

**East Midlands Gateway  
Phase 2 (EMG2)**

**Document DCO 6.14F/MCO 6.14F (Part 1)**

ENVIRONMENTAL STATEMENT

**Technical Appendices**

Appendix 14F

# Preliminary Sources Study Affecting National Highways

August 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)



**GEOTECHNICS**

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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## **DRAWINGS**

EMG2-BWB-GEN-XX-SK-CH-SK037\_Overview of works on the strategic road network-S2-P02  
EMG2-BWB-HGN-XX-DR-H-0102\_Document 2.8B\_Highway Plans General Arrangement Sheet 2 of 3  
EMG2-BWB-HGN-XX-DR-H-0103\_Document 2.8C\_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

## **APPENDICES**

Appendix 1: Groundsure Report  
Appendix 2: Historical Mapping  
Appendix 3: Historical Boreholes  
Appendix 4: GDMS Reports  
Appendix 5 : Geotechnical Risk Register  
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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 Kirkpatrick & 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.

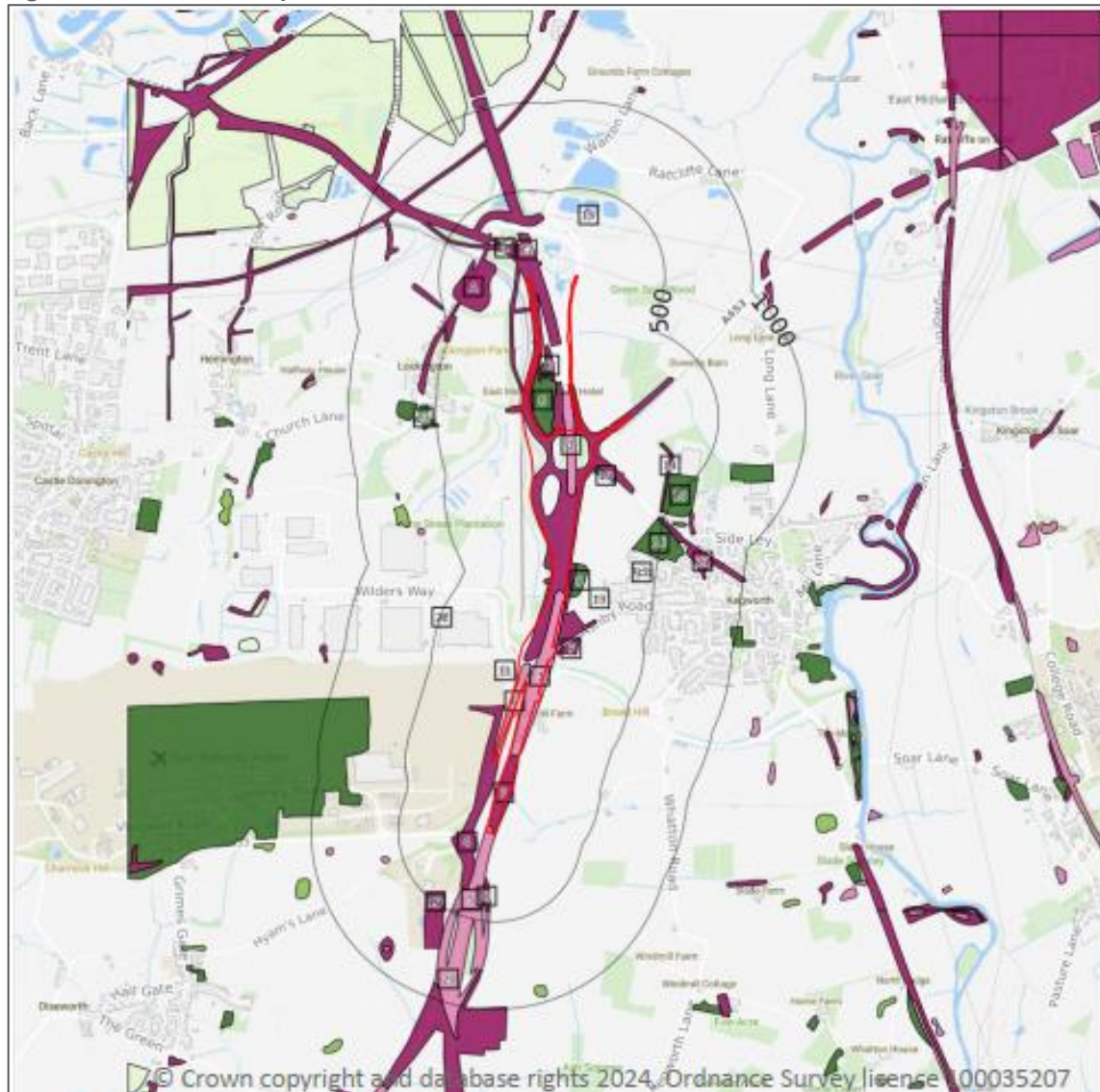
### Geology

#### 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**

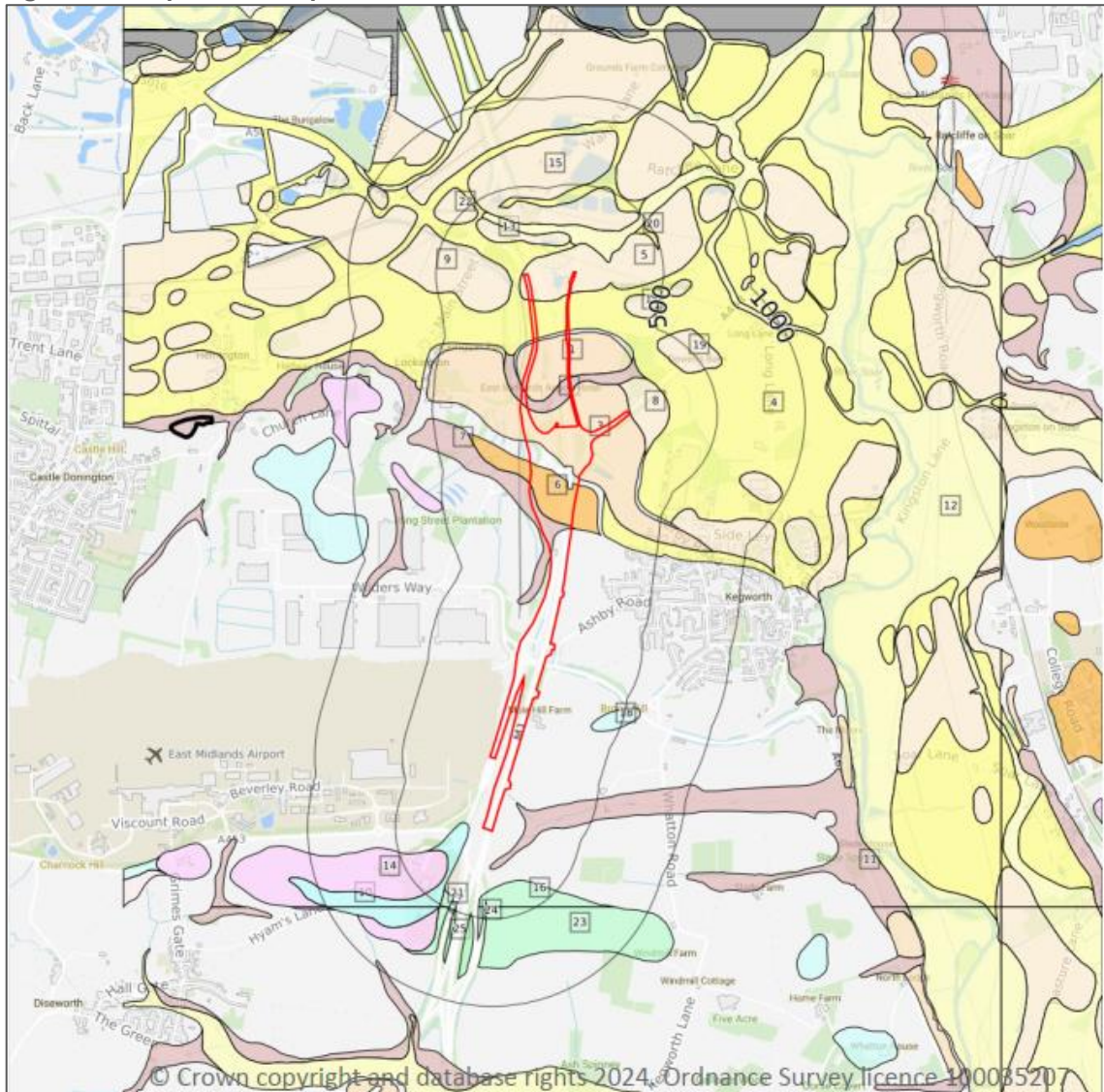


3.8 BGS data records various superficial deposits across the site, as well as an area where superficial deposits are absent in the south. A map extracted from the Groundsure® Report is presented on the following page as **Figure 3:2**. It is emphasised that some variation in the location and extent of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

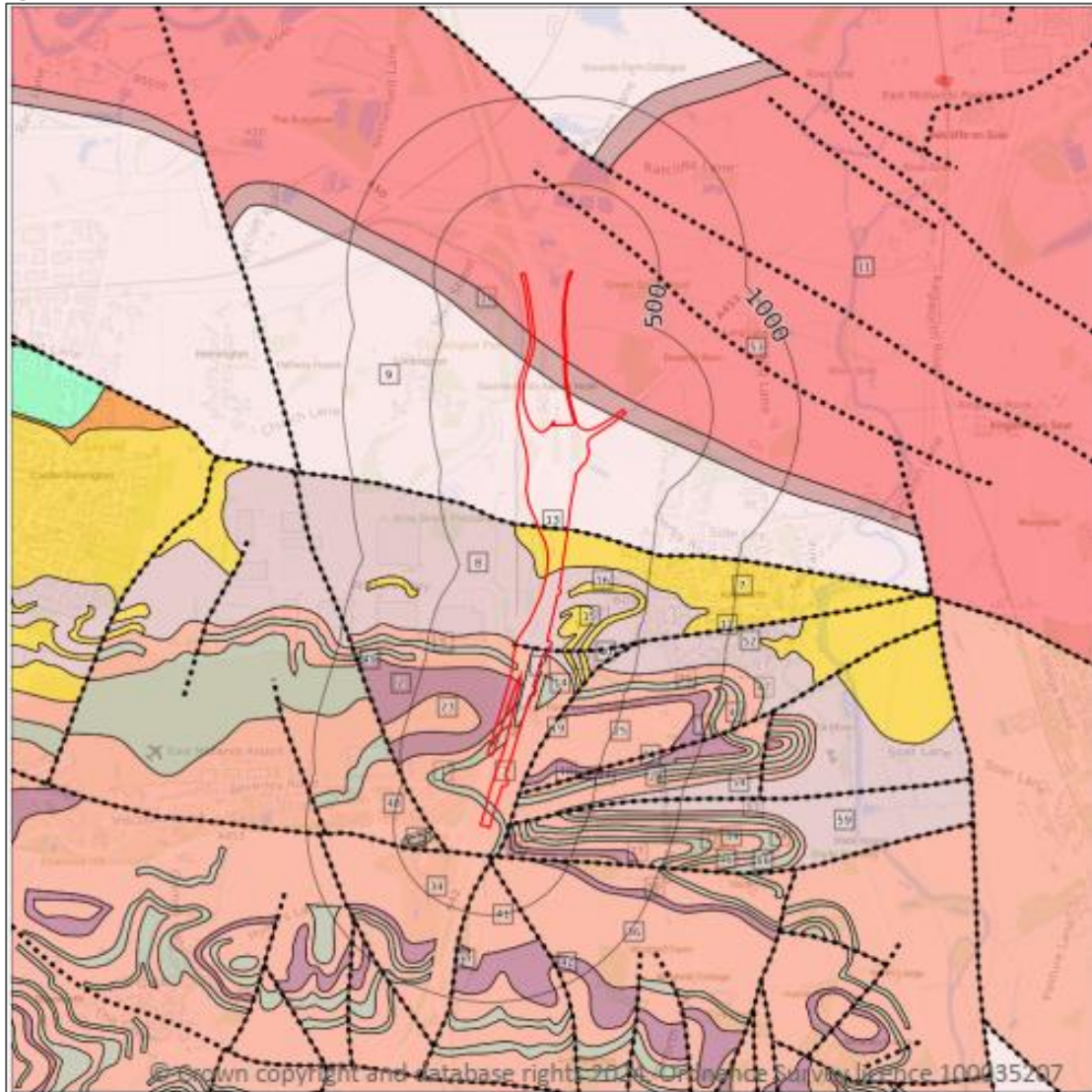
- Gunthorpe Member Siltstone, Dolomitic (shown as No1 and No5).
- Diseworth Sandstone (shown as No2).
- Gunthorpe Member Mudstone (shown as No3 and No6).
- Tarporley Siltstone Formation (shown as No4 and No8)
- Helsby Sandstone Formation (shown as No7)
- Edwalton Member (shown as No9)
- Arden Sandstone 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, <b>Rises</b> 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 <b>GRAVEL PIT</b> and several small <b>lakes</b> are mapped 250m to the north. In 1901, a covered <b>Reservoir</b> is mapped 100m to the southwest. <b>Rises</b> are also mapped in the same area from 1919.
1921 - 1955	In 1921, <b>AIR VALVES</b> and <b>rises</b> 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 <b>AIR VALVES</b> and a <b>WASHOUT CHAMBER</b> and sluice valves are mapped.
1966	In 1966, construction of the M1 begins through the site and the A6 to the north, with <b>EARTHWORKS</b> 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 <b>Flood Prevention Lagoon</b> mapped along the northeastern boundary. An unspecified <b>FACTORY</b> is mapped 500m to the northeast. <b>Weirs</b> and <b>Wells</b> 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.	<b>EAST MIDLANDS AIRPORT</b> is mapped 500m to the southwest of the site and a <b>SERVICES</b> with a <b>PETROL STATION</b> 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 22<sup>nd</sup> 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 <sup>(1)</sup>	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	$\gamma$	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	$\gamma_b, \gamma_d$	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	$\phi'$	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].  $\phi'$ 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 $c_u = 4.5 \times \text{SPT 'N' value}$ may be adopted.
Coefficient of compressibility	$m_v$	Compressibility and stiffness typically show a wide scatter in published correlations. A moderately conservative assumption of $m_v = 1/N$ 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	$\nu$	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, $\gamma'$	Effective Angle of Friction, $\phi'$	Effective Cohesion, $c'$	Undrained Shear Strength, $c_u$	Coefficient of Compressibility, $m_v$
	kN/m <sup>3</sup>	deg	kN/m <sup>2</sup>	kN/m <sup>2</sup>	MN/m <sup>2</sup>
Fill	21	27	0	100	0.08
Alluvium <sup>1</sup>	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
<sup>1</sup> 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.

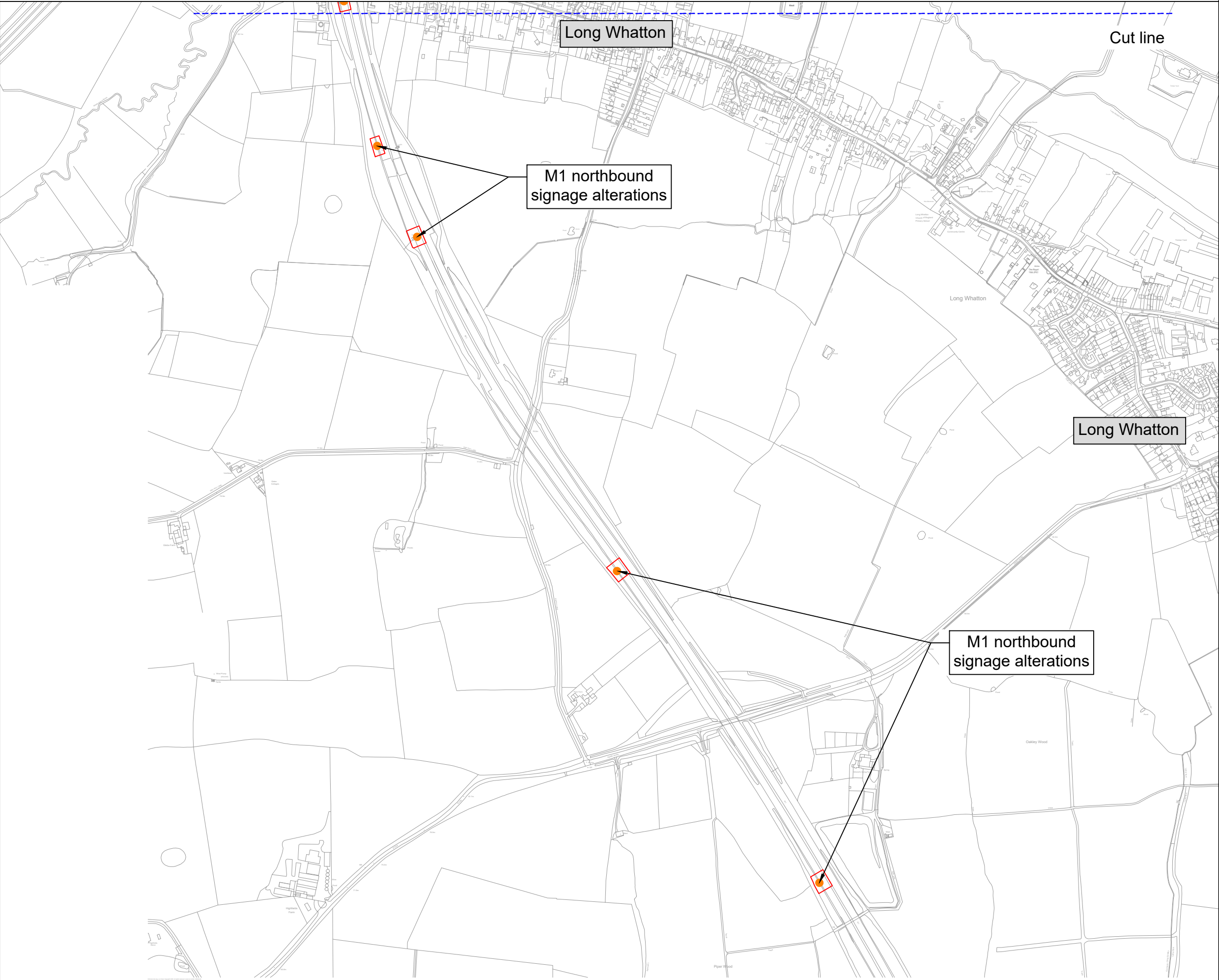
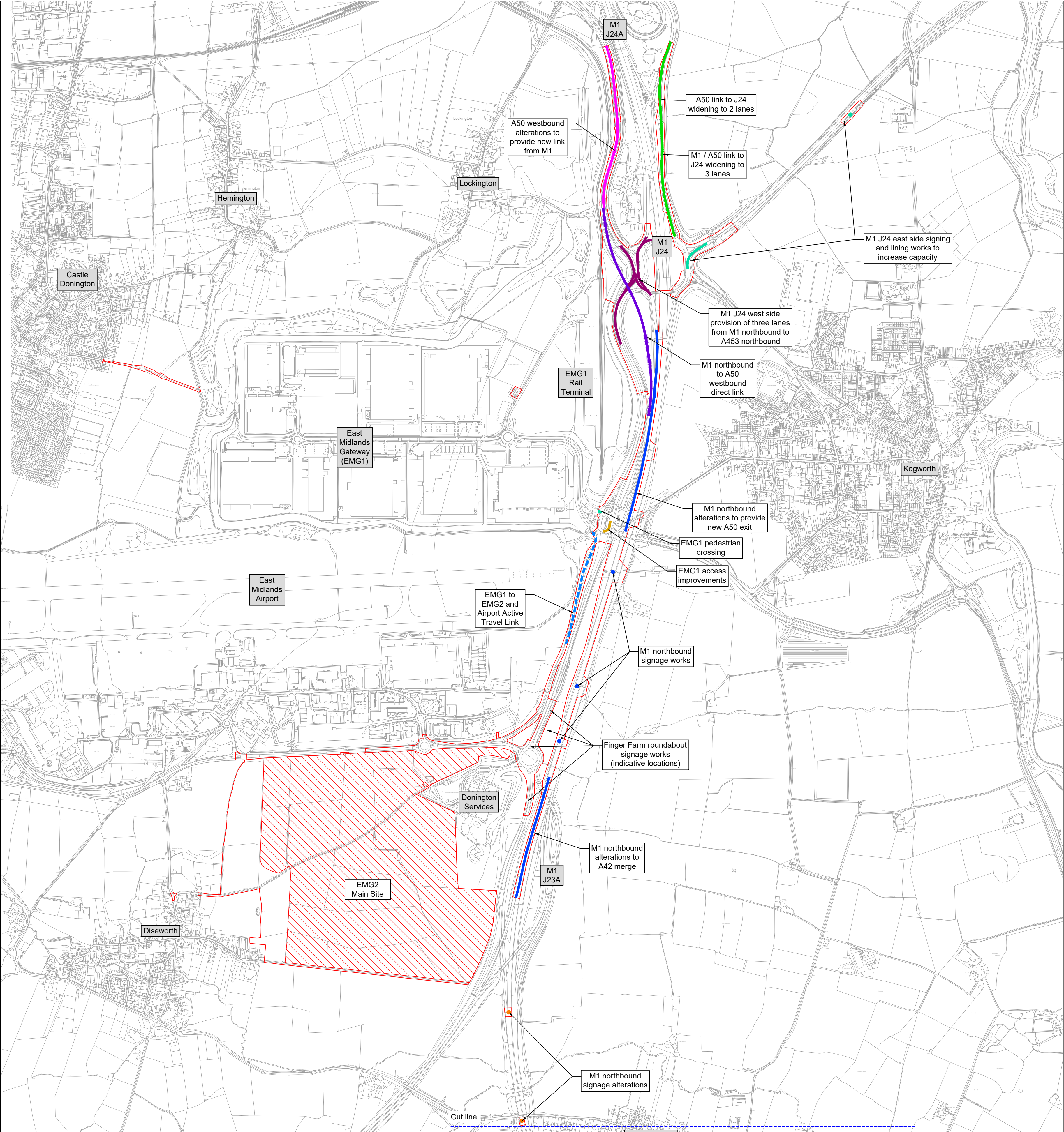
8.8 A visual inspection of embankments and cuttings at locations of exploratory holes is recommended by a suitably qualified geotechnical engineer or engineering geologist. It is recommended this is coordinated during ground investigation works to take advantage of traffic management and safe access 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**

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

ISSUES & REVISIONS				Drw		Rev	
Rev	Date	Details of issue / revision		SRH	SRH	SRH	SRH
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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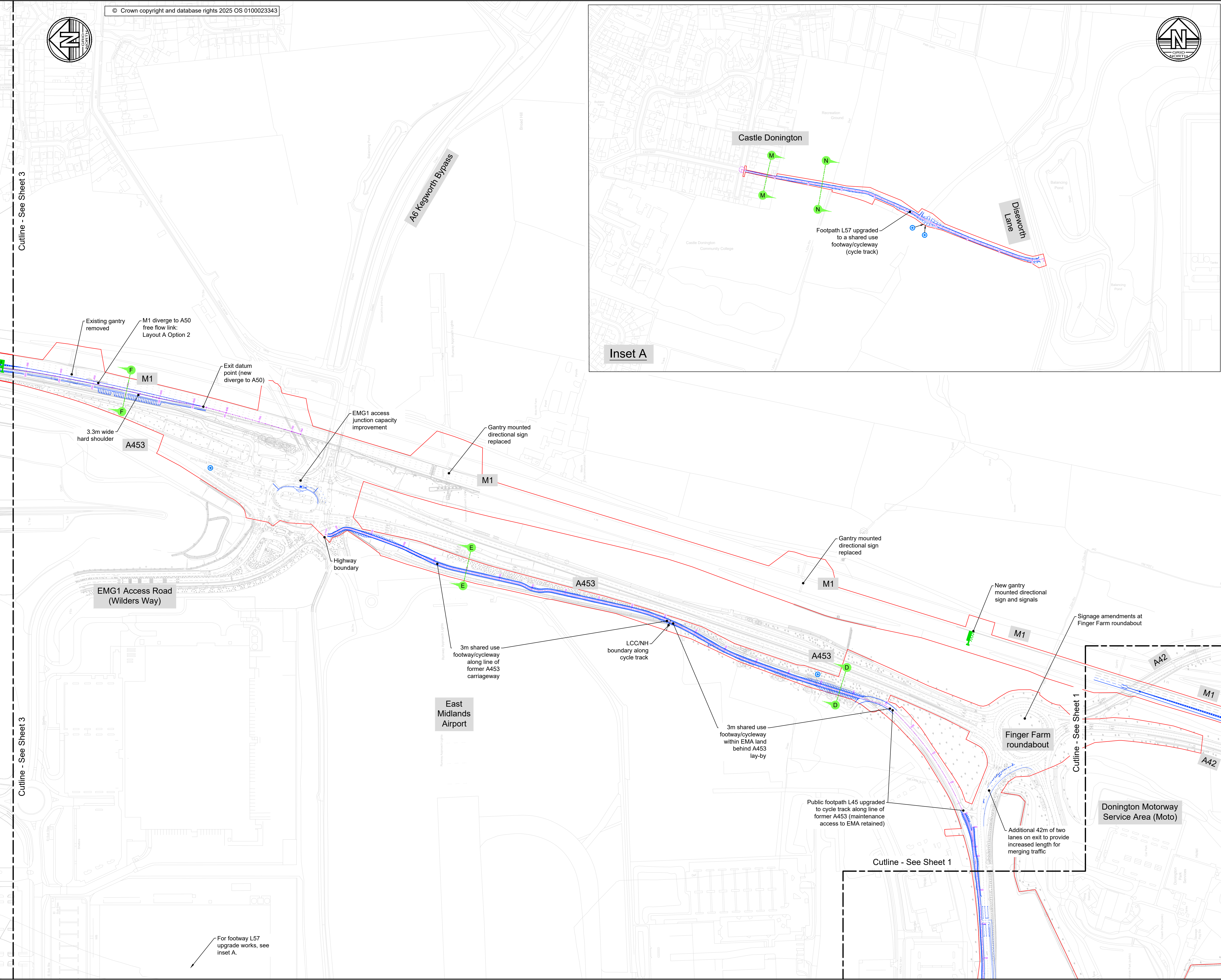
Client		Project Title		Drawing Status		Drawing Title	
SEGRO		EAST MIDLANDS GATEWAY 2 (EMG2)		FOR INFORMATION		OVERVIEW OF WORKS ON THE STRATEGIC ROAD NETWORK	
Drawn: S. Hilditch		Reviewed: S. Hilditch		Scale@A1: 1:10,000		Project - Originator - Zone - Level - Type - Role - Number	
BWB Ref: 220500		Date: 04.03.25				EMG2-BWB-GEN-XX-SK-CH-SK037	

Client		Project Title		Drawing Status		Drawing Title	
SEGRO		EAST MIDLANDS GATEWAY 2 (EMG2)		FOR INFORMATION		OVERVIEW OF WORKS ON THE STRATEGIC ROAD NETWORK	
Drawn: S. Hilditch		Reviewed: S. Hilditch		Scale@A1: 1:10,000		Project - Originator - Zone - Level - Type - Role - Number	
BWB Ref: 220500		Date: 04.03.25				EMG2-BWB-GEN-XX-SK-CH-SK037	

Client		Project Title		Drawing Status		Drawing Title	
SEGRO		EAST MIDLANDS GATEWAY 2 (EMG2)		FOR INFORMATION		OVERVIEW OF WORKS ON THE STRATEGIC ROAD NETWORK	
Drawn: S. Hilditch		Reviewed: S. Hilditch		Scale@A1: 1:10,000		Project - Originator - Zone - Level - Type - Role - Number	
BWB Ref: 220500		Date: 04.03.25				EMG2-BWB-GEN-XX-SK-CH-SK037	

Client		Project Title		Drawing Status		Drawing Title	
SEGRO		EAST MIDLANDS GATEWAY 2 (EMG2)		FOR INFORMATION		OVERVIEW OF WORKS ON THE STRATEGIC ROAD NETWORK	
Drawn: S. Hilditch		Reviewed: S. Hilditch		Scale@A1: 1:10,000		Project - Originator - Zone - Level - Type - Role - Number	
BWB Ref: 220500		Date: 04.03.25				EMG2-BWB-GEN-XX-SK-CH-SK037	





**Legend**

- All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
- The height of proposed bridges, embankments and depths of cuttings are indicative subject to the limits of deviation referred to in the order.
- All structure positions and sizes shown are indicative only.
- 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

050100150200

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 2021**

Drawing Title

**HIGHWAY PLANS  
GENERAL ARRANGEMENT  
SHEET 2 OF 4**

Scale1:2500

DrawnM.S

SizeA1

ReviewedS.H

Regulation

Document

**6(2)**

**DCO 2.8B**

Drawing Status

**DCO SUBMISSION**

Drawing No.

