 9,11,27,50 for 75mm
	70.75		3.25						NI NI 80	
Assessed zone of core loss				2.90 – 4.45		77	45	0		
light grey green fine sandy SILT with frequent medium to coarse gravel sized lithorelics										
Very stiff (hard) red brown very silty CLAY with occasional fine gravel sized lithorelics and locally with occasional pockets of light grey green silt (weathered MUDSTONE) (KEUPER MARL 2/3)			(3.35)							aft 4.45m S:75 10,10/25,50 for 75mm
				4.45 – 6.30		89	68	20	NI NI 110	
with bands of light grey green and red brown siltstone moderately weak										
assessed zone of core loss									NI NI 90	
	67.40		6.60							at 6.30m S:83 11,17/27,56 for 75mm
Dense becoming hard red brown clayey SILT with occasional fine to medium gravel sized lithorelics (completely weathered SILTSTONE) (KM 4a)			(1.20)	6.30 – 8.00		82	71	65		
70 fissure with speckled black stain	66.20		7.80							
Light grey brown moderately weathered very silty fine grained SANDSTONE weak to very weak (KEUPER SANDSTONE 2)			(0.50 pen)							at 8.00m S:94 10,16/37,57 for 75mm
	65.70		8.30							
BOREHOLE ENDS AT 8.30 m.										

Remarks

Logged by: AAC

Scale: 1:50

Fig.: EE

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 11.04.88/12.28 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218200 : BGS Reference: SK42NE60
British National Grid (27700) : 447322,326116

Soil Mechanics

BOREHOLE No. 731R

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382 SK42NE 60

Location 447322.0 326116.0

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level | Coordinates | Date

As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988 26.01	-	6.30	4.45	6.30	water strike

Remarks

Logged by: ANC

Scale: 1:50

Fig. F5

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 11.64.88 (7.78) (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218201 : BGS Reference: SK42NE61
British National Grid (27700) : 447341,326126

Soil Mechanics

BOREHOLE No. 732

Sheet 1 of 2

Equipment & Methods Cable tool boring, 150mm diameter, from ground level to 7.60m	Location No. 7382 SK42NE61 Location A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4
Carried out for Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners	Ground Level: 79.60 m A.O.D. Coordinates: 447341.0 mE, 326126.0 mN Date: 01.02.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
Light grey brown becoming brown slightly fine sandy locally very clayey SILT with occasional medium gravel sized lithorelics (KEUPER MARL 4a)	79.60		(0.90)	0.30	D	1		
				0.50 – 0.95	U	2		54 blows
dense light greenish grey slightly fine sandy SILT with occasional medium gravel sized lithorelics	78.70		0.90	1.00	D	3		
				1.00 – 1.45	D	4	S N=24	2,3/3,5,7,9
Stiff to very stiff red brown very silty CLAY with occasional fine to medium gravel sized lithorelics Locally with pockets and lenses of light greenish grey silt and siltstone (KEUPER MARL 3/4a)				2.00 – 2.45	U	5		72 blows
				2.50	D	6		
dense becoming very dense (hard) light green grey locally mottled red brown slightly fine sandy SILT with occasional lithorelics				2.50 – 2.95	D	7	S N=58	7,8/12,14,17,15
				3.10	W	8		
Below 3.70m becoming very stiff (hard) with occasional fine gravel sized lithorelics Locally with very closely spaced fissures with speckled black staining				3.50 – 3.95	U	9		131 blows
				4.00	D	10		
			(6.70 pen)	4.00 – 4.45	D	11	S N=92	9,14/16,19,27,30
				5.00 – 5.45	D	12	S N=129	10,22/28,30,31,40
				6.00 – 6.45	D	13	S N=109	9,18/21,24,29,35
				7.00 – 7.21	D	14	S 50	15,27/50 for 50mm Chiselling from 7.00m to 7.40m 1.00 hour
				7.40 – 7.58	D	15	S 50	21,36/50 for 33mm
BOREHOLE ENDS AT 7.60 m.	72.00		7.60					

Remarks

Logged by: AAC

Scale: 1:50

Fig.

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics

All depths and reduced levels in metres. Thicknesses given in brackets are in depth values.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218201 : BGS Reference: SK42NE61
British National Grid (27700) : 447341,326126

Soil Mechanics

BOREHOLE No. 732

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382

Location SK42NE61 447341.0 326126.0

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level | Coordinates | Date

As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample: Type	Sample: No.	Test	Field Records

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
01.02	0800	0.00	0.00		
01.02	–	2.10	1.50	DRY	
01.02	–	3.10	1.50	3.00	Water strike
01.02	–			2.00	after 20 mins
01.02	–	3.60	3.00		DAMP
01.02	–	4.10	3.00	3.50	
01.02	–	5.10	4.50	DRY	water sealed at 4.50m
01.02	–	7.60	4.50	DRY	End of cable tool boring

Remarks

Logged by AAC

Scale 1:50

Fig. 56

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 14.04.88/14.05 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218201 : BGS Reference: SK42NE61
British National Grid (27700) : 447341,326126

Soil Mechanics

BOREHOLE No. 732R

Sheet 1 of 2

Equipment & Methods
Open hole drilling, air flush, using 6.75in rock bit, from ground level to 7.00m. Rotary core drilling, air flush, producing 92mm diameter core from 7.00m to 14.14m.

Location No. 7382

Location SK42NE61

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 79.60 m A.O.D.

Coordinates: 447341.0 mE, 326126.0 mN

Date: 08.02.88 to 09.02.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
	79.60									
Cable Tool Boring to 7.60m			(7.00)							
Assessed zone of core loss	72.60		7.00							
Red brown moderately weathered SILTSTONE moderately weak with occasional bands of very dense red brown silt with up to coarse gravel sized lithorelics. Closely locally very closely spaced fractures with black speckled staining (KM 2/3)			(0.35)							
non intact	72.25		7.35	7.00 – 8.50		63	37	27	NI 90 260	at 7.00m S:N= 154 5,10/18,36, 30,40
assessed zone of core loss			(1.80)							
Light grey green moderately weathered slightly fine sandy SILTSTONE very weak (KM 2) altered to a friable silt with frequent lithorelics	70.45		9.15	8.50 – 9.50		70	50	29		at 8.50m S:81 10,22/31,50 for 75mm at 9.50m S:N=94 10,18/18,18 28,30
			(0.35)						NI 80 100	
Assessed zone of core loss	70.10		9.50							
SILTSTONE (as sheet 2)	69.80		(0.30) 9.80	9.50 – 11.50		85	45	34		

Remarks

Logged by: AAC

Scale: 1:50

Fig. 57

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics
11.04.88/13.51 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218201 : BGS Reference: SK42NE61
British National Grid (27700) : 447341,326126

Soil Mechanics

BOREHOLE No. 732R

Sheet 2 of 2

Equipment & Methods: As sheet 1

Location No. 7382

Location: SK42NE61 47341.0 26126.0

A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: As sheet 1 | Coordinates | Date

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
non intact										
Red brown moderately locally highly weathered SILTSTONE weak to very weak locally altered to a dense silt with medium to coarse gravel sized lithorelics (KEUPER MARL 2/3)			(1.45)	9.50 – 11.50		85	45	34	NI NI 180	
non intact: greenish grey and red brown mottled slightly weathered weak to moderately weak									80 120 250	
	68.35		11.25							
assessed zone of core loss										at 11.50m S:No105 14,13/22,26 27,30
Very dense red brown clayey SILT (weathered SILTSTONE) (KEUPER MARL 4a/b) Below 12.40m locally with fine to coarse gravel sized lithorelics			(1.85)	11.50 – 14.00		88	80	28		
band of light grey green silt with frequent lithorelics	66.50		13.10						NI 170 290	
Red brown slightly to moderately weathered SILTSTONE weak to very weak with occasional bands of very stiff (hard) clay Closely spaced sub-horizontal fractures (KEUPER MARL 3/4a)			(1.04 pen)							
sub-vertical joint tight with black stain	65.46		14.14							at 14.00m S:(83) 33,50 for 60mm

BOREHOLE ENDS AT 14.14 m.

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988 08.02	1800	7.00	7.00		cased off
09.02	0800	7.00	7.00		cased off

Remarks

Logged by: AAC

Scale: 1:50

Fig. 57

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 24.05.88/09.44 (Ver 3.1.10)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218202 : BGS Reference: SK42NE62
British National Grid (27700) : 447331,326144

Soil Mechanics

BOREHOLE No. 733B

Sheet 1 of 2

Equipment & Methods
Inspection pit dug to 0.70m, Rotary core, air flush producing 92mm diameter core from 0.70m to 8.35m

Location No. 7382 SK42NE62

Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 73.50 m A.O.D.
Coordinates: 447331.0 mE, 326144.5 mN
Date: 28.01.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
Inspection pit dug to 0.70m	73.50		(0.70)							
Assessed zone of core loss	72.80		0.70 (0.45)							
Red brown slightly locally slightly to moderately weathered MUDSTONE weak with occasional lenses of siltstone interbedded with light greenish grey slightly fine sandy SILTSTONE moderately weak to moderately strong beds up to 120mm thick Closely spaced sub-horizontal fractures (KEUPER MARL 2)	72.35	Assessed zone of core loss; very stiff (hard) friable clay with mudstone lithorelics; NI	1.15 (3.05)	0.70 – 1.50		44	31	0	NI 60 90	at 1.50m S:50 13,28/50 for 75mm
				1.50 – 3.00		33	20	15	NI 60 120	
Red brown slightly weathered SILTSTONE strong with occasional light grey green siltstone pockets or lenses (KM 2)	69.30	70 joint	4.20 (0.30)	3.00 – 4.50		97	90	60	NI 100 200	at 3.00m S:89 3.5/12,27, 50 for 75mm
Assessed zone of core loss	69.00		4.50 (0.70)							
Red brown slightly to moderately weathered locally silty MUDSTONE weak to moderately weak with occasional pockets of light green grey silt (KM 2)	68.30	NI	5.20 (0.60)						NI 120 190	
	67.70		5.80 (0.45)	4.50 – 7.00		72	34	25		
Firm to stiff becoming very stiff red brown very silty CLAY with frequent lithorelics (weathered MUDSTONE) (KM 3)	67.25	sub-vertical joint; Light greenish grey slightly fine sandy siltstone very weak (non intact); sub-vertical joint	6.25 (2.10 pen)						NI 90 120	
		very dense silt with frequent lithorelics; sub-vertical joint		7.00 – 8.00		90	75	63	NI 130 190	
Red brown moderately weathered SILTSTONE moderately strong with occasional pockets and lenses of mudstone:closely to very closely spaced sub-horizontal fractures (KEUPER MARL 2)	65.15		8.35	8.00 – 8.20		100	0	0		at 8.20m S:(78) 28,50 for 75mm
BOREHOLE ENDS AT 8.35 m.										

Remarks

1. Water level observations during boring: dry to 4.50m, damp 4.50m to base.

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 18.04.88/10.00 (Ver 3.1.0)

Logged by AAC

Scale 1:50

Fig. 58

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218202 : BGS Reference: SK42NE62
British National Grid (27700) : 447331,326144

Soil Mechanics

SK42NE62
447331.0 326144.5

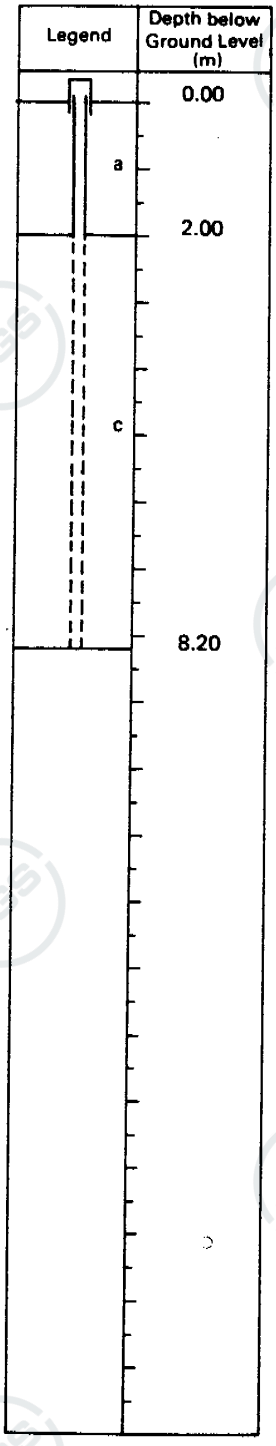
BOREHOLE No. 733R
Sheet 2 of 2

Location No. 7382
Location A42 CASTLE DONINGTON NORTH : GROUND INVESTIGATION CONTRACT 4

Carried out for
Client : Department of Transport (E. Midlands Regional Office)
Engineer : Scott Wilson Kirkpatrick and Partners

Type of installation	Standpipe	
Internal diameter of tubing	19	mm
Length of filter	6200	mm
Diameter of filter	121	mm

Depth (m) From	Depth (m) To	SUMMARY OF INSTALLATION
		Surface protection: Gas barrel with screw cap
0.00	2.00	Concrete
0.00	8.20	UPVC tubing
2.00	8.20	Perforated section
2.00	8.20	Gravel filter



KEY

a	Concrete
b	Sand
c	Gravel
d	Bentonite seal
e	Bentonite/cement grout
f	Backfill

ACCESS TUBINGS

- Standpipe/Piezometer (x 2 for Hydraulic or Pneumatic piezometers)
- Porous element
- Well with perforated section
- Inclinometer with joint
- Westbay with coupling and port

Remarks

1. Ground level and coordinates as sheet 1.

DETAILS OF INSTRUMENTS

Scale 1:100
Fig. 58

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218202 : BGS Reference: SK42NE62
British National Grid (27700) : 447331,326144

Soil Mechanics

BOREHOLE No. 734

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382

Location SK42NE63 47349.0 26154.0

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level | Coordinates | Date

As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Samples: Type	Samples: No.	Test	Field Records

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
29.01	0800	0.00	0.00		
29.01	-	2.00	1.50	DRY	
29.01	-	3.50	3.00	DRY	
29.01	-	5.00	4.50	DRY	
29.01	-	6.40	6.00	DRY	
29.01	-	7.10	6.00	DRY	End of cable tool boring

Remarks

Logged by: AAC

Scale: 1:50

Fig. 59

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 12.04.88/15.01 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218203 : BGS Reference: SK42NE63
British National Grid (27700) : 447349,326154

Soil Mechanics

BOREHOLE No. 734

Sheet 1 of 2

Equipment & Methods
Cable tool boring, 150mm diameter, from ground level to 7.10m

Location No. 7382
Location SK42NE63
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 79.81 m A.O.D.
Coordinates: 447349.0 mE, 326154.0 mN
Date: 29.01.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
	79.81			0.20	D	1		
Dense mottled red brown and light greenish brown locally red brown slightly fine sandy locally very clayey SILT with occasional fine to medium gravel sized siltstone lithorelics (KEUPER MARL 4a)			(1.80)	0.50 - 0.95	U	2		60 blows
				1.00	D	3		
				1.00 - 1.45	D	4	S N=19	2,2/3,4,6,6
	78.01		1.80	1.80	D	5		
dense mottled red brown and grey green locally very clayey SILT with rare lithorelics				1.90 - 2.35	U	6		55 blows
				2.40	D	7		
				2.40 - 2.95	D	8	S N=15	3,5/4,4,3,4
Stiff becoming very stiff (hard) red brown very silty CLAY with occasional pockets and lenses of light greenish grey silt (KEUPER MARL 3/4a)				3.40 - 3.85	U	9		75 blows
				3.90	D	10		
				3.90 - 4.35	D	11	S N=45	5,7/7,10,12,16
Below 2.40m with fine to medium gravel sized silty mudstone lithorelics Locally with very closely spaced fissures occasionally with speckled black staining			(5.30 pen)					
red brown locally green grey probably moderately weathered SILTSTONE band - weak to very weak				4.90 - 5.25	U	12		150 blows
				5.30	D	13		
				5.30 - 5.75	D	14	S N=85	9,12/17,19,23,26
				6.30 - 6.58	D	15	S 86	12,24/36,50 for 50mm Chiselling from 6.40m to 6.90m 1.00 hour
				6.90 - 7.02	D	16	S (71)	21,50 for 40mm
BOREHOLE ENDS AT 7.10 m.	72.71		7.10					

Remarks

Logged by: AAC
Scale: 1:50
Fig. 59

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 12.04.88/15.01 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218203 : BGS Reference: SK42NE63
British National Grid (27700) : 447349,326154

Soil Mechanics

BOREHOLE No. 734R

Sheet 1 of 2

SK42NE63

Equipment & Methods
Open hole drilling, air flush using 6.75in rock bit from ground level to 6.00m. Rotary core drilling, air flush, producing 92mm diameter core from 6.00m to 14.06m.

Location No. 7382

Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 79.81 m A.O.D.
Coordinates: 47349.0 mE, 26154.0 mN
Date: 10.02.88 to 11.02.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	Mechanical core log: SCR	Mechanical core log: RQD	Mechanical core log: If	Field Records and Test Results
	79.81									
Cable Tool Boring to 7.10m			(6.00)							
Assessed zone of core loss	73.81		6.00							
Very stiff (hard) red brown very silty CLAY with occasional fine gravel sized lithorelics (KEUPER MARL 3/4a)	73.66		(0.15) 6.15							
Red brown and light greenish grey slightly to moderately weathered SILTSTONE moderately weak (KEUPER MARL 2)	73.41		(0.25) 6.40							at 6.00m S:78 10,19/28,50 for 75mm
Assessed zone of core loss	73.06		(0.35) 6.75	6.00 – 7.50		60	23	0	45 75 90	
Red brown slightly locally moderately weathered very silty MUDSTONE thinly interbedded with very stiff red brown very silty CLAY:moderately widely spaced sub-horizontal fractures (KM 2/3)	72.46		(0.60) 7.35							
Light grey green locally red brown slightly to moderately weathered fine gained SANDSTONE weak to very weak (KM 2)			(1.90)	7.50 – 9.50		100	88	81	NI 270 270	
Assessed zone of core loss	70.56		9.25 (0.25)						NI 45	
SANDSTONE (as sheet 2)	70.31		9.50 (0.40)	9.50 – 12.30		86	79	5		at 9.50m S:(50) 50 for 50mm no recovery
	69.91		9.90							

Remarks

Logged by: AAC

Scale: 1:50

Fig. 60

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218203 : BGS Reference: SK42NE63
British National Grid (27700) : 447349,326154

Soil Mechanics

BOREHOLE No. 734R

Sheet 2 of 2

Equipment & Methods: As sheet 1

Location No. 7382 SK42NE63

Location 447349.0 326154.0

A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: As sheet 1 | Coordinates: As sheet 1 | Date: As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
Light greenish grey and red brown slightly locally moderately weathered SANDSTONE strong (KM 2)	69.06		(0.85) 10.75						NI 90 150	
Very dense red brown very clayey SILT with occasional bands of light red brown very weak SILTSTONE (KM 3/4a) Below 11.50m with fine to medium occasionally coarse gravel sized lithorelics			(1.30)	9.50 – 12.30		86	79	5		
non intact; assessed zone of core loss; non intact due to 2 intersecting sub-vertical joints stained black	67.76		12.05							at 12.30m S:(72) 22,50 for 70mm
Red brown slightly to moderately weathered locally very clayey SILTSTONE weak with occasional bands of dense silty clay with fine to medium gravel sized lithorelics and closely spaced sub-horizontal fractures Below 13.50m becoming moderately weak to weak (KEUPER MARL 2/3)			(2.01 pm)	12.30 – 14.00		88	85	48	NI 110 270	
sub-vertical joint stained black	65.75		14.06							at 14.00m S:(50) 50 for 60mm

BOREHOLE ENDS AT 14.06 m.

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
10.02	1730	12.30	6.70	10.80	
11.02	0830	12.30	6.70	9.80	

Remarks

Logged by: AAC

Scale: 1:50

Fig. 60

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 12.04.88/15.47 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218204 : BGS Reference: SK42NE64
British National Grid (27700) : 447340,326173

Soil Mechanics

BOREHOLE No. 735R

Sheet 1 of 2

Equipment & Methods
Hand dug inspection pit from ground level to 0.60m. Rotary core drilling, air flush, producing 92mm diameter core from 0.60m to 8.15m.

Location No. 7382 SK42NE64

Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 72.95 m A.O.D.
Coordinates: 447340.0 mE, 326173.0 mN
Date: 25.01.88 to 26.01.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
TOPSOIL	72.95		(0.20)							
Red brown moderately weathered SILTSTONE moderately weak to moderately strong with frequent black staining (KM 2)	72.75		0.20 (0.40)							
Assessed zone of core loss	72.35		0.60 (0.60)	0.60 – 1.50		33	9	0	NI NI 50	
Very stiff (hard) red brown very silty CLAY with medium gravel sized mudstone lithorelics (weathered MUDSTONE). Frequent pockets and lenses of light greenish grey silt and siltstone (KEUPER MARL 3) Below 2.50m with medium to coarse gravel sized lithorelics. Locally with sub-vertical fissures with speckled black staining	71.75		1.20	1.50 – 2.80		77	46	11	NI 50 140	at 1.50m S:N=68 7,8/14,12, 13,19
assessed zone of core loss; disturbed by SPT; light greenish grey slightly fine sandy siltstone strong; reddish brown moderately weathered siltstone band			(3.40)	2.80 – 4.60		83	65	47	NI 200 370	at 2.80m S:87 4,7/37,50 for 75mm
Stiff to very stiff red brown very silty CLAY (weathered MUDSTONE) (KM 4b) disturbed by SPT	68.35		4.60 (0.45)							at 4.60m S:N=59 8,12/12,13, 15,19
Greenish brown slightly to moderately weathered sandy SILTSTONE weak becoming moderately weak with very closely spaced fractures with black speckled staining (KM 2) At 5.75m becoming red brown with occasional reduction spots	67.90		5.05 (1.40)	4.60 – 6.45		100	100	75	100 170 460	
assessed zone of core loss	66.50		6.45 (0.50)							
Very stiff red brown very clayey SILT locally with up to coarse gravel sized lithorelics (weathered SILTSTONE) (KM 3/4a)	66.00		6.95 (0.55)	6.45 – 8.00		87	87	23	50 120 230	
Red brown slightly to moderately weathered sandy SILTSTONE moderately weak (KM 2)	65.45		7.50 (0.00p)							
Very stiff (hard) red brown clayey SILT locally with closely spaced sub-horizontal fissures (weathered SILTSTONE) (KEUPER MARL 3)	64.80		8.15							at 8.00m S:(71) 21,50 for 75mm
BOREHOLE ENDS AT 8.15 m.										

Remarks

Logged by: AAC

Scale: 1:50

Fig. 61

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 14.04.88/14.02 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218204 : BGS Reference: SK42NE64
British National Grid (27700) : 447340,326173

Soil Mechanics

BOREHOLE No. 735R

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382

Location SK42NE64 447340.0 326173.0

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level | Coordinates | Date

As sheet 1

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988 26.01	0800	1.50		DRY	

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results

Remarks

Logged by AAC

Scale 1:50

Fig. 61

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 14.04.88/14.02 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218205 : BGS Reference: SK42NE65
British National Grid (27700) : 447362,326181

Soil Mechanics

BOREHOLE No. 736

Sheet 1 of 2

Equipment & Methods
Cable tool boring, 150mm diameter, from ground level to 7.50m

Location No. 7382 SK42NE65
Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 79.88 m A.O.D.
Coordinates: 447362.0 mE, 326181.0 mN
Date: 22.01.88 to 23.01.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
TOPSOIL	79.88		(0.30)					
	79.58		0.30	0.30	D	1		
Angular medium to coarse gravel sized fragments of greenish grey slightly weathered silty fine grained SANDSTONE moderately strong to strong with red brown clay smearing (Possibly MADE GROUND)			(0.90)	0.50 – 0.95	D	2	S N=24	3,4/4,6,7,7
	78.68		1.20	1.20	D	3		
Stiff becoming very stiff (hard) red brown silty to very silty CLAY with occasional pockets and lenses of light greenish grey silt and siltstone Locally with very closely spaced fissures with speckled black staining (KEUPER MARL 3/4a)				1.30 – 1.75	U	4		61 blows
				1.80	D	5		
				1.80 – 2.25	D	6	S N=12	2,3/2,2,4,4
				2.80 – 3.25	U	7		94 blows
			(3.90)	3.30	D	8		
Below 1.80m with fine to coarse gravel sized lithorelics From 2.80m to 3.30m: Light grey green fine sandy SILT with medium to coarse gravel sized lithorelics and occasional bands and lenses of very stiff red brown silty clay At 4.60m: Grey green SILTSTONE band moderately weak to moderately strong				3.30 – 3.75	D	9	S N=56	5,6/9,10,14,23
				4.30 – 4.60	U	10		150 blows
				4.65	D	11		
				4.65 – 5.10	D	12	S N=58	5,5/7,11,19,21
	74.78		5.10	5.10	W	13		
Very stiff (hard) red brown silty CLAY with frequent medium to coarse gravel sized silty mudstone lithorelics and occasional pockets and lenses of light greenish grey silt and siltstone (KEUPER MARL 3)				5.60 – 6.05	D	14	S N=77	5,7/14,15,21,27
By 6.60m becoming moderately weathered MUDSTONE very weak			(2.40 part)	6.60 – 6.80	D	15	S 50	14,23/50 for 50mm Chiselling from 6.70m to 7.20m 1.50 hours
				7.20 – 7.31	D	16	S (67)	17,50 for 34mm
BOREHOLE ENDS AT 7.50 m.	72.38		7.50					

Remarks

Logged by: AAC

Scale: 1:50

Fig. 62

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics

12.04.88/15.13 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218205 : BGS Reference: SK42NE65
British National Grid (27700) : 447362,326181

Soil Mechanics

BOREHOLE No. 736

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382 SK42NE65

Location

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level | Coordinates | Date

As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample: Type	Sample: No.	Test	Field Records

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
22.01	1330	0.00	0.00		
22.01	–	1.40	1.00	DRY	
22.01	–	3.90	2.50	DRY	
22.01	–	4.40	3.00	DRY	
22.01	1700	5.10	3.00	DRY	End of shift
23.01	0800	5.10	3.00	4.00	Water sample taken
23.01	–	5.70	3.00		DAMP
23.01	–	7.50	3.00		DAMP End of cable tool boring

Remarks

Logged by: AMC

Scale: 1:50

Fig. 62

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 12.04.88/15.13 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218205 : BGS Reference: SK42NE65
British National Grid (27700) : 447362,326181

Soil Mechanics

DRAFT

BOREHOLE No. 736R

Sheet 1 of 3

SK42NE65

Equipment & Methods
Open hole drilling, air flush, using 6.75in rock bit, from ground level to 7.00m. Rotary core drilling, air flush, producing 92mm diameter core from 7.00m to 14.13m.

Location No. 7382

Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level
79.88 m A.O.D.

Coordinates
447362.0 mE
326181.0 mN

Date
11.02.88
to 12.02.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	Mechanical core log: SCR	Mechanical core log: RQD	Mechanical core log: If	Field Records and Test Results
Cable Tool Boring to 7.50m	79.88		(7.00)							
Assessed zone of core loss Very stiff (hard) red brown very silty CLAY with occasional fine gravel sized lithorelics (weathered MUDSTONE) (KEUPER MARL 3/4a)	72.88		7.00							
Red brown slightly to moderately weathered SILTSTONE weak to moderately weak (KM 2)			(1.00)	7.00 – 8.50		33	30	13		at 7.00m S:N=90 7,14/18,16, 24,30
Assessed zone of core loss	71.88		8.00							
Red brown moderately to highly weathered silty MUDSTONE locally altered to a very stiff silty clay with coarse gravel sized lithorelics (KEUPER MARL 2/3)	71.68		(0.20) 8.20						NI 90	
	71.38		(0.30) 8.50							
Light greenish brown locally red brown slightly to moderately weathered very silty fine SANDSTONE (KEUPER SANDSTONE 2) From 9.80m to 10.10m stiff red brown silty CLAY with frequent fine to medium gravel sized lithorelics	70.93		(0.45) 8.95							
			(0.50) 9.45	8.50 – 9.80		65	28	8	NI NI 80	
assessed core loss	70.43		(0.89)	9.80 – 11.50		82	68	8	NI 60 140	at 9.80m

Remarks

Logged by: AAC

Scale: 1:50

Fig. 63

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 19.04.88/09.11 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218205 : BGS Reference: SK42NE65
British National Grid (27700) : 447362,326181

Soil Mechanics

BOREHOLE No. 736R

Sheet 2 of 3

Equipment & Methods: As sheet 1

Location No. 7382

Location: A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4

SK42NE65 447362.0 326181.0

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: As sheet 1 | Coordinates: As sheet 1 | Date: As sheet 1

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
SANDSTONE (as sheet 1)			(0.89)						NI to 140	at 9.80m S:81 6,21/31,50 for 75mm
	69.54		10.34							
Very dense (hard) red brown clayey SILT with occasional fine gravel sized lithorelics (weathered SILTSTONE) (KM 3) From 10.60m to 11.60m with coarse gravel sized lithorelics. Below 11.60m becoming slightly fine sandy — assessed zone of core loss				9.80 – 11.50		82	68	8		
			(1.56)							
	67.98		11.90							at 11.50m S:50 15,18/50 for 75mm
			(0.70)						60 170 270	
Light reddish green slightly to moderately weathered very silty fine SANDSTONE weak Closely spaced sub-horizontal fractures (KEUPER SANDSTONE 2/3)	67.28		12.60	11.50 – 14.00		96	86	52		
irregular 70 joint										
sub-vertical joint									NI 170 340	
stiff red brown very silty CLAY			(1.53 pen)							
Red brown slightly to moderately weathered SILTSTONE weak to moderately weak with moderately widely becoming widely spaced sub-horizontal fractures (KEUPER MARL 2)	65.75		14.13							at 14.00m S:(88) 38,50 for 50mm
BOREHOLE ENDS AT 14.13 m.										

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988 11.02	1730	8.50	7.00		DMP, end of shift
12.02	0830	8.50	7.00		DMP

Remarks

Logged by: AAC

Scale: 1:50

Fig. 63

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 15.04.88/13.52 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218205 : BGS Reference: SK42NE65
British National Grid (27700) : 447362,326181

Soil Mechanics

SK42NE65
+7362.0 26181.0

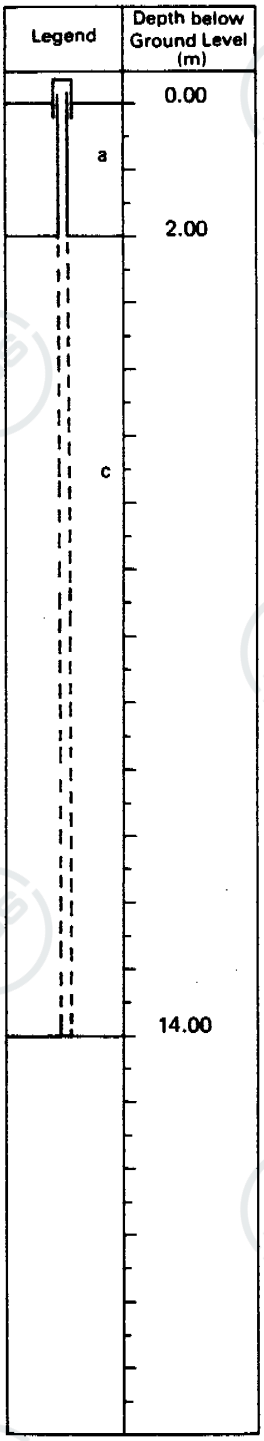
BOREHOLE No. 736R
Sheet 3 of 3

Location No. 7382
Location A42 CASTLE DONINGTON NORTH : GROUND INVESTIGATION CONTRACT 4

Carried out for
Client : Department of Transport (E. Midlands Regional Office)
Engineer : Scott Wilson Kirkpatrick and Partners

Type of installation Standpipe
Internal diameter of tubing 19 mm
Length of filter 12000 mm
Diameter of filter 120 mm

Depth (m) From	Depth (m) To	SUMMARY OF INSTALLATION
		Surface protection: Gas barrel with screw cap
0.00	2.00	Concrete
0.00	14.00	UPVC tubing
2.00	14.00	Slotted section
2.00	14.00	Gravel filter



KEY

a	Concrete
b	Sand
c	Gravel
d	Bentonite seal
e	Bentonite/cement grout
f	Backfill

ACCESS TUBINGS

- Standpipe/Piezometer (x 2 for Hydraulic or Pneumatic piezometers)
- Porous element
- Well with perforated section
- Inclinometer with joint
- Westbay with coupling and port

Remarks

1. Ground level and coordinates as sheet 1.

DETAILS OF INSTRUMENTS

Scale 1:100
Fig. 63

D4/8/85 © Soil Mechanics Limited, Bracknell, England

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218206 : BGS Reference: SK42NE66
British National Grid (27700) : 447349,326201

Soil Mechanics

BOREHOLE No. 737R

Sheet 1 of 1

Equipment & Methods

Hand dug inspection pit from ground level to 0.60m. Rotary core drilling, air flush, producing 92mm diameter core, from 0.60m to 8.375m

Location No. 7382

Location SK42NE66

A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 72.50 m A.O.D.

Coordinates: 447349.0 mE, 326201.5 mN

Date: 27.01.88

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	SCR	RQD	If	Field Records and Test Results
Inspection pit dug to 0.60m	72.50		(0.60)							
Dense light greenish grey locally friable SILT with occasional lithorelics (KM 4a)	71.90		0.60 (0.43)							
Very stiff (hard) red brown locally very silty CLAY with occasional bands and lenses of light greenish grey and red brown siltstone very weak (KEUPER MARL 3/4a) — assessed zone of core loss; disturbed by SPT	71.47		1.03	0.60 – 2.10		100	93	72		
			(2.57)						NI 150 320	at 2.10m S:50 9,18/50 for 75mm
				2.10 – 3.60		87	77	59		
Assessed zone of core loss	68.90		3.60 (0.45)							at 3.60m S:50 8,21/50 for 75mm no recovery
Very stiff locally stiff red brown very silty CLAY locally with occasional lithorelics (weathered MUDSTONE) (KM 3) From 4.84m to 4.93m band of light greenish grey silt — red brown siltstone; disturbed due to SPT	68.45		4.05 (0.90)	3.60 – 4.70		59	59	0		
	67.55		4.95							at 4.70m S:100 10,19/23,35 50 for 75mm
Red brown slightly to moderately weathered SILTSTONE very weak to weak with occasional mudstone bands up to 80mm thick: closely locally very closely spaced often tight fractures occasionally with speckled black staining (KM 2) — stepped sub-vertical joint; silty clay with frequent lithorelics; assessed zone of core loss; disturbed by SPT			(2.40)	4.70 – 6.90		100	89	64	NI 130 370	
Stiff red brown very silty CLAY with occasional lithorelics (weathered MUDSTONE) (KM 4a)	65.15 / 65.00		7.35 (0.15) 7.50	6.90 – 8.00		36				
Assessed zone of core loss			(0.88 pen)							at 8.00m S:115 11,8/24,41, 50 for 75mm
BOREHOLE ENDS AT 8.38 m.	64.12		8.38							

Remarks

Logged by: AAC

Scale: 1:50

Fig. 64

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics

12.04.88/16.13 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218210 : BGS Reference: SK42NE70
British National Grid (27700) : 447292,326133

Soil Mechanics

BOREHOLE No. 748

Sheet 1 of 1

Equipment & Methods
Hand dug inspection pit from ground level to 1.00m. Cable tool boring, 150mm diameter from 1.00m to 5.00m.

Location No. 7382
SK42NE70
Location 447292.0 326133.5
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level 73.45 m A.O.D.
Coordinates 447292.0 mE, 326133.5 mN
Date 01.02.88 to 02.02.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
FILL (Foreman's description)	73.45		(0.30)					
	73.15		0.30					
Angular to sub-angular medium to coarse and cobble sized fragments of light grey green locally red brown slightly fine sandy SILTSTONE moderately strong to strong (FILL)			(0.50)	0.50 – 0.70	1	b		
	72.65		0.80					
Very stiff red brown and dark brown mottled CLAY with occasional decayed plant matter and rare angular medium gravel (FILL)			(1.00)	1.00 – 1.45	D	2	S N=34	5,9/7,5,8,14
	71.65		1.80					
Stiff becoming very stiff (hard) red brown locally very silty CLAY with occasional fine gravel sized lithorelics and locally with occasional pockets and lenses of light grey green silt and siltstone				2.00 – 2.45	D	3	S N=71	6,8/8,12,22,29
(KEUPER MARL 4a)				3.00 – 3.45	D	4	S N=47	3,9/12,11,6,18
From 4.00m to 4.60m dense light grey green SILT with occasional fine gravel sized lithorelics			(3.20 pen)					
Below about 4.80m becoming light grey green probably moderately weathered SILTSTONE weak to very weak				4.00 – 4.38	D	5	S 94	7,14/17,25,52 for 75mm Chiselling from 4.40m to 4.70m 1.00 hour
				4.70 – 5.00	D	6	S 54	13,24/54 for 75mm
BOREHOLE ENDS AT 5.00 m.	68.45		5.00					

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
01.02	1800	1.50	1.50	DRY	End of shift
02.02	0800	1.50	1.50	DRY	
02.02	–	2.00	1.84	DRY	
02.02	–	5.00	1.84	DRY	End of cable tool boring

Remarks

Logged by: AAC
Scale: 1:50
Fig. 73

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 12.04.88/16.33 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218211 : BGS Reference: SK42NE71
British National Grid (27700) : 447491,326858

Soil Mechanics

BOREHOLE No. 749

Sheet 1 of 1

Equipment & Methods
Hand dug inspection pit from ground level to 1.00m. Cable tool boring, 150mm diameter, from 1.00m to 3.61m.

Location No. 7382
Location SK42NE71
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 56.75 m A.O.D.
Coordinates: 447491.5 mE 326858.5 mN
Date: 02.02.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
TOPSOIL	56.75		(0.20)					
Light grey green moderately weathered silty fine grained porous SANDSTONE weak to very weak with occasional red brown siltstone lenses and occasional black speckled staining	56.55		0.20					
			(0.80)	0.20 – 0.80	B	1		
(KEUPER SERIES SANDSTONE 3)	55.75		1.00					
				1.00 – 1.45	D	2	S N=98	8,9/12,15,24,47
Very stiff (hard) red brown CLAY with occasional fine gravel sized lithorelics thinly to thickly interlaminated with very dense light grey green SILT				1.70 – 2.15	D	3	S N=53	7,15/19,9,8,17
Below 2.30m stiff becoming very stiff red brown locally thinly laminated locally very silty CLAY with occasional fine to medium occasionally coarse gravel sized lithorelics and occasional bands and lenses of light greenish grey slightly fine sandy siltstone			(2.61 pen)					
				2.50 – 2.95	D	4	S N=98	8,14/17,21,26,34
(KEUPER SERIES MARL 3/4a)				3.00 – 3.19	D	5	S 50	12,37/50 for 40mm Chiselling from 3.00m to 3.40m 1.25 hours
				3.40 – 3.61	D	6	S 50	9,26/50 for 55mm
BOREHOLE ENDS AT 3.61 m.	53.14		3.61					

Remarks

Logged by: AAC
Scale: 1:50
Fig. 74

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics
12.04.88/16.37 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218212 : BGS Reference: SK42NE72
British National Grid (27700) : 447525,326851

Soil Mechanics

BOREHOLE No. 750

Sheet 1 of 2

SK42NE72

Equipment & Methods
Cable tool boring from ground level to 7.20m.

Location No. 7382
Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 57.35 m A.O.D.
Coordinates: 447525.0 mE, 326851.5 mN
Date: 25.01.88 to 26.01.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
Very stiff red brown very silty locally slightly fine sandy CLAY with occasional fine gravel sized lithorelics and a litt le to some angular medium to coarse mudstone and sandstone gravel (Possible FILL)	57.35		(0.70)	0.20	D	1		
	56.65		0.70	0.50 – 0.95	U	2		150 blows
			(0.70)	1.00	D	3		
Light grey green moderately weathered silty fine grained SANDSTONE weak to very weak with black speckled staining Below 1.00m becoming fine silty SAND with frequent medium to coarse gravel sized lithorelics (KEUPER SERIES SANDSTONE 3)	55.95		1.40	1.00 – 1.45	D	4	S N=64	3,10/15,12,17,20
red brown probably moderately weathered SILTSTONE very weak				2.00 – 2.45	D	5	S N=92	7,12/17,23,25,27
Very stiff red brown locally thinly laminated CLAY with occasional fine to medium gravel sized lithorelics and occasional pockets and lenses of light grey green silt and siltstone Frequent bands of light reddish green silty fine SAND with occasional fine to medium gravel sized lithorelics (KEUPER SERIES MARL 3/4a)				3.00 – 3.20	D	6	S 50	15,36/50 for 50mm
				4.00 – 4.19	D	7	S 50	17,31/50 for 42mm
			(5.80 part)	5.00 – 5.12	D	8	S (70)	20,50 for 40mm
Below 7.00m becoming probably moderately weathered red brown MUDSTONE very weak				6.00 – 6.23	D	9	S 50	17,36/50 for 75mm Chiselling from 6.70m to 7.00m 1.00 hour
				7.00 – 7.12	D	10	S (72)	22,50 for 50mm
BOREHOLE ENDS AT 7.20 m.	50.15		7.20					

Remarks

Logged by: AAC
Scale: 1:50
Fig. 75

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 12.04.88/16.43 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218212 : BGS Reference: SK42NE72
British National Grid (27700) : 447525,326851

Soil Mechanics

BOREHOLE No. 750

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382 SK42NE72

Location A7525.0 26851.5

A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level | Coordinates | Date

As sheet 1

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
25.01	-	2.10	1.50	DRY	
25.01	-	3.20	3.00	DRY	
25.01	-	5.10	5.00	DRY	End of shift
26.01	0800	5.10	5.00	DRY	
26.01	-	6.10	6.00	DRY	
26.01	-	7.20	6.00	DRY	End of cable tool boring

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample: Type	Sample: No.	Test	Field Records

Remarks

Logged by: AAC

Scale: 1:50

Fig. 75

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 12.04.88/16.43 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218213 : BGS Reference: SK42NE73
British National Grid (27700) : 447530,327315

Soil Mechanics

BOREHOLE No. 751

Sheet 1 of 2

Equipment & Methods
Hand dug inspection pit from ground level to 1.20m. Cable tool boring, 150mm diameter, from 1.20m to 7.00m.

Location No. 7382
SK42 NE 73
Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: - - - - -
Coordinates: 447530.0 mE, 327315.0 mN
Date: 02.02.88 to 03.02.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
TOPSOIL			(0.20) 0.20					
Stiff red brown very silty CLAY with a little gravel (FILL)			(0.40) 0.60					
Angular sandstone COBBLES (FILL)			(0.30) 0.90					
TARMAC			(0.20) 1.10	1.00 - 1.20	B	1		
Dense red brown very clayey SILT with rare fine to medium occasionally coarse gravel sized lithorelics: locally with a little fine to medium gravel (Probable FILL)			(1.40)	1.20 - 1.65	U	2		81 blows
				1.70	D	3		
				1.70 - 2.15	D	4	S N=23	2,3/5,5,6,7
Light grey brown fine sandy locally very sandy SILT locally very clayey with rare sub-rounded fine to medium gravel (Probable RIVER TERRACE DEPOSITS)			2.50 (0.50) 3.00	2.60	D	5		
				2.60 - 3.05	U	6		50 blows
				3.10	D	7		
				3.10 - 3.55	D	8	S N=31	3,5/7,6,8,10 No sample No. 9
Brown becoming orange brown medium SAND with a little to some sub-angular fine to medium occasionally coarse mainly chert gravel (Probable TERRACE DEPOSITS)			(1.80) 4.80	3.60	W	11		
				4.00 - 4.50	B	10		
				4.05 - 4.50			S N=23	3,3/6,7,6,4
				4.70	W	13		
				4.80	D	12		
Stiff becoming very stiff (hard) red brown very silty CLAY with occasional pockets and lenses of light grey green silt				5.00 - 5.45	U	14		87 blows
(KEUPER MARL 3/4a)				5.50	D	15		
Below about 5.20m with frequent fine to medium gravel sized lithorelics			(2.20 part)	5.50 - 5.95	D	16	S N=41	7,5/8,10,10,13
At 5.50m band of moderately weathered siltstone moderately weak				6.50 - 6.95	D	17	S N=62	10,11/10,15,17,20
BOREHOLE ENDS AT 7.00 m.			7.00					

Remarks

Logged by: AAC

Scale: 1:50

Fig. 76

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 12.04.88/16.49 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218213 : BGS Reference: SK42NE73
British National Grid (27700) : 447530,327315

Soil Mechanics

BOREHOLE No. 751

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382

Location SK42NE73 447530.0 327315.0

A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4

Carried out for

Client: Department of Transport (E. Midlands Reg. Office)

Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level — Coordinates — Date

As sheet 1

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
02.02	-	1.30	1.20	DRY	
02.02	-	2.70	2.60	DRY	
02.02	-	3.60	3.50	3.50	
02.02	-			1.70	water strike after 20 mins
02.02	1730	4.10	4.00	3.00	
03.02	0800	4.80	4.80	4.00	End of shift
03.02	-	4.80	4.80	4.70	
03.02	-	5.10	5.00		DAMP
03.02	-	6.60	6.00		DAMP
		7.00	6.00		DAMP, End of cable tool boring

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample: Type	Sample: No.	Test	Field Records

marks

ns:

erials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics

depths and reduced levels in metres. Thicknesses given in brackets in depth column.

Logged by AAC

Scale 1:50

Fig.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218214 : BGS Reference: SK42NE74
British National Grid (27700) : 447558,328033

Soil Mechanics

BOREHOLE No. 752

Sheet 1 of 2

Equipment & Methods
Hand dug inspection pit from ground level to 1.40m. Cable tool boring, 150mm diameter, from 1.40m to 7.05m.

Location No. 7382 SK42NE74

Location
A42 CASTLE DONINGTON NORTH:
GROUND INVESTIGATION CONTRACT 4

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: 35.30 m A.O.D.
Coordinates: 447558.0 mE, 328033.0 mN
Date: 03.02.88 to 04.02.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
	35.30		(0.30)					
FILL (Foreman's description)	35.00		0.30					
Light brown to brown clayey fine to medium SAND with a little to some sub-angular to rounded medium to coarse assorted gravel and occasional inclusions of sandy clay (FILL)			(1.50)	0.30 - 1.00	B	1		
				1.40 - 1.85	U	2		
	33.50		1.80	2.00	D	3		
Soft to firm red brown very silty becoming fine sandy CLAY with a little to some sub-angularto rounded fine to medium occasionally coarse assorted gravel (RIVER TERRACE DEPOSITS)			(0.60)	2.00 - 2.45	D	4	S N=18	4,4/5,4,4,5
	32.90		2.40					
Soft to firm light reddish brown sandy locally very sandy CLAY/locally very clayey SAND with a little sub-angular to rounded fine to medium assorted gravel (RIVER TERRACE DEPOSITS)			(1.30)	3.00 - 3.45	D	5	S N=16	3,3/4,4,3,5
	31.60		3.70	3.80	D	6		
Soft to firm red brown CLAY with frequent laminations of light greenish grey slightly fine sandy SILT (KM 4)			(0.60)	3.90 - 4.35	U	7		
	31.00		4.30	4.50	D	8		
Dense light grey green locally mottled red brown locally very clayey silty fine SAND with occasional fine to medium gravel sized lithorelics At 4.40m with inclusions of dark brown slightly sandy CLAY with occasional root fragments From 4.60m to 5.00m with rare sub-angular to rounded medium gravel and frequent decayed roots Below 5.50m becoming fine sandy SILT with a little fine to medium sub-angular to sub-rounded gravel (KM 3/4)			(2.75 pen)	4.60 - 5.00 4.60 - 5.05	B D	10 9	S N=34	3,4/6,7,10,11
				5.50 - 5.95	D	11	S N=64	4,4/7,11,19,27
				6.60 - 7.05	D	12	S N=73	6,7/11,14,17,31
BOREHOLE ENDS AT 7.05 m.	28.25		7.05					

Remarks

Logged by: AMC

Scale: 1:50

Fig.

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 12.04

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218214 : BGS Reference: SK42NE74
British National Grid (27700) : 447558,328033

Soil Mechanics

BOREHOLE No. 752

Sheet 2 of 2

Equipment & Methods: As sheet 1

Location No. 7382

Location: A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4

SK42NE74 447558.0 328033.0

Carried out for
Client: Department of Transport (E. Midlands Reg. Office)
Engineer: Scott Wilson Kirkpatrick & Partners

Ground Level: As sheet 1 | Coordinates | Date

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
03.02	-	1.50	0.00	DRY	
03.02	-	2.00	0.00	DRY	End of shift
04.02	-	3.80	0.00	3.80	slight seepage after 20 mins
04.02	-			3.80	DAMP
04.02	-	4.00	3.34		slurry
04.02	-	6.00	4.50		slurry, end of cable tool boring
04.02	-	7.05	4.50		

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample: Type	Sample: No.	Test	Field Records

Remarks

Logged by: AMC

Scale: 1:50

Fig. 77

Notes:
Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 12.04.88/16.54 (Ver 3.1.0)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218251 : BGS Reference: SK42NE111
British National Grid (27700) : 447330,326610

SK 42 NE/111

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

BIRMINGHAM – NOTTINGHAM ROUTE
A42 CASTLE DONINGTON NORTH
MAIN SITE INVESTIGATION
CONTRACT 2

4733 2661

BOREHOLE No 279
FIGURE A1
Sheet 1 of 1

Field Work by: Exploration Associates (Warwick) Limited
Method: Cable Percussion
Dates: 2.10.84
Hole Dimensions: 150mm
Casing Dimensions: 150mm

Coordinates: 67356.9 E.
96648.9 N.
Ground Level: 62.95 m O.D.

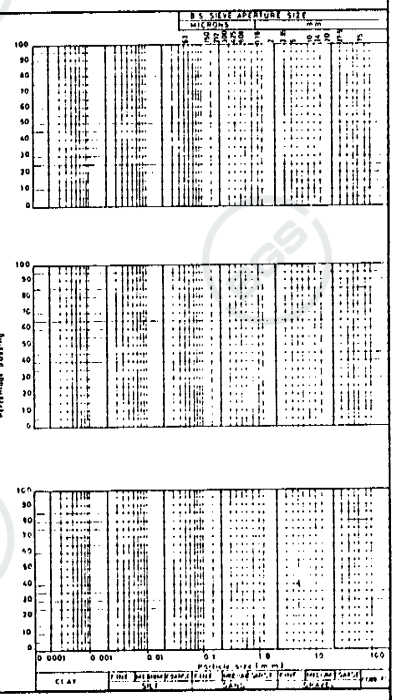
Laboratory Testing by: Dates:

Dates	Depth of Casing (m)	Depth to water (m)	Sample/Insitu Test Depth (m)	Sample/Insitu Test Type & Number	Change of Strata Legend	Depth (m)	Reduced Level	Description of Strata
2.10.84			0.30	J1		0.30	62.65	TOPSOIL
			0.50					Soft to firm brown fissured silty sandy clay with occasional sub-angular gravel (sandstone, quartz) (GLACIAL TILL)
			0.90	(25)2		0.80	62.15	
			1.00	J3				Very stiff red brown fissured silty to very silty CLAY with many siltstone lithorelicts. Occasional bands of highly weathered fissured weak siltstone at 1.00. (KEUPER MARL : ZONE II/III
			1.45	S(11) J4				
			1.50	B5				
			1.80	J6				
			2.00					
			2.45	(36)7				Firm to stiff in parts.
			2.50	J8		2.50	60.45	
			2.95	S(27) J9				Stiff red brown and grey green fissured inter-stratified silty CLAY sand highly weathered fissured very weak mudstone/siltstone (KEUPER MARL : ZONE III)
			3.00					
			3.10	J10		3.10	59.85	
			3.45	S(106 for 200mm) J11				Soft red brown fissured silty CLAY with many mudstone/siltstone lithorelicts and many thin bands of highly weathered interstratified very weak mudstone/siltstone. (KEUPER MARL : ZONE III)
			3.50	B12				
			3.70	J13				
			3.80	S(81 for 150mm)				
2.10.84	Nil	Dry	4.10	J14		4.10	58.85	End of Shell and Auger Hole.

* Seating Blows – J11 = 20
J14 = 31

Hard Strata – 3.40 – 3.80 = 1½ hours

Sample Number	Natural Moisture Content (%)	Natural Dry Density (kg/m³)	Liquid Limit (%)	Plastic Limit (%)	% passing 425 microns
1	15				
2	13	1790	27	17	100
5	22				
7	26	1645	32	18	87



Scale 1:

Disturbed Samples : w – Groundwater
● J – Jar
● S – S.P.T.
● B – Bulk
● M – Maxi

Undisturbed Samples : Soil Sample

Insitu Tests : V (30) – Vane shear strength in KN/m²

▼ Groundwater first struck

□ Core Cutter Density
■ Core Cutter Density/C.B.R

▽ Sandbottle Density
▲ C.B.R

C or S S.P.T. – ne or spoon
(25) – N value

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218252 : BGS Reference: SK42NE112
British National Grid (27700) : 447380,326760

SK 42 NE/112

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

BIRMINGHAM – NOTTINGHAM ROUTE
A42 CASTLE DONINGTON NORTH
MAIN SITE INVESTIGATION
CONTRACT 2

4738 2676

BOREHOLE No 280
FIGURE A1
Sheet 1 of 1

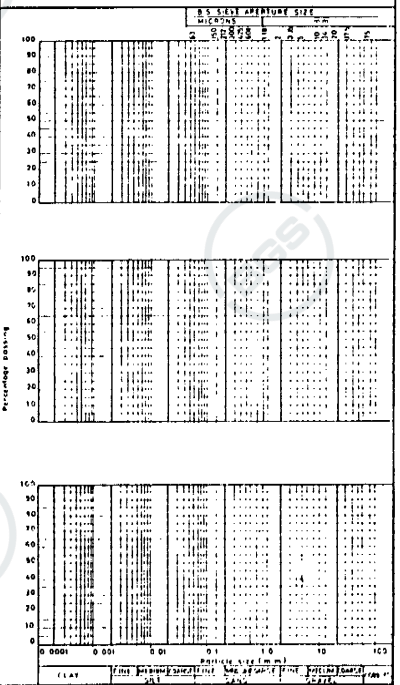
Field Work by: Exploration Associates (Warwick) Limited
Method: Cable Percussion
Dates: 3.10.84
Hole Dimensions: 150mm
Casing Dimensions: 150mm

Coordinates: 67404.6 E.
96797.0 N.
Ground Level: 57.18 m O.D.

Laboratory Testing by: Dates:

Dates	Depth of Casing	Depth to Water	Sample/Insitu Test Depth	Type & Number	Change of Strata Legend	Depth (m)	Reduced Level	Description of Strata
3.10.84			0.30	J1		0.30	56.88	TOPSOIL
			0.50	(36)2				Very stiff red brown fissured silty CLAY with occasional sub-rounded fragments of quartz, sandstone. Rootlets. (GLACIAL TILL)
			0.95					
			1.00	J3		1.00	56.18	
				S(28)				Stiff and very stiff red brown mottled grey green fissured silty CLAY with many mudstone and siltstone lithorelicts. (KEUPER MARL : ZONE III) Many mudstone/siltstone lithorelicts and many thin bands of highly weathered fissured red brown and grey green very weak calcareous mudstone/siltstone below 2.50.
			1.45	J4				
			1.50	B5				
			1.80	J6				
			2.00					
				(50)7				
			2.45					
			2.50	J8				
				S(25)				
			2.95	J9				
			3.00	B10				
			3.30	J11				
			3.40					
				S(79)				
			3.85	J12				Becoming very silty below 5.50m
			4.50	J13				
			4.70	S(70 For 150mm)				
			5.00	J14				
			5.40	J15				
			5.50	S(117 For 225mm)				
3.10.84	Nil	Dry	5.90	J16		5.90	51.28	End of Shell and Auger Hole.
								Hard Strata – 5.00 – 5.50 = 1 hour.
								* Seating Blows – J14 = 28 J16 = 33

Standpipe/Piezometer Installation	Sample Number	Natural Moisture Content (%)	Natural Dry Density (kg/m³)	Liquid Limit (%)	Plastic Limit (%)	% passing 425 microns	Sulphate g/ltr / pH
	1	14					
	2	11	1995	32	18	100	0.04 / 8.0
	5	24					
	7	13	1865	22	NP	100	



Scale 1:

Disturbed Samples: W – Groundwater
● J – Jar ● S – S.P.T. ● B – Bulk ● M – Maxi

Undisturbed Samples: Soil Sample

Insitu Tests: V C30] – Vane shear strength in KN /m²
Groundwater first struck
Core Cutter Density
Core Cutter Density/C.B.R
Sandbottle Density
C B R
C or S S.P.T. – ne or spoon
N value

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218278 : BGS Reference: SK42NE138
British National Grid (27700) : 447280,327705

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Field Work by : Soil Mechanics Limited
Method : Cable tool boring
Dates : 15 to 18.4.88
Hole Dimensions : 150mm
Casing Dimensions : 150mm

SK42 NE 138

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 137
SHEET 1 OF 5
COORDINATES
447280.9 E
327705.7 N
GROUND LEVEL
38.73 mOD

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
							(0.30) 0.30	38.43	TOPSOIL	
			0.50	J1			(0.90)		Firm brown very sandy CLAY with occasional subrounded fine quartz gravel (TERRACE CLAY)	
			1.00 - 1.45	U2	'35'		1.20	37.53		
			1.50	J3			(0.80)		Firm orange brown sandy CLAY with a little subrounded gravel (TERRACE CLAY)	
			1.50 - 1.95	B4	C (9)		2.00	36.73		
							(1.50)		Dense brown SAND and angular to subrounded GRAVEL with occasional subrounded cobbles (TERRACE SANDS AND GRAVELS)	
			3.00 - 3.45	B5	C (35)		3.50	35.23		
			3.60	J6			(0.75)		Firm red brown in parts mottled light greenish grey CLAY with rare fine quartz gravel (REWORKED KEUPER MARL)	
	4.00	Dry					4.25	34.48		
			4.00 - 4.45	U7	'35'		(0.75)		Firm to stiff red brown CLAY (KEUPER MARL : ZONE IVb)	
			4.50	J8			5.00	33.73		
			4.50 - 4.95	J9	S (4)					
			5.00 - 5.50	B10					Very stiff red brown in parts sandy CLAY with occasional up to medium gravel size subangular lithorelicts and pockets of light greenish grey sandy silt (KEUPER MARL : ZONE IVa) below 7.00m, indistinct fissures	
			6.00 - 6.45	B11	'36'					
			6.50 - 6.95	J12	S (26)					
			7.00 - 7.50	B13			(5.80)			
15.4.88	8.00	Dry	7.50 - 7.95	B14	'35'					
16.4.88	8.00	Dry	8.00 - 8.45	J15	S (54)					
			8.50 - 9.00	B16						
			9.00 - 9.45	U17	'75'					
			9.50	J18						
			9.50 - 9.95	J19	S (17)					

Remarks 1. Hole grouted to G.L.

SCALE 1:50

Disturbed Samples: W = Groundwater; J = Jar; B = Bulk
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m) and depth water rose to in X minutes; V (30) = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon; (25) = N value; ⊠ = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218278 : BGS Reference: SK42NE138
British National Grid (27700) : 447280,327705

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Field Work by : As sheet 1
Method :
Dates :
Hole Dimensions :
Casing Dimensions :

SK 42 NE 138

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 137
SHEET 2 OF 5
COORDINATES
E
N
GROUND LEVEL mOD

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
			10.00 - 10.50	B20			(5.80)		KEUPER MARL (As sheet 1)	
			10.50 - 10.80 10.85	U21 J22	'100'		10.80	27.93		
			10.90 - 11.35	J23	S (35)				Very stiff red brown very silty CLAY with some up to medium gravel size angular mudstone lithorelicts and with relict structure. (KEUPER MARL : ZONE IVa) below 12.60m with occasional pockets of light greenish grey sandy silt	
			11.50 - 12.00	B24						
			12.00 - 12.45	J25	S (54)					
			12.60 - 13.50	B26			(4.70)			
			13.50 - 13.95	J27	S (58)					
16.4.88	13.50	Dry								
17.4.88	13.50	8.50								
			14.00 - 15.00	B28 W29						
			15.00 - 15.46	J30	S (62)		15.50	23.23		
			15.50 - 16.50	B31					Red brown thickly laminated highly to moderately weathered MUDSTONE very weak with much clay, and with occasional bands / pockets of light greenish grey sandy siltstone. (KEUPER MARL : ZONE III)	
			16.50 - 16.95	J32	S (60)					
17.4.88	17.00	14.00								
18.4.88	17.00	11.00								
			17.00 - 18.00	B33			(7.45 pen)			
			18.00 - 18.45	J34	S (40)					
			18.50 - 19.50	B35						
			19.50 - 19.95	J36	S (80)					

Remarks

SCALE 1:50

Disturbed Samples: W = Groundwater; J = Jar; B = Bulk
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m)and depth water rose to in X minutes; V [30] = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon; (25) = N value; * = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218278 : BGS Reference: SK42NE138
British National Grid (27700) : 447280,327705

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Field Work by: As sheet 1
Method :
Dates :
Hole Dimensions :
Casing Dimensions :

SK42NE138

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 137
SHEET 3 OF 5
COORDINATES
E
N
GROUND LEVEL
mOD

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
			20.00 - 21.00	B37					KEUPER MARL	
			21.00 - 21.45	J38	S (116)		(7.45 pen)		(As sheet 2)	
			21.50 - 22.50	B39						
18.4.88	22.50	19.00	22.50 - 22.95	J40	S (93)		22.95	15.78		
									BORING COMPLETE AT 22.95m ROTARY FOLLOW ON	

Remarks

SCALE 1:50

Disturbed Samples: W = Groundwater; J = Jar; B = Bulk
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m)and depth water rose to in X minutes (3R, X, 4s); V [30] = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon; (25) = N value; ■ = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218278 : BGS Reference: SK42NE138
British National Grid (27700) : 447280,327705

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Fieldwork by: Soil Mechanics Limited
Method: Rotary core drilling (water flush)
Dates: 23 to 24.4.88
Core Diameter: 76mm
Casing Diameter: 100mm

SK 42 NE 138

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

DRILLHOLE No 137
SHEET 4 OF 5
COORDINATES E N
GROUND LEVEL m OD

Drilling: Date	Depth (m)	Run	T CR %	RQD %	Test or I_f (mm)	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata: Detail	Main	Piezo/ S'pipe
									CABLE TOOL BORING TO 23.00m		
	23.00						23.00	15.73			
			71	0	NI		(0.60)		Red brown thinly laminated extremely closely fractured moderately to highly weathered MUDSTONE very weak with some clay		
							23.60	15.13	(KEUPER MARL : ZONE III)		
	24.00				NI 30 140		(1.40)			Red brown thinly laminated slightly to moderately weathered MUDSTONE very weak to weak with a little to some clay	
			81	14					Red brown and light greenish grey siltstone	(KEUPER MARL : ZONE II – III)	
23.4.88	25.00						25.00	13.73			
24.4.88					S 103 for 175mm						
			58	0						Red brown thinly laminated extremely closely fractured moderately to highly weathered MUDSTONE very weak with some to much clay and with occasional light greenish grey patches	
	26.00									(KEUPER MARL : ZONE III)	
			46	0							
	27.00				NI						
			62	0							
	28.00				S 80 for 150mm						
			72	29			28.75	9.98			
	29.00									Red brown slightly weathered SILTSTONE weak with occasional light greenish grey patches and reduction spots	
			75	37	NI 90 180				Non-intact		
									Non-intact	(KEUPER MARL : ZONE II)	
	30.00						30.00	8.73			
									BOREHOLE COMPLETE AT 30.00m		

Remarks (Ground water seepages, Morning water levels, flush returns)

SCALE 1:50

Disturbed Samples
W – Groundwater
J – Jar

Core Runs
50 core recovery
100 %

Insitu Tests
Depth groundwater struck (m)
C or S – SPT cone or spoon
(25) – N value
* – Penetration for seating blows

FIGURE A2

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218278 : BGS Reference: SK42NE138
British National Grid (27700) : 447280,327705

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Fieldwork by: As sheet 4
Method:
Dates:
Core Diameter:
Casing Diameter:

SK42NE138

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

DRILLHOLE No 137
SHEET 5 OF 5
COORDINATES
E
N
GROUND LEVEL
m OD

Drilling						Change of Strata			Description of Strata		Piezo/ Spipe
Date	Depth (m)	Run	T CR %	RQD %	Test or I_f (mm)	Legend	Depth (m)	Reduced Level	Detail	Main	

Water Level Observations During Boring

Date 1988	Time	Depth of Hole m	Depth of Casing m	Depth to Water m	Remarks
23.4.	0800	23.00	23.00	2.10	
	1615	25.00	24.00	0.00	
24.4.	0800	25.00	24.00	2.40	
	–	30.00	25.00	–	Borehole complete

Remarks (Ground water seepages, Morning water levels, flush returns)

SCALE 1:50

Disturbed Samples
W – Groundwater
J – Jar

Core Runs
50
100
core recovery %

Insitu Tests
Depth groundwater struck (m)
C or S – SPT cone or spoon
(25) – N value
✱ – Penetration for seating blows

FIGURE A2

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218279 : BGS Reference: SK42NE139
British National Grid (27700) : 447321,327682

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK 42 NE 139

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 139
SHEET 1 OF 3
COORDINATES
447321.1 E
327682.6 N
GROUND LEVEL
38.84 mOD

Field Work by : Soil Mechanics Limited
Method : Cable tool boring
Dates : 20 to 21.4.88
Hole Dimensions : 150mm
Casing Dimensions : 150mm

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
							(0.40) 0.40	38.44	TOPSOIL	
			0.50	J1					Soft becoming firm orange brown mottled brown sandy CLAY with a little subrounded quartz gravel (TERRACE)	
			1.00 - 1.45	U2	'40'		(1.50) 1.90	36.94		
			1.50	J3						
			1.50 - 1.95		C (9)					
			1.60 - 3.00	B4					Dense subangular to subrounded GRAVEL with some to much orange brown clayey sand (TERRACE SANDS AND GRAVELS)	
			3.00 - 3.45		C (39)		(2.20) 4.10	34.74		
			3.00 - 4.00	B5						
	4.00	Dry								
			4.10 - 4.55		C (4)				Soft red brown sandy CLAY with a little subangular to subrounded gravel (REWORKED KEUPER MARL)	
			4.10 - 5.00	B6			(0.90) 5.00	33.84		
			5.50	J7					Firm becoming very stiff below 6.50m red brown very silty CLAY with occasional subangular fine gravel size lithorelicts. And with occasional pockets and lenses of light greenish grey sandy silt and siltstone (KEUPER MARL : ZONE IVa)	
			6.00 - 6.45	U8	'50'					
			6.50	J9						
			6.50 - 6.95	J10	S (38)					
			7.00 - 7.50	B11			(13.50)			
			7.50 - 7.95	U12	'100'					
	8.00	Dry	8.00	J13						
			8.00 - 8.45	J14	S (91)					
			8.50 - 9.00	B15						
			9.00 - 9.45	U16	'100'					
			9.50	J17						
			9.50 - 9.95	J18	S (24)					

Remarks
1. Water added to assist boring
2. Hole backfilled with arisings

SCALE 1:50

Disturbed Samples: J = Jar, B = Bulk; W = Groundwater
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m)and depth water rose to in X minutes; V [30] = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon (25) = N value; ■ = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218279 : BGS Reference: SK42NE139
British National Grid (27700) : 447321,327682

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Field Work by : As sheet 1
Method :
Dates :
Hole Dimensions :
Casing Dimensions :

SK42NE 139

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 139
SHEET 2 OF 3
COORDINATES
E
N
GROUND LEVEL mOD

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
			10.00 - 10.50	B20						
			10.50 - 10.95	U21	'120'					
			11.00	J22					With occasional bands of highly weathered very weak MUDSTONE	
			11.00 - 11.45	J23	S (61)					
			11.50 - 12.00	B24						
	12.00	Dry	12.00 - 12.45	U25	'100'					
			12.50	J26	S*					
			12.50 - 12.61	J27	74 for 115mm				Light greenish grey thickly laminated SILTSTONE, weak	
			13.00 - 13.50	B28					KEUPER MARL	
			13.50 - 13.95	J29	S (81)				(As sheet 1)	
							(13.50)			
			14.00 - 15.00	B30						
			15.00 - 15.45	J31	S (64)					
			15.50 - 16.50	B32						
			16.50 - 16.95	J33	S (75)					
20.4.88	17.00	Dry								
21.4.88	17.00	12.30								
			17.00 - 18.00	B34						
				W35						
			18.00 - 18.20	J36	'150'					
							18.50	20.34		
			18.50 - 18.95	J37	S (132)				Very stiff (hard) red brown and light greenish grey sandy CLAY with some angular fine and medium lithorelicts and with occasional bands of light greenish grey SILTSTONE and red brown MUDSTONE weak	
							(5.95 pen)			
			19.00 - 19.50	B38						
			19.50 - 19.95	J39	S (92)				(KEUPER MARL : ZONE III)	

Remarks

SCALE 1:50

Disturbed Samples: J = Jar; B = Bulk; W = Groundwater

Undisturbed Samples: Soil Sample

Insitu Tests: Depth groundwater struck(m) and depth water rose to in X minutes

V (30) = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon; (25) = N value; P = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218279 : BGS Reference: SK42NE139
British National Grid (27700) : 447321,327682

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Field Work by : As sheet 1
Method :
Dates :
Hole Dimensions :
Casing Dimensions :

SK 42 NE 139

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 139
SHEET 3 OF 3
COORDINATES
E
N
GROUND LEVEL
mOD

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
			20.00 - 21.00	B40					KEUPER MARL	
			21.00 - 21.45	J41	S (75)				(As sheet 2)	
			21.50 - 22.50	B42			(5.95 pen)			
			22.50 - 22.95	J43	S (91)					
			23.00 - 24.00	B44						
21.4.88	24.45	24.00	24.00 - 24.45	J45	S (114)		24.45	14.39	BOREHOLE COMPLETE AT 24.45m	

Remarks

SCALE 1:50

Disturbed Samples: W = Groundwater; J = Jar; B = Bulk
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m)and depth water rose to in X minutes; V (30) = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon (25) = N value; = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218280 : BGS Reference: SK42NE140
British National Grid (27700) : 447339,327496

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Field Work by: Soil Mechanics Limited
Method: Cable tool boring
Dates: 12 to 15.4.88
Hole Dimensions: 150mm
Casing Dimensions: 150mm

SK42NE 140
A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 140
SHEET 1 OF 6
COORDINATES 447339.4 E, 327496.6 N
GROUND LEVEL 43.01 mOD

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
							(0.30) 0.30	42.71	TOPSOIL	
			0.50	J1					Soft brown becoming orange brown sandy to very sandy CLAY with rare fine quartz gravel and occasional dark grey organic patches	
			1.00 - 1.45	U2	'20'		(2.20)		(POSSIBLY MADE GROUND)	
			1.50	J3						
			1.50 - 1.95	J4	S (19)					
			2.00 - 2.50	B5			2.50	40.51		
			3.00 - 3.45	U6	'45'		(1.50)		Firm to stiff orange brown and grey mottled becoming red brown sandy CLAY with rare fine quartz gravel	
			3.50	J7					(POSSIBLY MADE GROUND)	
12.4.88	4.00	Dry	3.50 - 3.95	J8	S (21)					
13.4.88	4.00	Dry		B9			4.00	39.01		
			4.00 - 4.45	J10	S (45)		(1.20)		Dense reddish brown SAND and angular fine GRAVEL with occasional subrounded coarse gravel and cobbles	
			4.50 - 5.00	B11					In parts very clayey (TERRACE SANDS AND GRAVELS)	
			5.00	J12			5.20	37.81		
			5.20 - 5.65	B13					Very stiff red brown very silty CLAY with occasional lithorelicts and relict structure	
			6.00	J14						
			6.00 - 6.45	J15	S (78)				(KEUPER MARL : ZONE VIa)	
			6.70 - 7.00	B16			(3.30)			
			7.00 - 7.45	J17	S (82)					
			7.50 - 8.00	B18						
			8.00 - 8.45	J19	S (132)					
			8.50 - 9.00	B20			8.50	34.51	Red brown moderately weathered MUDSTONE very weak, friable with some clay	
			9.00 - 9.45	J21	S (81)		(2.50)		(KEUPER MARL : ZONE III)	
			9.50 - 10.00	B22						

Remarks 1. Hole grouted to 5.00m, backfilled with arisings to G.L.