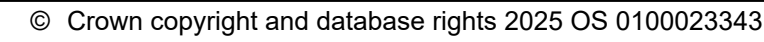
Revision

**EMG2-BWB-HGN-XX-DR-H-0102**

**P07**

J:\2022\220500-East Midlands Gateway Phase 2\Project\Delivery\01-WIP\Drawings\EMG2-BWB-HGN-XX-DR-H-010100104\_Document DCO 2.8\_EMG2 Highway Plans GAs.dwg





For signing works,  
see inset A

Derby Rd




✓ Signing  
amendment

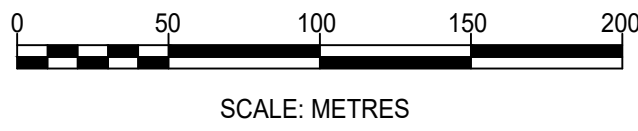
Cutline - See Sheet 2

Cutline - See Sheet 2

Lockington

- ## 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
-  Cross section location



## 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

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
Rev	Date	Details of issue / revision	Drw	Rev

## ISSUES & REVISIONS



# 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

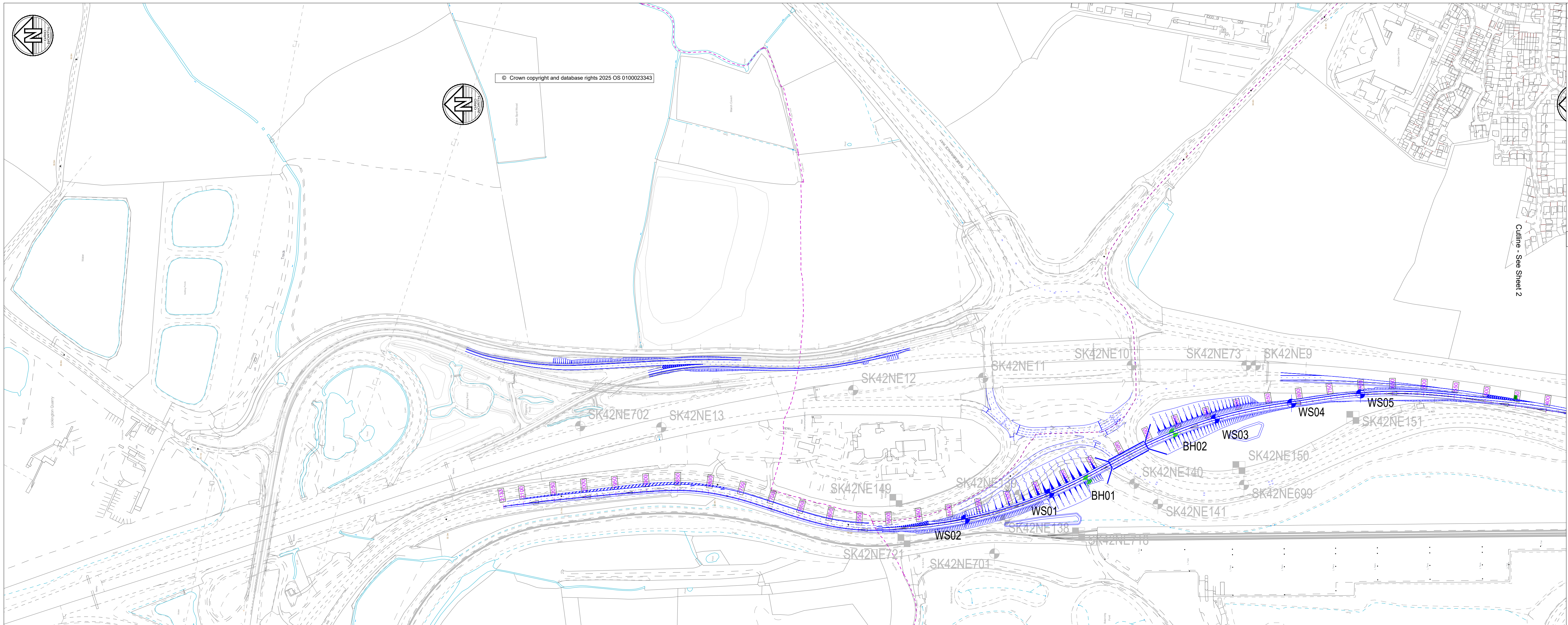
Regulation	Document
<b>6(2)</b>	<b>DCO 2.8C</b>

### Drawing Status

## DCO SUBMISSION

Drawing No.	Revision
<b>EMG2-BWB-HGN-XX-DR-H-0103</b>	<b>P07</b>





**Notes**

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**Legend**

Proposed Trial Pit / Window Sampling Borehole

Historic Trial Pit / Borehole

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

**Issues & Revisions**

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Client  
**SEGRO**

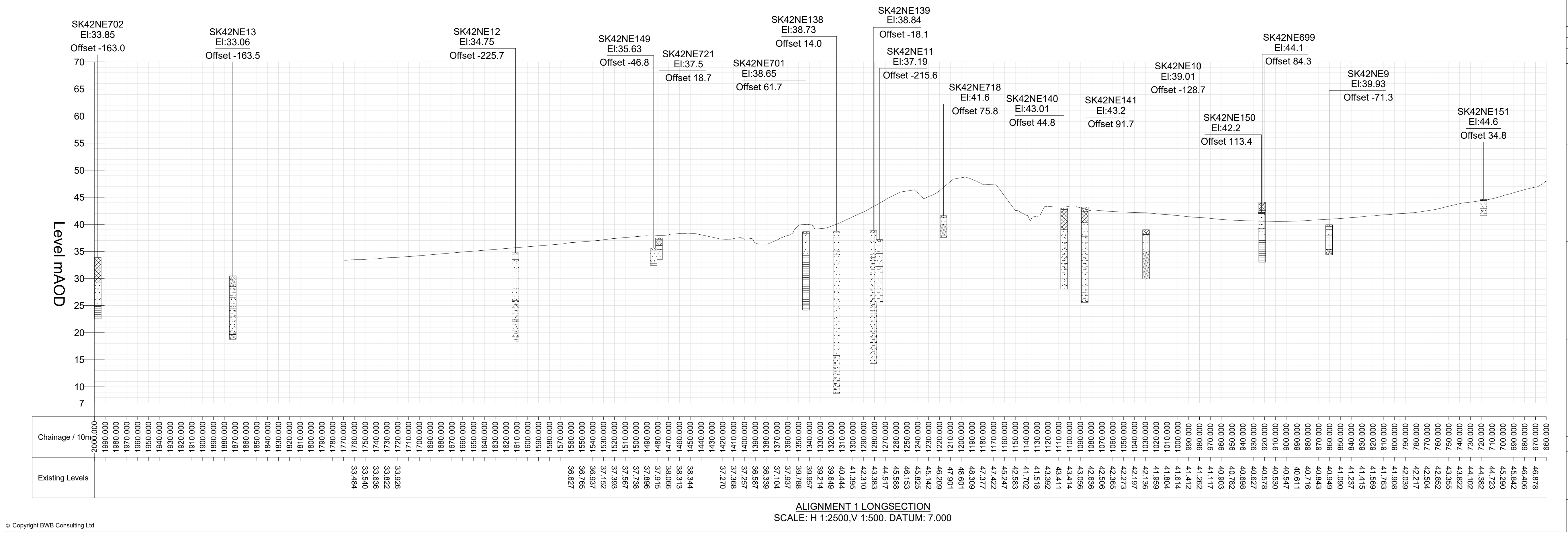
Project Title  
**EAST MIDLANDS GATEWAY - PHASE 2**

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	Status	Rev

**FOR INFORMATION**

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







## ***APPENDICES***

## **Appendix 1: Groundsure Report**

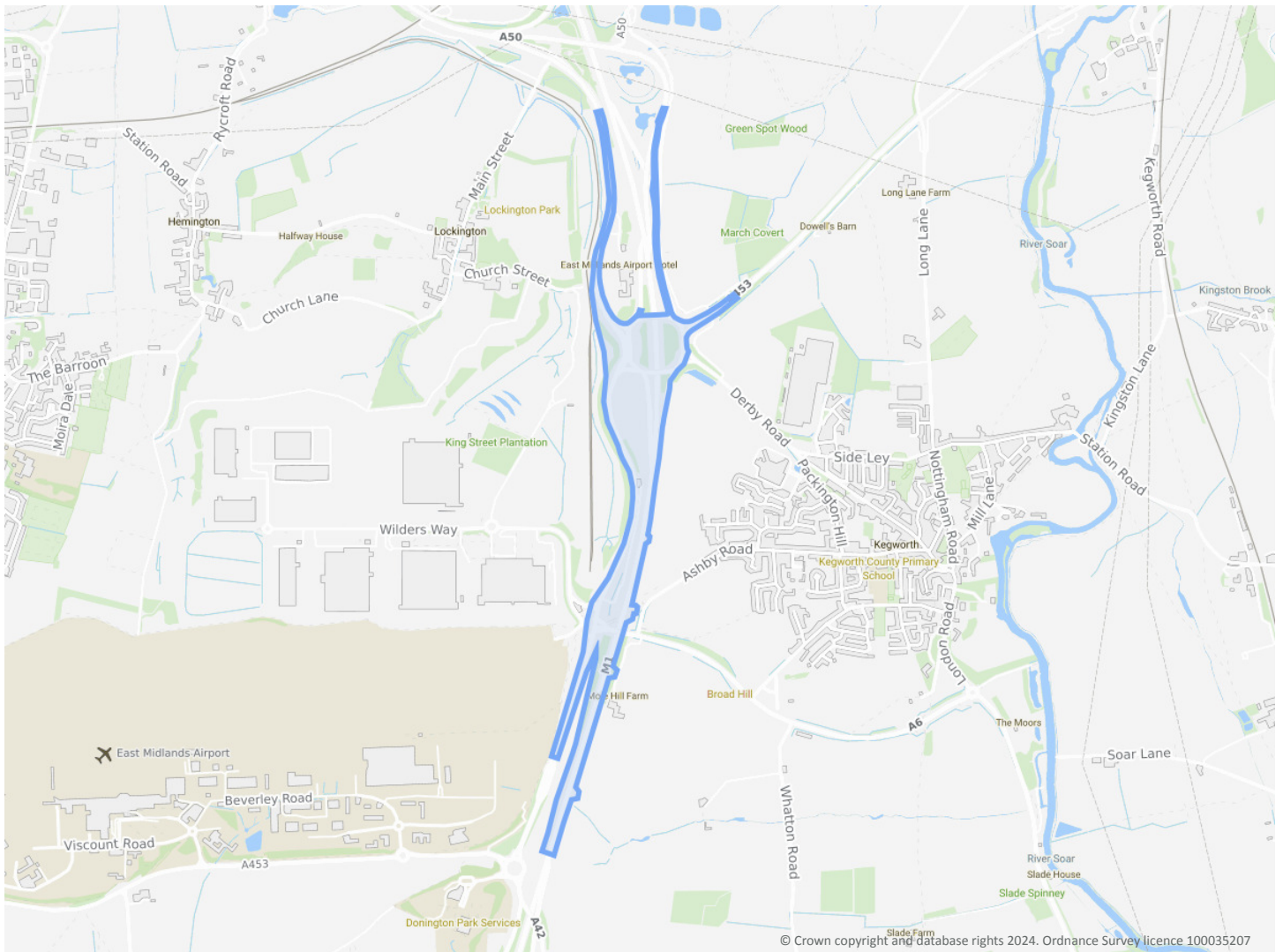
## East Midlands Gateway 2, J24 M1 (NH Land)

### 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 >](#)

**Aerial image**

[p. 9 >](#)

**OS MasterMap site plan**

N/A: >10ha

[Insight User Guide](#) ↗

Contact us with any questions at:

[info@groundsure.com](mailto:info@groundsure.com) ↗

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Corporation

## Summary of findings

Page	Section	<a href="#">Past land use &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">14 &gt;</a>	<a href="#">1.1 &gt;</a>	<a href="#">Historical industrial land uses &gt;</a>	4	0	12	15	-
<a href="#">16 &gt;</a>	<a href="#">1.2 &gt;</a>	<a href="#">Historical tanks &gt;</a>	0	0	1	2	-
<a href="#">16 &gt;</a>	<a href="#">1.3 &gt;</a>	<a href="#">Historical energy features &gt;</a>	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	<a href="#">Past land use - un-grouped &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">18 &gt;</a>	<a href="#">2.1 &gt;</a>	<a href="#">Historical industrial land uses &gt;</a>	6	0	19	20	-
<a href="#">20 &gt;</a>	<a href="#">2.2 &gt;</a>	<a href="#">Historical tanks &gt;</a>	0	0	1	2	-
<a href="#">21 &gt;</a>	<a href="#">2.3 &gt;</a>	<a href="#">Historical energy features &gt;</a>	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	<a href="#">Waste and landfill &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">22 &gt;</a>	<a href="#">3.1 &gt;</a>	<a href="#">Active or recent landfill &gt;</a>	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	-
<a href="#">23 &gt;</a>	<a href="#">3.6 &gt;</a>	<a href="#">Licensed waste sites &gt;</a>	0	0	0	12	-
<a href="#">27 &gt;</a>	<a href="#">3.7 &gt;</a>	<a href="#">Waste exemptions &gt;</a>	1	30	15	2	-
Page	Section	<a href="#">Current industrial land use &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">32 &gt;</a>	<a href="#">4.1 &gt;</a>	<a href="#">Recent industrial land uses &gt;</a>	5	5	11	-	-
<a href="#">34 &gt;</a>	<a href="#">4.2 &gt;</a>	<a href="#">Current or recent petrol stations &gt;</a>	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	-
<a href="#">35</a> >	<a href="#">4.8</a> >	<a href="#">Hazardous substance storage/usage</a> >	0	0	0	1	-
35	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
<a href="#">36</a> >	<a href="#">4.10</a> >	<a href="#">Licensed industrial activities (Part A(1))</a> >	0	0	0	3	-
<a href="#">36</a> >	<a href="#">4.11</a> >	<a href="#">Licensed pollutant release (Part A(2)/B)</a> >	0	0	0	2	-
37	4.12	Radioactive Substance Authorisations	0	0	0	0	-
<a href="#">37</a> >	<a href="#">4.13</a> >	<a href="#">Licensed Discharges to controlled waters</a> >	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	-
<a href="#">38</a> >	<a href="#">4.18</a> >	<a href="#">Pollution Incidents (EA/NRW)</a> >	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	<a href="#">Hydrogeology</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">40</a> >	<a href="#">5.1</a> >	<a href="#">Superficial aquifer</a> >	Identified (within 500m)				
<a href="#">42</a> >	<a href="#">5.2</a> >	<a href="#">Bedrock aquifer</a> >	Identified (within 500m)				
<a href="#">44</a> >	<a href="#">5.3</a> >	<a href="#">Groundwater vulnerability</a> >	Identified (within 50m)				
49	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
49	5.5	Groundwater vulnerability- local information	None (within 0m)				
<a href="#">50</a> >	<a href="#">5.6</a> >	<a href="#">Groundwater abstractions</a> >	2	0	0	0	20
<a href="#">55</a> >	<a href="#">5.7</a> >	<a href="#">Surface water abstractions</a> >	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	<a href="#">Hydrology</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">59</a> >	<a href="#">6.1</a> >	<a href="#">Water Network (OS MasterMap)</a> >	12	21	76	-	-



68 >	6.2 >	<a href="#">Surface water features &gt;</a>	1	16	43	-	-
68 >	6.3 >	<a href="#">WFD Surface water body catchments &gt;</a>	2	-	-	-	-
69 >	6.4 >	<a href="#">WFD Surface water bodies &gt;</a>	0	0	1	-	-
69 >	6.5 >	<a href="#">WFD Groundwater bodies &gt;</a>	2	-	-	-	-
Page	Section	<a href="#">River and coastal flooding &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
70 >	7.1 >	<a href="#">Risk of flooding from rivers and the sea &gt;</a>	High (within 50m)				
71 >	7.2 >	<a href="#">Historical Flood Events &gt;</a>	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 >	<a href="#">Flood Zone 2 &gt;</a>	Identified (within 50m)				
74 >	7.7 >	<a href="#">Flood Zone 3 &gt;</a>	Identified (within 50m)				
Page	Section	<a href="#">Surface water flooding &gt;</a>					
75 >	8.1 >	<a href="#">Surface water flooding &gt;</a>	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	<a href="#">Groundwater flooding &gt;</a>					
77 >	9.1 >	<a href="#">Groundwater flooding &gt;</a>	High (within 50m)				
Page	Section	<a href="#">Environmental designations &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
78 >	10.1 >	<a href="#">Sites of Special Scientific Interest (SSSI) &gt;</a>	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 >	<a href="#">Designated Ancient Woodland &gt;</a>	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 >	<a href="#">Green Belt &gt;</a>	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
<a href="#">82</a> >	<a href="#">10.16</a> >	<a href="#">Nitrate Vulnerable Zones</a> >	3	0	0	0	1
<a href="#">83</a> >	<a href="#">10.17</a> >	<a href="#">SSSI Impact Risk Zones</a> >	4	-	-	-	-
<a href="#">85</a> >	<a href="#">10.18</a> >	<a href="#">SSSI Units</a> >	0	0	0	0	2
Page	Section	<a href="#">Visual and cultural designations</a> >	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	-	-
<a href="#">87</a> >	<a href="#">11.5</a> >	<a href="#">Conservation Areas</a> >	0	0	1	-	-
88	11.6	Scheduled Ancient Monuments	0	0	0	-	-
88	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	<a href="#">Agricultural designations</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">89</a> >	<a href="#">12.1</a> >	<a href="#">Agricultural Land Classification</a> >	Grade 3b (within 250m)				
92	12.2	Open Access Land	0	0	0	-	-
92	12.3	Tree Felling Licences	0	0	0	-	-
<a href="#">92</a> >	<a href="#">12.4</a> >	<a href="#">Environmental Stewardship Schemes</a> >	0	3	2	-	-
93	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	<a href="#">Habitat designations</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">94</a> >	<a href="#">13.1</a> >	<a href="#">Priority Habitat Inventory</a> >	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	<a href="#">Geology 1:10,000 scale</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">97</a> >	<a href="#">14.1</a> >	<a href="#">10k Availability</a> >	Identified (within 500m)				
<a href="#">98</a> >	<a href="#">14.2</a> >	<a href="#">Artificial and made ground (10k)</a> >	7	7	5	13	-
<a href="#">100</a> >	<a href="#">14.3</a> >	<a href="#">Superficial geology (10k)</a> >	7	1	5	14	-

102	14.4	Landslip (10k)	0	0	0	0	-
<a href="#">103 &gt;</a>	<a href="#">14.5 &gt;</a>	<a href="#">Bedrock geology (10k) &gt;</a>	13	4	30	15	-
<a href="#">106 &gt;</a>	<a href="#">14.6 &gt;</a>	<a href="#">Bedrock faults and other linear features (10k) &gt;</a>	3	0	6	7	-
Page	Section	<a href="#">Geology 1:50,000 scale &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">108 &gt;</a>	<a href="#">15.1 &gt;</a>	<a href="#">50k Availability &gt;</a>	Identified (within 500m)				
109	15.2	Artificial and made ground (50k)	0	0	0	0	-
109	15.3	Artificial ground permeability (50k)	0	0	-	-	-
<a href="#">110 &gt;</a>	<a href="#">15.4 &gt;</a>	<a href="#">Superficial geology (50k) &gt;</a>	7	1	6	11	-
<a href="#">112 &gt;</a>	<a href="#">15.5 &gt;</a>	<a href="#">Superficial permeability (50k) &gt;</a>	Identified (within 50m)				
112	15.6	Landslip (50k)	0	0	0	0	-
112	15.7	Landslip permeability (50k)	None (within 50m)				
<a href="#">113 &gt;</a>	<a href="#">15.8 &gt;</a>	<a href="#">Bedrock geology (50k) &gt;</a>	11	3	26	11	-
<a href="#">116 &gt;</a>	<a href="#">15.9 &gt;</a>	<a href="#">Bedrock permeability (50k) &gt;</a>	Identified (within 50m)				
<a href="#">116 &gt;</a>	<a href="#">15.10 &gt;</a>	<a href="#">Bedrock faults and other linear features (50k) &gt;</a>	2	0	7	1	-
Page	Section	<a href="#">Boreholes &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">118 &gt;</a>	<a href="#">16.1 &gt;</a>	<a href="#">BGS Boreholes &gt;</a>	61	56	69	-	-
Page	Section	<a href="#">Natural ground subsidence &gt;</a>					
<a href="#">127 &gt;</a>	<a href="#">17.1 &gt;</a>	<a href="#">Shrink swell clays &gt;</a>	Very low (within 50m)				
<a href="#">129 &gt;</a>	<a href="#">17.2 &gt;</a>	<a href="#">Running sands &gt;</a>	Very low (within 50m)				
<a href="#">131 &gt;</a>	<a href="#">17.3 &gt;</a>	<a href="#">Compressible deposits &gt;</a>	Negligible (within 50m)				
<a href="#">132 &gt;</a>	<a href="#">17.4 &gt;</a>	<a href="#">Collapsible deposits &gt;</a>	Very low (within 50m)				
<a href="#">133 &gt;</a>	<a href="#">17.5 &gt;</a>	<a href="#">Landslides &gt;</a>	Low (within 50m)				
<a href="#">135 &gt;</a>	<a href="#">17.6 &gt;</a>	<a href="#">Ground dissolution of soluble rocks &gt;</a>	Negligible (within 50m)				
Page	Section	<a href="#">Mining and ground workings &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">137 &gt;</a>	<a href="#">18.1 &gt;</a>	<a href="#">BritPits &gt;</a>	0	0	0	5	-
<a href="#">138 &gt;</a>	<a href="#">18.2 &gt;</a>	<a href="#">Surface ground workings &gt;</a>	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	<a href="#">Radon</a> >					
<a href="#">146</a> >	<a href="#">20.1</a> >	<a href="#">Radon</a> >	Between 1% and 3% (within 0m)				
Page	Section	<a href="#">Soil chemistry</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">148</a> >	<a href="#">21.1</a> >	<a href="#">BGS Estimated Background Soil Chemistry</a> >	53	24	-	-	-
152	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
153	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	<a href="#">Railway infrastructure and projects</a> >	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	-	-
<a href="#">155</a> >	<a href="#">22.7</a> >	<a href="#">Railways</a> >	0	10	2	-	-
156	22.8	Crossrail 2	0	0	0	0	-
<a href="#">156</a> >	<a href="#">22.9</a> >	<a href="#">HS2</a> >	3	1	8	6	-



## Recent aerial photograph



Capture Date: 10/07/2022

Site Area: 39.28ha



## Recent site history - 2019 aerial photograph



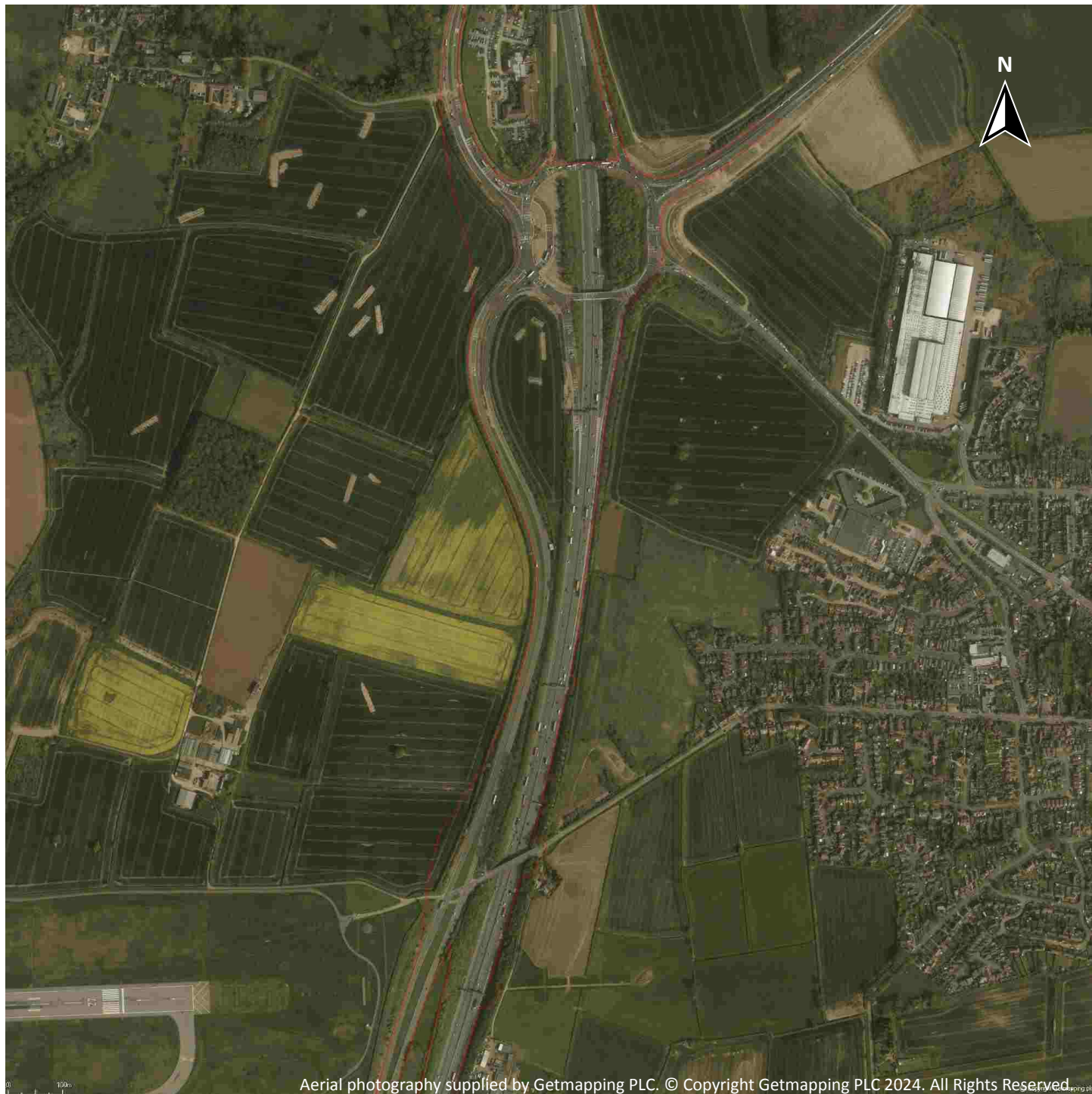
Capture Date: 20/04/2019

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



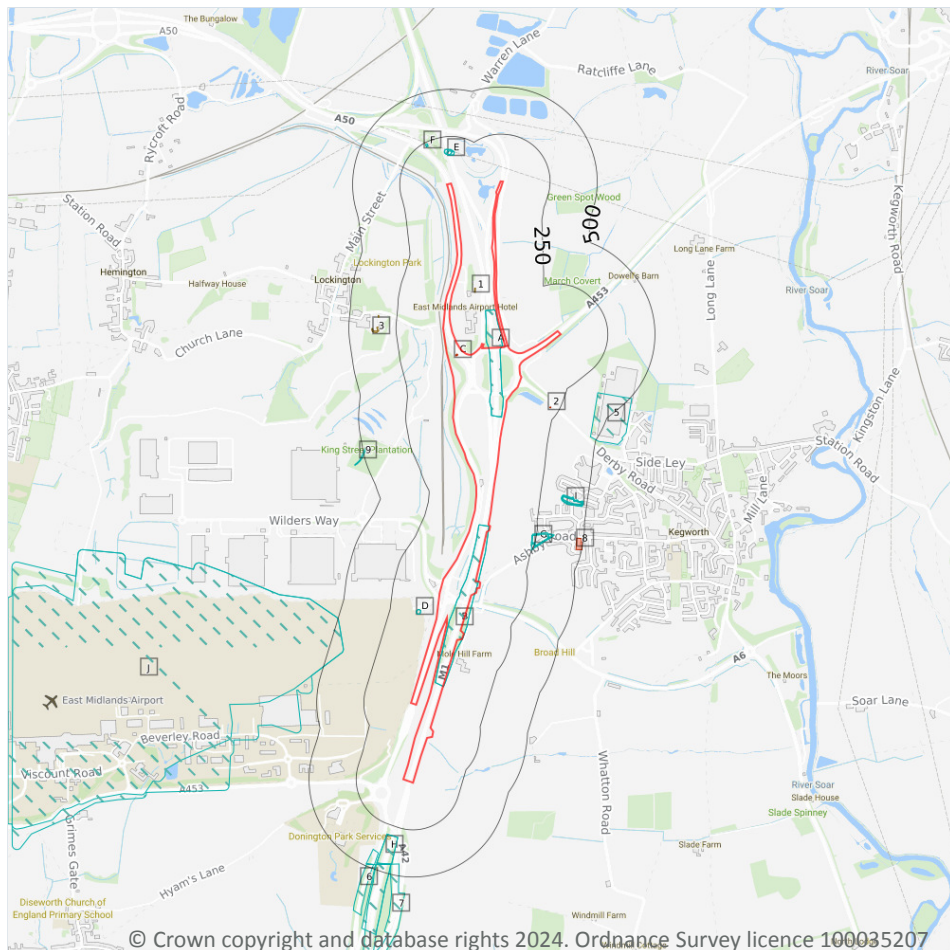
Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 11/07/1999

Site Area: 39.28ha



## 1 Past land use



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

### 1.1 Historical industrial land uses

Records within 500m

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
<b>A</b>	<b>On site</b>	<b>Cuttings</b>	<b>1982 - 1992</b>	<b>1726088</b>
<b>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1971</b>	<b>1692256</b>
<b>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1982 - 1992</b>	<b>1710569</b>
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 ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 14 >](#)

ID	Location	Land use	Dates present	Group ID
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 ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 14 >](#)

ID	Location	Land use	Dates present	Group ID
C	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

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

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

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

## 1.5 Historical garages

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

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

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

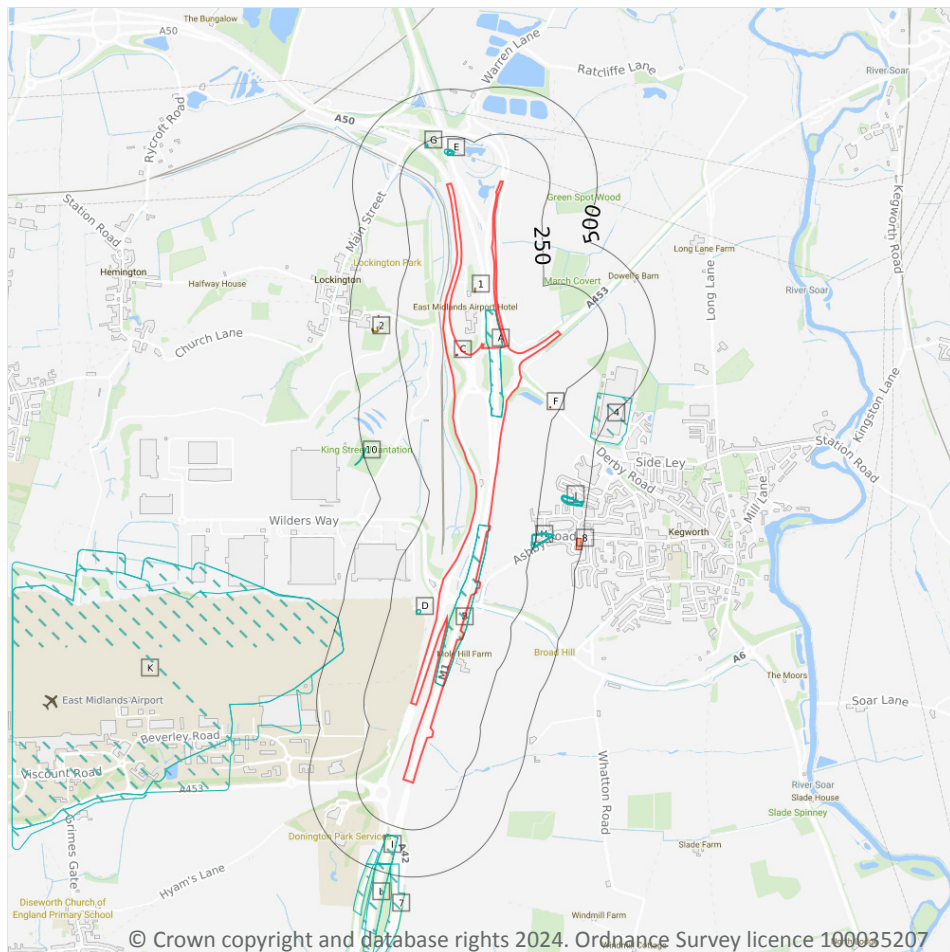
## 1.6 Historical military land

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

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

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

## 2 Past land use - un-grouped



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

### 2.1 Historical industrial land uses

Records within 500m

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>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1971</b>	<b>1692256</b>
<b>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1982</b>	<b>1710569</b>
<b>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1992</b>	<b>1710569</b>
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

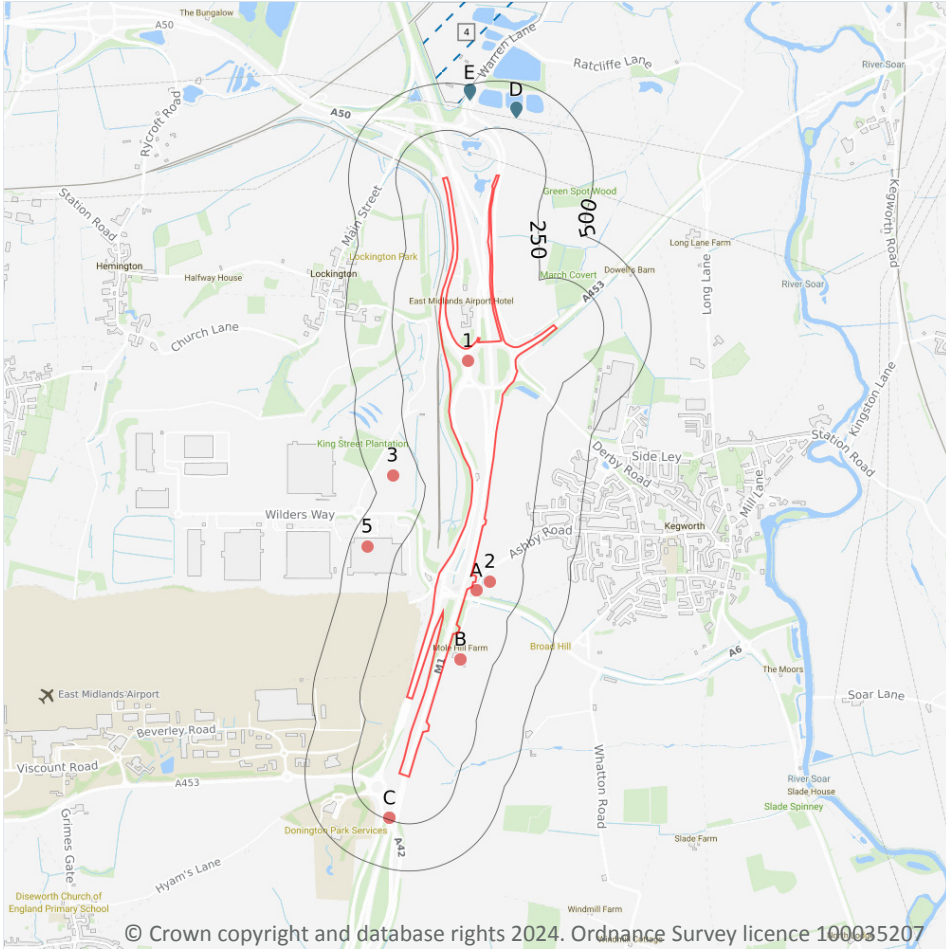
**0**

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



- Site Outline
- Search buffers in metres (m)
- Active or recent landfill
- Licensed waste sites
- Waste exemptions

### 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- Biodegradable 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-Biodegradable 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-Biodegradable 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

<b>Records within 500m</b>	<b>48</b>
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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/AE5387N S/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/PF0230G H/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/PF0230G H/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/PF0230G H/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/PF0230G H/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/PF0230G H/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/PF0230G H/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste in construction

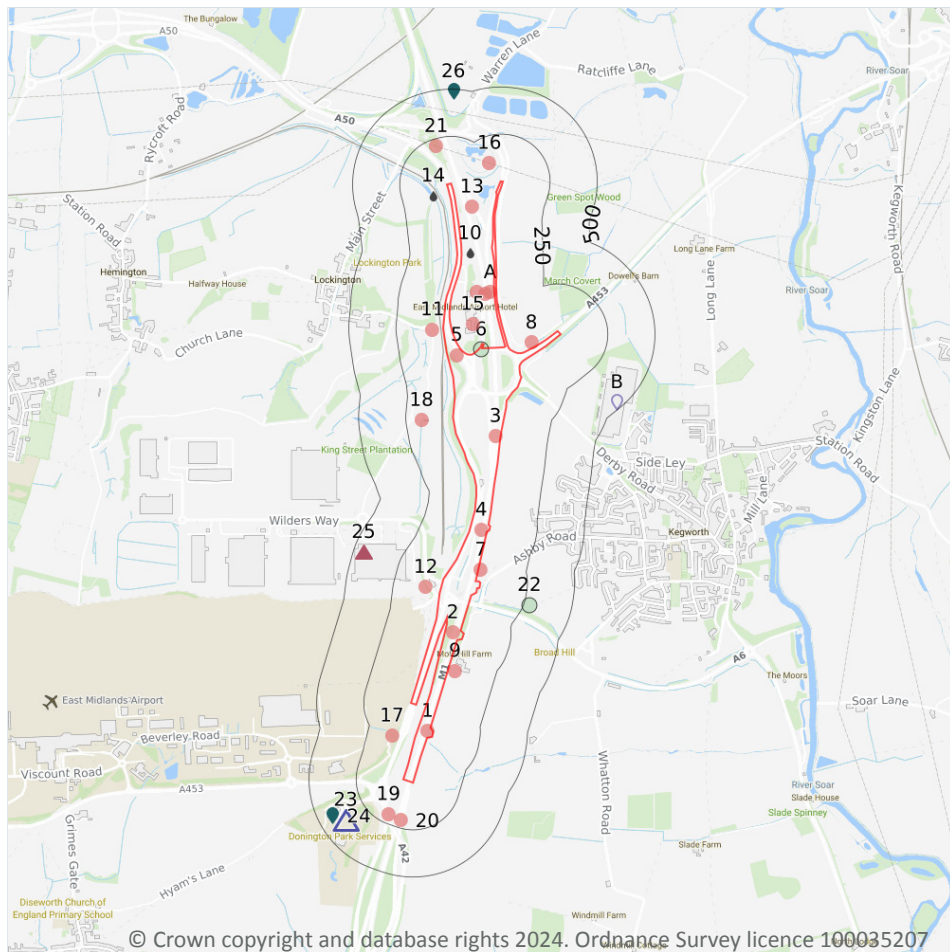


ID	Location	Site	Reference	Category	Sub-Category	Description
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230G H/A001	Using waste exemption	Both agricultural and non-agricultural waste	Incorporation of ash into soil
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230G H/A001	Using 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

<b>Records within 500m</b>	<b>1</b>
----------------------------	----------

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

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

High voltage underground electricity transmission cables.

*This data is sourced from National Grid.*

## 4.4 Gas pipelines

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

High pressure underground gas transmission pipelines.

*This data is sourced from National Grid.*

## 4.5 Sites determined as Contaminated Land

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

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

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

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

<b>Records within 500m</b>	<b>2</b>
----------------------------	----------

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	<b>Incident Date: 30/07/2001</b> <b>Incident Identification: 20190</b> <b>Pollutant: General Biodegradable Materials and Wastes</b> <b>Pollutant Description: Natural Organic Material</b>	<b>Water Impact: Category 4 (No Impact)</b> <b>Land Impact: Category 3 (Minor)</b> <b>Air Impact: Category 4 (No Impact)</b>
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

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

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

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

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.*

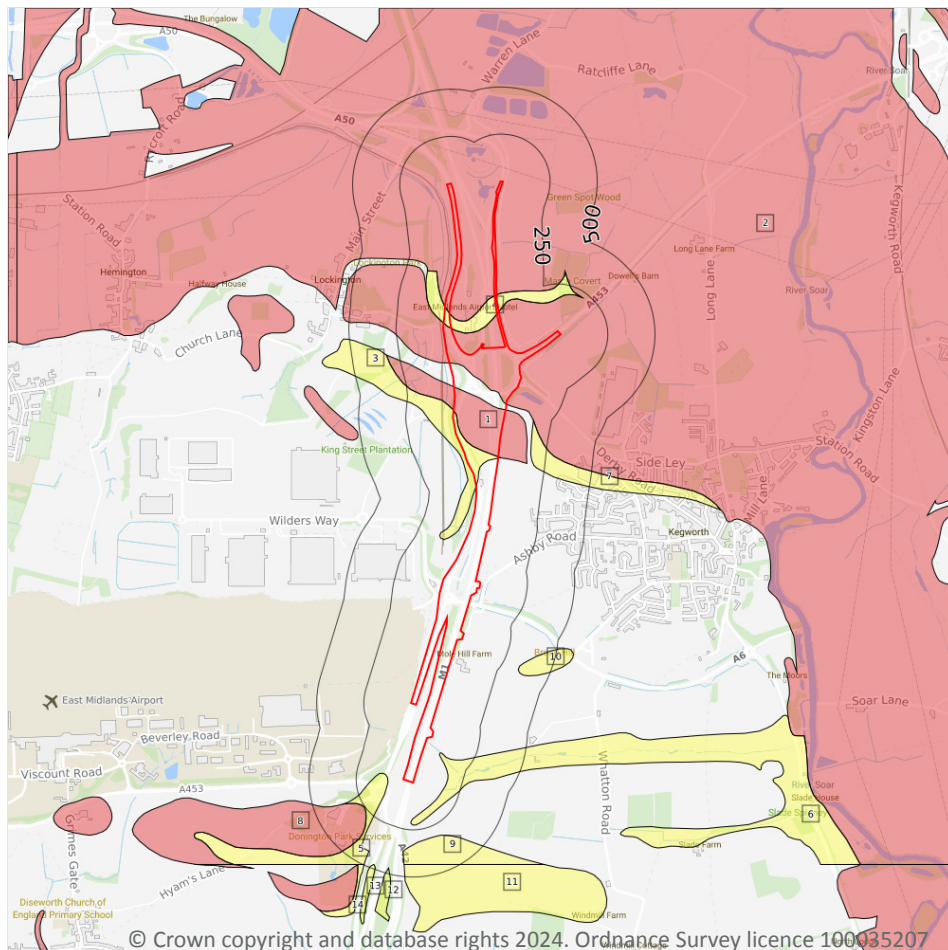
## 4.21 Pollution inventory radioactive waste

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

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

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

## 5 Hydrogeology - Superficial aquifer



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

### 5.1 Superficial aquifer

Records within 500m

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

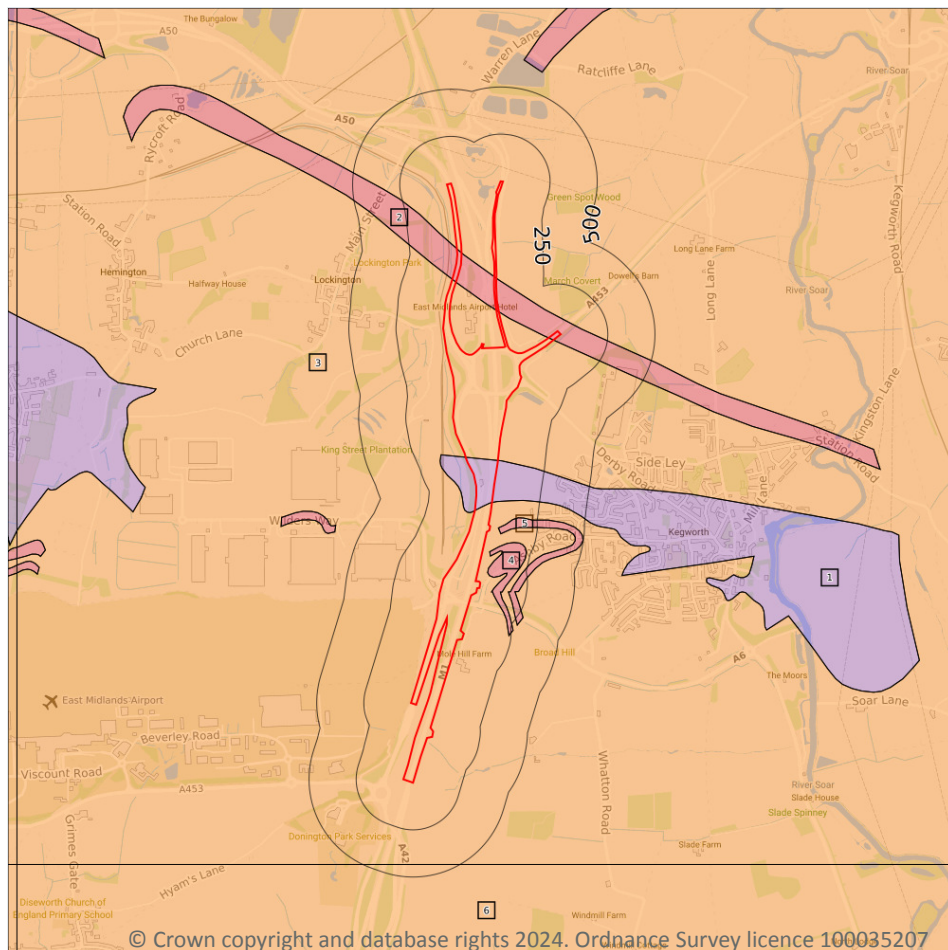


ID	Location	Designation	Description
3	On site	Secondary Undifferentiated	<b>Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics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



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

## 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



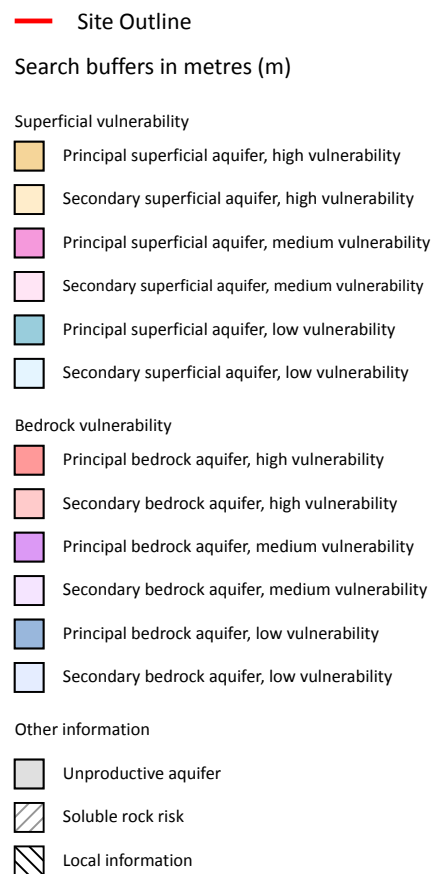
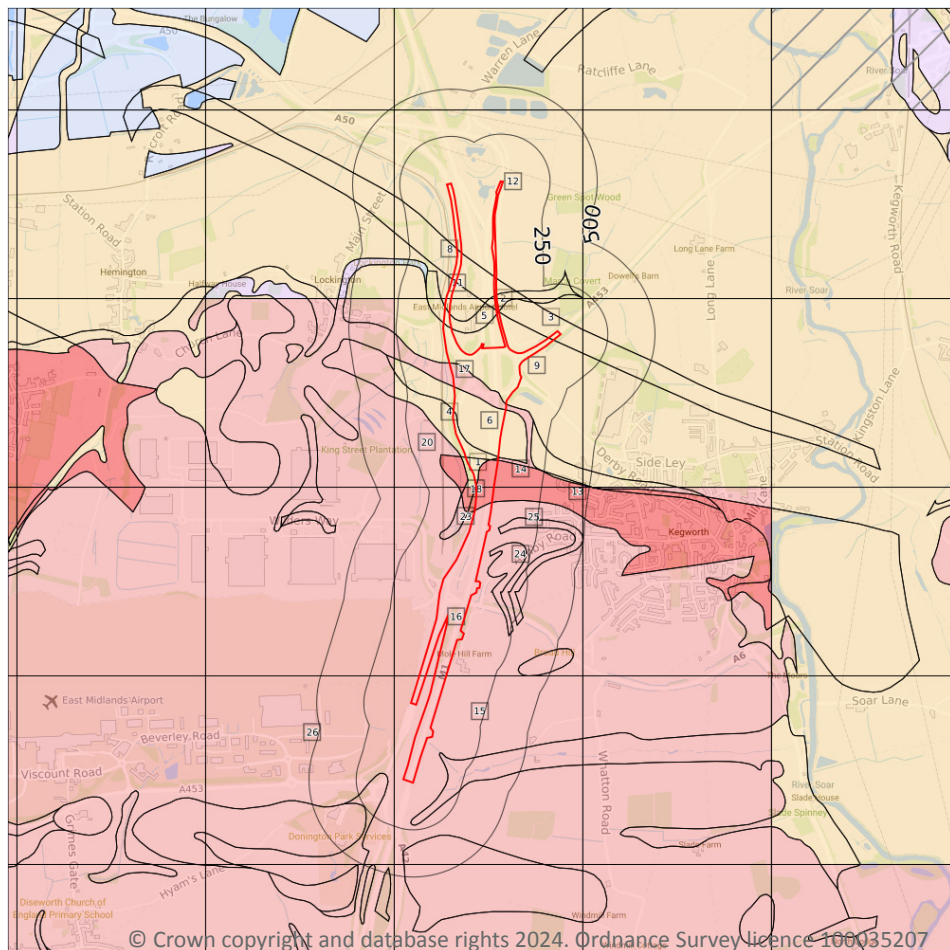
ID	Location	Designation	Description
3	On site	Secondary B	<b>Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers</b>
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 permeable horizons 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](mailto:enquiries@environment-agency.gov.uk) ↗.

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



Map of the area around East Midlands Airport, showing 16 numbered locations. The locations are marked with pink circles (1-10) and blue circles (11-16). A red line connects locations 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. A black line connects locations 11, 12, 13, 14, 15, and 16. The map shows roads, buildings, and green spaces.

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ID	Location	Details	
A	On site	<b>Status:</b> Active <b>Licence No:</b> MD/028/0059/004 <b>Details:</b> Dewatering <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY <b>Data Type:</b> Poly4 <b>Name:</b> Tarmac Trading Limited <b>Easting:</b> 447660 <b>Northing:</b> 329342	<b>Annual Volume (m³):</b> 1760000 <b>Max Daily Volume (m³):</b> 6400 <b>Original Application No:</b> NPS/NA/000749 <b>Original Start Date:</b> 24/10/2022 <b>Expiry Date:</b> 31/03/2037 <b>Issue No:</b> 1 <b>Version Start Date:</b> 24/10/2022 <b>Version End Date:</b> -
A	On site	<b>Status:</b> Active <b>Licence No:</b> MD/028/0059/007 <b>Details:</b> Dust Suppression <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY <b>Data Type:</b> Poly4 <b>Name:</b> Tarmac Trading Limited <b>Easting:</b> 447660 <b>Northing:</b> 329342	<b>Annual Volume (m³):</b> 13750 <b>Max Daily Volume (m³):</b> 50 <b>Original Application No:</b> NPS/NA/000748 <b>Original Start Date:</b> 24/10/2022 <b>Expiry Date:</b> 31/03/2037 <b>Issue No:</b> 1 <b>Version Start Date:</b> 24/10/2022 <b>Version End Date:</b> -
B	657m N	<b>Status:</b> Active <b>Licence No:</b> 03/28/59/0012/R01 <b>Details:</b> Mineral Washing <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY - BORROW PIT <b>Data Type:</b> Point <b>Name:</b> Tarmac Trading Limited <b>Easting:</b> 447727 <b>Northing:</b> 329260	<b>Annual Volume (m³):</b> 1036619 <b>Max Daily Volume (m³):</b> 6829.1 <b>Original Application No:</b> NPS/WR/038710 <b>Original Start Date:</b> 01/04/2018 <b>Expiry Date:</b> 31/03/2025 <b>Issue No:</b> 3 <b>Version Start Date:</b> 26/08/2022 <b>Version End Date:</b> -
B	657m N	<b>Status:</b> Active <b>Licence No:</b> 03/28/59/0012/R01 <b>Details:</b> General Use Relating To Secondary Category (Medium Loss) <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY - BORROW PIT <b>Data Type:</b> Point <b>Name:</b> Tarmac Trading Limited <b>Easting:</b> 447727 <b>Northing:</b> 329260	<b>Annual Volume (m³):</b> 1036619 <b>Max Daily Volume (m³):</b> 6829.1 <b>Original Application No:</b> NPS/WR/038710 <b>Original Start Date:</b> 01/04/2018 <b>Expiry Date:</b> 31/03/2025 <b>Issue No:</b> 3 <b>Version Start Date:</b> 26/08/2022 <b>Version End Date:</b> -
C	679m N	<b>Status:</b> Historical <b>Licence No:</b> 03/28/59/0012 <b>Details:</b> General Use Relating To Secondary Category (Medium Loss) <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY - BORROW PIT <b>Data Type:</b> Point <b>Name:</b> Tarmac Aggregates Limited <b>Easting:</b> 447600 <b>Northing:</b> 329300	<b>Annual Volume (m³):</b> 1878000 <b>Max Daily Volume (m³):</b> 6829 <b>Original Application No:</b> - <b>Original Start Date:</b> 02/01/2001 <b>Expiry Date:</b> 31/03/2018 <b>Issue No:</b> 5 <b>Version Start Date:</b> 26/10/2015 <b>Version End Date:</b> -



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 <sup>3</sup> ): 1878000 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1036619 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1036619 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1878000 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1878000 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 9999 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 9999 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 9999 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 9999 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 4773.3 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 4773.3 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 2273 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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

<b>Records within 2000m</b>	<b>12</b>
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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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 22730 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 14879.058 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 2273 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 14879.058 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 14879.058 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 16000 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 45801 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 22730 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 121500 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1250 Max Daily Volume (m <sup>3</sup> ): 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

<b>Records within 2000m</b>	<b>0</b>
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Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

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

## 5.9 Source Protection Zones

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

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

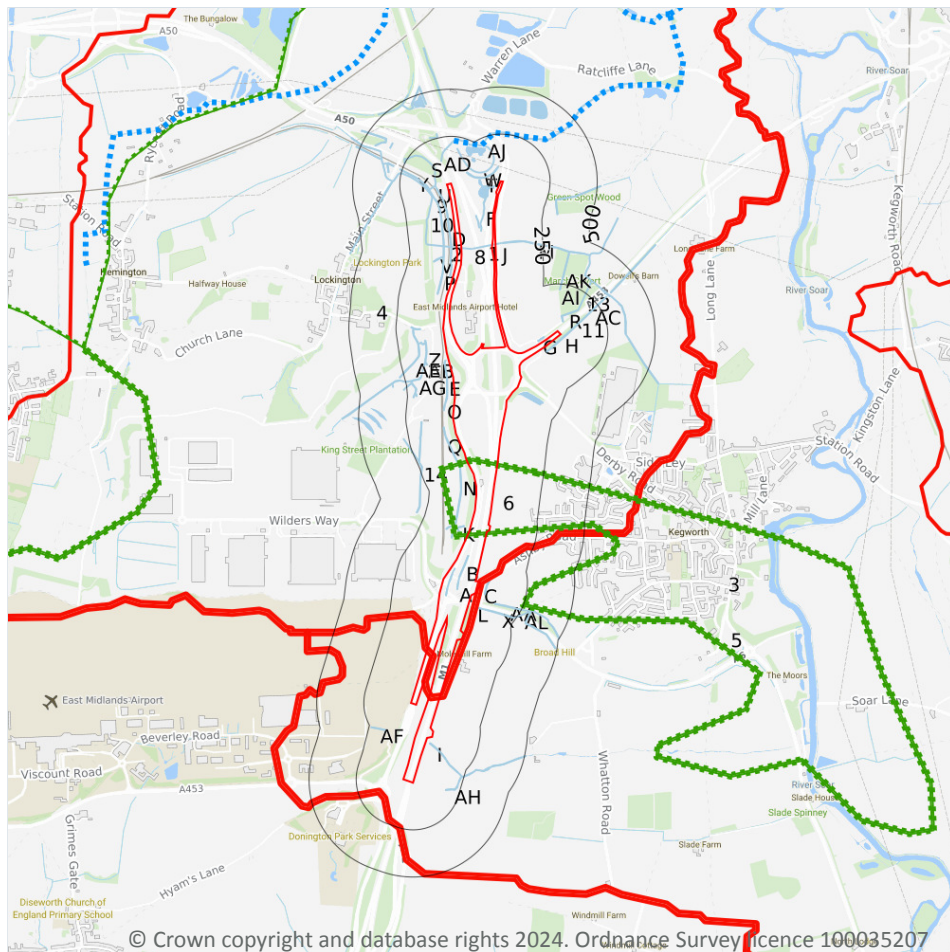
## 5.10 Source Protection Zones (confined aquifer)

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

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

## 6 Hydrology



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

### 6.1 Water Network (OS MasterMap)

Records within 250m

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

<b>Records within 250m</b>	<b>60</b>
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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

<b>Records on site</b>	<b>2</b>
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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

<b>Records identified</b>	<b>2</b>
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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)	<a href="#">GB104028047410 ↗</a>	Bad	Fail	Bad	2019
-	1286m NE	River	Soar from Long Whatton Brook to Trent	<a href="#">GB104028047212 ↗</a>	Moderate	Fail	Moderate	2019

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

## 6.5 WFD Groundwater bodies

<b>Records on site</b>	<b>2</b>
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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	<a href="#">GB40401G302800 ↗</a>	Poor	Poor	Good	2019
6	On site	Soar - Secondary Combined	<a href="#">GB40402G990600 ↗</a>	Good	Good	Good	2019

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





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

<b>Records within 250m</b>	<b>2</b>
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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