SCALE 1:50

Disturbed Samples: W = Groundwater; J = Jar; B = Bulk
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m)and depth water rose to in X minutes; V [30] = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon (25) = N value; P = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218280 : BGS Reference: SK42NE140
British National Grid (27700) : 447339,327496

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Field Work by : As sheet 1
Method :
Dates :
Hole Dimensions :
Casing Dimensions :

SK42NE140

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 140
SHEET 2 OF 6
COORDINATES E N
GROUND LEVEL mOD

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
13.4.88	6.00	Dry	10.00 - 10.37	• J23	S 106 for 220mm		(2.50)		KEUPER MARL (As sheet 1)	
14.4.88	6.00	3.00		W24						
			10.50 - 11.00	B25			11.00	32.01		
			11.00 - 11.45	• J26	S (70)				Very stiff red brown CLAY with some fine to medium mudstone lithorelicts and some very thin bands of very weak MUDSTONE and light greenish grey moderately weak SILTSTONE (KEUPER MARL : ZONE II – IV)	
			11.50 - 12.00	B27						
			12.00 - 12.45	• J28	S (85)					
			12.50 - 12.95	• J29	S 92 for 150mm		(3.95 pen)			
			13.50 - 13.87	• J30	S 107 for 220mm					
14.4.88	6.00	11.00								
15.4.88	6.00	3.00	14.00 - 14.50	B31						
			14.50 - 14.95	• J32	S (103)		14.95	28.06	BOREHOLE COMPLETE AT 14.95m ROTARY HOLE DRILLED ADJACENT	

Remarks

SCALE 1:50

Disturbed Samples: W = Groundwater; • J = Jar; B = Bulk
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m)and depth water rose to in X minutes; V (30) = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon (25) = N value; P = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218280 : BGS Reference: SK42NE140
British National Grid (27700) : 447339,327496

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK42NE 140

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

DRILLHOLE No 140
SHEET 3 OF 6
COORDINATES E N
GROUND LEVEL m OD

Fieldwork by: Soil Mechanics Limited
Method: Rotary core drilling (air flush)
Dates: 15 to 22.4.88
Core Diameter: 76mm
Casing Diameter: 100mm

Drilling						Change of Strata			Description of Strata		Piezo/ Slope
Date	Depth (m)	Run	T CR %	RQD %	Test or I_f (mm)	Legend	Depth (m)	Reduced Level	Detail	Main	
									ROTARY OPEN HOLE DRILLING 0.00 TO 14.00m		a e

Remarks (Ground water seepages, Morning water levels, flush returns)
Water flush below 8.50m

SCALE 1:50

FIGURE A2

Disturbed Samples
W – Groundwater
J – Jar

Core Runs
50 / 100 core recovery %

Insitu Tests
Depth groundwater struck (m)
C or S – SPT cone or spoon
125 – N value
* – Penetration for seating blows

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218280 : BGS Reference: SK42NE140
British National Grid (27700) : 447339,327496

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK42 NE140

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

DRILLHOLE No 140
SHEET 4 OF 6
COORDINATES E N
GROUND LEVEL m OD

Fieldwork by: As sheet 3
Method:
Dates:
Core Diameter:
Casing Diameter:

Drilling						Change of Strata			Description of Strata		
Date	Depth (m)	Run	T CR %	RQD %	Test or I_f (mm)	Legend	Depth (m)	Reduced Level	Detail	Main	Piezo / Strip
									ROTARY OPEN HOLE DRILLING 0.00 TO 14.00m		
20.4.88	14.00						14.00	29.01			
			94	14							
	15.00										
			100	44							
	16.00				NI 30 140						
			17	0							
	17.00				S (124)		(9.00)			Red brown thinly laminated extremely closely fractured moderately to highly weathered MUDSTONE very weak to weak with some to in parts much clay. And with occasional medium to closely spaced very thin light greenish grey siltstone bands (KEUPER MARL : ZONE III)	
			37	0							
	18.50								Subvertical fractures generally non-intact		
			77	11							
	20.00										

Remarks (Ground water seepages, Morning water levels, flush returns)

SCALE 1:50

Disturbed Samples
W – Groundwater
J – Jar

Core Runs
50 core recovery 100 %

Insitu Tests
Depth groundwater struck (m)
C or S – SPT cone or spoon 125 – N value
✱ – Penetration for seating blows

FIGURE A2

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218280 : BGS Reference: SK42NE140
British National Grid (27700) : 447339,327496

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK42NE140

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

DRILLHOLE No 140
SHEET 5 OF 6
COORDINATES E N
GROUND LEVEL m OD

Fieldwork by: As sheet 3
Method:
Dates:
Core Diameter:
Casing Diameter:

Drilling						Change of Strata			Description of Strata		Piezo/ S'pipe
Date	Depth (m)	Run	TCR %	RQD %	Test or I_f (mm)	Legend	Depth (m)	Reduced Level	Detail	Main	
	20.00				S 50 for 65mm					KEUPER MARL (As sheet 1)	
			60	0							
	21.00				NI 30 140						d
			100	0							
20.4.88	21.50						(9.00)				
21.4.88			58	0							
	22.00										
			53	0							
	23.00						23.00	20.01			
					S 87 for 135mm				Very closely spaced subvertical planar rough fractures, core generally non-intact.	Red brown slightly weathered MUDSTONE weak with occasional light greenish grey reduction spots and with occasional light greenish grey siltstone bands (KEUPER MARL : ZONE II)	e
			75	0							
	24.50				NI 40 160						
			65	0							
	25.50						(4.50)				
			63	0							
	26.50								Extremely to very closely spaced subvertical planar rough fractures, core generally non-intact.		
			100	27							
	27.50						27.50	15.51			
			100	35	NI 100 200				Subvertical planar rough fractures	Red brown slightly weathered SILTSTONE moderately weak to weak with occasional light greenish grey reduction spots (KEUPER MARL : ZONE II)	
21.4.88 22.4.88	28.50						(2.70 pen)				
			65	38					Light greenish grey siltstone moderately weak with subvertical fractures		
	29.50										
			93	54							

Remarks (Ground water seepages, Morning water levels, flush returns)

SCALE 1:50

Disturbed Samples
W – Groundwater
J – Jar

Core Runs
50 core recovery 100
%

Insitu Tests
Depth groundwater struck (m)
C or S – SPT cone or spoon
(25) – N value
✱ – Penetration for seating blows

FIGURE A2

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218280 : BGS Reference: SK42NE140
British National Grid (27700) : 447339,327496

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK42NE140

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

DRILLHOLE No 140
SHEET 6 OF 6
COORDINATES E N
GROUND LEVEL m OD

Fieldwork by: As sheet 3
Method:
Dates:
Core Diameter:
Casing Diameter:

Drilling						Change of Strata			Description of Strata		Piezo/ Spipe
Date	Depth (m)	Run	T CR %	RQD %	Test or I_s(mm)	Legend	Depth (m)	Reduced Level	Detail	Main	
22.4.88	30.20		93	54		× × ×	30.20	12.81	KEUPER MARL	(As sheet 2)	
									BOREHOLE COMPLETE AT 30.20m		

Water Level Observations During Boring

Date 1988	Time	Depth of Hole m	Depth of Casing m	Depth to Water m	Remarks
15.4.	1830	9.00	6.00	Damp	
16.4.	0800	9.00	6.00	Damp	
	1400	7.00	7.20	Damp	
17.4.	0800	7.00	7.20	Damp	
	1500	9.50	9.50	0.60	
18.4.	0800	9.50	9.50	–	
	1830	9.50	9.50	–	
19.4.	1330	9.50	9.50	3.10	
	1830	14.00	14.00	0.00	
20.4.	0800	14.00	14.00	0.00	
	1830	21.50	14.00	0.00	
21.4.	0800	21.50	14.00	2.60	
	1815	28.50	14.00	0.00	
22.4.	0800	28.50	14.00	2.30	
	–	30.20	14.00	–	

Remarks (Ground water seepages, Morning water levels, flush returns)

SCALE 1:50

Disturbed Samples
W – Groundwater
J – Jar

Core Runs
50 core recovery %
100

Insitu Tests
Depth groundwater struck (m)

C or S – SPT cone or spoon
[25] – N value
R – Penetration for seating blows

FIGURE A2

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218281 : BGS Reference: SK42NE141
British National Grid (27700) : 447306,327458

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK42NE 141

A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION

BOREHOLE No. 142
SHEET 1 OF 2
COORDINATES 447306.6 E, 327458.2 N
GROUND LEVEL 43.20 mOD

Field Work by: Soil Mechanics Limited
Method: Cable tool boring
Dates: 22 to 26.4.88
Hole Dimensions: 150mm
Casing Dimensions: 150mm

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
			0.50	J1			(0.80)		Firm brown slightly sandy CLAY with a little subrounded fine to medium gravel (TOPSOIL)	
							0.80	42.40		
			1.00 - 1.45	U2	'42'				Soft brown / red brown in parts mottled yellow brown slightly sandy CLAY with a little subangular to subrounded gravel and occasional pockets of sand (POSSIBLY MADE GROUND)	
			1.50	J3						
			1.50 - 1.95		C (9)		(2.10)			
			1.60 - 3.00	B4						
							2.90	40.30		
			3.00 - 3.45		C (30)				Dense orange brown fine to coarse becoming medium to coarse SAND and subangular to subrounded generally fine and medium GRAVEL (TERRACE SANDS AND GRAVELS)	
			3.00 - 4.00	B5						
							(2.50)			
			4.50 - 4.95		C (31)					
			4.50 - 5.50	B6						
							5.40	37.80		
			6.00 - 6.45	U7	'100'				Very stiff (hard) red brown very silty CLAY with occasional to some fine and medium gravel size lithorelicts and occasional pockets / lenses of light greenish grey sandy silt. And with occasional bands of red brown thinly and thickly laminated fractured moderately to highly weathered MUDSTONE very weak, friable with some clay on fractures. Stiff to 6.50m (KEUPER MARL : ZONE VIa WITH BANDS OF III)	
			6.50	J8						
			6.50 - 6.95	J9	S (91)					
			7.00 - 7.50	B10			(11.90)			
			7.50 - 7.95	U11	'100'					
			8.00	J12						
			8.00 - 8.45	J13	S (70)					
			8.50 - 9.00	B14						
			9.00 - 9.45	U15	'125'					
			9.50	J16						
			9.50 - 9.95	J17	S (75)					

Remarks 1. Hole grouted to 5.00m, backfilled with arisings to G.L.

SCALE 1:50

Disturbed Samples: J = Jar, B = Bulk; W = Groundwater
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m)and depth water rose to in X minutes; V (30) = Vane Shear Strength in KN/m²; C or S = SPT cone or spoon (25) = N value; B = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218281 : BGS Reference: SK42NE141
British National Grid (27700) : 447306,327458

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

Field Work by : As sheet 1
Method :
Dates :
Hole Dimensions :
Casing Dimensions :

SK42NE141

A564 DERBY SOUTHERN BYPASS
AND DERBY SPUR
PRELIMINARY GROUND
INVESTIGATION

BOREHOLE No. 142
SHEET 2 OF 2
COORDINATES
E
N
GROUND LEVEL
mOD

Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests: Depth (m)	Type No.	Test Result	Change of Strata: Legend	Depth (m)	Reduced Level	Description of Strata	Piezo/ S'pipe
			10.00 - 10.50	B18						
			10.50 - 10.95	U19	'125'					
			11.00	J20					KEUPER MARL	
			11.00 - 11.45	J21	S (118)				(As sheet 1)	
			11.50 - 12.00	B22					with mudstone bands becoming more frequent below 11.00m	
22.4.88	12.00	Added								
25.4.88	12.00	8.30	12.00 - 12.30	U23	'150'					
			12.35	J24						
				W25						
			12.50 - 12.95	J26	S (121)					
			13.00 - 13.50	B27			(11.90)			
			13.50 - 13.95	J28	S (94)					
			14.00 - 14.50	B29						
			14.70 - 15.15	J30	S (92)					
			15.20 - 16.20	B31						
	15.00	Dry								
			16.20 - 16.65	J32	S (109)					
			16.70 - 17.40	B33						
			17.40 - 17.535	J34	S* 50 for 60mm		17.30 (0.35 pen)	25.90	Red brown and light greenish grey slightly weathered SILTSTONE moderately weak, with a little clay (KEUPER MARL : ZONE II)	
5.4.88	15.00	–					17.65	25.55	BOREHOLE COMPLETE AT 17.65m	

Remarks

SCALE 1:50

Disturbed Samples: W = Groundwater; J = Jar; B = Bulk
Undisturbed Samples: Soil Sample
Insitu Tests: Depth groundwater struck(m) and depth water rose to in X minutes
V [30] = Vane Shear Strength in KNm^2
C or S = SPT cone or spoon
(25) = N value
P = Penetration for seating blows

FIGURE A1

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218288 : BGS Reference: SK42NE148
British National Grid (27700) : 447351,328129

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK 42 NE 148

A564 DERBY SOUTHERN BYPASS
AND DERBY SPUR
PRELIMINARY GROUND INVESTIGATION

Fieldwork By: Soil Mechanics Limited

Dates: 10.5.88

TRIAL PIT LOG

Co-ordinates E. 447361.9 N 328129.1

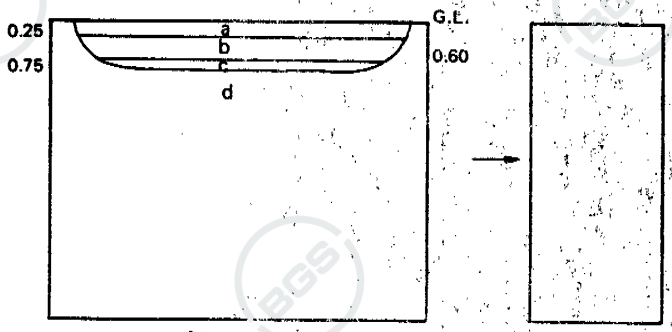
Ground Level 33.32 m A.O.D.

Dimensions (l x b x h) 2.50 x 0.70 x 0.75

Excavation Plant JCB 3CX

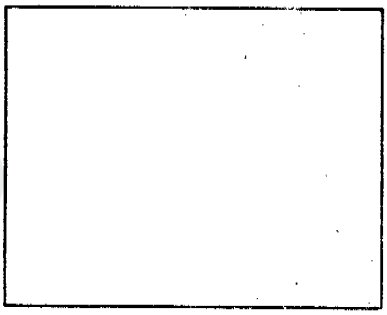
Trial Pit No. 231

ELEVATIONS : All faces similar



SIDE A

SIDE B

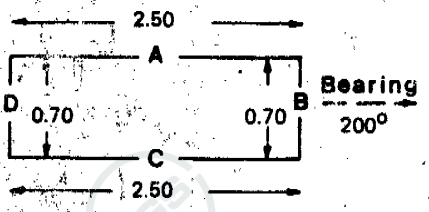


SIDE C



SIDE D

PLAN (Not to Scale)



SAMPLES

No. & Type	Depth m

No.	Depth m	STRATA DESCRIPTION	Cv/Cp kN m²
a.	0.00 – 0.25	Firm grey brown sandy CLAY (TOPSOIL)	
b.	0.25 – 0.60	Firm reddish brown and brown very silty sandy CLAY with some fine to medium subrounded gravel (MADE GROUND)	
c.	0.60 – 0.75	Tarmac	
d.	0.75	Concrete	
		Note: Unable to excavate through concrete	

NOTES Cv/Cp Approx. value of undrained shear strength from hand vane/penetrometer
Groundwater: –
Pumping: –
Supports/stability: Good

FIGURE A3

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218288 : BGS Reference: SK42NE148
British National Grid (27700) : 447351,328129

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK42 NE 148

A564 DERBY SOUTHERN BYPASS
AND DERBY SPUR
PRELIMINARY GROUND INVESTIGATION

Fieldwork By Soil Mechanics Limited

Dates : 10.5.88

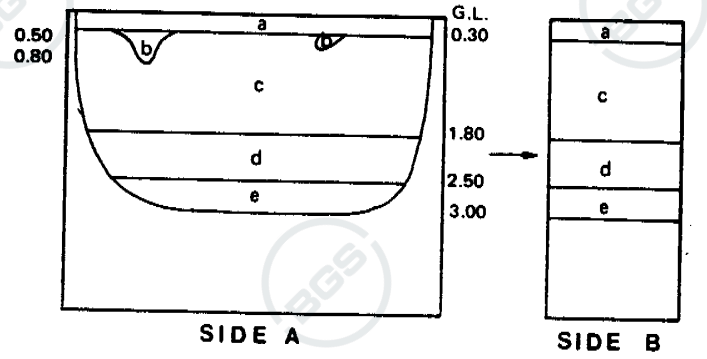
TRIAL PIT LOG

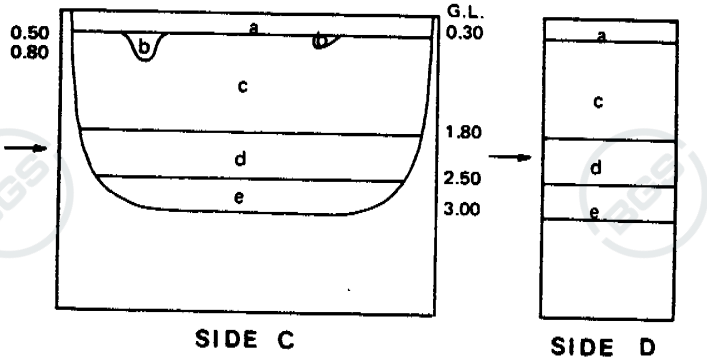
Co-ordinates E. 447351.9 N 328129.1 **Ground Level** 33.32 m A.O.D.

Dimensions [l x b x h] 2.80 x 0.70 x 3.00 **Excavation Plant** JCB 3CX

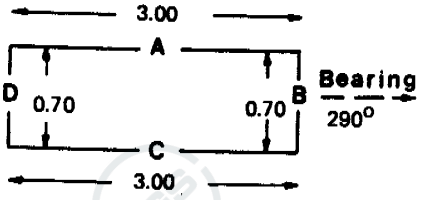
Trial Pit No. 231A

ELEVATIONS :





PLAN [Not to Scale]



SAMPLES

No. & Type	Depth m
D1	0.50
D2	1.00
B3	1.00
D4	1.80
D5	1.90
B6	2.20
D7	2.50
B8	3.00

No.	Depth m	STRATA DESCRIPTION	Cv/Cp kN/m²
a.	0.00 – 0.30	Firm grey brown sandy CLAY (TOPSOIL)	
b.	0.30 – 0.80	Loose orange brown silty fine to medium SAND (MADE GROUND)	
c.	0.80 – 1.80	Firm brown and reddish brown very silty CLAY (RIVER TERRACE DEPOSITS?)	
d.	1.80 – 2.50	Soft to firm slightly reddish brown mottled greyish and greenish brown very silty slightly sandy CLAY. Becoming very sandy in part, with fine to coarse subangular siltstone fragments. (KEUPER MARL : ZONE III – IVa)	
e.	2.50 – 3.20	Reddish brown fine to coarse subangular to subrounded mudstone fragments in a sparse matrix of very silty sandy CLAY (KEUPER MARL : ZONE III)	

NOTES Cv/Cp Approx. value of undrained shear strength from hand vane / penetrometer
Groundwater: –
Pumping: –
Supports/stability: Good

FIGURE A3

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218289 : BGS Reference: SK42NE149
British National Grid (27700) : 447312,327881

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK 42 NE 149

A564 DERBY SOUTHERN BYPASS
AND DERBY SPUR
PRELIMINARY GROUND INVESTIGATION

Fieldwork By Soil Mechanics Limited

Dates : 10.5.88

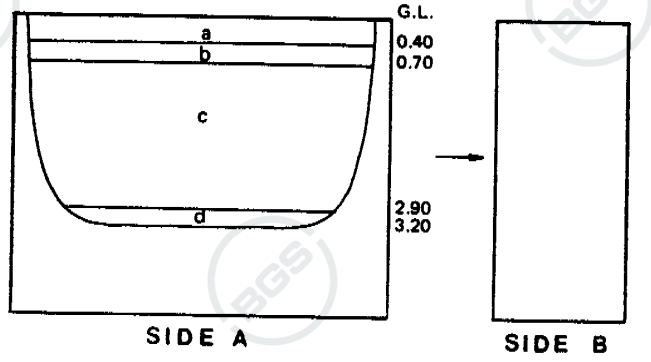
TRIAL PIT LOG

Co-ordinates E. 447312.5 N 327881.6 **Ground Level** 35.63 m A.O.D.

Dimensions (l x b x h) 3.00 x 0.70 x 3.20 **Excavation Plant** JCB 3CX

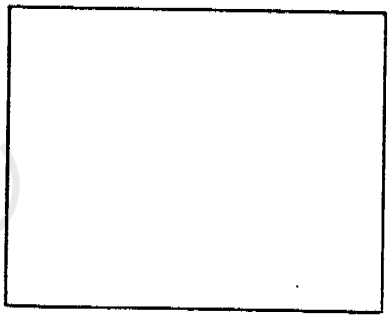
Trial Pit No. 232

ELEVATIONS : All faces similar



SIDE A

SIDE B

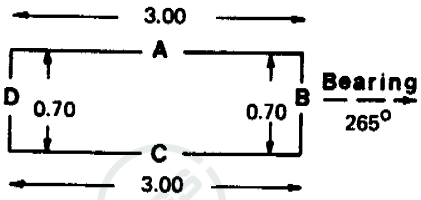


SIDE C



SIDE D

PLAN (Not to Scale)



SAMPLES

No. & Type	Depth m
D1	0.50
D2	1.00
D3	1.10
B4	1.30
D5	1.80
B6	2.00
B7	3.20

No.	Depth m	STRATA DESCRIPTION	Cv/Cp kN/m²
a.	0.00 – 0.40	Firm becoming stiff greyish brown sandy CLAY (TOPSOIL)	
b.	0.40 – 0.70	Dense reddish and greyish brown clayey fine to medium SAND with some medium to coarse subrounded gravel (RIVER TERRACE DEPOSIT)	
c.	0.70 – 2.90	Mid-brown fine to coarse SAND with a little fine to coarse subrounded gravel	
		By 1.10m, becoming reddish brown, slightly clayey in part with inclusions of reddish brown mottled greenish grey clay	
		By 2.60m, with much gravel and occasional cobbles (RIVER TERRACE DEPOSIT)	
d.	2.90 – 3.20	Firm reddish brown very silty in places CLAY. Discoloured greenish grey in places (KEUPER MARL : ZONE IVb)	

NOTES Cv/Cp Approx. value of undrained shear strength from hand vane / penetrometer
Groundwater: Slight seepage at 1.00m
Pumping: –
Supports/stability: Good

FIGURE A3

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218290 : BGS Reference: SK42NE150
British National Grid (27700) : 447365,327327

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK 42 NE 150

A564 DERBY SOUTHERN BYPASS
AND DERBY SPUR
PRELIMINARY GROUND INVESTIGATION

Fieldwork By Soil Mechanics Limited

Dates : 10.5.88

TRIAL PIT LOG

Co-ordinates E. 447365.9 N 327327.1

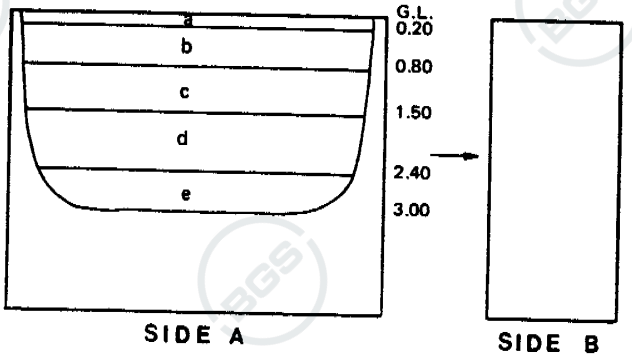
Ground Level 42.20 m A.O.D.

Dimensions (l x b x h) 3.00 x 0.70 x 3.00

Excavation Plant JCB 3CX

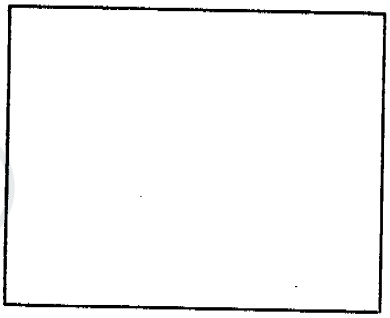
Trial Pit No. 233

ELEVATIONS : All faces similar



SIDE A

SIDE B

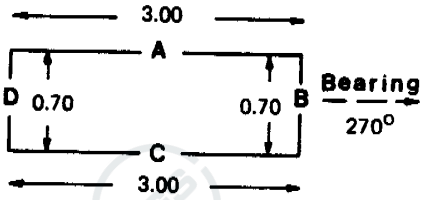


SIDE C



SIDE D

PLAN (Not to Scale)



SAMPLES

No. & Type	Depth m
D1	0.50
D2	1.00
B3	1.40
D4	1.50
B5	2.40

No.	Depth m	STRATA DESCRIPTION	Cv/Cp kN/m²
a.	0.00 – 0.20	Firm brown sandy CLAY (TOPSOIL)	
b.	0.20 – 0.80	Firm mid-greyish brown sandy to very sandy, in places very silty CLAY (RIVER TERRACE DEPOSIT / possible MADE GROUND)	
c.	0.80 – 1.50	Light brown and orange brown slightly silty slightly clayey SAND (RIVER TERRACE DEPOSIT / possible MADE GROUND)	
d.	1.50 – 2.40	Firm brown and orange brown very silty very sandy CLAY (RIVER TERRACE DEPOSIT / possible MADE GROUND)	
e.	2.40 – 3.00	Loose brown and orange brown silty fine to medium SAND (RIVER TERRACE DEPOSIT / possible MADE GROUND)	

NOTES Cv/Cp Approx. value of undrained shear strength from hand vane/penetrometer
Groundwater: –
Pumping: –
Supports/stability: Collapsing below 2.40m

FIGURE A3

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218291 : BGS Reference: SK42NE151
British National Grid (27700) : 447446,327143

SCOTT WILSON KIRKPATRICK & PARTNERS
Consulting Engineers & Transportation Planners

SK 42 NE 151

A564 DERBY SOUTHERN BYPASS
AND DERBY SPUR
PRELIMINARY GROUND INVESTIGATION

Fieldwork By Soil Mechanics Limited

Dates : 10.5.88

TRIAL PIT LOG

Co-ordinates E. 447446.1 N 327143.8

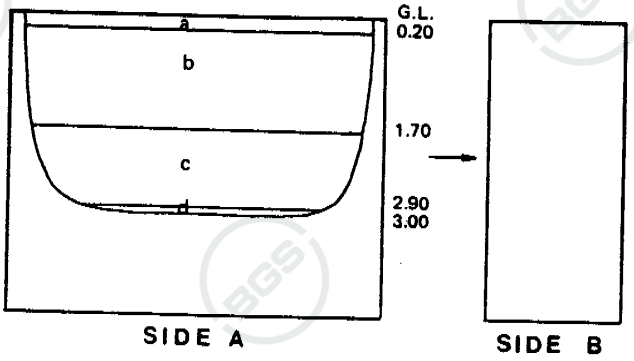
Ground Level 44.60 m A.O.D.

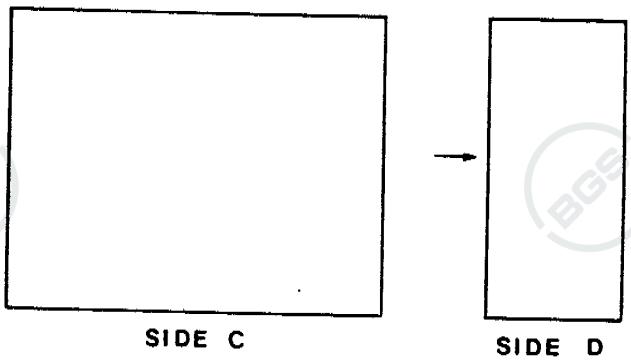
Dimensions (l x b x h) 3.00 x 0.70 x 3.00

Excavation Plant JCB 3CX

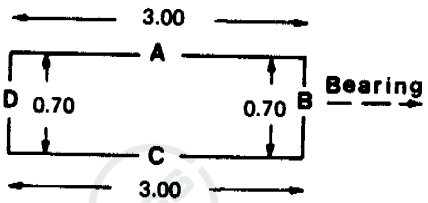
Trial Pit No. 234

ELEVATIONS : All faces similar





PLAN (Not to Scale)



SAMPLES

No. & Type	Depth m
D1	1.00
B2	1.00
D3	1.90
B4	1.90
D5	2.60
B6	3.00
D7	3.00

No.	Depth m	STRATA DESCRIPTION	Cv/Cp kN/m²
a.	0.00 – 0.20	Firm greyish brown sandy CLAY (TOPSOIL)	
b.	0.20 – 1.70	Firm slightly reddish brown very sandy CLAY tending to SAND in places with a little medium to coarse subrounded gravel (RIVER TERRACE DEPOSIT)	
c.	1.70 – 2.90	Firm to stiff pale greenish grey mottled greenish brown very silty, slightly sandy in part CLAY, closely fissured, with some medium gravel size angular siltstone fragments Becoming with many siltstone fragments (KEUPER MARL – ZONE IV)	
d.	2.90 – 3.00	Greenish grey fine grained well cemented SANDSTONE, moderately weak (KEUPER MARL – SKERRY)	

NOTES Cv/Cp Approx. value of undrained shear strength from hand vane/penetrometer
Groundwater: –
Pumping: –
Supports/stability: Good

FIGURE A3

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218294 : BGS Reference: SK42NE154
British National Grid (27700) : 447044,325719

D3/6 85 © Soil Mechanics Limited, Bracknell, England

Soil Mechanics

TRIAL PIT No. 825 — Sheet 1 of 1

Location No. 7382 — SK42NE154

Location A42 CASTLE DONINGTON NORTH GROUND INVESTIGATION CONTRACT 4

Ground Level 72.57 m AOD

Coordinates 447044.0 mE 325719.0 mN

Date Dug: 23.1.88 Logged: 23.1.88

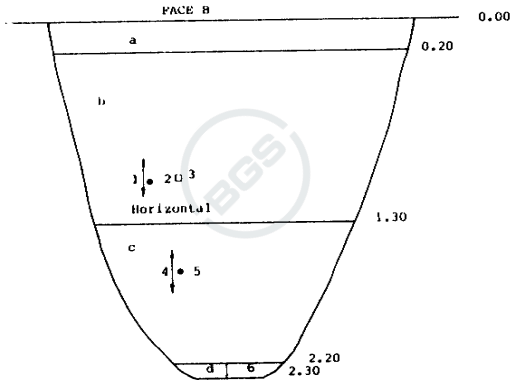
Carried out for
Client: Department of Transport
Engineer: Scott Wilson Kirkpatrick and Partners

Equipment & Methods
Machine dug to 2.30m by JCB 3CX
No support used
Logged on excavated material below 0.00m

Samples

Depth (m)	Type	No
0.00		
1.05	U	3
1.05	B	1
	D	2
1.60	B	4
	D	5
2.30	B	6

Sketch of faces and description of strata



Material Types

a. TOPSOIL

b. Soft to firm red brown mottled orange brown locally slightly fine sandy CLAY with occasional dark grey organic pockets, rootlets and gravel (Possible Glacial Till)

c. Firm to stiff red brown mottled green grey locally slightly fine sandy CLAY in parts mudstone, weak with frequent lithorelics and occasional fibrous rootlets. (Keuper Marl 3)

d. Greenish grey in parts thinly laminated SILTSTONE, moderately weak to moderately strong (Keuper Marl 1/2)

NOTE: Soil Resistivity measurements carried out at ground level and Redox potential tests carried out at 1.40m

Logged by JAS/AAC

Fig. 105

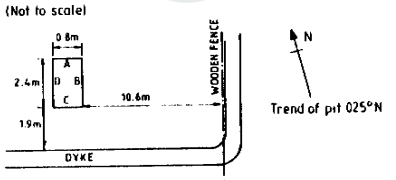
Notes Sample positions shown on faces

Ground water: Not encountered
Ease of excavation: Easy
Variability of faces: All faces similar
Stability of faces: Stable
Weather: Overcast

Materials are described in accordance with Appendices.

Sample key • D Small disturbed sample ⌈ B Bulk disturbed sample □ U Undisturbed sample • W Water sample

Plan (Not to scale)



Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218295 : BGS Reference: SK42NE155
British National Grid (27700) : 447094,325709

D3/6/85 © Soil Mechanics Limited, Bracknell, England

Soil Mechanics

TRIAL PIT No. 826 — Sheet 1 of 1

Location No. 7382

Location: A42 CASTLE DONINGTON NORTH GROUND INVESTIGATION CONTRACT 4

Ground Level: 71.27 m AOD

Coordinates: 447094.0 mE 325709.0 mN

Date: Dug 23.1.88 Logged: 23.1.88

Carried out for
Client: Department of Transport
Engineer: Scott Wilson Kirkpatrick and Partners

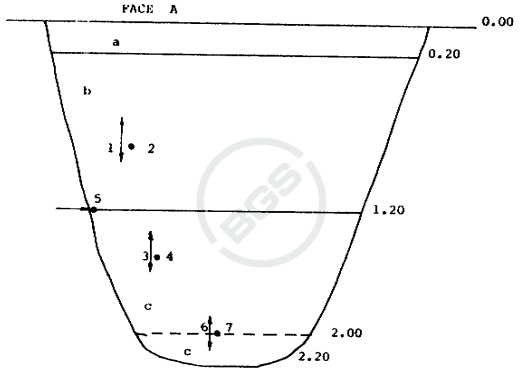
Equipment & Methods
Machine dug to 2.20m by JCB 3CX
No support used
Logged on excavated material below 0.00m

Sk 42 NE 155

Samples

Depth (m)	Type	No.
0.00		
0.80	B	1
	D	2
1.20	W	5
1.50	B	3
	D	4
2.00	B	6
	D	7

Sketch of faces and description of strata



Depth below ground level (m)

0
1
2

Material Types

a. TOPSOIL

b. Firm red brown mottled orange brown locally slightly fine sandy CLAY with occasional dark grey organic pockets and rootlets (Possible Glacial Till)

c. Firm to stiff red brown locally slightly fine sandy CLAY with occasional fine chert gravel, dark grey organic pockets and fibrous rootlets becoming by about 2.00m, with some pockets of very stiff locally hard green grey silt pockets and lenses, (Possible Reworked Keuper Marl)

NOTE: Soil Resistivity measurements carried out at ground level and Redox potential tests carried out at 1.50m

Notes Sample positions shown on faces

Ground water: Water entry at 1.20m from face A

Stability of faces: Collapse of face A

Base of excavation: Easy

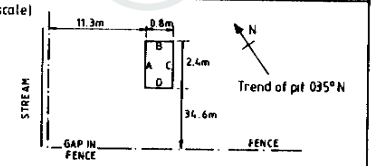
Weather: Fine

Variability of faces: All faces similar

Materials are described in accordance with Appendices.

Sample key • D Small disturbed sample [B Bulk disturbed sample ⊓ U Undisturbed sample • W Water sample

Plan (Not to scale)



Logged by JAS/AAC

Fig. 106

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218301 : BGS Reference: SK42NE161
British National Grid (27700) : 447780,327767

SK42NE 161 447780-327767

Norwest Holst Soil Engineering Ltd.

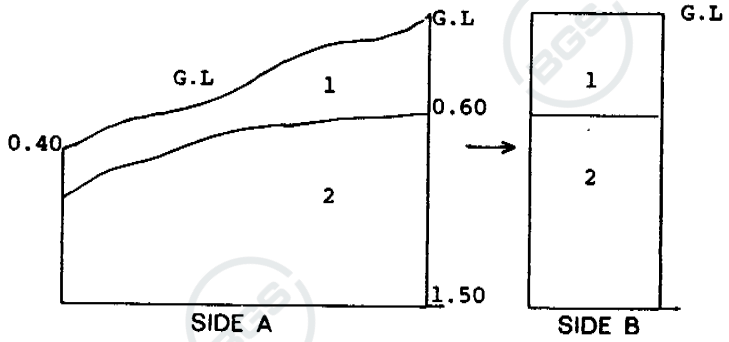
Trial Pit No. **1**

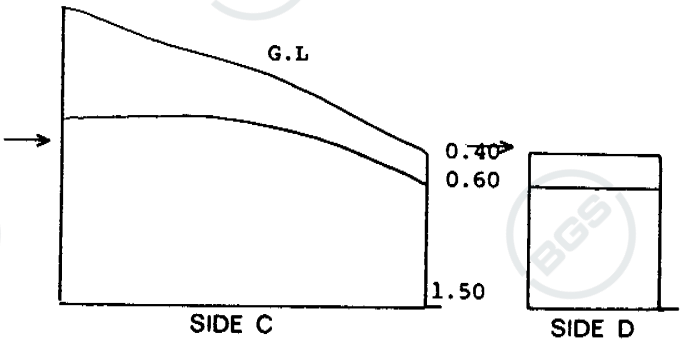
TRIAL PIT LOG

Contract No. F8883
Location A453(T): Clifton to M1
Client Department of Transport
Excavation Plant Case 580K
Dimensions (l x b x h) 1.80 x 0.60 x 1.50m

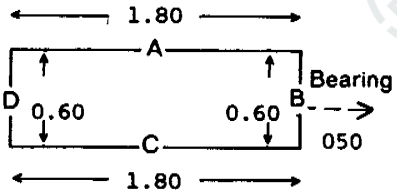
Co-ords E.447780.9 N.327767.6
Ground Level 40.30 m.A.O.D.
Date 25/10/90

ELEVATIONS:—





PLAN (Not to scale)



SAMPLES

No. & Type	Depth m.
1B	GL -0.60
1SRD	0.75
2B	1.00
1D	1.50

No.	Depth m.	STRATA DESCRIPTION	Cv/Cp kN/m²
1	G.L 0.60	TOPSOIL	
2	0.60- 1.50	MADE GROUND: Firm to stiff reddish brown sandy clay with some fine to coarse sub-angular to sub-rounded gravel and occasional boulder sized nodules of white gypsum, weak to moderately weak.	
		Trial Pit complete at 1.50m depth	
		Sand Replacement Density Test performed at 0.75m Bulk Density 1.83 Mg/m³ Dry Density 1.63 Mg/m³ Moisture Content 12% Method : BS Small Pouring Cylinder	

NOTES Cv/Cp Approximate value of undrained shear strength from hand vane/penetrometer
Groundwater: None
Pumping: None
Supports/Stability: None/Pit sides stable

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218316 : BGS Reference: SK42NE176
British National Grid (27700) : 447699,327645

SK536W 176 51794-31025

Norwest Holst Soil Engineering Ltd.

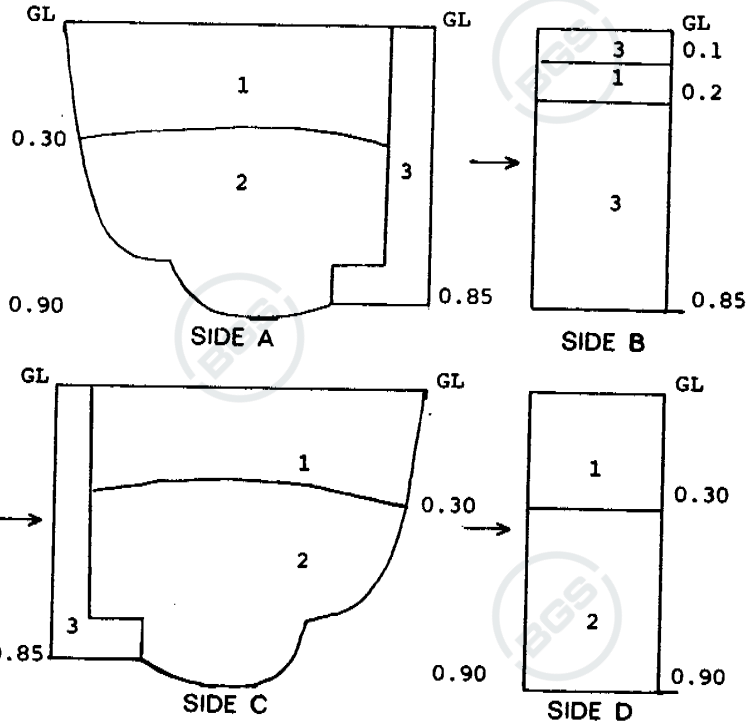
Trial Pit No. **52**

TRIAL PIT LOG

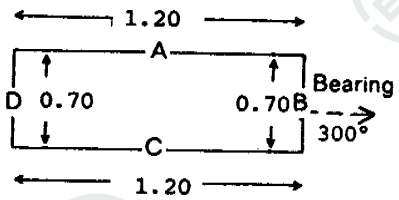
Contract No. F8883
Location A453 (T): Clifton to M1
Client Department of Transport
Excavation Plant Hand Dug
Dimensions (l x b x h) 1.20 x 0.70 x 0.90m

Co-ords E451794.5 N331025.0
Ground Level 38.40 m.A.O.D.
Date 27/9/90

ELEVATIONS:—



PLAN (Not to scale)



SAMPLES

No. & Type	Depth m.
B	0.30–0.90

No.	Depth m.	STRATA DESCRIPTION	Cv/Cp kN/m2
1	GL–0.30	MADE GROUND: Grey slightly sandy coarse subangular to angular gravel and cobbles of limestone and bituminous cobbles	
2	0.30–0.90	MADE GROUND: Very stiff light brown mottled reddish brown sandy clay with some fine to coarse subangular to subrounded gravel of limestone and bituminous material	
3	GL–0.90	MADE GROUND: Concrete	

NOTES Cv/Cp Approximate value of undrained shear strength from hand vane/penetrometer
Groundwater: None
Pumping: None
Supports/Stability: None/Pit faces stable during excavation

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218316 : BGS Reference: SK42NE176
British National Grid (27700) : 447699,327645

SK42NE 176 47699-27645

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 1

Contract No. F8883 — Method Cable Percussion
Location A453(T): Clifton to M1 — Sheet 1 of 1
Borehole Diam 150 mm — Coords E 447699 N327645
Client Dept. of Transport
Consultant John Burrow & Ptnrs. — Date 05/10/90 — Ground Level 34.62 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)			() & N	Ground Water
TOPSOIL.				B	0.00	1.00		
Loose brown clayey sandy to very sandy fine to coarse angular to rounded GRAVEL. 1.00–2.00m ... becoming clayey sand with some gravel. 2.00–3.00m ... becoming clayey SAND and GRAVEL. 3.00–4.00m ... becoming clayey sand with much gravel. (River Terrace Deposits)		0.40	34.22	B C	1.00 1.05	2.00 1.50	8	
				B C	2.00 2.05	3.00 2.50	8	
				B C	3.00 3.05	4.00 3.55	4	
				B C	4.00 4.05	5.00 4.50	4	
				B C	5.00 5.05	6.00 6.50	4	
				B C	6.00 6.05	7.00 6.50	12	
Firm red brown CLAY.		6.80	27.82	U	7.05	7.50	(51)	
Firm red brown and brown mottled silty to very silty CLAY. (Reworked Mercia Mudstone)		7.30	27.32	J	7.50	8.00		
Soft red brown and dark grey green mottled clayey SILT with a little sand to fine angular gravel. (Mercia Mudstone Zone IVa)		8.00	26.62	U	8.05	8.50	(49)	
Borehole complete at 10.00m.				J	8.50	9.50		
				U	9.55	10.00	(96)	
		10.00	24.62					

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
05/10/90	10.00	Dry	7.50

Hard Strata

Depth(m)	Time

Comments

Groundwater not encountered.
Water added from 0.50m.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
() Blows to drive U100

S.P.T. * N for full 300mm penetration
C.P.T. For given penetration
* Seating blows only
N.P. No Penetration

Rotary Core Run (Recovery to Scale)
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation

Ground Water
1-> First Water Strike
2-> Subsequent Water Strike
— am/pm Standing Level
Level 20mins after strike
[] Casing Depth

SID (c) 1990 MZ Associates Ltd

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218317 : BGS Reference: SK42NE177
British National Grid (27700) : 447738,327733

SK42NE 177 47738-27733

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 2

Contract No. F8883
Location A453(T): Clifton to M1
Client Dept. of Transport
Consultant John Burrow & Ptnrs.

Method CABLE PERCUSSION
Borehole Diam 150 mm
Date 20/09/90

Sheet 1 of 2
Coords E 447738 N 327733
Ground Level 41.55 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing				Ground Water
					Depth(m)		() & N	
MADEGROUND: Black bituminous road surfacing.		0.05	41.50	B	0.00	1.00		
MADEGROUND: Compacted brown clay fill.		0.70	40.85					
MADEGROUND: Firm to stiff red brown occasionally grey green mottled slightly silty clay with some angular fine to coarse gravel of mudstone.				U	1.05	1.50	(52)	
				J	1.50	1.50		
1.50–2.00m ...with some angular to rounded fine to coarse gravel of flint and quartzite.				U	2.05	2.50	(57)	
2.50–3.00m ...with some subangular coarse gravel sized fragments of gypsum.				J	2.50	2.50		
3.50–4.00m ...with a little angular fine gravel sized fragments of gypsum.				U	3.05	3.50	(61)	
4.50–5.00m ...with a little subangular to rounded fine and medium gravel of quartzite.				J	3.50	3.50		
6.50–6.80m ...with some coarse gravel sized pockets of soft black very sandy clay with some angular fine to medium gravel of brick fragments.				U	4.05	4.50	(66)	
				J	4.50	4.50		
				U	5.05	5.50	(65)	
				J	5.50	5.50		
				U	6.05	6.50	(86)	22/9 am 6.00
				J	6.50	6.50		
Firm brown very silty very sandy CLAY with some gravel. Gravel is fine to medium angular to rounded of flint and quartzite.		6.80	34.75	U	7.05	7.50	(46)	
				J	7.50	7.50		
				U	8.05	8.50	(39)	
Medium dense becoming very dense brown slightly clayey fine to coarse SAND with a little angular to rounded fine to medium gravel.		8.50	33.05	J	8.50	8.50		
				S	8.60	9.05	21	
8.60–9.05m ...becomes SAND AND GRAVEL.				B	9.00	10.00		
(River Terrace Deposits)								
(Continued.....)								22/9 pm 9.60
				B	10.00	11.00		

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
20/09/90	6.80	Dry	
21/09/90	11.00	Dry	
22/09/90	16.40	9.60	12.00

Hard Strata

Depth(m)	Time
2.50–2.90	1 hour
6.50	1hr 15 min

Comments

Inspection pit dug 1 hour.

21/09/90 – Water added at 9.00m, casing at 8.90m.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
0 Blows to drive U100

S.P.T. '' N for full
C.P.T. 300mm penetration
300/ — For given penetration
75/ — * Seating blows only
N.P. No Penetration

Rotary Core Run (Recovery to Scale)
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation

Ground Water

1–> First Water Strike
2–> Subsequent Water Strike
—— am/pm Standing Level
▽ Level 20mins after strike
[] Casing Depth

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218317 : BGS Reference: SK42NE177
British National Grid (27700) : 447738,327733

SK42NE 177

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 2

Contract No. F8883
Location A453(T): Clifton to M1
Client Dept. of Transport
Consultant John Burrow & Ptnrs.

Method CABLE PERCUSSION
Borehole Diam 150 mm
Date 20/09/90

Sheet 2 of 2
Coords E 447738 N 327733
Ground Level 41.55 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)		() & N	Ground Water
(....cont.)				S 10.05	10.50	8/305	
				C 11.05	11.50	14	
				B 11.50	11.80		
		11.80	29.75	B 11.80	11.80		
Firm red brown occasionally grey green mottled silty CLAY. (Mercia Mudstone Zone IVb)				U 12.05	12.50	(52)	
				J 12.50	12.50		
				S 13.05	13.50	47	
				J 13.50	13.50		
				J 14.50 S 14.55	14.50 15.00	59	
				S 16.00	16.40	134/250	
Red brown completely weathered silty MUDSTONE, very weak (Mercia Mudstone Zone)		16.10	25.45				
Borehole complete at 16.40m.		16.40	25.15				

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
20/09/90	6.80	Dry	
21/09/90	11.00	Dry	
22/09/90	16.40	9.60	12.00

Hard Strata

Depth(m)	Time
2.50–2.90	1 hour
6.50	1hr 15min

Comments

Inspection pit dug 1 hour.

21/09/90 – Water added at 9.00m, casing at 8.90m.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
() Blows to drive U100

S.P.T. * N for full
C.P.T. 300mm penetration
50/295 For given penetration
4/4/4/2 * Seating blows only
N.P. No Penetration

Rotary Core Run (Recovery to Scale)
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation

Ground Water

1-> First Water Strike
2-> Subsequent Water Strike
— am/pm Standing Level
☒ Level 20mins after strike
[] Casing Depth

SID (c) 1990 MZ Associates Ltd

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218318 : BGS Reference: SK42NE178
British National Grid (27700) : 447774,327705

SK42NE 178 47774-27705

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 3

Contract No. F8883
Location A453(T): Clifton to M1
Client Dept. of Transport
Consultant John Burrow & Ptnrs.

Method Cable Percussion
Borehole Diam 150 mm
Date 26/09/90

Sheet 1 of 1
Coords E 447774 N 327705
Ground Level 33.88 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing				Ground Water
					Depth(m)		() & N	
Soft locally stiff dark brown very sandy CLAY with a little fine to medium sub-angular to sub-rounded gravel with occasional rootlets and wood fragments.				J	0.00	0.00		
				U	0.55	1.00	(46)	
Firm orange brown and dark brown mottled sandy CLAY with a little fine sub-angular to sub-rounded gravel.		1.00	32.88	J	1.00	1.00		
...below 2.00m, becoming reddish brown.				U	1.55	2.00	(29)	
				J	2.00	2.00		
Firm locally stiff reddish brown CLAY with occasional black iron staining.		2.30	31.58					
(Mercia Mudstone Zone IVb)				U	2.55	3.00	(86)	
Firm reddish brown mottled grey green CLAY with a little fine gravel sized sub-angular to angular mudstone lithorelicts.		3.00	30.88	J	3.00	3.00		3.00 1->
(Mercia Mudstone Zone IVa)				J	3.00	3.50		
				U	3.55	4.00	(47)	
				J	4.00	4.00		
				J/S	4.50 / 4.55	4.50 / 5.00	13	
Very stiff reddish brown mottled grey green CLAY with a little fine to medium gravel sized sub-angular to angular mudstone lithorelicts.		5.50	28.38	J/S	5.5 / 5.55	5.50 / 6.00	19	
(Mercia Mudstone Zone III)				J/S	6.50 / 6.55	6.50 / 7.00	16	
Stiff reddish brown mottled grey green clayey SILT with a little fine gravel sized sub-angular to angular mudstone lithorelicts.		7.50	26.38	U	7.55	8.00	(89)	
(Mercia Mudstone Zone III)				J	8.00	8.00		
Firm to stiff reddish brown mottled grey green CLAY.		8.50	25.38	J/S	8.50 / 8.55	8.50 / 9.00	21	
(Mercia Mudstone Zone IVb)								26/9 pm 9.00
Reddish brown mottled grey green CLAY with some coarse sand to fine gravel sized sub-angular to angular mudstone lithorelicts.		9.50	24.38	S	9.55	10.00	28	
		10.00	23.88					

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
26/09/90	10.00	9.00	8.30

Hard Strata

Depth(m)	Time

Comments

Standpipe installed 26/09/90 with tip at 9.50m depth, gravel filter to 1.00m.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
Q Blows to drive U100

S.P.T. '' N for full
C.P.T. 300mm penetration
50/40 For given penetration
25/- * Seating blows only
N.P. No Penetration

Rotary Core Run (Recovery to Scale)
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation

Ground Water
1-> First Water Strike
2-> Subsequent Water Strike
___ cm/pm Standing Level
XX Level 20mins after strike
[] Casing Depth

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218319 : BGS Reference: SK42NE179
British National Grid (27700) : 447773,327733

SK42NE 179 447773-327733

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 4

Contract No. F8883
Location A453(T): Clifton to M1
Client Dept. of Transport
Consultant John Burrow & Ptnrs.

Method Cable Percussion
Borehole Diam 150 mm
Date 03/10/90

Sheet 1 of 2
Coords E 447773 N 327733
Ground Level 33.73 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing: Depth(m)			() & N	Ground Water
MADE GROUND: Soft dark brown clay with much fine to coarse angular to rounded gravel of sandstone, mudstone, flint, quartz and igneous lithologies.				B	0.00	1.00		
				B	1.00	1.50		
				B	1.50	2.00		
				B	2.00	2.50		
				B	2.50	3.50		
				J	3.50	4.00		
Firm red brown silty CLAY.		3.80	29.93					
5.50–6.50m ... Becoming stiff.				U	4.05	4.50	(62)	
(Mercia Mudstone Zone IVb)				J	4.50	5.00		
				U	5.05	5.50	(48)	
				J	5.50	6.00		
				U	6.05	6.50	(28)	6.30 ▽1
Stiff red brown silty CLAY with some sand sized mudstone lithorelicts.		6.50	27.23	J	6.50	7.00		
(Mercia Mudstone Zone IVa)				U	7.05	7.50	(21)	
(Continued.....)				J	7.50	8.00		
				U	8.05	8.50	(36)	7.90 1-▽
				B	8.50	9.50		
				S	9.55	11.00	50	
				B	9.555	10.00		

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
03/10/90	2.50		0.00
04/10/90	12.60		11.00

Hard Strata

Depth(m)	Time
2.00–2.50	1 hour
2.50–3.80	1hr 30min
7.70–7.90	45 mins
12.30–12.50	1 hour

Comments

Inspection pit G.L. – 1.60m.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
() Blows to drive U100

S.P.T. ' ' N for full
C.P.T. 300mm penetration
365/365 For given penetration
25/25 * Seating blows only
N.P. No Penetration

Rotary Core Run (Recovery to Scale)
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation

Ground Water

1-> First Water Strike
2-> Subsequent Water Strike
— am/pm Standing Level
▽2 Level 20mins after strike
[] Casing Depth

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218319 : BGS Reference: SK42NE179
British National Grid (27700) : 447773,327733

SK42NE 179

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 4

Contract No. F8883
Location A453(T): Clifton to M1
Client Dept. of Transport
Consultant John Burrow & Ptnrs.

Method Cable Percussion
Borehole Diam 150 mm
Date 03/10/90

Sheet 2 of 2
Coords E 447773 N 327733
Ground Level 33.73 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)		() & N	Ground Water
(....cont.)							
Very stiff, red brown silty CLAY. (Mercia Mudstone Zone IVb)		11.05	22.68	S 11.05	11.50	82	
Borehole complete at 12.60m.				B 11.50	12.00		
				W 12.00	12.00		
				S 12.05	12.30	88/150	
		12.60	21.13	S 12.50	12.60	50/75	

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
03/10/90	2.50		0.00
04/10/90	12.60		11.00

Hard Strata

Depth(m)	Time
2.00–2.50	1 hour
2.50–3.80	1hr 30min
7.70–7.90	45 mins
12.30–12.50	1 hour

Comments

Inspection pit G.L. – 1.60m.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
() Blows to drive U100

S.P.T. * * N for full
C.P.T. 300mm penetration
100/25 For given penetration
25/* Seating blows only
N.P. No Penetration

Rotary Core Run (Recovery to Scale)
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation

Ground Water

1-> First Water Strike
2-> Subsequent Water Strike
— am/pm Standing Level
SL Level 20mins after strike
[] Casing Depth

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218320 : BGS Reference: SK42NE180
British National Grid (27700) : 447874,327824

SK42 NE 180 447874·327824

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 5

Contract No. F8883
Location A453(T): Clifton to M1
Client Dept. of Transport
Consultant John Burrow & Ptnrs.

Method Cable Percussion
Borehole Diam 150 mm
Date 05/11/90

Sheet 1 of 2
Coords E 447874 N 327824
Ground Level 37.27 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)		() & N	Ground Water
TOPSOIL.		0.10	37.17				
MADE GROUND: Red brown clay with some fine to coarse gravel.		0.70	36.57	B 0.50 U 0.50	0.70	(80) N.R.	
MADE GROUND: Loose becoming very dense dark grey fine to coarse sand with a little fine to coarse angular gravel of slag and igneous lithologies and occasional cobbles of brick, slag and iron.				J 0.80 B 1.00 S 1.50	1.95	15	
				B 2.00 B 2.50 S 2.50	2.95	53	
				B 3.00 B 3.40 B 4.00 U 4.00 C 4.25 B 4.30	4.25 4.30	50	
MADE GROUND: Medium dense grey brown clayey fine to coarse sand with occasional rootlets.		4.30	32.97				
				B 5.10 S 5.10	5.55 5.55	10	
MADE GROUND: Firm brown sandy clay with some fine to coarse angular to rounded gravel with occasional rootlets.		5.55	31.72	B 5.60			
Dense grey brown silty fine to medium SAND with some fine to coarse angular to rounded gravel of flint and quartzite. 7.40–7.50m ... becoming slightly silty sandy gravel. (River Terrace Deposits)		5.80	31.47	B 6.00 C 6.10 B 6.60 W 6.80	6.55	37	8/11 gm 6.80
Medium dense grey brown very silty clayey fine SAND with some fine to coarse angular to rounded gravel of flint and quartzite. (Alluvium)		7.50	29.77	B 7.40 C 7.50 B 8.00	7.95	21	
Stiff red brown and brown mottled silty to very silty CLAY. (Reworked Mercia Mudstone)		9.00	28.27	B 9.00 S 9.00 B 9.50	9.45 9.45	19	
		10.00	27.27	J 10.00			

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
05/11/90	1.00		1.00
06/11/90	5.00		5.00
07/11/90	11.15	10.50	10.50
08/11/90	15.00	6.80am	15.00

Hard Strata

Depth(m)	Time
0.80–1.00	1 hour
1.00–2.00	1hr 30min
3.20–3.90	3 hour
4.30–4.80	45 mins

Comments

07/11/90 – Water added.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
() Blows to drive U100

S.P.T. '' N for full
C.P.T. 300mm penetration
300/50 for given penetration
50/25 * Seating blows only
N.P. No Penetration

Rotary Core Run (Recovery to Scale)
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation

Ground Water
1–> First Water Strike
2–> Subsequent Water Strike
— am/pm Standing Level
SCL Level 20mins after strike
() Casing Depth

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218320 : BGS Reference: SK42NE180
British National Grid (27700) : 447874,327824

SK42NE 180

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 5

Contract No. F8883 — Method Cable Percussion — Sheet 2 of 2

Location A453(T): Clifton to M1 — Borehole Diam 150 mm — Coords E 447874 N 327824

Client Dept. of Transport

Consultant John Burrow & Ptnrs. — Date 05/11/90 — Ground Level 37.27 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing Depth(m)		() & N	Ground Water
Very soft grey green occasionally red brown mottled silty CLAY.							
(Possibly reworked Mercia Mudstone ?)		10.50	26.77	J 10.50 U 10.50	10.95	(31)	
Firm red brown sandy SILT, with some sand to fine gravel sized mudstone lithorelicts.							
(Mercia Mudstone Zone IVa)							
11.80–12.20m ... becoming sandy silty clay with some to much lithorelicts.				J 11.15 J 11.80			
Very stiff red brown very silty CLAY with much fine to coarse angular mudstone lithorelicts.		12.20	25.07	J 12.20 U 12.20	12.43	(90)	
(Mercia Mudstone Zone III)				J 12.63 J 13.00			
Firm red brown SILT.		13.50	23.77	B 13.50 S 13.50	13.95	50	
(Merica Mudstone Zone IVb)				B 14.00			
Firm red brown SILT with some sand and fine gravel sized mudstone lithorelicts.		14.50	22.77	B 14.50 S 14.50	14.95	57	
(Mercia Mudstone Zone IVa)							
Borehole complete at 15.00m.		15.00	22.27	B 15.00			

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
05/11/90	1.00		1.00
06/11/90	5.00		5.00
07/11/90	11.15	10.50	10.50
08/11/90	15.00	6.80am	15.00

Hard Strata

Depth(m)	Time
0.80–1.00	1 hour
1.00–2.00	1hr 30min
3.20–3.90	3 hour
4.30–4.80	45 mins

Comments

07/11/90 - Water added.

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery

S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; () Blows to drive U100

S.P.T. * N for full 300mm penetration; C.P.T. 300mm penetration; 50/200 For given penetration; 4+4+4/25 * Seating blows only; N.P. No Penetration

Rotary Core Run (Recovery to Scale); T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation

Ground Water

1-> First Water Strike; 2-> Subsequent Water Strike; ▽ am/pm Standing Level; ▽Z Level 20mins after strike; [] Casing Depth

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218321 : BGS Reference: SK42NE181
British National Grid (27700) : 447960,327862

SK42NE 181 447960-327862

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 6

Contract No. F8883 — Method Cable Percussion

Location A453(T): Clifton to M1 — Sheet 1 of 1

Borehole Diam 150 mm — Coords E 447960 N327862

Client Dept. of Transport

Consultant John Burrow & Ptnrs. — Date 05/10/90 — Ground Level 31.34 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing: Depth(m)		() & N	Ground Water
Loose becoming medium dense light brown sandy fine to coarse GRAVEL.				B	0.00 1.00		
1.00–2.00m ... Become light brown silty SAND and GRAVEL.				B 1.00 2.00 C 1.05 1.50		6	6/10 dm
(River Terrace Deposit)				B 2.00 3.00 C 2.05 2.50		11	
				B 3.00 4.00 C 3.05 3.50		11	
Soft locally firm red brown occasionally grey green spotted slightly clayey SILT with a little sand sized mudstone lithorelicts.		3.80	27.54	U	4.05 4.50	(46)	
(Mercia Mudstone Zone IVa)				J	4.50 5.00		
Borehole complete at 6.50m.				U	5.05 5.50	(62)	
				J	5.50 6.00		
				U	6.05 6.50	(63)	
		6.50	24.84				

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
05/10/90	3.50		3.00
06/10/90	6.50	1.10	4.50

Hard Strata

Depth(m)	Time

Comments

05/10/90 – Water added to bail gravels from 0.80m.