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

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

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

## 7.4 Areas Benefiting from Flood Defences

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

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

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



## 7.5 Flood Storage Areas

Records within 250m

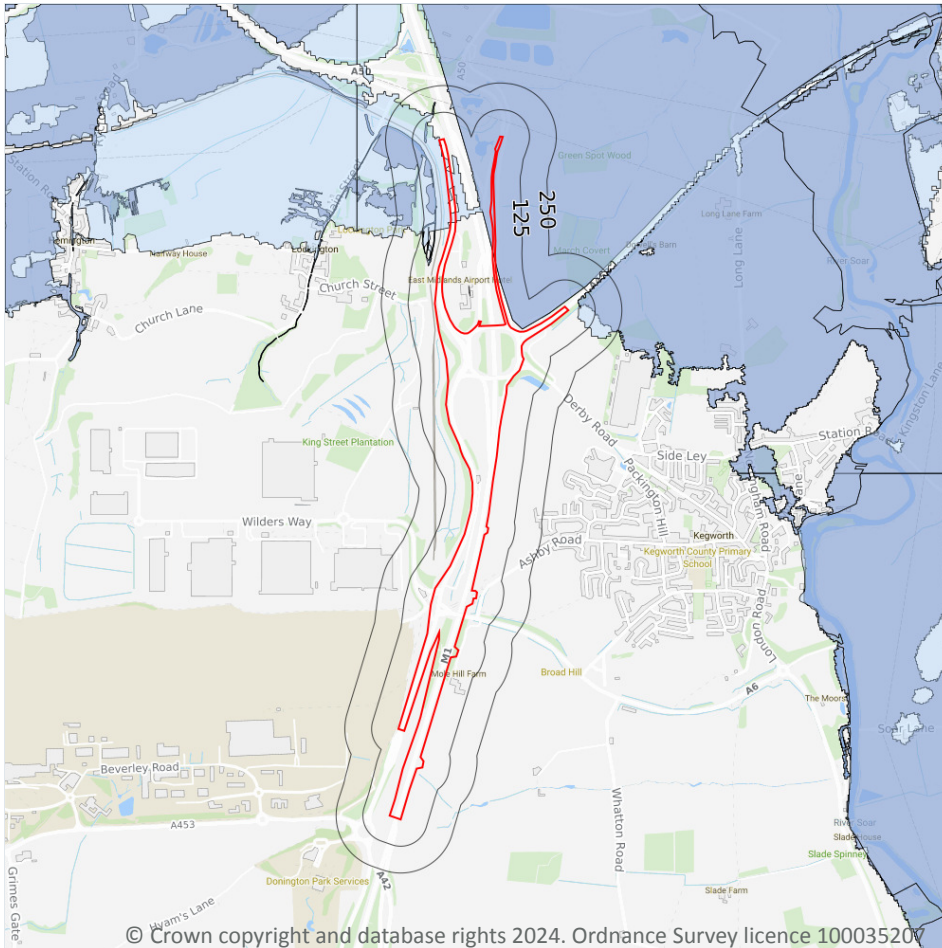
0

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

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



## River and coastal flooding - Flood Zones



- 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](#) >

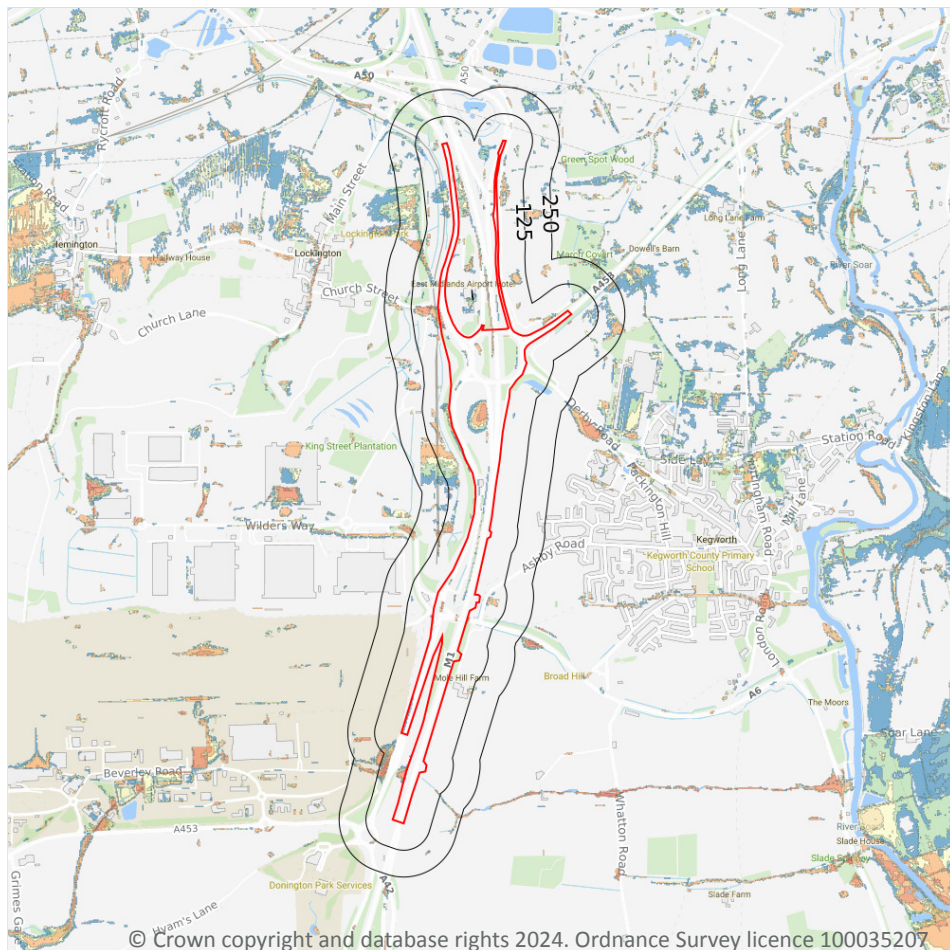
Location	Type
On site	Zone 3 - (Fluvial Models)

*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.

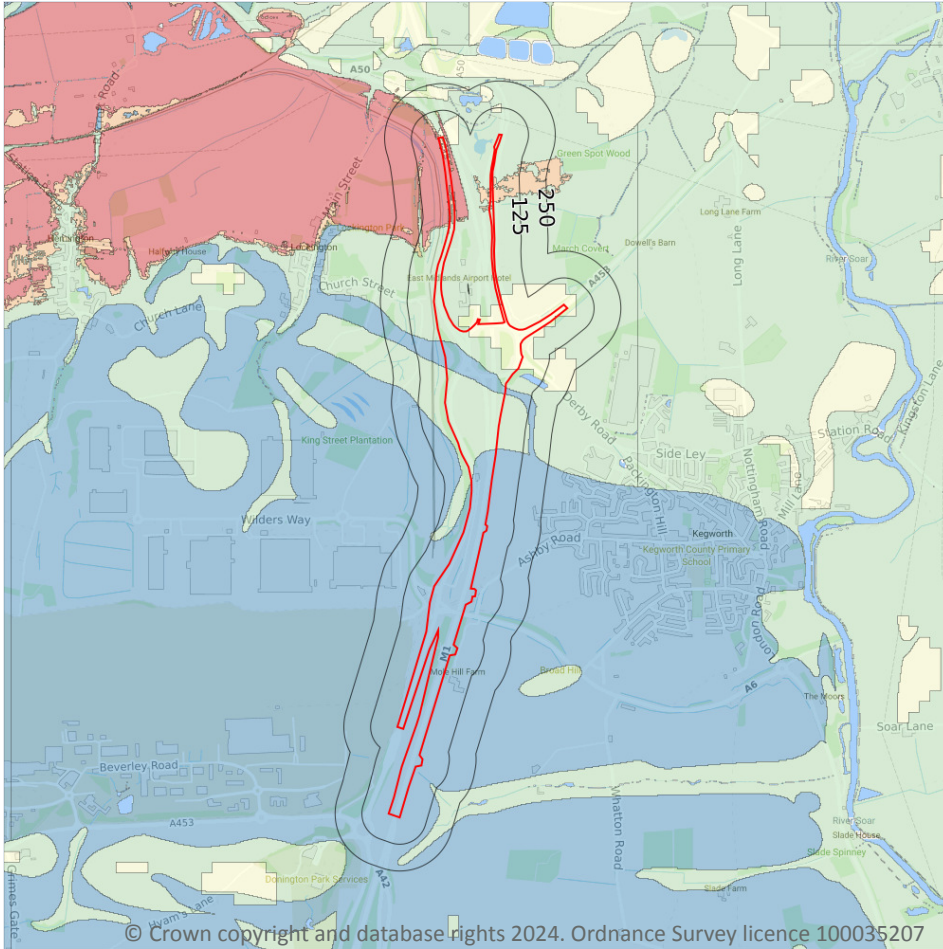
The table below shows the maximum flood depths for a range of return periods for the site.

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 Ambiantal 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

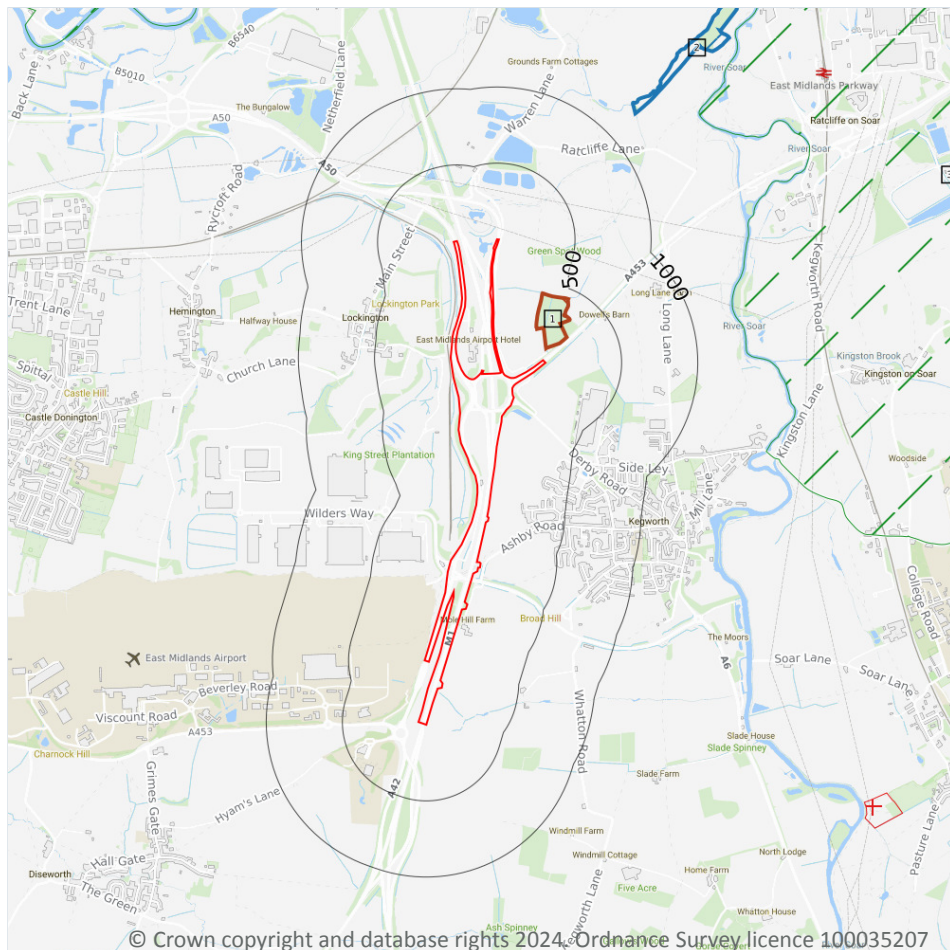
High

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 Ambiantal Risk Analytics.*

## 10 Environmental designations



- 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

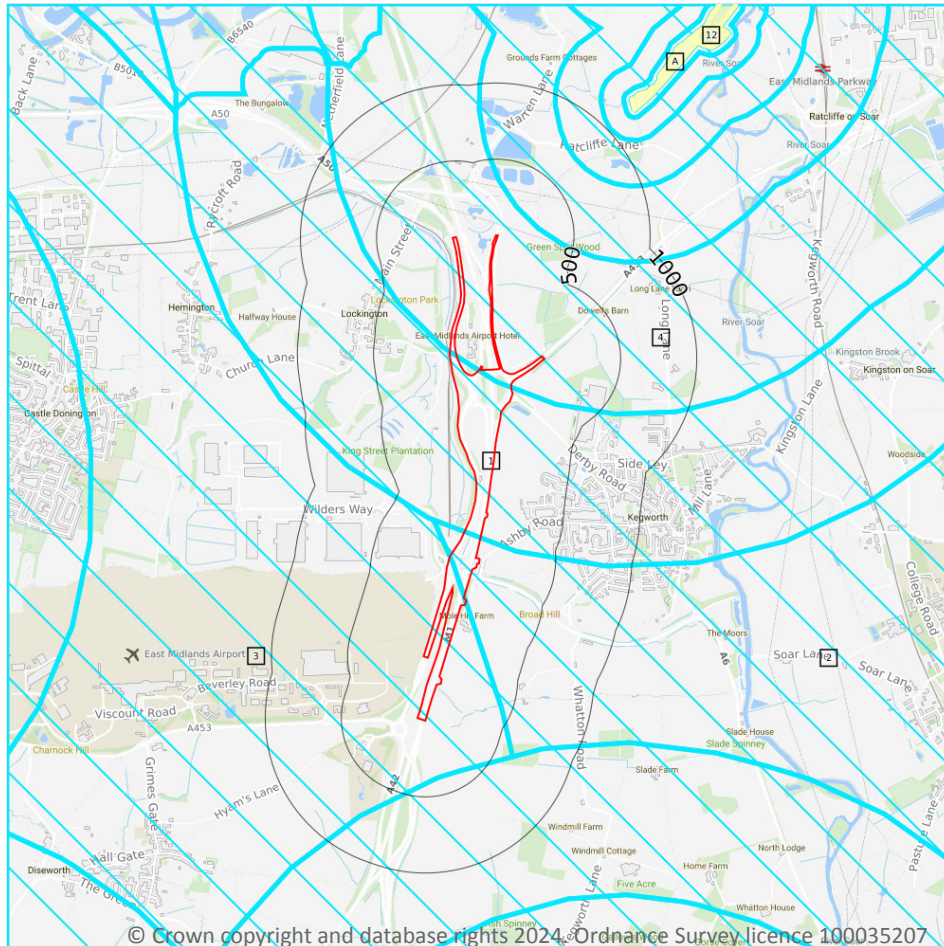
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

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



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

### 10.17 SSSI Impact Risk Zones

#### Records on site

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	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil &amp; gas exploration/extraction.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Discharges - Any discharge of water or liquid waste of more than 5m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream.</p>
2	On site	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Discharges - Any discharge of water or liquid waste of more than 20m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream.</p>
3	On site	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Minerals, Oil and Gas - Oil &amp; gas exploration/extraction.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Discharges - Any discharge of water or liquid waste of more than 20m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream.</p>
4	On site	<p>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.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil &amp; gas exploration/extraction.</p> <p>Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.</p> <p>Rural residential - Any residential development of 100 or more houses outside existing settlements/urban areas.</p> <p>Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 200m<sup>2</sup>, manure stores &gt; 250t).</p> <p>Combustion - General combustion processes &gt;20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p> <p>Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.</p> <p>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.</p> <p>Discharges - Any discharge of water or liquid waste of more than 5m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream.</p> <p>Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m<sup>2</sup> or more.</p>

*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:

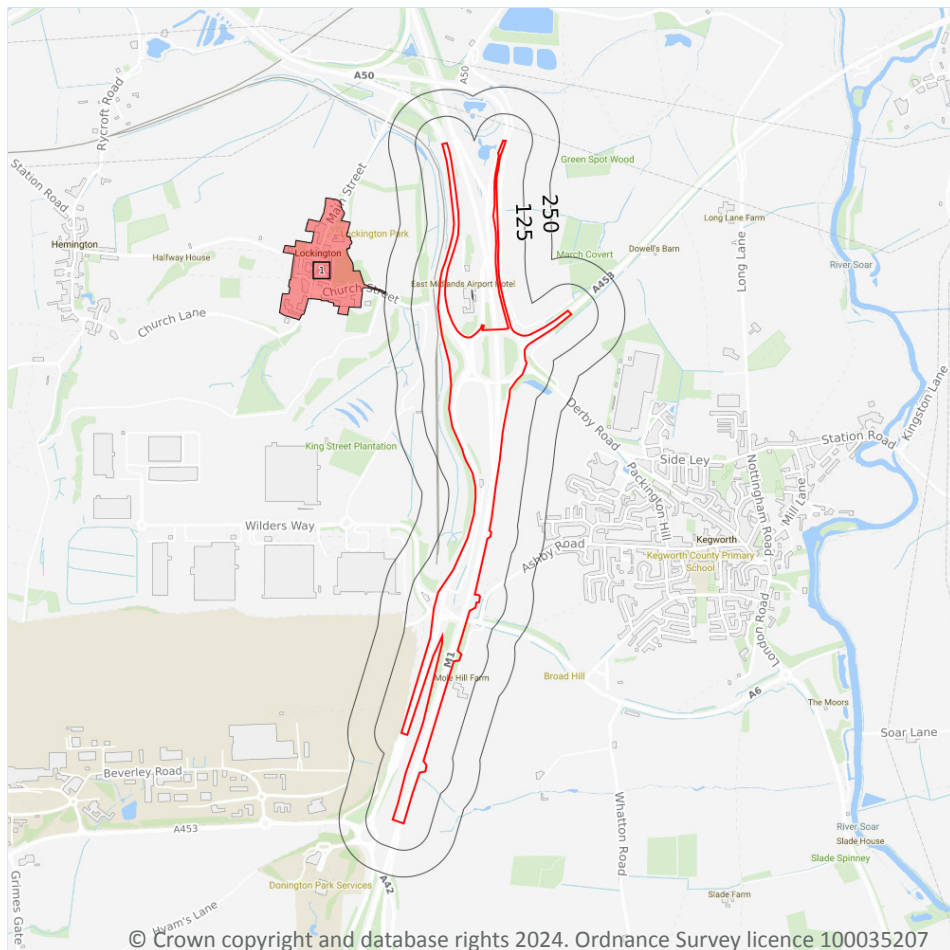
Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Unfavourable - Recovering	01/07/2014

*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

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

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.*

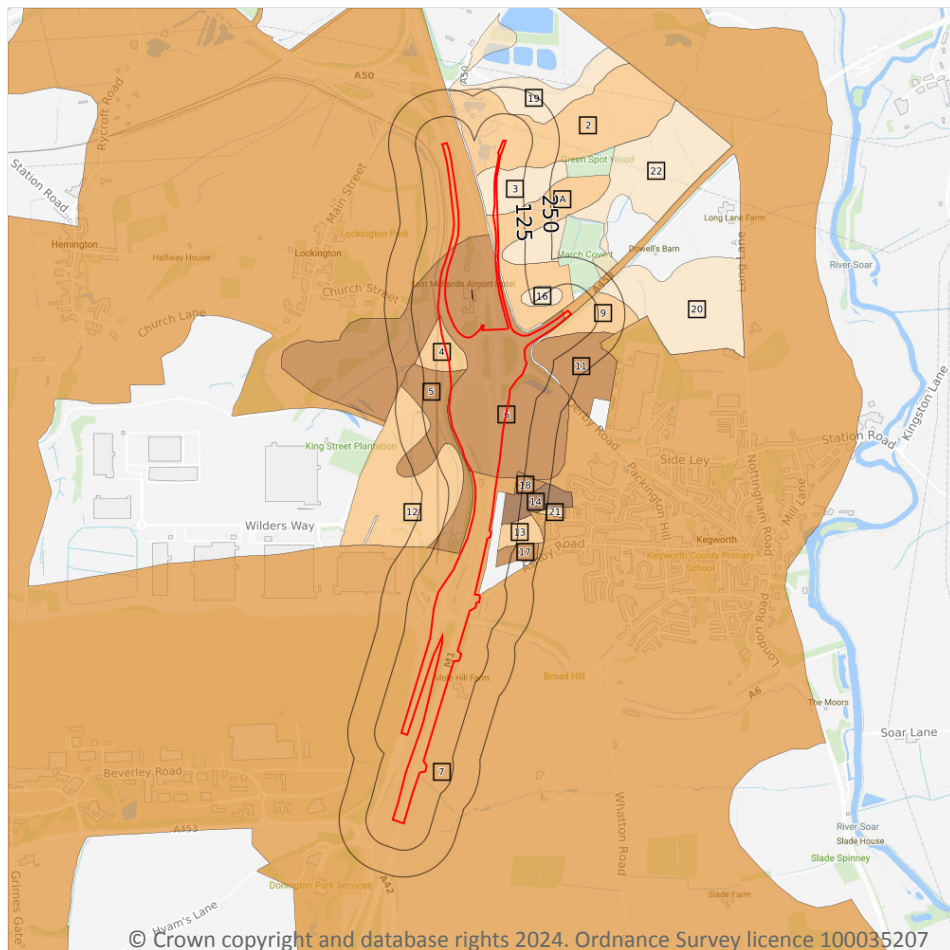
## 11.7 Registered Parks and Gardens

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

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

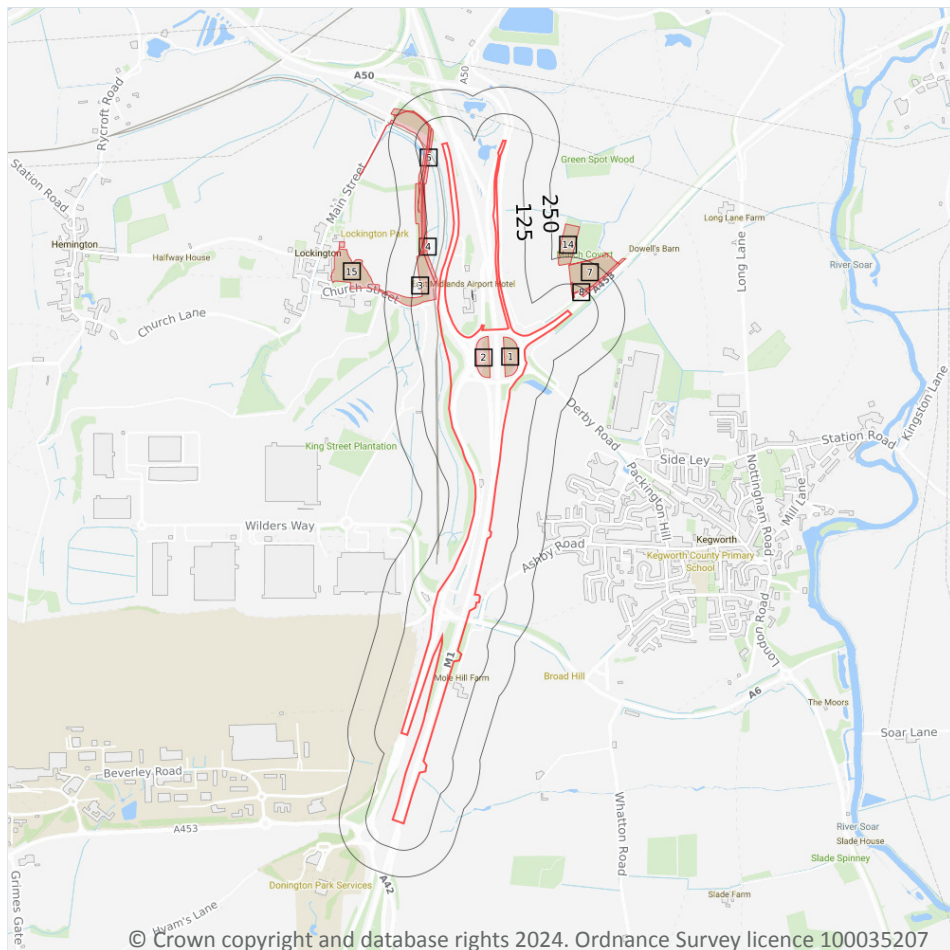
0

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

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

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

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

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

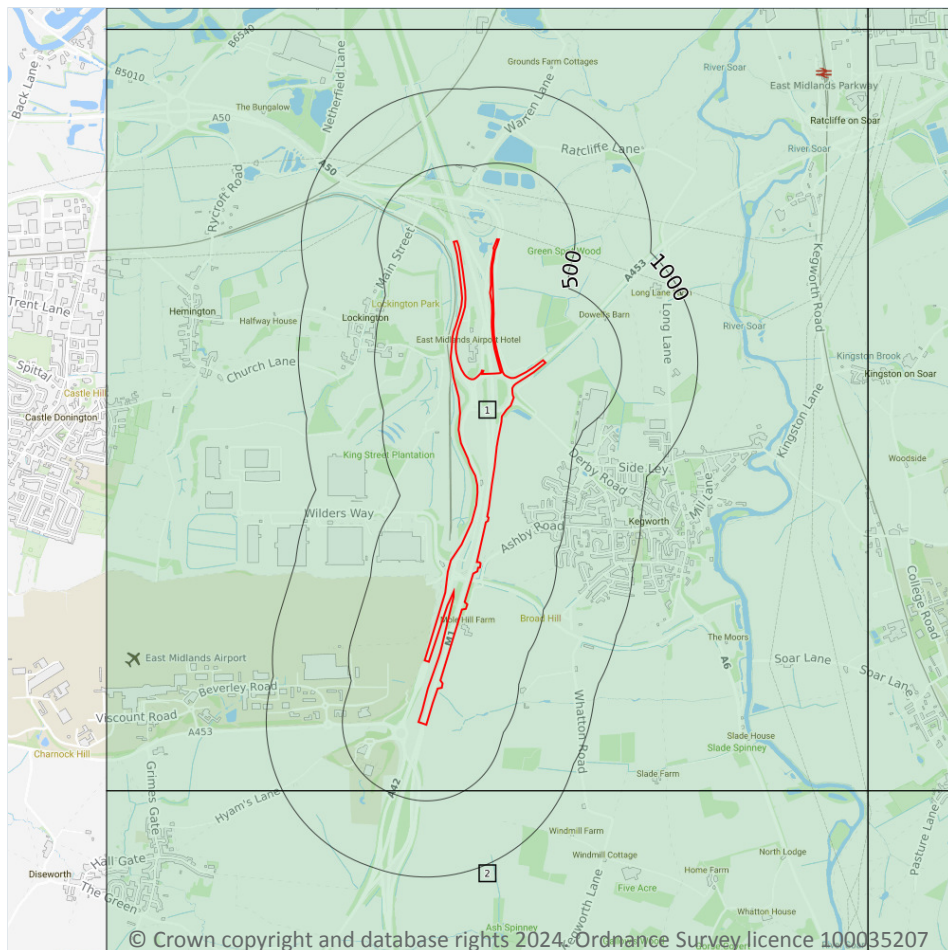
0

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.