Casing maintained just above base of borehole unless sta

Sample and Test Key

J Small Disturbed Sample
B Bulk Disturbed Sample
U Undisturbed U100 Sample
W Water Sample
N.R. No Recovery

S Standard Penetration Test
C Cone Penetration Test
V Insitu Vane Test
PR Pressuremeter Test
K Permeability Test
() Blows to drive U100

S.P.T. ' ' N for full
C.P.T. 300mm penetration
50/x For given penetration
x/25 * Seating blows only
N.P. No Penetration

Rotary Core Run (Recovery to Scale)
T.C.R. Total Core Recovery (%)
S.C.R. Solid Core Recovery (%)
R.Q.D. Rock Quality Designation

Ground Water
1–> First Water Strike
2–> Subsequent Water Strike
___ dm/pm Standing Level
▽Z Level 20mins after strike
[] Casing Depth

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218375 : BGS Reference: SK42NE235
British National Grid (27700) : 447756,327746

SK42 NE 235 447756-327746

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 108

Contract No. F8883 — Method CABLE PERCUSSION

Location A453(T): Clifton to M1 — Sheet 1 of 2

Borehole Diam 150 mm — Coords E 447756 N 327746

Client Dept. of Transport

Consultant John Burrow & Ptnrs. — Date 24/09/90 — Ground Level 41.15 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing: Depth(m)		() & N	Ground Water	Piezometer/ Standpipe
MADEGROUND: Very stiff reddish brown mottled dark brown clay with a little fine gravel sized sub-angular to angular fragments of gypsum and a little fine to medium sub-rounded to rounded gravel of quartzite.				J 0.00	0.00			
				U 1.05	1.50	(42)		
				J 1.50	1.50			
MADEGROUND: Dense to very dense dark brown and grey clayey sandy fine to coarse sub-angular to sub-rounded gravel of roadstone and quartzite.		2.00	39.15	U 2.05	2.50	(48)		
MADEGROUND: Firm to stiff reddish brown mottled dark brown clay with much coarse sand to fine gravel sized sub-rounded to rounded gypsum fragments and a little fine to coarse gravel sized sub-rounded to rounded quartzite.		2.50	38.65	J 2.50	2.50			
				U 3.55	4.00	(49)		
MADEGROUND: Stiff reddish brown mottled dark grey clay with some fine to coarse sub-angular to rounded gravel of quartzite and roadstone.		4.00	37.15	B 4.00	4.50			
				B 4.50 U 4.55	5.50 5.00	(47)		
				B 5.50 S 5.55	6.50 6.00	60		
				B 6.50 S 6.55	7.50 7.00	26		
				B 7.555 S 7.55	8.55 8.00	50 • 0		
				U 8.55	9.00	(46)		
				J 9.00	9.00		9.20 ▽	
				U 9.55	10.00	(82)		
		10.00	31.15	S 10.00	10.50	4	9.80 1->	

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
24/09/90	8.00	Dry	7.50
25/09/90	14.00	9.20	12.00

Hard Strata

Depth(m)	Time
2.50 to 3.50	0.75 hrs
5.50 to 6.00	0.75 hrs
7.50 to 8.50	1 hr
10.00 to 10.30	0.75 hrs

Comments

Standpipe installed to 14.00m.

Logged by:

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery

S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; () Blows to drive U100

S.P.T. '' N for 4ll; C.P.T. 300mm penetration; 50/200 For given penetration; 25/25 * Seating blows only; N.P. No Penetration

Rotary Core Run (Recovery to Scale); T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation

Ground Water: 1-> First Water Strike; 2-> Subsequent Water Strike; — cm/pm Standing Level; ▽ Level 20mins after strike; [] Casing Depth

Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal Grout

SID (c) 1990 MZ Associates Ltd

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 218375 : BGS Reference: SK42NE235
British National Grid (27700) : 447756,327746

SK42NE 235

Norwest Holst Soil Engineering Ltd.

BOREHOLE LOG — Borehole No. 108

Contract No. F8883 — Method CABLE PERCUSSION — Sheet 2 of 2

Location A453(T): Clifton to M1 — Borehole Diam 150 mm — Coords E 447756 N 327746

Client Dept. of Transport

Consultant John Burrow & Ptnrs. — Date 24/09/90 — Ground Level 41.15 m.A.O.D.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing: Depth(m)		() & N	Ground Water	Piezometer/ Standpipe
MADEGROUND: Soft to very soft reddish brown mottled dark grey clay with some fine to coarse sub-angular to sub-rounded gravel of quartzite and roadstone.		10.00	31.15	S 10.00	10.50	4		
MADEGROUND: Dark brown and grey clayey sandy fine to coarse sub-angular to sub-rounded gravel of roadstone and quartzite and occasional cobbles of roadstone.		10.50	30.65	J 10.50	10.50			
Firm to stiff reddish brown mottled dark grey very silty CLAY with occasional black iron stains. (Mercia Mudstone Zone IVb)		11.30	29.85	U 11.55	12.00			
Stiff to very stiff reddish brown mottled grey green CLAY with a little fine gravel sized sub-angular to angular mudstone lithorelicts and occasional black iron staining. (Mercia Mudstone Zone IVa)		12.00	29.15	J 12.00 S 12.05	12.00 12.50	30		
				B 12.50	13.50			
Stiff to very stiff reddish brown mottled grey green CLAY with some fine to medium gravel sized sub-angular to angular mudstone lithorelicts. (Mercia Mudstone Zone III)		13.25	27.90	S 13.55	14.00	89		
Borehole complete at 14.00m.		14.00	27.15					

Daily Progress

Date	Final Depth (m) of: Borehole	Water	Casing
24/09/90	8.00	Dry	7.50
25/09/90	14.00	Dry	12.00

Hard Strata

Depth(m)	Time
2.50 to 3.50	0.75 hrs
5.50 to 6.00	0.75 hrs
7.50 to 8.50	1 hr
10.00 to 10.30	0.75 hrs

Comments

Standpipe installed to 14.00m.

Logged by:

Casing maintained just above base of borehole unless stated

Sample and Test Key

J Small Disturbed Sample; B Bulk Disturbed Sample; U Undisturbed U100 Sample; W Water Sample; N.R. No Recovery

S Standard Penetration Test; C Cone Penetration Test; V Insitu Vane Test; PR Pressuremeter Test; K Permeability Test; () Blows to drive U100

S.P.T. '' N for full; C.P.T. 300mm penetration; 30/20 For given penetration; 35 * Seating blows only; N.P. No Penetration

Rotary Core Run (Recovery to Scale); T.C.R. Total Core Recovery (%); S.C.R. Solid Core Recovery (%); R.Q.D. Rock Quality Designation

Ground Water: 1-> First Water Strike; 2-> Subsequent Water Strike; — am/pm Standing Level; SZ Level 20mins after strike; [] Casing Depth

Piezometer: Upper Seal; Sand Cell; Piezometer Tip; Lower Seal; Grout

SID (c) 1990 MZ Associates Ltd

Contact BGS: ngdc@bgs.ac.uk

TP1 & ASSOCIATED SERVICE TRENCH **Sheet 1 of 3**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10th & 13/12/2004

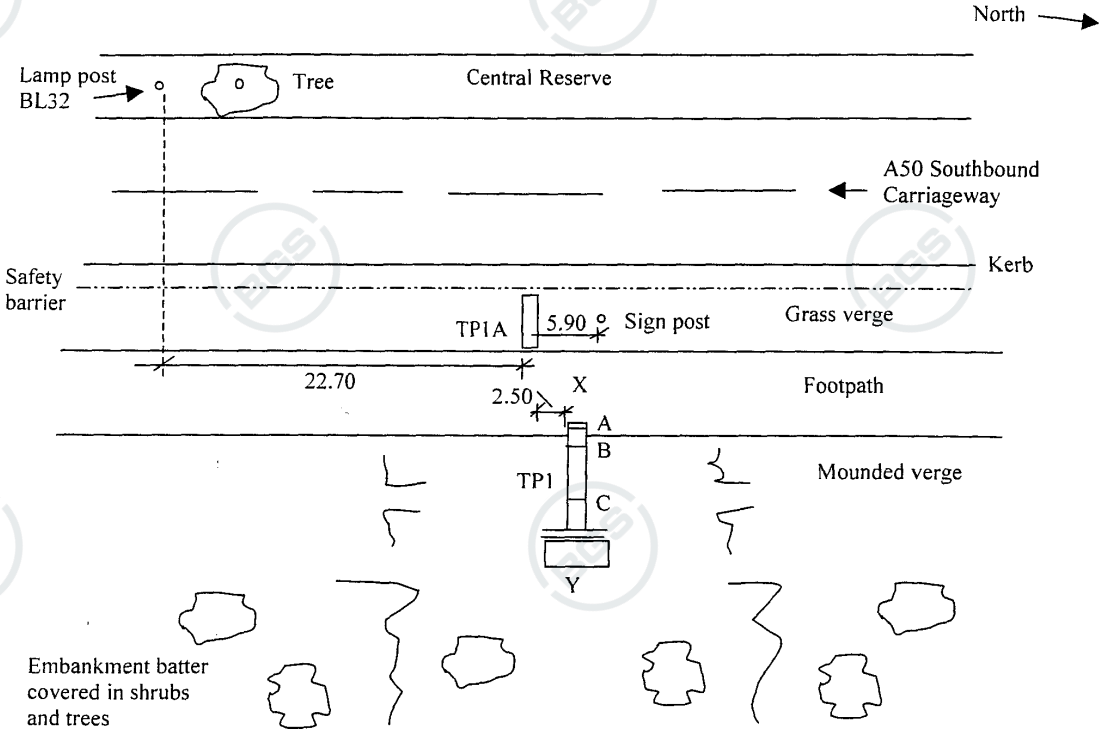
Plant/Method of Excavation: Hand Excavated

Ground Level: 32.55m AOD (adjacent to footpath), 32.60m AOD (geotechnical pit)

National Grid Co-ordinates: 447325E 328551N

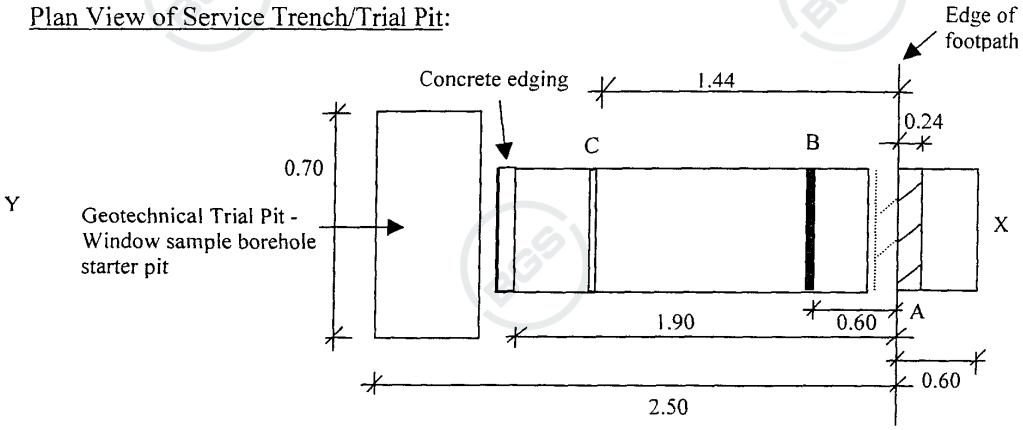
Services Encountered: Yes (see below)

Location Plan:



NOT TO SCALE
(All dimensions are in m)

Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TP1 & ASSOCIATED SERVICE TRENCH (continued) **Sheet 2 of 3**

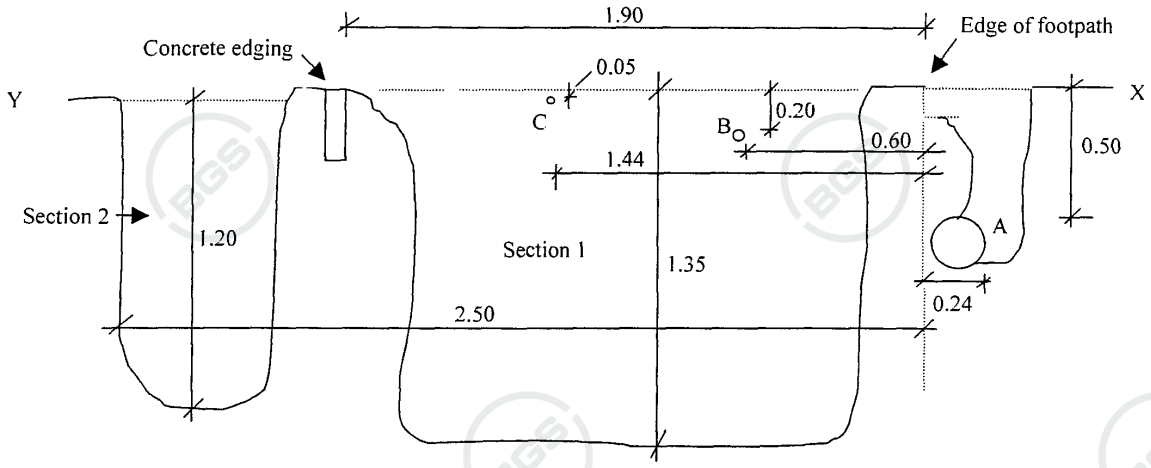
Services Encountered:

A = 180mm diameter blue plastic water main at 0.50m below existing ground level.

B = 19mm diameter dark grey CNE electric cable at 0.20m below existing ground (de-marked by yellow polythene warning tape on top of cable).

C = 12mm diameter pale grey cable at 0.05m below existing ground level.

Section View of Service Trench/Trial Pit:



Descriptions:

Depth (m)	Description (Section 1)
0.0 – 0.10-0.25	MADE GROUND – vegetation over sandy topsoil with many roots
0.25 – 0.45	MADE GROUND – bituminous macadam
0.45 – 1.15	MADE GROUND – red brown clayey gravelly fine sand with occasional pockets of firm red brown locally grey slightly sandy gravelly clay (gravel is fine to coarse sub-angular to rounded quartz)
1.15 – 1.35	MADE GROUND – orange brown very silty gravelly fine to medium sand (gravel is fine to coarse angular to rounded quartz and occasional flint)

Contact BGS: ngdc@bgs.ac.uk

TP1 & ASSOCIATED SERVICE TRENCH **Sheet 3 of 3**

Depth (m)	Description (Section 2 Window sample Starter pit)
0.00 – 0..45	MADE GROUND – vegetation over sandy topsoil with many roots
0.45 – 1.15	MADE GROUND – red brown clayey gravelly fine sand with occasional pockets of firm red brown locally grey slightly sandy gravelly clay (gravel is fine to coarse sub-angular to rounded quartz)
1.15 – 1.20	MADE GROUND – orange brown very silty gravelly fine to medium sand (gravel is fine to coarse angular to rounded quartz and occasional flint)

Samples: (Section 2 Window sample Starter pit)

Type / No.	Depth (m)
D 1	0.10m
J 2	0.50m
T 3	0.50m
B 4	0.50m
B 5	1.15-1.20m

Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial pit/trench sides occurred.
3. The trial pit/trench was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk

NICHOLLS COLTON AND PARTNERS LTD.
Tel: 0116 - 2536333

BOREHOLE RECORD
(Window Sampler)

Borehole Number **WS1**

Site: Scheme 758: A50 Abnormal Loads Laybys

Client: Optima Infrastructure Management

Boring diameter: 92 mm To 3.60m

Casing diameter:

Logged by: NB

Scale: 1:50

LR: G05046 Ground Level:32.60 m

Date: 15/12/2004 Location: 447325E - 328551N

Sheet 1 of 1

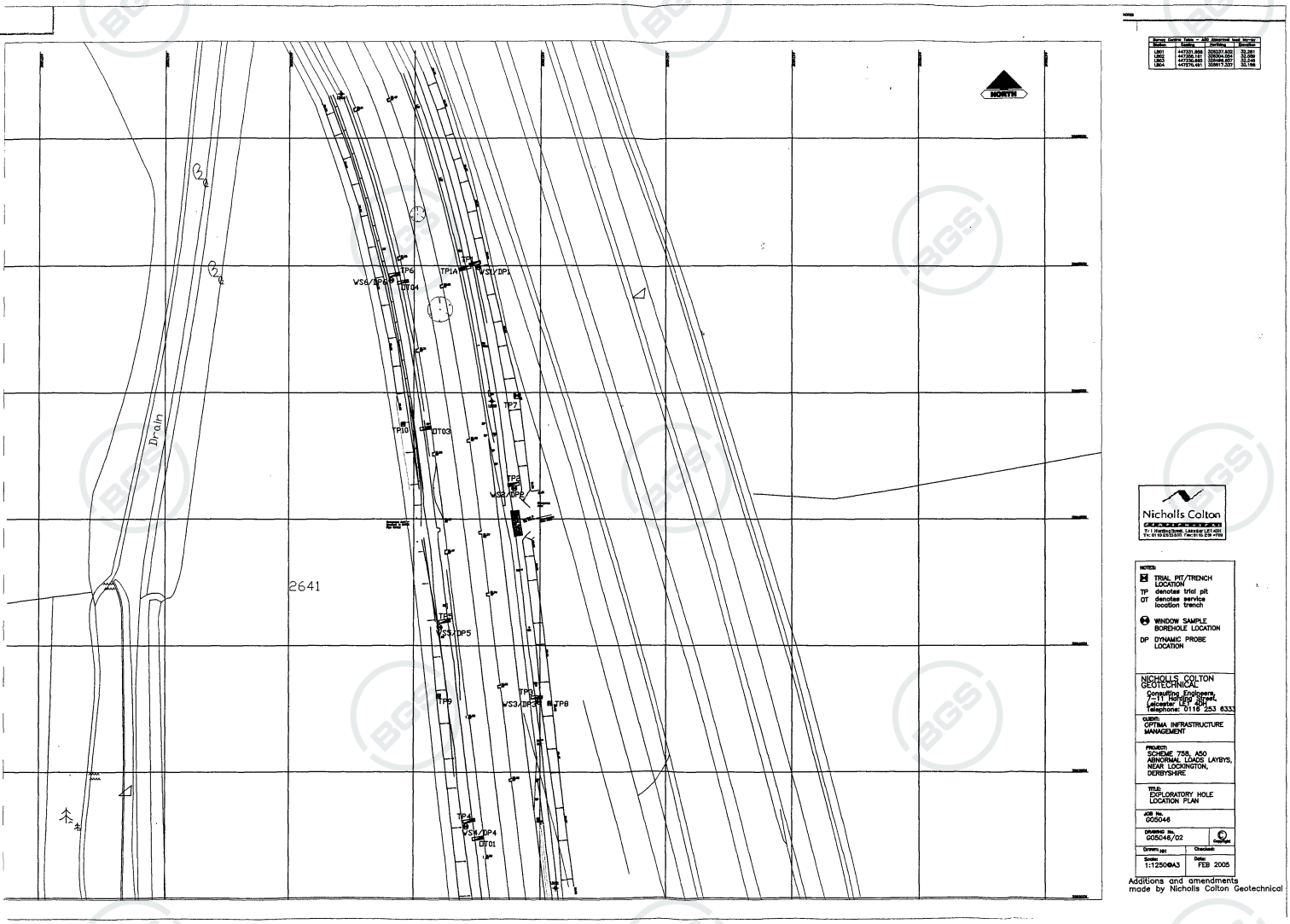
Samples & Tests			Water	Level (m)	Depth (m)	Description	Legend	Install-ation
Depth (m)	Type	SPT N						
						MADE GROUND - hand dug, see trial pit TP1 for soil descriptions and sample details		
1.20-2.00	D 1			31.40	1.20	MADE GROUND - red and orange brown silty slightly gravelly fine sand (gravel is fine to coarse sub-angular to rounded quartz)		
2.00-2.30	D 2							
2.30-3.00	D 3			30.30	2.30	Red and orange brown fine to coarse SAND and fine to coarse sub-angular to rounded quartz GRAVEL		
3.00-3.60	D 4					....with occasional thin bands of firm red brown and pale grey sandy gravelly clay from 2.90m		
				29.40	3.20			
				29.00	3.60	Red brown locally pale grey silty very sandy fine to coarse sub-angular to rounded quartz GRAVEL ....becoming moist from 3.50m		
						End of Borehole at 3.60 m		

Remarks and Water Observations

1. Hand dug to 1.20m for bulk soil sampling and to check for services (See log for TP1).
2. No groundwater seepages were encountered at the time of boring.
3. Window sampling tube refused at 3.60m.
4. Borehole terminated and backfilled with cement/bentonite upon completion.

British Geological Survey

BGS ID: 18127227 : BGS Reference: SK42NE631
British National Grid (27700) : 447320,328550



Contact BGS: ngdc@bgs.ac.uk

TP1A **Sheet 1 of 2**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10/12/2004

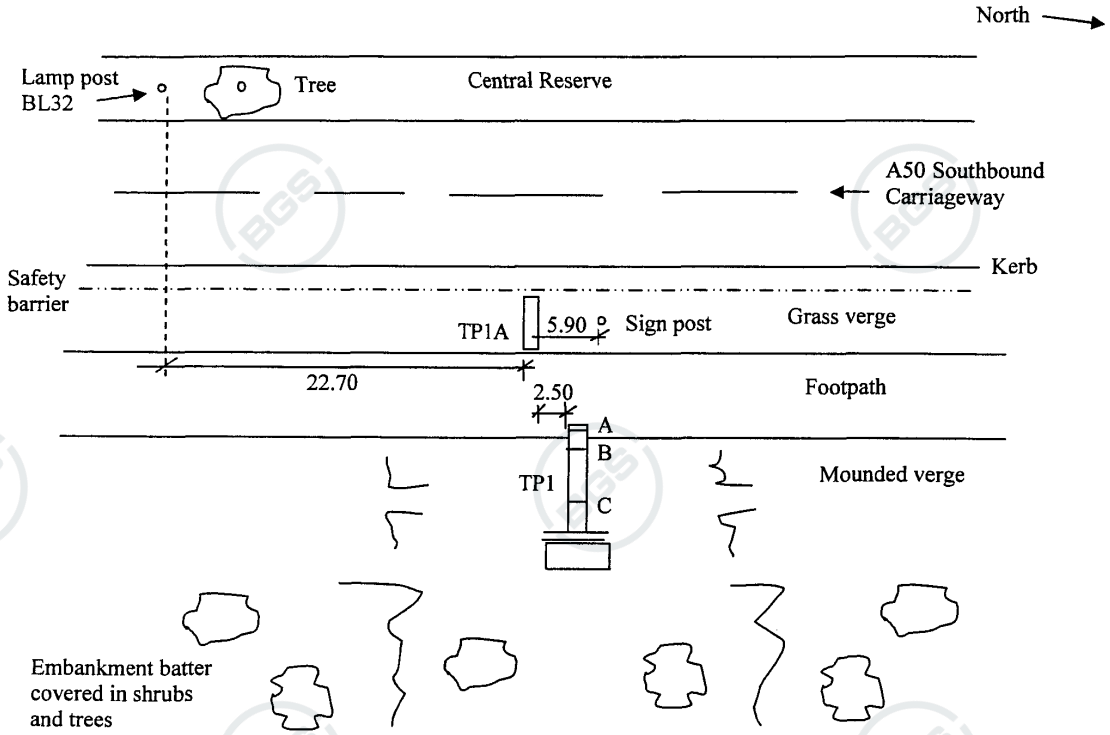
Plant/Method of Excavation: Hand Excavated

Ground Level: 32.74m AOD

National Grid Co-ordinates: 447320E 328549N

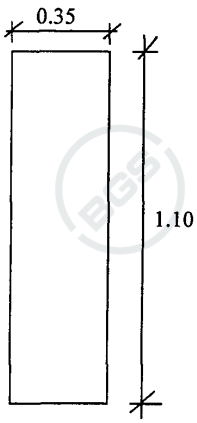
Services Encountered: None

Location Plan:



NOT TO SCALE
(All dimensions are in m)

Plan View of Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TP1A & ASSOCIATED SERVICE TRENCH (continued) **Sheet 2 of 2**

Descriptions:

Depth (m)	Description
0.00 – 0.18	MADE GROUND – turf over topsoil with many roots
0.18 – 0.40	MADE GROUND – brown clayey gravelly fine to medium sand and topsoil (gravel is fine to coarse sub-angular to sub-rounded quartz)
0.40 – 0.80	MADE GROUND – brown clayey gravelly fine to medium sand with occasional sub-angular quartz cobbles (gravel is fine to coarse sub-angular to rounded quartz)
0.80 – 1.20	MADE GROUND – orange and red brown clayey gravelly fine to medium sand (gravel is fine to coarse sub-angular to rounded quartz)

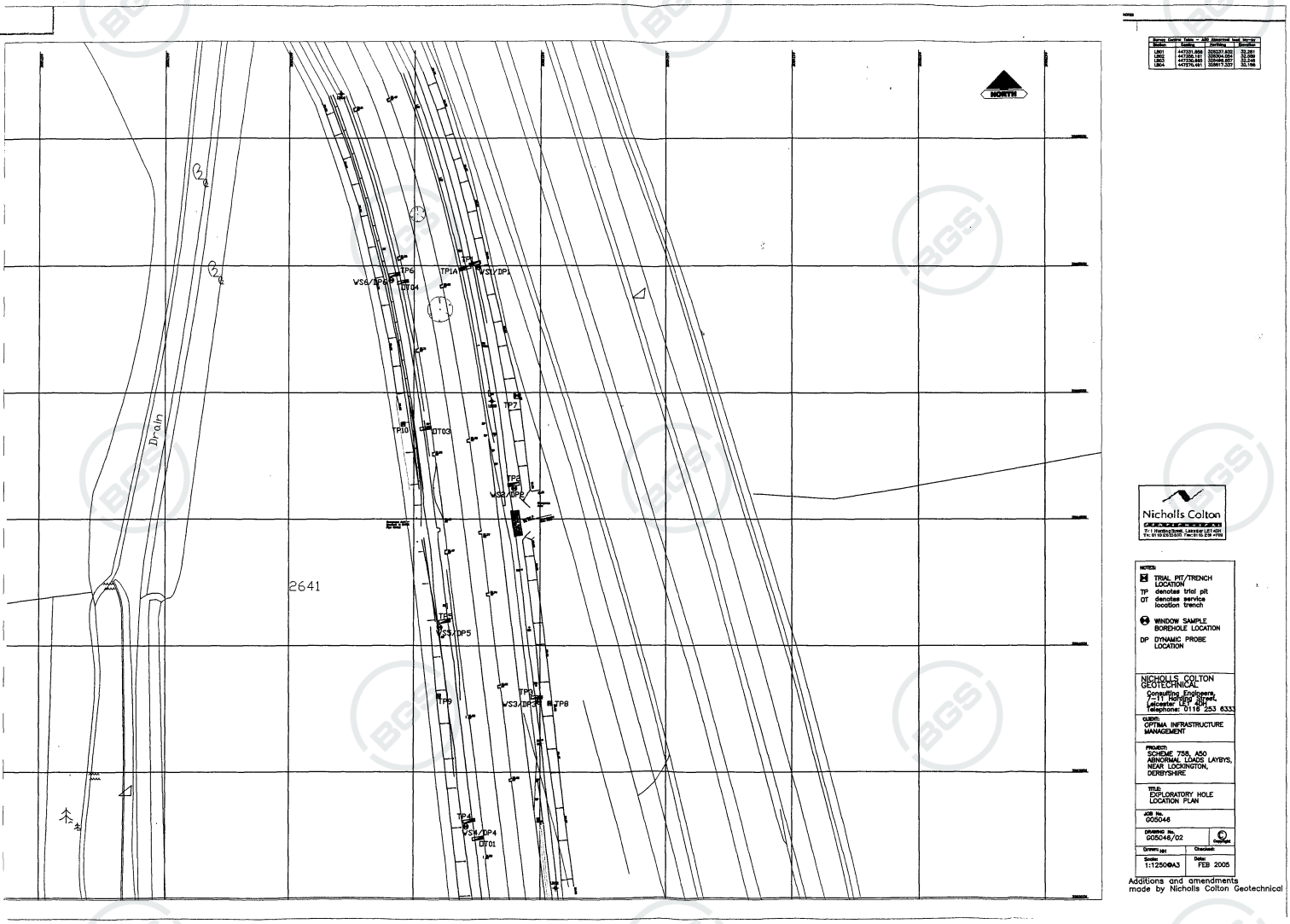
Samples:

Type / No.	Depth (m)
B 1	0.50m
B 2	1.00m

Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial pit/trench sides occurred.
3. The trial pit was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk


NORTH
TP6
TP1A
WS1/DP1
WS4/DP6
DT04
TP7
TP10
DT03
TP3
WS2/DP2
2641
Drain
TP5
WS3/DP5
TP9
WS3/DP3
TP8
TP4
WS4/DP4
DT01
Nicholls Colton
NOTES:
TRIAL PIT/TRENCH LOCATION
TP denotes trial pit
DT denotes service location trench
WINDOW SAMPLE BOREHOLE LOCATION
DP DYNAMIC PROBE LOCATION
NICHOLLS COLTON GEOTECHNICAL
Consulting Engineers
7-11 Nottingham Street
Leicester LE1 4BU
Telephone: 0116 253 6333
CLIENT:
OPTIMA INFRASTRUCTURE MANAGEMENT
PROJECT:
SCHEME 758, A50 ABNORMAL LOADS LAYBYS, NEAR LOCKINGTON, DERBYSHIRE
TITLE:
EXPLORATORY HOLE LOCATION PLAN
JOB No.
G05046
DRAWING No.
G05046/02
Drawn: NH
Checked:
Scale:
1:1250@A3
Date:
FEB 2005
Additions and amendments made by Nicholls Colton Geotechnical

TP2 & ASSOCIATED SERVICE TRENCH **Sheet 1 of 2**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10th & 13/12/2004

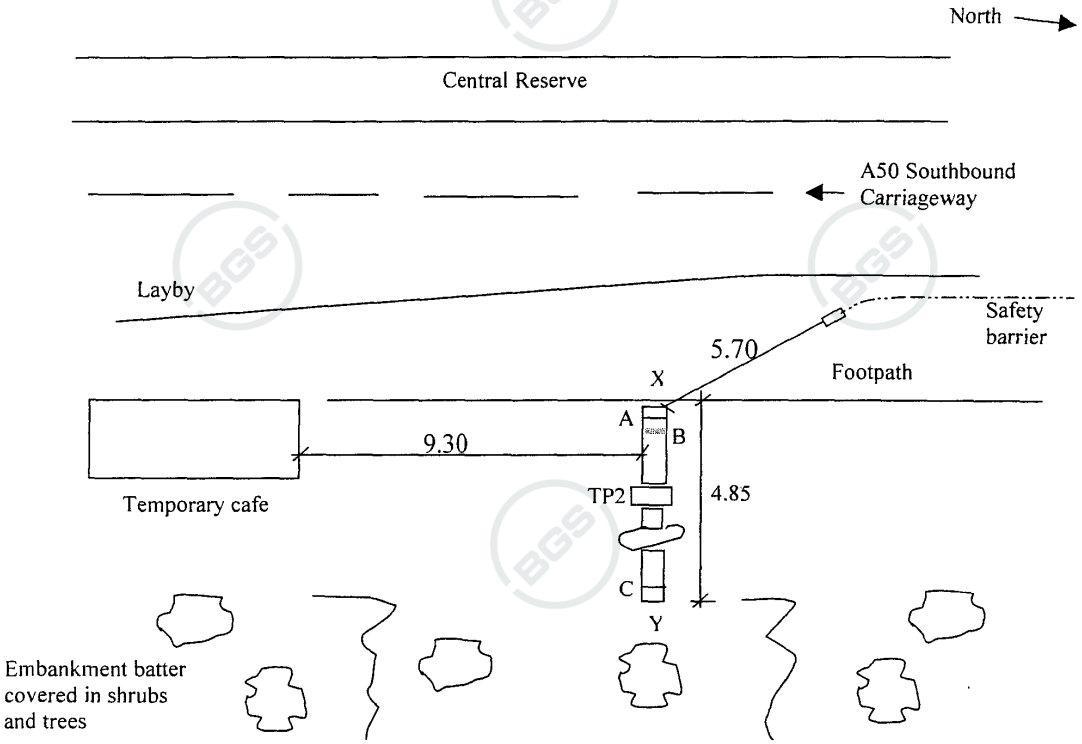
Plant/Method of Excavation: Hand Excavated

Ground Level: 32.18m AOD (adjacent to footpath), 32.23m AOD (geotechnical pit)

National Grid Co-ordinates: 447340E 328463N

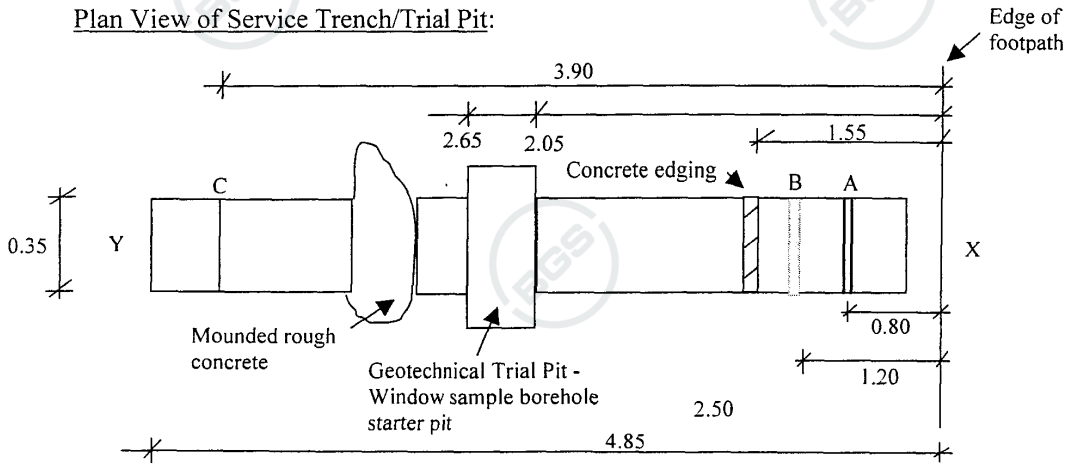
Services Encountered: Yes (see below)

Location Plan:



NOT TO SCALE
(All dimensions are in m)

Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TP2 & ASSOCIATED SERVICE TRENCH (continued) **Sheet 2 of 2**

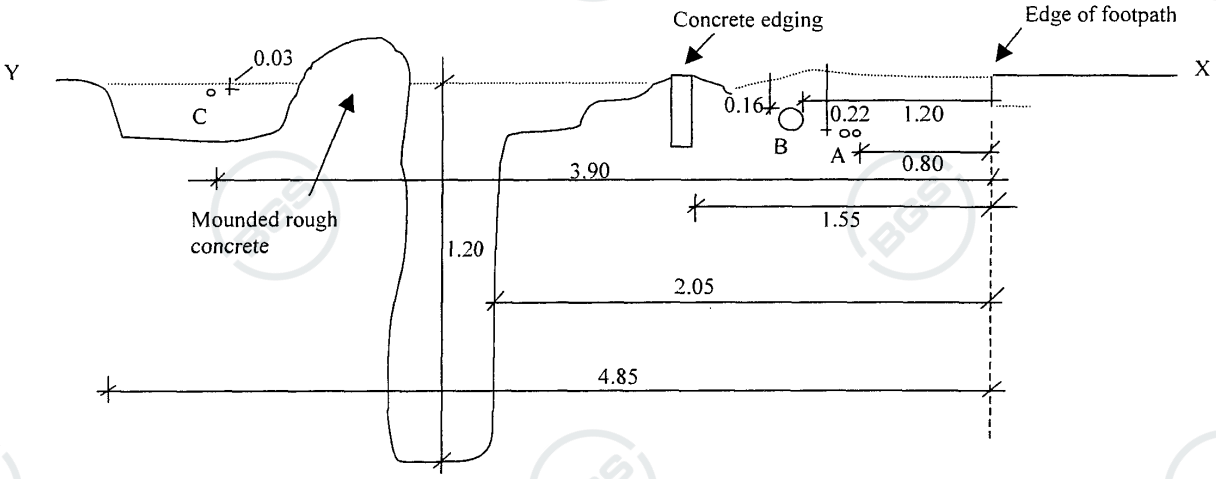
Services Encountered:

A = 2 No.14mm & 18mm diameter dark grey cables at 0.22m below existing ground level (de-marked by yellow polythene warning tape).

B = 61mm diameter orange duct marked street lighting at 0.16m below existing ground level (de-marked by yellow polythene warning tape).

C = 12mm diameter pale grey cable at 0.03m below existing ground level.

Section View of Service Trench/Trial Pit:



Descriptions:

Depth (m)	Description (Window sample starter pit)
0.08 – 0.30	MADE GROUND – vegetation over topsoil with many roots
0.30 – 0.48	MADE GROUND – reinforced concrete
0.48 – 1.20	MADE GROUND – red brown and orange locally clayey gravelly fine to medium sand (gravel is fine to coarse sub-angular to rounded quartz)

Samples: (TP2 Window sample Starter pit)

Type / No.	Depth (m)
B 1	0.50m
B 2	1.00m

Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial pit/trench sides occurred.
3. The trial pit/trench was backfilled with arisings upon completion.

NICHOLLS COLTON GEOTECHNICAL LR: G05046

NICHOLLS COLTON AND PARTNERS LTD.
Tel: 0116 - 2536333

BOREHOLE RECORD
(Window Sampler)

Borehole Number **WS2**

Site: Scheme 758: A50 Abnormal Loads Laybys

Client: Optima Infrastructure Management

Boring diameter: 92 mm To 2.90m

Casing diameter:

Logged by: NB

Scale: 1:50

LR: G05046 Ground Level: 32.23 m

Date: 15/12/2004 Location: 447340E - 328463N

Sheet 1 of 1

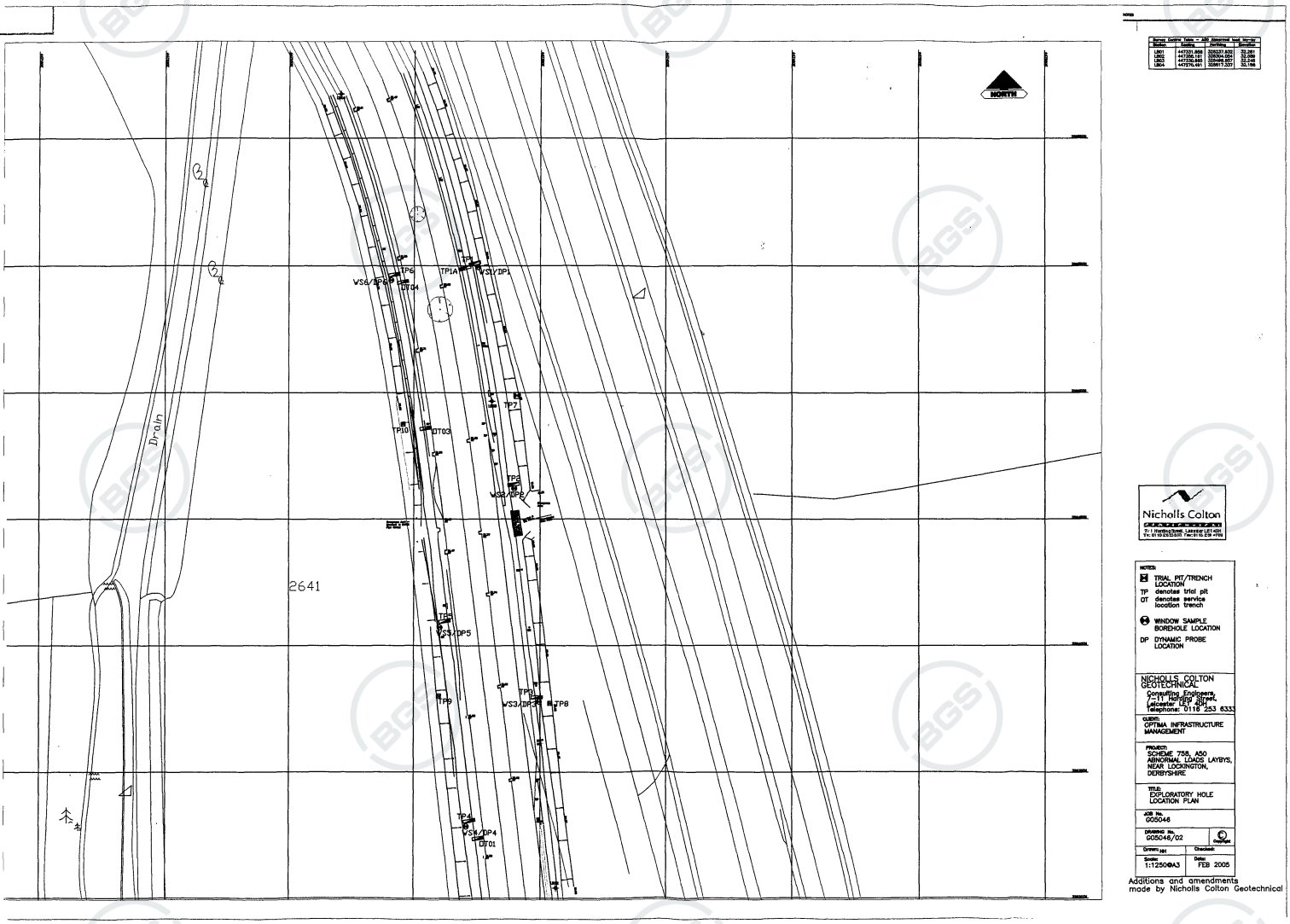
Samples & Tests			Water	Level (m)	Depth (m)	Description	Legend	Install-ation
Depth (m)	Type	SPT N						
						MADE GROUND - hand dug, see trial pit TP2 for soil descriptions and sample details		
1.20-2.00	D 1			31.03	1.20	MADE GROUND - red brown locally clayey slightly gravelly fine sand (gravel is fine to coarse sub-angular to rounded quartz)		
2.10-2.50	D 2			30.13	2.10	Orange and red brown silty fine to coarse SAND and fine to coarse angular to rounded flint and quartz GRAVEL		
2.50-2.90	D 3			29.73	2.50			
				29.33	2.90	Orange slightly gravelly fine to coarse SAND (gravel is fine to coarse sub-angular to rounded quartz)		
						End of Borehole at 2.90 m		

Remarks and Water Observations

1. Hand dug to 1.20m for bulk soil sampling and to check for services (see log for TP2).
2. No groundwater seepages were encountered at the time of boring.
3. Window sampling tube refused at 2.90m.
4. Borehole terminated and backfilled with cement/bentonite upon completion.

British Geological Survey

BGS ID: 18127235 : BGS Reference: SK42NE633
British National Grid (27700) : 447340,328460



Contact BGS: ngdc@bgs.ac.uk

TP3 & ASSOCIATED SERVICE TRENCH **Sheet 1 of 3**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 13/12/2004

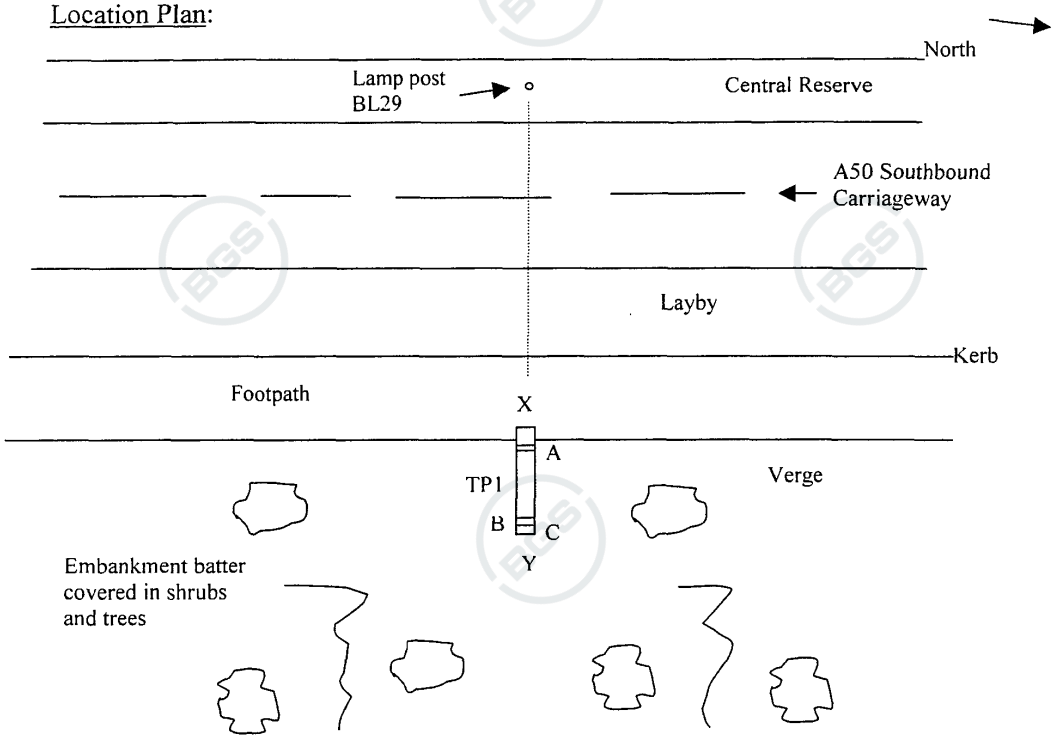
Plant/Method of Excavation: Hand Excavated

Ground Level: 32.27m AOD (adjacent to footpath), 32.44m AOD (geotechnical pit) 32.33m AOD (rear of trial trench)

National Grid Co-ordinates: 447349E 328379N

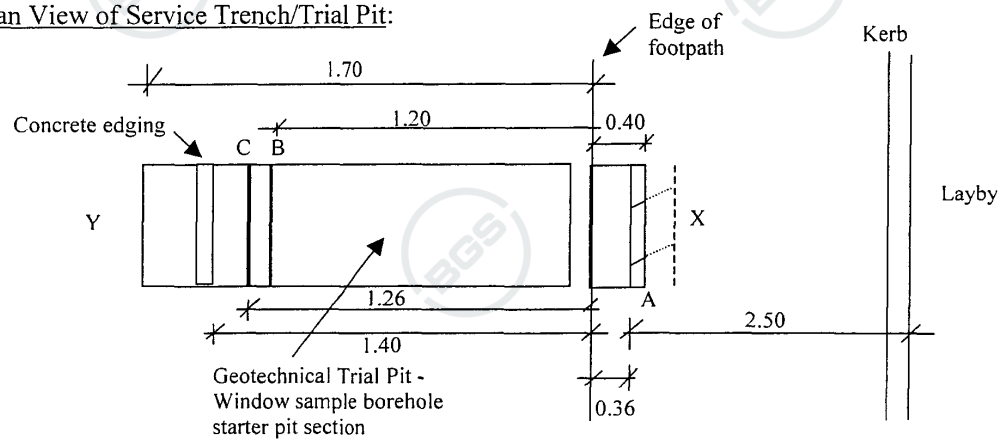
Services Encountered: Yes (see below)

Location Plan:



NOT TO SCALE
(All dimensions are in m)

Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TP3 & ASSOCIATED SERVICE TRENCH (continued) **Sheet 2 of 3**

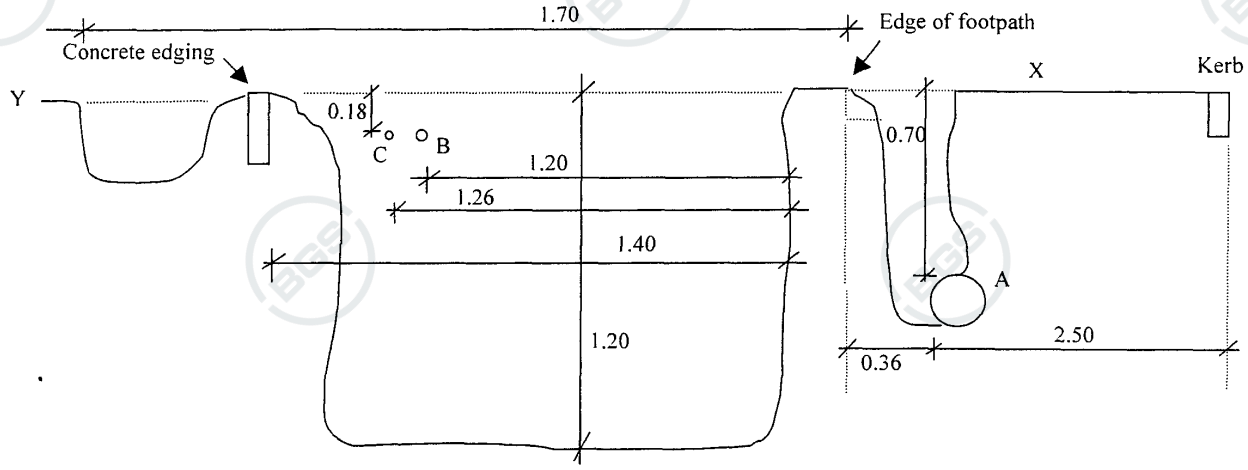
Services Encountered:

A = 180mm diameter blue plastic water main at 0.70m below existing ground level.

B = 18mm diameter black cable at 0.18m below existing ground

C = 15mm diameter black cable at 0.18m below existing ground level.

Section View of Trench/Trial Pit:



Descriptions:

Depth (m)	Description (Footpath)
0.00 – 0.08	MADE GROUND – bituminous macadam surfacing
0.08 – 0.60	MADE GROUND – red brown locally clayey gravelly fine sand (gravel is fine to coarse sub-angular to rounded quartz)
0.60 – 0.90	MADE GROUND – orange gravelly fine to medium sand (gravel is fine to coarse sub-angular to rounded quartz)

Depth (m)	Description (Main section of trial pit/window sample borehole WS3 starter pit)
0.00 – 0.10	MADE GROUND – vegetation over topsoil with many roots
0.10 – 0.14	MADE GROUND – bituminous macadam surfacing
0.14 – 0.20	MADE GROUND – red brown clayey gravelly fine sand (gravel is fine to coarse sub-angular to rounded quartz)

TP3 & ASSOCIATED SERVICE TRENCH (Continued) **Sheet 3 of 3**

Descriptions: (Continued)

Depth (m)	Description (Main section of trial pit/window sample borehole WS3 starter pit)
0.20 – 0.25	MADE GROUND – bituminous macadam surfacing
0.25 – 0.35	MADE GROUND – brown and black sandy ash and clinker
0.35 – 1.20	MADE GROUND – red brown and orange clayey gravelly fine to medium sand (gravel is fine to coarse sub-angular to rounded quartz)
	.....becoming orange from 0.50m

Samples:

Type / No.	Depth (m)
B 1	0.08 – 0.60m (Footpath section of trial trench)
B 2	1.00m (Window sample WS3 starter pit section of trial trench)
J 3	1.00m (Window sample WS3 starter pit section of trial trench)
T 4	1.00m (Window sample WS3 starter pit section of trial trench)

Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial pit/trench sides occurred.
3. The trial pit/trench was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk

NICHOLLS COLTON AND PARTNERS LTD.
Tel: 0116 - 2536333

BOREHOLE RECORD
(Window Sampler)

Borehole Number **WS3**

Site
Scheme 758: A50 Abnormal Loads Laybys

Client
Optima Infrastructure Management

Boring diameter: 92 mm To 3.50m

Casing diameter:

Logged by: NB

Scale: 1:50

LR: G05046 | Ground Level: 32.44 m | Date: 15/12/2004 | Location: 447349E - 328379N | Sheet 1 of 1

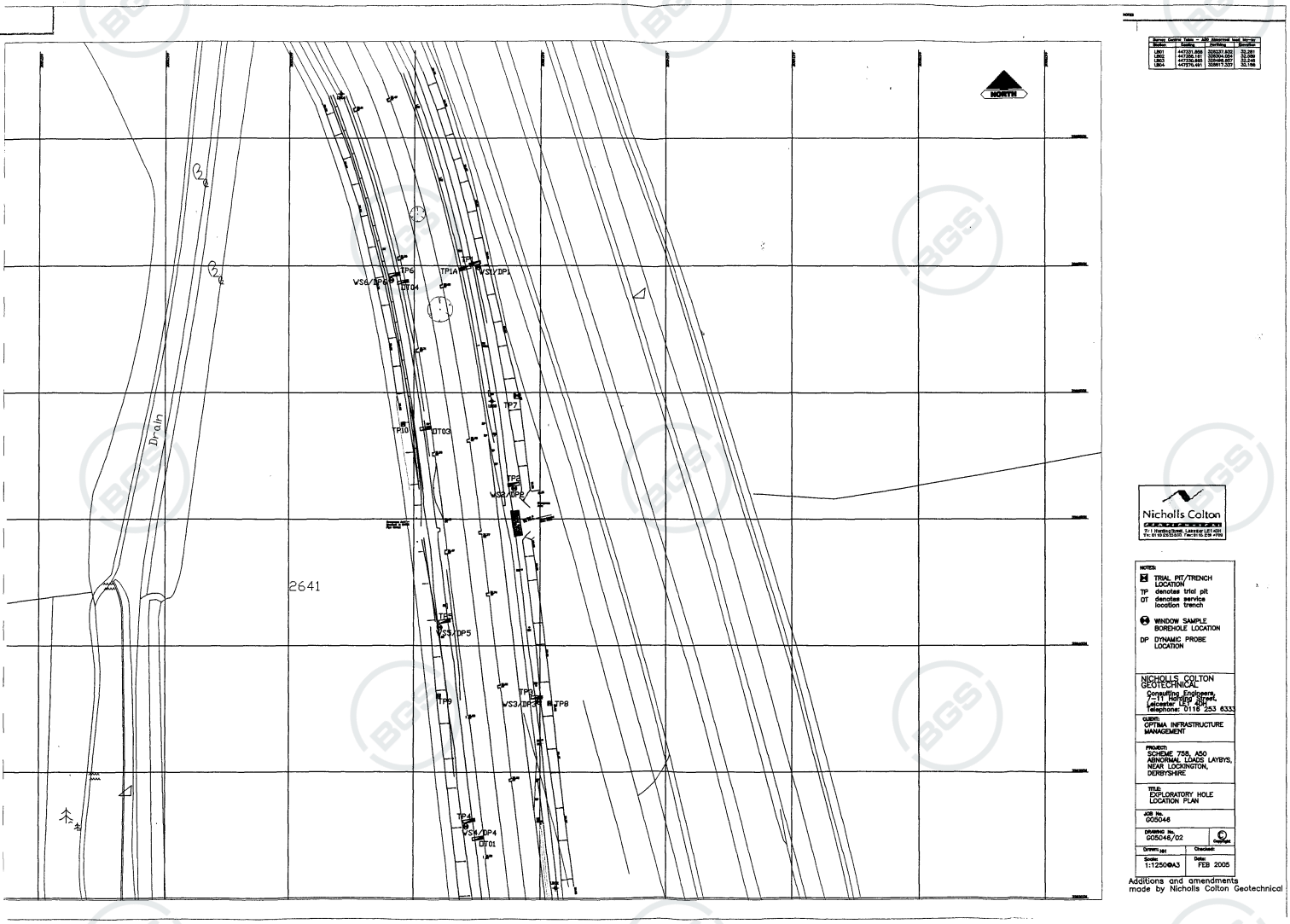
Samples & Tests			Water	Level (m)	Depth (m)	Description	Legend	Install-ation
Depth (m)	Type	SPT N						
						MADE GROUND - hand dug, see trial pit TP3 for soil descriptions and sample details		
1.20-1.50	D 1			31.24	1.20			
1.50-2.00	D 2					MADE GROUND - red brown silty slightly gravelly fine sand with occasional clay pockets and roots to 2.00m (gravel is fine to coarse angular to rounded quartz and occasional flint)		
2.00-2.70	D 3							
2.70-2.90	D 4			29.74	2.70	....partial recovery from 2.40m to 2.70m, in-situ material possibly voided		
2.90-3.50	D 5			29.54	2.90	Stiff red brown CLAY		
				28.94	3.50	Pale grey orange and red brown clayey gravelly fine to medium SAND (gravel is fine to coarse sub-angular to rounded quartz)		
						End of Borehole at 3.50 m		

Remarks and Water Observations

1. Hand dug to 1.20m for bulk soil sampling and to check for services (See log for TP3).
2. No groundwater seepages were encountered at the time of boring.
3. Window sampling tube refused at 3.50m.
4. Borehole terminated and backfilled with cement/bentonite upon completion.

British Geological Survey

BGS ID: 18127251 : BGS Reference: SK42NE634
British National Grid (27700) : 447340,328370



Contact BGS: ngdc@bgs.ac.uk

TP4 & ASSOCIATED SERVICE TRENCH **Sheet 1 of 3**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 08/12/2004

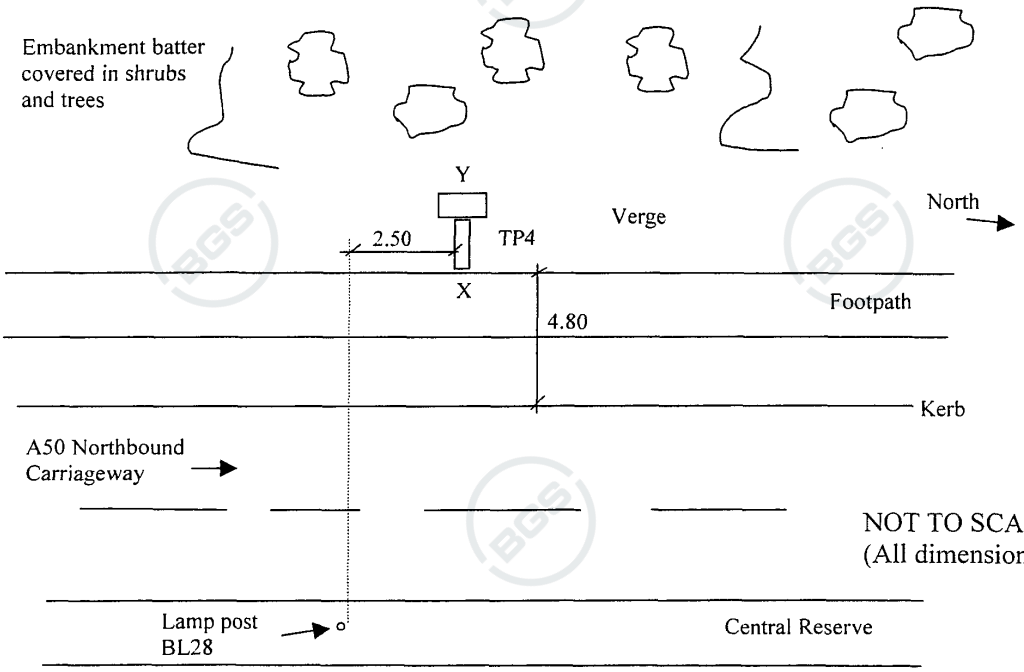
Plant/Method of Excavation: Hand Excavated

Ground Level: 31.97m AOD (adjacent to footpath), 32.09m AOD (geotechnical pit)

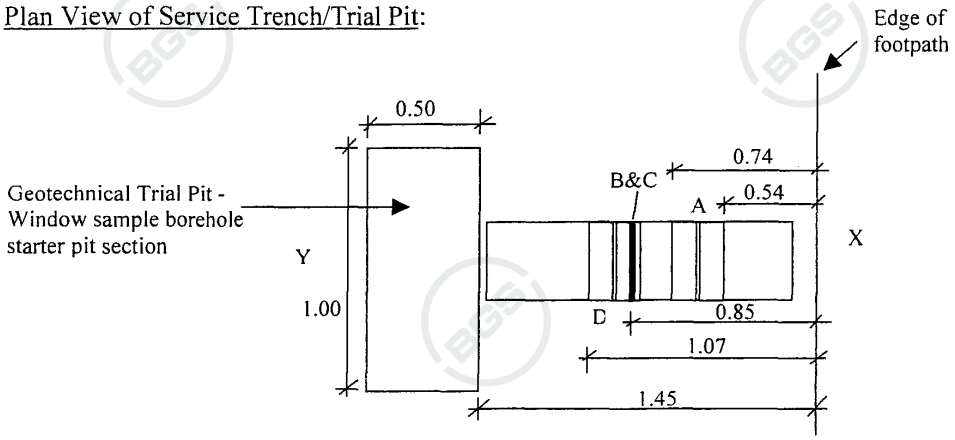
National Grid Co-ordinates: 447321E 328330N

Services Encountered: Yes (see below)

Location Plan:



Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TP4 & ASSOCIATED SERVICE TRENCH (continued) **Sheet 2 of 3**

Services Encountered:

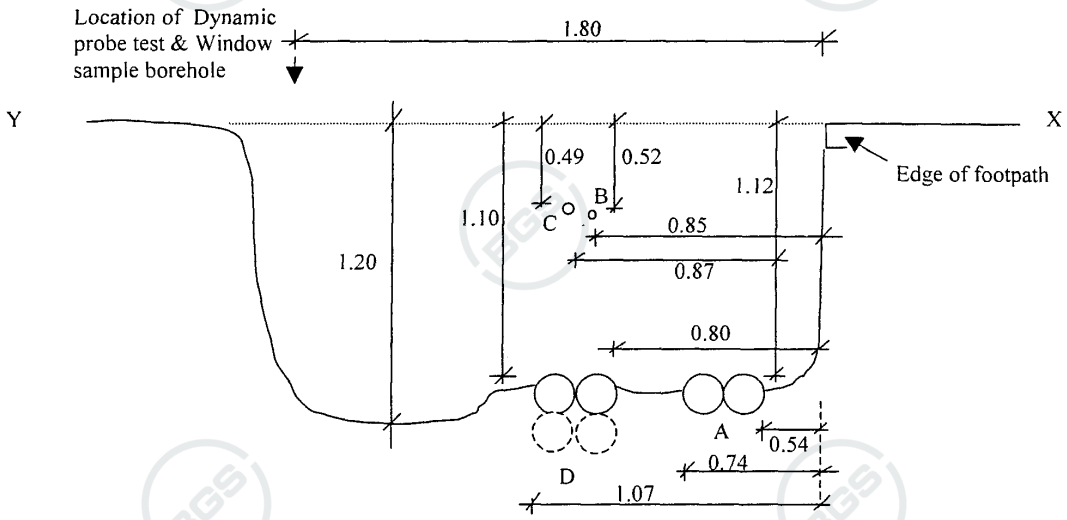
A = 2 No. approximate 100mm diameter red brown glazed ceramic ducts at 1.12m below existing ground level.

B = 7mm diameter green earth wire cable at 0.52m below existing ground level (de-marked by yellow polythene warning tape).

C = 31mm diameter black CNE cable at 0.49m below existing ground level (de-marked by yellow polythene warning tape).

D = 4 No. approximate 100mm diameter red brown glazed ceramic ducts from 1.10m below existing ground level.

Section View of Service Trench/Trial Pit:



Descriptions:

Depth (m)	Description
0.00 – 0.10	MADE GROUND – topsoil with many roots
0.10 – 0.20	MADE GROUND – black ash and clinker
0.20 – 1.20	MADE GROUND – red brown very silty gravelly fine to medium sand with occasional to many pockets of stiff sandy slightly gravelly clay with occasional angular mudstone boulders and roots (gravel is fine to coarse angular to rounded quartz and flint)
	…. large tree roots encountered at 1.20m

NICHOLLS COLTON GEOTECHNICAL LR: G05046

TP4 & ASSOCIATED SERVICE TRENCH (Continued) **Sheet 3 of 3**

Samples:

Type / No.	Depth (m)
D 1	0.10m
D 2	0.15m
B 3	0.50m
J 4	0.90m
T 5	0.90m
B 6	1.00m

Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial pit/trench sides occurred.
3. The trial pit/trench was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk

NICHOLLS COLTON AND PARTNERS LTD.
Tel: 0116 - 2536333

BOREHOLE RECORD
(Window Sampler)

Borehole Number **WS4**

Site
Scheme 758: A50 Abnormal Loads Laybys

Client
Optima Infrastructure Management

Boring diameter: 92 mm To 3.80m

Casing diameter:

Logged by: NB

Scale: 1:50

LR: G05046 Ground Level:32.09 m

Date: 16/12/2004 Location: 447321E - 328330N

Sheet 1 of 1

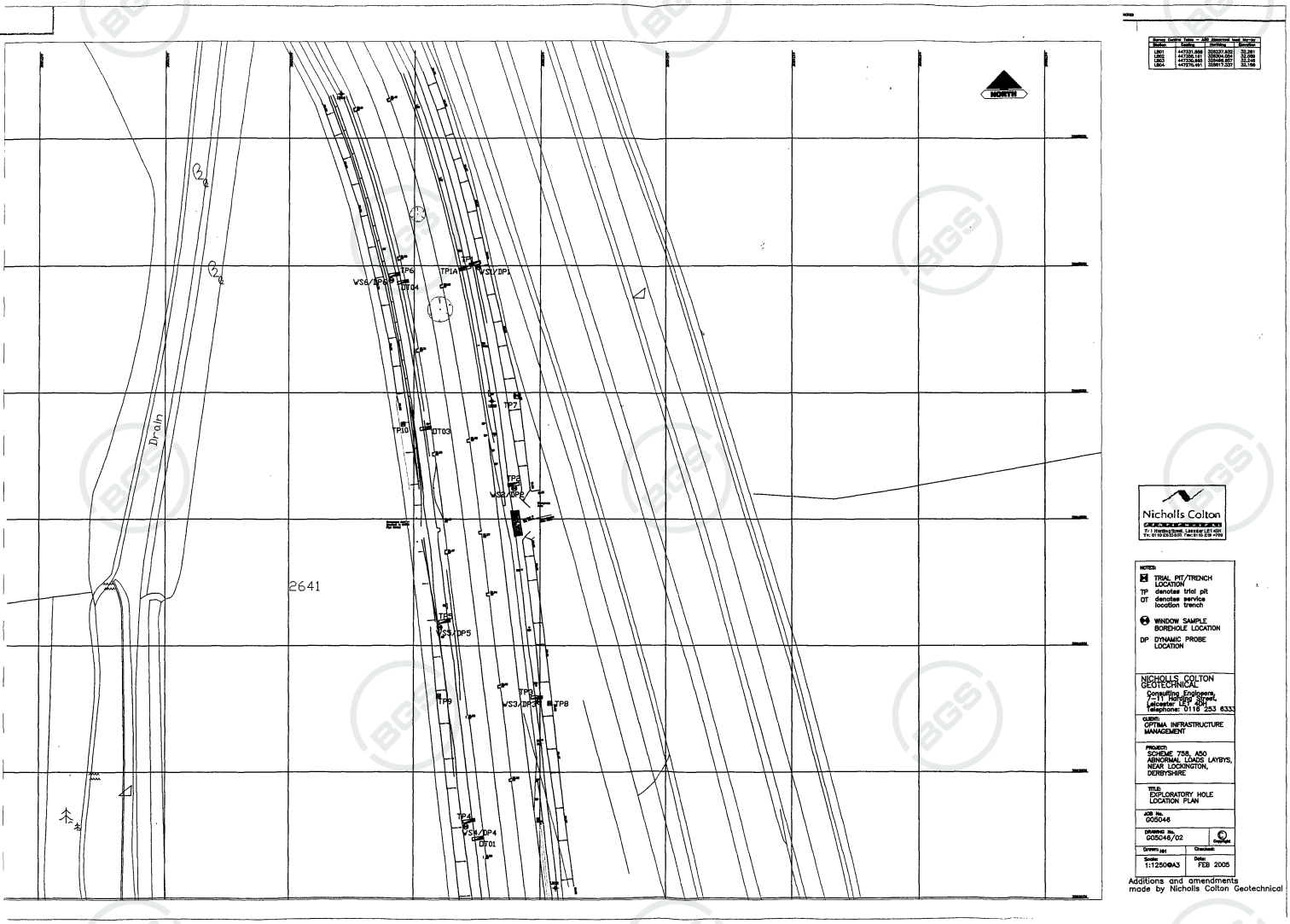
Samples & Tests			Water	Level (m)	Depth (m)	Description	Legend	Install-ation
Depth (m)	Type	SPT N						
						MADE GROUND - hand dug, see trial pit TP4 for soil descriptions and sample details		
1.20-1.70	D 1			30.89	1.20			
1.70-2.00	D 2			30.39	1.70	MADE GROUND - orange brown silty slightly gravelly fine sand (gravel is fine to coarse angular to rounded quartz and occasional flint)		
2.00-2.30	D 3					Stiff red brown CLAY		
2.30-2.60	D 4		▼	29.79	2.30			
2.60-2.75	D 5			29.49	2.60	Soft red brown orange and pale grey sandy slightly gravelly CLAY (gravel is fine to coarse sub-angular to rounded quartz)		
2.75-3.40	D 6		▽	29.34	2.75			
3.40-3.80	D 7			28.69	3.40	Orange and pale grey clayey fine to coarse SAND and fine to coarse sub-angular to rounded quartz GRAVEL		
				28.29	3.80	Grey locally orange slightly clayey very gravelly medium to coarse SAND (gravel is medium to coarse sub-angular to rounded quartz)		
						Grey and orange fine to coarse SAND and fine to coarse angular to rounded flint and quartz GRAVEL		
						End of Borehole at 3.80 m		

Remarks and Water Observations

1. Hand dug to 1.20m for bulk soil sampling and to check for services (See log for TP4).
2. Groundwater seepages were encountered at 3.00m rising to 2.30m on cessation of boring.
3. Window sampling tube refused at 3.80m.
4. Borehole terminated and backfilled with cement/bentonite upon completion.

British Geological Survey

BGS ID: 18127253 : BGS Reference: SK42NE635
British National Grid (27700) : 447320,328330



Contact BGS: ngdc@bgs.ac.uk

TP5 & ASSOCIATED SERVICE TRENCH **Sheet 1 of 3**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 09/12/2004

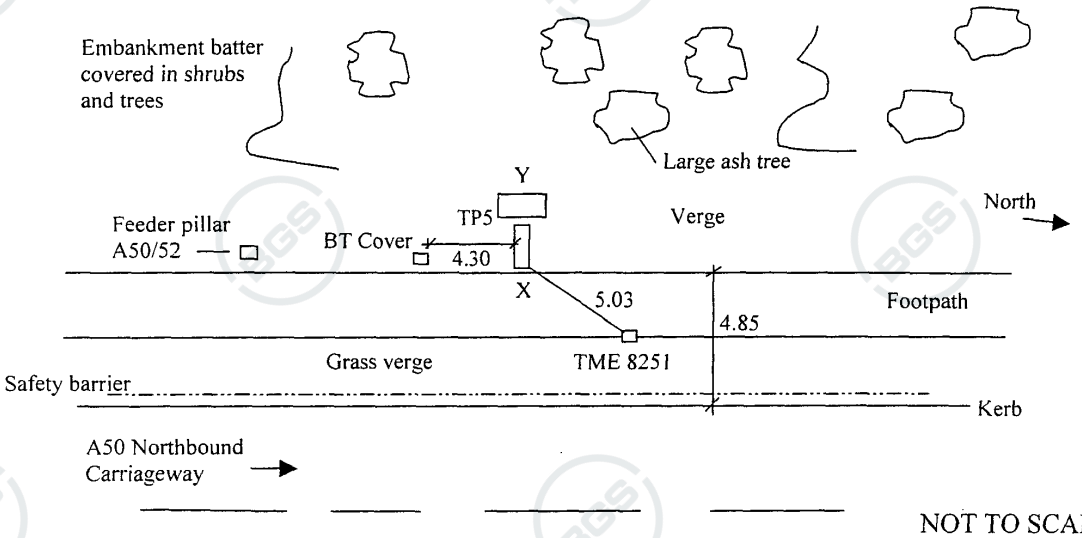
Plant/Method of Excavation: Hand Excavated

Ground Level: 31.67m AOD (adjacent to footpath), 31.77m AOD (geotechnical pit)

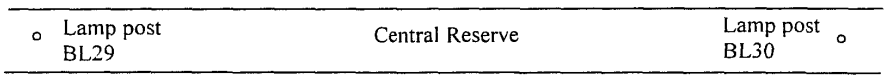
National Grid Co-ordinates: 447311E 328409N

Services Encountered: Yes (see below)

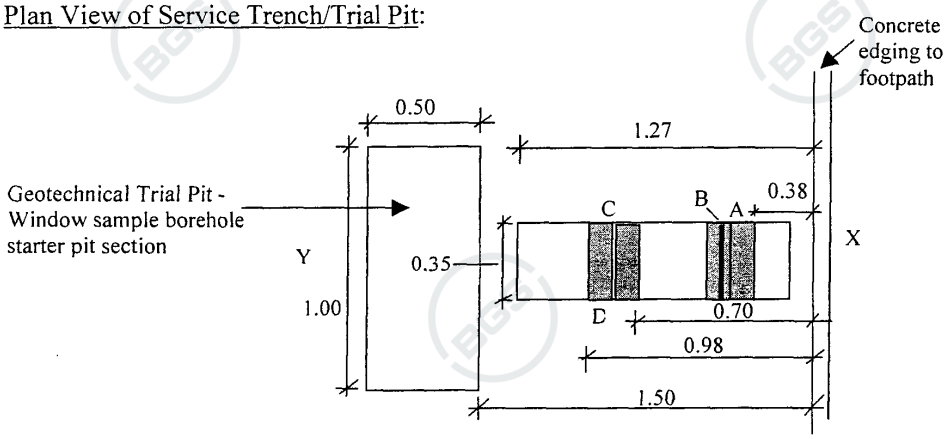
Location Plan:



NOT TO SCALE
(All dimensions are in m)



Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TP5 & ASSOCIATED SERVICE TRENCH (continued) **Sheet 2 of 3**

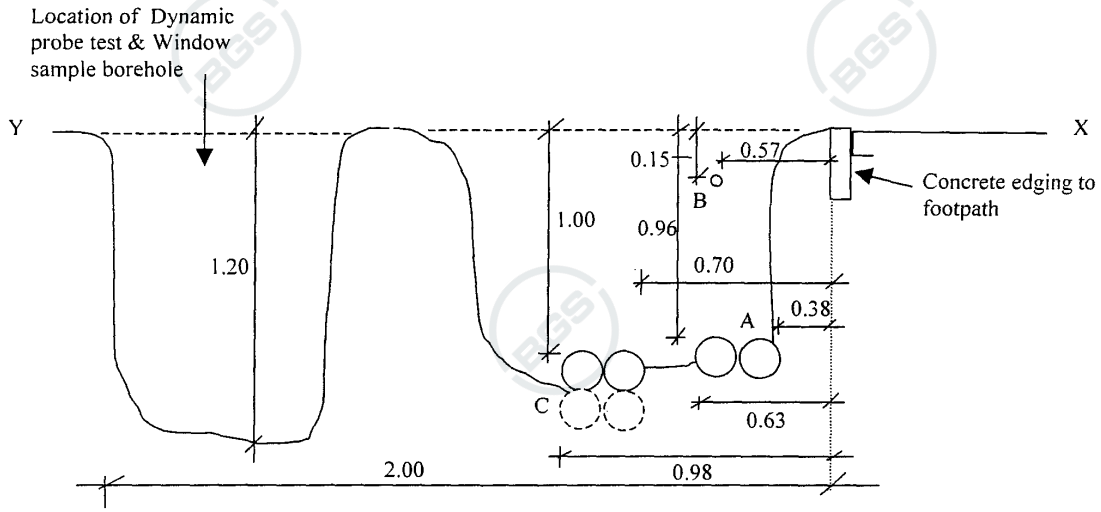
Services Encountered:

A = 2 No. approximate 100mm diameter red brown glazed ceramic ducts at 0.96m below existing ground level.

B = 15mm diameter black cable at 0.15m below existing ground level (de-marked by yellow polythene warning tape).

C = 4 No. approximate 100mm diameter red brown glazed ceramic ducts from 1.00m below existing ground level.

Section View of Service Trench/Trial Pit:



Descriptions:

Depth (m)	Description (service trench section)
0.00 – 0.15	MADE GROUND – vegetation over topsoil with many root hairs
0.15 – 1.05	MADE GROUND – red brown clayey fine to medium sand and fine to coarse angular to rounded flint and quartz gravel with occasional sub-rounded quartz cobbles

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18127257 : BGS Reference: SK42NE636
British National Grid (27700) : 447310,328400

TP5 & ASSOCIATED SERVICE TRENCH (Continued) **Sheet 3 of 3**

Descriptions (Continued):

Depth (m)	Description (Geotechnical trial pit/window sample borehole starter pit)
0.00 – 0.15	MADE GROUND – vegetation over brown sandy topsoil with many roots
0.15 – 0.20	MADE GROUND – sandy black ash and clinker
0.20 – 0.50	MADE GROUND – stiff red brown sandy slightly gravelly clay (gravel is fine to coarse sub-angular to sub-rounded quartz)
0.50 – 1.20	MADE GROUND – red brown very clayey gravelly fine to medium sand with many pockets of stiff sandy slightly gravelly clay (gravel is fine to coarse sub-angular to rounded quartz)
	…. becoming slightly gravelly from 0.70m

Insitu Testing:

Hand Shear Vanes:

Depth	Readings (kPa)	Mean Value (kPa)
0.30m	140, 125 & 130	132

Samples:

Type / No.	Depth (m)
D 1	0.10m
D 2	0.15-0.20m
D 3	0.30m
J 4	0.50m
T 5	0.50m
B 6	0.70-0.80m
D 7	1.20m

Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial pit/trench sides occurred.
3. The trial pit/trench was backfilled with arisings upon completion.

NICHOLLS COLTON GEOTECHNICAL LR: G05046

Contact BGS: ngdc@bgs.ac.uk

NICHOLLS COLTON AND PARTNERS LTD.
Tel: 0116 - 2536333

BOREHOLE RECORD
(Window Sampler)

Borehole Number **WS5**

Site: Scheme 758: A50 Abnormal Loads Laybys

Client: Optima Infrastructure Management

Boring diameter: 92 mm To 5.00m

Casing diameter:

Logged by: NB

Scale: 1:50

LR: G05046 | Ground Level: 31.77 m | Date: 16/12/2004 | Location: 447311E - 328409N

Sheet 1 of 1

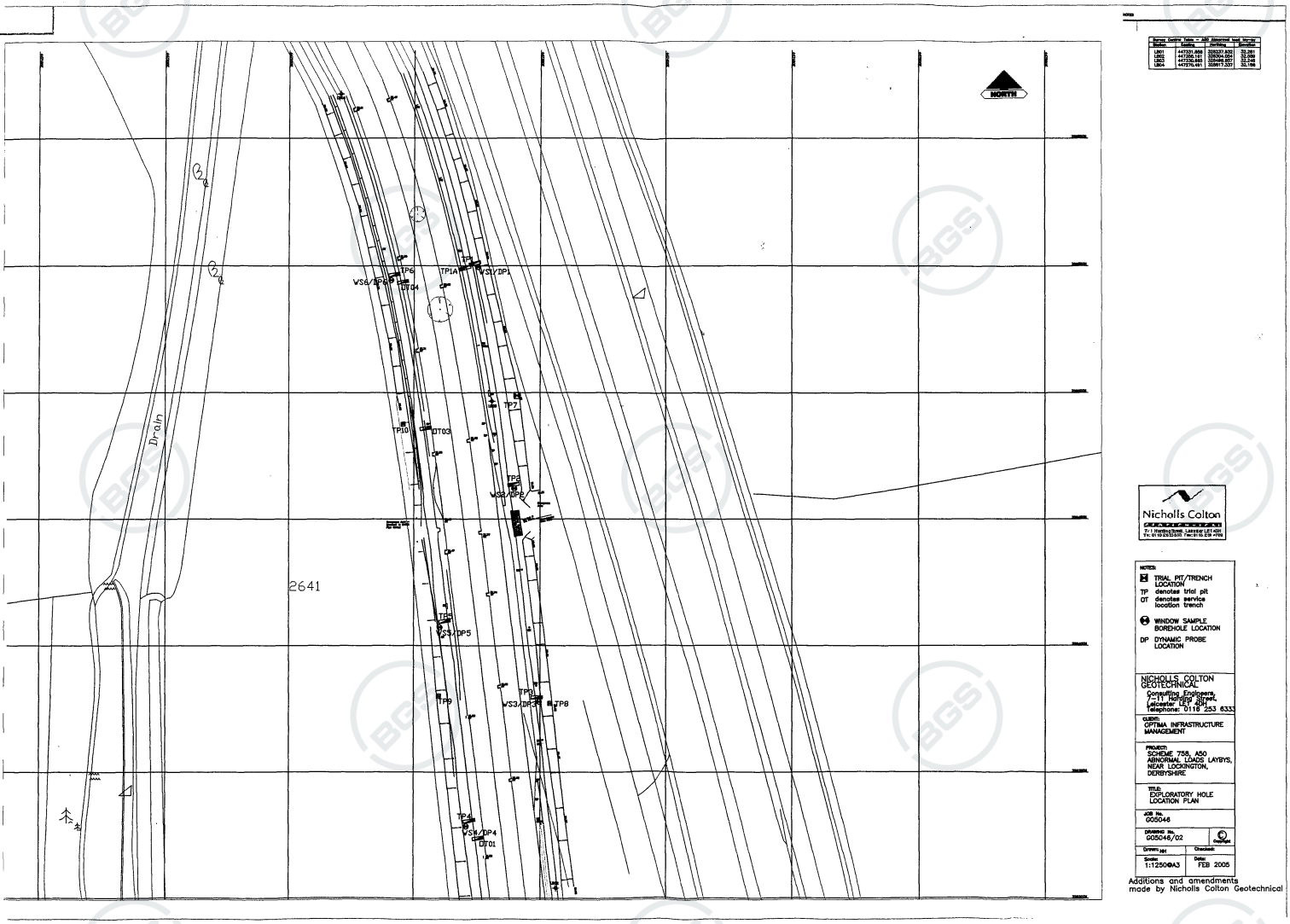
Samples & Tests Depth (m)	Type	SPT N	Water	Level (m)	Depth (m)	Description	Legend	Install-ation
						MADE GROUND - hand dug, see trial pit TP5 for soil descriptions and sample details		
1.20-1.50	D 1			30.57	1.20	MADE GROUND - soft red brown sandy slightly gravelly clay with occasional brick fragments (gravel is medium to coarse sub-rounded to rounded quartz)		
1.50-1.80	D 2			30.27	1.50			
1.80-2.00	D 3			29.97	1.80			
2.00-2.40	D 4			29.77	2.00	Firm red brown CLAY with occasional roots		
2.40-3.00	D 5		▼	29.37	2.40	Firm becoming soft from 1.90m red brown and grey mottled CLAY		
3.00-4.00	D 6		▽	28.77	3.00	Soft red brown orange and pale grey mottled CLAY		
						Grey clayey fine to coarse SAND and fine to coarse sub-angular to rounded quartz GRAVEL		
4.00-4.70	D 7					Brown slightly silty very sandy fine to coarse sub-angular to rounded quartz GRAVEL		
4.70-5.00	D 8			27.07	4.70	Soft red brown and grey green mottled CLAY with occasional pockets of fine sand/silt ....becoming firm from 4.90m		
				26.77	5.00	*End of Borehole at 5.00 m*		

Remarks and Water Observations

1. Hand dug to 1.20m for bulk soil sampling and to check for services (See log for TP5).
2. Groundwater seepages were encountered at 2.90m rising to 2.30m on cessation of boring.
3. The borehole collapsed in on removal of window sampling tube from 5.00m.
4. Borehole terminated and backfilled with cement/bentonite upon completion.

British Geological Survey

BGS ID: 18127257 : BGS Reference: SK42NE636
British National Grid (27700) : 447310,328400



Contact BGS: ngdc@bgs.ac.uk

TP6 & ASSOCIATED SERVICE TRENCH **Sheet 1 of 3**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 13/12/2004

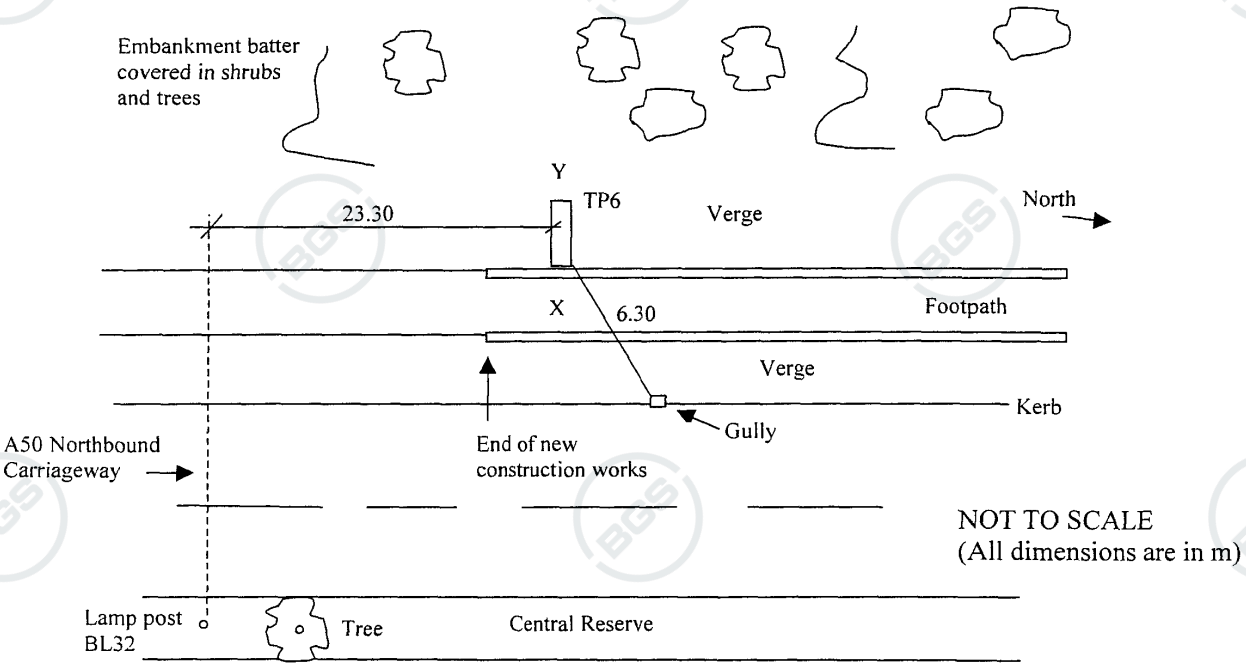
Plant/Method of Excavation: Hand Excavated

Ground Level: 32.03m AOD (adjacent to footpath), 32.23m AOD (geotechnical pit)

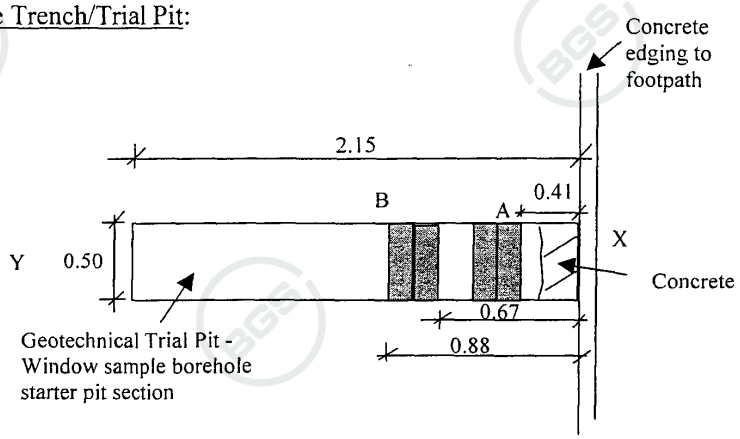
National Grid Co-ordinates: 447291E 328546N

Services Encountered: Yes (see below)

Location Plan:



Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

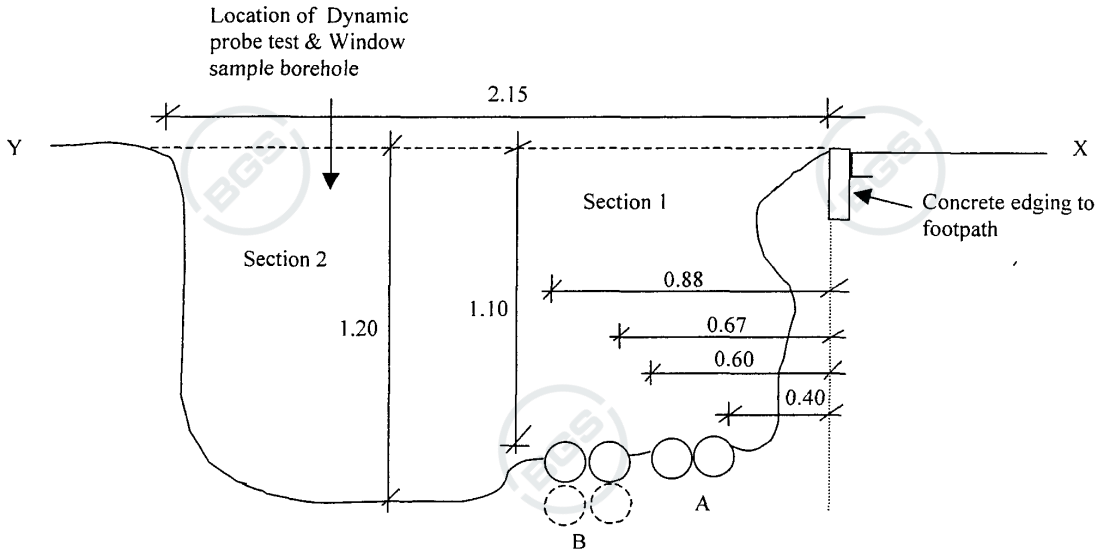
TP6 & ASSOCIATED SERVICE TRENCH (continued) **Sheet 2 of 3**

Services Encountered:

A = 2 No. approximate 100mm diameter red brown glazed ceramic ducts at 1.10m below existing ground level.

B = 4 No. approximate 100mm diameter red brown glazed ceramic ducts from 1.10m below existing ground level.

Section View of Service Trench/Trial Pit:



Descriptions:

Depth (m)	Description (section 1)
0.00 – 0.35	MADE GROUND – topsoil with many roots
0.35 – 0.80	MADE GROUND – red brown clayey gravelly fine to medium sand with occasional concrete fragments (gravel is fine to coarse sub-angular to rounded quartz)
0.80 – 1.10	MADE GROUND – orange brown gravelly fine to medium sand (gravel is fine to coarse sub-angular to rounded quartz)

Contact BGS: ngdc@bgs.ac.uk

TP6 & ASSOCIATED SERVICE TRENCH (Continued) **Sheet 3 of 3**

Descriptions (Continued):

Depth (m)	Description (Section 2)
0.00 – 0.20	MADE GROUND – topsoil with many roots
0.20 – 0.40	MADE GROUND – black ash and clinker
0.40 – 0.80	MADE GROUND – red brown locally clayey gravelly fine sand (gravel is fine to coarse sub-angular to sub-rounded quartz)
0.80 – 1.20	MADE GROUND – orange silty gravelly fine sand with occasional sub-rounded quartz cobbles (gravel is fine to coarse sub-angular to rounded quartz)

Samples:

Type / No.	Depth (m)
D 1	0.10m
D 2	0.30m
B 3	0.50m
B 4	1.00m

Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial trench/pit sides occurred.
3. The trial trench/pit was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk

NICHOLLS COLTON AND PARTNERS LTD.
Tel: 0116 - 2536333

BOREHOLE RECORD
(Window Sampler)

Borehole Number **WS6**

Site: Scheme 758: A50 Abnormal Loads Laybys

Client: Optima Infrastructure Management

Boring diameter: 92 mm To 5.00m

Casing diameter:

Logged by: NB

Scale: 1:50

LR: G05046 Ground Level:32.23 m

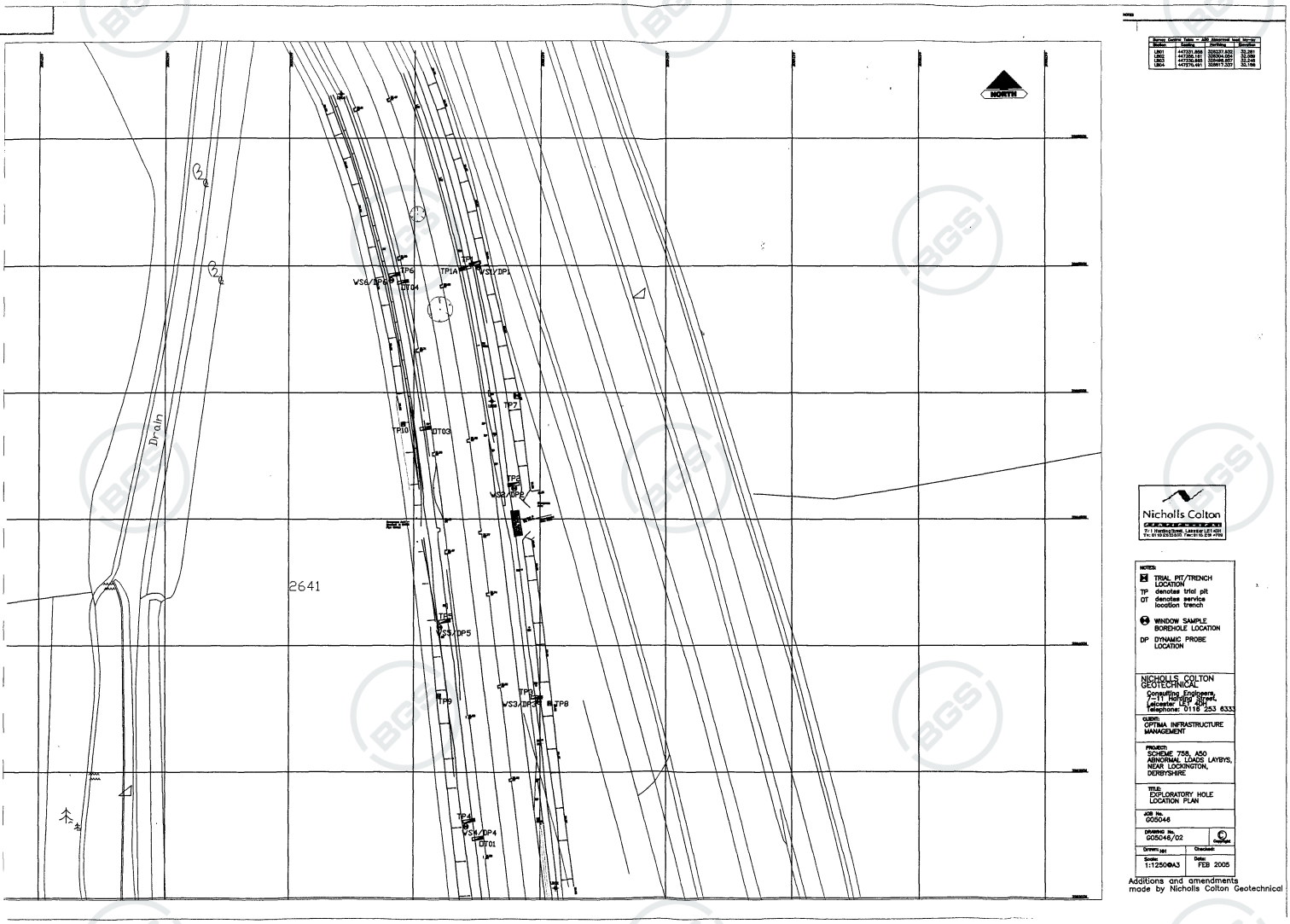
Date: 16/12/2004 Location: 447291E - 328546N

Sheet 1 of 1

Samples & Tests Depth (m)	Type	SPT N	Water	Level (m)	Depth (m)	Description	Legend	Installation
						MADE GROUND - hand dug, see trial pit TP6 for soil descriptions and sample details		
1.20-1.40	D 1			31.03	1.20			
1.40-1.90	D 2			30.83	1.40	MADE GROUND - orange brown gravelly fine sand (gravel is fine to coarse sub-angular to rounded quartz)		
1.90-2.00	D 3			30.33	1.90			
2.30-2.40	D 4			29.93	2.30	MADE GROUND - stiff red brown locally grey sandy slightly gravelly clay (gravel is medium to coarse sub-angular to rounded quartz)		
2.40-2.60	D 5			29.83	2.40			
2.60-2.80	D 6		▼	29.63	2.60			
2.80-3.00	D 7		▽	29.43	2.80	MADE GROUND - red brown grey and black slightly ashy clayey fine to medium sand and fine to coarse sub-angular to rounded quartz gravel		
3.00-4.00	D 8			29.23	3.00			
						Brown fine to medium SAND and fine to coarse sub-angular to rounded quartz GRAVEL		
4.00-4.85	D 9					Firm orange and pale grey sandy CLAY/SILT		
						Orange and pale grey fine to medium SAND		
4.85-5.00	D 10			27.38	4.85	Red brown orange and pale grey slightly clayey fine to medium SAND and fine to coarse sub-angular to rounded quartz GRAVEL		
				27.23	5.00			
						Orange brown silty very sandy fine to coarse sub-angular to rounded quartz GRAVEL		
						Firm red brown locally pale grey green mottled CLAY/SILT		
						End of Borehole at 5.00 m		

Remarks and Water Observations

1. Hand dug to 1.20m for bulk soil sampling and to check for services (See log for TP6).
2. Groundwater seepages were encountered at 3.00m rising to 2.70m on cessation of boring.
3. The borehole collapsed in on removal of window sampling tube from 5.00m.
4. Borehole terminated and backfilled with cement/bentonite upon completion.


NORTH
TP6
TP1A
WS1/DP1
WS4/DP6
DT04
TP7
TP10
DT03
TP3
WS2/DP2
2641
Drain
TP5
WS5/DP5
TP9
WS3/DP3
TP8
TP4
WS6/DP4
DT01
Nicholls Colton
NOTES:
TRIAL PIT/TRENCH LOCATION
TP denotes trial pit
DT denotes service location trench
WINDOW SAMPLE BOREHOLE LOCATION
DP DYNAMIC PROBE LOCATION
NICHOLLS COLTON GEOTECHNICAL
Consulting Engineers
7-11 Nottingham Street
Leicester LE1 4BU
Telephone: 0116 253 6333
CLIENT:
OPTIMA INFRASTRUCTURE MANAGEMENT
PROJECT:
SCHEME 758, A50 ARMORIAL LOADS LAYBYS, NEAR LOCKINGTON, DERBYSHIRE
TITLE:
EXPLORATORY HOLE LOCATION PLAN
JOB No.
G05046
DRAWING No.
G05046/02
Drawn: NH
Checked:
Scale:
1:1250@A3
Date:
FEB 2005
Additions and amendments made by Nicholls Colton Geotechnical

TRIAL PIT TP7 **Sheet 1 of 2**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10/12/2004

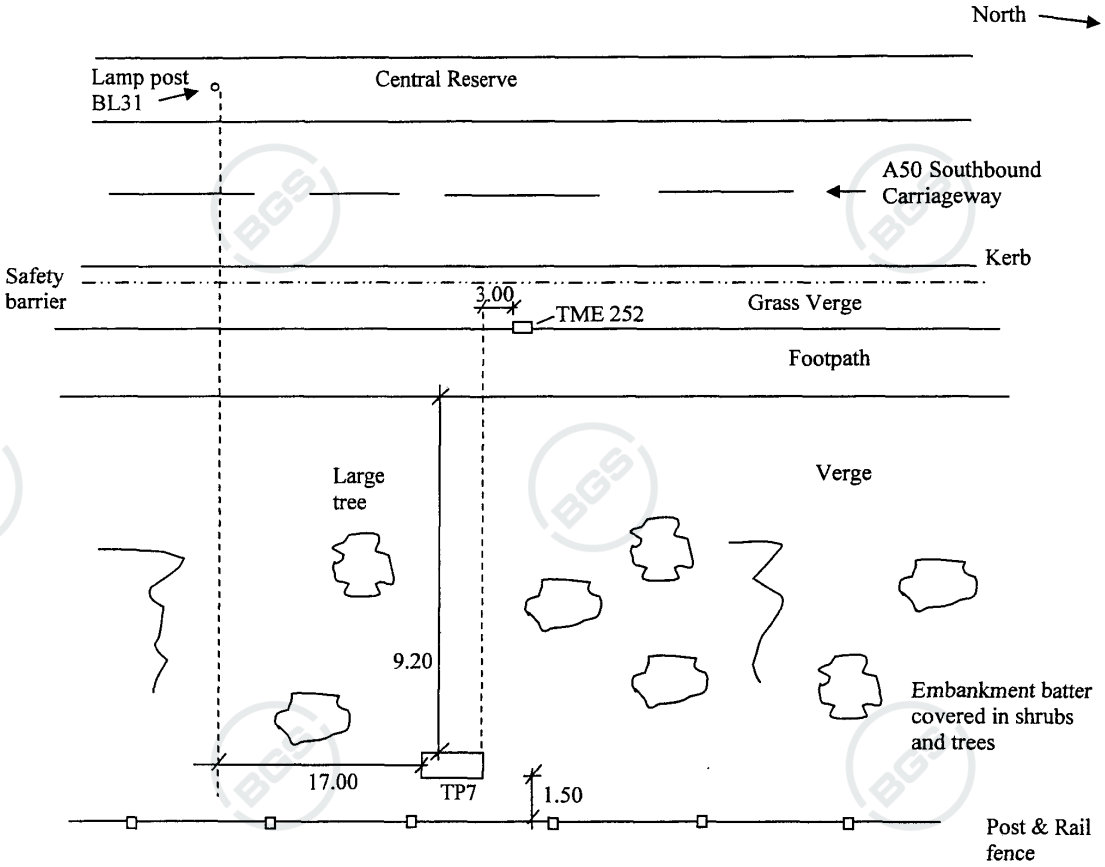
Plant/Method of Excavation: Hand Excavated

Ground Level: 30.88m AOD

National Grid Co-ordinates: 447341E 328499N

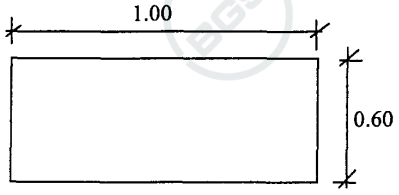
Services Encountered: None

Location Plan:



NOT TO SCALE
(All dimensions are in m)

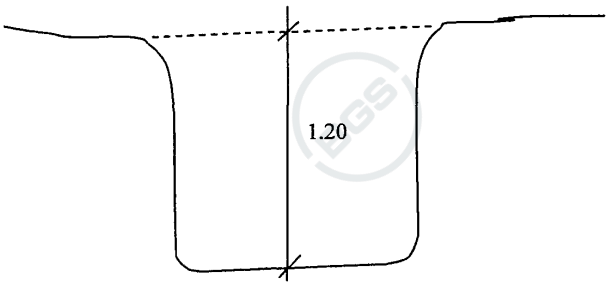
Plan View of Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TRIAL PIT TP7 **(Continued)** **Sheet 2 of 2**

Section View of Trial Pit:



Descriptions:

Depth (m)	Description
0.00 – 0.25	MADE GROUND – vegetation over topsoil with many roots and occasional wood and glass fragments
0.25 – 0.70	PROBABLE MADE GROUND – brown silty gravelly fine to medium sand with occasional roots (gravel is fine to coarse sub-angular to rounded quartz)
0.70 – 1.20	Orange and red brown slightly clayey very sandy fine to medium sub-angular to rounded quartz GRAVEL

Samples:

Type / No.	Depth (m)
D 1	0.50m
B 2	0.70-0.80m
B 3	1.00-1.20m

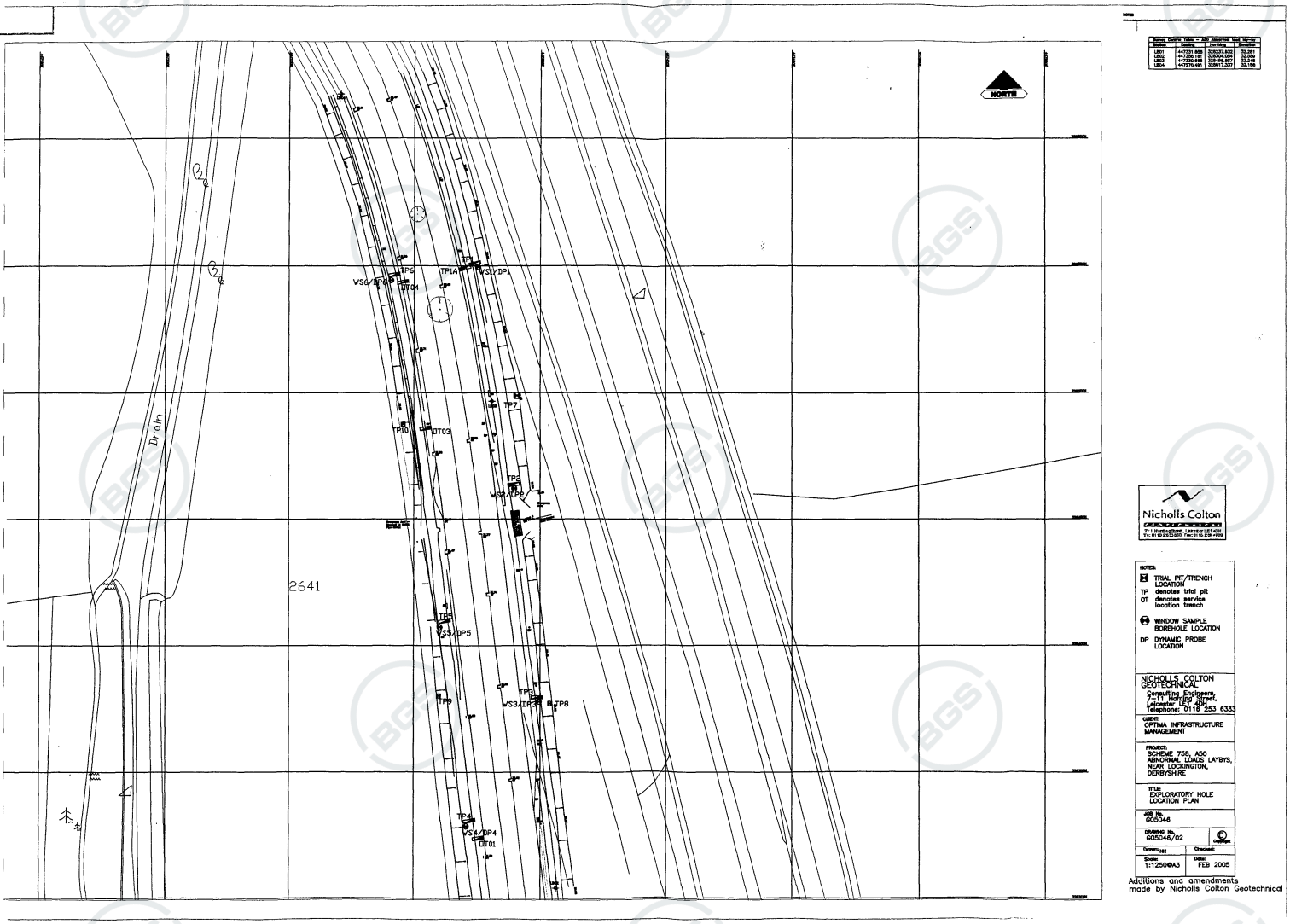
Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial pit sides occurred.
3. The trial pit was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18127721 : BGS Reference: SK42NE638
British National Grid (27700) : 447340,328490



Survey Control Table – ARD (Unrectified Grid Values)

Station	Eastings	Northings	Elevation
LB01	447331.666	328327.830	72.281
LB02	447290.181	328304.087	72.206
LB03	447284.181	328317.337	72.206
LB04	447370.481	328417.337	72.156

Nicholls Colton GEOTECHNICAL

NOTES:
- TRIAL PIT/TRENCH LOCATION
- TP denotes trial pit
- DT denotes service location trench
- WINDOW SAMPLE BOREHOLE LOCATION
- DP DYNAMIC PROBE LOCATION

NICHOLLS COLTON GEOTECHNICAL
Consulting Engineers
7–11 Nottingham Street
Leicester LE1 4BU
Telephone: 0116 253 6333

CLIENT: CAPITAL INFRASTRUCTURE MANAGEMENT

PROJECT: SCHEME 758, A50 ABNORMAL LOADS LAYBYS, NEAR LOCKINGTON, DERBYSHIRE

TITLE: EXPLORATORY HOLE LOCATION PLAN

JOB No. G05046

DRAWING No. G05046/02

Drawn: NH | Checked:

Scale: 1:1250@A3 | Date: FEB 2005

Additions and amendments made by Nicholls Colton Geotechnical

Contact BGS: ngdc@bgs.ac.uk

TRIAL PIT TP8 **Sheet 1 of 2**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10/12/2004

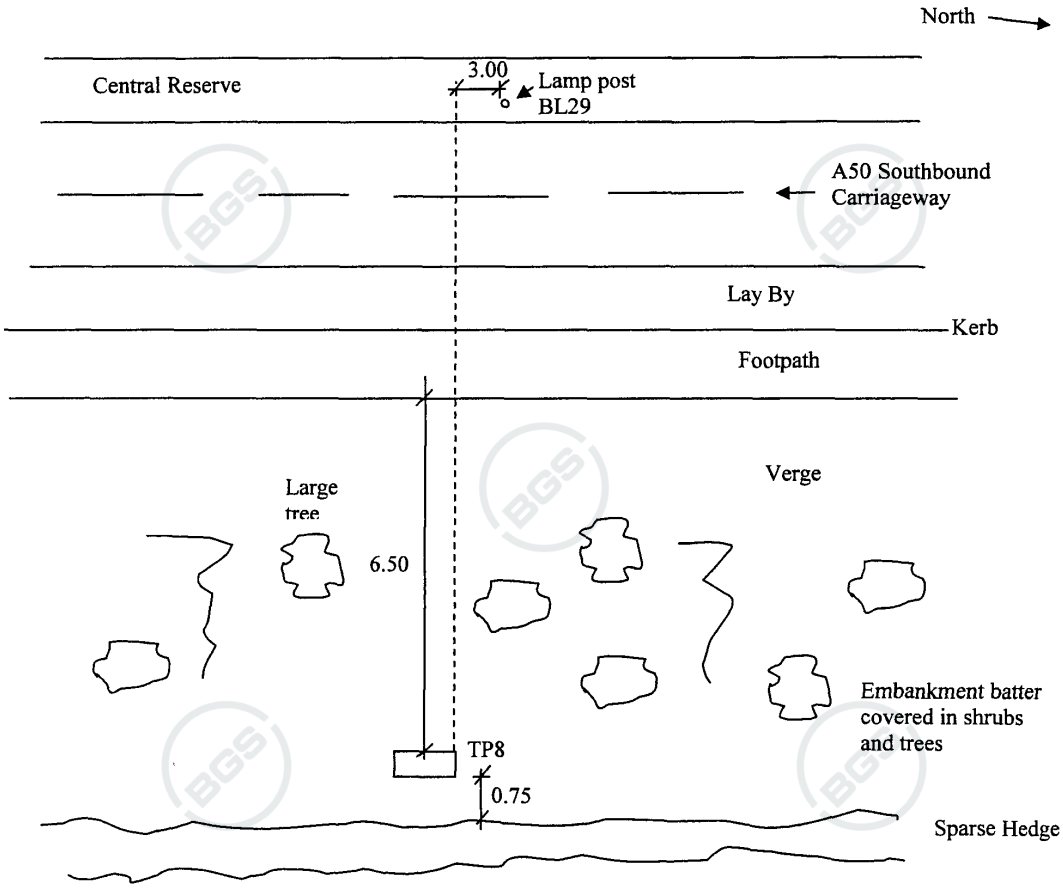
Plant/Method of Excavation: Hand Excavated

Ground Level: 30.50m AOD

National Grid Co-ordinates: 447354E 328377N

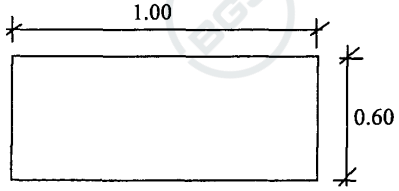
Services Encountered: None

Location Plan:



NOT TO SCALE
(All dimensions are in m)

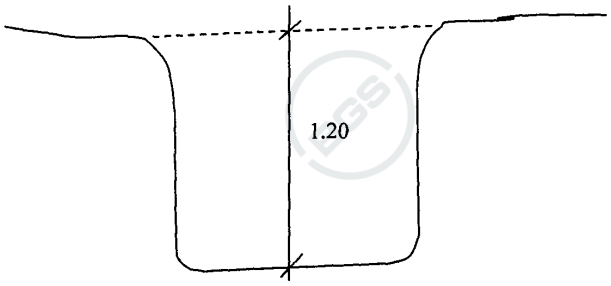
Plan View of Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TRIAL PIT TP8 **(Continued)** **Sheet 2 of 2**

Section View of Trial Pit:



Descriptions:

Depth (m)	Description
0.00 – 0.25	MADE GROUND – topsoil with many roots
0.25 – 0.75	MADE GROUND – firm red brown and grey clay with occasional roots
0.75 – 1.20	Moist orange and pale grey clayey very sandy fine to medium sub-angular to rounded quartz GRAVEL

Insitu Testing:

Hand Shear Vanes:

Depth	Readings (kPa)	Mean Value (kPa)
0.50m	76, 70 & 70	72

Samples:

Type / No.	Depth (m)
D 1	0.20m
B 2	0.50m
B 3	0.75-1.00m
D 4	1.20m

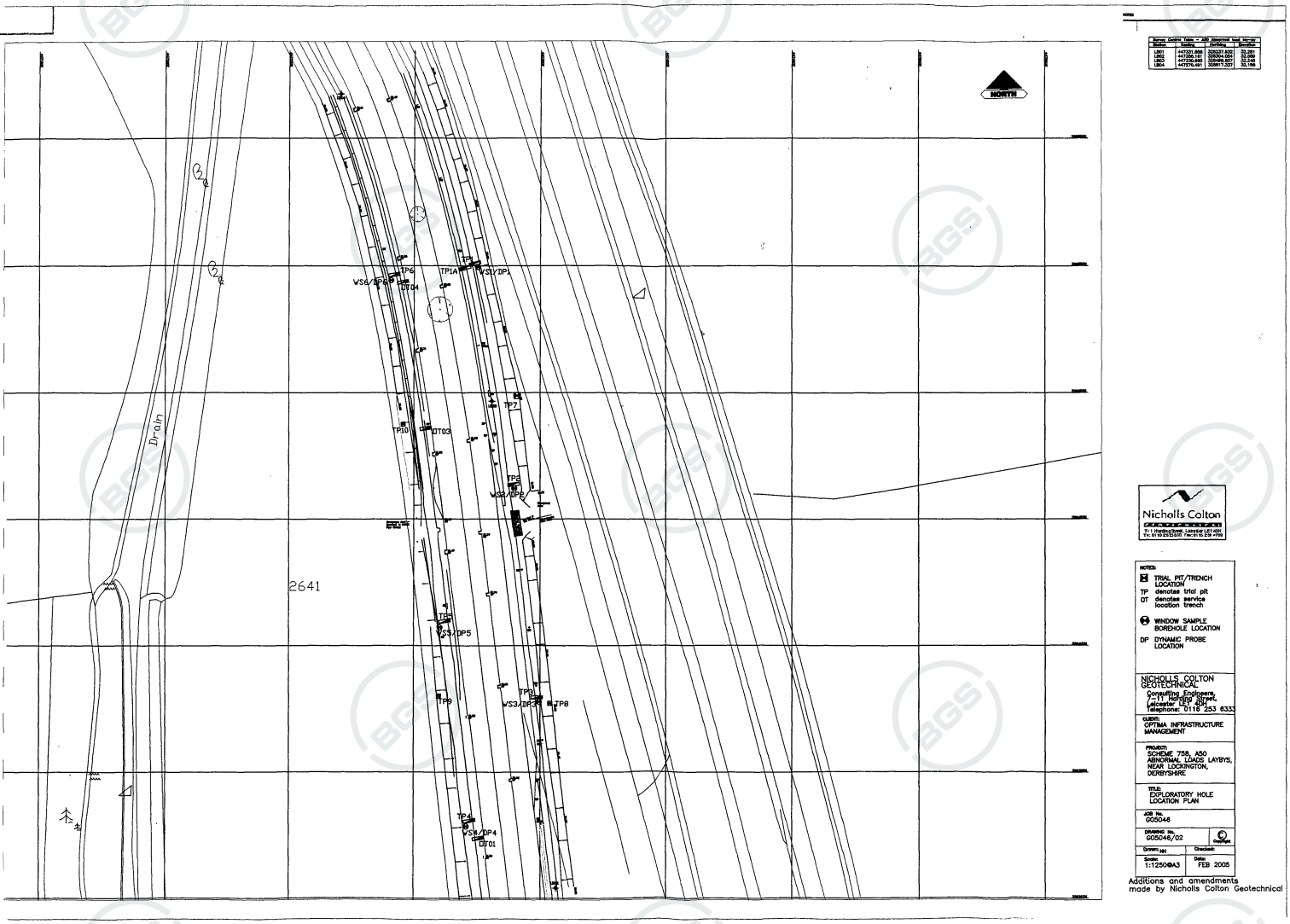
Remarks:

1. Slight groundwater seepages were encountered at 1.20m at the time of excavation.
2. No collapse of the trial pit sides occurred.
3. The trial pit was backfilled with arisings upon completion.

NICHOLLS COLTON GEOTECHNICAL LR: G05046

British Geological Survey

BGS ID: 18127722 : BGS Reference: SK42NE639
British National Grid (27700) : 447350,328370



Contact BGS: ngdc@bgs.ac.uk

TRIAL PIT TP9 **Sheet 1 of 2**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 09/12/2004

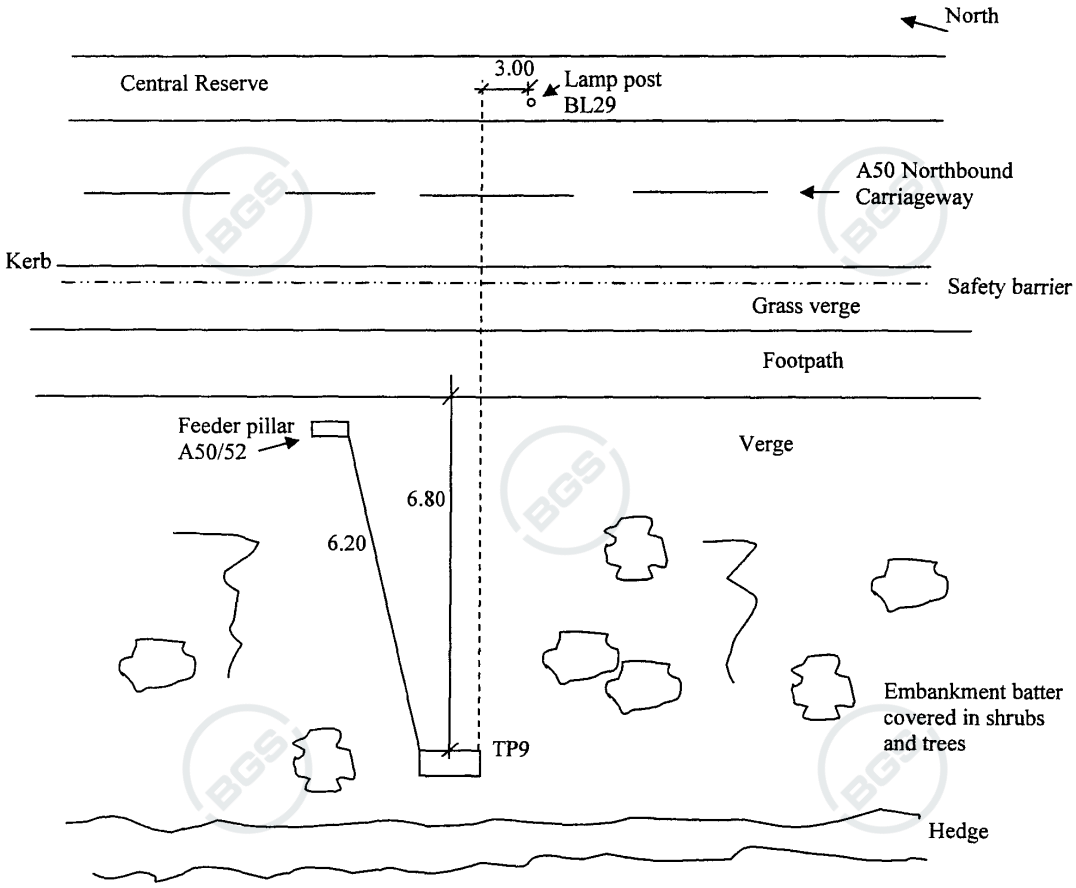
Plant/Method of Excavation: Hand Excavated

Ground Level: 30.52m AOD

National Grid Co-ordinates: 447310E 328380N

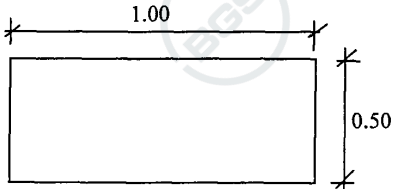
Services Encountered: None

Location Plan:



NOT TO SCALE
(All dimensions are in m)

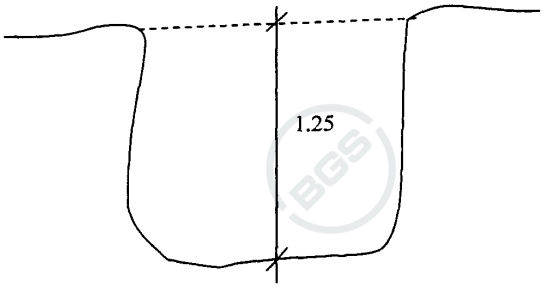
Plan View of Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TRIAL PIT TP9 **(Continued)** **Sheet 2 of 2**

Section View of Trial Pit:



Descriptions:

Depth (m)	Description
0.00 – 0.13	MADE GROUND – topsoil with many roots
0.13 – 0.65	MADE GROUND – firm red brown clay with many pockets of topsoil and roots
0.65 – 0.80	PROBABLE MADE GROUND – grey and brown clayey fine to coarse sand and fine to coarse sub-angular to rounded quartz gravel with many roots
0.80 – 1.25	Very moist orange and pale grey clayey very sandy fine to medium sub-angular to rounded quartz GRAVEL

Insitu Testing:

Hand Shear Vanes:

Depth	Readings (kPa)	Mean Value (kPa)
0.45m	80, 66 & 86	77

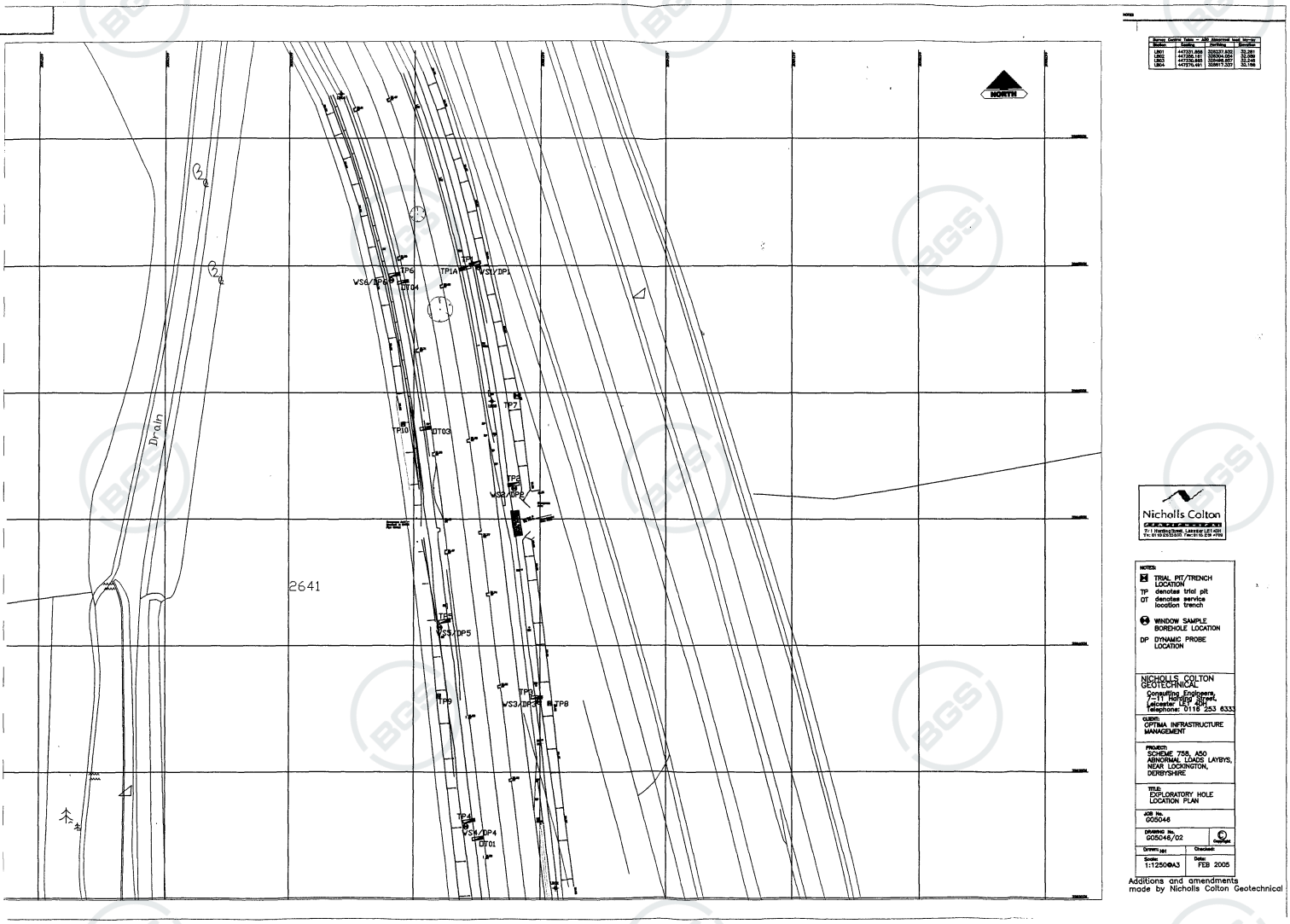
Samples:

Type / No.	Depth (m)
J 1	0.10m
T 2	0.10m
D 3	0.40m
D 4	0.70m
B 5	0.80-0.90m
B 6	1.00-1.20m
D 7	1.25m

Remarks:

1. Slight groundwater seepages were encountered at 1.10m at the time of excavation.
2. No collapse of the trial pit sides occurred.
3. The trial pit was backfilled with arisings upon completion.