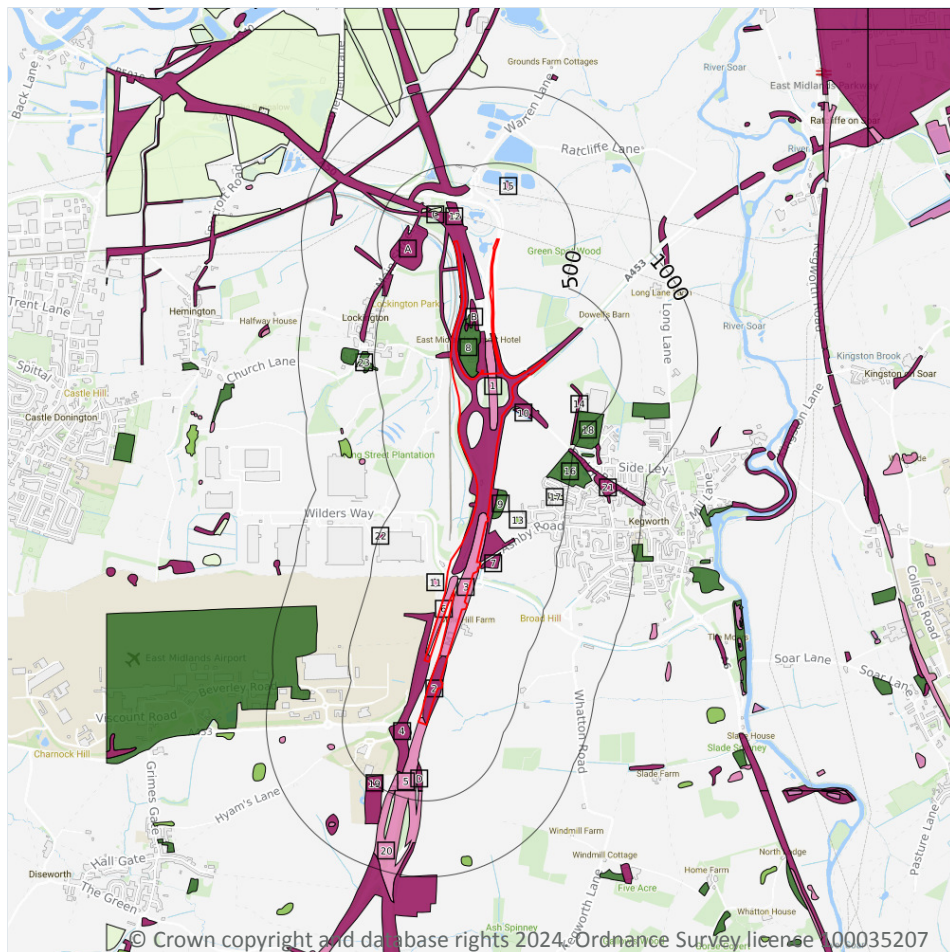
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 97](#) >

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



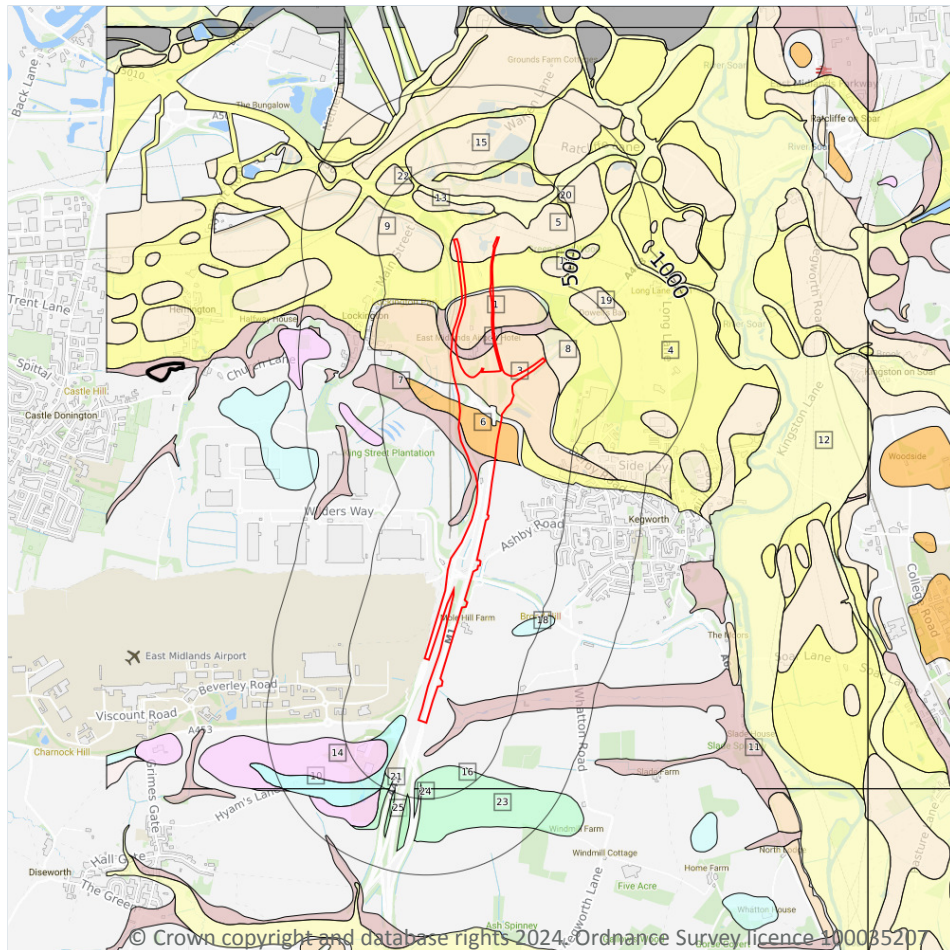
ID	Location	LEX Code	Description	Rock description
5	On site	WGR-VOID	Worked Ground (Undivided)	Void
6	On site	WGR-VOID	Worked Ground (Undivided)	Void
A	On site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	4m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	12m N	LSGR-UNKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
9	21m SE	LSGR-UNKNOWN	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-UNKNOWN	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-UNKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
17	376m E	WMGR-ARTDP	Infilled Ground	Artificial Deposit
18	382m NE	LSGR-UNKNOWN	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-UNKNOWN	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

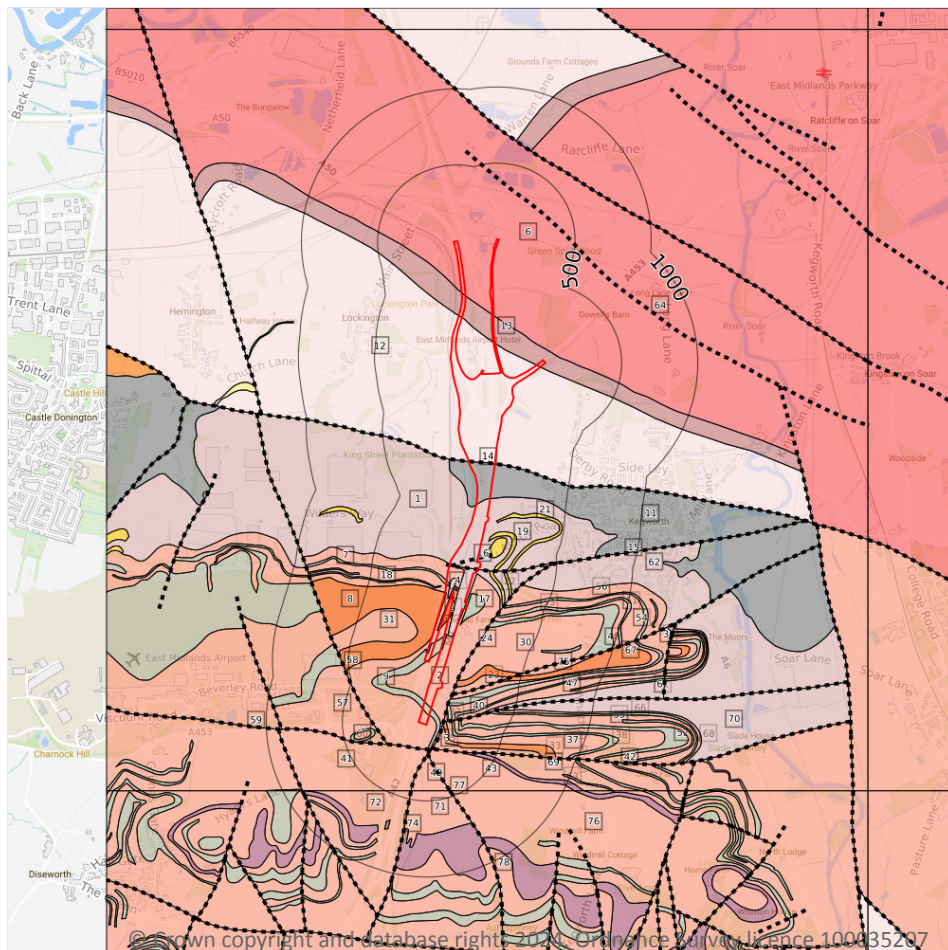
0

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



### 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)

<b>Records within 500m</b>	<b>16</b>
----------------------------	-----------

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
<b>14</b>	<b>On site</b>	<b>FAULT</b>	<b>Normal fault, inferred</b>
<b>15</b>	<b>On site</b>	<b>FAULT</b>	<b>Normal fault, inferred</b>
<b>16</b>	<b>On site</b>	<b>FAULT</b>	<b>Normal fault, inferred</b>
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

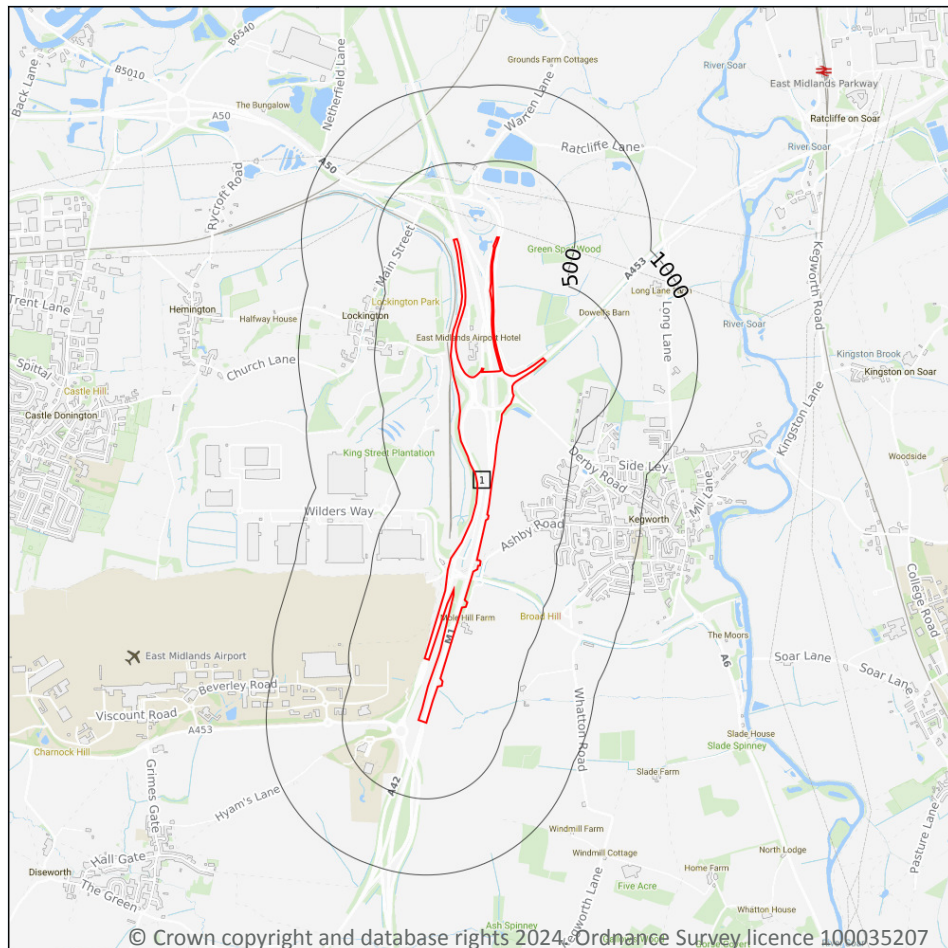


ID	Location	Category	Description
74	448m S	FAULT	Normal fault, inferred
77	460m S	FAULT	Normal fault, inferred
78	470m S	FAULT	Normal fault, inferred

*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

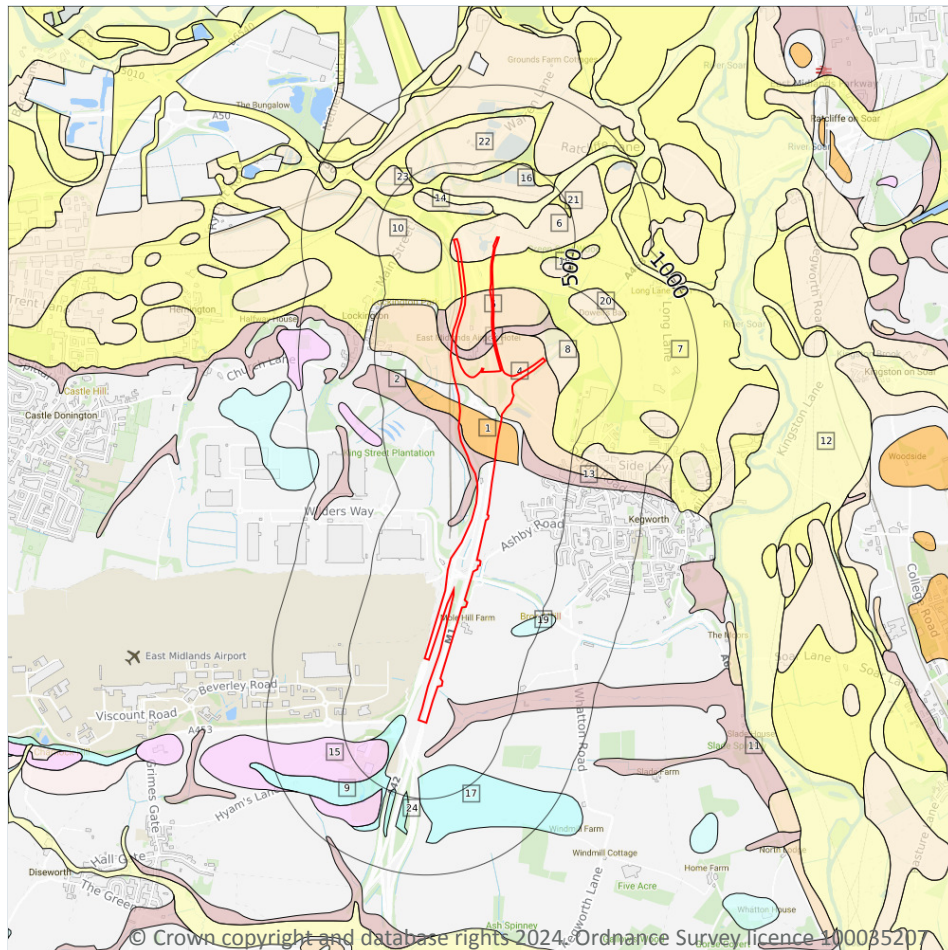
0

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

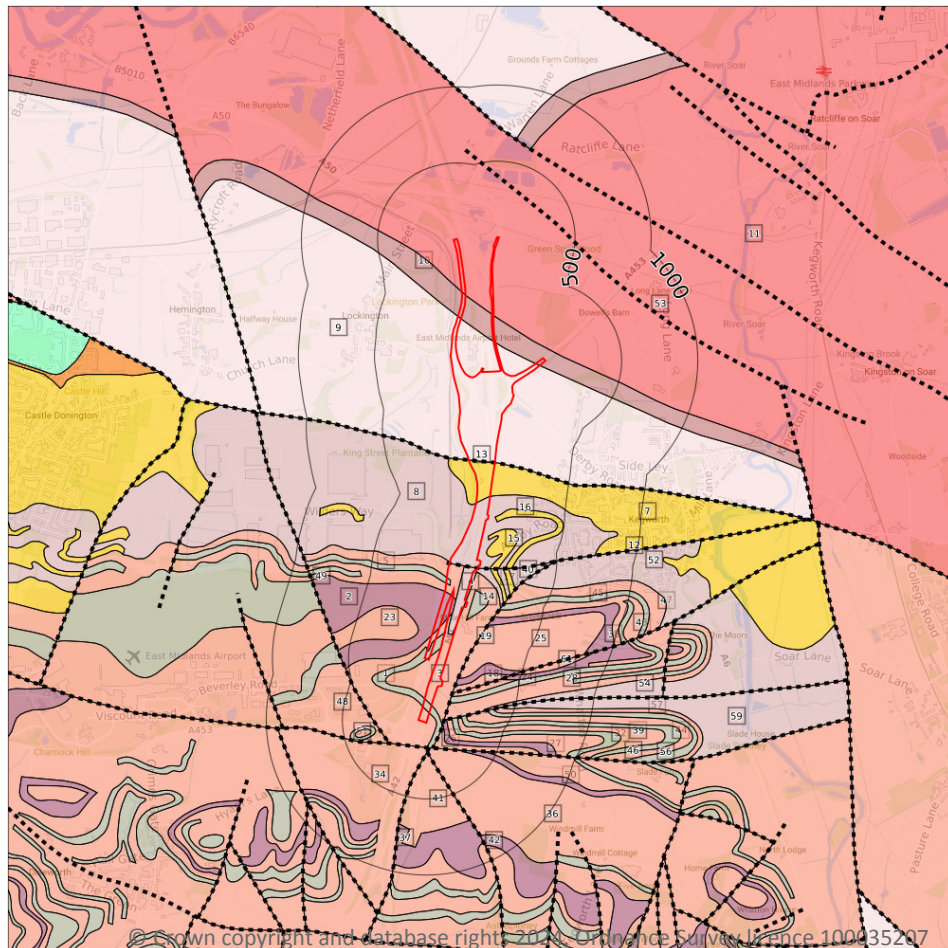
0

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	GUNTORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
2	On site	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
3	On site	GUN-MDST	GUNTORPE 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

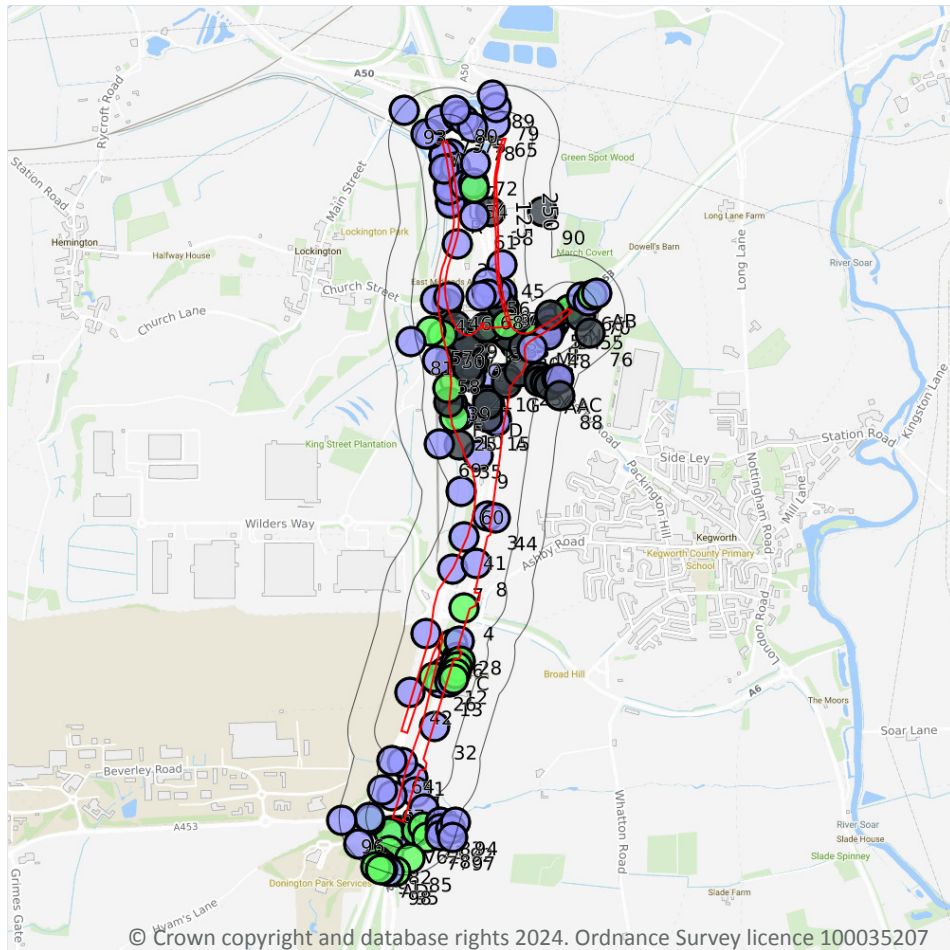


ID	Location	Category	Description
19	82m S	FAULT	Fault, inferred
21	85m S	FAULT	Fault, inferred
29	107m S	FAULT	Fault, inferred
35	162m S	FAULT	Fault, inferred
37	167m S	FAULT	Fault, inferred
42	193m S	FAULT	Fault, inferred
49	246m S	FAULT	Fault, inferred
53	309m N	FAULT	Fault, inferred

*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	<a href="#">218144</a> ↗
2	On site	447321 327682	A564 DERBY S BYPASS/SPUR BH139	24.45	N	<a href="#">218279</a> ↗
3	On site	447491 326858	A42 CASTLE DONINGTON 749	4.0	N	<a href="#">218211</a> ↗



ID	Location	Grid reference	Name	Length	Confidential	Web link
4	On site	447380 326430	M1 EXTENSIONS BH309 KEGWORTH	12.19	N	<a href="#">218147 ↗</a>
5	On site	447339 327496	A564 DERBY S BYPASS/SPUR BH140	30.2	N	<a href="#">218280 ↗</a>
6	On site	447330 326260	M1 EXTENSIONS BH308 KEGWORTH	15.24	N	<a href="#">218146 ↗</a>
7	On site	447330 326610	A42 CASTLE DONINGTON BH279	4.0	N	<a href="#">218251 ↗</a>
8	On site	447440 326640	M1 EXTENSIONS BH310 KEGWORTH	7.62	N	<a href="#">218148 ↗</a>
9	On site	447446 327143	A564 DERBY S BYPASS/SPUR TP234	3.0	N	<a href="#">218291 ↗</a>
10	On site	447365 327327	A564 DERBY S BYPASS/SPUR TP233	3.0	N	<a href="#">218290 ↗</a>
11	On site	447530 327500	M1 EXTENSIONS BH312 KEGWORTH	9.14	N	<a href="#">218150 ↗</a>
12	On site	447292 326133	A42 CASTLE DONINGTON 748	5.0	N	<a href="#">218210 ↗</a>
13	On site	447270 326080	M1 EXTENSIONS BH307 KEGWORTH	9.14	N	<a href="#">218145 ↗</a>
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	<a href="#">18189587 ↗</a>
25	On site	447337 327319	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1085	11.17	N	<a href="#">18913750 ↗</a>
26	On site	447240 326105	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1079	15.5	N	<a href="#">18913771 ↗</a>
27	On site	447556 327905	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D120L	3.2	N	<a href="#">19511278 ↗</a>
28	On site	447358 326274	M1 J23a to J25 Ground Investigation CPT01	6.45	N	<a href="#">21246666 ↗</a>
A	On site	447530 327315	A42 CASTLE DONINGTON BH751	7.0	N	<a href="#">218213 ↗</a>



ID	Location	Grid reference	Name	Length	Confidential	Web link
A	On site	447530 327300	M1 EXTENSIONS BH311 KEGWORTH	6.09	N	<a href="#">218149 ↗</a>
B	On site	447773 327733	A453 CLIFTON TO M1 4	12.6	N	<a href="#">218319 ↗</a>
B	On site	447738 327733	A453 CLIFTON TO M1 2	16.4	N	<a href="#">218317 ↗</a>
B	On site	447756 327746	A453 CLIFTON TO M1 108	14.0	N	<a href="#">218375 ↗</a>
C	On site	447349 326201	A42 CASTLE DONINGTON BH737R	8.0	N	<a href="#">218206 ↗</a>
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	<a href="#">18127251</a> ↗
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	<a href="#">218278</a> ↗
Q	On site	447320 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP1A	1.2	N	<a href="#">18127234</a> ↗
L	1m NE	447780 327767	A453 CLIFTON TO M1 TP1	1.0	N	<a href="#">218301</a> ↗
31	2m N	447510 327740	M1 EXTENSIONS BH313 KEGWORTH	12.19	N	<a href="#">218151</a> ↗
Q	2m N	447320 328550	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP1/WS1	3.6	N	<a href="#">18127227</a> ↗
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	<a href="#">218160</a> ↗
N	3m NE	447874 327824	A453 CLIFTON TO M1 5	15.0	N	<a href="#">218320</a> ↗
32	4m S	447243 325878	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1078	3.02	N	<a href="#">18913749</a> ↗
33	4m N	447582 327754	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1086	12.94	N	<a href="#">18913751</a> ↗
P	5m N	447350 328370	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP8	1.2	N	<a href="#">18127722</a> ↗
R	5m N	447320 328330	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP4/WS4	3.8	N	<a href="#">18127253</a> ↗
R	6m N	447320 328320	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT01	1.2	N	<a href="#">18127864</a> ↗
S	6m N	447290 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP6	5.0	N	<a href="#">18127259</a> ↗
S	6m N	447290 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT04	1.2	N	<a href="#">18127866</a> ↗



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	<a href="#">18127865</a> ↗
U	7m N	447310 328400	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP5/WS5	5.0	N	<a href="#">18127257</a> ↗
34	8m N	447340 328460	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP2/WS2	2.9	N	<a href="#">18127235</a> ↗
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	<a href="#">18127724</a> ↗
36	11m N	447351 328129	A564 DERBY S BYPASS/SPUR TP231	3.0	N	<a href="#">218288</a> ↗
C	11m S	447322 326116	A42 CASTLE DONINGTON BH731	8.0	N	<a href="#">218200</a> ↗
C	11m S	447331 326144	A42 CASTLE DONINGTON BH733	8.0	N	<a href="#">218202</a> ↗
C	11m S	447340 326173	A42 CASTLE DONINGTON BH735R	8.0	N	<a href="#">218204</a> ↗
C	12m S	447314 326087	A42 CASTLE DONINGTON BH729R	8.0	N	<a href="#">218198</a> ↗
37	12m N	447340 328490	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP7	1.2	N	<a href="#">18127721</a> ↗
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	<a href="#">218281</a> ↗
40	14m S	447155 325573	A42 CASTLE DONINGTON 747	7.0	N	<a href="#">218209</a> ↗
C	14m S	447362 326181	A42 CASTLE DONINGTON BH736	14.0	N	<a href="#">218205</a> ↗
41	14m S	447380 326760	A42 CASTLE DONINGTON BH280	6.0	N	<a href="#">218252</a> ↗
42	15m S	447129 326038	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1080	1.2	N	<a href="#">18913778</a> ↗
43	15m N	447247 327868	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1089	4.0	N	<a href="#">18913784</a> ↗
44	16m SE	447525 326851	A42 CASTLE DONINGTON BH750	7.0	N	<a href="#">218212</a> ↗
45	16m N	447558 328033	A42 CASTLE DONINGTON BH752	7.05	N	<a href="#">218214</a> ↗
46	17m N	447312 327881	A564 DERBY S BYPASS/SPUR TP232	3.0	N	<a href="#">218289</a> ↗
47	17m N	447531 327899	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D1B	3.0	N	<a href="#">19513368</a> ↗



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



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



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	<a href="#">18189548 ↗</a>
74	126m N	447352 328725	A564 DERBY SOUTH'BYPASS TP5674	2.0	N	<a href="#">218566 ↗</a>
75	128m N	447380 328710	M1 EXTENSION BH316 LOCKINGTON	6.4	N	<a href="#">218159 ↗</a>
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	<a href="#">218245 ↗</a>
78	137m N	447421 328675	A564 DERBY SOUTH'BYPASS TP5665	3.0	N	<a href="#">218564 ↗</a>
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	<a href="#">218161 ↗</a>
79	150m N	447533 328768	A564 DERBY SOUTH'BYPASS TP5663	3.0	N	<a href="#">218563 ↗</a>
80	150m N	447340 328755	A564 DERBY SOUTH'BYPASS BH5666	10.0	N	<a href="#">218535 ↗</a>
81	151m N	447133 327673	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1087	3.5	N	<a href="#">18913783 ↗</a>
82	153m S	447031 325296	A42 CASTLE DONINGTON BH728R	20.0	N	<a href="#">218197 ↗</a>
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	<a href="#">218247 ↗</a>
AC	170m NE	447825 327502	SOAR VALLEY SAND AND GRAVEL	7.5	N	<a href="#">218262 ↗</a>
84	173m S	447270 325400	A42 CASTLE DONINGTON TP444	3.0	N	<a href="#">218246 ↗</a>
85	175m S	447127 325261	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1074	15.0	N	<a href="#">18913769 ↗</a>
86	182m S	447270 325370	A42 CASTLE DONINGTON TP446	4.0	N	<a href="#">218248 ↗</a>
87	200m S	446890 325330	A42 CASTLE DONINGTON BH275	5.0	N	<a href="#">218221 ↗</a>
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	<a href="#">218533 ↗</a>
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	<a href="#">218231 ↗</a>



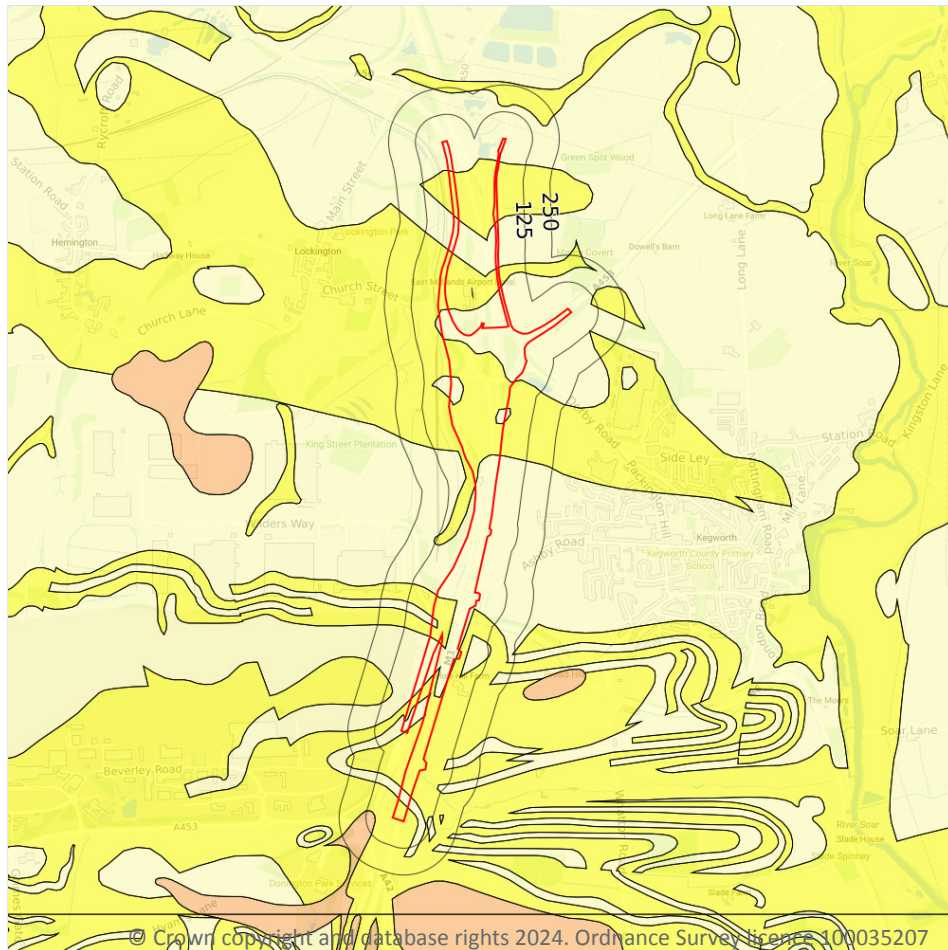


ID	Location	Grid reference	Name	Length	Confidential	Web link
92	221m S	447320 325400	A42 CASTLE DONINGTON TP447	3.0	N	<a href="#">218249 ↗</a>
AD	225m S	447000 325230	A42 CASTLE DONINGTON BH272	25.0	N	<a href="#">218229 ↗</a>
93	231m N	447101 328752	A564 DERBY S BYPASS/SPUR TP229	2.0	N	<a href="#">218286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

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



## 17 Natural ground subsidence - Shrink swell clays



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

### 17.1 Shrink swell clays

#### Records within 50m

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 >](#)

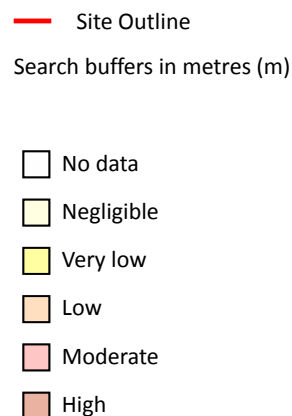
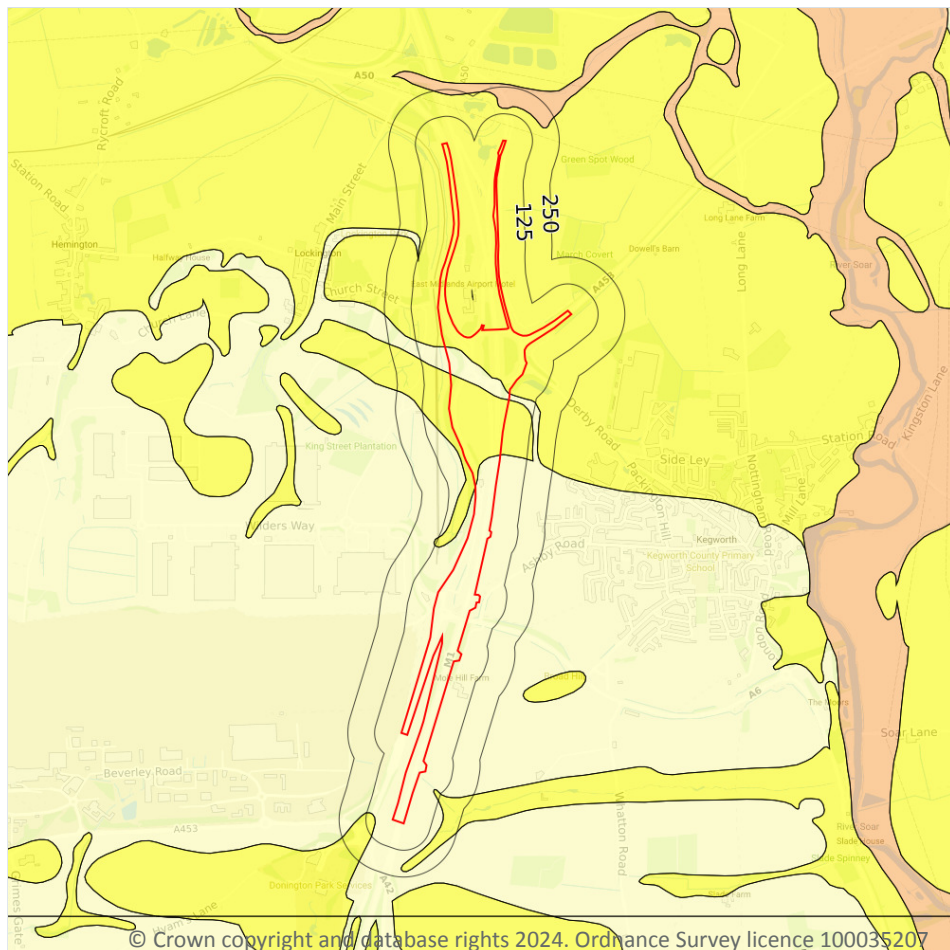
Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.
On site	Very low	Ground conditions predominantly low plasticity.
28m S	Negligible	Ground conditions predominantly non-plastic.