NICHOLLS COLTON GEOTECHNICAL LR: G05046


NORTH
Drain
2641
TP1A
WS1/DP1
TP6
WS6/DP6
DT04
TP7
TP10
DT03
TP3
WS2/DP2
TP5
WS5/DP5
TP9
WS3/DP3
TP8
TP4
WS4/DP4
DT01
Nicholls Colton
NOTES:
TRIAL PIT/TRENCH LOCATION
TP denotes trial pit
DT denotes service location trench
WINDOW SAMPLE BOREHOLE LOCATION
DP DYNAMIC PROBE LOCATION
NICHOLLS COLTON GEOTECHNICAL
Consulting Engineers
7-11 Nottingham Street
Leicester LE1 4BU
Telephone: 0116 253 6333
CLIENT: OPTIMA INFRASTRUCTURE MANAGEMENT
PROJECT: SCHEME 758, A50 ABNORMAL LOADS LAYBYS, NEAR LOCKINGTON, DERBYSHIRE
TITLE: EXPLORATORY HOLE LOCATION PLAN
JOB No. G05046
DRAWING No. G05046/02
Drawn: NH
Checked:
Scale: 1:1250@A3
Date: FEB 2005
Additions and amendments made by Nicholls Colton Geotechnical

TRIAL PIT TP10 **Sheet 1 of 2**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 09/12/2004

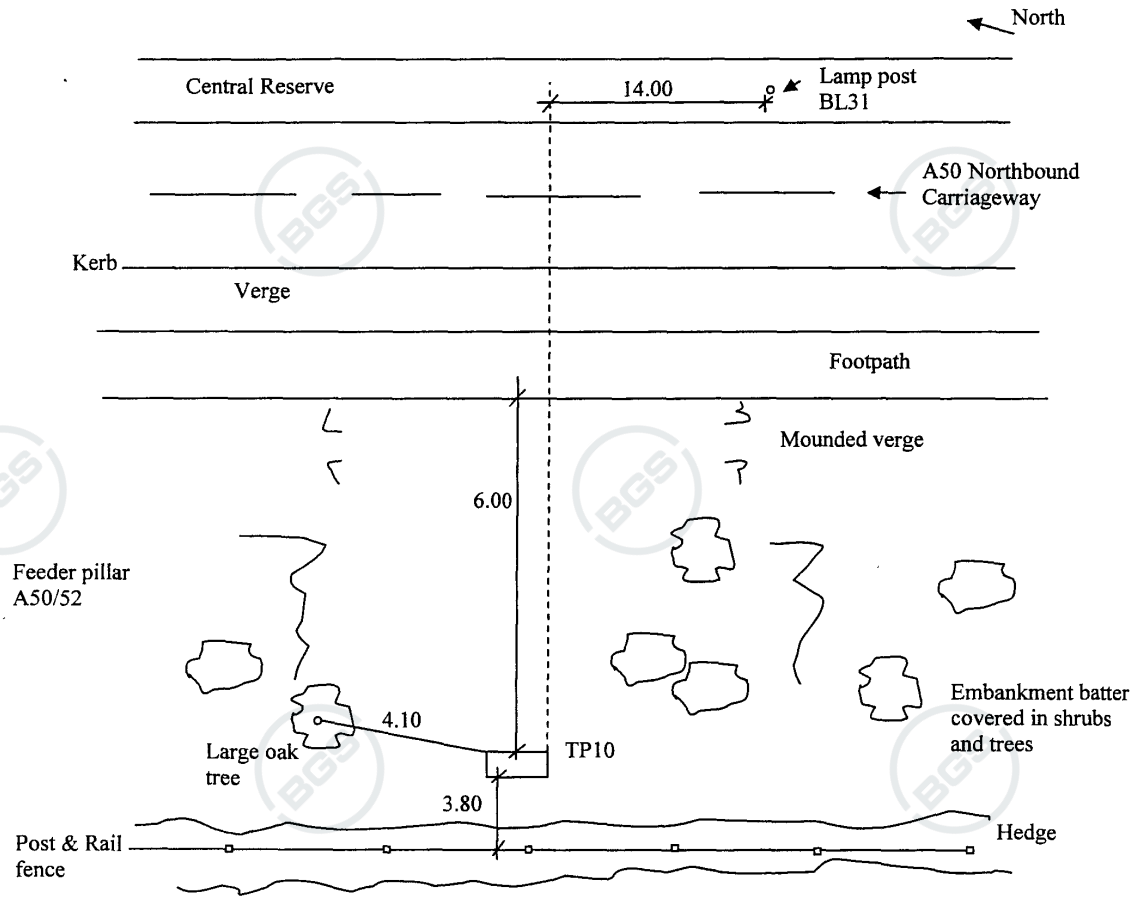
Plant/Method of Excavation: Hand Excavated

Ground Level: 30.59m AOD

National Grid Co-ordinates: 447296E 328487N

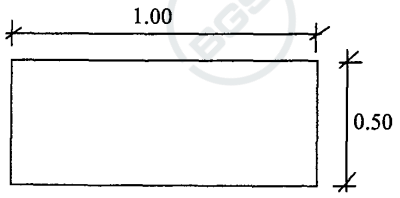
Services Encountered: None

Location Plan:



NOT TO SCALE
(All dimensions are in m)

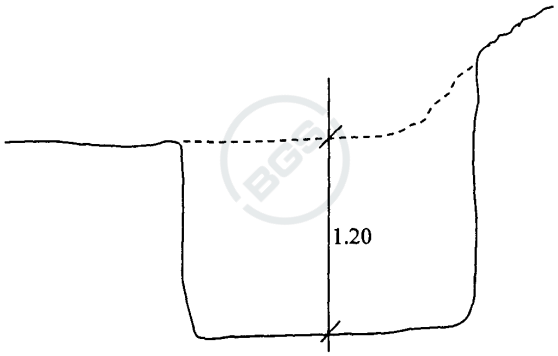
Plan View of Trial Pit:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

TRIAL PIT TP10 **(Continued)** **Sheet 2 of 2**

Section View of Trial Pit:



Descriptions:

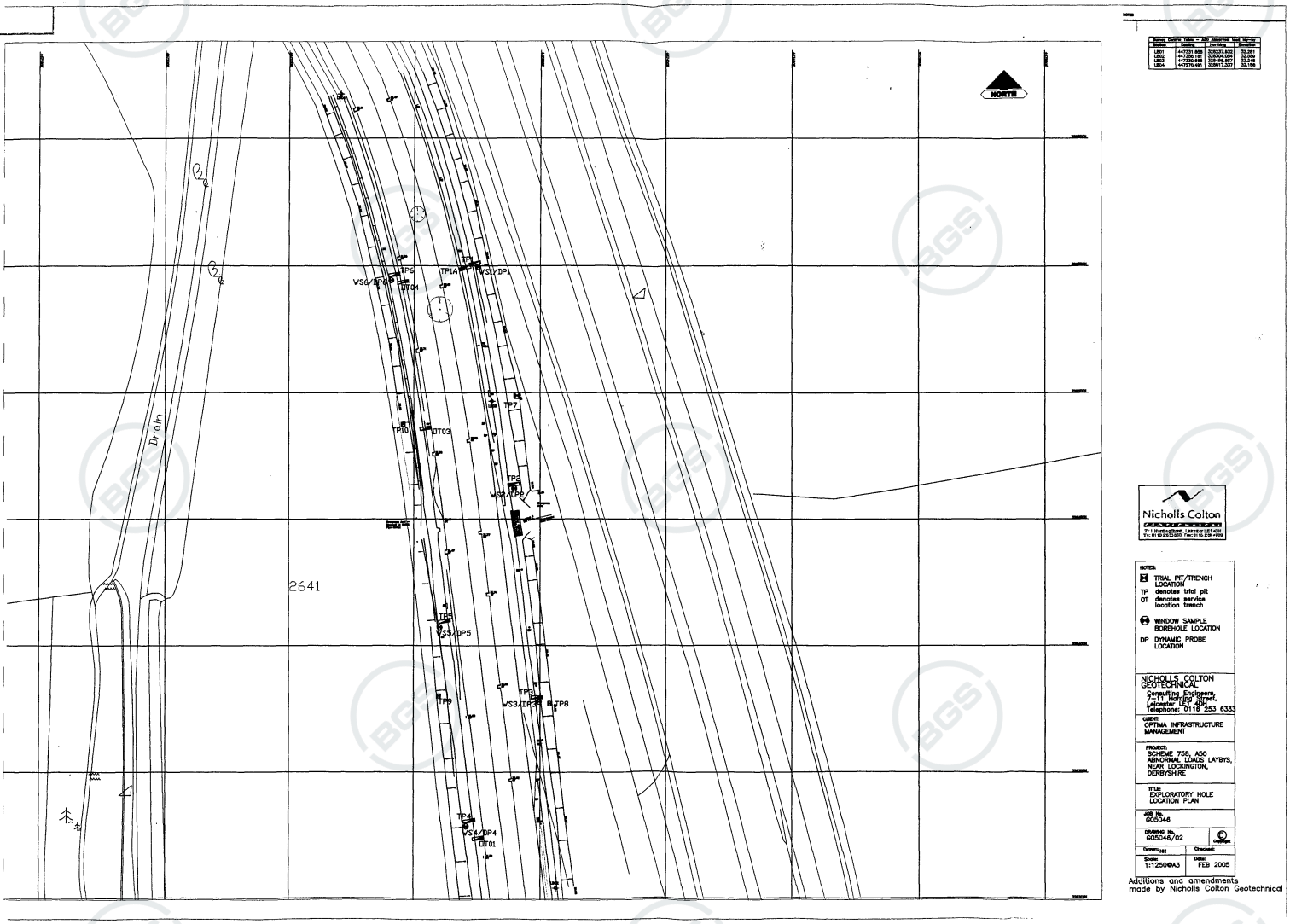
Depth (m)	Description
0.00 – 0.70	MADE GROUND – brown fine to medium sand and fine to coarse sub-angular to rounded quartz gravel with occasional roots
0.70 – 1.20	Brown slightly silty medium to coarse SAND and fine to coarse sub-angular to rounded quartz GRAVEL ….becoming silty very sandy medium to coarse sub-angular to rounded quartz GRAVEL from 1.20m

Type / No.	Depth (m)
D 1	0.20m
B 2	0.70-1.00m
D 3	1.20m

Remarks:

1. Trial pit cut into toe of embankment adjacent to apparent ditch filled with organic matter.
2. Groundwater seepages were encountered at 1.10m at the time of excavation.
3. No collapse of the trial pit sides occurred.
4. The trial pit was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk


NORTH
Drain
2641
TP6
TP1A
WS1/DP1
WS4/DP6
DT04
TP7
TP10
DT03
TP3
WS2/DP2
TP5
WS5/DP5
TP9
WS3/DP3
TP8
TP4
WS6/DP4
DT01
Nicholls Colton
NOTES:
TRIAL PIT/TRENCH LOCATION
TP denotes trial pit
DT denotes service location trench
WINDOW SAMPLE BOREHOLE LOCATION
DP DYNAMIC PROBE LOCATION
NICHOLLS COLTON GEOTECHNICAL
Consulting Engineers
7-11 Nottingham Street
Leicester LE1 4BU
Telephone: 0116 253 6333
CLIENT:
OPTIMA INFRASTRUCTURE MANAGEMENT
PROJECT:
SCHEME 758, A50 ABNORMAL LOADS LAYBYS, NEAR LOCKINGTON, DERBYSHIRE
TITLE:
EXPLORATORY HOLE LOCATION PLAN
JOB No.
G05046
DRAWING No.
G05046/02
Drawn: NH
Checked:
Scale:
1:1250@A3
Date:
FEB 2005
Additions and amendments made by Nicholls Colton Geotechnical

SERVICE LOCATION TRENCH OT01 **Sheet 1 of 3**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 08/12/2004

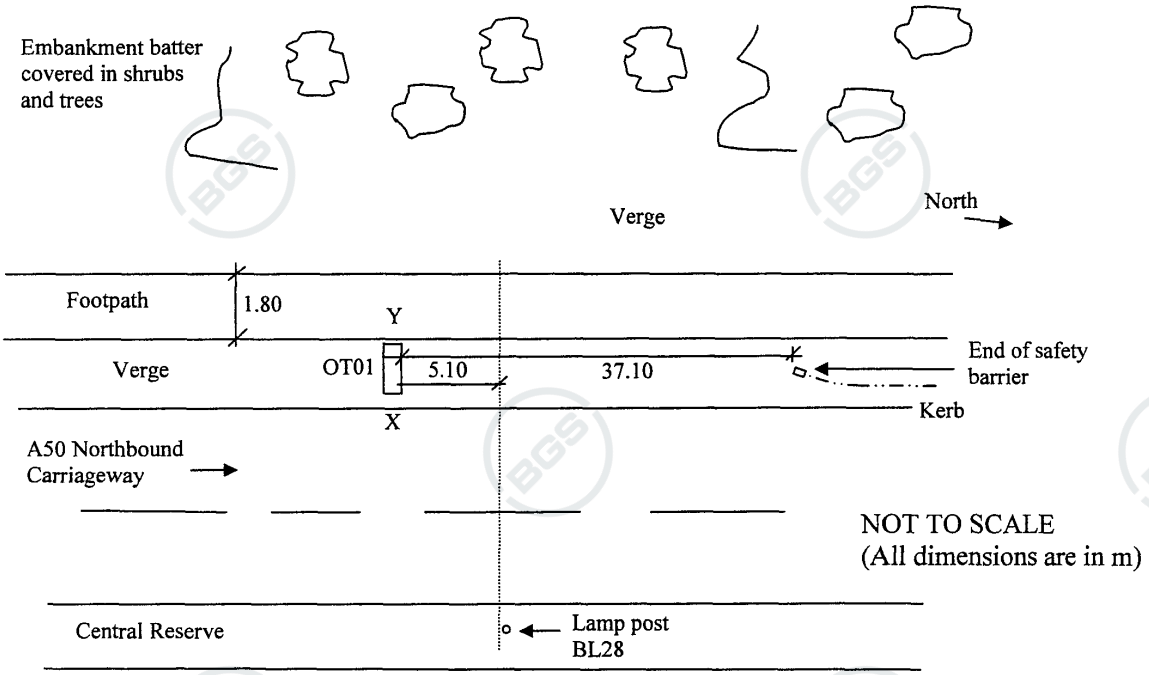
Plant/Method of Excavation: Hand Excavated

Ground Level: 32.05m AOD

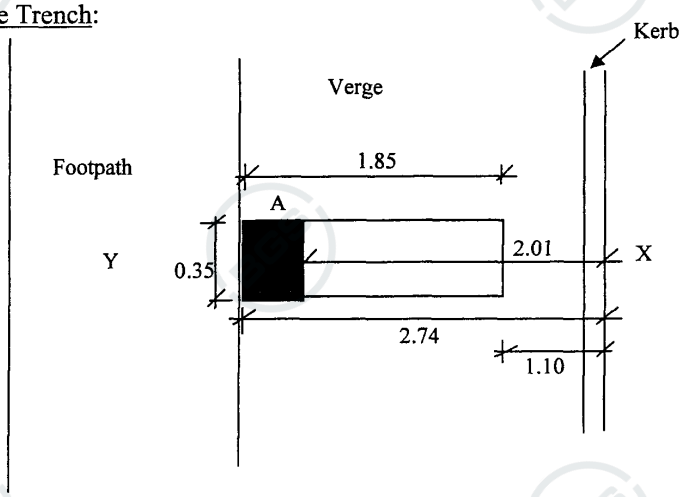
National Grid Co-ordinates: 447325E 328324N

Services Encountered: Yes (see below)

Location Plan:



Plan View of Service Trench:



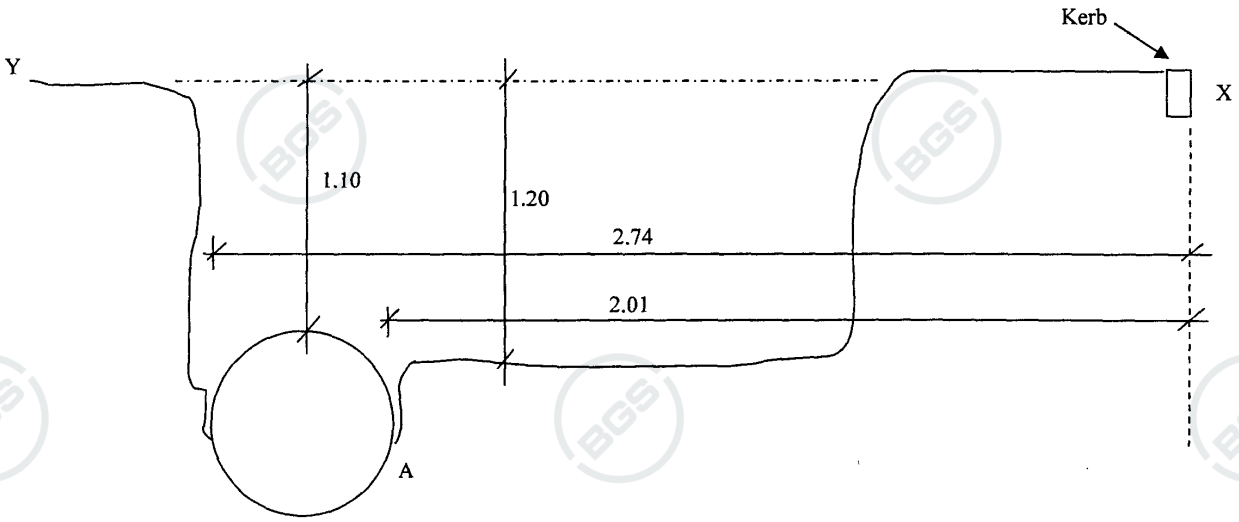
NICHOLLS COLTON GEOTECHNICAL LR: G05046

SERVICE LOCATION TRENCH OT01 (continued) **Sheet 2 of 3**

Services Encountered:

A = 27'' diameter black cast iron gas main at 1.10m below existing ground level.

Section View of Service Trench:



Descriptions:

Depth (m)	Description
0.00 – 0.16	MADE GROUND – turf over topsoil with many roots
0.16 – 1.20	MADE GROUND – black ash and clinker
0.20 – 1.20	MADE GROUND – red brown clayey fine to medium sand and fine to coarse angular to rounded quartz and flint gravel with occasional pockets of firm and stiff red brown locally pale grey green mottled slightly gravelly clay (gravel is fine to medium siltstone and mudstone), shale cobbles and glass fragments

Contact BGS: ngdc@bgs.ac.uk

SERVICE LOCATION TRENCH OT01 (continued) **Sheet 3 of 3**

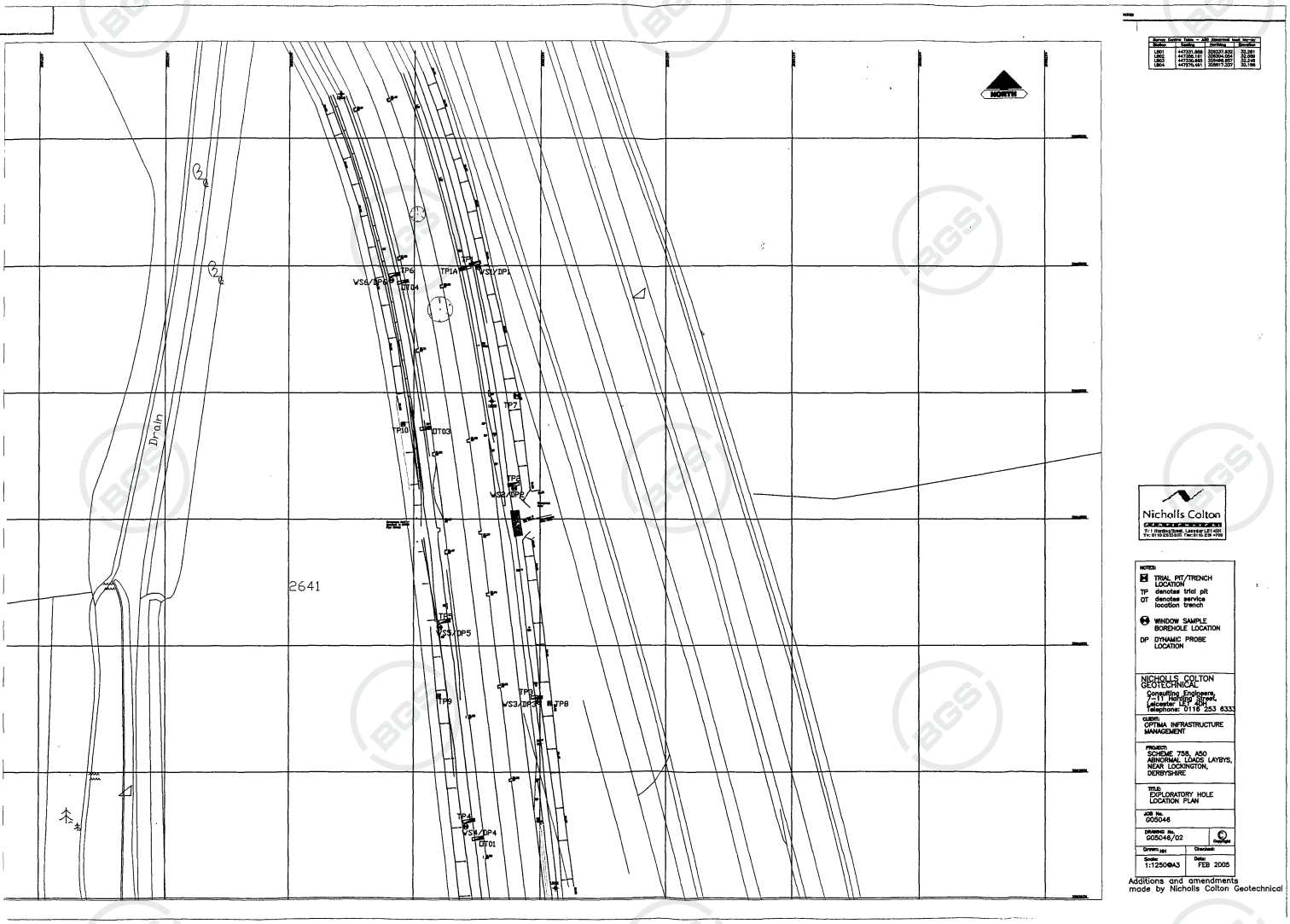
Samples:

Type / No.	Depth (m)
B 1	0.30m
D 2	0.90m

Remarks:

1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial trench sides occurred.
3. The trial trench was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk



Survey Control Table – All dimensions in metres

Station	Eastings	Northings	Ground Level
LB01	447331.666	328327.830	72.281
LB02	447290.181	328304.087	72.276
LB03	447317.161	328277.557	72.290
LB04	447370.481	328317.337	72.196

Nicholls Colton GEOTECHNICAL

NOTES:
- TRIAL PIT/TRENCH LOCATION
- TP denotes trial pit
- DT denotes service location trench
- WINDOW SAMPLE BOREHOLE LOCATION
- DP DYNAMIC PROBE LOCATION

NICHOLLS COLTON GEOTECHNICAL
Consulting Engineers
7-11 Nottingham Street
Leicester LE1 4BU
Telephone: 0116 253 6333

CLIENT: CAPITAL INFRASTRUCTURE MANAGEMENT

PROJECT: SCHEME 758, A50 ABNORMAL LOADS LAYBYS, NEAR LOCKINGTON, DERBYSHIRE

TITLE: EXPLORATORY HOLE LOCATION PLAN

JOB No. G05046

DRAWING No. G05046/02

Drawn: NH | Checked:

Scale: 1:1250@A3 | Date: FEB 2005

Additions and amendments made by Nicholls Colton Geotechnical

SERVICE LOCATION TRENCH OT03 **Sheet 1 of 2**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 08/12/2004

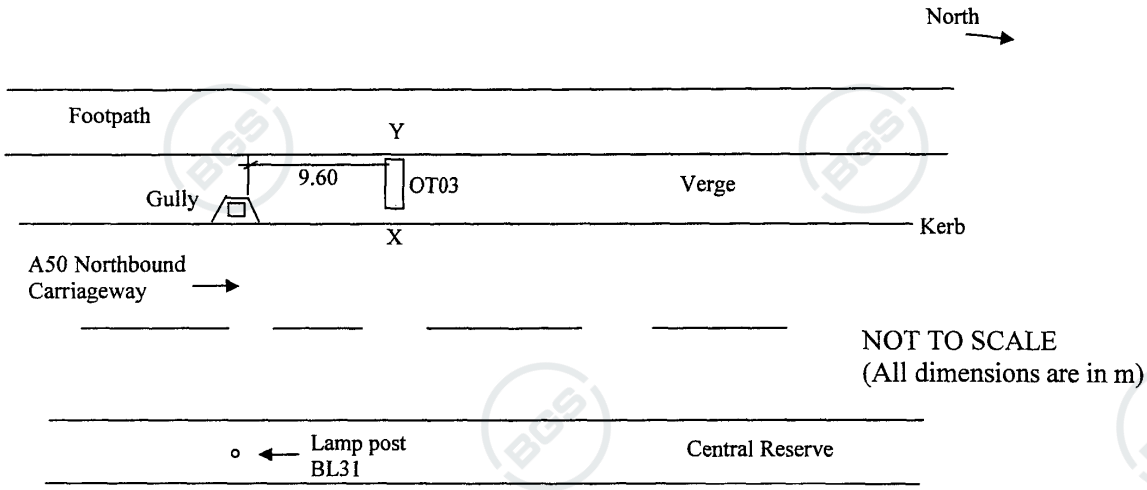
Plant/Method of Excavation: Hand Excavated

Ground Level: 31.68m AOD

National Grid Co-ordinates: 447306E 328481N

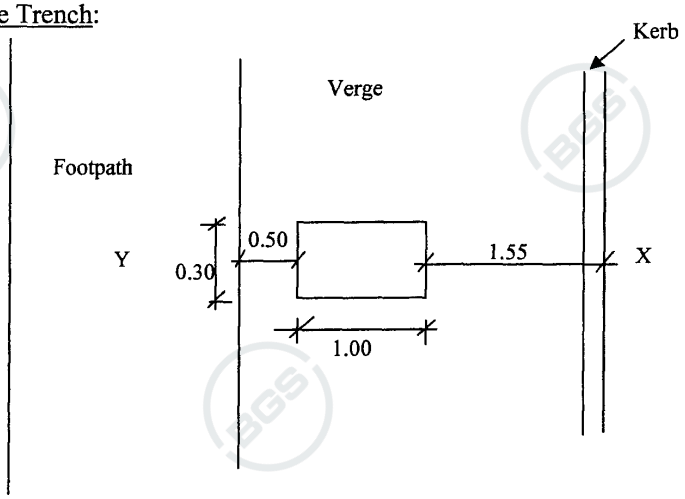
Services Encountered: None

Location Plan:



NOT TO SCALE
(All dimensions are in m)

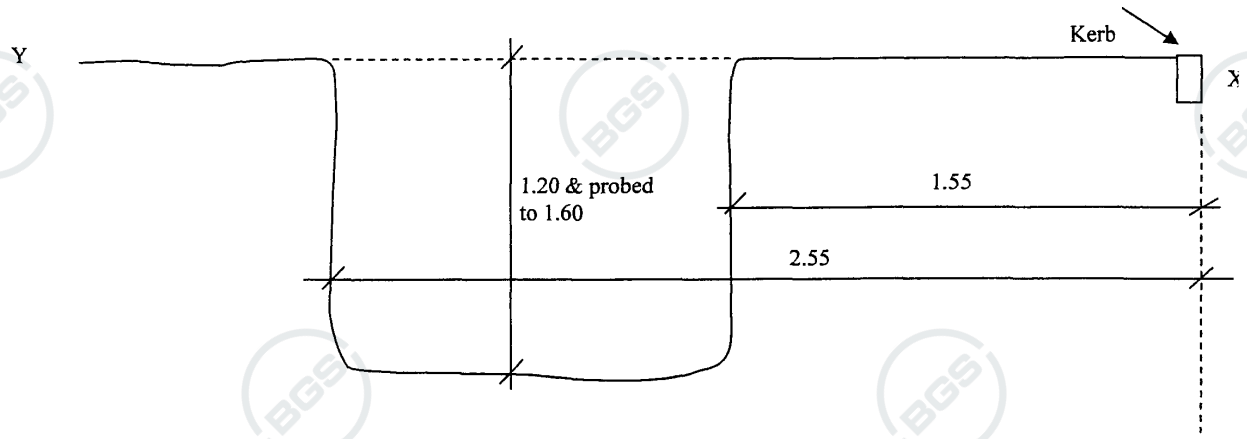
Plan View of Service Trench:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

SERVICE LOCATION TRENCH OT03 (continued) **Sheet 2 of 2**

Section View of Service Trench:



Descriptions:

Depth (m)	Description
0.00 – 1.20	MADE GROUND – grey and brown clayey fine to medium sand and fine to coarse sub-angular to rounded quartz gravel with occasional paving slab and concrete fragments

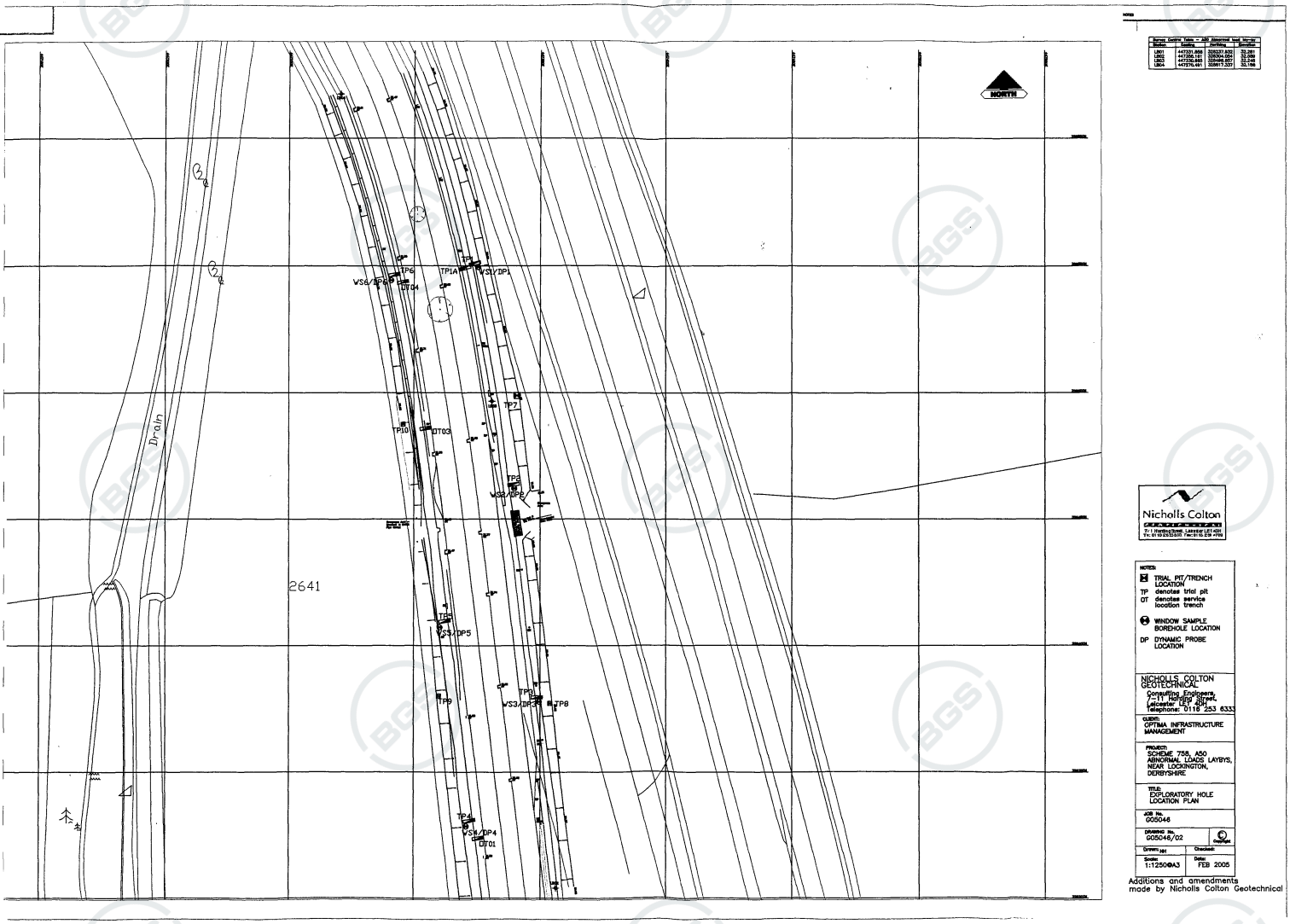
Samples:

Type / No.	Depth (m)
B 1	0.90m

Remarks:

1. Although a clear signal was obtained on the cable avoidance tool (CAT) the cast iron gas main was not located, it is assumed that the pipe is located at a depth in excess of 1.60m.
2. No groundwater seepages were encountered at the time of excavation.
3. No collapse of the trial trench sides occurred.
4. The trial trench was backfilled with arisings upon completion.

Contact BGS: ngdc@bgs.ac.uk


NORTH
Drain
2641
TP6
TP1A
WS1/DP1
WS4/DP6
DT04
TP7
TP10
DT03
TP3
WS2/DP2
TP5
WS5/DP5
TP9
WS3/DP3
TP8
TP4
WS6/DP4
DT01
Nicholls Colton
GEOTECHNICAL
NOTES:
TRIAL PIT/TRENCH LOCATION
TP denotes trial pit
DT denotes service location trench
WINDOW SAMPLE BOREHOLE LOCATION
DP DYNAMIC PROBE LOCATION
NICHOLLS COLTON GEOTECHNICAL
Consulting Engineers
7-11 Nottingham Street
Leicester LE1 4BU
Telephone: 0116 253 6333
CLIENT:
OPTIMA INFRASTRUCTURE MANAGEMENT
PROJECT:
SCHEME 758, A50 ABNORMAL LOADS LAYBYS, NEAR LOCKINGTON, DERBYSHIRE
TITLE:
EXPLORATORY HOLE LOCATION PLAN
JOB No.
G05046
DRAWING No.
G05046/02
Drawn: NH
Checked:
Scale:
1:1250@A3
Date:
FEB 2005
Additions and amendments made by Nicholls Colton Geotechnical

SERVICE LOCATION TRENCH OT04 **Sheet 1 of 2**

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 13/12/2004

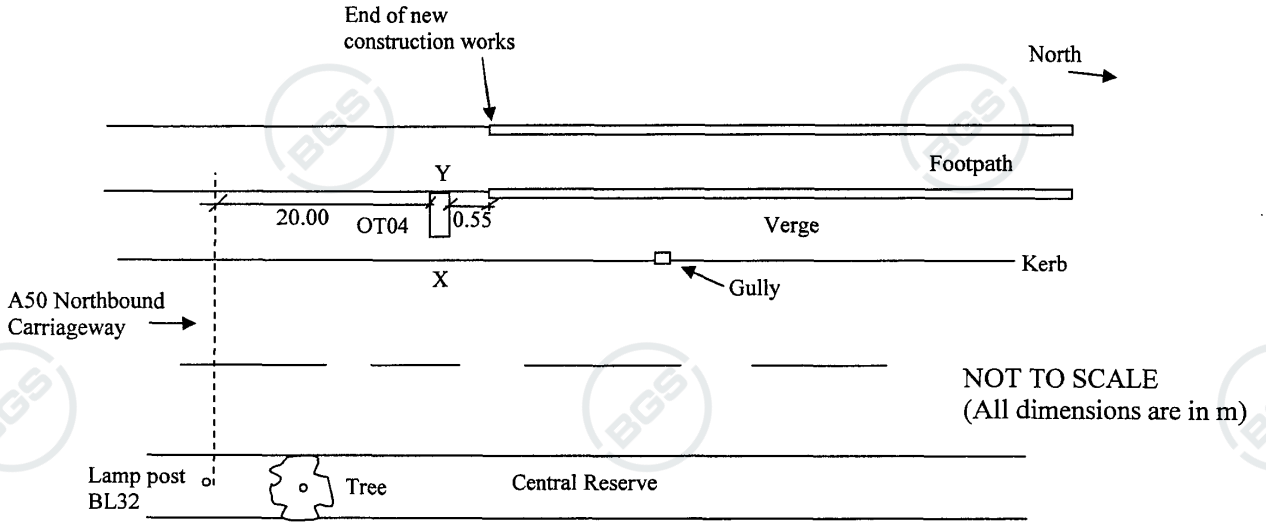
Plant/Method of Excavation: Hand Excavated

Ground Level: 32.00m AOD

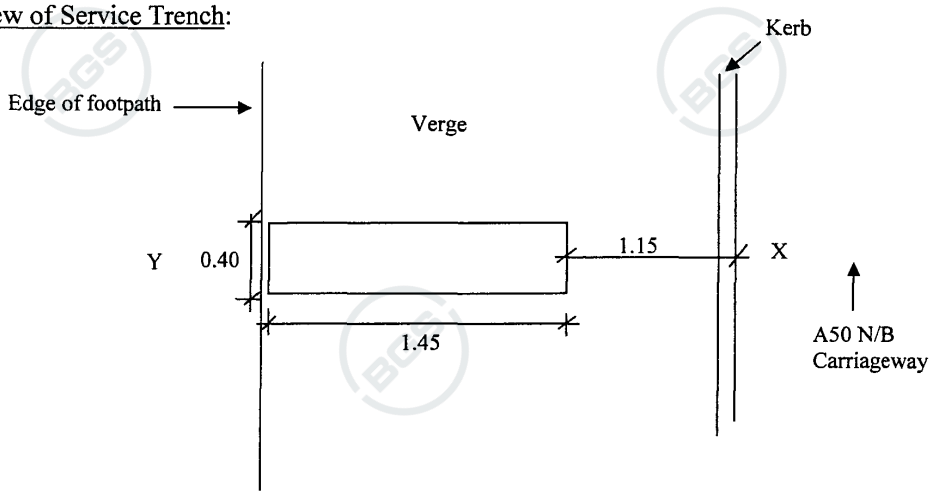
National Grid Co-ordinates: 447295E 328543N

Services Encountered: None

Location Plan:



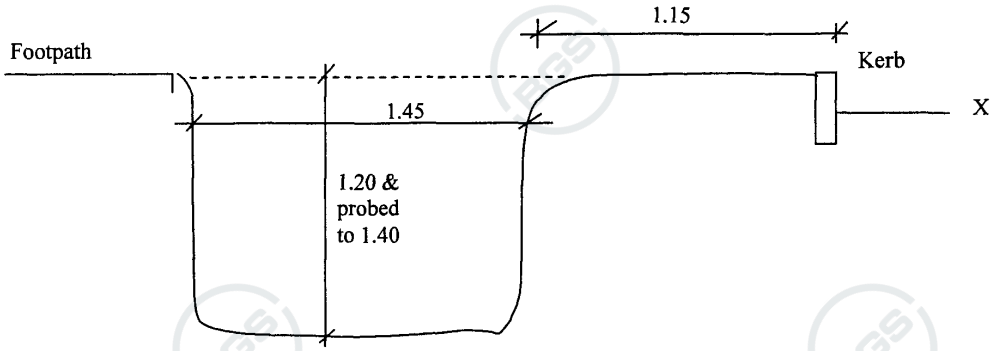
Plan View of Service Trench:



NICHOLLS COLTON GEOTECHNICAL LR: G05046

SERVICE LOCATION TRENCH OT04 (Continued) **Sheet 1 of 2**

Section View of Service Trench:



Descriptions:

Depth (m)	Description
0.00 – 0.05	MADE GROUND – topsoil
0.05 – 0.20	MADE GROUND – grey crushed rock sub-base
0.20 – 1.20	MADE GROUND – orange brown clayey fine to coarse sand and fine to coarse sub-angular to sub-rounded quartz gravel with occasional pockets of stiff sandy slightly gravelly clay and brick fragments

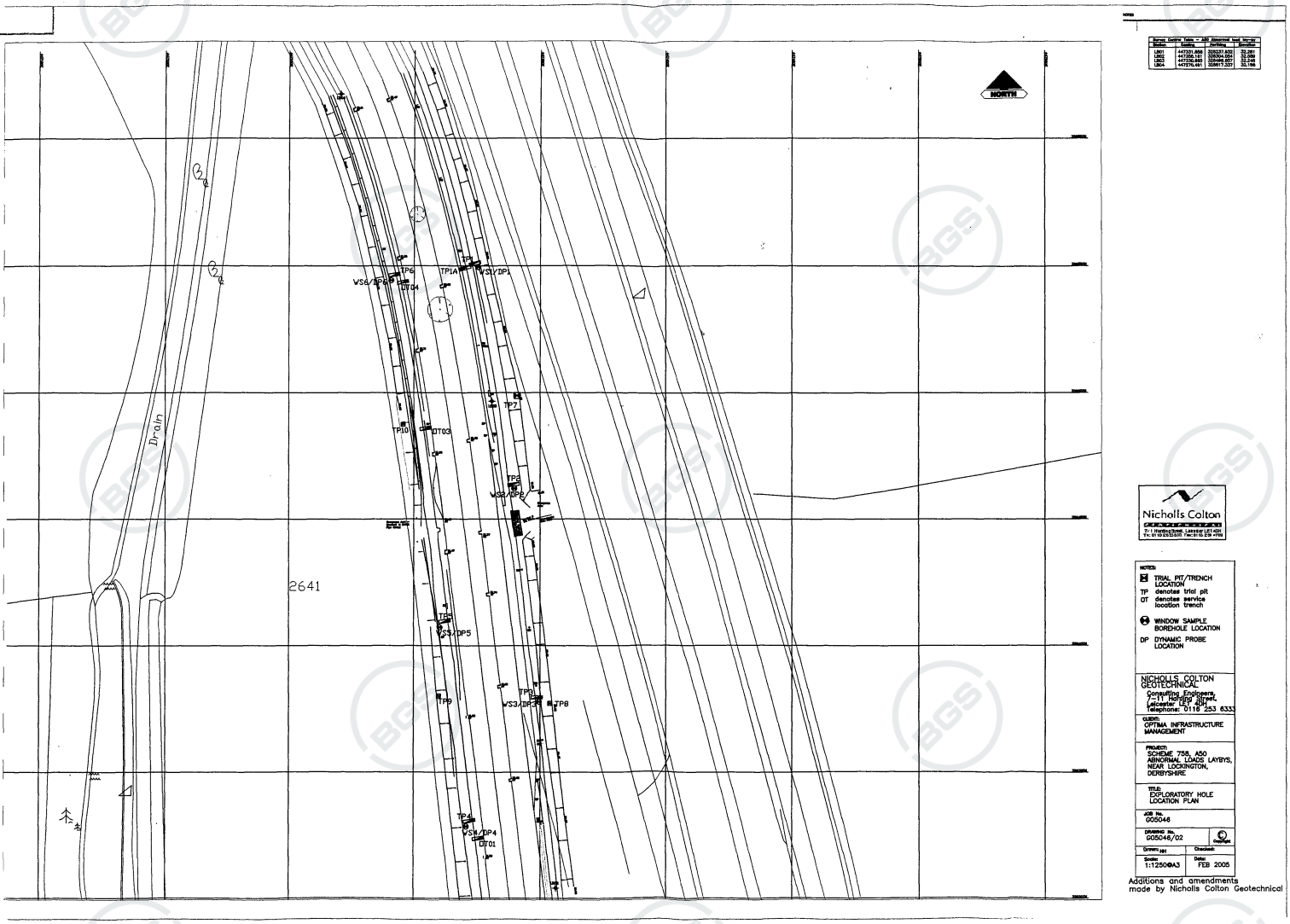
Samples:

Type / No.	Depth (m)
B 1	0.50m

Remarks:

1. Although a clear signal was obtained on the cable avoidance tool (CAT) the cast iron gas main was not located, it is assumed that the pipe is located at a depth in excess of 1.40m.
2. No groundwater seepages were encountered at the time of excavation.
3. No collapse of the trial trench sides occurred.
4. The trial trench was backfilled with arisings upon completion.

NICHOLLS COLTON GEOTECHNICAL LR: G05046


NORTH
TP6
TP1A
WS1/DP1
WS4/DP4
DT04
TP7
TP10
DT03
TP3
WS2/DP2
Drain
2641
TP5
WS3/DP5
TP9
WS3/DP3
TP8
TP4
WS4/DP4
DT01
Nicholls Colton
TRIAL PIT/TRENCH LOCATION
TP denotes trial pit
DT denotes service location trench
WINDOW SAMPLE BOREHOLE LOCATION
DP DYNAMIC PROBE LOCATION
NICHOLLS COLTON GEOTECHNICAL
Consulting Engineers
7-11 Nottingham Street
Leicester LE1 4BU
Telephone: 0116 253 6333
CLIENT:
OPTIMA INFRASTRUCTURE MANAGEMENT
PROJECT:
SCHEME 758, A50 ARMORIAL LOADS LAYBYS, NEAR LOCKINGTON, DERBYSHIRE
TITLE:
EXPLORATORY HOLE LOCATION PLAN
JOB No.
G05046
DRAWING No.
G05046/02
Drawn: NH
Checked:
Scale:
1:1250@A3
Date:
FEB 2005
Additions and amendments made by Nicholls Colton Geotechnical

BOREHOLE RECORD - Window Sampling

Project: A453 WIDENING, MI JUNCTION 24 - A52 NOTTINGHAM
Engineer: LAING O'ROURKE
Borehole: WS01A-06
Project No: PC062588
Client: WHITE YOUNG GREEN
National Grid Coordinates: 447935.75 E, 327888.38 N
Ground Level: 34.87 m OD
Scale: 1:50

Sampling			Properties		Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
						G.L.		34.87
0.50	D				Dark brown slightly gravelly sand with some organic material. Gravel is angular fine to medium quartzite. [MADE GROUND - GRANULAR]	0.40		34.47
					Stiff red brown sandy gravelly clay. Gravel is angular fine to coarse mudstone. [MADE GROUND-COHESIVE]	0.80		34.07
1.20- 1.30	D				Very hard solidified grey ash (PFA). [MADE GROUND - GRANULAR]	1.30		33.57
					End of Borehole			

Boring				Progress					Groundwater					
Depth	Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.20		Inspection Pit	PS	G.L.			02/10/06	08:00						None encountered during boring.
1.30	0.10	Windowless Sampler	PS	1.30			02/10/06	18:00						

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

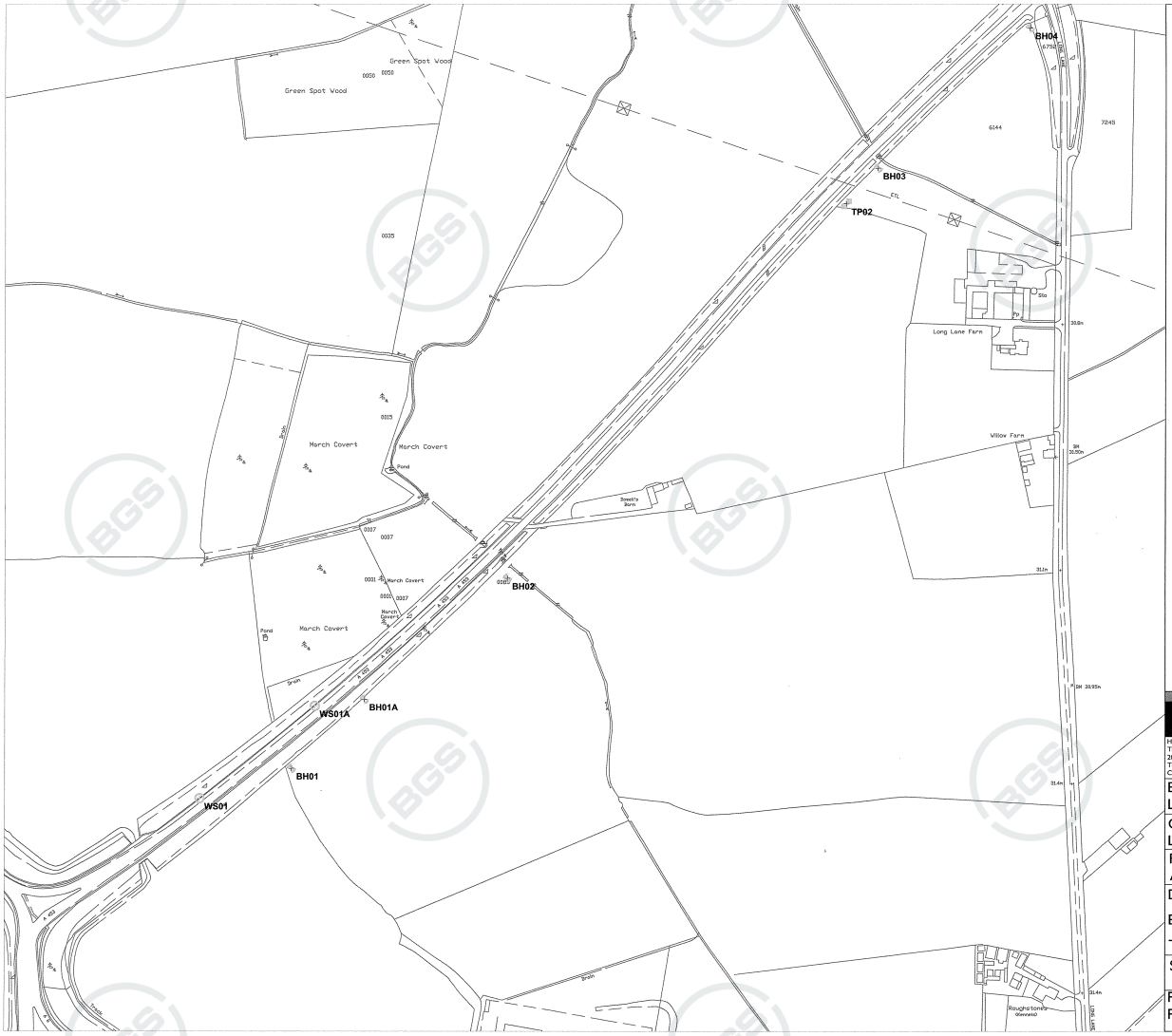
Inspection pit hand excavated to 1.20m depth.
Terminated at 1.30m due to refusal.
Window Sample Borehole backfilled with cement-bentonite grout on completion.

Logged by: TZ
Checked by: DRB
Figure: 1 of 1
06/12/2006

geotechnics

British Geological Survey

BGS ID: 18189586 : BGS Reference: SK42NE656
British National Grid (27700) : 447930,327880



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.97	327826.50	31.89
BH01A	CL	447905.37	327894.93	31.53
BH01B	GL			31.50
BH02	CL	448126.35	328014.65	30.87
BH02	GL			30.87
BH03	CL	448464.18	328417.41	30.09
BH03	GL			30.09
BH04	CL	448664.74	328554.63	30.39
BH04	GL			30.39
BH05	CL	449699.38	329227.22	40.53
BH05	GL			40.53
BH06	CL	449705.20	329610.35	33.58
BH06	GL			33.58
BH07	CL	449750.91	329951.47	38.00
BH07	GL			38.00
BH08	CL	450009.29	329310.99	36.50
BH08	GL			36.50
BH09	CL & GL	450014.69	329307.53	36.16
BH10	CL & GL	450166.76	329301.28	34.09
BH10	GL			34.09
BH11	CL	450249.52	329431.54	33.76
BH11	GL			33.76
BH12	CL & GL	451711.55	330999.69	36.46
BH13	CL	452220.32	331657.25	29.36
BH13	GL			29.36
BH14	CL	452471.52	331970.36	28.38
BH14	GL			27.55
RO01	CL	451521.34	330332.93	54.66
RO01	GL			54.32
RO02	CL	451534.41	330356.19	52.37
RO03	CL	451562.40	330404.90	48.43
RO03	GL			48.13
TP01		NOT	USED	
TP02		449462.78	329367.48	30.13
TP03		449994.4	329273.75	30.55
TP04		449851.99	329429.03	34.21
TP05		449971.48	329157.43	27.01
TP06		450304.17	329452.74	30.77
TP07		451791.90	330883.75	36.70
TP08		452052.83	331297.71	76.43
TP09		454052.45	333715.23	78.07
TP10		453069.83	332613.87	43.44
TP11		453322.83	333004.09	63.40
TP12		453709.88	333425.42	79.20
TP13		453836.50	333525.76	81.06
TP14		454164.31	334081.32	90.71
TP15		452437.35	331981.61	27.57
WS01		447821.64	327786.76	30.84
WS01A		447935.75	327898.38	34.87
WS02	CL	449101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	449791.42	329216.85	40.74
WS03	GL			40.34
WS04		449869.95	329176.75	42.01
WS05		449904.12	329214.97	36.49
WS06	EL	449886.73	329355.82	36.82
WS06	GL			36.40
WS07	CL	449927.77	329421.80	33.02
WS07	GL			32.65
WS08		450345.11	329489.04	32.86
WS09	CL	450463.59	329569.74	33.19
WS09	GL			32.76
WS 10	CL	450591.61	329663.24	33.43
WS10	GL			33.08
WS11	CL	450652.60	329743.33	34.37
WS11	GL			33.87
WS12		450911.26	329835.76	35.48
WS13	CL	450891.97	329904.20	37.56
WS13	GL			37.15
WS14		450662.77	329986.00	39.54
WS15	CL	451057.05	330055.58	43.20
WS15	GL			42.71
WS16	CL	451127.18	330196.40	44.14
WS16	GL			43.75
WS17		451182.50	330955.72	40.10
WS18		454865.76	334998.76	42.49
WS19		450979.64	335156.02	48.15
WS20		450248.11	335389.23	47.93
WS21	CL & GL	450264.89	335406.89	56.27
WS22	CL	454877.12	334836.59	43.64
WS23	CL	454692.50	334653.93	47.67
WS24	CL	454703.35	334767.14	46.99
WS24	GL			46.57
WS25	CL & GL	454757.43	334795.00	46.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(1)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18189586 : BGS Reference: SK42NE656
British National Grid (27700) : 447930,327880



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.87	327926.50	31.86
BH01A	CL	447865.37	327894.95	31.53
BH01A	GL			31.12
BH02	CL	448126.35	326014.65	30.80
BH02	GL			30.47
BH03	CL	448494.18	326417.41	30.28
BH03	GL			30.00
BH04	CL	448644.74	326554.83	30.29
BH04	GL			29.92
BH05	CL	449089.38	326027.22	40.11
BH05	GL			40.11
BH06	CL	449705.29	326510.35	33.88
BH06	GL			33.82
BH07	CL	449750.51	326558.47	33.93
BH07	GL			33.80
BH08	CL	450009.29	326318.99	36.53
BH08	GL			36.18
BH09	CL & GL	450414.69	325967.63	39.70
BH10	CL	450166.79	326391.28	34.08
BH10	GL			33.71
BH11	CL	450249.52	326431.54	33.10
BH11	GL			32.79
BH12	CL & GL	451711.55	326899.69	36.46
BH13	CL	452230.32	331657.25	29.76
BH13	GL			29.39
BH14	CL	452471.52	331970.36	28.30
BH14	GL			27.93
RO01	CL	451521.34	330552.65	54.66
RO01	GL			54.22
RO02	CL	451534.41	330568.19	52.37
RO03	CL	451562.40	330604.50	48.43
RO03	GL			48.13
TP01		NOT	USED	
TP02		446462.79	326361.48	50.12
TP03		446994.4	329273.75	36.35
TP04		446661.95	329428.05	34.21
TP05		446971.48	329157.43	37.01
TP06		450304.17	329452.74	30.77
TP07		451751.90	330863.75	36.70
TP08		453552.83	332287.71	75.42
TP09		454012.45	332719.23	78.07
TP10		453909.83	332813.97	43.44
TP11		453322.83	333064.09	63.40
TP12		453706.66	333425.42	78.20
TP13		453826.50	333525.76	61.05
TP14		454164.31	334081.52	66.71
TP16		452437.39	331981.61	27.37
WS01		447651.64	327790.78	38.84
WS01A		447655.75	327868.38	34.87
WS02	CL	449101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	449795.42	329216.85	40.74
WS03	GL			40.34
WS04		449868.95	329176.75	42.01
WS05		449964.12	329214.37	36.48
WS06	CL	449868.73	329305.82	36.92
WS06	GL			36.42
WS07	CL	449927.77	329421.90	33.02
WS07	GL			32.62
WS08		450346.11	329498.04	32.86
WS09	CL	450462.35	329568.74	33.19
WS09	GL			32.75
WS10	CL	450591.81	329691.24	53.43
WS10	GL			53.04
WS11	CL	450892.60	329745.33	54.37
WS11	GL			53.87
WS12		450811.26	329835.76	55.48
WS13	CL	450891.97	329904.20	57.56
WS13	GL			57.15
WS14		450983.77	329986.00	59.54
WS15	CL	451057.05	330055.39	43.35
WS15	GL			42.71
WS16	CL	451127.18	330186.40	44.14
WS16	GL			43.76
WS17		451182.30	330355.72	45.15
WS18		454665.78	334998.70	42.49
WS19		455079.94	335136.02	48.15
WS20		455249.11	335369.23	47.93
WS21	CL & GL	455844.95	335906.89	43.37
WS22	CL	454677.12	334626.59	43.44
WS23	CL	454692.80	334512.43	43.87
WS24	CL	454703.35	334767.14	43.99
WS24	GL			43.57
WS25	CL & GL	454757.43	334795.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:

EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(2)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18189586 : BGS Reference: SK42NE656
British National Grid (27700) : 447930,327880



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED LEVEL
BH01	CL & GL	447912.97	327826.50	31.66
BH01A	CL	447965.37	327854.93	31.53
BH01A	GL			31.12
BH02	CL	448126.35	328014.65	30.60
BH02	GL			30.47
BH03	CL	448464.18	328417.41	30.26
BH03	GL			30.00
BH04	CL	448644.74	328554.63	30.26
BH04	GL			29.92
BH05	CL	448668.38	328227.22	45.53
BH05	GL			45.11
BH06	CL	448705.29	329010.35	33.66
BH06	GL			33.52
BH07	CL	448750.51	329058.47	38.60
BH07	GL			38.60
BH08	CL	450008.29	329310.98	36.55
BH08	GL			36.16
BH09	CL & GL	450014.69	329367.63	36.70
BH10	CL	450166.75	329391.28	34.06
BH10	GL			33.71
BH11	CL	450249.52	329451.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.55	330999.69	36.46
BH13	CL	452220.32	331627.25	29.76
BH13	GL			29.36
BH14	CL	452471.52	331870.36	28.36
BH14	GL			27.93
RO01	CL	451521.34	330552.93	54.66
RO01	GL			54.22
RO02		451534.41	330558.19	52.37
RO03	CL	451562.40	330604.50	48.42
RO03	GL			48.13
TP01		NOT	USED	
TP02		446462.78	329382.48	30.12
TP03		446994.4	329273.75	36.55
TP04		446961.89	329426.03	34.23
TP05		446971.48	329157.43	37.01
TP06		450304.17	329452.74	36.77
TP07		451701.90	330863.75	36.70
TP08		450952.83	330292.71	78.42
TP09		454012.45	333715.23	78.67
TP10		453909.83	332813.97	43.44
TP11		453322.83	331804.09	63.40
TP12		453708.58	333421.42	78.35
TP13		453626.50	333525.76	81.65
TP14		454164.51	334561.32	56.75
TP15		452437.35	331661.61	27.57
WS01		447821.64	327796.70	30.84
WS01A		447825.75	327858.38	34.67
WS02	CL	449101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	449291.42	329216.85	40.74
WS03	GL			40.34
WS04		449869.95	329176.75	42.01
WS05		449894.12	329214.37	39.46
WS06	CL	449888.73	329265.82	36.92
WS06	GL			36.46
WS07	CL	449927.77	329421.66	33.02
WS07	GL			32.63
WS08		450346.11	329488.04	32.36
WS09	CL	450463.33	329568.74	33.18
WS09	GL			32.76
WS10	CL	450591.61	329699.24	33.43
WS10	GL			33.04
WS11	GL	450692.60	329743.33	34.97
WS11	GL			33.87
WS12		450911.29	329835.76	36.48
WS13	CL	450891.97	329904.20	37.36
WS13	GL			37.15
WS14		450982.77	329986.00	39.54
WS15	CL	451027.80	330055.58	43.25
WS15	GL			42.71
WS16	CL	451127.18	330186.40	44.14
WS16	GL			43.76
WS17		451182.30	330055.72	40.15
WS18		454895.79	334998.78	42.49
WS19		455079.64	335136.00	46.15
WS20		455345.11	335389.23	47.93
WS21	CL & GL	455364.89	335604.89	50.37
WS22	CL	454977.12	334626.59	43.44
WS23	CL	454692.60	334453.93	42.67
WS24	CL	454705.35	334767.14	40.99
WS24	GL			40.57
WS25	CL & GL	454757.43	334795.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(3)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18189586 : BGS Reference: SK42NE656
British National Grid (27700) : 447930,327880



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.87	327926.50	31.86
BH01A	CL	447965.37	327894.05	31.53
BH01A	GL			31.13
BH02	CL	448126.35	328014.65	30.80
BH02	GL			30.47
BH03	CL	448464.18	328417.41	30.28
BH03	GL			30.02
BH04	CL	448644.74	328584.63	30.29
BH04	GL			29.92
BH05	CL	448669.38	329227.22	40.53
BH05	GL			40.11
BH06	CL	449705.29	329010.35	33.98
BH06	GL			33.52
BH07	CL	449750.51	329058.47	39.00
BH07	GL			38.60
BH08	CL	450009.29	329310.99	36.10
BH08	GL			35.63
BH09	CL & GL	450414.60	331307.62	30.76
BH10	CL	450166.76	329391.39	34.00
BH10	GL			33.71
BH11	CL	450249.52	329431.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.55	330899.69	30.48
BH13	CL	452220.52	331657.25	29.76
BH13	GL			29.36
BH14	CL	452471.52	331970.36	28.38
BH14	GL			27.99
RO01	CL	451531.34	330532.93	54.66
RO01	GL			54.12
RO02		451534.41	330558.19	52.37
RO03	CL	451562.49	330604.90	49.43
RO03	GL			48.13
TP01		NOT	USED	
TP02		446462.78	326362.48	30.12
TP03		446994.4	326073.75	36.55
TP04		446981.86	325428.05	34.31
TP05		446971.48	325157.43	37.01
TP06		446944.17	324852.74	30.77
TP07		451701.90	330863.75	36.70
TP08		453652.83	332287.71	78.42
TP09		454012.45	333715.23	78.87
TP10		454009.83	333611.97	43.44
TP11		453332.83	333064.06	63.48
TP12		453709.86	333423.42	78.20
TP13		453826.50	333525.76	81.55
TP14		454164.31	334061.32	86.71
TP15		452437.35	331981.61	27.57
WS01		447821.64	327796.78	38.84
WS01A		447830.75	327868.36	34.87
WS02	CL	449101.87	328916.09	35.25
WS02	GL			34.74
WS03	CL	448791.42	329216.85	40.74
WS03	GL			40.34
WS04		449660.95	329176.75	42.01
WS05		449804.12	328214.37	56.48
WS06	CL	449868.73	327935.82	56.82
WS06	GL			56.40
WS07	CL	449027.77	325421.50	33.02
WS07	GL			32.65
WS08		450346.11	325488.64	32.89
WS09	CL	450460.33	325868.74	33.18
WS09	GL			32.76
WS10	CL	450591.81	326604.24	53.43
WS10	GL			53.06
WS11	CL	450692.60	326743.33	54.37
WS11	GL			53.87
WS12		450611.26	329835.76	39.48
WS13	CL	450881.67	329904.20	37.56
WS13	GL			37.15
WS14		450982.77	329986.00	39.54
WS15	CL	451057.05	330055.58	43.35
WS15	GL			42.71
WS16	CL	451127.16	330166.40	44.14
WS16	GL			43.76
WS17		451182.50	330055.72	45.15
WS18		454865.76	334990.76	43.49
WS19		455079.64	335136.02	48.15
WS20		455249.11	335369.23	47.05
WS21	CL & GL	455384.66	335606.89	33.37
WS22	CL	454877.12	334636.59	43.44
WS23	CL	454692.60	334403.23	42.87
WS24	CL	454703.35	334767.14	40.09
WS24	GL			40.37
WS25	CL & GL	454757.43	334705.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(4)

Contact BGS: ngdc@bgs.ac.uk



M53 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No. PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.97	327826.50	31.86
BH01A	CL	447965.37	327894.50	31.53
BH01A	GL			31.12
BH02	CL	448126.35	329014.65	30.60
BH02	GL			30.47
BH03	CL	448464.18	329417.81	30.28
BH03	GL			30.02
BH04	CL	448644.74	329554.63	30.29
BH04	GL			29.92
BH05	CL	449669.38	329277.22	40.53
BH05	GL			40.11
BH06	CL	449705.29	329010.35	33.68
BH06	GL			33.53
BH07	CL	449750.51	329058.47	34.00
BH07	GL			33.60
BH08	CL	450000.29	329310.98	36.53
BH08	GL			36.16
BH09	CL & GL	450014.69	329367.83	30.70
BH10	CL	450165.76	329391.28	34.08
BH10	GL			33.71
BH11	CL	450240.52	329431.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.55	330899.69	36.46
BH13	CL	452220.32	331827.25	29.76
BH13	GL			29.38
BH14	CL	452471.52	331970.36	28.38
BH14	GL			27.93
RO01	CL	451521.34	330532.93	54.66
RO01	GL			54.22
RO02		451534.41	330556.19	52.37
RO03	CL	451562.40	330604.50	48.40
RO03	GL			48.13
TP01		NOT	USED	
TP02		449462.76	328362.48	30.12
TP05		449994.4	329273.75	36.55
TP04		449851.09	329428.03	34.21
TP05		449971.48	329157.43	37.01
TP06		450054.17	329452.74	30.77
TP07		451791.90	330883.75	36.70
TP08		452552.63	333287.71	78.42
TP09		454012.45	333715.23	78.07
TP10		452909.63	332513.97	43.44
TP11		453322.83	333064.29	63.40
TP12		453758.68	333425.42	78.20
TP13		453635.50	333525.76	61.05
TP14		454164.51	334381.32	50.71
TP15		452437.35	331981.61	27.57
WS01		447821.64	327706.78	38.84
WS01A		447935.75	327888.18	34.97
WS02	CL	448101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	448791.42	329216.85	40.74
WS03	GL			40.34
WS04		449869.95	329175.75	42.01
WS05		449684.12	329214.97	36.49
WS06	CL	449888.73	329308.92	36.93
WS06	GL			36.45
WS07	CL	449927.77	329421.69	33.02
WS07	GL			32.65
WS08		450345.11	329488.04	33.86
WS09	CL	450483.53	329590.74	33.15
WS09	GL			32.78
WS10	CL	450591.81	329699.24	33.63
WS10	GL			33.04
WS11	CL	450692.50	329743.33	34.57
WS11	GL			33.97
WS12		450811.26	329835.76	35.48
WS13	CL	450861.97	329964.20	27.56
WS13	GL			27.15
WS14		450982.77	329986.00	39.54
WS15	CL	451227.05	330055.58	43.25
WS15	GL			42.71
WS16	CL	451127.18	330166.40	44.14
WS16	GL			43.75
WS17		451182.50	330055.72	40.15
WS18		454885.79	334956.76	42.49
WS19		455079.04	335100.92	48.15
WS20		455240.11	335389.23	47.93
WS21	CL & GL	455384.89	335606.99	39.37
WS22	CL	454077.12	334626.59	43.44
WS23	CL	454852.80	334853.93	42.87
WS24	CL	454703.35	334767.14	40.99
WS24	GL			40.57
WS25	CL & GL	454757.43	334705.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:

EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(5)

British Geological Survey

BGS ID: 18189586 : BGS Reference: SK42NE656
British National Grid (27700) : 447930,327880



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No. PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.97	327826.80	31.86
BH01A	CL	447985.37	327994.30	31.50
BH01A	GL			31.12
BH02	CL	448126.55	329014.65	30.80
BH02	GL			30.47
BH03	CL	448646.18	329417.41	30.28
BH03	GL			30.02
BH04	CL	448644.74	329554.93	30.28
BH04	GL			29.92
BH05	CL	449626.58	329237.22	40.50
BH05	GL			40.11
BH06	CL	449315.39	329010.95	33.88
BH06	GL			33.52
BH07	CL	449750.51	329268.47	39.00
BH07	GL			38.60
BH08	CL	450009.39	329310.99	36.53
BH08	GL			36.16
BH09	CL & GL	450014.89	329367.63	30.70
BH10	CL	450166.76	329391.26	34.08
BH10	GL			33.71
BH11	CL	450246.52	329431.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.55	330699.69	36.49
BH13	CL	452230.52	331657.25	29.76
BH13	GL			29.39
BH14	CL	452471.52	331870.36	30.36
BH14	GL			27.93
RO01	CL	451521.34	330532.93	54.66
RO01	GL			54.33
RO02		451534.41	330558.19	52.37
RO03	CL	451562.40	330604.50	48.43
RO03	GL			48.13
TP01		NOT	USED	
TP02		449462.78	329362.48	30.12
TP03		449994.4	329273.75	36.55
TP04		449951.89	329435.05	34.31
TP05		449971.49	329157.43	37.01
TP06		450094.17	329452.74	30.77
TP07		451701.90	330883.75	36.70
TP08		450952.83	330287.71	78.42
TP09		454012.45	333715.23	76.07
TP10		453999.83	332813.97	43.34
TP11		453322.83	332004.09	63.40
TP12		453708.98	332423.42	78.20
TP13		453826.50	333525.76	81.05
TP14		454164.51	334081.32	56.71
TP15		452437.35	331981.61	27.57
WS01		447821.64	327786.78	38.84
WS01A		447935.75	327889.38	34.87
WS02	CL	449101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	449791.42	329216.85	40.74
WS03	GL			40.34
WS04		449868.95	329175.75	42.01
WS05		449864.12	329214.97	39.49
WS06	CL	449888.73	329305.82	36.92
WS06	GL			36.45
WS07	CL	449927.77	329421.80	33.92
WS07	GL			32.95
WS08		450146.11	329489.04	32.96
WS09	CL	450483.52	329560.74	32.15
WS09	GL			32.15
WS10	CL	450581.61	329600.24	33.43
WS10	GL			33.04
WS11	CL	450692.60	329743.33	34.97
WS11	GL			33.97
WS12		450911.29	329935.76	30.48
WS13	CL	450891.97	329904.20	37.96
WS13	GL			37.15
WS14		450992.77	329968.00	39.54
WS15	CL	451057.06	330000.59	43.25
WS15	GL			42.71
WS16	CL	451127.18	330156.40	44.14
WS16	GL			43.76
WS17		451183.30	330005.72	40.15
WS18		454865.78	334956.76	42.48
WS19		455076.64	335136.02	48.15
WS20		455249.11	335369.23	47.50
WS21	CL & GL	455384.80	335606.89	51.37
WS22	CL	454677.12	334626.39	43.44
WS23	CL	454692.80	334653.93	42.67
WS24	CL	454703.35	334767.14	40.99
WS24	GL			40.57
WS25	CL & GL	454757.43	334795.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(6)

Contact BGS: ngdc@bgs.ac.uk



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.97	327826.50	31.66
BH01A	CL	447985.57	327894.93	31.53
BH01A	GL			31.12
BH02	CL	448126.35	328014.85	30.60
BH02	GL			30.47
BH03	CL	448494.18	328417.41	30.28
BH03	GL			30.02
BH04	CL	448644.74	328564.83	30.29
BH04	GL			29.92
BH05	CL	448669.38	329227.22	40.55
BH05	GL			40.11
BH06	CL	448705.29	329010.35	33.86
BH06	GL			33.52
BH07	CL	448750.51	329000.47	39.00
BH07	GL			38.60
BH08	CL	450009.29	329310.99	36.53
BH08	GL			36.18
BH09	CL & GL	450610.68	329367.03	30.78
BH10	CL	450166.76	329091.39	34.06
BH10	GL			33.71
BH11	CL	450249.52	329431.54	33.78
BH11	GL			33.39
BH12	CL & GL	451711.55	330899.69	30.48
BH12	GL	452220.52	331657.25	29.76
BH13	GL			29.38
BH14	CL	453471.52	331200.36	28.58
BH14	GL			27.98
RD01	CL	451521.34	330532.00	54.06
RD01	GL			54.32
RD02		451534.41	330556.19	52.37
RD03	CL	451952.40	330604.50	48.47
RD03	GL			48.13
TP01		NOT	USED	
TP02		449462.28	326362.48	30.12
TP03		449994.4	326073.75	36.55
TP04		449851.99	326428.03	34.51
TP05		449971.49	326157.45	37.01
TP06		450306.57	326462.74	30.77
TP07		451701.90	330863.75	36.76
TP08		453502.83	332397.71	70.40
TP09		454012.45	333715.23	78.07
TP10		453406.63	333613.97	63.44
TP11		453322.53	333064.06	63.49
TP12		453706.89	333421.42	78.30
TP13		453626.50	333525.76	81.05
TP14		454154.31	334081.32	99.71
TP15		453457.35	331861.61	27.57
WS01		447601.66	327796.78	36.84
WS01A		447505.75	327888.38	36.87
WS02	CL	449101.87	326918.09	35.25
WS02	GL			34.75
WS03	CL	448791.82	326295.85	40.74
WS03	GL			40.34
WS04		449660.95	329176.75	42.01
WS05		449604.12	329214.97	36.49
WS06	CL	449668.73	329305.82	36.80
WS06	GL			36.40
WS07	CL	449927.77	329421.80	33.02
WS07	GL			32.60
WS08		450345.11	329498.04	32.96
WS09	CL	450463.50	329569.74	33.16
WS09	GL			32.76
WS10	CL	450681.61	329669.24	33.40
WS10	GL			33.04
WS11	CL	450602.50	329743.33	34.07
WS11	GL			33.67
WS12		450611.26	329835.76	35.46
WS13	CL	450891.97	329904.30	27.56
WS13	GL			27.15
WS14		450662.77	329986.00	39.54
WS15	CL	451057.05	330055.38	43.20
WS15	GL			42.71
WS16		451127.16	330196.40	44.14
WS16	GL			43.75
WS17		451182.50	330055.72	40.15
WS18		454665.76	334999.76	42.49
WS19		455079.64	335136.02	48.15
WS20		455248.11	335399.23	47.00
WS21	CL & GL	455264.69	335666.89	37.27
WS22	CL	454877.12	334626.59	43.44
WS23	CL	454662.80	334605.93	47.67
WS24	CL	454703.35	334767.14	48.99
WS24	GL			48.57
WS25	CL & GL	454757.43	334795.00	48.94

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Engineer: Laing O'Rourke	
Client: Laing O'Rourke	
Project: A453 M1-Nottingham	
Drawing Title: EXPLORATORY HOLE LOCATION PLAN Taken from a drawing supplied by the client	
Scale: 1:2500@A2	Date: November 2006
Project No: PC062588	File Name: Geo-PC062588-001(7)

British Geological Survey

BGS ID: 18189587 : BGS Reference: SK42NE657
British National Grid (27700) : 447820,327790

BOREHOLE RECORD - Window Sampling

Project: A453 WIDENING, MI JUNCTION 24 - A52 NOTTINGHAM
Engineer: LAING O'ROURKE
Borehole: WS01-06
Project No: PC062588
Client: WHITE YOUNG GREEN
National Grid Coordinates: 447821.64 E, 327796.78 N
Ground Level: 38.84 m OD
Scale: 1:50

Sampling: Depth	Sample Type	Depth Cased & (to Water)	Properties: Strength kPa	w %	Strata: Description	Depth	Legend	Level m OD
						G.L.		38.84
					Dark brown slightly gravelly slightly clayey sand with some organic material. [MADE GROUND - GRANULAR]	0.40		38.44
0.50	D				Red brown gravelly sandy clay. Gravel is angular to rounded fine to coarse flint, mudstone and quartzite. [MADE GROUND-COHESIVE]	0.80		38.04
1.20- 1.60	B				Grey slightly clayey slightly gravelly ash (PFA). Gravel is angular to subangular fine to medium concrete fragments and slag. [MADE GROUND - GRANULAR] At 1.00m cobbles.	1.60		37.24
					End of Borehole			

Boring

Depth	Dia	Technique	Crew
1.20		Inspection Pit	PS
1.60	0.10	Windowless Sampler	PS

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			02/10/06	08:00
1.60			02/10/06	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					None encountered during boring.