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



## Natural ground subsidence - Running sands



### 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.

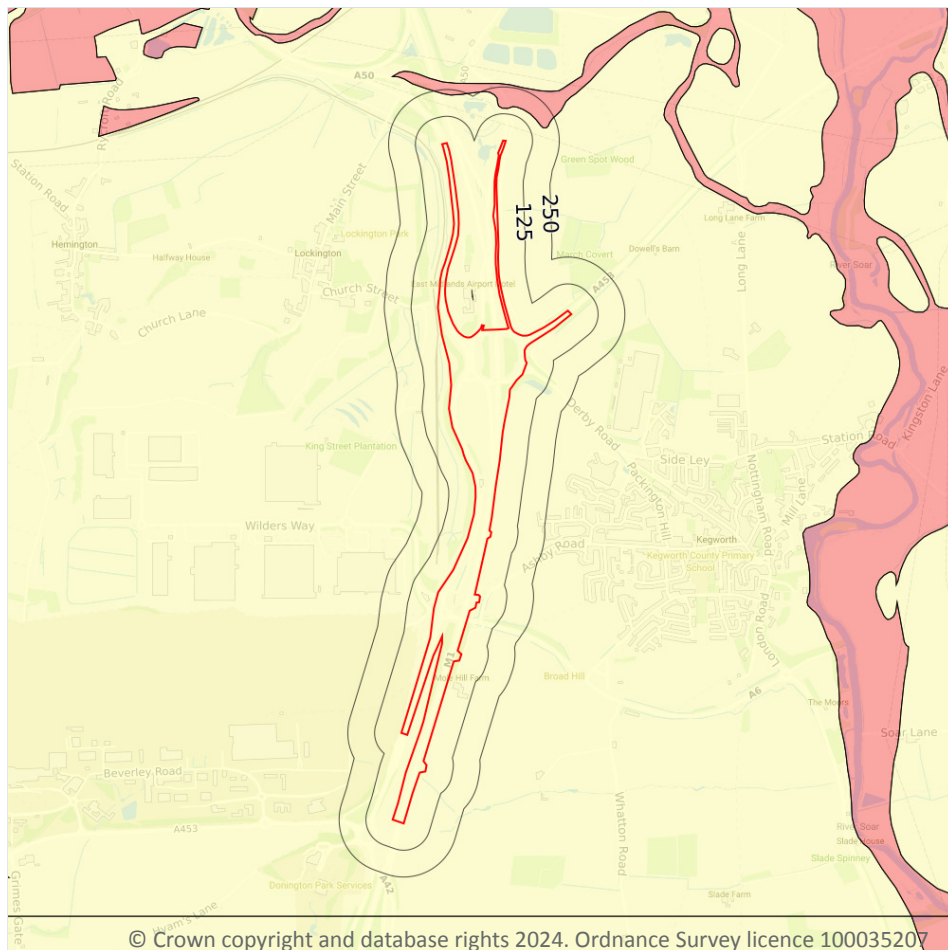
Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

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





## Natural ground subsidence - Compressible deposits



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

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### 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.

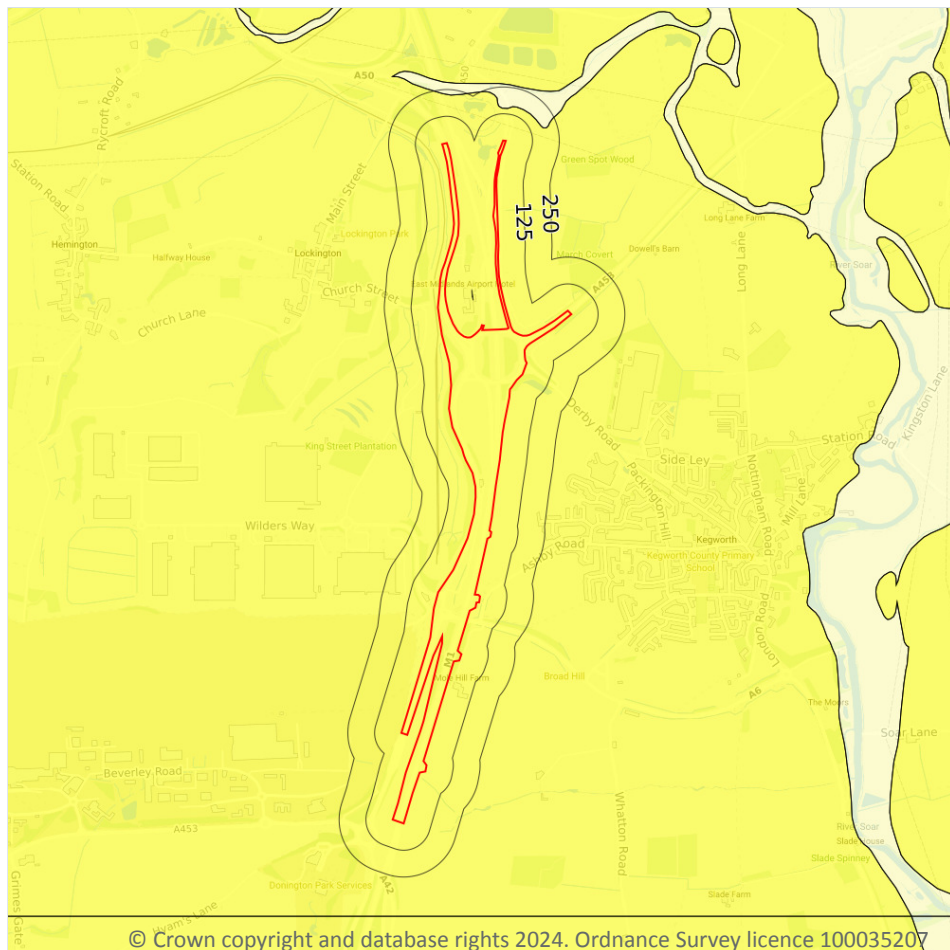
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 131](#) >

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.

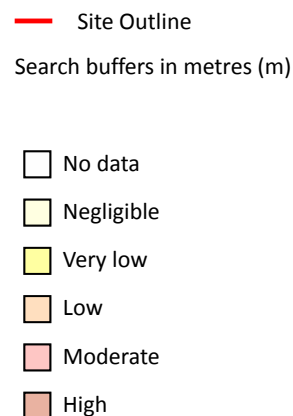
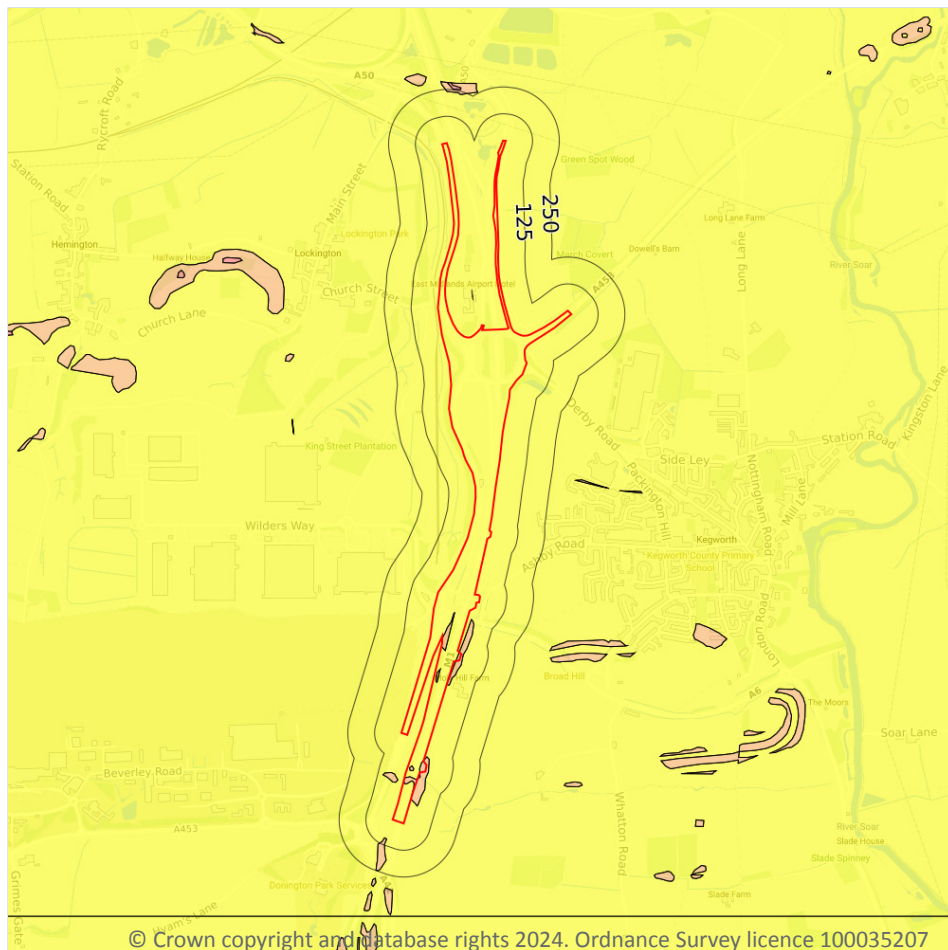
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 132 >](#)

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



### 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.

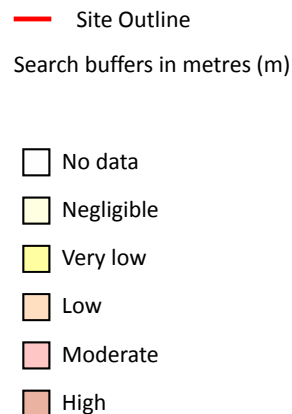
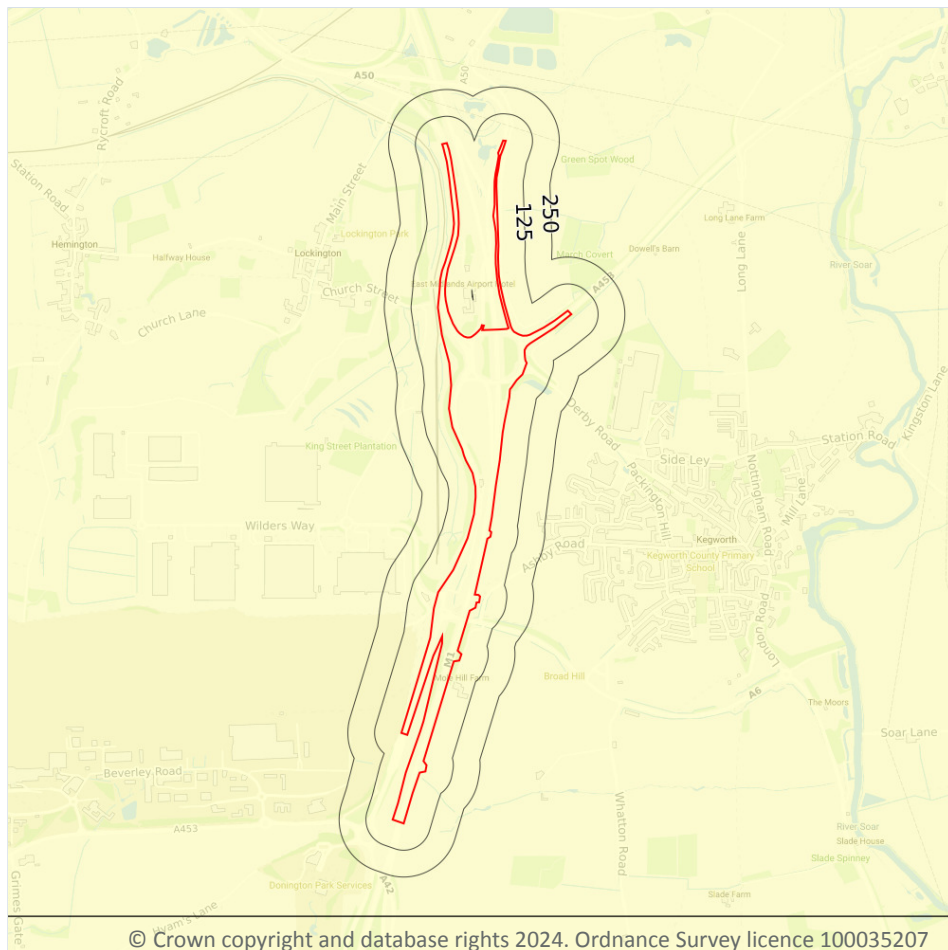


Location	Hazard rating	Details
On site	Low	<b>Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.</b>
28m S	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically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

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



## Natural ground subsidence - Ground dissolution of soluble rocks



### 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.

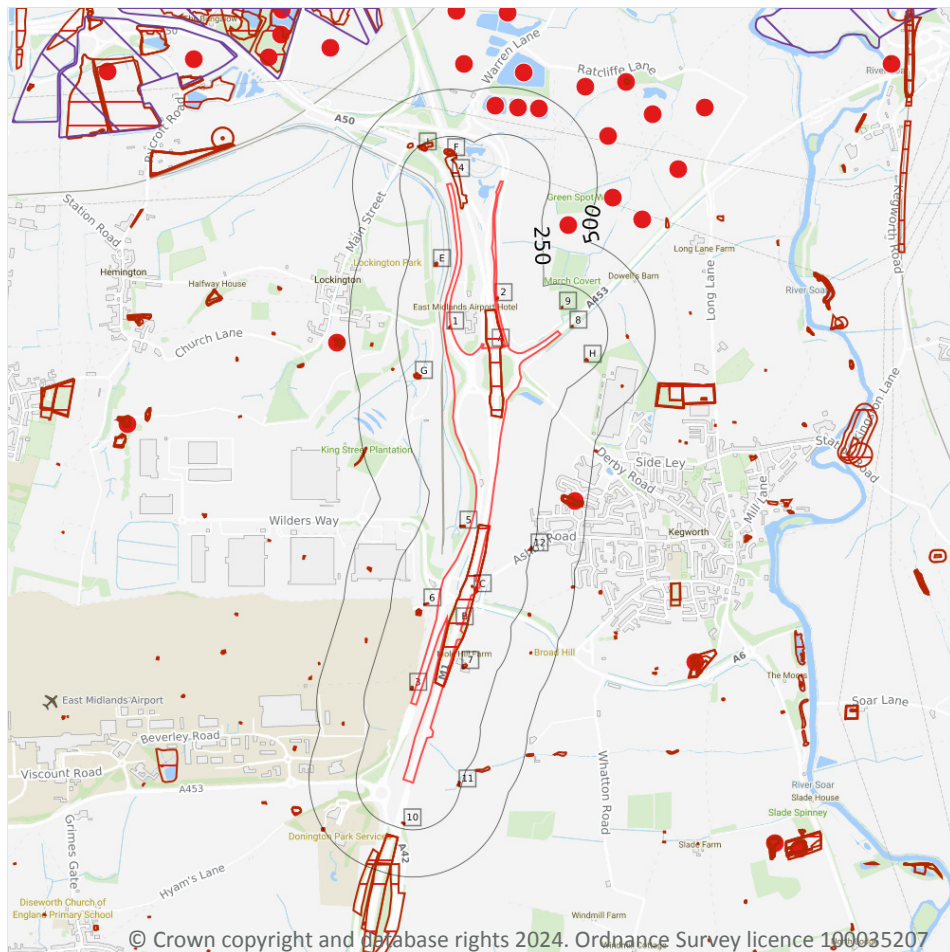




*This data is sourced from the British Geological Survey.*



## 18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
  - Sporadic underground mining of restricted extent possible
  - Localised small scale underground mining possible
  - Small scale mining possible
  - Underground mining known or likely within or in close proximity
  - Underground mining known within or in very close proximity

### 18.1 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.*







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<sup>2</sup>. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km<sup>2</sup>; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 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
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<sup>2</sup>).

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



## 21.3 BGS Measured Urban Soil Chemistry

Records within 50m

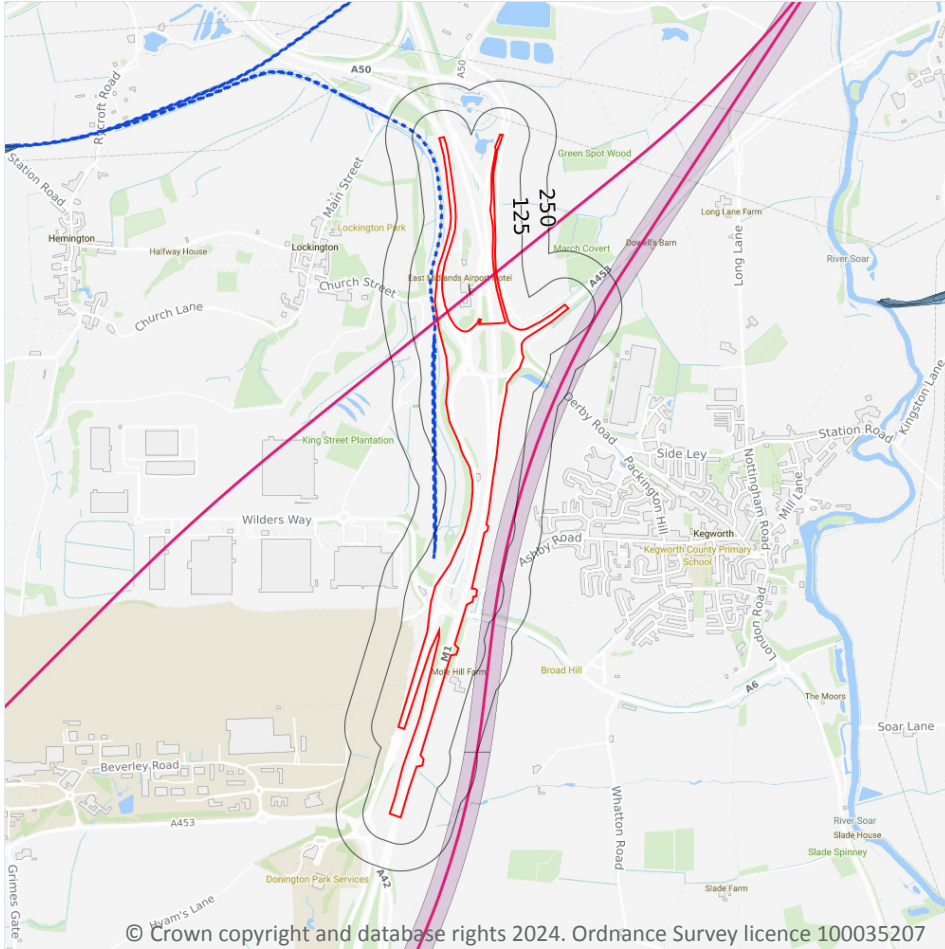
0

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<sup>2</sup>.

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



## 22 Railway infrastructure and projects



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

### 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
<b>On site</b>	<b>Bridge/Viaduct</b>	<b>249mph</b>	<b>400kph</b>	<b>Section is scheduled for cancellation</b>
<b>On site</b>	<b>Bridge/Viaduct</b>	<b>199mph</b>	<b>320kph</b>	<b>Section is scheduled for cancellation</b>
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/](https://www.groundsure.com/terms-and-conditions-april-2023/) ↗.



## **Appendix 2: Historical Mapping**

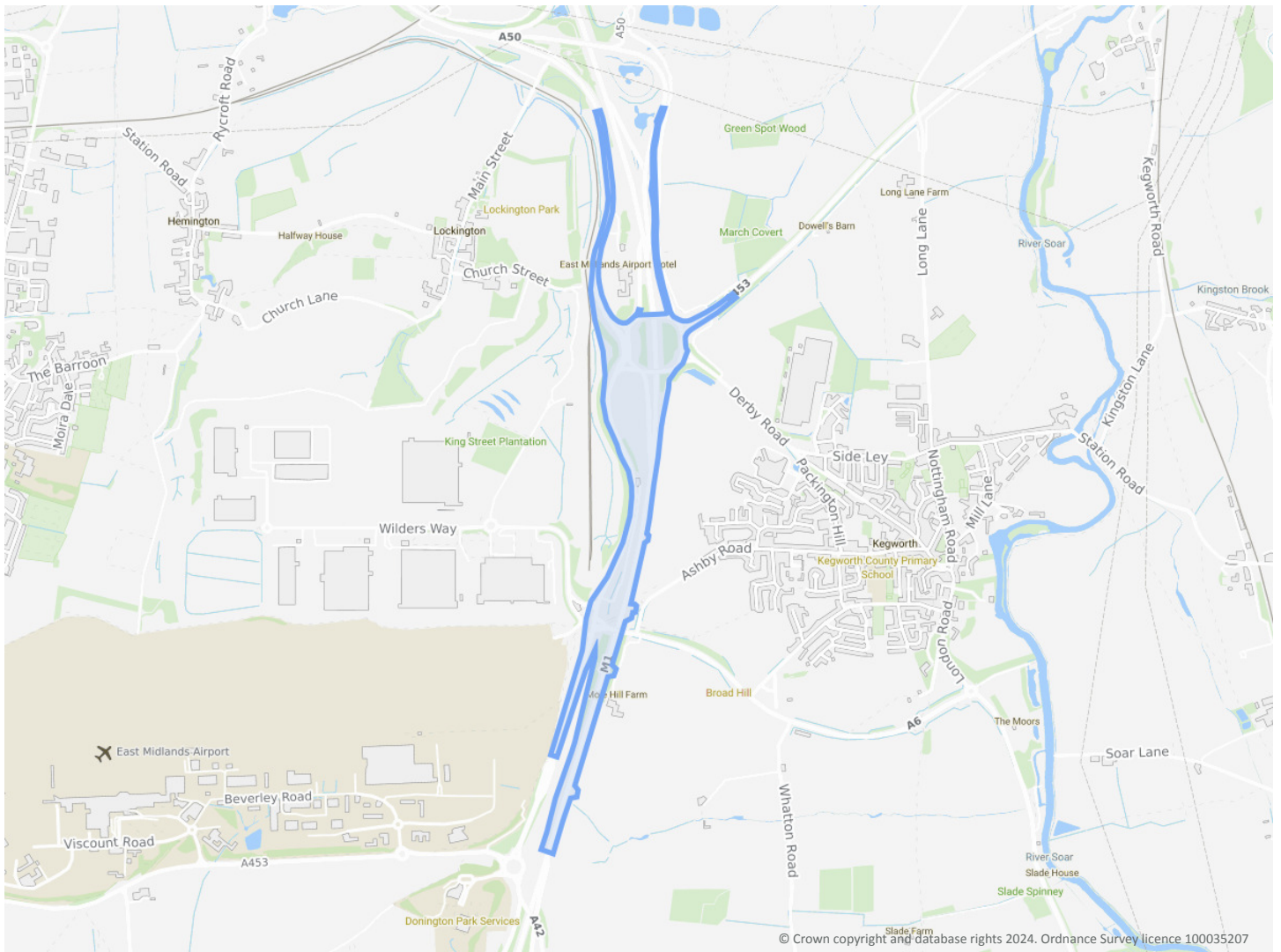
## East Midlands Gateway 2, J24 M1 (NH Land)

### 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 >](#)

**Aerial image**

[p. 9 >](#)

**OS MasterMap site plan**

N/A: >10ha

[Insight User Guide](#) ↗

Contact us with any questions at:

[info@groundsure.com](mailto:info@groundsure.com) ↗

01273 257 755

## Summary of findings

Page	Section	<a href="#">Past land use &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">14 &gt;</a>	<a href="#">1.1 &gt;</a>	<a href="#">Historical industrial land uses &gt;</a>	4	0	12	15	-
<a href="#">16 &gt;</a>	<a href="#">1.2 &gt;</a>	<a href="#">Historical tanks &gt;</a>	0	0	1	2	-
<a href="#">16 &gt;</a>	<a href="#">1.3 &gt;</a>	<a href="#">Historical energy features &gt;</a>	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	<a href="#">Past land use - un-grouped &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">18 &gt;</a>	<a href="#">2.1 &gt;</a>	<a href="#">Historical industrial land uses &gt;</a>	6	0	19	20	-
<a href="#">20 &gt;</a>	<a href="#">2.2 &gt;</a>	<a href="#">Historical tanks &gt;</a>	0	0	1	2	-
<a href="#">21 &gt;</a>	<a href="#">2.3 &gt;</a>	<a href="#">Historical energy features &gt;</a>	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	<a href="#">Waste and landfill &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">22 &gt;</a>	<a href="#">3.1 &gt;</a>	<a href="#">Active or recent landfill &gt;</a>	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	-
<a href="#">23 &gt;</a>	<a href="#">3.6 &gt;</a>	<a href="#">Licensed waste sites &gt;</a>	0	0	0	12	-
<a href="#">27 &gt;</a>	<a href="#">3.7 &gt;</a>	<a href="#">Waste exemptions &gt;</a>	1	30	15	2	-
Page	Section	<a href="#">Current industrial land use &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">32 &gt;</a>	<a href="#">4.1 &gt;</a>	<a href="#">Recent industrial land uses &gt;</a>	5	5	11	-	-
<a href="#">34 &gt;</a>	<a href="#">4.2 &gt;</a>	<a href="#">Current or recent petrol stations &gt;</a>	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	-
<a href="#">35</a> >	<a href="#">4.8</a> >	<a href="#">Hazardous substance storage/usage</a> >	0	0	0	1	-
35	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
<a href="#">36</a> >	<a href="#">4.10</a> >	<a href="#">Licensed industrial activities (Part A(1))</a> >	0	0	0	3	-
<a href="#">36</a> >	<a href="#">4.11</a> >	<a href="#">Licensed pollutant release (Part A(2)/B)</a> >	0	0	0	2	-
37	4.12	Radioactive Substance Authorisations	0	0	0	0	-
<a href="#">37</a> >	<a href="#">4.13</a> >	<a href="#">Licensed Discharges to controlled waters</a> >	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	-
<a href="#">38</a> >	<a href="#">4.18</a> >	<a href="#">Pollution Incidents (EA/NRW)</a> >	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	<a href="#">Hydrogeology</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">40</a> >	<a href="#">5.1</a> >	<a href="#">Superficial aquifer</a> >	Identified (within 500m)				
<a href="#">42</a> >	<a href="#">5.2</a> >	<a href="#">Bedrock aquifer</a> >	Identified (within 500m)				
<a href="#">44</a> >	<a href="#">5.3</a> >	<a href="#">Groundwater vulnerability</a> >	Identified (within 50m)				
49	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
49	5.5	Groundwater vulnerability- local information	None (within 0m)				
<a href="#">50</a> >	<a href="#">5.6</a> >	<a href="#">Groundwater abstractions</a> >	2	0	0	0	20
<a href="#">55</a> >	<a href="#">5.7</a> >	<a href="#">Surface water abstractions</a> >	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	<a href="#">Hydrology</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">59</a> >	<a href="#">6.1</a> >	<a href="#">Water Network (OS MasterMap)</a> >	12	21	76	-	-