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Inspection pit hand excavated to 1.20m depth.
Terminated at 1.60m due to no progress.
Window Sample Borehole backfilled with cement-bentonite grout on completion.

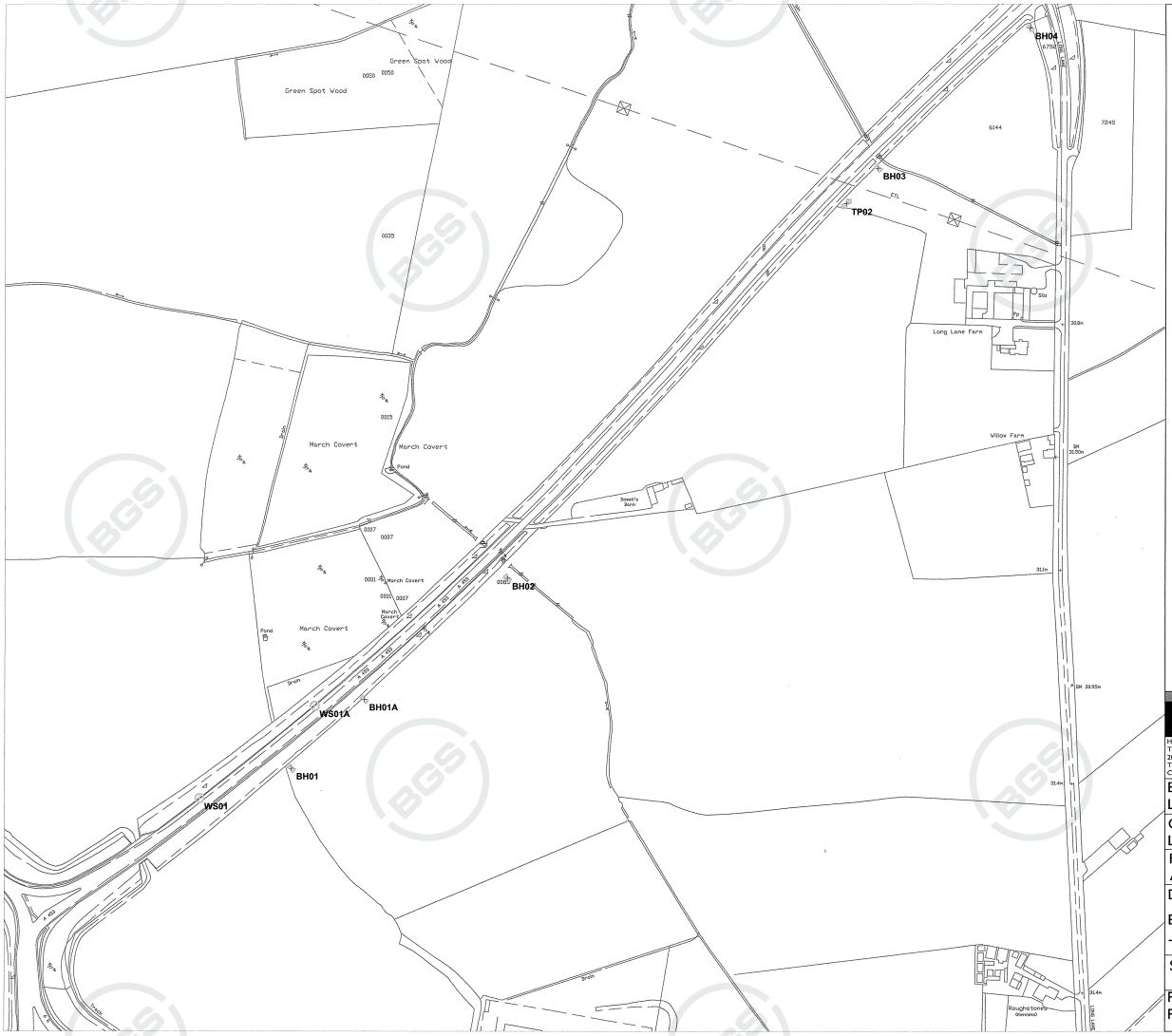
Logged by: TZ
Checked by: DRB
Figure: 1 of 1
06/12/2006

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18189587 : BGS Reference: SK42NE657
British National Grid (27700) : 447820,327790



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref No: PO362566

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.97	327826.92	31.89
BH01A	CL	447905.37	327844.93	31.53
BH02	CL			31.52
BH02	GL	448126.35	328014.65	30.87
BH03	CL			30.47
BH03	GL	448464.18	328417.41	30.03
BH04	CL			30.09
BH04	GL	448664.74	328554.63	29.39
BH05	CL			29.52
BH05	GL	449699.38	329227.22	40.53
BH06	CL			33.87
BH06	GL	449705.29	329610.35	33.58
BH07	CL			33.92
BH07	GL	449750.91	329951.47	34.00
BH08	CL			34.60
BH08	GL	450009.29	329310.99	36.50
BH09	CL			36.16
BH09	CL & GL	450014.69	329307.63	30.70
BH10	CL & GL	450195.76	329301.28	34.09
BH10	CL			33.77
BH11	CL	450249.52	329431.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.55	330999.69	36.46
BH13	CL	452220.32	331657.25	29.76
BH13	GL			29.38
BH14	CL	452471.52	331970.36	28.38
BH14	GL			27.95
RO01	CL	451521.34	330332.93	54.66
RO01	GL			54.32
RO02	CL	451534.41	330358.19	52.37
RO03	CL	451562.49	330404.90	48.43
RO03	GL			48.13
TP01		NOT	USED	
TP02		449462.78	329367.48	30.13
TP03		449994.4	329273.75	30.55
TP04		449851.99	329428.03	34.21
TP05		449971.48	329157.43	27.01
TP06		450304.17	329452.74	30.77
TP07		451791.90	330883.75	36.70
TP08		452052.53	331297.71	76.43
TP09		454052.45	333715.23	78.07
TP10		453909.83	333511.97	43.44
TP11		453322.83	333004.09	63.46
TP12		453709.88	333425.42	79.30
TP13		453836.50	333525.76	81.06
TP14		454164.31	334081.32	90.71
TP15		452437.35	331981.61	27.57
WS01		447821.64	327786.76	30.84
WS01A		447935.75	327898.38	34.87
WS02	CL	449101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	449791.42	329216.85	40.74
WS03	GL			40.34
WS04		449869.95	329176.75	42.01
WS05		449904.12	329214.37	36.49
WS06	GL	449886.73	329355.82	36.82
WS06	GL			35.45
WS07	CL	449927.77	329421.80	33.02
WS07	GL			32.65
WS08		450345.11	329489.04	32.96
WS09	CL	450463.93	329569.74	33.19
WS09	GL			32.76
WS10	CL	450591.61	329663.24	33.43
WS10	GL			33.08
WS11	CL	450652.60	329743.33	34.37
WS11	GL			33.87
WS12		450811.26	329835.76	35.48
WS13	CL	450891.97	329904.20	37.56
WS13	GL			37.15
WS14		450962.77	329986.00	39.54
WS15	CL	451057.05	330055.58	43.25
WS15	GL			42.71
WS16	CL	451127.18	330195.40	44.14
WS16	GL			43.75
WS17		451182.50	330955.72	40.10
WS18		454865.76	334998.76	42.49
WS19		450979.64	335156.02	48.15
WS20		450248.11	335389.23	47.93
WS21	CL & GL	450264.89	335406.89	55.27
WS22	CL	454877.12	334836.59	43.64
WS23	CL	454892.90	334853.93	47.67
WS24	CL	454703.35	334767.14	46.99
WS24	GL			46.57
WS25	CL & GL	454757.43	334795.00	46.94

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Engineer:
Laing O'Rourke

Client:
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Project:
A453 M1-Nottingham

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(1)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18189587 : BGS Reference: SK42NE657
British National Grid (27700) : 447820,327790



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447812.87	327926.50	31.96
BH01A	CL	447865.37	327894.95	31.53
BH01A	GL			31.12
BH02	CL	448126.35	328014.65	30.80
BH02	GL			30.47
BH03	CL	448494.18	328417.41	30.28
BH03	GL			30.00
BH04	CL	448644.74	328554.65	30.29
BH04	GL			29.92
BH05	CL	449089.38	329227.22	40.11
BH05	GL			40.11
BH06	CL	449705.29	329510.35	33.98
BH06	GL			33.82
BH07	CL	449750.51	329558.47	33.93
BH07	GL			33.80
BH08	CL	450009.29	329318.99	26.53
BH08	GL			26.39
BH09	CL & GL	450414.69	329167.63	30.70
BH10	CL	450566.79	329391.28	34.08
BH10	GL			33.71
BH11	CL	450249.52	329431.54	33.19
BH11	GL			32.79
BH12	CL & GL	451711.55	330899.69	36.46
BH13	CL	452230.32	331657.25	29.76
BH13	GL			29.39
BH14	CL	452471.52	331970.36	28.30
BH14	GL			27.93
RO01	CL	451521.34	330552.65	54.66
RO01	GL			54.22
RO02	CL	451534.41	330568.19	52.37
RO03	CL	451562.40	330604.50	48.43
RO03	GL			48.13
TP01		NOT	USED	
TP02		448462.78	326361.48	50.12
TP03		449994.4	329273.75	36.35
TP04		449681.96	329428.05	34.21
TP05		449971.48	329157.43	37.01
TP06		450304.17	329452.74	30.77
TP07		451751.90	330863.75	36.70
TP08		453552.83	332287.71	75.42
TP09		454012.45	332719.23	78.07
TP10		453909.83	332813.97	43.44
TP11		453322.83	333064.09	63.40
TP12		453706.66	333425.42	78.20
TP13		453826.50	333525.76	61.05
TP14		454164.31	334081.52	66.71
TP16		452437.39	331981.61	37.37
WS01		447651.64	327790.78	38.84
WS01A		447655.75	327868.38	34.87
WS02	CL	449101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	449795.42	329216.85	40.74
WS03	GL			40.34
WS04		449868.95	329176.75	42.01
WS05		449864.12	329214.37	36.48
WS06	CL	449868.73	329305.82	36.92
WS06	GL			36.42
WS07	CL	449927.77	329421.90	33.02
WS07	GL			32.62
WS08		450346.11	329498.04	32.86
WS09	CL	450462.35	329568.74	33.19
WS09	GL			32.79
WS10	CL	450591.81	329669.24	53.43
WS10	GL			53.04
WS11	CL	450892.60	329745.33	34.37
WS11	GL			33.87
WS12		450811.26	329835.76	35.48
WS13	CL	450891.97	329904.20	37.56
WS13	GL			37.15
WS14		450983.77	329986.00	39.54
WS15	CL	451057.05	330055.39	43.35
WS15	GL			42.71
WS16	CL	451127.18	330186.40	44.14
WS16	GL			43.75
WS17		451182.30	330355.72	45.15
WS18		454665.78	334998.70	42.49
WS19		455079.94	335136.02	48.15
WS20		455249.11	335369.23	47.93
WS21	CL & GL	455844.86	335906.89	33.27
WS22	CL	454677.12	334626.59	43.44
WS23	CL	454892.80	334903.40	43.87
WS24	CL	454703.38	334767.14	43.99
WS24	GL			43.57
WS25	CL & GL	454757.43	334795.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:

EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(2)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18189587 : BGS Reference: SK42NE657
British National Grid (27700) : 447820,327790



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED LEVEL
BH01	CL & GL	447912.97	327826.50	31.66
BH01A	CL	447965.37	327854.93	31.53
BH01A	GL			31.12
BH02	CL	448126.35	328014.65	30.60
BH02	GL			30.47
BH03	CL	448464.18	328417.41	30.26
BH03	GL			30.00
BH04	CL	448644.74	328554.63	30.26
BH04	GL			29.92
BH05	CL	448668.38	328227.22	45.53
BH05	GL			45.11
BH06	CL	448705.29	329010.35	33.66
BH06	GL			33.52
BH07	CL	448750.51	329258.47	38.60
BH07	GL			38.60
BH08	CL	450008.29	329310.98	36.55
BH08	GL			36.16
BH09	CL & GL	450014.69	329367.63	36.70
BH10	CL	450166.75	329391.28	34.06
BH10	GL			33.71
BH11	CL	450249.52	329451.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.55	330999.69	36.46
BH13	CL	452220.32	331627.25	29.76
BH13	GL			29.36
BH14	CL	452471.52	331870.36	28.36
BH14	GL			27.93
RO01	CL	451521.34	330552.93	54.66
RO01	GL			54.22
RO02		451534.41	330558.19	52.37
RO03	CL	451562.40	330604.90	48.43
RO03	GL			48.13
TP01		NOT	USED	
TP02		446462.78	329362.48	30.12
TP03		446994.4	329273.75	36.55
TP04		446961.89	329426.03	34.23
TP05		446971.48	329157.43	37.01
TP06		450304.17	329452.74	30.77
TP07		451701.90	330863.75	36.70
TP08		453952.83	333297.71	78.42
TP09		454012.45	333715.23	78.67
TP10		453909.83	332813.97	43.44
TP11		453322.83	331804.09	63.40
TP12		453708.58	333423.42	78.35
TP13		453626.50	333525.76	81.65
TP14		454164.51	334081.32	96.75
TP15		452437.35	331661.61	27.57
WS01		447821.64	327796.70	30.84
WS01A		447825.75	327858.38	34.67
WS02	CL	448101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	448291.42	329216.85	40.74
WS03	GL			40.34
WS04		449869.95	329176.75	42.01
WS05		449894.12	329214.37	39.46
WS06	CL	449888.73	329265.82	36.92
WS06	GL			36.46
WS07	CL	449927.77	329421.66	33.02
WS07	GL			32.63
WS08		450346.11	329488.04	32.36
WS09	CL	450463.33	329568.74	33.18
WS09	GL			32.76
WS10	CL	450591.61	329699.24	33.43
WS10	GL			33.04
WS11	GL	450692.60	329743.33	34.97
WS11	GL			33.87
WS12		450911.29	329835.76	36.48
WS13	CL	450891.97	329904.20	37.56
WS13	GL			37.15
WS14		450982.77	329986.00	39.54
WS15	CL	451027.00	330055.58	43.25
WS15	GL			42.71
WS16	CL	451127.18	330186.40	44.14
WS16	GL			43.76
WS17		451182.30	330055.72	40.15
WS18		454895.79	334998.78	42.49
WS19		455079.64	335136.00	46.15
WS20		455345.11	335389.23	47.93
WS21	CL & GL	455364.89	335604.89	50.37
WS22	CL	454977.12	334626.59	43.44
WS23	CL	454692.60	334453.93	42.67
WS24	CL	454705.35	334767.14	40.99
WS24	GL			40.57
WS25	CL & GL	454757.43	334795.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(3)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 18189587 : BGS Reference: SK42NE657
British National Grid (27700) : 447820,327790



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.87	327926.50	31.86
BH01A	CL	447965.37	327894.03	31.53
BH01A	GL			31.13
BH02	CL	448126.35	328014.65	30.80
BH02	GL			30.47
BH03	CL	448464.18	328417.41	30.28
BH03	GL			30.02
BH04	CL	448644.74	328584.63	30.29
BH04	GL			29.92
BH05	CL	448669.38	329227.22	40.53
BH05	GL			40.11
BH06	CL	449705.29	329010.35	33.98
BH06	GL			33.52
BH07	CL	449750.51	329058.47	39.00
BH07	GL			38.60
BH08	CL	450009.29	329310.99	36.10
BH08	GL			35.61
BH09	CL & GL	450014.60	330307.62	39.76
BH10	CL	450166.76	329391.39	34.00
BH10	GL			33.71
BH11	CL	450249.52	329431.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.55	330899.69	36.46
BH13	CL	452220.52	331657.25	29.76
BH13	GL			29.36
BH14	CL	452471.52	331970.36	28.38
BH14	GL			27.99
RO01	CL	451531.34	330532.93	54.66
RO01	GL			54.12
RO02		451534.41	330558.19	52.37
RO03	CL	451562.40	330604.90	48.43
RO03	GL			48.13
TP01		NOT	USED	
TP02		446462.78	326362.48	30.12
TP03		446994.4	326073.75	36.55
TP04		446981.86	325428.05	34.31
TP05		446971.48	325157.43	37.01
TP06		450004.17	329452.74	30.77
TP07		451701.90	330863.75	36.70
TP08		453552.83	332267.71	78.42
TP09		454012.45	333715.23	78.97
TP10		454009.83	333615.97	43.44
TP11		453332.83	333064.06	63.48
TP12		453709.86	333423.42	78.20
TP13		453826.50	333525.76	81.05
TP14		454164.31	334061.32	86.71
TP15		452437.35	331981.61	27.57
WS01		447821.64	327796.78	36.84
WS01A		447830.75	327868.36	34.87
WS02	CL	449101.87	328916.09	35.25
WS02	GL			34.74
WS03	CL	449791.42	329216.85	40.74
WS03	GL			40.34
WS04		449660.95	329176.75	42.01
WS05		449804.12	328214.37	56.48
WS06	CL	449868.73	329305.82	36.82
WS06	GL			36.40
WS07	CL	449027.77	329421.60	33.02
WS07	GL			32.65
WS08		450346.11	329488.64	32.89
WS09	CL	450460.33	329884.74	33.18
WS09	GL			32.76
WS10	CL	450591.81	329604.24	53.43
WS10	GL			53.06
WS11	CL	450692.60	329743.33	54.37
WS11	GL			53.87
WS12		450611.26	329835.76	39.48
WS13	CL	450881.67	329904.20	37.56
WS13	GL			37.15
WS14		450982.77	329986.00	39.54
WS15	CL	451057.05	330055.58	43.35
WS15	GL			42.71
WS16	CL	451127.18	330166.40	44.14
WS16	GL			43.76
WS17		451182.50	330055.72	45.10
WS18		454865.76	334990.76	42.49
WS19		455079.64	335136.02	48.15
WS20		455249.11	335369.23	47.05
WS21	CL & GL	455384.66	335606.89	35.37
WS22	CL	454877.12	334636.59	43.44
WS23	CL	454692.60	334403.23	42.87
WS24	CL	454703.35	334767.14	40.09
WS24	GL			40.37
WS25	CL & GL	454757.43	334705.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(4)

Contact BGS: ngdc@bgs.ac.uk



M53 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No. PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.97	327826.50	31.86
BH01A	CL	447965.37	327894.50	31.53
BH01A	GL			31.12
BH02	CL	448126.35	329014.65	30.60
BH02	GL			30.47
BH03	CL	448464.18	329417.81	30.28
BH03	GL			30.02
BH04	CL	448644.74	329554.63	30.29
BH04	GL			29.92
BH05	CL	449669.38	329277.22	40.53
BH05	GL			40.11
BH06	CL	449705.29	329010.35	33.68
BH06	GL			33.52
BH07	CL	449750.51	329058.47	34.00
BH07	GL			33.60
BH08	CL	450000.29	329310.98	36.53
BH08	GL			36.16
BH09	CL & GL	450014.69	329367.83	30.70
BH10	CL	450165.76	329391.28	34.08
BH10	GL			33.71
BH11	CL	450240.52	329431.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.55	330899.69	36.46
BH13	CL	452220.32	331827.25	29.76
BH13	GL			29.38
BH14	CL	452471.52	331970.36	28.38
BH14	GL			27.93
RO01	CL	451521.34	330532.93	54.66
RO01	GL			54.22
RO02		451534.41	330556.19	52.37
RO03	CL	451562.40	330604.50	48.40
RO03	GL			48.13
TP01		NOT	USED	
TP02		449462.76	328362.48	30.12
TP05		449994.4	329273.75	36.55
TP04		449851.09	329428.03	34.21
TP05		449971.48	329157.43	37.01
TP06		450004.17	329452.74	30.77
TP07		451701.00	330883.75	36.70
TP08		452552.63	331337.71	78.42
TP09		454012.45	333715.23	78.07
TP10		452909.63	332513.97	43.44
TP11		453322.83	333064.29	63.40
TP12		453708.68	333425.42	78.20
TP13		453635.50	333525.76	61.05
TP14		454164.51	334381.32	50.71
TP15		452437.35	331981.61	27.57
WS01		447821.64	327706.78	38.84
WS01A		447935.75	327888.18	34.97
WS02	CL	448101.87	328916.09	35.25
WS02	GL			34.75
WS03	CL	448791.42	329216.85	40.74
WS03	GL			40.34
WS04		449869.95	329175.75	42.01
WS05		449684.12	329214.97	36.49
WS06	CL	449688.73	329308.52	36.93
WS06	GL			36.45
WS07	CL	449927.77	329421.69	33.02
WS07	GL			32.65
WS08		450345.11	329488.04	33.86
WS09	CL	450483.53	329590.74	33.15
WS09	GL			32.78
WS10	CL	450591.81	329669.24	33.63
WS10	GL			33.04
WS11	CL	450692.50	329743.33	34.57
WS11	GL			33.97
WS12		450811.26	329825.76	35.48
WS13	CL	450861.97	329904.20	27.56
WS13	GL			27.15
WS14		450982.77	329986.00	39.54
WS15	CL	451227.05	330055.58	43.25
WS15	GL			42.71
WS16	CL	451127.18	330166.40	44.14
WS16	GL			43.75
WS17		451182.50	330055.72	40.15
WS18		454885.79	334956.76	42.49
WS19		455079.04	335160.92	48.15
WS20		455245.11	335389.23	47.93
WS21	CL & GL	455384.89	335606.99	39.37
WS22	CL	454077.12	334626.59	43.44
WS23	CL	454852.80	334853.93	42.87
WS24	CL	454703.35	334767.14	40.99
WS24	GL			40.57
WS25	CL & GL	454757.43	334705.00	40.94

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Engineer:
Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:

EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2	Date: November 2006
Project No: PC062588	File Name: Geo-PC062588-001(5)

British Geological Survey

BGS ID: 18189587 : BGS Reference: SK42NE657
British National Grid (27700) : 447820,327790



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No. PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.97	327826.90	31.86
BH01A	CL	447985.37	327994.93	31.50
BH01A	CL			31.12
BH02	CL	448126.55	329014.65	30.90
BH02	CL			30.47
BH03	CL	448646.18	329417.41	30.26
BH03	CL			30.02
BH04	CL	448644.74	329554.93	30.39
BH04	CL			29.92
BH05	CL	449689.38	329237.22	40.50
BH05	CL			40.11
BH06	CL	449765.39	329010.95	33.88
BH06	CL			33.52
BH07	CL	449750.51	328698.47	30.00
BH07	CL			29.60
BH08	CL	450009.39	328310.99	36.53
BH08	GL			36.16
BH09	CL & GL	450014.89	326987.63	30.79
BH10	CL	450166.76	326591.26	34.08
BH10	GL			33.71
BH11	CL	450246.52	326431.54	33.16
BH11	GL			32.79
BH12	CL & GL	451711.35	326989.69	36.40
BH13	CL	452230.52	327457.25	29.76
BH13	GL			29.39
BH14	CL	452471.82	327670.36	29.36
BH14	GL			27.93
RO01	CL	451521.34	326532.93	54.66
RO01	GL			54.33
RO02		451534.41	326558.19	52.37
RO03	CL	451562.40	326604.50	48.43
RO03	GL			48.13
TP01		NOT	LGEO	
TP02		449462.78	325362.48	30.12
TP03		449994.4	329273.75	36.55
TP04		449891.89	329435.05	34.31
TP05		449971.49	329157.43	37.01
TP06		450094.17	329452.74	30.77
TP07		451701.90	330883.75	36.70
TP08		450952.83	333287.71	78.42
TP09		454012.45	333715.23	76.07
TP10		453909.83	332813.97	43.34
TP11		453322.83	333004.09	63.40
TP12		453708.98	333423.42	78.20
TP13		453826.50	333525.76	81.05
TP14		454164.51	334081.32	56.71
TP15		452437.35	331981.61	27.57
WS01		447821.64	327786.78	32.84
WS01A		447935.75	327889.38	34.87
WS02	CL	449101.87	328900.09	35.25
WS02	GL			34.75
WS03	CL	449791.42	329216.85	40.74
WS03	GL			40.34
WS04		449868.95	329175.75	42.01
WS05		449864.12	329214.97	39.49
WS06	CL	449888.73	329305.82	36.92
WS06	GL			36.45
WS07	CL	449927.77	329421.80	33.92
WS07	GL			32.85
WS08		450146.11	329489.04	32.96
WS09	CL	450483.58	329969.74	33.15
WS09	GL			32.75
WS10	CL	450581.61	329950.24	33.43
WS10	GL			33.04
WS11	GL	450692.60	329743.33	34.37
WS11	GL			33.97
WS12		450911.29	329935.76	30.48
WS13	CL	450891.97	329904.20	37.96
WS13	GL			37.15
WS14		450992.77	329988.00	39.54
WS15	CL	451057.06	330000.59	43.25
WS15	GL			42.71
WS16	CL	451127.18	330186.40	44.14
WS16	GL			43.76
WS17		451183.30	330005.72	40.15
WS18		454885.78	334956.76	42.48
WS19		455076.64	335136.02	48.15
WS20		455249.11	335369.23	47.50
WS21	CL & GL	455384.80	335606.89	51.37
WS22	CL	454677.12	334626.39	43.44
WS23	CL	454692.80	334653.93	42.67
WS24	CL	454703.35	334767.14	40.99
WS24	GL			40.57
WS25	CL & GL	454757.43	334795.00	40.94

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Laing O'Rourke

Client:
Laing O'Rourke

Project:
A453 M1-Nottingham

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

Scale: 1:2500@A2

Date:
November 2006

Project No:
PC062588

File Name:
Geo-PC062588-001(6)

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey



A453 NOTTINGHAM
SITE INVESTIGATION
Your Job Ref. No: PC062588

OCTOBER 2006

EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID
REDUCED LEVELS RELATE TO ORDNANCE DATUM

DESCRIPTION		EASTING	NORTHING	RED.LEVEL
BH01	CL & GL	447912.97	327826.50	31.66
BH01A	CL	447985.37	327894.93	31.53
BH01A	GL			31.12
BH02	CL	448126.35	328014.85	30.60
BH02	GL			30.47
BH03	CL	448494.18	328417.41	30.28
BH03	GL			30.02
BH04	CL	448644.74	328564.83	30.29
BH04	GL			29.92
BH05	CL	448669.38	329227.22	40.53
BH05	GL			40.11
BH06	CL	448705.29	329010.35	33.86
BH06	GL			33.52
BH07	CL	448750.51	329000.47	39.00
BH07	GL			38.60
BH08	CL	450009.29	329310.99	36.53
BH08	GL			36.18
BH09	CL & GL	450610.68	329367.03	30.78
BH10	CL	450166.76	329091.39	34.06
BH10	GL			33.71
BH11	CL	450249.52	329431.54	33.78
BH11	GL			33.39
BH12	CL & GL	451711.55	330899.69	30.48
BH13	CL	452220.52	331657.25	29.76
BH13	GL			29.38
BH14	CL	453471.52	331200.36	28.38
BH14	GL			27.98
RD01	CL	451521.34	330532.00	54.06
RD01	GL			54.32
RD02		451534.41	330556.19	52.37
RD03	CL	451562.40	330604.50	48.47
RD03	GL			48.13
		NOT	USED	
TP01		449462.39	326362.48	30.12
TP02		449994.4	326073.75	36.55
TP04		449851.99	325628.03	34.51
TP05		449671.49	326157.45	37.01
TP06		450306.57	326462.74	30.77
TP07		451701.90	330863.75	36.76
TP08		453602.83	332981.71	70.40
TP09		454012.45	333715.23	78.07
TP10		453406.63	333613.97	63.44
TP11		453322.53	333064.06	63.49
TP12		453706.89	333421.42	78.30
TP13		453626.50	333525.76	81.05
TP14		454154.31	334081.32	99.71
TP15		453457.35	331861.61	27.57
WS01		447601.66	327796.78	36.84
WS01A		447505.75	327888.38	36.87
WS02	CL	448101.87	328918.09	35.25
WS02	GL			34.75
WS03	CL	448791.82	329216.65	40.74
WS03	GL			40.34
WS04		449660.95	329176.75	42.01
WS05		449604.12	329114.97	36.49
WS06	CL	449668.73	329305.82	36.80
WS06	GL			36.40
WS07	CL	449527.77	329421.80	33.02
WS07	GL			32.60
WS08		450345.61	329498.04	32.96
WS09	CL	450463.50	329569.74	33.16
WS09	GL			32.76
WS10	CL	450681.61	329669.24	33.40
WS10	GL			33.04
WS11	CL	450602.50	329743.33	34.07
WS11	GL			33.67
WS12		450611.26	329835.76	35.46
WS13	CL	450891.97	329904.30	27.56
WS13	GL			27.15
WS14		450662.77	329986.00	39.54
WS15	CL	451057.05	330055.58	43.20
WS15	GL			42.71
WS16		451127.16	330196.40	44.14
WS16	GL			43.75
WS17		451182.50	330055.72	40.15
WS18		454665.76	334999.76	42.49
WS19		455079.64	335136.02	48.15
WS20		455248.11	335399.23	47.90
WS21	CL & GL	455264.69	335666.89	52.27
WS22	CL	454877.12	334626.59	43.44
WS23	CL	454662.80	334610.93	42.67
WS24	CL	454703.35	334767.14	46.99
WS24	GL			46.57
WS25	CL & GL	454757.43	334795.00	46.94

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Engineer: Laing O'Rourke	
Client: Laing O'Rourke	
Project: A453 M1-Nottingham	
Drawing Title: EXPLORATORY HOLE LOCATION PLAN Taken from a drawing supplied by the client	
Scale: 1:2500@A2	Date: November 2006
Project No: PC062588	File Name: Geo-PC062588-001(7)

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	CP1078

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 2.50m	76.00	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447243 E 325878 N	25/10/2006	Arup	1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				Water strike(1) at 0.00m.	75.80	(0.20) 0.20	TOPSOIL.		▽1
0.20	B1					(0.30)	MADE GROUND: Stiff brown friable slightly sandy silt locally silt/clay with occasional gravel of fine to coarse subangular sandstone and siltstone. With rare subangular cobbles of flint. With rootlets.		
0.50	B2				75.50	0.50	Stiff friable red brown occasionally grey green SILT, locally silt/clay.		
1.50-1.95	U3			100 blows		(2.00)			
2.00	D4								
2.50-2.61	SPT 10*/75 50/35	2.50	1.20	10/15,35	73.50	2.50	Weak grey green SILTSTONE recovered as medium to coarse subangular to angular gravel size fragments.		
2.50	D5					(0.50)			
2.50-3.00	B6				73.00	3.00			
3.00	D7			25/10/2006:1.60m					
3.00-3.02	SPT 25*/10 25/10	2.50	1.60	25/10/2006: 25/25 25/10/2006:			Complete at 3.02m		

Remarks	Scale (approx)	Logged By
	1:50	MW
	Figure No.	

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W101

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NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	CP1085

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	200mm cased to 7.50m	44.10	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447337 E 327319 N	29/08/2006	Arup	1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				Driller noted 'borehole wet at 5.60m'(1) at 0.00m.	43.90	(0.20) 0.20	Sandy TOPSOIL.		▽1
0.20	B1					(0.50)	MADE GROUND. Red brown sand with gravel sized fragments of angular to rounded fine to coarse slag, mudstone, sandstone and limestone with cobbles of the same.		
0.70	B2				43.40	0.70	MADE GROUND. Firm to stiff red brown mottled grey sandy clay with occasional angular fine to coarse gravel sized fragments of mudstone and rare cobbles of quartz.		
						(0.80)			
1.50-1.95	U3			80 blows	42.60	1.50	Grey fine silty SAND.		
2.00	D4					(0.70)			
2.20	D5				41.90	2.20	Medium dense red brown clayey fine and medium SAND with occasional gravel size pockets of coal dust. Occasional rounded fine to coarse gravel of quartz.		
2.50-2.95 2.50 2.50-3.00	SPT N=15 D6 B7	2.50	DRY	3,3/4,3,4,4		(1.30)	At 2.50m; clayey and locally mottled black.		
3.50-3.95	U8			40 blows	40.60	3.50	Medium dense red brown slightly clayey fine to medium SAND with pockets of sandy clay.		
4.00	D9								
4.50-4.95 4.50 4.50-5.00	SPT N=11 D10 B11	4.50	DRY	2,3/3,2,3,3		(2.60)			
5.50-6.00	U12			30 blows			From 5.50m; occasional angular to rounded gravel of flint.		
					38.00	6.10	Medium dense orange brown slightly sandy GRAVEL. Gravel is fine to coarse angular to rounded predominantly of flint with quartz, sandstone, dolerite and mudstone and with occasional cobbles of the same.		
6.50-6.95 6.50-7.00	SPT N=20 B13	6.50	5.70	3,3/4,4,5,7		(0.90)			
7.00-7.50	B15				37.10	7.00	Very stiff red brown very sandy CLAY with subangular coarse gravel sized fragments of sandstone and mudstone.		
7.50-7.95	U16			100 blows					
8.00	D17						From 8.00m; becoming mottled grey.		
						(3.70)			
9.00-9.45 9.00 9.00-9.50	SPT N=59 D18 B19	7.50	7.10	10,11/14,14,15,16					

Remarks

Scale (approx)	Logged By
1:50	RMS

Figure No.

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British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	CP1085

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	200mm cased to 7.50m	44.10	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447337 E 327319 N	29/08/2006	Arup	2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(3.70)	Red brown CLAY (as previous sheet)		
10.50-10.70 10.50 10.50-11.00	SPT 35/50 D20 B21	7.50	7.90	25,30/35	33.40	10.70 (0.40)	Very weak MUDSTONE recovered as red brown mottled grey clayey fine to coarse angular sand and gravel sized fragments.		
11.10	D22			29/08/2006:8.40m	33.00	11.10	At 11.10m; becoming red brown and grey coarse angular gravel of friable mudstone. Complete at 11.17m		
11.10-11.17	SPT 25*/40 35/30	7.50	8.40	29/08/2006: 25/35 29/08/2006:					

Remarks

Scale (approx)	Logged By
1:50	RMS

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Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	CP1086

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 12.00m	42.15	Highways Agency	WAL060099
Location	**Dates**	**Engineer**	**Sheet**	
447582 E 327754 N	26/01/2007-29/01/2007	Arup	1/2	

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				Water strike(1) at 0.00m.		(0.45)	Dark brown sandy TOPSOIL. Driller notes hardcore over brown clayey sand.		▽1
0.20-0.45	B1				41.70	0.45			
0.45-1.20	B2						MADE GROUND. Firm to stiff brown gravelly clay. Gravel is subangular to subrounded fine to coarse of mudstone and siltstone.		
1.20-1.65	U3			64 blows					
1.70	D4						Below 1.70m; with coarse rounded gravel of quartz.		
2.20-2.65 2.20-2.65 2.20-2.70	SPT N=17 D5 B6	1.50	DRY	2,2/4,4,4,5			Below 2.20m; mottled grey		
3.20-3.65	U7			70 blows					
3.70	D8					(7.20)			
4.20-4.65 4.20-4.56 4.20-4.70	SPT N=18 D9 B10	1.50	DRY	2,3/3,4,5,6			At 4.20m; slightly sandy, slightly gravelly.		
5.20-5.65	U11			61 blows					
5.70	D12								
6.20-6.65 6.20-6.65 6.20-6.70	SPT N=15 D13 B14	1.50	DRY	2,3/3,4,4,4			Below 6.20m; sandy, slightly gravelly		
7.20-7.65	U15			50 blows					
7.65	D16				34.50	7.65			
7.70-8.15 7.70-8.15 7.70-8.20	SPT N=27 D17 B18	1.50	DRY	4,4/5,7,7,8			Medium dense to dense yellow brown gravelly SAND and sandy GRAVEL. Sand is fine to medium, gravel is rounded, fine to coarse of mudstone, sandstone and quartz. Below 7.70m; slightly clayey		
9.10 9.20-9.65 9.20-9.70	W20 SPT(C) N=35 B19	9.20	ADDED	4,6/6,9,10,10 26/01/2007:ADDED 26/01/2007:		(4.35)	Below 9.20m; sand is fine to coarse, gravel of quartz.		

Remarks

Scale (approx)	Logged By
1:50	RMS

Figure No.

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Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	CP1086

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 12.00m	42.15	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447582 E 327754 N	26/01/2007-29/01/2007	Arup	2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				26/01/2007:			SAND (as previous sheet)		
				29/01/2007:					
10.70-11.15 10.70-11.20	SPT(C) N=42 B21	10.70	ADDED	6,7/9,9,11,13		(4.35)			
12.00-12.37 12.00-12.38 12.00-12.70	SPT 62/220 D22 B23	12.00	DAMP	6,8/12,17,33	30.15	12.00 (0.80)	Stiff red brown locally mottled grey CLAY with subangular to subrounded, fine to coarse gravel sized lithorelics of mudstone.		
12.70-12.94 12.70-12.94	SPT 25'/125 50/115 D24	12.00	DAMP	11,14/25,25 29/01/2007:DAMP	29.35	12.80	Complete at 12.94m		
				29/01/2007: 29/01/2007:9.10m					

Remarks

Scale (approx)	Logged By
1:50	RMS

Figure No.

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Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	CP1088

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 10.50m	38.65	Highways Agency	WAL060099

Location	Dates	Engineer	Sheet
447226 E 327722 N	17/10/2006	Arup	1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	B1					(0.30)	Grey brown slightly silty occasionally gravelly sandy TOPSOIL. Gravel is subangular to subrounded fine to medium of quartz and sandstone.		
0.30-1.20	B2				38.35	0.30	Medium dense grey brown slightly clayey gravelly SAND. Gravel is subangular to subrounded fine to coarse, of quartz and sandstone with some subangular to subrounded quartz cobbles.		
1.20-1.65 1.20-1.65	SPT(C) N=18 B3		DRY	2,3/4,4,5,5			From 1.20m to 1.65m; very gravelly.		
2.20-2.65 2.20-2.65	SPT(C) N=12 B4	1.50	DRY	2,3/2,3,3,4		(4.00)	Below 2.20m; orange brown.		
3.20-3.65 3.20-3.65 3.20-3.70	SPT(C) N=39 B5 B6	3.00	DRY	6,8/8,13,9,9			From 3.20m; dense .		
4.20-4.65 4.20-4.65	SPT(C) N=9 B7	3.00	DRY	3,2/2,2,2,3	34.35	4.30	At 4.20m; loose sandy clay.		
				Water strike(1) at 5.20m.			Firm to stiff brown slightly sandy SILT/CLAY with occasional fine angular to subangular gravel of sandstone and weathered siltstone.		∇_1
5.20-5.65	U8			80 blows					
5.70	D9								
6.20-6.65 6.20-6.65 6.20-6.70	SPT N=17 D10 B11	6.00	DRY	2,3/3,4,5,5			At 6.20m; mottled green grey, sandy slightly gravelly.		
7.20-7.65 7.20-7.65 7.20-7.70	SPT N=15 D12 B13	7.00	DRY	2,2/3,3,4,5		(6.20)	From 7.20m to 8.70m; with siltstone lithorelics.		
				Water strike(2) at 8.20m.					∇_2
8.20-8.65 8.20-8.70 8.20-8.65	D14 B15 SPT N=17	7.50	7.40	2,3/4,4,4,5					
9.50-9.95 9.50-9.95 9.50-10.00	SPT N=11 D16 B17	9.00	7.40	1,2/2,3,3,3					

Remarks	Scale (approx)	Logged By
	1:50	MW
	Figure No.	

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NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	CP1088

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 10.50m	38.65	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447226 E 327722 N	17/10/2006	Arup	2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(6.20)	SILT/CLAY (as previous sheet)		
10.50	D18				28.15	10.50	Stiff red brown sandy SILT.		
11.00-11.45 11.00-11.45 11.00-11.50	SPT N=39 D19 B20	10.50	8.20	4,8/8,9,10,12			At 11.00m; mottled grey brown with rare sandstone gravel.		
						(2.90)			
12.00	D21						From 12.00m; sandy with occasional subangular medium gravel of siltstone.		
12.50-12.95 12.50-12.95 12.50-13.00	SPT N=43 D22 B23	10.50	8.00	5,7/8,9,12,14					
13.40	D24				25.25	13.40	Recovered as subangular fine to coarse gravel size fragments of weak grey green SANDSTONE.		
						(1.10)			
14.00-14.05 14.00 14.00-14.50 14.50	SPT 25*/20 50/30 D25 D26 D27	10.50	7.40	25/50 17/10/2006:7.40m	24.15	14.50			
14.50-14.54	SPT 25*/10 50/30	10.50	7.40	17/10/2006: 25/50 17/10/2006:			Complete at 14.54m		

Remarks	Scale (approx)	Logged By
	1:50	MW
	Figure No.	

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Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	RC1079

Machine:	Casing Diameter	Ground Level (mOD)	Client	Job Number
Flush :	140mm cased to 1.95m	80.00	Highways Agency	WAL060099
Core Dia: mm				
Method :	**Location**	**Dates**	**Engineer**	**Sheet**
	447240 E 326105 N	25/10/2006	Arup	1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					Groundwater was not apparent during boring(1) at 0.00m.					
0.00			0	0				Inspection Pit.		▽1
			0	0			(1.20)			
						78.80	1.20			
1.20	53	0	0	0				Open Hole.		
							(0.80)			
2.00						78.00	2.00	No recovery.		
			0	0			(0.70)			
						77.30	2.70			
							(0.20)			
2.90						77.10	2.90	Recovered non-intact as moderately strong light grey brown subangular cobbles of SILTSTONE.		
	100	0	0	0	4,8/8,9,16,21 SPT N=54			Generally very weak variably very stiff clay to weak red brown locally mottled grey green calcareous MUDSTONE with occasional very thin beds of moderately weak to moderately strong grey green siltstone. Fractures: horizontal (where evident), extremely closely to closely spaced, planar to irregular; subvertical, locally very closely spaced, planar to irregular, occasional; others irregular, apparently random strike.		
3.50-3.95										
3.50							(1.60)			
			0	0						
4.40					P1					
4.50	63	13	0	0	6,10/10,21,19,27 SPT N=77	75.50	4.50	Very weak to weak red brown locally mottled grey to green calcareous MUDSTONE with occasional thin to medium beds of weak to moderately strong grey to green siltstone. Weathering: occasional black speckling and surface discolouration. Fractures: where evident horizontal, extremely closely to closely spaced, planar to irregular; subvertical, locally very closely spaced, planar and undulating to irregular.		
5.00-5.45										
5.00			0	0				Between 5.00m to 5.50m; no recovery, possibly due to SPT.		
5.60					P2					
5.50	95	61	9	0	6,7/9,14,18,26 SPT N=67					
6.50-6.95										
6.50								Between 6.80m and 6.95m; moderately strong siltstone.		
							(5.20)			
	87	43	15	0						
7.60					P3					
8.00-8.45					5,6/9,12,26,31 SPT N=78					
8.00			0	0						
8.40								Between 8.40m and 9.00m; weak to moderately strong siltstone.		
8.90	83	74	31	0	P4					
9.50-9.95					8,9/12,13,17,15 SPT N=57			Between 9.30m and 9.70m; moderately weak to strong siltstone with very frequent small rounded vugs (up to 5mm).		
9.50			0	0						
						70.30	9.70			
9.70								Generally weak variably very weak to moderately weak red brown locally mottled grey green calcareous MUDSTONE		

Remarks	Scale (approx)	Logged By
	1:50	TL
	Figure No.	

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NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Borehole Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	RC1079

Machine:	Casing Diameter	Ground Level (mOD)	Client	Job Number
Flush :	140mm cased to 1.95m	80.00	Highways Agency	WAL060099
Core Dia: mm				
Method :	Location	Dates	Engineer	Sheet
	447240 E 326105 N	25/10/2006	Arup	2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.20	87	23	20	0	P5			with occasional thin beds of very weak to weak grey green siltstone. Fractures: horizontal, very closely to medium spaced, planar and undulating, very tight to open, subvertical, planar, tight to open, occasionally becoming irregular. MUDSTONE (as next sheet)		
11.00 11.00-11.45	91	85	51	0	9,11/11,15,13,16 SPT N=55			Between 11.00m and 11.20m; no recovery, possibly due to SPT.		
12.00					P6					
12.50 12.50-12.70	67	31	15	0	12,13/50 SPT 50/46		(5.80)			
13.80					P7					
14.00 14.00-14.19			0	0	9,16/50 SPT 50/37					
14.20	Sample / Tests		Casing Depth (m)	Water Depth (m)				Between 14.20m and 15.00m; fractures are generally subhorizontal to subvertical, very closely spaced, undulating to irregular.		
14.60	P8									
					25/10/2006:13.97m	64.50	15.50			
					25/10/2006:			Complete at 15.50m		

Remarks	Scale (approx)	Logged By
	1:50	TL
	Figure No.	

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Site	Trial Pit Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	TP1080

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		79.55	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447129 E 326038 N	18/10/2006	Arup	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Groundwater was not apparent during excavation(1) at 0.00m.	79.35	(0.20) 0.20	Brown clayey TOPSOIL with many rootlets. (Stratum I)		▽1
0.50	B1				(1.00)	MADE GROUND: Firm friable red brown clay. (Stratum II) From 0.50m In wall of face D; pockets of brown silty angular to rounded coarse gravel of quartz, dolomite, limestone and mudstone. (Stratum III)		
0.95	B2			78.35	1.20	At 1.05m; steel 300mm diameter pipe At 1.10m; ceramic drainage pipe, 3.00m from edge of tarmac.		
			18/10/2006:			Complete at 1.20m		
			18/10/2006:					

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:50	RMS	

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Site	Trial Pit Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	TP1082

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		82.40	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447203 E 326311 N	18/10/2006	Arup	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Groundwater was not apparent during excavation(1) at 0.00m.	82.20	(0.20) 0.20	Brown clayey TOPSOIL. (Stratum I)		▽1
0.50	B1				(1.70)	MADE GROUND: Firm red brown mottled grey gravelly locally slightly gravelly silt/clay. Gravel is fine to coarse angular to rounded mudstone, quartz and fragments of tile. (Stratum II)		
1.90	B2			80.50	1.90			
			18/10/2006:		(0.50)	MADE GROUND: Firm to stiff grey gravelly silt/clay. Gravel is fine to coarse angular of siltstone. (Stratum III)		
			18/10/2006: 18/10/2006:	80.00	2.40	At 2.25m: steel pipe 150mm diameter parallel to road.		
						Complete at 2.40m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
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Site	Trial Pit Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	TP1083

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		41.60	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447258 E 327586 N	23/10/2006	Arup	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Groundwater was not apparent during excavation(1) at 0.00m.	41.30	(0.30) 0.30	Dark brown sandy TOPSOIL with occasional fine to coarse rounded gravel of quartz. (Stratum I)		▽1
0.50	B1			40.80	(0.50) 0.80	Red brown clayey locally gravelly SAND. Gravel is coarse rounded of quartz. (Stratum II)		
1.00	B2			39.90	(0.90) 1.70	Orange brown fine to coarse gravelly SAND. Gravel is From 1.00m: becoming very gravelly coarse rounded quartz and subangular flint. (Stratum III)		
2.00	B3					Firm red brown locally mottled grey slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded weathered mudstone. With gravel size pockets of organic matter. (Stratum IV)		
3.00	B4				(2.30)			
4.00	B5		23/10/2006:	37.60	4.00	Complete at 4.00m		
			23/10/2006:					

Plan

Remarks

Prior to excavation a Cable Avoidance Tool (CAT) survey was carried out. Services were not encountered.;On completion the trial pit was backfilled with compacted arisings.;No visual or olfactory indication of contamination was observed.;

Scale (approx)	Logged By	Figure No.
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Site	Trial Pit Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	TP1084

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		51.30	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447369 E 326976 N	23/10/2006	Arup	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Groundwater was not apparent during excavation(1) at 0.00m.		(0.25)	Dark brown slightly sandy clayey TOPSOIL with occasional subrounded to rounded fine to coarse gravel of quartz. (Stratum I)		▽1
				51.05	0.25			
0.50	B1				(0.75)	MADE GROUND: Firm to stiff red brown sandy clay with occasional fine to coarse subrounded to rounded gravel of quartz and sandstone. (Stratum II) At 0.70m; 150mm diameter terracotta pipe, broken and infilled. Pit extended 1m east.		
				50.30	1.00			
1.50	B2				(1.60)	Stiff red brown slightly sandy gravelly CLAY with occasional pockets of organic matter and occasional cobbles of moderately weak fine sandstone. Gravel is mainly fine to coarse subangular to subrounded of sandstone. (Stratum III) At 1.80m; becoming sandy		
2.60	B3			48.70	2.60	Moderately weak green grey fine SANDSTONE. (Stratum IV)		
					(0.40)			
			23/10/2006:	48.30	3.00	Complete at 3.00m		
			23/10/2006:					

Plan

Remarks

Scale (approx)	Logged By	Figure No.
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Site	Trial Pit Number
M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2	TP1089

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		37.50	Highways Agency	WAL060099
	Location	**Dates**	**Engineer**	**Sheet**
	447247 E 327868 N	04/12/2006	Arup	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Groundwater was not apparent during excavation(1) at 0.00m.		(0.25)	Brown clayey TOPSOIL with many rootlets. (Stratum I).		▽1
0.10	D1			37.25	0.25	Possible MADE GROUND. Firm red brown gravelly locally slightly gravelly clay. Gravel is subangular to rounded fine to coarse, of mudstone, sandstone and siltstone. Locally sandy. (Stratum II). Possible		
0.50	B2				(0.50)			
				36.75	0.75	Possible MADE GROUND. Firm to stiff brown slightly sandy gravelly locally slightly gravelly clay. Gravel is subangular to rounded, fine to coarse of quartz, sandstone and mudstone. (Stratum III). Possible		
1.00	B3				(0.65)			
				36.10	1.40	Firm to stiff red brown gravelly locally slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse, of mudstone and siltstone with occasional quartz and coal and occasional pockets of soft grey clay. (Stratum IV). Possible		
1.50	B4				(0.70)			
				35.40	2.10	Brown grey clayey SAND with occasional rounded coarse gravelly quartz. Sand is fine to coarse and fine grained igneous lithologies. (Stratum V). Possible		
2.30	B5					From 2.20m; yellow brown and not clayey.		
2.80	D6				(1.90)			
3.30	B7					At 3.30m; gravelly		
3.80	D8							
			04/12/2006:	33.50	4.00			
			04/12/2006:			Complete at 4.00m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
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Site	Number
Nottinghamshire/ Derbyshire COA NMCS2 Upgrade	D119K

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		36.78	Highways Agency	F11451
	Location	**Dates**	**Engineer**	**Sheet**
	447460.97 E 327885.63 N	06/09/1999	WSP Environmental Ltd	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				36.58	(0.20) 0.20	TOPSOIL.		
0.20-0.45	D01		0 blows		(0.90)	Firm to stiff, reddish brown slightly sandy CLAY with occasional to some fine to coarse angular gravel of reddish brown mudstone (occasional grey colouration).		
1.10-1.80	D02		0 blows	35.68	1.10	Brown, slightly clayey SAND.		
1.80-2.00	D03		0 blows		(0.70)			
			06/09/1999:0.00m	34.98	1.80	Very stiff, reddish brown and greenish grey slightly sandy CLAY. (Mercia Mudstone - Grade IVa/IVb)		
			06/09/1999:	34.78	(0.20) 2.00	Complete at 2.00m		

Remarks
1. Inspection pit excavated to 0.45m (0.50m x 0.50m). 2. Hole complete at 2.00m no penetration in Mercia Mudstone. 3. Hole dry. 4.Marker Post Ref 185/5 +50. 5. Hole backfilled with grout.

Scale (approx)	Logged By
1:50	NBR

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Site	Number
Nottinghamshire/ Derbyshire COA NMCS2 Upgrade	D120L

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		37.14	Highways Agency	F11451
	Location	**Dates**	**Engineer**	**Sheet**
	447556.57 E 327905.86 N	13/09/1999	WSP Environmental Ltd	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				36.94	(0.20) 0.20	TOPSOIL with occasional coarse subangular limestone fragments.		
0.20-0.60	D01		0 blows		(0.40)	MADE GROUND: Reddish brown clay with a little fine to medium mudstone and Magnesian limestone gravel.		
0.60-1.50	D02		0 blows	36.54	0.60	MADE GROUND: Reddish brown sandy clay with a little fine to medium subangular quartz gravel.		
					(0.90)			
1.50-3.20	D03		0 blows 13/09/1999:0.00m 13/09/1999: 13/09/1999:0.00m	35.64	1.50	MADE GROUND: Reddish brown mottled grey clay with a little greenish grey fine to coarse subangular sandstone gravel.		
					(1.70)			
				33.94	3.20	Complete at 3.20m		

Remarks
1. Hand excavated inspection pit to 0.90m (0.50m x 0.50m). 2. Hole complete at 3.20m. 3. Hole dry. 4. Marker Post Ref 185/5 +50. 5.Hole backfilled with grout.

Scale (approx)	Logged By
1:50	NBR

Figure No.

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Site	Number
Nottinghamshire/ Derbyshire COA NMCS2 Upgrade	D1A

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		33.87	Highways Agency	F11451
	Location	**Dates**	**Engineer**	**Sheet**
	447493.18 E 327893.83 N	13/09/1999	WSP Environmental Ltd	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.80	D01		0 blows		(0.80)	TOPSOIL with some fine to coarse subangular to subrounded gravel of limestone and quartz.		
			13/09/1999:0.00m	33.07	0.80			
0.80-3.10	D02		0 blows		(2.30)	Reddish brown clayey coarse SAND with some subrounded fine to coarse quartz gravel.		
				30.77	3.10	Complete at 3.10m		

Remarks
1. Hand excavated inspection pit to 0.70m (0.50m x 0.50m). 2. Hole complete at 3.10m. 3. Hole damp below 0.90m. 4. Hole backfilled withgrout. 5. Marker Post Ref 185/5 +50

Scale (approx)	Logged By
1:50	NBR

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British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Site	Number
Nottinghamshire/ Derbyshire COA NMCS2 Upgrade	D1B

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		34.60	Highways Agency	F11451
	Location	**Dates**	**Engineer**	**Sheet**
	447531.12 E 327899.87 N	15/09/1999	WSP Environmental Ltd	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.90	D01		0 blows	34.50	0.10	TOPSOIL with a little fine to coarse subrounded quartz gravel.		
					(0.80)	MADE GROUND: Brown fine sand and fine to coarse, subangular to subrounded gravel sized fragments of quartz and sandstone.		
			15/09/1999:0.00m	33.70	0.90			
0.90-2.70	D02		0 blows			Soft reddish brown very sandy CLAY with a little medium subrounded quartz gravel.		
					(1.80)			
						---from 2.50m pale brown		
2.70-3.00	D03		0 blows	31.90	2.70			
					(0.30)	Soft reddish brown slightly sandy CLAY.		
				31.60	3.00			
						Complete at 3.00m		

Remarks
1. Hand excavated inspection pit to 0.70m (0.50m x 0.50m). 2. Hole complete at 3.00m. 3. Hole dry. 4. Hole backfilled with grout. 5.Marker Post Ref 185/5 +50.

Scale (approx)	Logged By
1:50	NBR

Figure No.

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Appendix 4: GDMS Reports

Geotechnical Design Report

East Midlands Gateway Strategic Rail Freight Interchange

M1 Overbridge

Phase - R

Element – 11

Highway Components vi & vii

HAGDMS Ref: 29800

for

Roxhill Kegworth Ltd

Hydrock Ref: R/14792/014
Document Ref: EMG-HYD-HGT-C4-RP-GE-0014

August 2017

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Project: EAST MIDLANDS GATEWAY STRATEGIC RAIL FREIGHT INTERCHANGE

Title: GEOTECHNICAL DESIGN REPORT FOR M1 OVERBRIDGE

Date: JULY 2017

Document Production Record

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S2 – P1	March 2017	First issue, for coordination & approval
S2 – P2	July 2017	Revised after additional boreholes for bridge abutments
S4 – P3	August 2017	Revised following HE review
S4 – P4	August 2014	Revised following HE comments

Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above named Client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

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1.0 INTRODUCTION

Roxhill Kegworth Ltd (Roxhill) is undertaking the construction of the East Midlands Gateway Strategic Rail Freight Interchange. The development site covers approximately 374 ha in total of which the area covered by this report forms part. The site was previously, to the commencement of the onsite works, largely agricultural land associated with the Lockington Estate, along with smaller areas of other ownership. Earthworks on the Main Site, highway improvements to the A453 and the off-site highways (Junction 24, 24A and the A50) are in progress at the time of writing this report. The HAGDMS reference for this report is 29800.

The proposed overall development is to comprise a Strategic Rail Freight Interchange (SRFI), incorporating several large warehouses and associated infrastructure, a rail freight container terminal and a landscape bund to the north providing visual screening for the villages of Lockington and Hemington. The development will necessitate major improvements to Junctions 24 & 24A of the M1, creation of a new junction on the A453 dual carriageway to serve the SRFI and provision of a southern bypass for Kegworth. This report covers the M1 Overbridge, associated with the construction of the Kegworth bypass.

The development of the site has been subdivided into a series of phases, as identified on BWB Drawing NTH/209/SK212 Revision 3, entitled DCO Phasing, dated April 2016 and presented at Annex A. Hydrock Drawing EMG-HYD-HGT-ZZ-DR-GE-0641 presents a plan of the report coverage in terms of Geotechnical Interpretive and Geotechnical Design Reports. A copy of this drawing is presented at Annex A.

The content of this report covers the geotechnical design elements associated with the M1 Overbridge Phase R, comprising the A6 Kegworth Bypass, Highway Components vi and vii. In terms of contractual responsibility, as identified on BWB Drawing NRH/209/SK173 Rev P6, entitled Contract Assembly, dated March 2016 the work covered by this report is identified as Element 11. A copy of this drawing is presented at Annex A.

In January 2017, Hydrock was commissioned by Roxhill to undertake the ground investigation and complete a Geotechnical Design Report (GDR) to cover the proposed earthworks required for the M1 Overbridge and the A6 Kegworth Bypass. The content of this report has been prepared following the guidance and in accordance with the requirements of DMRB HD 22/08.

A phase of additional site investigation works was undertaken in May 2017, once access to the location of bridge abutments was facilitated as part of the Smart Motorway highway improvement works. The content of the GDR has been reviewed and revised accordingly based upon the findings of the most recent investigation works.

The findings from the previous phases of investigation for the areas of the site associated with the M1 Overbridge are presented in the following reports, with copies of those reports prepared by other consultants provided for the production of the GDR:

- East Midlands Gateway Strategic Rail Freight Interchange: Geotechnical Interpretive Report, M1 Overbridge and Kegworth By-pass, prepared by Hydrock Consultants Ltd on behalf of Roxhill Kegworth Ltd, Hydrock Report R/14792/013 dated July 2017.

- East Midlands Gateway Strategic Rail Freight Interchange: Zone 4 Kegworth Bypass. Preliminary Sources Study Report, prepared by RSK, reference 312494/4-02 (00), on behalf of Roxhill Developments Ltd, dated November 2013.

- East Midlands Gateway Strategic Rail Freight Interchange: Zone 4 Kegworth Bypass. Factual Ground Investigation Report, prepared by RSK, reference 312494/4-03 (00), on behalf of Roxhill Developments Ltd, dated December 2013.

- East Midlands Gateway Strategic Rail Freight Interchange: Zone 4 Kegworth Bypass. Preliminary Ground Investigation Report, prepared by RSK, reference 312494/4-04 (00), on behalf of Roxhill Developments Ltd, dated December 2013.

- Stage 1 Preliminary Ground Investigation at Kegworth, for Waterman Transport and Developments Limited. Project Number PC124998, dated October 2012.

Additional reference has been made to previous phases of ground investigation and geotechnical design completed by Hydrock on the other elements within the wider development. Supporting information has been taken from the following reports prepared by Hydrock.

- East Midlands Gateway Strategic Rail Freight Interchange: Factual Ground Investigation Report, prepared by Hydrock Consultants Ltd on behalf of Roxhill Developments Ltd, Hydrock Report R/14792/003 dated June 2016.

- East Midlands Gateway Strategic Rail Freight Interchange: Main Site. Geo-environmental Report, prepared by Hydrock Consultants Ltd on behalf of Roxhill Developments Ltd, Hydrock Report R/14792/004 dated May 2016.

- East Midlands Gateway Strategic Rail Freight Interchange: Rail Container Terminal and A453 Site Access Junction. Geotechnical Interpretive Report, prepared by Hydrock Consultants Ltd on behalf of Roxhill Kegworth Ltd, Hydrock Report R/14792/006 dated June 2016.

- East Midlands Gateway Strategic Rail Freight Interchange: A453 Site Access Junction. Geotechnical Design Report, prepared by Hydrock Consultants Ltd on behalf of Roxhill Kegworth Ltd, Hydrock Report R/14792/008 dated November 2016.

The content of the reports listed above have been reviewed and relied upon by Hydrock in the formation of this GDR and are considered to provide sufficient information to satisfy the requirements for the purposes of drafting this GDR in terms of the Preliminary Sources Study Report (PSSR) and Ground Investigation Report (GIR) as described by HD 22/08, Managing Geotechnical Risk.

Cass Hayward LLP (Cass Hayward) have been separately appointed by Roxhill to undertake the structural design of the M1 Overbridge, which is presented under a separate cover. BWB Consulting Ltd (BWB) have been appointed by the Client to undertake the highway and civil engineering design elements, with their submission presented under a separate cover. Selected Cass Hayward and BWB drawings have been included in Annex A of this GDR to support the geotechnical design elements completed by Hydrock.

The GDR has been prepared for Roxhill for the purposes of identifying geotechnical characteristic design values for the structural design of the M1 Overbridge. The GDR has been written in accordance with the requirements of DMRB HD 22/08. The report structure has followed the general requirements of HD 22/08, with the addition of Section 1 Introduction. The inclusion of the Introduction section his intended to aid in the understanding of the reader and set out the correct sequence of reports and documents used in the generation of the GDR.

BS EN ISO 1997: Section 2 advocates the use of geotechnical categorization of the proposed structures to establish the design requirements; i.e. the geotechnical assessment for the bridge abutment, selected

backfill to structures, associated earthworks and the placement of fill, have been determined to be Category 2.

The Geotechnical Category has been re-assessed at the design stage and this GDR covers the elements of the development which have been deemed to be Category 2.

Further to the reference to BS EN ISO 1997, additional consideration has been given to DMRB BD 2/12 (Technical approval of Highway Structures) to ensure the selected categorisation for the GDR is in accordance with this publication. From reference to Section 3 of BD 2/12, the geotechnical design of the M1 Overbridge is considered to be Category 2.

A number of abbreviations have been included in the text of the report and the accompanying earthworks specification. For clarity, the following abbreviations with their corresponding description have been used.

- DA: Design Approach, as defined by BS EN 1997 (Eurocode 7, EC 7) with a corresponding number defining which approach and combination has been used, e.g. reference to DA1/1 would be Design Approach 1, combination 1.
- DCO: Development Consent Order.
- DMRB: Design Manual for Roads and Bridges.
- EC 7: Eurocode 7, BS EN 1997-1: 2004 + A1:2013 and BS EN 1997-2: 2007.
- EGL: Existing Ground Level, at the time of drafting the report and/or ground investigation works.
- FGL: Final Ground Level.
- HAPMS: Highways Agency Pavement Management System, where the Highways Agency has now been replaced by Highways England.
- HAGDMS: Highways Agency Geotechnical Data Management System, where the Highways Agency has now been replaced by Highways England.
- MAGLE: Managing Agents Geotechnical Liaison Engineer.
- MCerts: Environment Agency Monitoring Certification Scheme.
- m OD: reduced ground level, presented in terms of m Ordnance Datum, with a positive value representing a level above Ordnance Datum and a negative value below Ordnance Datum.
- MMG: Mercia Mudstone Group, the prevailing geology which underlies the majority of the site, comprising a range of mudstone, siltstone and sandstone materials, broadly split into five main groups and weathering grades.
- MMP: Materials Management Plan, developed by the appointed Contractor to manage materials on site including the methodology for demonstrating certainty of use, quantity of material required and the acceptability of the site won soils to be used as engineered fill.
- NB: Northbound carriageway.

- NR: Nominated Representative, the Client's representative or representatives who have been nominated by the Client with responsibility for supervision of specific aspects of the works (earthworks).

- RMS: Remediation Method Statement, covering aspects and protocols to be followed by the Contractor associated with contamination, including the protection of Controlled Waters, Human Health and the Environment.

- SB: Southbound carriageway.

- SHW: Manual of Contract Document for Highway Works, Volume 1, Specification for Highway Works.

- UKAS: United Kingdom Accreditation Service.

The document referencing system used for the East Midlands Gateway development follows the guidance from BS 1192:2007 Collaborative production of architectural, engineering and construction information, Code of practice. In accordance with this system, documents include a reference to the status at time of issue. The following status references are of note when reviewing this report:

- S2, the document is suitable for information and has been issued for comment; and

- S4, the document is suitable for construction approval.

Once a document has been approved for construction, only the status reference will be changed, with no further amendments. As built records will include a status reference prefixed with CR.

2.0 EARTHWORKS

The following section provides an overview of the geotechnical parameters, as appropriate to the proposed new embankments and the underlying soils associated with the M1 Overbridge. A series of slope stability assessments have been completed utilising the findings from previous phases of ground investigation.

2.1 Slope Stability

The redevelopment of the site requires a number of temporary and permanent cuttings, embankments and slopes to be formed, as identified on the BWB drawings. In terms of the new M1 Overbridge, the location of the bridge spans across an existing cutting of the M1. The bridge is to be supported on ground bearing abutments. As such there will be a requirement to place fill, including selected fill to structures, to in fill behind the bridge abutments and the existing slopes. All fill is to be benched in to existing slopes, in accordance with the Earthworks Specification. The contract specific requirements of the Earthworks Specification are presented at Annex A of this report.

The following sections detail the stability of the proposed cutting slopes and engineered slopes in both short-term temporary and long-term permanent conditions.

2.1.1 Methods of Analysis

In accordance with Design Approach 1 from BS EN ISO 1997, all calculations have applied the reduction to the actions and soil parameters using Combination 1 and 2 (DA1/1 and DA1/2) for STR and GEO Limit States. This approach has been used for geotechnical analysis in accordance with definitions and methodology specified in BS EN ISO 1997.