68 >	6.2 >	<a href="#">Surface water features &gt;</a>	1	16	43	-	-
68 >	6.3 >	<a href="#">WFD Surface water body catchments &gt;</a>	2	-	-	-	-
69 >	6.4 >	<a href="#">WFD Surface water bodies &gt;</a>	0	0	1	-	-
69 >	6.5 >	<a href="#">WFD Groundwater bodies &gt;</a>	2	-	-	-	-
Page	Section	<a href="#">River and coastal flooding &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
70 >	7.1 >	<a href="#">Risk of flooding from rivers and the sea &gt;</a>	High (within 50m)				
71 >	7.2 >	<a href="#">Historical Flood Events &gt;</a>	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 >	<a href="#">Flood Zone 2 &gt;</a>	Identified (within 50m)				
74 >	7.7 >	<a href="#">Flood Zone 3 &gt;</a>	Identified (within 50m)				
Page	Section	<a href="#">Surface water flooding &gt;</a>					
75 >	8.1 >	<a href="#">Surface water flooding &gt;</a>	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	<a href="#">Groundwater flooding &gt;</a>					
77 >	9.1 >	<a href="#">Groundwater flooding &gt;</a>	High (within 50m)				
Page	Section	<a href="#">Environmental designations &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
78 >	10.1 >	<a href="#">Sites of Special Scientific Interest (SSSI) &gt;</a>	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 >	<a href="#">Designated Ancient Woodland &gt;</a>	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 >	<a href="#">Green Belt &gt;</a>	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
<a href="#">82</a> >	<a href="#">10.16</a> >	<a href="#">Nitrate Vulnerable Zones</a> >	3	0	0	0	1
<a href="#">83</a> >	<a href="#">10.17</a> >	<a href="#">SSSI Impact Risk Zones</a> >	4	-	-	-	-
<a href="#">85</a> >	<a href="#">10.18</a> >	<a href="#">SSSI Units</a> >	0	0	0	0	2
Page	Section	<a href="#">Visual and cultural designations</a> >	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	-	-
<a href="#">87</a> >	<a href="#">11.5</a> >	<a href="#">Conservation Areas</a> >	0	0	1	-	-
88	11.6	Scheduled Ancient Monuments	0	0	0	-	-
88	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	<a href="#">Agricultural designations</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">89</a> >	<a href="#">12.1</a> >	<a href="#">Agricultural Land Classification</a> >	Grade 3b (within 250m)				
92	12.2	Open Access Land	0	0	0	-	-
92	12.3	Tree Felling Licences	0	0	0	-	-
<a href="#">92</a> >	<a href="#">12.4</a> >	<a href="#">Environmental Stewardship Schemes</a> >	0	3	2	-	-
93	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	<a href="#">Habitat designations</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">94</a> >	<a href="#">13.1</a> >	<a href="#">Priority Habitat Inventory</a> >	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	<a href="#">Geology 1:10,000 scale</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">97</a> >	<a href="#">14.1</a> >	<a href="#">10k Availability</a> >	Identified (within 500m)				
<a href="#">98</a> >	<a href="#">14.2</a> >	<a href="#">Artificial and made ground (10k)</a> >	7	7	5	13	-
<a href="#">100</a> >	<a href="#">14.3</a> >	<a href="#">Superficial geology (10k)</a> >	7	1	5	14	-

102	14.4	Landslip (10k)	0	0	0	0	-
<a href="#">103 &gt;</a>	<a href="#">14.5 &gt;</a>	<a href="#">Bedrock geology (10k) &gt;</a>	13	4	30	15	-
<a href="#">106 &gt;</a>	<a href="#">14.6 &gt;</a>	<a href="#">Bedrock faults and other linear features (10k) &gt;</a>	3	0	6	7	-
Page	Section	<a href="#">Geology 1:50,000 scale &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">108 &gt;</a>	<a href="#">15.1 &gt;</a>	<a href="#">50k Availability &gt;</a>	Identified (within 500m)				
109	15.2	Artificial and made ground (50k)	0	0	0	0	-
109	15.3	Artificial ground permeability (50k)	0	0	-	-	-
<a href="#">110 &gt;</a>	<a href="#">15.4 &gt;</a>	<a href="#">Superficial geology (50k) &gt;</a>	7	1	6	11	-
<a href="#">112 &gt;</a>	<a href="#">15.5 &gt;</a>	<a href="#">Superficial permeability (50k) &gt;</a>	Identified (within 50m)				
112	15.6	Landslip (50k)	0	0	0	0	-
112	15.7	Landslip permeability (50k)	None (within 50m)				
<a href="#">113 &gt;</a>	<a href="#">15.8 &gt;</a>	<a href="#">Bedrock geology (50k) &gt;</a>	11	3	26	11	-
<a href="#">116 &gt;</a>	<a href="#">15.9 &gt;</a>	<a href="#">Bedrock permeability (50k) &gt;</a>	Identified (within 50m)				
<a href="#">116 &gt;</a>	<a href="#">15.10 &gt;</a>	<a href="#">Bedrock faults and other linear features (50k) &gt;</a>	2	0	7	1	-
Page	Section	<a href="#">Boreholes &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">118 &gt;</a>	<a href="#">16.1 &gt;</a>	<a href="#">BGS Boreholes &gt;</a>	61	56	69	-	-
Page	Section	<a href="#">Natural ground subsidence &gt;</a>					
<a href="#">127 &gt;</a>	<a href="#">17.1 &gt;</a>	<a href="#">Shrink swell clays &gt;</a>	Very low (within 50m)				
<a href="#">129 &gt;</a>	<a href="#">17.2 &gt;</a>	<a href="#">Running sands &gt;</a>	Very low (within 50m)				
<a href="#">131 &gt;</a>	<a href="#">17.3 &gt;</a>	<a href="#">Compressible deposits &gt;</a>	Negligible (within 50m)				
<a href="#">132 &gt;</a>	<a href="#">17.4 &gt;</a>	<a href="#">Collapsible deposits &gt;</a>	Very low (within 50m)				
<a href="#">133 &gt;</a>	<a href="#">17.5 &gt;</a>	<a href="#">Landslides &gt;</a>	Low (within 50m)				
<a href="#">135 &gt;</a>	<a href="#">17.6 &gt;</a>	<a href="#">Ground dissolution of soluble rocks &gt;</a>	Negligible (within 50m)				
Page	Section	<a href="#">Mining and ground workings &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">137 &gt;</a>	<a href="#">18.1 &gt;</a>	<a href="#">BritPits &gt;</a>	0	0	0	5	-
<a href="#">138 &gt;</a>	<a href="#">18.2 &gt;</a>	<a href="#">Surface ground workings &gt;</a>	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	<a href="#">Radon</a> >					
<a href="#">146</a> >	<a href="#">20.1</a> >	<a href="#">Radon</a> >	Between 1% and 3% (within 0m)				
Page	Section	<a href="#">Soil chemistry</a> >	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">148</a> >	<a href="#">21.1</a> >	<a href="#">BGS Estimated Background Soil Chemistry</a> >	53	24	-	-	-
152	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
153	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	<a href="#">Railway infrastructure and projects</a> >	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	-	-
<a href="#">155</a> >	<a href="#">22.7</a> >	<a href="#">Railways</a> >	0	10	2	-	-
156	22.8	Crossrail 2	0	0	0	0	-
<a href="#">156</a> >	<a href="#">22.9</a> >	<a href="#">HS2</a> >	3	1	8	6	-

## Recent aerial photograph



Capture Date: 10/07/2022

Site Area: 39.28ha





## Recent site history - 2019 aerial photograph

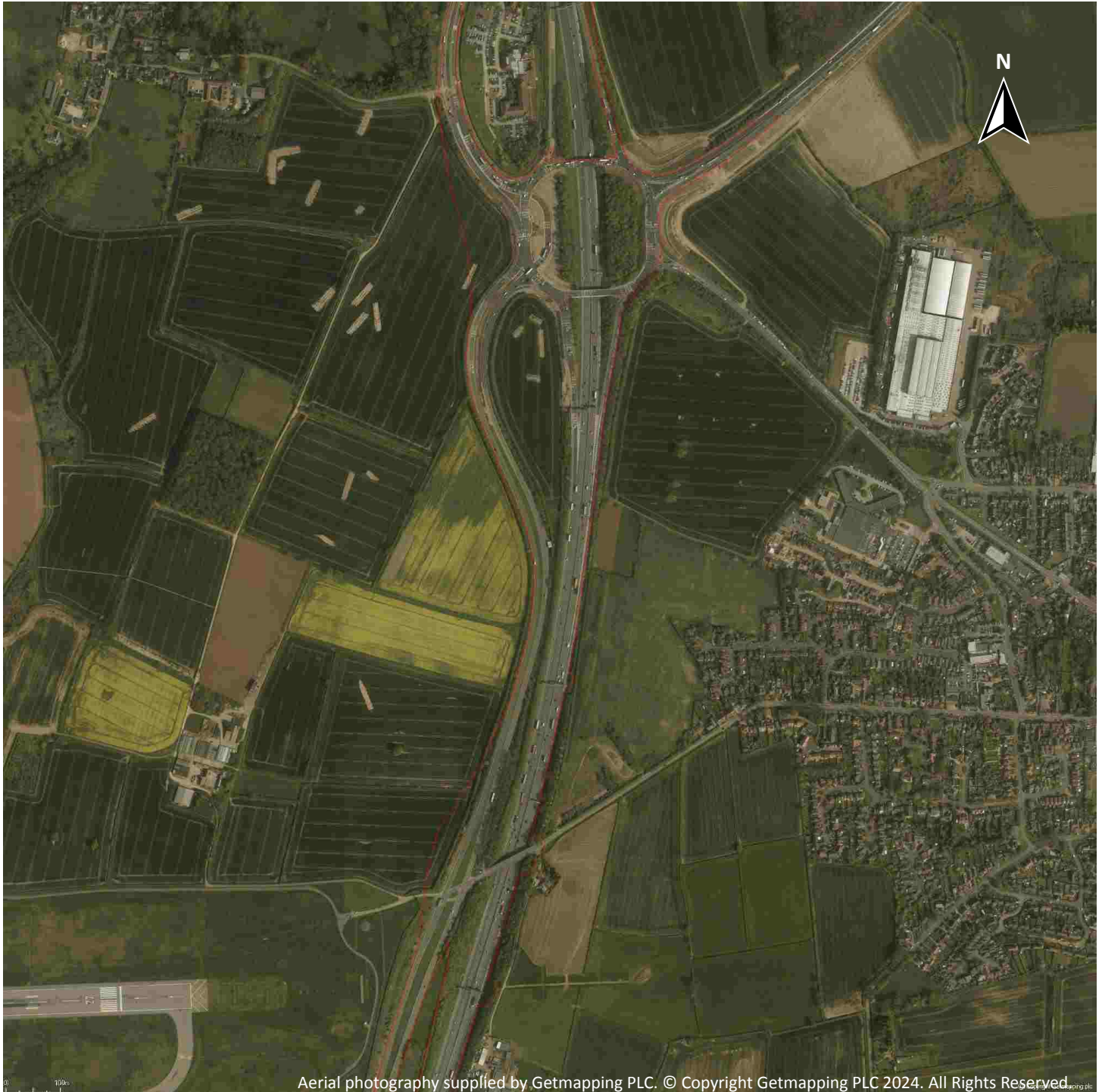


Capture Date: 20/04/2019

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

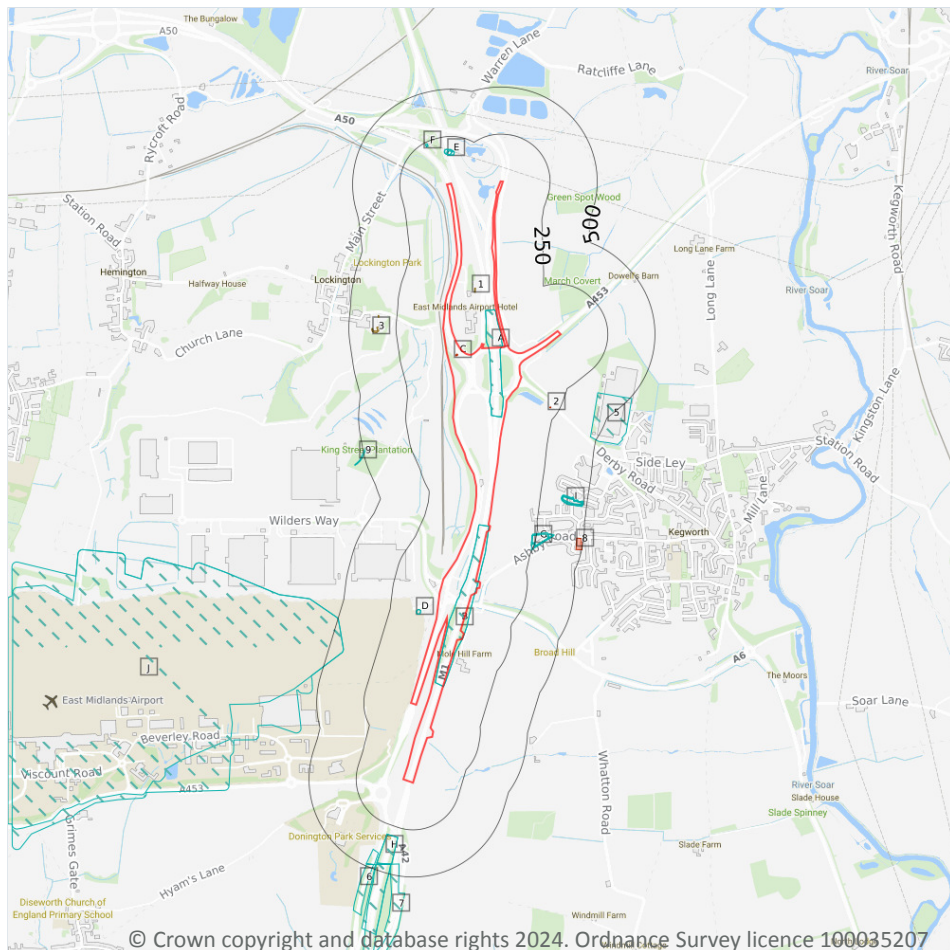


Capture Date: 11/07/1999

Site Area: 39.28ha



## 1 Past land use



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

### 1.1 Historical industrial land uses

#### Records within 500m

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
<b>A</b>	<b>On site</b>	<b>Cuttings</b>	<b>1982 - 1992</b>	<b>1726088</b>
<b>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1971</b>	<b>1692256</b>
<b>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1982 - 1992</b>	<b>1710569</b>
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 ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 14 >](#)

ID	Location	Land use	Dates present	Group ID
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 ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 14 >](#)

ID	Location	Land use	Dates present	Group ID
C	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

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

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

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

## 1.5 Historical garages

<b>Records within 500m</b>	<b>0</b>
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Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

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

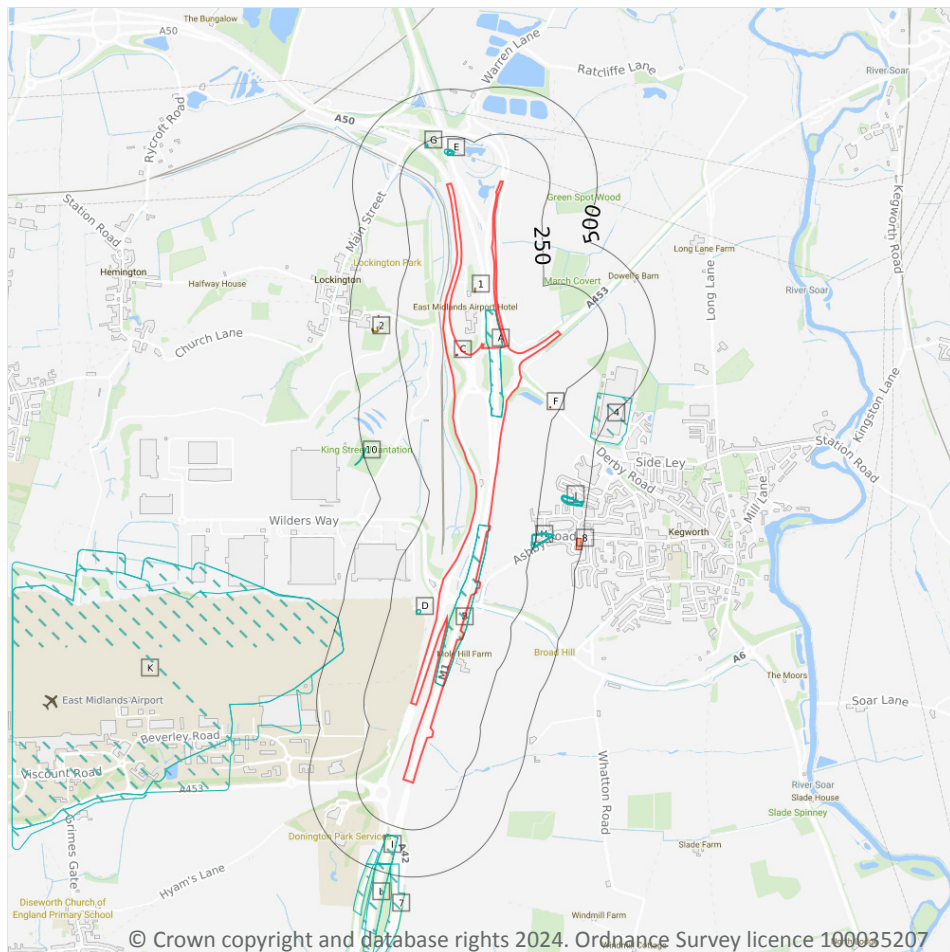
## 1.6 Historical military land

<b>Records within 500m</b>	<b>0</b>
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Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

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

## 2 Past land use - un-grouped



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

### 2.1 Historical industrial land uses

Records within 500m

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>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1971</b>	<b>1692256</b>
<b>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1982</b>	<b>1710569</b>
<b>B</b>	<b>On site</b>	<b>Cuttings</b>	<b>1992</b>	<b>1710569</b>
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

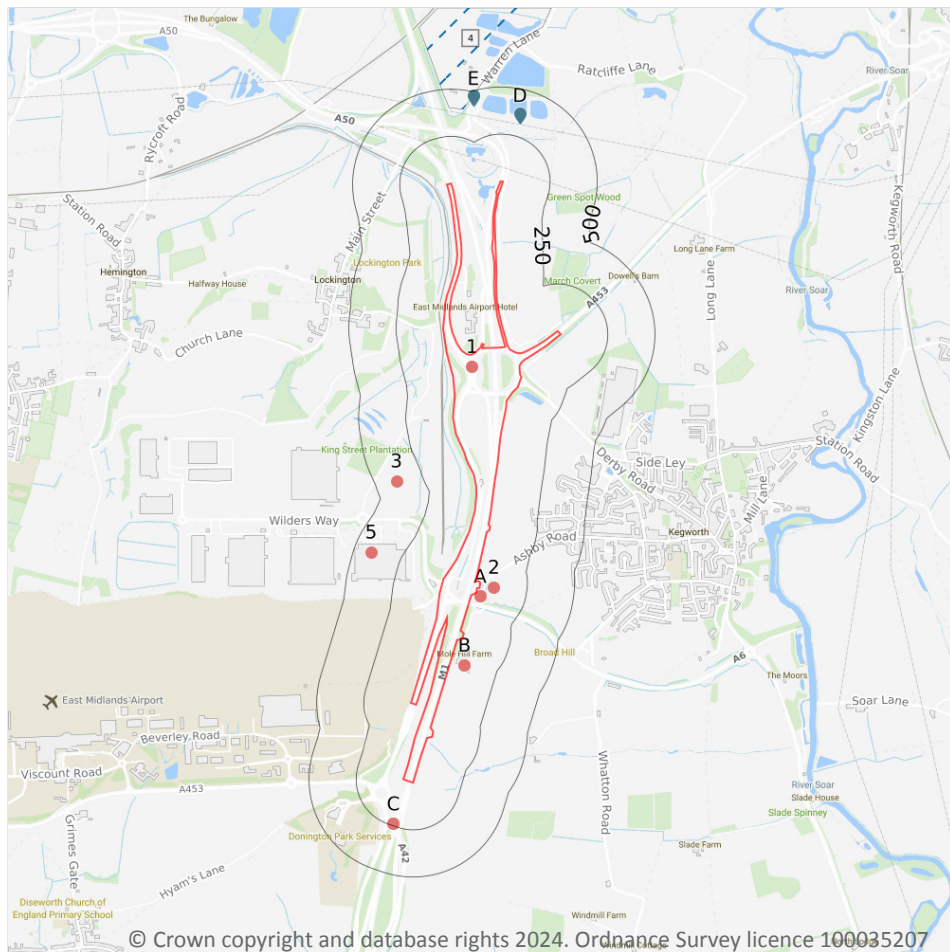
**0**

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



- Site Outline
- Search buffers in metres (m)
- Active or recent landfill
- Licensed waste sites
- Waste exemptions

### 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- Biodegradable 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-Biodegradable 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-Biodegradable 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

<b>Records within 500m</b>	<b>48</b>
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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/AE5387N S/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/PF0230G H/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/PF0230G H/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/PF0230G H/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/PF0230G H/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/PF0230G H/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/PF0230G H/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste in construction



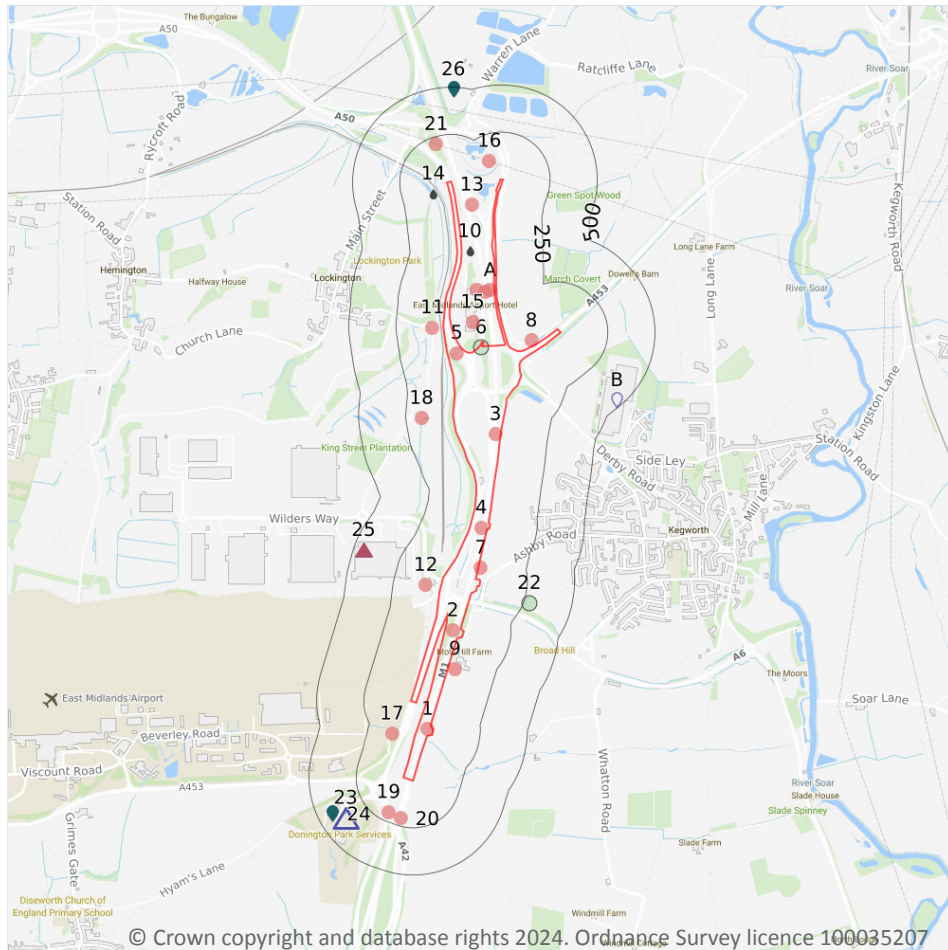


ID	Location	Site	Reference	Category	Sub-Category	Description
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230G H/A001	Using waste exemption	Both agricultural and non-agricultural waste	Incorporation of ash into soil
B	77m S	Mole Hill Farm Ashby Road Derby De74 2dl	EPR/PF0230G H/A001	Using 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

<b>Records within 500m</b>	<b>1</b>
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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

<b>Records within 500m</b>	<b>0</b>
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High voltage underground electricity transmission cables.

*This data is sourced from National Grid.*

## 4.4 Gas pipelines

<b>Records within 500m</b>	<b>0</b>
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High pressure underground gas transmission pipelines.