Appendix 0/4 List B provides a comprehensive list of design standards, guides, codes of practice and additional resources which have been used in the formation of this design. In particular, the following publications have been used:

- BRITISH STANDARDS INSTITUTION. 1990. Method of tests for soils for civil engineering purposes. BS 1377. Parts 1 - 9. BSI, London.
- BRITISH STANDARDS INSTITUTION. 2004. Eurocode 7 – Geotechnical Design, Part 1 General rules, BS EN 1997-1:2004 + A1 2013. BSI, London.
- BRITISH STANDARDS INSTITUTION. 2007. Eurocode 7 – Geotechnical Design, Part 2 Ground investigation and testing, BS EN 1997-2. BSI, London.
- BRITISH STANDARDS INSTITUTION. 2008 + A1:2011. Code of practice for temporary works procedures and the permissible stress design of falsework. BS 5975. BSI London.
- BRITISH STANDARDS INSTITUTION, 2009. Code of practice for earthworks. BS 6031. BSI London.
- BRITISH STANDARDS INSTITUTION. 2015. Foundations, BS 8004. BSI, London.
- BRITISH STANDARDS INSTITUTION. 2016. Code of practice for strengthened/reinforced soils and other fills. BS 8006-1:2010. BSI London.
- BRITISH STANDARDS INSTITUTION. 2003. Aggregates for unbound and hydraulically bound materials for use in civil engineering works and road construction. Guidance on the use of BS EN 13242. PD 6682-6: 2003. BSI, London.
- BRITISH STANDARDS INSTITUTION. Geotechnical investigation and testing – Field testing. BS EN ISO 22476. BSI London
- BUILDING RESEARCH ESTABLISHMENT. 2001. Building on fill: geotechnical aspects, 2nd Edition. BRE BR424. BRE, Garston.
- BUILDING RESEARCH ESTABLISHMENT. 2015. Building on fill: geotechnical aspects, 3rd Edition. BRE FB75. BRE Garston.
- BUILDING RESEARCH ESTABLISHMENT. 2005. Brownfield sites, an integrated ground engineering strategy. BRE BR485. BRE, Garston.
- THE HIGHWAYS AGENCY. 1991. Design Manual, Road and Bridges: Volume 4, Geotechnics and Drainage; Section 1, Earthworks; Part 1, HA 44/91, Design and preparation of contract documents. HA 44/91.

- THE HIGHWAYS AGENCY. 2012. Design Manual for Roads and Bridges. Volume 1, Highway Structures Approval Procedures and General Design. Approval Procedures. BD 2/12.
- THE HIGHWAYS AGENCY. 1987. Design Manual for Roads and Bridges. Volume 2, Highway Structures Design (Substructures, special structures and materials) Substructures. Backfilled retaining walls and bridge abutments. BD 30/87.
- THE HIGHWAYS AGENCY. 2003. Design Manual for Roads and Bridges. Volume 2, Highway Structures Design (Substructures, special structures and materials) Substructures. Strengthened/reinforced soils and other fills for retaining walls and bridge abutments. BD 70/03.
- THE HIGHWAYS AGENCY. 2000. Design Manual for Roads and Bridges. Volume 2, Highway Structures Design (Substructures, special structures and materials) Substructures. Foundations. BD 74/00.
- THE HIGHWAYS AGENCY. 2008. Design Manual for Roads and Bridges. Volume 4, Geotechnics and Drainage. Section 1 Earthworks, Part 2, Managing Geotechnical Risk. HD 22/08.
- THE HIGHWAYS AGENCY. 2009. Design guidance for road pavement foundations (Draft HD 25). Interim Advice Note 73/06 Revision 1. IAN 73/06 Rev 1.
- THE HIGHWAYS AGENCY. 1994. Design Manual, Road and Bridges: Volume 4, Geotechnics and Drainage; Section 1, Earthworks; Part 5, HA 68/94 Design methods for the Reinforcement for Highway Slopes by Reinforced Soil and Soil Nailing Techniques. HA 68/94.
- THE HIGHWAYS AGENCY. 1994. Design Manual, Road and Bridges: Volume 4, Geotechnics and Drainage; Section 1, Earthworks; Part 5, HA 70/94, Construction of Highway earthworks. HA 70/94.
- THE HIGHWAYS AGENCY. 2007. Design Manual, Road and Bridges: Volume 4, Geotechnics and Drainage; Section 1, Earthworks; Part 6, HA 74/07, Treatment of Fill and Capping Materials Using Either Lime or Cement or Both. HA 74/07.
- HIGHWAYS ENGLAND. 2016. Manual of Contract Documents for Highway Works, Specification for Highway Works: Volume 1. SHW.
- INSTITUTION OF CIVIL ENGINEERS. 1987. Specification for ground treatment. ICE Geotechnical Engineering Group; Ebook ISBN : 978-0-7277-4943-7; Publication Date: April 1987.
- INSTITUTION OF CIVIL ENGINEERS. 2012. ICE Manual of Geotechnical Engineering. Volume 1 Geotechnical Engineering Principals, Problematic Soils and Site Investigation. ICE Publishing, 2012. ISBN 978-0-72777-5707-4.
- INSTITUTION OF CIVIL ENGINEERS. 2012. ICE Manual of Geotechnical Engineering. Volume 2 Geotechnical Design, Construction and Verification. ICE Publishing, 2012. ISBN 978-0-72777-5709-8.

All geotechnical and geostructural analysis undertaken as part of the assessment of cutting stability has been completed using the FINE GEO5 Geostructural Software Suite 2017. The complete software suite allows the user to preselect the method of analysis, design approach and geotechnical parameters and presents the findings as a complete report for each analysis undertaken along with a series of plans in 2D and 3D of the model under assessment.

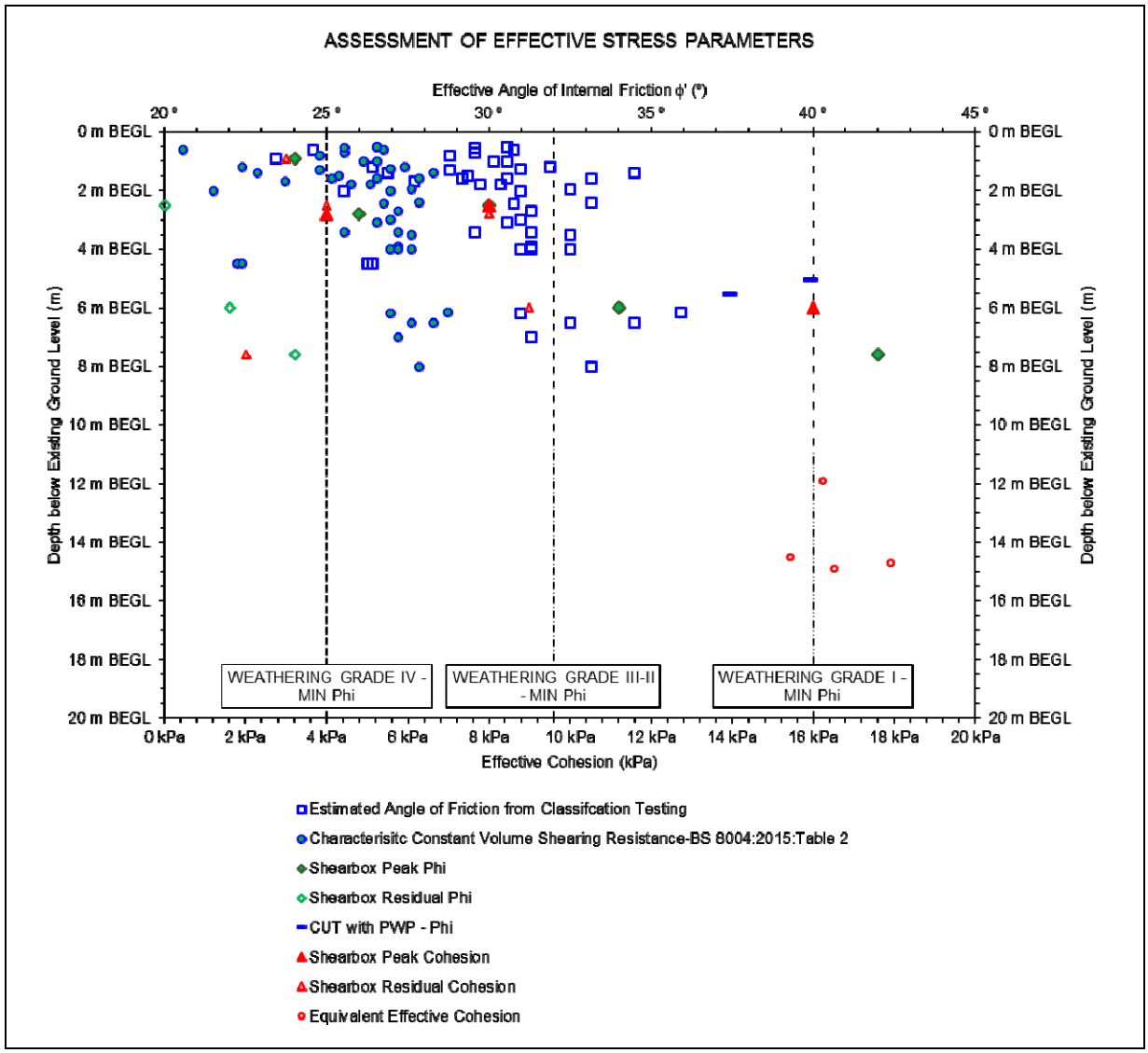
2.1.2 Soil Parameters

The soil parameters used in the assessment of the slope stability are based upon the findings and recommendations of the Geotechnical Investigation Report (GIR), presented as Hydrock Report R/14792/013, and a review of previous GIRs for other phases of the wider site, as detailed in Section 1.

Figure 2.1 presents the findings of the direct and indirect assessment of effective stress parameters, plotted against the depth below Existing Ground Level (EGL) for effective cohesion (c') and effective angle of friction (ϕ'), including peak ($_{pk}$), critical ($_{cr}$) and residual values ($_{res}$). Figure 2.1 plots the derivation of soil parameters for effective cohesion and effective angle of friction.

Figure 2.1 has been used in the derivation of appropriate values for c' and ϕ' to be used in the geotechnical modelling, including the slope stability analysis as well as the assessment of the ground bearing bridge abutments. Following responses to previous reviews for GDR covering other aspects of the wider site, a sensitivity analysis on the lower bound values, in particular the use of effective cohesion for the weathered MMG has been completed. This is presented within the subsequent sections of this report.

Figure 2.1: Derivation of Effective Stress Parameters for Slope Stability



On the basis of the encountered geology summarised in the GIR, the geostructural design reports presented at Annex B and the requirements from Table 6/1, a set of geotechnical design characteristic values have been determined for each stratum to be used in the geostructural assessment. This information is summarised in Table 2.1.

Design Parameters and Characteristic Values have been adopted directly from the previous GIR listed in Section 1, or correlated to design values using the methodologies defined in Annex C. In terms of deriving appropriate effective stress parameters, a number of direct and indirect assessments have been completed. The indirect assessment of these parameters has made reference to the findings of the previous phases of investigation and testing, as well as the British Standards and Design Guides previously listed in Section 2.1.1.

For the purposes of the GDR, soils have been grouped by weathering grade and engineering designation, as opposed to the geological grouping adopted in the GIR, to aid in the understanding of the future engineering works by the Contractor and to allow for direct correlation between published values for geotechnical parameters and the characteristic values used in the GDR. A comprehensive assessment was completed, comparing the geological group and the weathering grade as recorded during the GIR phase. It was concluded that for the purposes of the GDR and subsequent earthworks operation, the use of the weathering grade as opposed to the parent geological group was more beneficial in understanding the geotechnical characteristics, and this is the approach adopted in the GDR.

Table 2.1: Design Parameters and Characteristic Values

Stratum Description	**Parameter**					
	Bulk Unit Weight	Undrained cohesion	Drained Cohesion	Effective Angle of Internal Friction	Oedometric Modulus	Elastic Modulus Small Strain
	γ_b kN/m³	S_u kN/m²	c′ kN/m²	ϕ' º	E_{oed} MPa	E_s MPa
Topsoil / Subsoil[2]	16.50	35	0	25	2.5	3.5
Firm to stiff red brown CLAY MMG IVB[1]	19.50	65	2 (< 20)[3]	25 (25 – 32)[3]	12.5	30
Stiff red brown CLAY MMG IVA[1]	20.50	90	4 (< 20)[3]	32 (25 – 32)[3]	15.0	37
Mercia Mudstone MMG III[1]	22.00	Fig 2.2 & Fig 2.3	10 (< 20)[3]	32 (32 – 42)[3]	Table 2.3	Table 2.3
Mercia Mudstone MMG II[1]	22.50	Fig 2.2 & Fig 2.3	16 (> 25)[3]	42 (> 40)[3]	Table 2.3	Table 2.3
Intact Mudstone MMG I[1]	23.00	Fig 2.2 & Fig 2.3	25 (> 25)[3]	42 (>40)[3]	Table 2.3	Table 2.3
Bromsgrove Sandstone – interbedded Mudstone and Sandstone	22.50	150	8	40	250	625

Stratum Description	**Parameter**					
	Bulk Unit Weight	Undrained cohesion	Drained Cohesion	Effective Angle of Internal Friction	Oedometric Modulus	Elastic Modulus Small Strain
	γ_b kN/m³	S_u kN/m²	c' kN/m²	ϕ' º	E_{oed} MPa	E_s MPa
Class 2 Cohesive General Fill (2A & 2C)	19.50	50[2]	2	25	8.5	20
Class 6F/9E Capping	21.00	-	-	35	30	75
Class 6N Selected Fill to Structures	23.00	-	-	$\phi'_{pk} \leq 44º$ $\phi'_{crit} \leq 38º$	100	150
Class 7A Selected cohesive fill to Structures	20.50	100	2	25	20	45

Notes: [1] The reference to MMG describes the material is derived from the general sequence of the Mercia Mudstone Group, with an appropriate weathering grade (IVB to I) are taken from CIRIA C570.

[2] Minimum value for undrained shear strength specified to be 50 kN/m².

[3] Values presented in brackets () have been taken from CIRIA C570 on typical parameters for the MMG.

Testing of the site won soils has indicated that when fill materials are placed in accordance with the guidance from SHW Table 6/4, the undrained shear strength of all materials is likely to be in excess of 65 kN/m². However, the values recorded in Table 2.1 are considered to be the least credible, lowest permissible parameters. This has been used in order to demonstrate that overall geotechnical design is compliant even where the lowest permissible strength is considered.

BS 8004 refers the designer to CIRIA C570, where the values for effective cohesion presented in Table 2.1 have been derived. Effective cohesion is not a parameter used in the current design process for the M1 Overbridge; however, for completeness it has been left included in the document to show consistency with the other GDRs that form part of the wider EMG site.

Soils parameters used in the derivation of earth pressure coefficients are based on a soil with shear resistance ϕ'_{crit} value = 38° and ϕ'_{max} plane strain = 44°. The specification of the backfill has a requirement for shear box testing of Class 6N backfill (compacted to a Dr of 92%) to demonstrate that the ϕ'_{crit} value and ϕ'_{max} plane strain values do not exceed those used in the design.'

These values combine to give a max design value of 0.4 x 38 + 0.6 x 44 = 41.6, i.e. as the 41.5º adopted in the geostructural analysis design process.

The process has been replicated in order to determine the minimum parameters for shear resistance ϕ'_{crit} value of 31.5° and ϕ'_{max} plane strain = 37.5°. This will return a lower bound design value of 35º.

The structural design of the M1 Overbridge, which is a single span integral bridge, is to comprise ground bearing abutments, founded at a level in the order of 66.5 to 66.8 m OD. The structural design of the Bridge, including the wing walls and the retaining walls, has been undertaken by Cass Hayward. Reference should be made to the Cass Hayward structural design and accompanying drawings. A selection of drawings has been provided to Hydrock, which are replicated in Annex A of this report.

In terms of the assessment on slope stability, this section concentrates on the temporary slope stability required during construction. This section also considers the long-term stability of the existing cutting. Section 3 of this design report considers the proposed highway structures from a geotechnical design perspective. This includes the derivation of the safe and permissible bearing pressure for the foundation of the proposed retaining wall, with the indicative location shown on Hydrock drawing EMG-HYD-C4-M1OB-DR-GE-0636, a copy of which is presented at Annex A. The geotechnical assessment of the retaining walls includes the global stability, with the geotechnical parameters as defined in this section of the report.

In addition to being used in the slope stability analysis, the geotechnical design parameters defined in Table 2.1 have been adopted for the other subsequent analysis, including the prediction of settlement resulting from changes in imposed load. Where additional geotechnical parameters have been used in the analysis, the values are presented on the accompanying geostructural reports, presented at Annex B.

At the foundation level of the abutment historical records have indicated the geology will comprise the lower level of the MMG weathering Grade III to Grade II. At this reduced level the strength characteristics of the material are in the range of an extremely high strength soil (S_u > 300 kN/m²) and an extremely weak rock (UCS <1000 kN/m² and where S_u = UCS/2). Following the completion of the additional boreholes at the proposed abutment locations, a detailed assessment on the strength and stiffness profile of the underlying MMG has been completed.

Figure 2.2 presents the results of the statistical analysis of the strength profile of the MMG, This is based upon a total of 291 individual strength measurements. A small number of the values used are derived from direct measurement of the undrained shear strength, with the remainder based upon correlated unconfined compressive strength and point load tests.

Figure 2.2 presents the strength profile against the reduced ground level. Data has been combined from individual measurements and presented per 1.0m of change in reduced ground level. The calculated upper and lower quartile values for each zone of assessment have been used to form the solid blue block, with the upper and lower error bars presented.

Figure 2.2: Analysis of Strength vs Depth – Statistical Analysis following May 2017 Boreholes

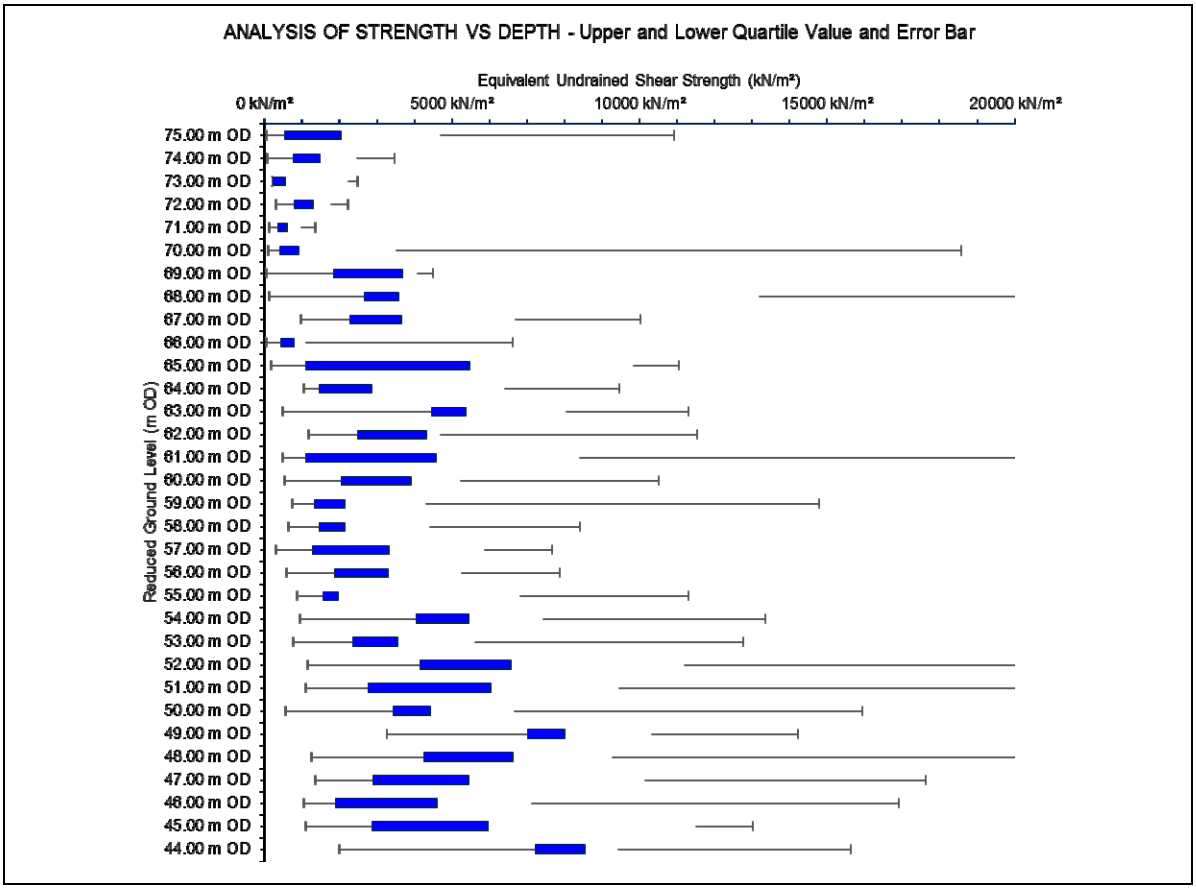
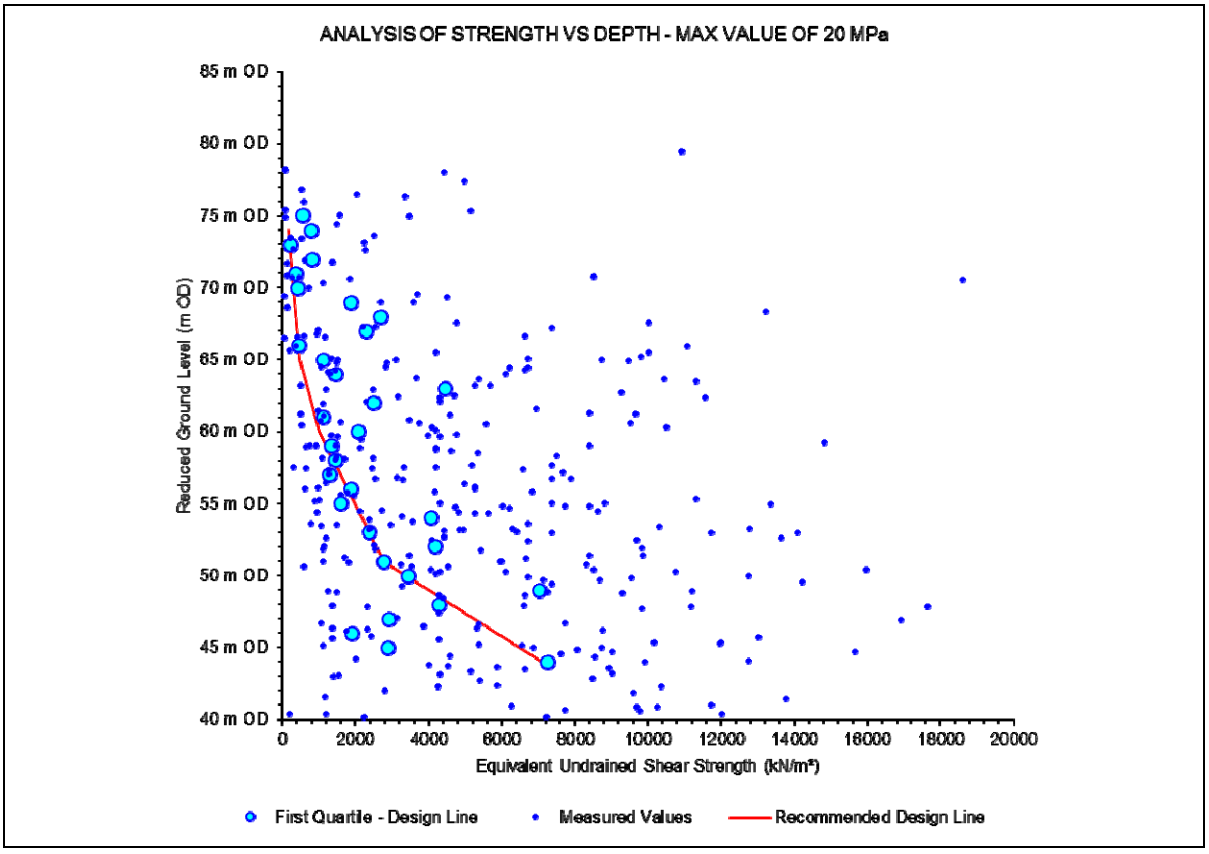


Figure 2.3: Analysis of Strength vs Depth - Design Line



For clarity, the horizontal scale has been limited to 20,000 kN/m² (20 MPa). However, values in excess of 20 MPa were locally recorded, with a maximum value in excess of 50 MPa.

The lower (first) quartile value for each level has been used to define the Design Line for the strength profile of the MMG. This is presented on Figure 2.3, with the specific lower quartile value for each level shown as a large blue circle, and the design line as a solid red line.

Using the design line presented in Figure 2.3, a series of regression analysis parameters were derived, which relates the reduced level in m OD to a corresponding undrained shear strength based upon the first (e.g. lower) quartile value. The parameters derived from this assessment are presented in Table 2.2.

Table 2.2: Regression Analysis Parameters for Strength derived from Reduced Ground Level

Reduced Ground Level		Undrained Shear Strength at upper level	Linear Regression Parameters		Modulus Values	
From	To		S_u = (A x Level m OD) + B		Oedometric Modulus E_{oed}	Elastic Modulus E_s
			A	B		
74.00 m OD	65.00 m OD	150 kN/m²	-33.333	2616.667	(S_u kN/m² x 0.166) MN/m²	(S_u kN/m² x 0.400) MN/m²
65.00 m OD	60.00 m OD	450 kN/m²	-110.000	7600.000	(S_u kN/m² x 0.166) MN/m²	(S_u kN/m² x 0.400) MN/m²
60.00 m OD	51.00 m OD	1,000 kN/m²	-194.444	12666.667	(S_u kN/m² x 0.166) MN/m²	(S_u kN/m² x 0.400) MN/m²
51.00 m OD	44.00 m OD	2,750 kN/m²	-621.429	34442.857	(S_u kN/m² x 0.166) MN/m²	(S_u kN/m² x 0.400) MN/m²

Table 2.2 includes the corresponding correlation between the undrained shear strength and the Oedometric modulus (E_{oed}) and Elastic Modulus (E_s). The derivation of the correlation parameters is presented in the detailed discussion on analysis methods presented in Annex C with specific reference to Figure C.6 and C.7.

In order to determine Oedometric Modulus values for a specific reduced ground level, the initial calculation will be to derive the corresponding undrained shear strength. As an example, considering the reduced level of 66.5 m OD, then the equation for deriving the equivalent shear strength (S_u) would be as follows.

S_u = (-33.333 x 66.5) + 2616.667 = 400 kN/m²

Taking this derived value for shear strength, then the corresponding Oedometric Modulus (E_{oed}) would be.

E_{oed} = 400 kN/m² x 0.166 = 66.4 MN/m²

The same process can be used to estimate a derived value for the Elastic Modulus (E_s).

E_s = 400 kN/m² x 0.400 = 160.0 MN/m²

At the proposed foundation level of around 66.5 to 66.8m OD, the corresponding undrained shear strength using the lower quartile value has been determined to be in the order of 390 kN/m² to 400

kN/m². This would be an equivalent Unconfined Compressive Strength of 780 kN/m² to 800 kN/m². The assessed strength is in accordance with the previous assessment as noted previously, prior to the drilling of the additional boreholes in May 2017.

A table of values of derived geotechnical parameters is presented in Annex B. This is based upon the strength and stiffness per 1.0m increment, starting at a maximum elevation of 78 m OD and reducing to less than 60 m OD. The maximum elevation of 78 m OD has been taken from the maximum elevation of the embankment to the outside of the cutting. The weathering grade used in this table is based upon Hydrock Drawing EMG-HYD-C4-M1OB-DR-GE-0636. Reference is made in the notes at the bottom of the table as to how each parameter has been derived.

2.2.3 Drainage and Groundwater Characteristics

This GDR is limited in coverage to the M1 Overbridge. The location of the bridge spans a pre-existing cut in the MMG, as identified on Hydrock Drawing EMG-HYD-C4-M1OB-DR-GE-0636, a copy of which is presented at Annex A.

Groundwater modelling has identified that the prevailing ground water profile is present within the underlying Bromsgrove Sandstone. Therefore, where the geotechnical model extends to a depth to include the Bromsgrove Sandstone, the ground water profile is included in the analysis. For the majority of the analysis included in this report the groundwater profile is below that base of the model. Consideration on the intrinsic permeability and also the rate at which consolidation is expected to occur is discussed in more detail in Section 2.4.

The GEO5 software includes an option to consider the effects of water on the stability of the slope in terms of a ground water level pore water coefficient (r_u), pore pressure, ground water pressure and suction surface or rapid draw down. For the purposes of the slope stability analysis the groundwater profile option had been selected, based upon the measured levels, for the long-term effective stress condition.

Details of permanent drainage are presented on the BWB drawings and accompanying specification.

2.2.4 Slope Suitability Assessment

The location of the new M1 Overbridge spans an existing cutting for the M1 Motorway. No unsupported slopes are proposed. However, temporary slopes will need to be cut to permit the construction of the bridge abutments. Temporary slopes to permit construction are based on a short-term undrained analysis. To complete the assessment of slope stability, the long-term stability under fully drained conditions of the pre-existing M1 cutting has been included. The following GEO5 Geostructural analysis reports related to slope stability are presented in Annex B.

- EMG-HYD-C4-M1OB-CA-GE-0661: Long-term slope stability of pre-existing M1 Cutting.

- EMG-HYD-C4-M1OB-CA-GE-0662: Short-term temporary stability during construction of new M1 Overbridge Abutment.

Table 2.3 presents a summary of the analysis completed on the long-term stability of the pre-existing M1 Cutting.

Table 2.3: Long-term Stability of pre-existing M1 Cutting - EMG-HYD-C4-M1OB-CA-GE-0661

Embankment	Slip Surface	Slope Stability Result		Comments
		Maximum Utilisation	Minimum Over Design Ratio Γ	
West Embankment (Northbound M1)	Circular	73.7 %	1.35	Acceptable
	Non-circular	74.6 %	1.34	Acceptable
East Embankment (Southbound M1)	Circular	65.9 %	1.52	Acceptable
	Non-circular	66.4 %	1.51	Acceptable

The maximum degree of utilisation for the pre-existing cutting was 74.6%, which is the equivalent Over Design Ratio of 1.34. In each instance, the highest degree of utilisation was recorded for DA 1/2.

Table 2.4 presents a summary of the analysis completed on the short-term stability during the construction of the new bridge abutments. The sequence of activities described in the following analysis is presented on Hydrock Drawing EMG-HYD-C4-M1OB-DR-GE-0654-S4-P2, a copy of which is presented at Annex A.

Table 2.4: Short-term Stability during Construction – EMG-HYD-C4-M1OB-CA-GE-0662-S4-P2

Construction Stage	Slip Surface	Slope Stability Result		Comments
		Maximum Utilisation	Minimum Over Design Ratio Γ	
Stage 1 – Pre-existing Condition	Circular	24.8 % [2]	4.03	Acceptable
	Non-circular	23.8 % [2]	4.20	Acceptable
Stage 2 – Excavation of Foundations	Circular	27.9 % [2]	3.58	Acceptable Excavation exposed for minimum period
	Non-circular	27.9 % [2]	3.58	
Stage 3 – Excavation including site plant	Circular	26.1 % [2]	3.83	Acceptable Excavation exposed for minimum period
	Non-circular	23.2 % [2]	4.20	
Stage 4 to 6 – Foundation & Abutment Cast	Circular	Not analysed	-	Construction activities covered by previous analysis
	Non-circular	Not analysed	-	
Stage 7 – Granular Backfill to Abutment	Circular	24.1 % [1]	4.15	Bench cut at time of fill placement
	Non-circular	22.6 % [1]	4.42	
Stage 8 – Foundation to retaining wall	Circular	Not analysed	-	Construction activities covered by previous analysis
	Non-circular	Not analysed	-	
Stage 9 – Granular Backfill to Abutment	Circular	22.3 % [2]	4.48	Acceptable
	Non-circular	21.5 % [1]	4.65	Acceptable
Stage 10 & 11- Foundation to retaining wall	Circular	Not analysed	-	Construction activities covered by previous analysis
	Non-circular	Not analysed	-	
Stage 12 – Granular	Circular	30.4 % [2]	3.29	Acceptable

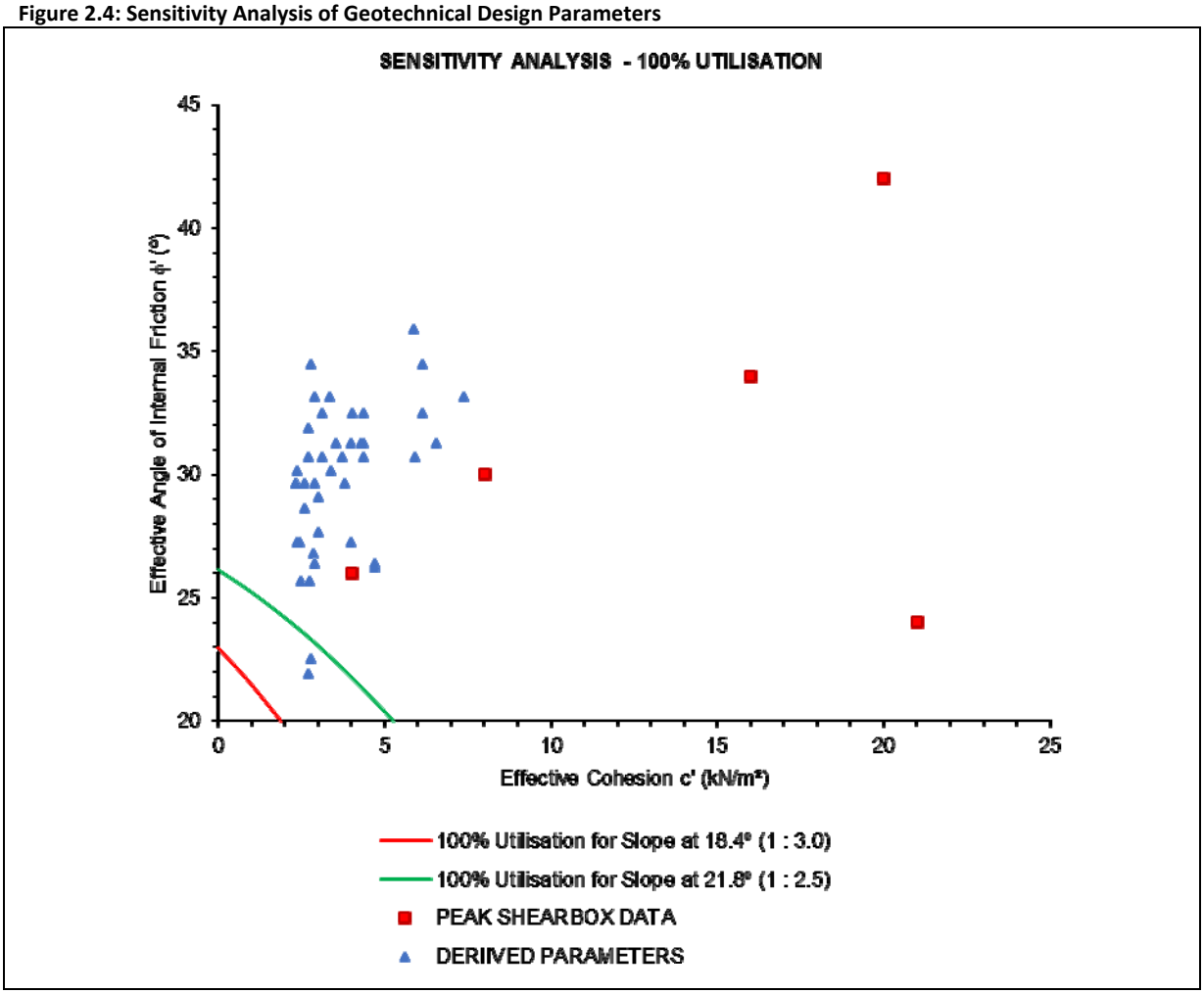
Construction Stage	Slip Surface	Slope Stability Result		Comments
		Maximum Utilisation	Minimum Over Design Ratio Γ	
Backfill to Abutment	Non-circular	35.0 % [2]	2.86	Acceptable
Stage 13 – Application of Highway UDL 20 kPa	Circular	30.4 % [2]	3.29	Acceptable
	Non-circular	35.0 % [2]	2.86	Acceptable

Notes: [1] Indicates highest degree of utilisation derived using DA 1/1

[2] Indicates highest degree of utilisation derived using DA 1/2

The maximum degree of utilisation for the pre-existing cutting was 35.0%, which is the equivalent Over Design Ratio of 2.86.

Figure 2.4: Sensitivity Analysis of Geotechnical Design Parameters



In assessing the stability model associated with the embankments to the M1 Overbridge, in all instances and in all combinations, the degree of utilisation returned was less than 100% with the corresponding Over Design Ratio (Γ) in excess of 1.0, which is acceptable in terms of compliance with the requirements of BS EN 1997.

In deriving the acceptability of the slopes which are to be formed in areas of cut, consideration has been given to the long-term performance of the material with specific emphasis on the potential for the

mudstone materials to degrade through weathering should they be left exposed. As such, the maximum slope to be formed either through the placement of engineered fill derived from the MMG or by cutting has been set at 1:2.5 (21.8º), which should be sufficient to provide an acceptable profile to allow topsoil to be placed and vegetation to become established. This will require an appropriate level of preparation of the surface of the slopes, and this is discussed separately.

To complete the analysis on the stability of the new slopes, a sensitivity check has been undertaken on a range of geotechnical parameter.

In completing this assessment a range of effective cohesion values between 0 and 4 kN/m² has been used in conjunction with effective angles of friction between 20 and 28º. Two slope profiles have been used in this assessment, the first with a final landform profile of 1:3 (18.4º) and the second of 1:2.5 (21.8º). The results of this assessment have been used to derive a line for each slope profile where the combination of the selected values for effective cohesion and friction would return a degree of utilisation of 100%. This is presented on Figure 2.3.

Figure 2.4 presents two series of data, as lines,

- a solid red line representing 100% utilisation for a slope of 1:3 (18.4º) for a combination of c' and ϕ'; and
- a solid green line represents 100% utilisation for a slope of 1:2.5 (21.8º) for combination of c' and ϕ'.

As the value for effective cohesion (c') increases, the minimum value for effective friction (ϕ') will decrease and still achieve a corresponding degree of utilisation of 100%. Included on Figure 2.2 are the results of the actual test data for the measured c' and ϕ' from the remoulded shearboxes. Of note is that one value for c' has been reduced from 80 kPa to 20 kPa, so that it could be plotted on the figure. The data from the shearboxes is presented as a series of red squares. Further to this, inferred values of c' and ϕ' derived following BS 8004: 2015 are plotted as blue triangles.

Where data is plotted above the line, the resultant degree of utilisation will be less than 100%, or alternatively when reported as the Over Design Ratio (Γ), a value in excess of 1. Following a traditional, pre EC 7 approach, then a Γ of 1 would be equivalent to a global factor of safety of 1.5.

Based upon the results of the sensitivity analysis, in order for a degree of utilisation to be less than 100%, an effective angle of internal friction (ϕ') of at least 26º (25.8º) is required, where there is no benefit from effective cohesion, for slopes of up to 1:2.5 (21.8º). When considering a shallower slope of 1:3 (18.4º), the minimum friction angle for the material will reduce to 23º (22.6º), where the effective cohesion is 0 kN/m².

With respect to the recorded values for effective cohesion and effective friction, there are only two instances where the combined friction and cohesion plots data below either of the lines. This data relates to inferred values for ϕ' and c' from soils within the upper superficial material which in turn is required to be removed and re-engineered as part of the earthworks cut to fill exercise.

Whilst limited data and investigation positions are within the footprint of the proposed highway embankment for the new A453 site access, geotechnical data has been derived from across the wider site as well as published values.

Figure 2.5 expands on the records presented in Figure 2.4, with the inclusion of published values for each weathering grade of the MMG and a series of data points representing the characteristic values from Table 2.1.

Figure 2.5: Sensitivity Analysis of Geotechnical Design Parameters and Characteristic Values

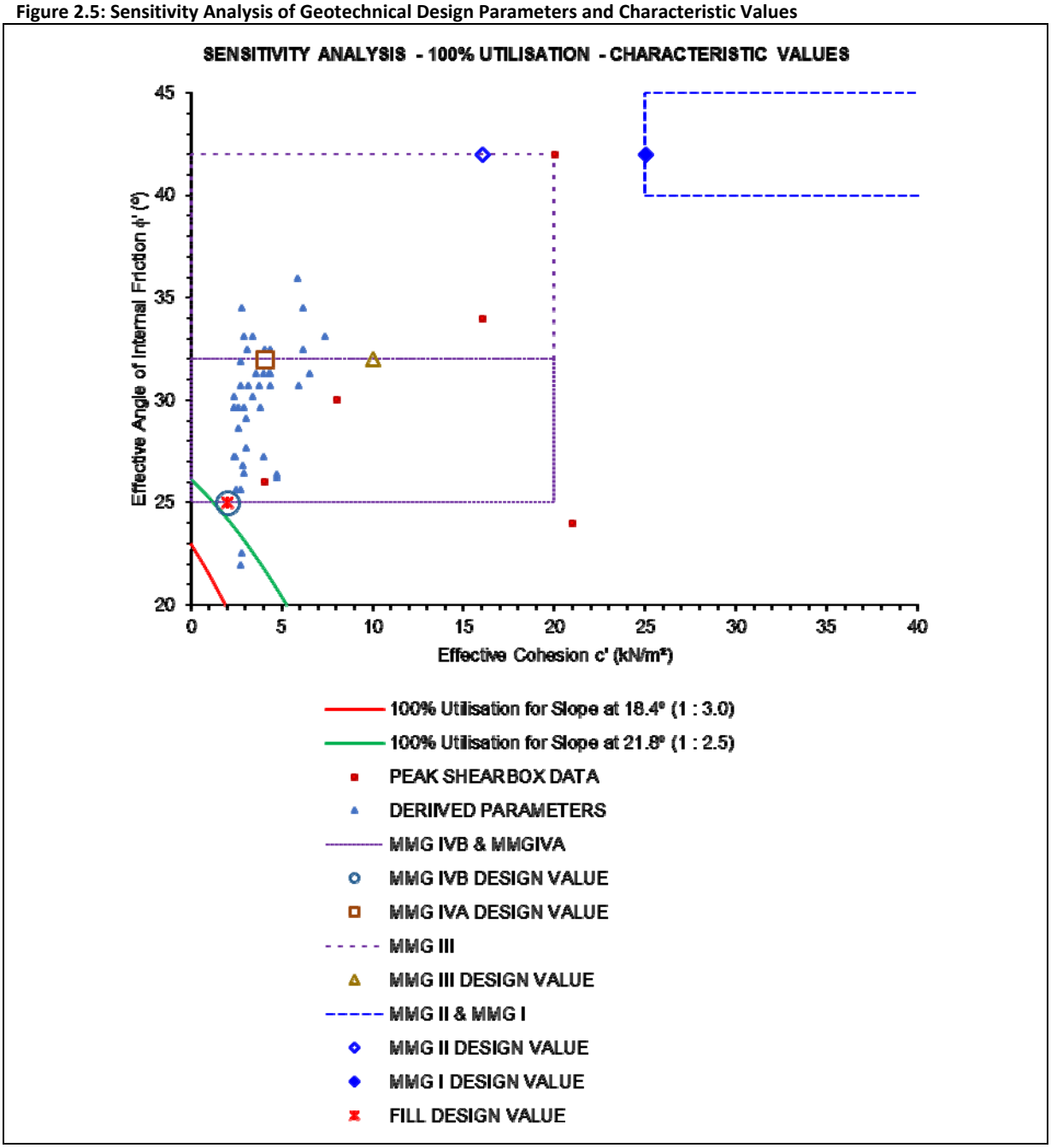


Figure 2.5 presents a series of zones covering the range of published values for the various weathering grades, as presented in brackets in Table 2.1. It should be noted that the selected characteristic values for the MMG II material is actually plotted outside of the published zone for the same weathering grade, due to the selection of a lower, more conservative value for effective cohesion.

For a minimum angle of friction of 25º, as defined in the published values for MMG and with no contribution from effective cohesion, the maximum steepness of a slope with a degree of utilisation of 100% is 1:2.6 (20.9º).

Overall, adopted values for effective cohesion are at the lower end of published values, and the sensitivity analysis has shown that so long as the effective angle of friction is at least 26º, the value of effective cohesion is not critical to the global stability. For slopes slacker than 1:2.6, an effective angle of friction of 25º will return an acceptable degree of utilisation with no additional benefit from effective cohesion.

Further to the completion of the sensitivity checks on a range of geotechnical parameters, a notional r_u value has been added to the slope stability model in order to replicate the potential impact of water infiltrating the ground. The slope model assessed has had a pore water pressure coefficient r_u value of 0.1 added into the model to replicate the infiltration of water.

The assessment of the typical slope model was undertaken for each construction stage with a corresponding increase in degree of utilisation due to the inclusion of r_u. The assessment has increased the degree of utilisation from the previous maximum of 77.8% (Γ = 1.29) to 80.3% (Γ = 1.25).

A series of assumptions have been made in terms of the degree of saturation which could occur in the embankment and the likely duration of this could have an impact on the global stability. For the final construction stage with the highway open, a range of r_u values have been utilised, with a value of 0.01 with supplementary interfaces set at an r_u of 0.05 at approximately 0.3m below the surface, an r_u of 0.10 at around 0.60m below the surface and a deeper profile set at an r_u of 0.2 within the core of the embankment. The re-evaluated onerous condition has increased the degree of utilisation from an initial value 88.7% (Γ = 1.13) to 95.25% (Γ = 1.05).

In assessing the stability of all slopes, the location of drainage channels has been assessed on the potential impact on the long-term stability of the slopes, including the new embankments and environmental bunds which form part of the A6 Kegworth Bypass. The assessment has included an assessment on the potential instability at the toe of the slope due to localised softening of the soils where these are left in a perpetual wet condition. Where a risk has been identified, the drainage feature has either been relocated a sufficient distance away from the affected slope, or replaced with an appropriate design of a fin drain.

Surface drainage of the slopes will be required where the prevailing groundwater table is encountered, in conjunction with drains at the crest and toe of all slopes to collect surface water and prevent inundation, as identified on the BWB drawings. Copies of geostructural design assessments are presented at Annex B.

2.2.6 Summary of Slope Angles

The geostructural analyses undertaken for the proposed cuttings, embankment widening and new embankments have returned acceptable degrees of utilisation for all scenarios assessed. The maximum steepness of all slopes in the geotechnical model, whether they are cut or formed from engineered fill, has been set at 1 vertical to 2.5 horizontal, equivalent to 21.8º or slopes of 40%.

All permanent slopes associated with the location of the new M1 Overbridge are pre-existing and based upon supplied topographical data are in the range of 1: 2.5 to 1 : 3. The construction of the new bridge does not alter the steepness of the existing slopes.

Sensitivity analysis has determined that where the effective angle of friction is in excess of 26º, there is no long-term reliance upon effective cohesion, for slopes of up to 1:2.5 (21.8º). Testing undertaken on recompacted samples of the proposed fill have returned values for effective cohesion in excess of 4 kN/m² with a maximum value of 80 kN/m².

2.3 California Bearing Ratio and Subgrade Surface Stiffness

Table 2.1 presents the characteristic CBR and Subgrade Modulus values for each of the materials under consideration within the geotechnical model. Guidance on appropriate values for the subgrade stiffness have been based in part from the recommendations contained within the GIR as well as the guidance from DMRB IAN 73/06 Rev 1 Table 5.1.

From reference to DMRB IAN 73/06, the value of the modulus of subgrade reaction (k) and subgrade surface stiffness modulus I can be related to an equivalent CBR value, as summarised in Table 2.2. The pavement design has a Class 3 foundation as defined by BWB in their design presented under a separate cover. In order to comply with the BWB pavement design the subgrade surface stiffness modulus will need to achieve an equivalent CBR of more than 10%, equivalent to subgrade stiffness modulus of 77Mpa.

The available fill materials for the land raise to construct the new highway embankment are to be derived from the upper weathered horizons of the Gunthorpe Member and Tarporley Formation, corresponding to Mercia Mudstone weathering grade IVB and IVA as defined by CIRIA C570. In consideration of the likely long-term engineering performance of this material, and with full reference to DMRB IAN 73/06 Rev Table 5.1, it is considered unlikely that the material in an untreated state would achieve the requisite stiffness for the final layers of fill and further to this a higher stiffness could not be relied upon under long-term equilibrium conditions.

As such, the use of hydraulic binders, following the full guidance from DMRB HA 740/7, has been included in the specification appendices, subject to appropriate mix design trials and testing demonstrating the long-term performance of the treated soils is acceptable. Sulphate testing undertaken on representative samples of the Gunthorpe and Tarporley deposits, and the results have returned Total Potential Sulphates of less than 0.25% which is indicative that the soils should be suitable for treatment with hydraulic binders, subject to the testing defined in HA 74/07.

In consideration of the likely classification of the fill material pre and post treatment with hydraulic binders, the parent soils derived from the weathered MMG comparable to Grades IVB and IVA can be designated as either Class 2A (wet) or Class 2C (stony) cohesive general fill. They would be re-designated as Class 7E or 7I to allow treatment with lime to form a Class 9D or lime and cement to form a Class 9E.

Cement is to be used to modify the upper layers of material, and as such the re-designation of this material will be as a Class 9E following treatment. Trials have indicated a minimum cement content of 1% will be required, subject to confirmatory testing at time of treatment. Details of actual binder type and addition, in conjunction with all associated test results, will be provided in the Geotechnical Feedback Report (GFR) upon completion of the works.

Whilst the designation of both Class 9D and 9E are strictly used to define a capping material, it is considered that lime will be required in order to stiffen the upper layers of the engineered fill in order to arrive at a subgrade surface stiffness modulus in excess of 77 Mpa at the top of the earthworks fill prior to the placement of the remainder of the pavement foundation. The use of cement is considered unlikely to be required for the engineered fill to achieve 77Mpa.The use of hydraulic binders is covered by the requirements defined in Appendix 6/1 and 6/3.

Table 2.5 provides a summary of the Design Subgrade Surface Stiffness and CBR values, which have been used in the generation of the GDR and accompanying specification appendices, which includes the use of hydraulic binders on the final 0.60m of engineered fill in order to elevate the subgrade stiffness modulus to in excess of 77Mpa.

Table 2.5: Design Subgrade Surface Stiffness & CBR Values

Stratum and Fill Designation	**Parameter**			
	Young's Modulus	Modulus of Subgrade Reaction	Subgrade Surface Stiffness	Equivalent CBR
	E'	k	E	CBR
	Mpa	MN/m³	Mpa	%
Firm to stiff red brown CLAY MMG IVB[1]	12.5	32	43	4
Stiff red brown CLAY MMG IVA[1]	15.0	37	49	5
Class 2[2] (Site won MMG IV[1] reused as fill)	12.5	32	43	4
Class 9 Lime or cement Modified Fill. Upper layer(S) of Engineer Fill below all pavements	25.0	55	77[3]	10

Notes: [1] The reference to MMG describes the material is derived from the general sequence of the Mercia Mudstone Group, with an appropriate weathering grade taken from CIRIA C570.

[2] The CBR and modulus of subgrade reaction values are based upon DMRB IAN 73/06 Rev 1 Table 5.1.

[3] The value for Class 9 should be considered to be the minimum permissible value, it is the responsibility of the Contractor to derive the correct mix design to achieve this value.

2.4 Settlement

An initial assessment of settlement due to the construction of the new highway embankment has been completed using the settlement program from the GEO5 suite. The assessment of settlement will be refined following completion of the current phase of ground investigation.

Settlement will not be limited to the changes in imposed load from the embankment construction and as such the following scenarios which can cause settlement have been considered:

- the potential contribution from ongoing self-weight settlement within selected fill mass backfill to the bridge abutment up to a maximum thickness of 10.5m;
- settlements induced within the existing soils as a result of the imposed load from the embankment construction;

- the proportion of the above settlements that may continue after the earthworks have been completed and the carriageway is open; and
- settlements induced at the foundation level of the bridge abutments, which are typically 1.50m below current ground level.

2.4.1 Self-Weight Settlement

An assessment has been made as to the potential magnitude of self-weight settlement within the engineered fill placed during the highway embankment construction. This assessment assumes a minimum degree of compaction of 95% of the maximum dry density, and that all fill used behind the abutments will comprise a Class 6N Selected Granular fill.

The assessment of self-weight settlement has been undertaken based upon a derived Constrained Soil Modulus Value (M). In accordance with SHW Clause 642, the Constrained Soil Modulus may be taken as the reciprocal of the coefficient of volume compressibility (m_v). Therefore, the basis of the calculation of the self-weight settlement of the newly placed fill is that it will have a maximum coefficient of volume compressibility (m_v) of no more than 0.01m²/MN with a corresponding constrained modulus of M of 100 MN/m². Based on BS 6031:2009: Clause 7.6.3.2, the prediction of self-weight settlement can be estimate from:

Total self-weight settlement = [0.5 x (γ_b x H²)]/ D, where:

γ_b is the unit weight of the fill, taken as 23.0 KN/m³ from Table 2.1

H is the height, with a maximum thickness of 10.5m

D is the constrained modulus (referred to by the symbol M from SHW Clause 642)

For the maximum fill thickness of 10.5m, the predicted self-weight settlement would be 13mm, or <0.01% of the fill thickness. The greater thickness of fill will induce a higher proportion of self-weight settlement in the material at the base. As the material is granular in nature, the duration over which self-weight settlement will occur is likely to be very short. It is expected that all self-weight settlement will be complete by the time the permanent surfacing is placed.

The current profile of the cutting at the location of the M1 Overbridge has been formed to 1 vertical to 2.5 horizontal (21.8º). The indicative length of the foundation to the bridge abutment is in the order of 8.0m. The profile of the Class 6N has been set at 45º and starts from the rear of the abutment foundation. By overlaying this profile of Class 6N fill, it has identified that only Class 6N will be required, which will need to be benched into the current embankment. Details of the benching details will be provided in the finalised version of the GDR, but given the design profile each bench will be the same height as it is long.

Therefore, in terms of self-weight settlement, consideration has only been given to the properties of the Class 6N fill.

2.4.2 Settlement Due to Land Raising

An initial assessment has been completed on the predicted settlement of the underlying soils due to the placement of the selected fill behind the abutment.

The greatest change in pressure occurs at the rear of the foundation where the thickness of Class 6N is the greatest. The underlying soils in this region, other than a thin veneer of superficially weathered soils, are expected to be bedrock of the lowest weathering grade and of greatest stiffness. These materials are least likely to be susceptible to load induced settlement. Settlement due the abutment is considered separately.

Further to this, prior to the construction of the M1, these materials would have been surcharged by overlying soils of comparable thickness to the depth of Class 6N. As such, any load induced settlement within these materials is considered to be extremely small and any such settlement will occur very quickly upon loading. It is not considered that significant settlement will occur post construction.

For a maximum thickness of Class 6N of 10.5m the change in imposed load is likely to be in the order of 240 kN/m². Derived correlated Oedometric Modulus values at the level of the foundation are in the order of 72 MN/m². The maximum settlement predicted under this global change in load and corresponding stiffness, irrespective of previous ground loads, would be in the order 5mm within the upper 1m of soil. Below this level, the weathering grade reduces to grade II, with a corresponding increase in stiffness. On this basis it is not anticipated that load induced settlement would occur below 1.0m given the previous loading on the ground (before the M1 cutting).

2.4.3 Predicted Rate of Load Induced Settlement (Consolidation)

The underlying natural soils present below the proposed bridge abutment and selected backfill comprise competent deposits derived from the Mercia Mudstone Group. The consolidation characteristics of these deposits are such that any settlement due to change in load are likely to occur very quickly. This is due in part to the soils being previously surcharged by overburden before the excavation of the cutting during the construction of the M1 motorway in the 1960's. On this basis any settlement due to changes in load from construction will be negligible following completion of the bridge construction.

2.4.4 Settlement below M1 Overbridge Abutment

The assessment of settlement below the proposed bridge abutments is discussed in Section 3.0. In summary, total load induced settlement is predicted to be less than 20mm, with a large proportion of this occurring during the construction process. The tolerable service limits for the M1 Overbridge structure have been provided by Cass Hayward, which are a total settlement for each abutment of no more than 25mm, and a differential between each abutment of no more than 25mm. The predicted settlement complies with the service limit requirements for the M1 Overbridge.

The assessment of rate of settlement has indicated that the majority of any load induced movement will occur within the first 12 months, with most of this occurring during the earthworks fill placement.

2.5 Reuse of Materials

An assessment has been undertaken on the suitability of the site won materials to be re-used as part of the general and selected fill, required to raise the ground level in line with the proposed formation as identified on the drawings.

The basis for the Specification is the Manual of Contract Documents for Highway Works (MCHW), Volume 1, and Specification for Highway Works (SHW) Series 600 published by HMSO. Where appropriate additional reference has been made to the general requirements of BS 6031:2009, Code of practice for earthworks; BS 8000-1, workmanship on building sites and BS EN 13242, Hydraulically bound and unbound materials for use in civil engineering and highway construction.

From a review of the geotechnical testing previously undertaken and reported in the GIR it has been indicated that the upper weathered horizons of the MMG, in particular weathering grades IVB and IVA derived from the Tarporley and Gunthopre Members, are suitable for immediate re-use with no modification. These deposits are located within the area of cut required for the rail terminal and are expected to be encountered from approximately 0.7m to 2.0m below existing ground level. Below this depth, the weathering grade reduces with a correspondingly higher proportion of mudstones present. As such it is recommended to limit the earthworks fill for the highway from materials within weathering Grade IVB and IVA. The designation of this fill material would comply with a Class 2 general cohesive fill as defined by Table 6/1 of the SHW.

Section 9 of the GDR discusses the requirements for the earthworks materials in more detail, with the Specification appendices presented at Annex A. A number of different classes of fill have been identified, to be used during the earthworks, as summarised in Table 2.6, which includes the minimum compaction requirements to be met, which in turn have been used in the development of the geotechnical design.

Table 2.6: Earthworks Fill Class and Minimum Compaction Requirements

Earthworks Class and Description	Typical Use	Compaction Control
Class 1 General Fill (Site won Sands & Gravels)	Earthworks to highway embankment	SHW Table 6/4 Method 2, modified as required to ensure a minimum 95% MDD and a CBR of 5%.
Class 2A general wet cohesive fill (Site won MMG IV)	Earthworks to highway embankment	SHW Table 6/4 Method 1, modified as required to ensure a minimum 95% MDD and a minimum shear strength (Cu) of 50 KN/m² with a target 70 KN/m²
Class 2B general dry cohesive fill (Site Won MMG II – I)	Earthworks to highway embankment	SHW Table 6/4 Method 2, modified as required to ensure a minimum 95% MDD and a minimum shear strength (Cu) of 80 KN/m² and a target of 100 KN/m²
Class 2C general stony cohesive fill (Site won MMG IV – III)	Earthworks to highway embankment	SHW Table 6/4 Method 2, modified as required to ensure a minimum 95% MDD and a minimum shear strength (Cu) of 50 KN/m² and a target of 70 KN/m²
Class 6F selected granular capping (imported)	Capping to highways	SHW Table 6/4 Method 6, modified as required to ensure a minimum 95% MDD and a CBR of 15%

Earthworks Class and Description	Typical Use	Compaction Control
Class 6N selected well graded granular material	Backfill to structures, abutments and retaining walls	End Product, minimum 95% MDD of Vibrating Hammer. Equivalent CBR of 15%
Class 7E selected cohesive fill for modification with Lime	Following treatment, upper 0.60m of earthworks fill to highways	See Class 9D
Class 7I selected cohesive fill for stabilisation with Lime & cement	Stabilised to form Capping Replacement material to highways	See Class 9E
Class 9D Lime modified fill	Upper 0.60m of earthworks fill	End product, minimum 95% MDD, CBR of 10% and/or E of 77 Mpa before capping.
Class 9E Lime and cement stabilised	Capping to highways	End product, minimum 95% MDD, CBR of 15%

The review of the testing requirements as defined by the Specification, when compared against the findings of the GIR have indicated that the site won materials which are required to be excavated as part of the cut operation are likely to comply with Class 2. Within the wider site to the north, which is outside of the area of the M1 Overbridge and Kegworth Bypass, River Terrace deposits have been identified. Based upon the current program of works, it is considered unlikely that material derived from the River Terrace deposits will be available for inclusion in the M1 Overbridge, or Kegworth bypass, however they have been included in Table 6/1 for completeness.

The design of the pavements has been undertaken by BWB, with their design and accompanying specification presented under a separate cover. In summary the highway pavement foundation will include a layer of CBGM. In order to provide a smoother transition in stiffness, over the design life of the pavement, between the engineered fill and CBGM the upper layer(s) of the earthworks fill are to be treated with cement. The thickness of treated material will be a function of the performance of the engineered fill, and shall comprise a minimum of 0.30m to a maximum of 0.60m where only the minimum performance defined in the GDR has been met. Confirmation on the thickness of treated material will be provided in the GFR.

Section 8 and Annex A of the GDR have been written in such a way as to permit the use of hydraulic binders to modify and improve the site won fill material (derived from the weathered Gunthorpe and Tarporley formations only) in order to achieve the specification requirements. This will be subject to appropriate mix design trials completed to the satisfaction of Hydrock. The Branscombe Mudstone located to the north and north east of the wider site, and weathered soils derived from this formation, are not considered suitable for treatment with hydraulic binders, due to the potential for elevated sulphates which are locally present within this soil. However, there are no soils derived from the Branscombe Mudstone within the vicinity of the M1 Overbridge and there are no proposals to include these materials as part of the earthworks operation covered by this GDR.

Annex A of the GDR includes the appropriate Appendix 1/5 (testing to be undertaken by the Contractor) and Table 6/1 (acceptability limits), and this shall be undertaken as part of the site preparation and enabling works.

The minimum engineering performance of the fill is specified in the relevant appendices, in Table 6/1 presented at Annex A of the GDR.

The moisture content (MC) range defined in the specification considers an upper and lower bound value based on the required performance for the fill, the compaction control to be used and the end use of

the material. As an example, for a Class 2A wet cohesive fill, this is controlled by Method Placement (as defined in HA 70/94), where method compaction should achieve typically less than 10% air voids at a conservative (low) moisture content. HA 70/94 and BS 6031 also provide guidance on the minimum undrained shear strength to allow for trafficking by construction plant, with values in the order of 45 kN/m².

The GDR has used a series of lower bound values in the design process and based on these findings a series of compliance values have been defined which are reflected in the specification and Table 6/1. For the Class 2A example, the lower MC should be the equivalent of 105% of the MDD with an air void content of 5%. The upper MC should be either the MC where 95% of the MDD on the wet side of the curve is achieved, or where the undrained shear strength is at least 50 kN/m².

In order to define the upper MC, the contractor is required to undertake measurement of the undrained shear strength at each point of the compaction curve, using a calibrated hand vane (as defined in Appendix 1/5). This is then supported by a remoulded triaxial at the OMC. This will then allow a plot of the MC vs the undrained shear strength to be made. On this basis the upper MC can be confirmed as either the MC equivalent to 95% MDD or a Cu of 50 kN/m². A series of figures are provided in the specification to assist the contractor in understanding this requirement and other similar restrictions for different classes of fill. For example, as a Class 2B is a dry cohesive fill, the method of compaction is obviously increased to the 4.5kg rammer and the minimum Cu is set to 80 kN/m².

3.0 HIGHWAY STRUCTURES

Reference should be made to Cass Hayward LLP design and drawings for the structural design of the M1 Overbridge, which is presented under a separate cover.

The following section discusses the geotechnical design aspects associated with the M1 Overbridge. The bridge is a single span integral structure, which includes wing walls. At the rear of each wing wall, a short section of retaining wall is required in order to support the granular backfill to the bridge. Reference should be made to Cass Hayward drawing EMG-CH-SBR-HW21-DR-CB-6001 and Hydrock Drawing EMG-HYD-C4-M1OB-DR-GE-0636 which present the general arrangement of the bridge, abutments, wing walls and retaining wall sections. The final detailed design drawings produced by Cass Hayward are to be provided separately. Should the detailed design by Cass Hayward result in any significant change to foundation geometry and level, the design will be checked by Hydrock and submitted for a separate review and geotechnical certification by HE.

All geotechnical assessments have been undertaken using the GEO5 Fine geostructural analysis suite, 2017, and in particular the packages Abutment, Earth Pressures and Spread Footing.

The structure has been designed as an integral bridge, which has allowed the loads to be taken at the centre of the bridge foundation. Design loads and moments have been provided by Cass Hayward LLP. The moments provided to Hydrock allow for eccentricity effects built up over the different stages of construction and use.

In broad terms, the bridge is to be supported on a ground bearing foundation, nominally 8.0m in length and 21.0m in width across the carriageway. The indicative base of foundation is around 66.5 m OD (circa a minimum of 1.50m below current ground level), and will be founded at a level coincident between the change in the MMG weathering Grade III and II.

Cass Hayward have provided a series of design loads and load contributions, as summarised in Table 3.1.

Table 3.1: Cass Hayward load contributions M1 Overbridge August 2017

Load Case		Load Contribution making up Load Case		
Contribution	**Action**	**Magnitude**	**Set A1**	**Set A2**
Load Case 1 Permanent & Traffic	Vertical	50,963 kN	68,800 kN	51,835 kN
	Moment	17,295 kNm	23,308 kNm	18,554 kNm
	Horizontal	-1,795 kN	-1,726 kN	-2,404 kN
Load Case 2 Permanent and Thermal	Vertical	45,151 kN	60,954 kN	45,151 kN
	Moment	21,162 kNm	31,346 kNm	25,328 kNm
	Horizontal	5,215 kN	8,327 kN	6,101 kN
Load Case 3 Permanent, Traffic and 0.6 x Thermal	Vertical	50,963 kN	68,880 kN	51,835 kN
	Moment	24,759 kNm	35,091 kNm	28,548 kNm
	Horizontal	2,379 kN	4,263 kN	2,302 kN
Load Case 4 Permanent, Thermal and 0.75 x Traffic	Vertical	49,510 kN	66,839 kN	50,164 kN
	Moment	27,607 kNm	40,047 kNm	32,740 kNm
	Horizontal	2,172 kN	4,219 kN	2,601 kN

The partial factors for design values are based on Table NA.A2.4(B), for BS EN 1997-1 Set A1 and Table NA.2.4(C) for set A2, in accordance with NA+A1:2004 to BS EN 1997-1.

3.1 M1 Overbridge Abutment Design Check

Using the supplied four load cases provided by Cass Hayward, as summarised in Table 3.1, the GEO5 FINE program Abutment has been used, in conjunction with Cass Hayward, to derive the geotechnical design values. This has been an iterative process, requiring a number of cross-checks to be completed by Hydrock and Cass Hayward in order to derive the correct parameters to be adopted for the structural design.

Hydrock geostructural analysis report, EMG-HYD-C4-M1OB-CA-GE-0649-S4-P4 presents the findings of the Hydrock assessment. A copy of this report is presented at Annex B. Table 3.2 provides a summary of the key findings from Hydrock assessment.

Table 3.2: Summary of Geostructural Analysis M1 Overbridge Abutment– Utilising CASS Hayward Load Cases

Verification	Load Case 1		Load Case 2		Load Case 2		Load Case 3	
	A1	**A2**	**A1**	**A2**	**A1**	**A2**	**A1**	**A2**
Resisting Moment M_{res} kNm/m	10,323	10,323	9,769	9,769	10,323	10,322	10,185	10,185
Overturning Moment M_{ovr} kNm/m	2,648	2,474	-123.9	-296	997	824	1,079	906
Satisfactory – Overturning	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Verification	Load Case 1		Load Case 2		Load Case 2		Load Case 3	
	A1	A2	A1	A2	A1	A2	A1	A2
Resisting Horizontal H_{res} kN/m	2,417	1,934	2,259	1,808	2,425	1,940	2,382	1906
Active Horizontal H_{act} kN/m	666	575	332	241	467	376	477	386
Satisfactory – Horizontal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Maximum stress in footing bottom kPa	942	921	651	618	780	761	769	751
Bearing Capacity Foundation Soil R_d kPa	2,530		3,516		3,086		3,052	
Extreme Contact Stress kPa	883		597		735		725	
Satisfactory – Bearing Capacity	Yes		Yes		Yes		Yes	
Foundation Settlement mm	19.2		17.3		18.5		18.2	
Satisfactory – Settlement	<25 mm		<25 mm		<25 mm		<25 mm	

Cass Hayward have confirmed that for the structural design of the bridge, the total settlement limit is 25mm with a differential between each bridge abutment of no more than 25 mm. As summarised in Table 3.2, the maximum predicted settlement is less than 25 mm. Further to this, running a sensitivity analysis between the ground profile of each abutment has returned a maximum differential between each abutment of no more than 10mm.

On this basis the serviceability limit states for total and differential settlement requirements have been met.

3.2 Retaining Wall

A short section of retaining wall is to be constructed at the rear of each wing wall. The structural design of the retaining wall has been undertaken by Cass Hayward. Hydrock have undertaken a geotechnical assessment of the foundations in order to advise on the permissible bearing pressure to be used by Cass Hayward in their design.

Reference should be made to the geostructural analysis report, EMG-HYD-C4-M1OB-CA-GE-0663 presented at Annex B for full details of the retaining wall assessment. A summary of the key findings are presented in Table 3.3 below.

Table 3.3 presents the results of the most onerous combination, which comprises the highest retaining wall of 6.0m, with the minimum Class 6N below the footing of 0.50m, and the lowest surcharge thickness of fill in front of the wall of 1.0m, equivalent to the thickness of the footing.

Table 3.3: Summary of Geostructural Analysis Embankment Retaining Wall – Utilising CASS Hayward Load Cases

Verification	Most Onerous Load Case	
	A1	A2
Resisting Moment M_{res} kNm/m	2,036	1,982
Overturning Moment M_{ovr} kNm/m	260	308
Satisfactory – Overturning	Yes	Yes
Resisting Horizontal H_{res} kN/m	498	399
Active Horizontal H_{act} kN/m	99	131
Satisfactory – Horizontal	Yes	Yes
Maximum stress in footing bottom kPa	228	177
Bearing Capacity Foundation Soil R_d kPa	1,466	
Extreme Contact Stress kPa	169	
Satisfactory – Bearing Capacity	Yes	
Foundation Settlement mm	2.0	
Satisfactory – Settlement	<25 mm	

As for the bridge itself, the serviceability limits for the retaining wall have been defined as no more than 25mm total settlement, and no more than 10mm differential between each retaining wall. Total predicted settlement is less than 5mm (maximum predicted of 2.0mm), with differential of no more than 2mm. Therefore, the structural design complies with the service limit requirements.

3.3 Assessment of Chemical Attack

Little evidence of sulphate bearing minerals (gypsum, anhydrite) is apparent within the geological units present in the location of the M1 Overbridge. However, elevated sulphates are present within other geological units of the MMG, as has been recorded to the north of this study area, within the wider site.

Records from previous phases of investigation have been extracted and replicated in Table 3.4. In accordance with BRE (Special Digest 1), the Design Sulphate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification for the strata present are presented in Table 3.4.

Table 3.4: Aggressive Chemical Environment Concrete Classification

Stratum	No. Tests	DS	ACEC
Gunthorpe Member	7	DS-1	AC-1
Tarporley Siltstone Member	6	DS-1	AC-1
Bromsgrove Sandstone Formation	3	DS-1	AC-1
Groundwater	8	DS-1	AC-1

Additional sampling and testing is currently in progress at the time of writing as part of the on-going supplementary geotechnical investigation for the M1 Overbridge and A6 Kegworth Bypass. Values presented in Table 3.4 will be reviewed and revised accordingly upon completion of the supplementary investigation.

4.0 STRENGTHENED EARTHWORKS

There are currently no proposed strengthened earthworks associated with the M1 Overbridge.

5.0 DRAINAGE

Permanent drainage design is the responsibility of BWB, which is presented under a separate cover. Except where located on granular materials with sufficient infiltration rates, the pavement foundation will be drained by use of fin drains, narrow filter drains or combined filter and carrier drains, as appropriate to each location. These are shown on the detailed drainage design drawings prepared by BWB.

BWB drawing EMG-BWB-HDG-HW21a-DR-D-500-S4-P1 sets out the drainage layout around the M1 Overbridge structure, a copy of this drawing is presented at Annex A.

Surface drainage should be designed to prevent infiltration of water to the embankment. This is of particular importance where fin drains (F) and/or narrow fin drains (NF) as defined by HA 44/91 are to be installed on the outside verge, close to the crest of proposed slopes and embankments.

6.0 PAVEMENT DESIGN, SUBGRADE AND CAPPING

Reference should be made to the recommended subgrade surface stiffness values presented in Section 2. Pavement design, and associated specification of materials have been undertaken by BWB and are presented under separate cover.

The pavement design has been undertaken using DMRB standards HD24/06, IAN73/06r1 and HD26/06 (along with other DMRB standards for the surface course design but these are not considered relevant to a GDR). Calculation of design traffic has been undertaken using traffic data for HGVs generated from the approved traffic model for the East Midlands Gateway development and the calculated values using HD24 for the links relevant to this GDR are as follows:

- A6 Kegworth Bypass: 25msa.

Where the design traffic is less than or equal to 80msa a traditional recipe Class 2 foundation can be provided and this has been specified for Kegworth Bypass. This utilises Type 1 sub-base to SHW Clause 803 with or without 6F2 or 6F5 capping to SHW Clause 613, and the thickness of each material is based on the foundation surface modulus and equivalent CBR in accordance with IAN73.

As noted at Section 2 of this report the foundation surface modulus on the untreated embankment fill is expected to give an equivalent CBR of around 4-5%.

The pavement design, based on the above, is specified within Appendix 7/1 included within the BWB design submission.

7.0 ASSESSMENT OF POTENTIAL CONTAMINATION

The previous phases of investigation have not identified any potential areas of concern with respect to contamination or the need for remediation. The GDR has been written in line with the findings and the recommendations of the previous phases of investigation and in particular Hydrock Report R/14792/003 which covers the geo-environmental issues across the entire site.

All Made Ground, from whatever source, shall be tested in accordance with the requirements of Appendix 6/14 and 6/15, at a frequency of 1 contamination suite per 500m³, unless otherwise agreed with Hydrock.

8.0 GROUND TREATMENT

Based upon the findings of the GIR and the proposed changes in level following the cut to fill operation, there is no requirement to undertake any form of ground treatment, other that the use of hydraulic binders to improve the stiffness of the upper 0.60m of fill below Class 3 pavement foundations. The use of hydraulic binders is discussed in the previous sections and covered by the requirements in Appendix 6/1 and 6/3.

9.0 SPECIFICATION APPENDICES

The basis for the Specification is the Manual of Contract Documents for Highway Works (MCHW), Volume 1, and Specification for Highway Works (SHW) Series 600 published by HMSO.

Annex A contains Appendix 1/5 detailing the testing to be undertaken by the Contractor, Appendix 1/24 for the Quality Control measures and an up-dated Table 6/1 presenting the compliance limits to be met. These should be read in conjunction with the site wide environmental report, Hydrock Report R/14792/004, document reference EMG-HYD-HGT-XXX-RP-GE-0004.

10.0 INSTRUMENTATION AND MONITORING

There are currently no requirement defined for instrumentation and monitoring associated with the proposed construction of the M1 Overbridge.

ANNEX A

SPECIFICATION APPENDICES & DRAWINGS

APPENDIX 0/3: LIST OF NUMBERED APPENDICES REFERRED TO IN THE SPECIFICATION AND INCLUDED IN THE CONTRACT

Appendix No.	Title.
	INTRODUCTION
0/3	List of numbered appendices referred to in the specification and included in the contract
0/4	List of drawings included in the contract
	PRELIMINARIES
1/5	Testing to be carried out by Contractor
1/23	Risks to Health and Safety from Materials or Substances
1/24	Quality Management System
	EARTHWORKS
6/1	Requirements for Acceptability & Testing etc. of Earthworks Materials
6/2	Requirements for dealing with Class U1B and class U2 unsuitable materials
6/3	Requirements For Excavation, Deposition, Compaction (Other Than Dynamic Compaction)
6/6	Fill to Structures and fill above Structural Foundations
6/7	Sub-formation and Capping Preparation & Surface Treatment Formation
6/8	Topsoiling
6/9	Earthwork Environmental Bunds, Landscape Areas and Strengthening Embankments
6/12	Instrumentation and Monitoring
6/14	Limiting Values for Pollution of Controlled Waters
6/15	Limiting Values for Harm to Human Health and the Environment

APPENDIX 0/4: LIST OF DRAWINGS INCLUDED IN THE CONTRACT

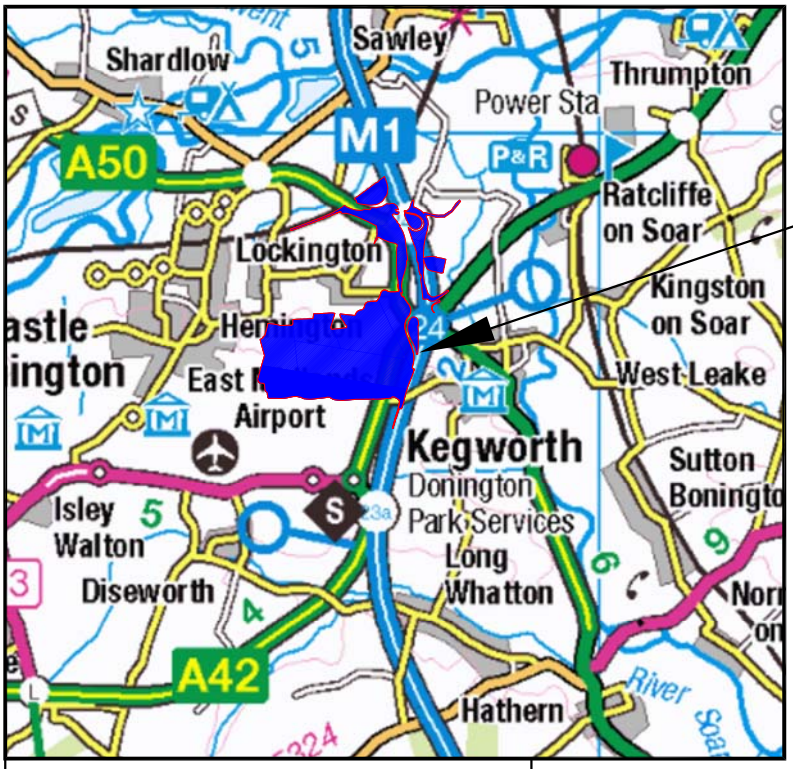
List A of Employer's Drawing is included below:

Drawing No.	**Drawing Title**
14792/D001	Site Location Plan
EMG-HYD-C4-M1OB-DR-GE-0636	M1 Overbridge Recorded Geology and Site Investigation Plan
EMG-HYD-HGT-ZZ-DR-GE-0641	Hydrock Report Coverage
EMG-HYD-C4-M1OB-DR-GE-0654	M1 Overbridge – General Earthworks Construction Sequence
BWB	
EMG-BWB-GEN-XX-SK-D-SK173 P6	Contract Assembly
EMG-BWB-GEN-XX-SK-D-SK212 P3	DCO Phasing Plan
EMG-BWB-HDG-HW21a-DR-D-500	Drainage Layout Sheet 21A
BWB Highway Drawing Series	Refer to BWB submission presented under a separate cover
170627-SK	Annotated sketch of Kegworth Bypass Bridge Maintenance Schedule
Cass Hayward	
EMG-CH-SBR-HW21-DR-CB-6001-S4-P04	Kegworth Bypass M1 Overbridge General Arrangement

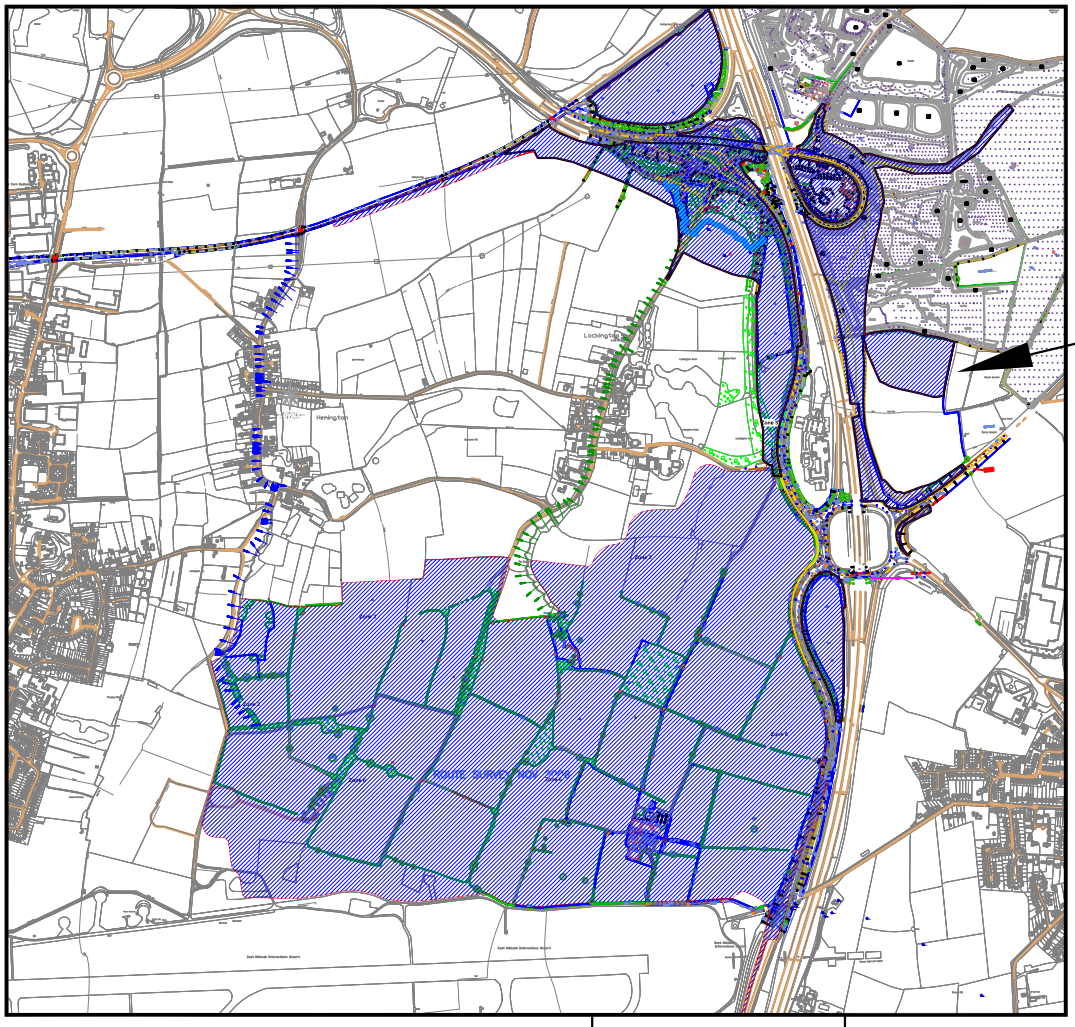
List B: List of Documents Brought into the Contract by Reference
East Midlands Gateway Strategic Rail Freight Interchange: Factual Ground Investigation Report, prepared by Hydrock Consultants Ltd on behalf of Roxhill Developments Ltd, Hydrock Report R/14792/003 dated June 2016.
East Midlands Gateway Strategic Rail Freight Interchange: Main Site. Geo-environmental Report, prepared by Hydrock Consultants Ltd on behalf of Roxhill Developments Ltd, Hydrock Report R/14792/004 dated May 2016.
East Midlands Gateway Strategic Rail Freight Interchange: Rail Container Terminal and A453 Site Access Junction. Geotechnical Interpretive Report, prepared by Hydrock Consultants Ltd on behalf of Roxhill Kegworth Ltd, Hydrock Report R/14792/006 dated June 2016.
East Midlands Gateway Strategic Rail Freight Interchange: A453 Site Access Junction. Geotechnical Design Report, prepared by Hydrock Consultants Ltd on behalf of Roxhill Kegworth Ltd, Hydrock Report R/14792/008 dated November 2016
East Midlands Gateway Strategic Rail Freight Interchange: Geotechnical Interpretive Report, M1 Overbridge and Kegworth By-pass, prepared by Hydrock Consultants Ltd on behalf of Roxhill Kegworth Ltd, Hydrock Report R/14792/013 dated July 2017.
East Midlands Gateway Strategic Rail Freight Interchange: Zone 1 Main Development Plateau and Rail Freight Terminal. Preliminary Sources Study Report, prepared by RSK Environmental Ltd (RSK), reference 312494 on behalf of Roxhill Developments Ltd, dated November 2013.
East Midlands Gateway Strategic Rail Freight Interchange: Zone 1 Main Development Plateau and Rail Freight Terminal. Factual Ground Investigation Report, prepared by RSK, reference 312494-01-02 (00) on behalf of Roxhill Developments Ltd, dated December 2013

Notes:

1. Contains Ordnance Survey data © Crown copyright and database right 2015







Rev	Date	Description	By	Ckd

Architect :

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Client : ROXHILL

Project Title: EAST MIDLANDS GATEWAY
STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title: Site Location Plan

Drawing Status: FINAL

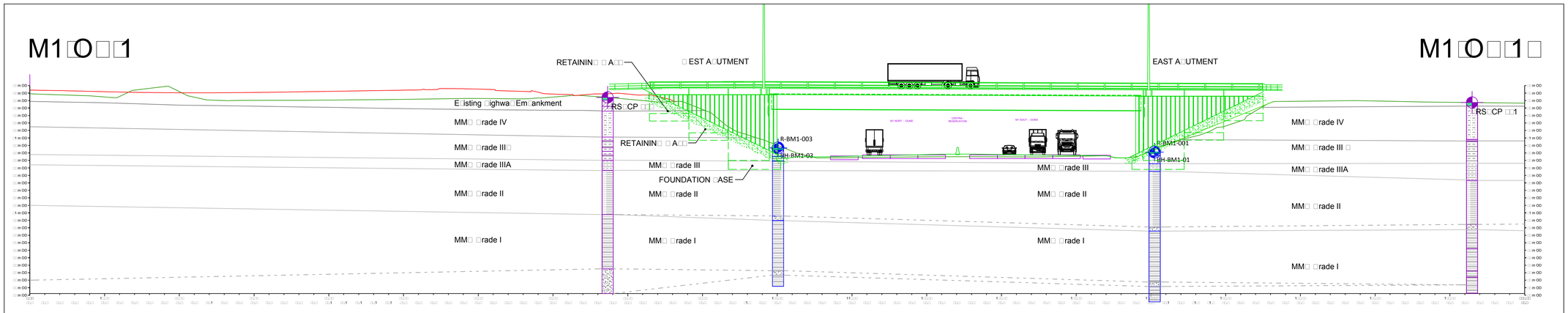
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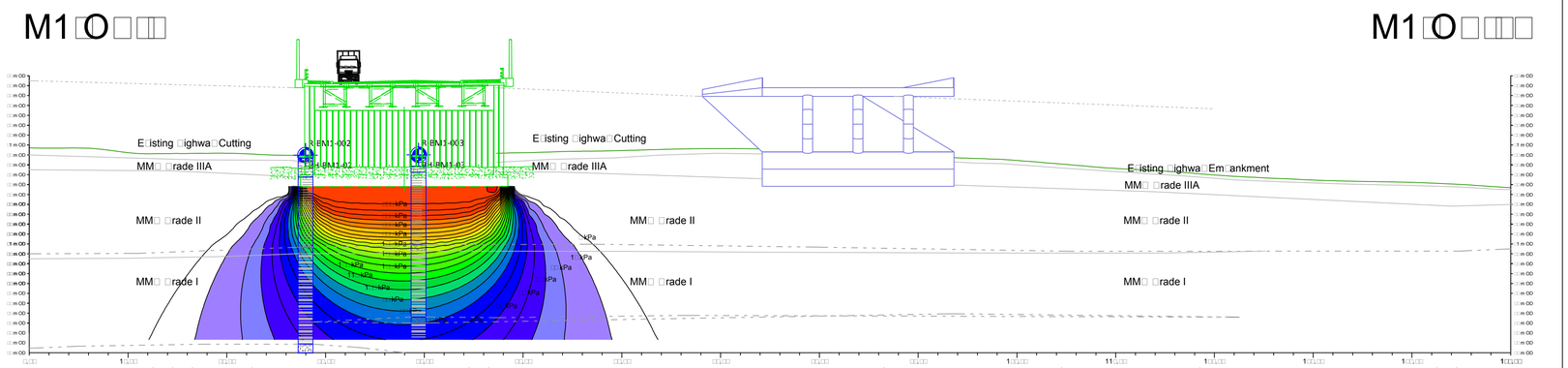
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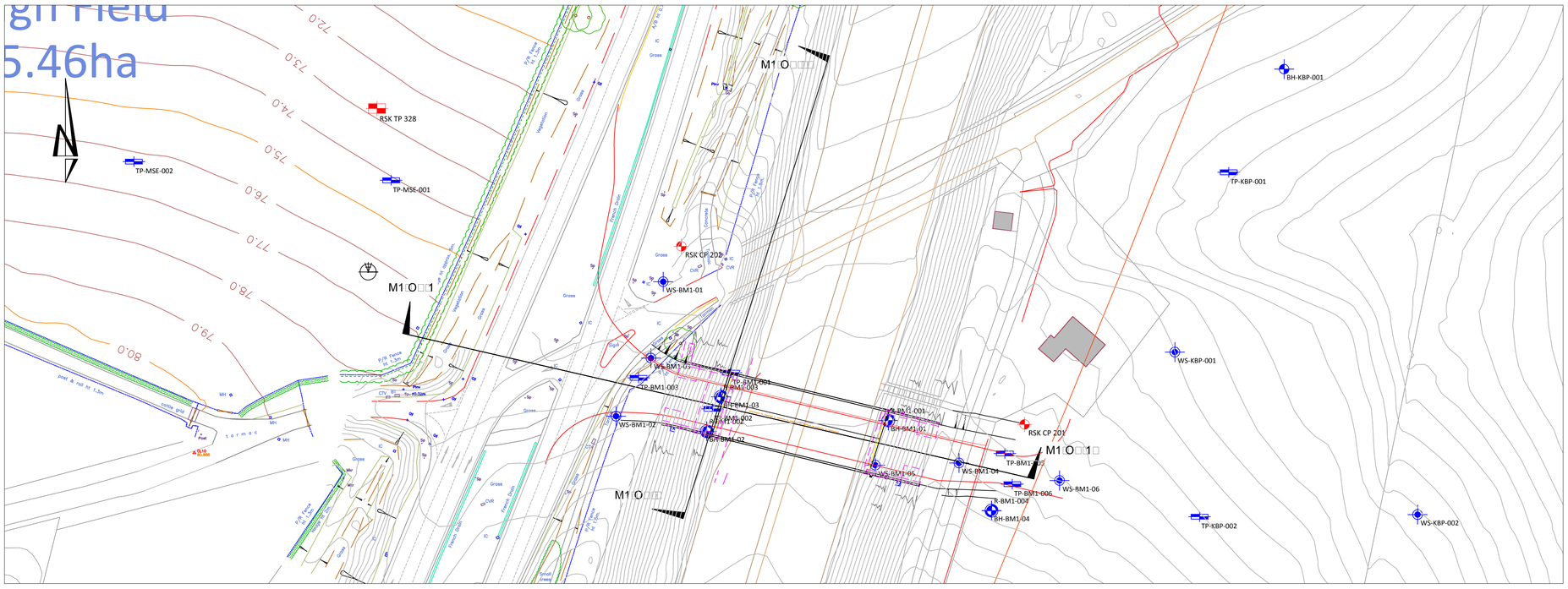
Drawing Number: C14792/D001

Revision: -

This drawing is the copyright of Hydrock Consultants Ltd







Legend
Change in Im osed oad kPa

280 kPa
270 kPa
260 kPa
250 kPa
240 kPa
230 kPa
220 kPa
210 kPa
200 kPa
190 kPa
180 kPa
170 kPa
160 kPa
150 kPa
140 kPa
130 kPa
120 kPa
110 kPa
100 kPa
90 kPa
80 kPa
70 kPa
60 kPa
50 kPa
40 kPa
30 kPa
20 kPa
10 kPa
0 kPa

HTP001 and e cavated Trial Pit
TP001 Machine e cavated Trial Pit
TPSA001 Trial Pit Infiltration Test
BH001 Ca le Percussion orehole
RO01 Rotar orehole
CPT001 Static Cone Penetration Test
WS001 indow Sam le orehole
DCP001 D namic Cone Penetrometer
CBR001 *In Situ* C R Assessment
DP001 D namic Pro e
RSK TP Previous Trial Pit RS
RSK CP Previous orehole RS

Notes:

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

egend

- To soil / Su soil
- Alluvium
- Terrace De osits Soft to firm sand gravell C A
- Terrace De osits Sands & ravels
- ighwa Em ankment
- Mercia Mudstone rou MM IV Mudstone
- Mercia Mudstone rou MM III Mudstone
- Mercia Mudstone rou MM IIA Mudstone
- Mercia Mudstone rou Sandstone
- Mercia Mudstone rou MM II Mudstone
- Mercia Mudstone rou MM I Mudstone
- romsgrove Sandstone
- Indicative ridge Arrangement
- E isting Skewed ridge indicative Arrangement

Rev	Date	Description		Ckd
P4	01/08/17	Revised M1 Over Bridge from Cass Hayward drawing EMG-CH-SBR-HW21-DR-CB-S4-P04		CV
P3	20/07/17	Revised with M1 Bridge added and cross-section of pressure distribution from new construction		CV
P2	05/07/17	Revised following May 2017 Ground Investigation		CV

Architect :

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Client :
ROXHILL KEGWORTH LTD

Project Title:
EAST MIDLANDS GATEWAY STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title:
M1 Overbridge Geological Ground Profile

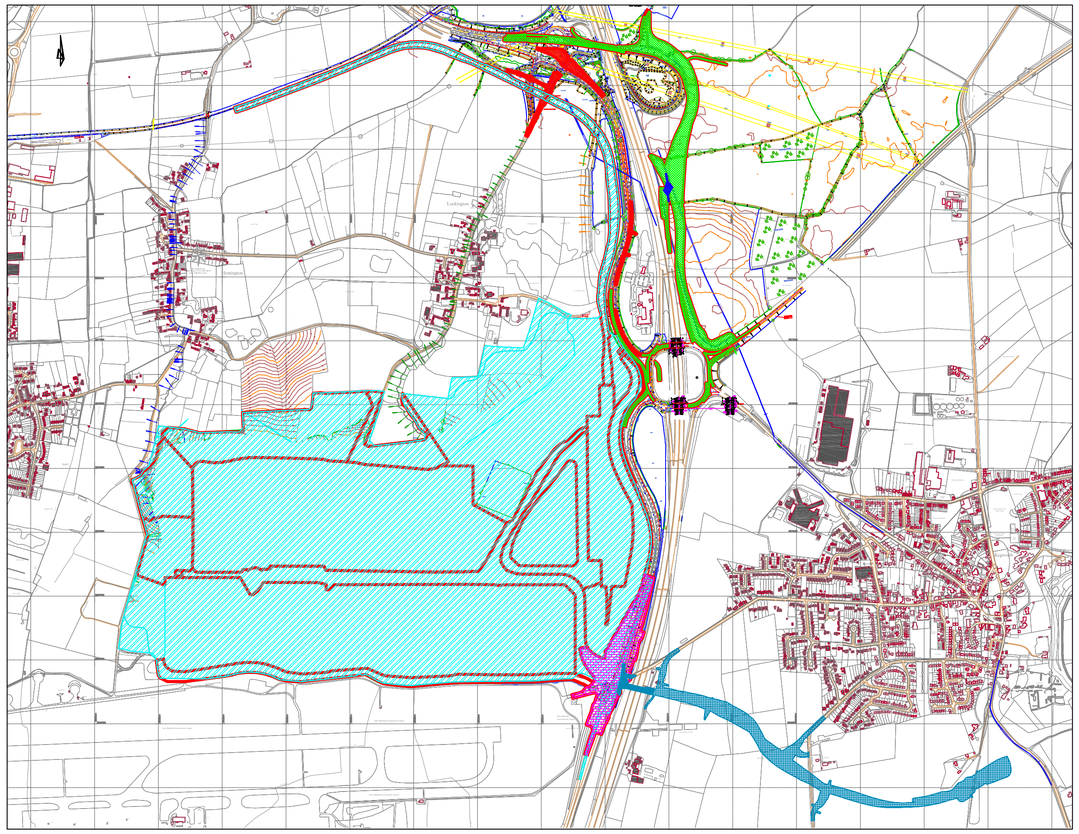
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S4	P4

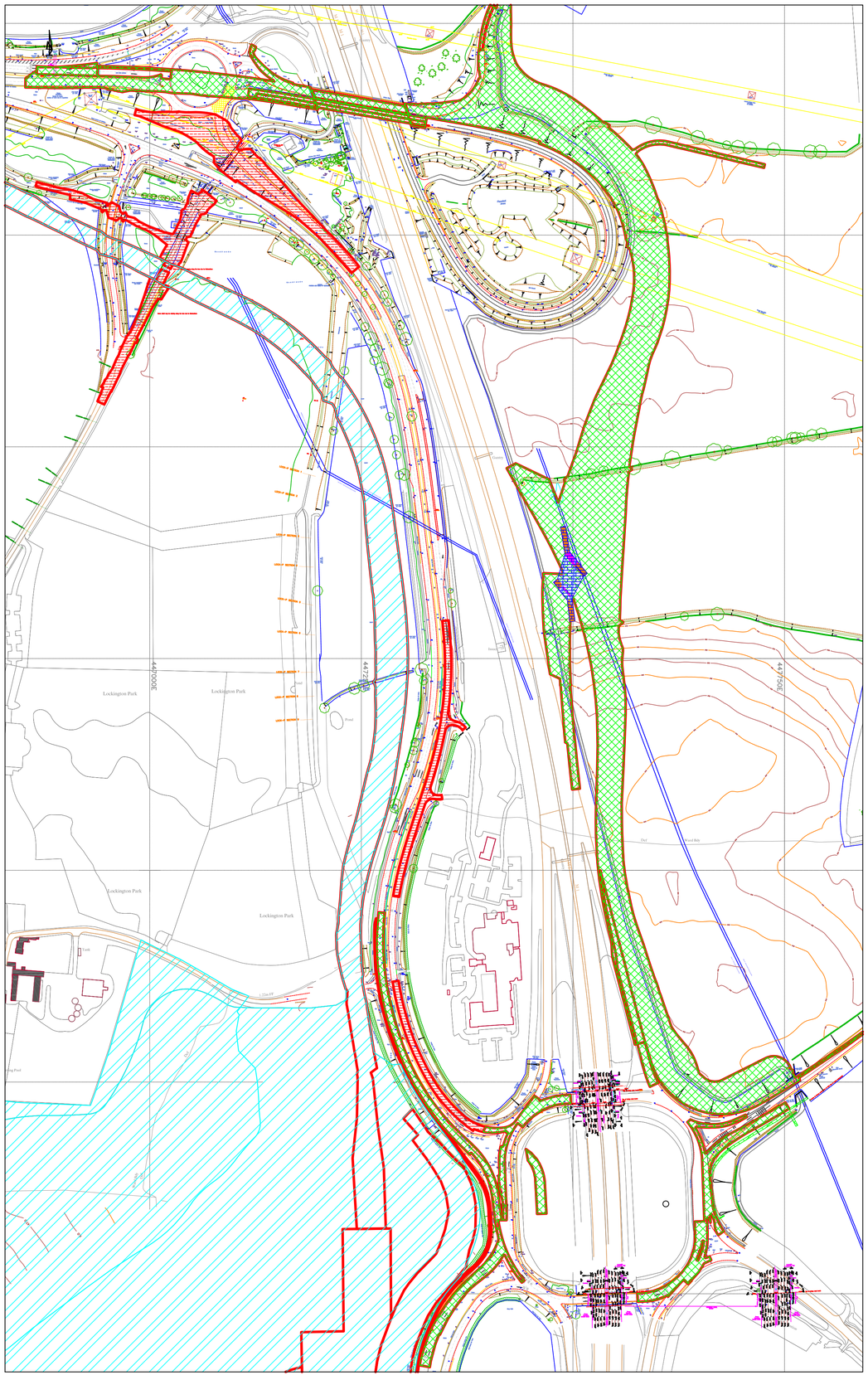
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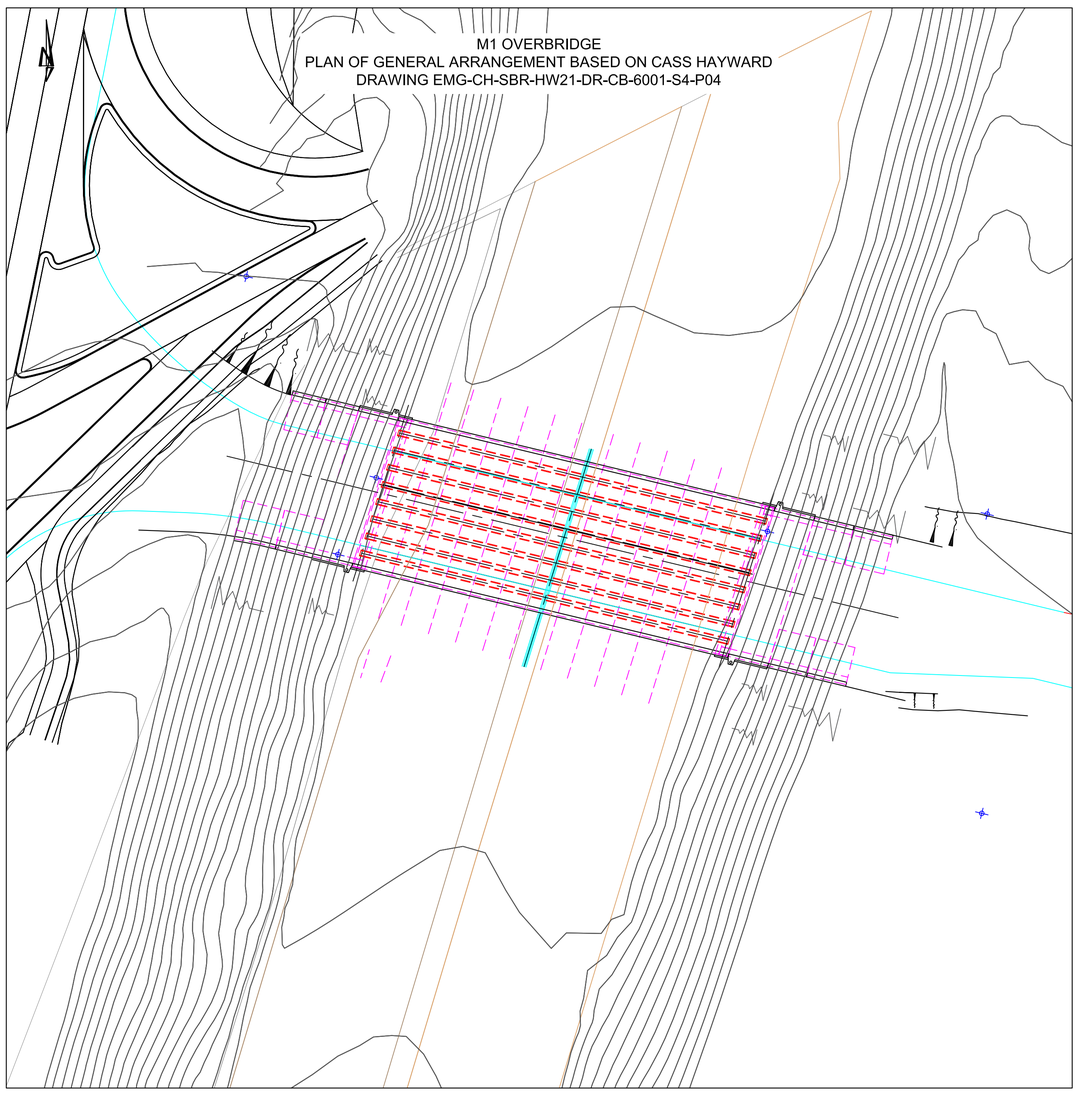
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Drawing Number: EMG-HYD-C4-M1OB-DR-GE-0636

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Lockington Park
Lockington Park
Lockington Park
Lockington Park
Lockington Park
Pond
Pond
Pond



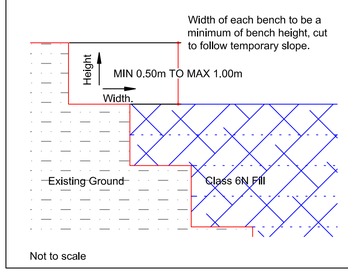
APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR
Table 1/5.1 - Earthworks testing requirements

CLAUSE	WORKS, GOODS OR MATERIAL		TEST	FREQUENCY By Volume from Source	COMPLIANCE
Series 600	Earthworks				
601, 631 to 637, 640	Acceptable Limits				
	Class	General Description			
	1	General granular fill	MC, Grading & UC (U)	1 per 500m³	SHW Table 6/2 Appendix 6/1
			TPS Sulphate Suite	1 per 500m³ minimum of 5	Appendix 6/1
			OMC/MDD (U) (Vib Hammer)	1 per 500m³	Declared
			CBR at OMC (U)	1 per 500m³	5%
	2	General cohesive fill	MC, PI, Grading (U)	1 per 500m³	SHW Table 6/2 Appendix 6/1
			OMC/MDD Particle Density & HSV (U)	1 per 1,000m³	Declared
			TPS Sulphate Suite	1 per 500m³ minimum 5	Declared
			Undrained Triaxial (U)	1 per 1,000m³	50 kN/m² for 2A, 2C 80kN/m² for 2B
	4	Fill to Landscape Areas	MC (U)	1 per 500m³	Appendix 6/1
			Hand shear vane	1 per 500m³	45 kN/m²
			Grading (U)	1 per 1,000m³	Appendix 6/1
	6	Selected granular fill	Grading, UC, MC (U)	1 per 500m³	SHW Table 6/2 Appendix 6/1
			OMC/MDD (U) (Vib Hammer)	1 per 1,000m³, minimum 3 per source	Declared
			CBR at OMC (U)	1 per 1,000m³, minimum 3 per source	≥ 15% for 6F ≥ 15% for 6N
			Los Angeles (U)	Source approval, as delivered to site	≤60 for 6F ≤40 for 6N
			Organic Matter (U)	1 per 500m³, minimum 5 per source	≤ 2%
			SO_3, S, TPS, OS (U)	1 per 500m³, minimum 5 per source	Declared, to Inform Concrete Class
			Bitumen Content (U)	1 per 1,000m³	Class 6F3 only Appendix 6/1
			Drained shear parameters	Source Approval and 1 per bridge abutment as delivered to site	ϕ'_{cv}= 37.5° to 44° ϕ'_{cv}= 31.5° to 38° (ϕ'_{res} 35.0° to 41.5°)

APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR
Table 1/5.1 - Earthworks testing requirements

CLAUSE	WORKS, GOODS OR MATERIAL		TEST	FREQUENCY By Volume from Source	COMPLIANCE
Series 600	Earthworks				
601, 631 to 637, 640	Acceptable Limits				
	Class	General Description			
	7	Selected cohesive fill	MC, PI, Grading (U)	1 per 500m³	SHW Table 6/2 Appendix 6/1
			OMC/MDD HSV,Particle Density & Triaxial (U)	1 per 1,000m³, minimum 3 per source	Declared, min Cu 80 kN/m²
			SO_3, S, TPS, OS & Organic Matter(U)	1 per 500m³ minimum of 5 per source	Declared, to inform Concrete Class, Organic < 2%
			Drained shear parameters (U)	Source Approval	ϕ'_{cv} = 25°
	9	Stabilised material	Pulverization	1 per 625m²	≥30%, HA 74/07 BS 1924
			Bearing ratio, (CBR), recompacted	1 per day	15%
			MCV (U)	1 per 250m³, max 5 per day	To permit compaction, as per mix design trial
612	Compaction of Fills				
		Method Compaction	Field Dry Density (U)	1 per 400m³ per layer	95% MDD Appendix 6/1
			In situ CBR - granular fill only	1 per 400m³ per layer	Appendix 6/1
			In situ HSV - cohesive fill only	1 per 400m³ per layer	Appendix 6/1
			Compaction trial	1 per method, per source. To be witnessed by Hydrock	To confirm method is suitable
			Dual Cycle Plate Load Test	1 per 20m x 20m per 1m of fill and at final earthworks formation.	Equivalent CBR Appendix 6/1
		End Product	Field Dry Density (U)	1 per 200m³ per layer	95% MDD Appendix 6/1
			Air Void Content - cohesive only (U)	1 per 200m³ per layer	≤ 5% air voids Appendix 6/1
			In situ CBR - granular fill only	1 per 200m³ per layer	Appendix 6/1
			In situ HSV - cohesive fill only	1 per 200m³ per layer	Appendix 6/1
			Compaction trial	1 per method, per source, To be witnessed by Hydrock	To confirm method is suitable
			Dual Cycle Plate Load Test	1 per 20m x 20m per 1m of fill, base of foundations and at final formation.	Equivalent CBR Appendix 6/1

TYPICAL BENCHING DETAIL



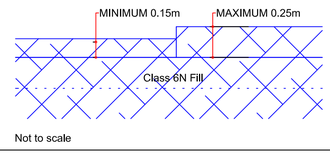
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MINIMUM CLASS 6N BELOW RETAINING WALL FOUNDATION

Not to scale

CLASS 6N MINIMUM & MAXIMUM COMPACTED LAYER THICKNESS

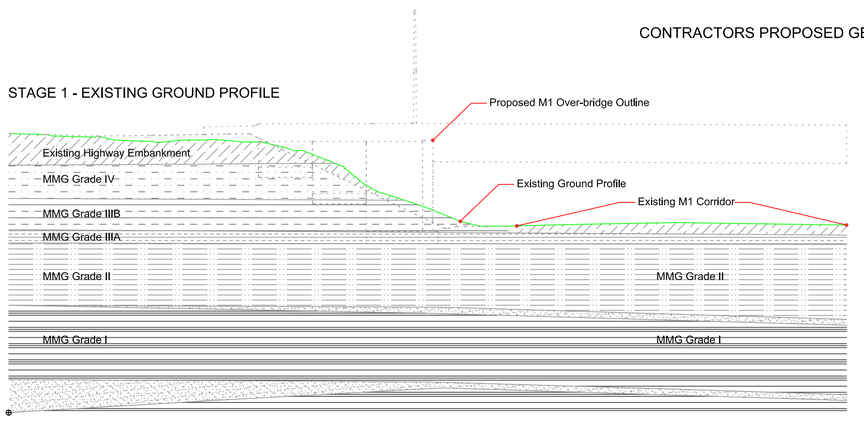
Compaction control by End Product
Minimum 95% MDD by Vibrating Hammer
In situ density at a rate of 1 per 200m³ per layer
Dual cycle static plate load, tested at
- 1 per 20m x 20m per 1.0m of fill;
- 1 per 20m x 20m at the base of each retaining wall foundation; and
- 1 per 20m x 20m at final formation of Class 6N.



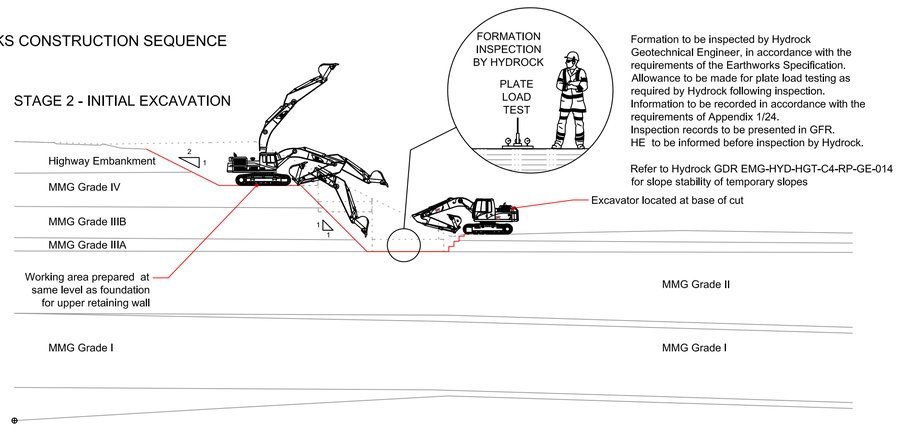
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M1 OVERBRIDGE
CONTRACTORS PROPOSED GENERAL EARTHWORKS CONSTRUCTION SEQUENCE

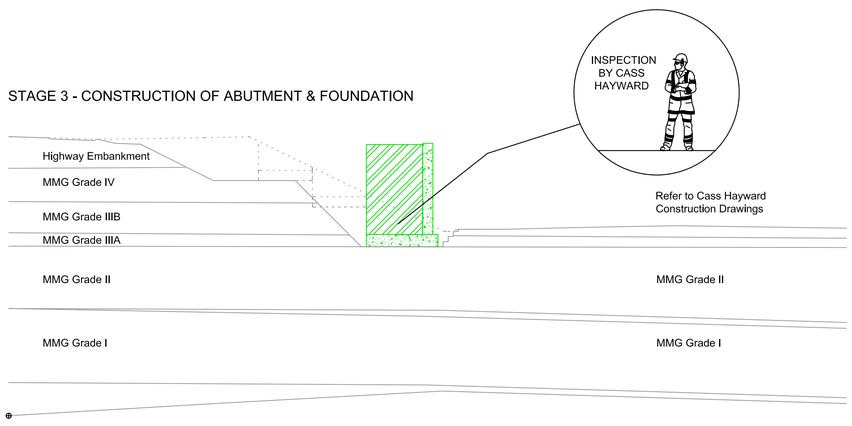
STAGE 1 - EXISTING GROUND PROFILE



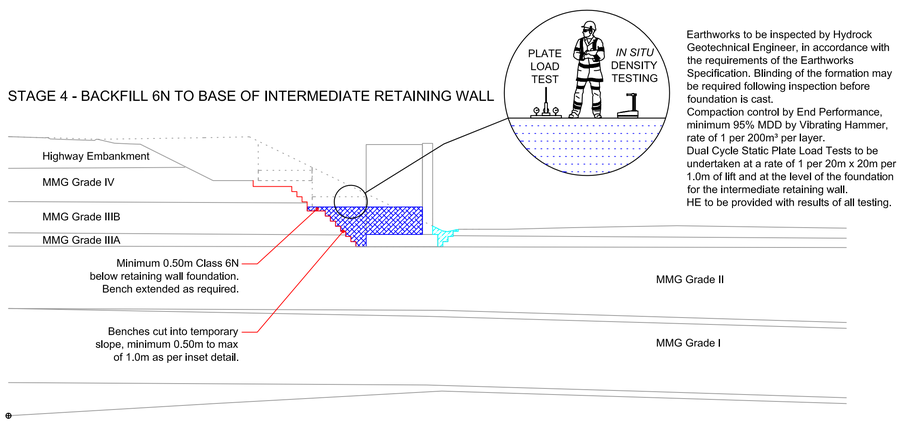
STAGE 2 - INITIAL EXCAVATION



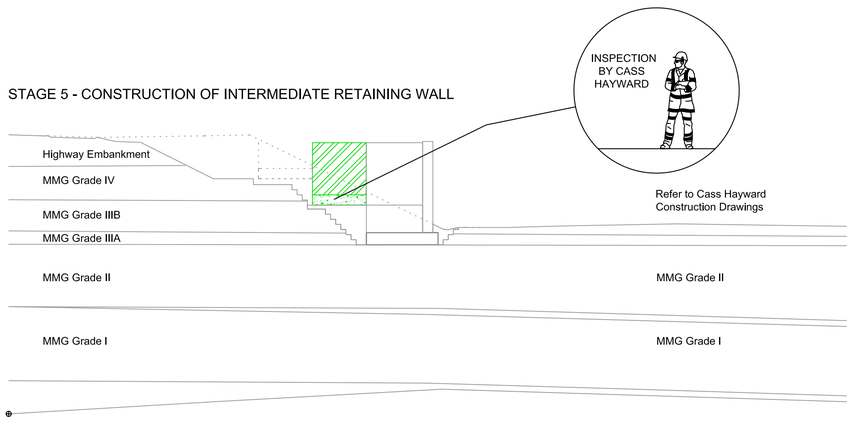
STAGE 3 - CONSTRUCTION OF ABUTMENT & FOUNDATION



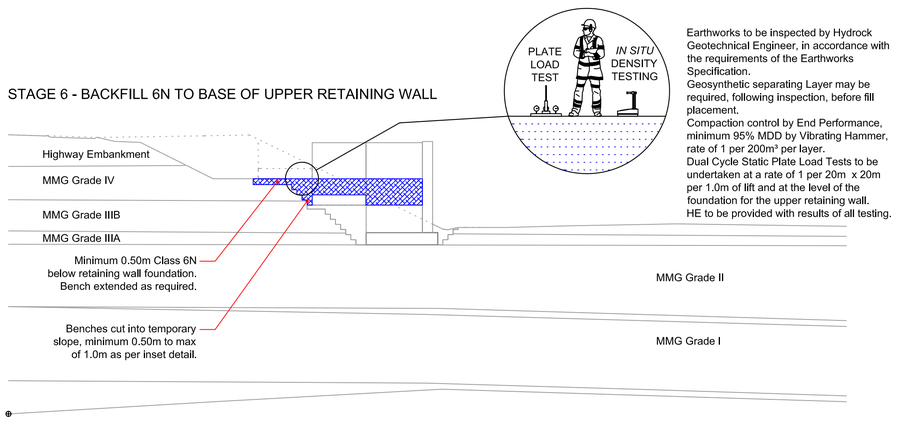
STAGE 4 - BACKFILL 6N TO BASE OF INTERMEDIATE RETAINING WALL



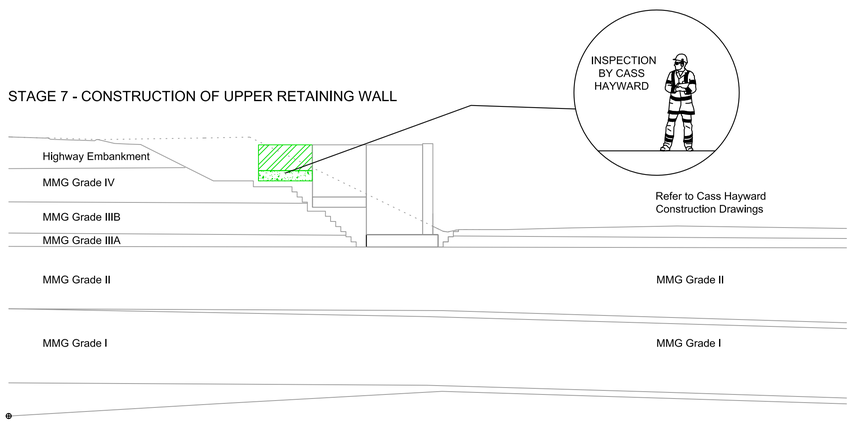
STAGE 5 - CONSTRUCTION OF INTERMEDIATE RETAINING WALL



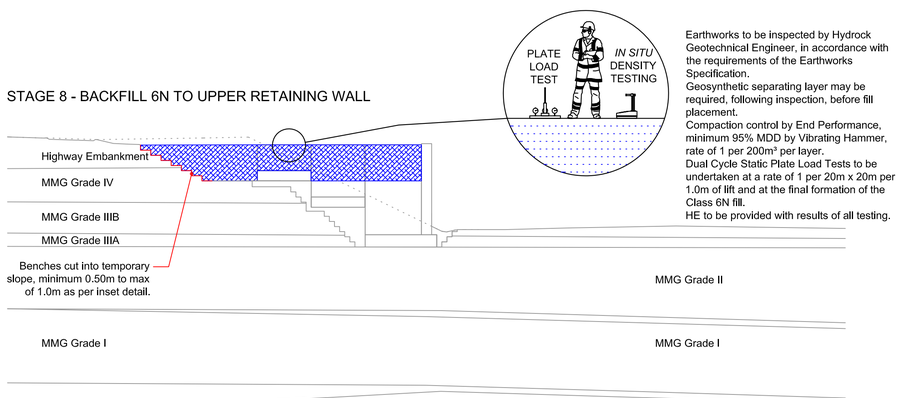
STAGE 6 - BACKFILL 6N TO BASE OF UPPER RETAINING WALL



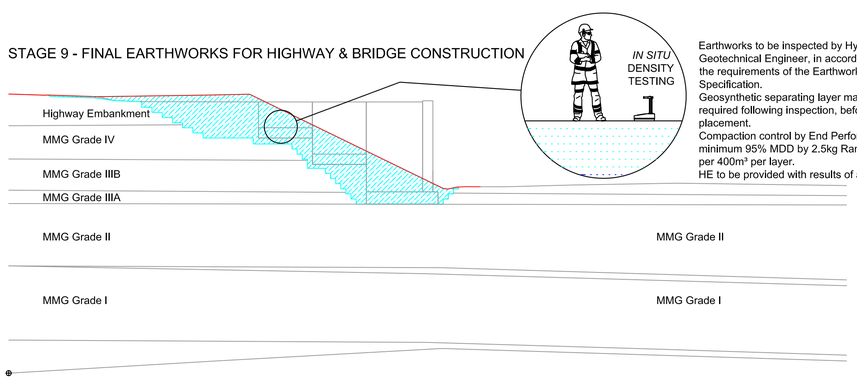
STAGE 7 - CONSTRUCTION OF UPPER RETAINING WALL



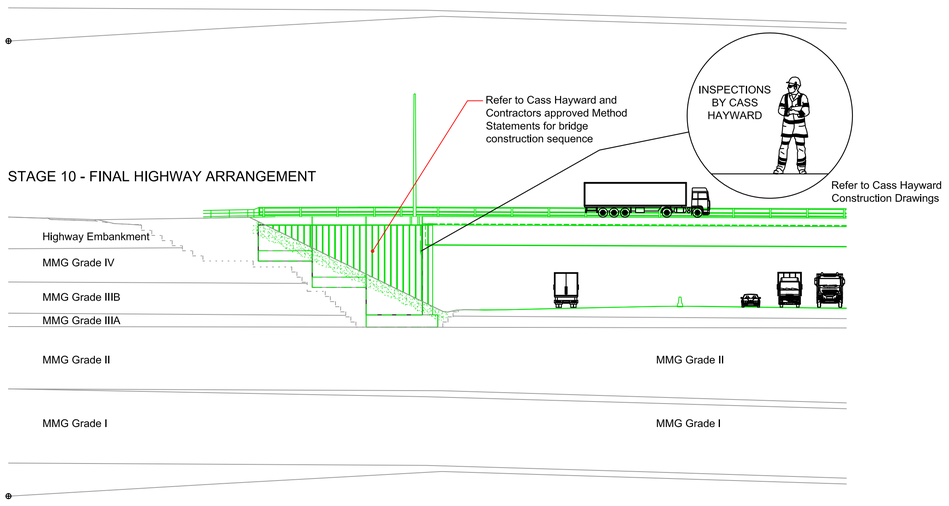
STAGE 8 - BACKFILL 6N TO UPPER RETAINING WALL



STAGE 9 - FINAL EARTHWORKS FOR HIGHWAY & BRIDGE CONSTRUCTION



STAGE 10 - FINAL HIGHWAY ARRANGEMENT



Notes:

1. All dimensions are to be checked on site before the commencement of works, Any discrepancies are to be reported to the relevant Engineer for verification, Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. As defined in Appendix 1/24, the Contractor is responsible for providing a information to Hydrock, including an up to date review of the works completed, It is recognized by Hydrock that tests may have been carried out in the preceding week for which no results have been provided. However the report reference and type shall be included in the summary in terms of compliance testing, Weekly reporting shall include the following records, to be provided by midday of the first working day per week:
   - sequential test number,
   - date of test;
   - coordinated position to include easting & northing, correct to National Grid Reference;
   - reduced level, to meters above Ordnance Datum;
   - site reference;
   - test grid reference;
   - layer number (during placement of fill);
   - test type;
   - whether results are Draft (before the issue of certificate) or Final (certificate issued and received by Contractor); and
   - the results of the testing, compliance with the Specification and any comments relating to the test .
4. As defined in Appendix 1/24, at the completion of the Earthworks, the Contractor is responsible for providing a factual Validation Report, covering all activities which have been completed, The Validation Report shall include the following information:
   - daily record sheets to include a summary of the day's activities;
   - progress photographs;
   - general description of the works completed, including any earthworks, excavations (including excavations of hard obstructions or foundations), placement and compaction methodology and plant used;
   - detailed weather conditions;
   - formation and foundation treatment, including drainage and treatment of soft areas;
   - plant, personnel and visitors present;
   - aspects relating to Health and Safety, Environmental control;
   - waste transfer notes;
   - application of acceptability criteria and summary of control test results for each specific earthworks material placed during the earthworks operations;
   - chemical and geotechnical test certificates and monitoring data including location and level with associated drawings;
   - as built surveys, including base of excavations to include drawings;
   - coordinates, levels, invert levels and diameters of services remaining on site;
   - drawings showing the location and level of each specific earthworks material placed during the earthworks operations, any feature or operation relevant to the earthworks including any instrumentation and the location of trial areas and control tests; and
   - all correspondence with Statutory Authorities
4. All earthworks are to be undertake in accordance with BS 6031:2009 (Code of practice for earthworks) and BS EN 13242 (Hydraulically bound and unbound materials for use in Civil Engineering, using the Specification for Highway Works as the model specification, Additional reference shall be made to the recommendations and model specification for earthworks defined in BRE FB 57 Building on fill, geotechnical aspects version 3: 2015. Site specific testing requirements for fill materials are as detailed on this drawing and should be read in conjunction with the above publications,
5. Where there is a perceived to be a conflict in requirements between the various documents detailed above and the content of this drawing, the Contractor shall assume the most onerous requirement and immediately inform Hydrock as to the exact requirements to be met.
6. The Contractor shall be responsible for ensuring all testing is undertaken, and is permitted to self-certify the works, in accordance with the requirements of the Specification, The right of self-certification is not to be delegated or extended to any of the following parties:
   - Subcontractors, employed by the Contractor,
   - Service owners contractors undertaking backfilling of diverted service trenches,
   - Other third party contractors undertaking works on the site.
7. Should any material be placed which has not been given prior written approval from Hydrock, the Contractor will have done this at their own risk and they will be responsible for any and all remedial works required to rectify the situation, All costs associated with this remedial work are to be borne by the Contractor.
8. All works and associated costs relating the control and management of water on site, from existing, proposed or redundant watercourses or from any other source including groundwater, rainfall and surface water is the responsibility of the Contractor, All costs for the control and management of water are to be borne by the Contractor and the Contractor is deemed to have read, understood and fully accounted for these costs within their Tender submission, Any uncertainty over the issues associated with water or groundwater control should be submitted to the Engineer for clarification, as soon as any such issue is noted or identified by any party.
9. The structural design of the M1 Overbridge has been undertaken by Cass Hayward, Reference shall be made to the construction drawings prepared by Cass Hayward,
10. The design of all temporary works is the responsibility of the Contractor.
11. The general sequence set out on this drawing is to be undertaken for the Western and the Eastern Embankment.
12. The general construction is to be confirmed by the Contractor in their Detailed Method Statements, once the structural design has been completed by Cass Hayward and it has been approved by HE.
13. The Contractor is to prepare all detailed Method Statements required to undertake the works, Copies of the Method Statements are to be made available to HE upon request.
14. This drawing is only intended to show the general sequence of earthworks operations. Reference should be made to the Cass Hayward construction drawings and the approved Contractors Method Statements for details on the construction sequence for the bridge.

Legend

- Topsoil / Subsoil
- Alluvium
- Terrace Deposits Soft to firm sandy gravelly CLAY
- Terrace Deposits Sands & Gravels
- Highway Embankment, General Fill Class 1 and Class 2
- Class 6N Selected Backfill
- Mercia Mudstone Group MMG IV (Mudstone)
- Mercia Mudstone Group MMG IIIB (Mudstone)
- Mercia Mudstone Group MMG IIIA (Mudstone)
- Mercia Mudstone Group (Sandstone)
- Mercia Mudstone Group MMG II (Mudstone)
- Mercia Mudstone Group MMG I (Mudstone)
- Bromsgrove Sandstone
- Indicative Bridge Arrangement
- Existing Skewed Bridge Indicative Arrangement

Rev	Date	Description	By	Ckd
P3	08/08/17	Up-dated to identify potential requirement for static plate load tests at bridge abutment location.	IG	CV
P2	03/08/17	Up-dated to S4, commentary added regarding possible requirements for blinding and geosynthetic material.	IG	CV

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www.hydrock.com

Client :
ROXHILL KEGWORTH LTD

Project Title:
EAST MIDLANDS GATEWAY - STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title:
M1 Overbridge - General Earthworks Construction Sequence

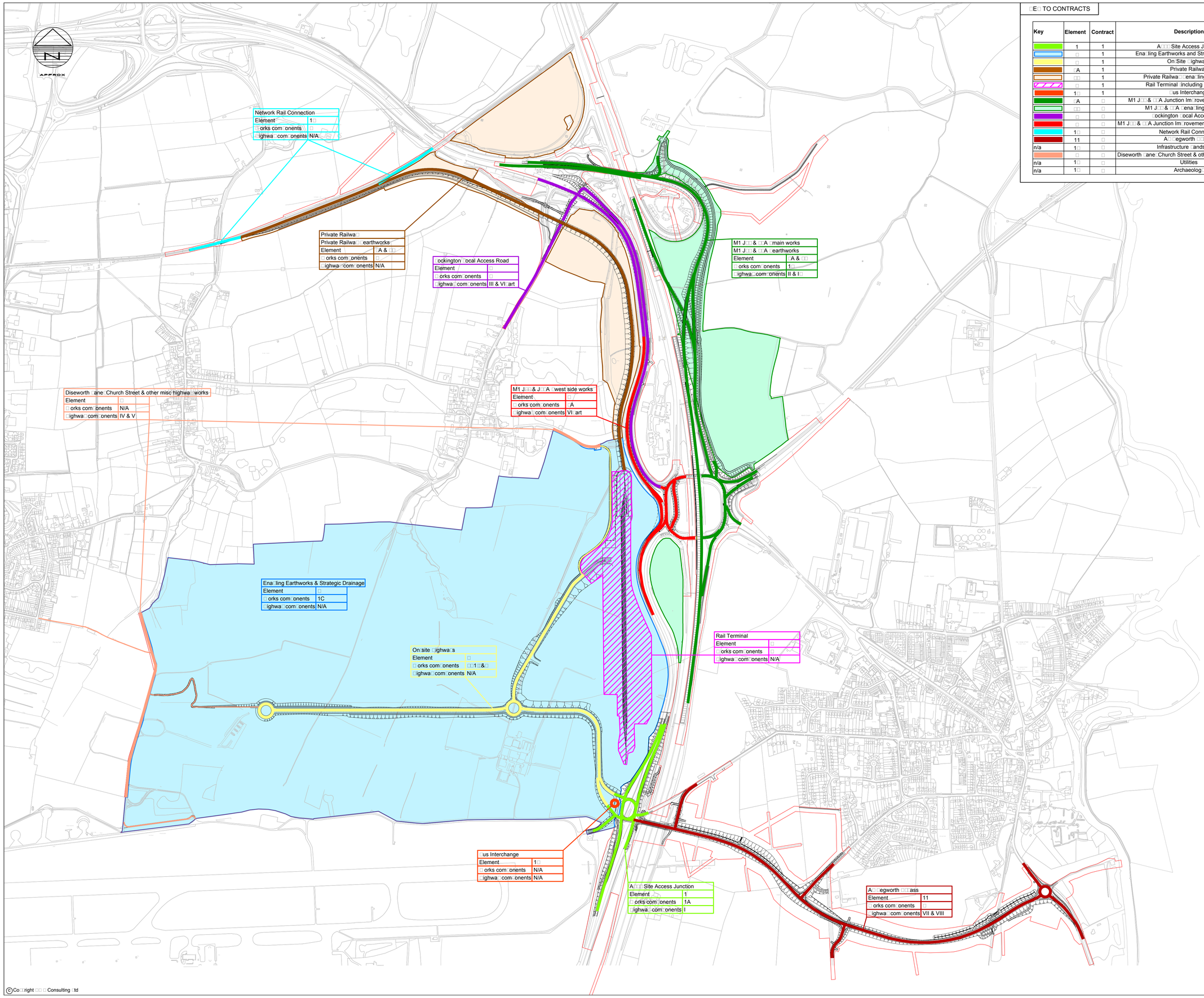
Drawing Status:	Revision:
S4	P3

Hydrock Job No:
C/14792

Drawn	Checked	Scale @ A0	Date	Issue Date
IG	CV	Not to scale	01/08/17	02/08/17

Drawing Number:
EMG-HYD-C4-M1OB-DR-GE-0654

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□E□ TO CONTRACTS

Key	Element	Contract	Description	Principal Adopting Authority	□ ork Com□onents □NT□/□□□/S□□1□	□ighwa□ Com□onents □NT□/□□□/1□□□1□
	1	1	A□□□ Site Access Junction	□ighwa□s England	1A	I
	□	1	Ena□ling Earthworks and Strategic Drainage	n/a	1C	n/a
	□	1	On□Site □ighwa□s	n/a	□□1□□□□ and □□□	n/a
	□A	1	Private Railwa□	n/a	□	n/a
	□□	1	Private Railwa□□ena□ling earthworks	n/a	□	n/a
	□	1	Rail Terminal □including tracks etc.□	n/a	□	n/a
	1□	1	□us Interchange	n/a	n/a	n/a
	□A	□	M1 J□□ & □□A Junction Im□rovement □main works	□ighwa□s England	1□	II & I□
	□□	□	M1 J□□ & □□A □ena□ling earthworks	□ighwa□s England	1□	Various
	□	□	□ockington □ocal Access Road	□eicestershire CC	□	III & VI □art□
	□	□	M1 J□□ & □□A Junction Im□rovement □J□□ west side works	□ighwa□s England	□A	VI □art□
	1□	□	Network Rail Connection	Network Rail	□	n/a
	11	□	A□□egworth □□□ass	□eicestershire CC	□	VII & VIII
n/a	1□	□	Infrastructure □andsca□ing	n/a	n/a	n/a
	□	□	Diseworth □ane□Church Street & other misc highwa□works	□eicestershire CC	n/a	IV & V
n/a	1□	□	Utilities	n/a	n/a	n/a
n/a	1□	□	Archaeolog□	n/a	n/a	n/a

NOTES

1. DO NOT SCA□E T□IS DRA□ IN□. A□□DIMENSIONS MUST □E C□EC□ED/ VERIFIED ON SITE. IF IN DOU□T AS□.

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P□	□.□.□.1□	TA□□E AMENDED		SR□	SR□
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Rev	Date	Details of issue / revision		Drw	Rev

ISSUES & REVISIONS

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Client

ROXHILL

Pro□ect Title

EAST MIDLANDS GATEWAY STRATEGIC RAIL FREIGHT INTERCHANGE

Drawing Title

CONTRACT ASSEMBLY

Scale	1□□□□	Drawn	S. □ilditch
Size	A1	Reviewed	S. □ilditch

Drawing Status

PRELIMINARY

Drawing No.	Revision
NTH/209/SK173	P6

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