*This data is sourced from National Grid.*

## 4.5 Sites determined as Contaminated Land

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

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

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

<b>Records within 500m</b>	<b>2</b>
----------------------------	----------

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	<b>Incident Date: 30/07/2001</b> <b>Incident Identification: 20190</b> <b>Pollutant: General Biodegradable Materials and Wastes</b> <b>Pollutant Description: Natural Organic Material</b>	<b>Water Impact: Category 4 (No Impact)</b> <b>Land Impact: Category 3 (Minor)</b> <b>Air Impact: Category 4 (No Impact)</b>
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

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

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

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

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.*

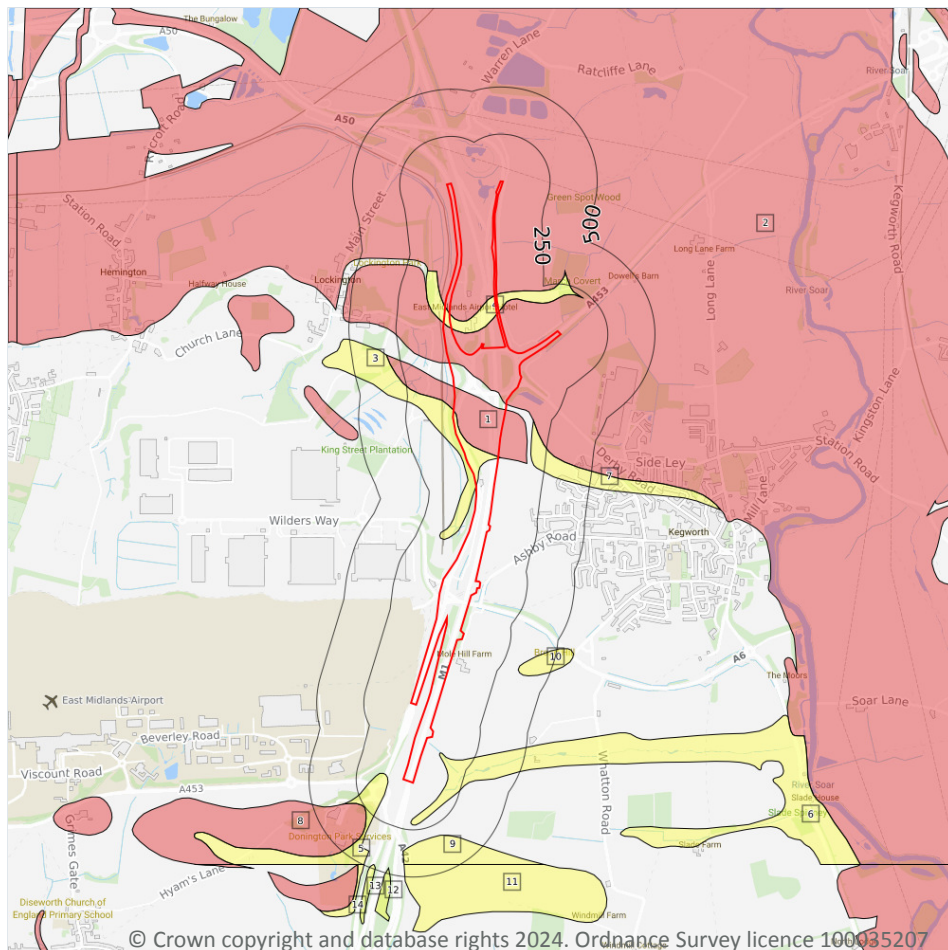
## 4.21 Pollution inventory radioactive waste

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

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

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

## 5 Hydrogeology - Superficial aquifer



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

### 5.1 Superficial aquifer

Records within 500m

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



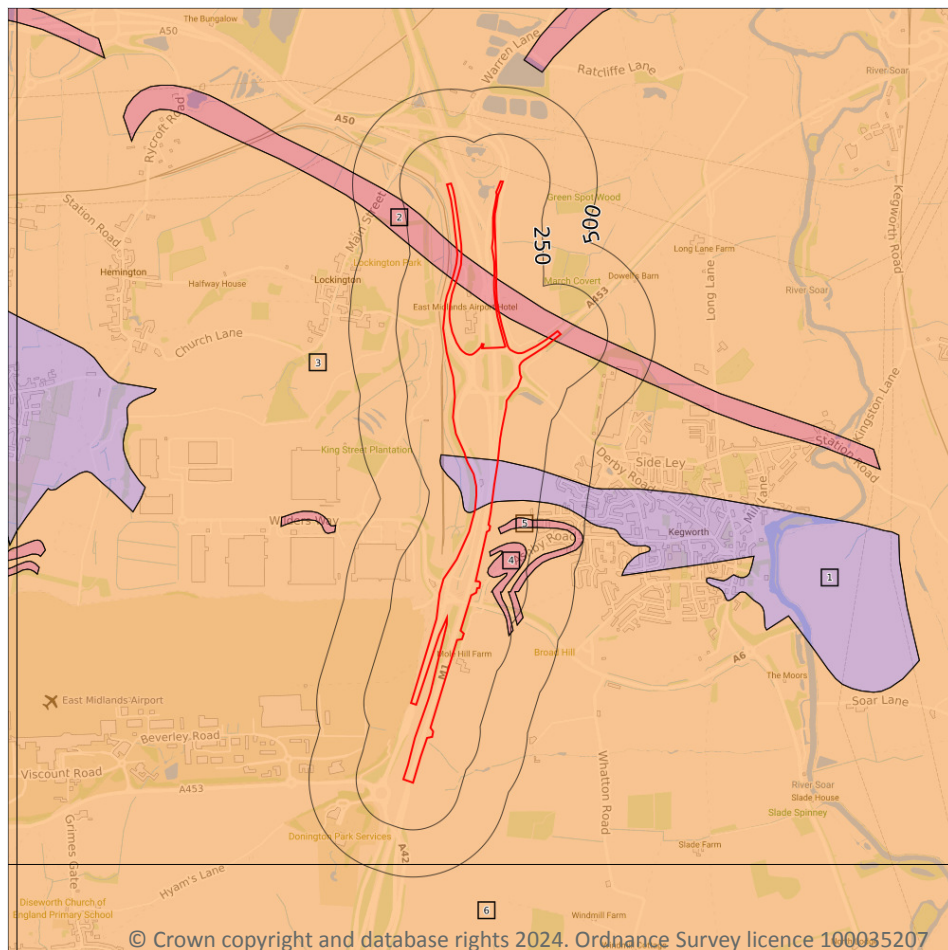


ID	Location	Designation	Description
3	On site	Secondary Undifferentiated	<b>Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics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



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

## 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

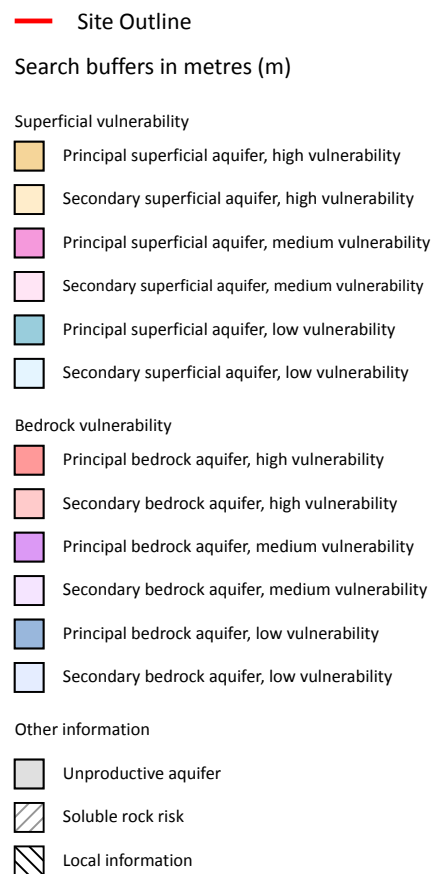
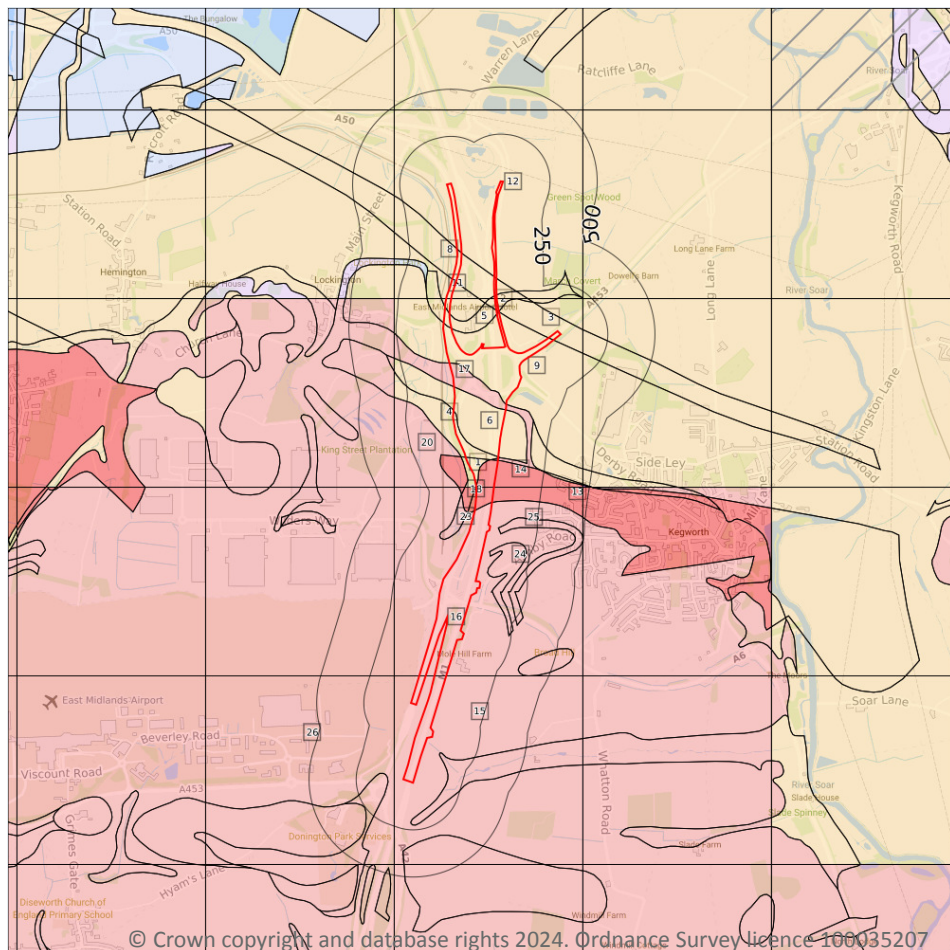


ID	Location	Designation	Description
3	On site	Secondary B	<b>Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers</b>
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 permeable horizons 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

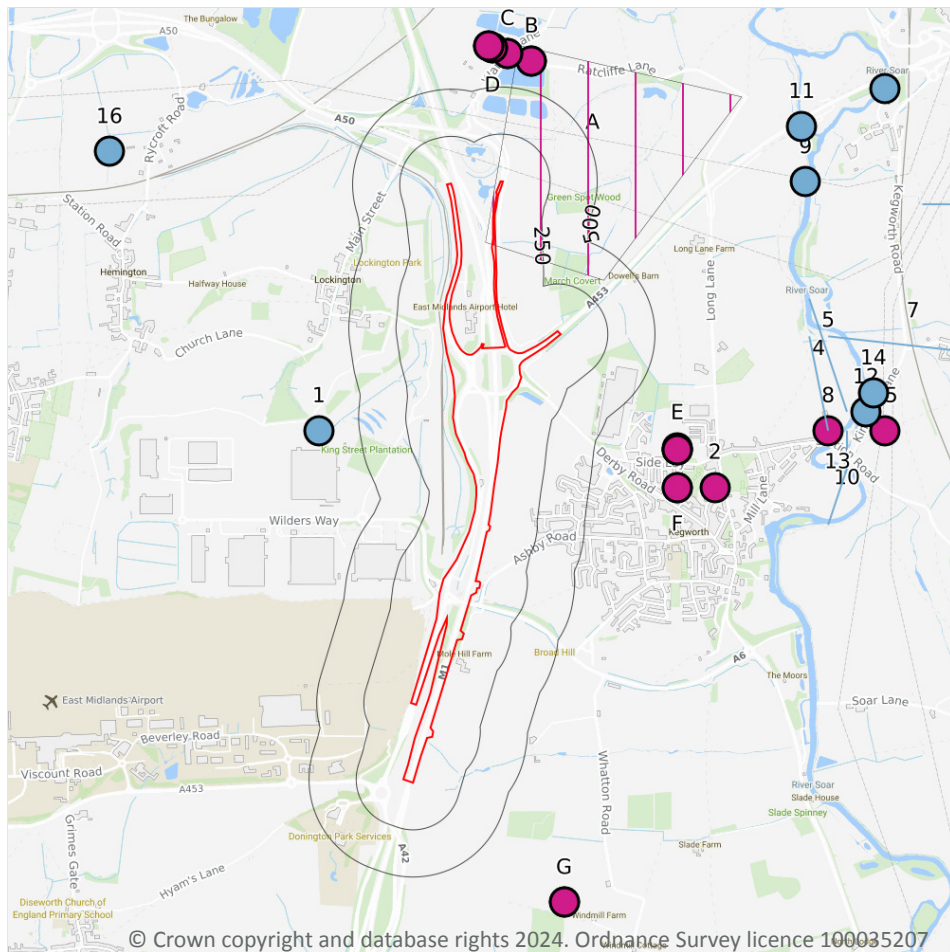
**0**

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](mailto:enquiries@environment-agency.gov.uk) ↗.

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



## Abstractions and Source Protection Zones



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

### 5.6 Groundwater abstractions

#### Records within 2000m

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	<b>Status:</b> Active <b>Licence No:</b> MD/028/0059/004 <b>Details:</b> Dewatering <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY <b>Data Type:</b> Poly4 <b>Name:</b> Tarmac Trading Limited <b>Easting:</b> 447660 <b>Northing:</b> 329342	<b>Annual Volume (m³):</b> 1760000 <b>Max Daily Volume (m³):</b> 6400 <b>Original Application No:</b> NPS/NA/000749 <b>Original Start Date:</b> 24/10/2022 <b>Expiry Date:</b> 31/03/2037 <b>Issue No:</b> 1 <b>Version Start Date:</b> 24/10/2022 <b>Version End Date:</b> -
A	On site	<b>Status:</b> Active <b>Licence No:</b> MD/028/0059/007 <b>Details:</b> Dust Suppression <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY <b>Data Type:</b> Poly4 <b>Name:</b> Tarmac Trading Limited <b>Easting:</b> 447660 <b>Northing:</b> 329342	<b>Annual Volume (m³):</b> 13750 <b>Max Daily Volume (m³):</b> 50 <b>Original Application No:</b> NPS/NA/000748 <b>Original Start Date:</b> 24/10/2022 <b>Expiry Date:</b> 31/03/2037 <b>Issue No:</b> 1 <b>Version Start Date:</b> 24/10/2022 <b>Version End Date:</b> -
B	657m N	<b>Status:</b> Active <b>Licence No:</b> 03/28/59/0012/R01 <b>Details:</b> Mineral Washing <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY - BORROW PIT <b>Data Type:</b> Point <b>Name:</b> Tarmac Trading Limited <b>Easting:</b> 447727 <b>Northing:</b> 329260	<b>Annual Volume (m³):</b> 1036619 <b>Max Daily Volume (m³):</b> 6829.1 <b>Original Application No:</b> NPS/WR/038710 <b>Original Start Date:</b> 01/04/2018 <b>Expiry Date:</b> 31/03/2025 <b>Issue No:</b> 3 <b>Version Start Date:</b> 26/08/2022 <b>Version End Date:</b> -
B	657m N	<b>Status:</b> Active <b>Licence No:</b> 03/28/59/0012/R01 <b>Details:</b> General Use Relating To Secondary Category (Medium Loss) <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY - BORROW PIT <b>Data Type:</b> Point <b>Name:</b> Tarmac Trading Limited <b>Easting:</b> 447727 <b>Northing:</b> 329260	<b>Annual Volume (m³):</b> 1036619 <b>Max Daily Volume (m³):</b> 6829.1 <b>Original Application No:</b> NPS/WR/038710 <b>Original Start Date:</b> 01/04/2018 <b>Expiry Date:</b> 31/03/2025 <b>Issue No:</b> 3 <b>Version Start Date:</b> 26/08/2022 <b>Version End Date:</b> -
C	679m N	<b>Status:</b> Historical <b>Licence No:</b> 03/28/59/0012 <b>Details:</b> General Use Relating To Secondary Category (Medium Loss) <b>Direct Source:</b> Groundwater Midlands Region <b>Point:</b> LOCKINGTON QUARRY - BORROW PIT <b>Data Type:</b> Point <b>Name:</b> Tarmac Aggregates Limited <b>Easting:</b> 447600 <b>Northing:</b> 329300	<b>Annual Volume (m³):</b> 1878000 <b>Max Daily Volume (m³):</b> 6829 <b>Original Application No:</b> - <b>Original Start Date:</b> 02/01/2001 <b>Expiry Date:</b> 31/03/2018 <b>Issue No:</b> 5 <b>Version Start Date:</b> 26/10/2015 <b>Version End Date:</b> -



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 <sup>3</sup> ): 1878000 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1036619 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1036619 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1878000 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1878000 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 9999 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 9999 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 9999 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 9999 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 4773.3 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 4773.3 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 2273 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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

<b>Records within 2000m</b>	<b>12</b>
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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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 22730 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 14879.058 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 2273 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 14879.058 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - 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 <sup>3</sup> ): 14879.058 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 16000 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 45801 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 22730 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 121500 Max Daily Volume (m <sup>3</sup> ): 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 <sup>3</sup> ): 1250 Max Daily Volume (m <sup>3</sup> ): 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

<b>Records within 2000m</b>	<b>0</b>
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Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

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

## 5.9 Source Protection Zones

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

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

## 5.10 Source Protection Zones (confined aquifer)

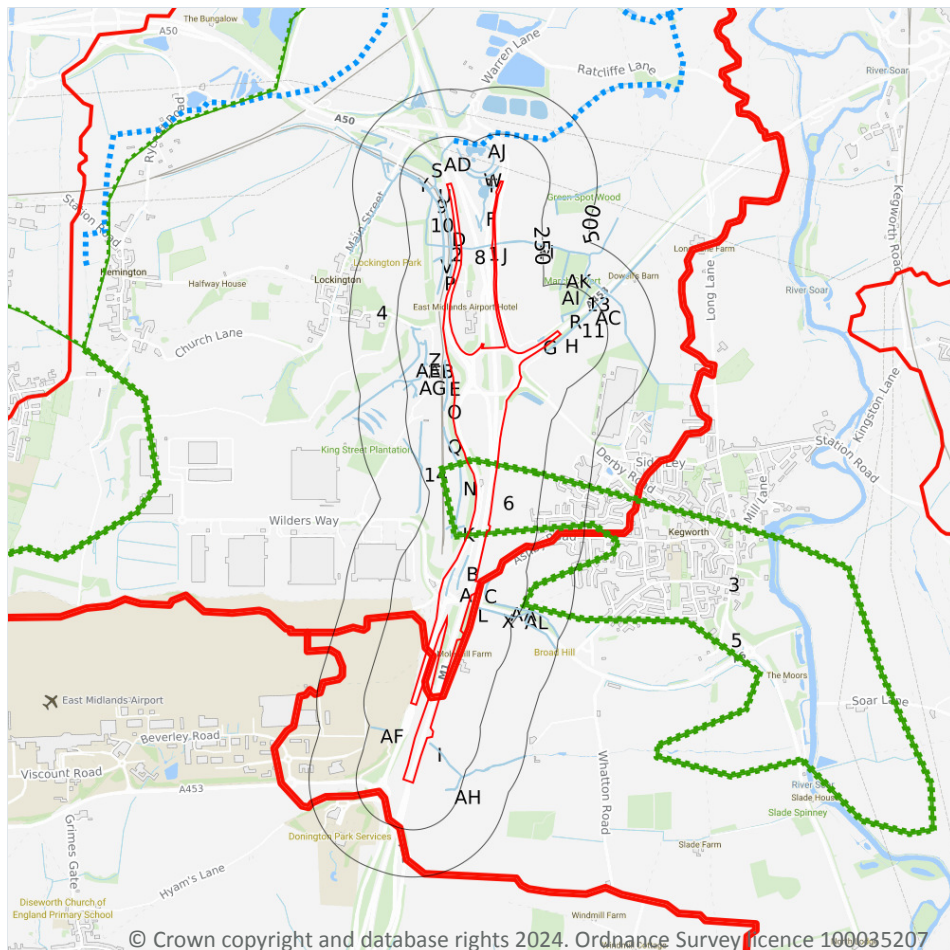
<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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

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



## 6 Hydrology



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

### 6.1 Water Network (OS MasterMap)

Records within 250m

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

<b>Records within 250m</b>	<b>60</b>
----------------------------	-----------

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

<b>Records on site</b>	<b>2</b>
------------------------	----------

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

<b>Records identified</b>	<b>2</b>
---------------------------	----------

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)	<a href="#">GB104028047410 ↗</a>	Bad	Fail	Bad	2019
-	1286m NE	River	Soar from Long Whatton Brook to Trent	<a href="#">GB104028047212 ↗</a>	Moderate	Fail	Moderate	2019

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

## 6.5 WFD Groundwater bodies

<b>Records on site</b>	<b>2</b>
------------------------	----------

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

Features are displayed on the Hydrology map on [page 59 >](#)

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
5	On site	Soar - PT Sandstone	<a href="#">GB40401G302800 ↗</a>	Poor	Poor	Good	2019
6	On site	Soar - Secondary Combined	<a href="#">GB40402G990600 ↗</a>	Good	Good	Good	2019

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







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

<b>Records within 250m</b>	<b>2</b>
----------------------------	----------

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

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

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

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

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

## 7.4 Areas Benefiting from Flood Defences

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

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

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



## 7.5 Flood Storage Areas

Records within 250m

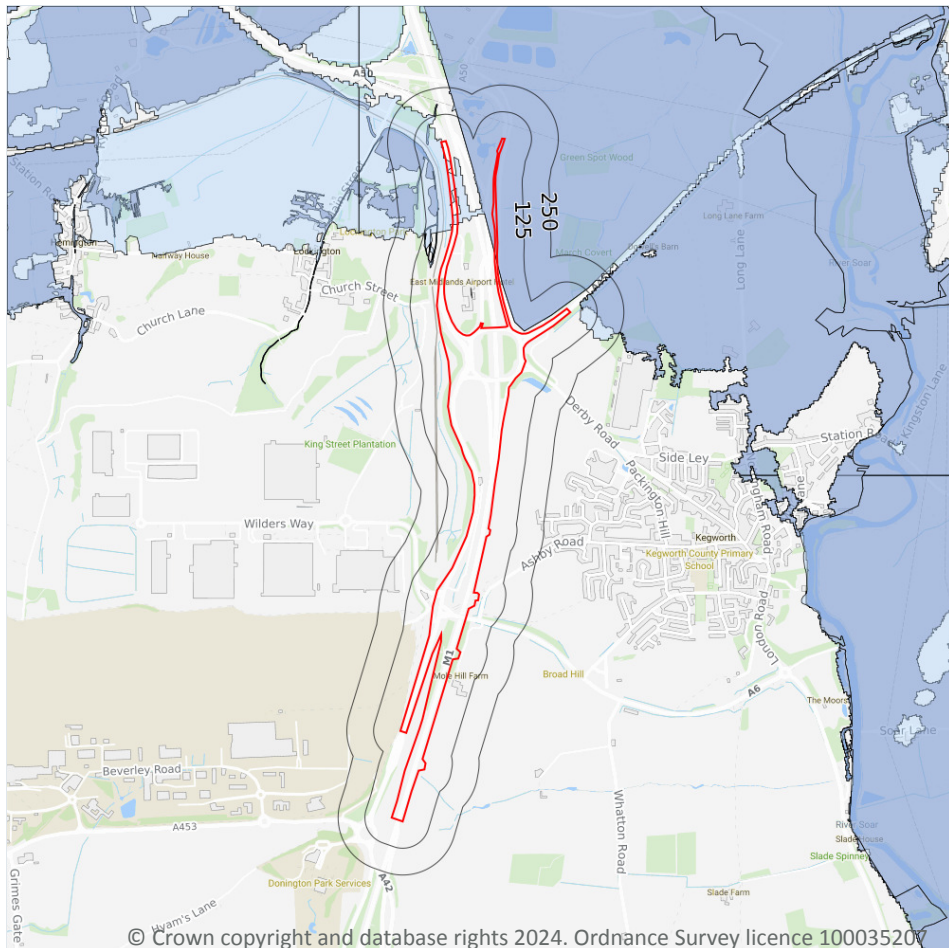
0

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

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



## River and coastal flooding - Flood Zones



- 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.

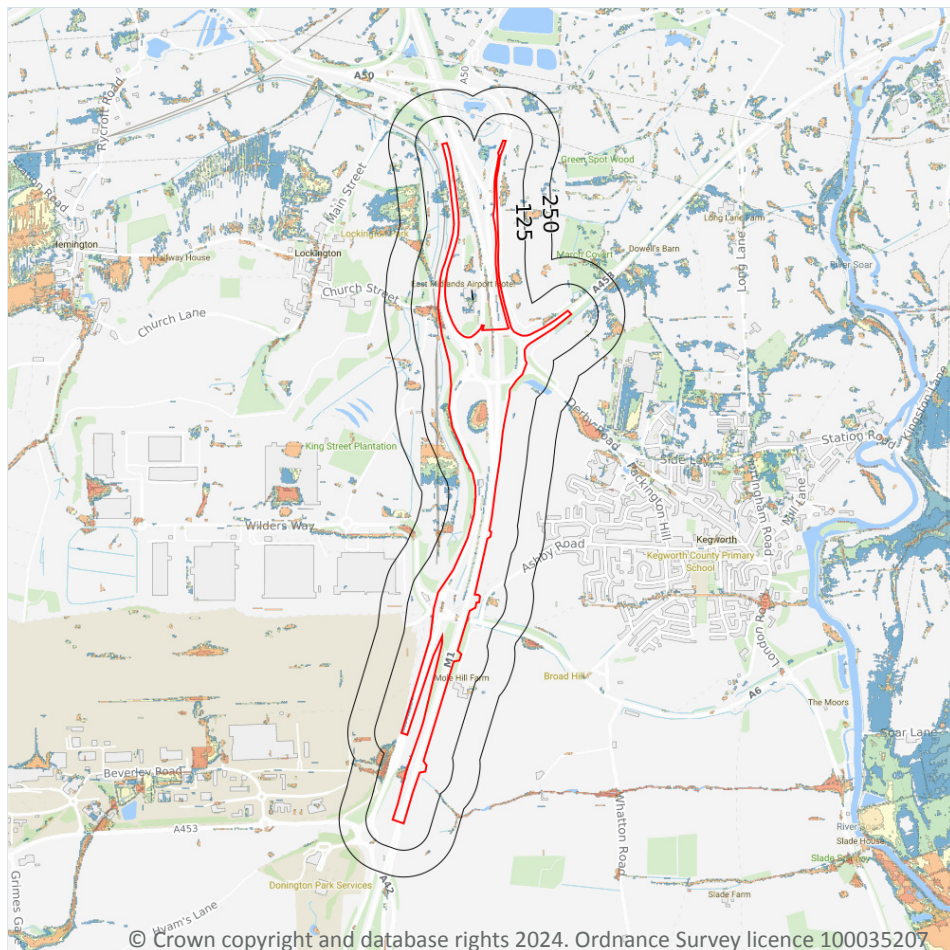
Features are displayed on the River and coastal flooding map on [page 70](#) >

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.

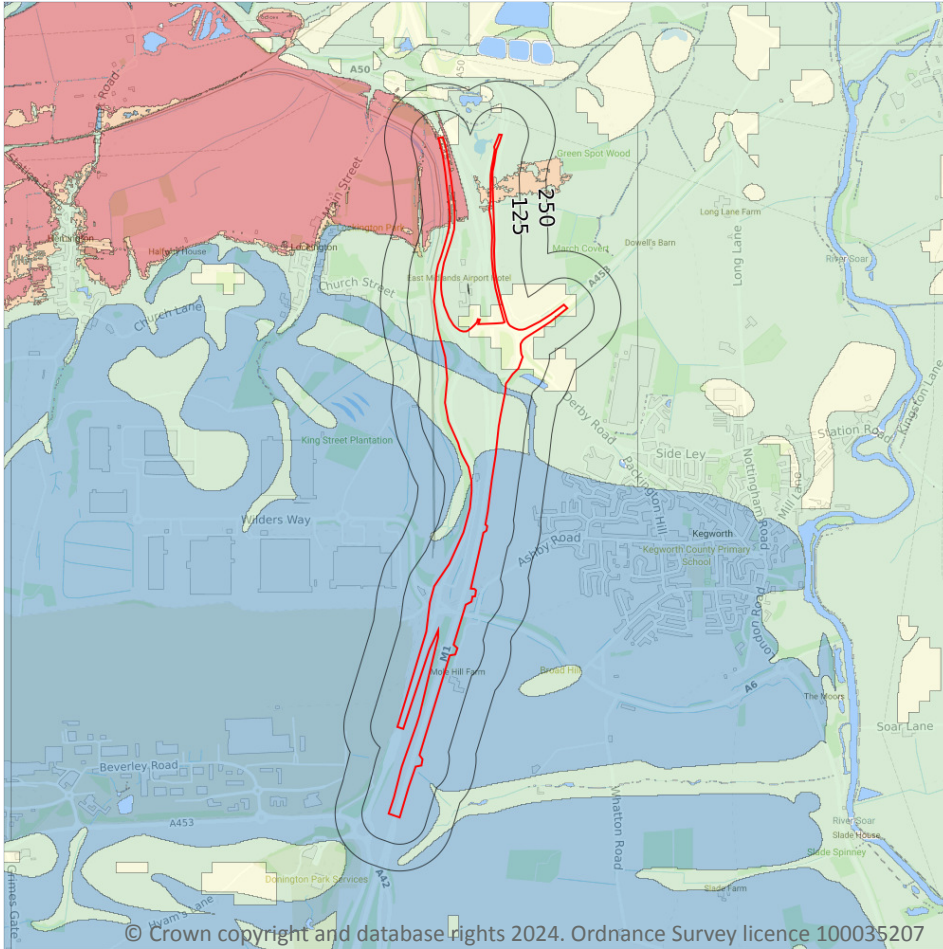
Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

*This data is sourced from Ambiantal 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

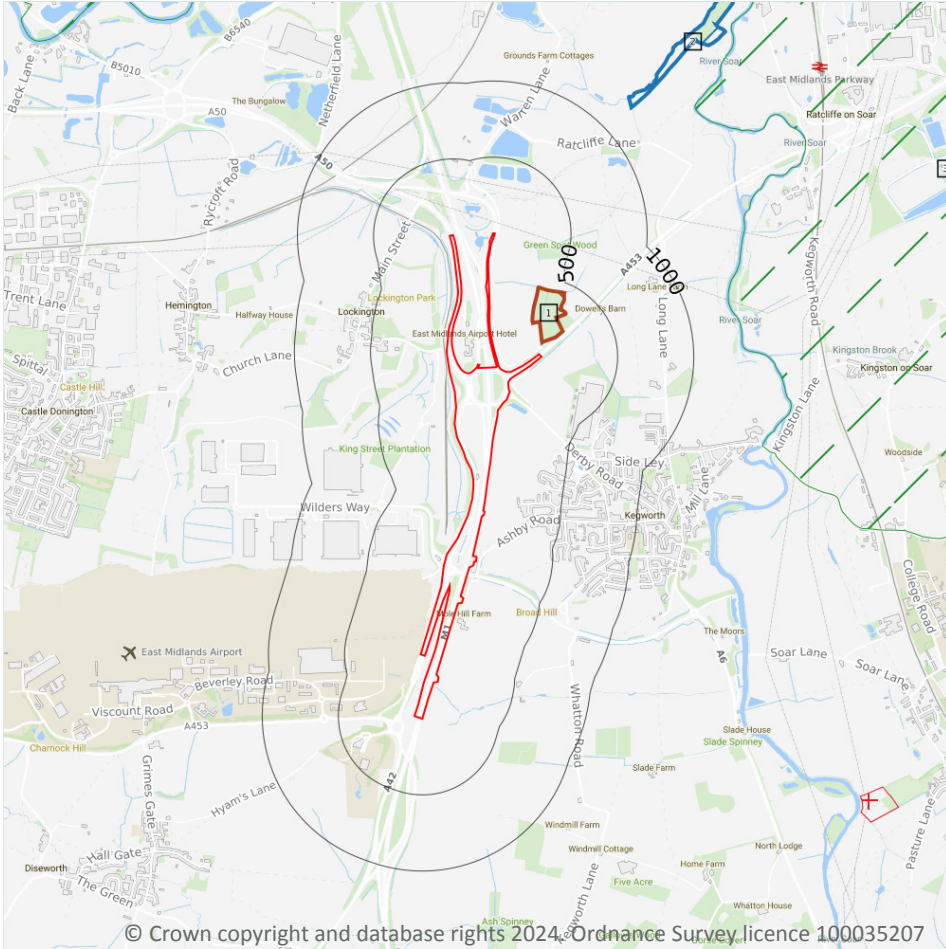
High

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 Ambiantal Risk Analytics.*

## 10 Environmental designations



- 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.

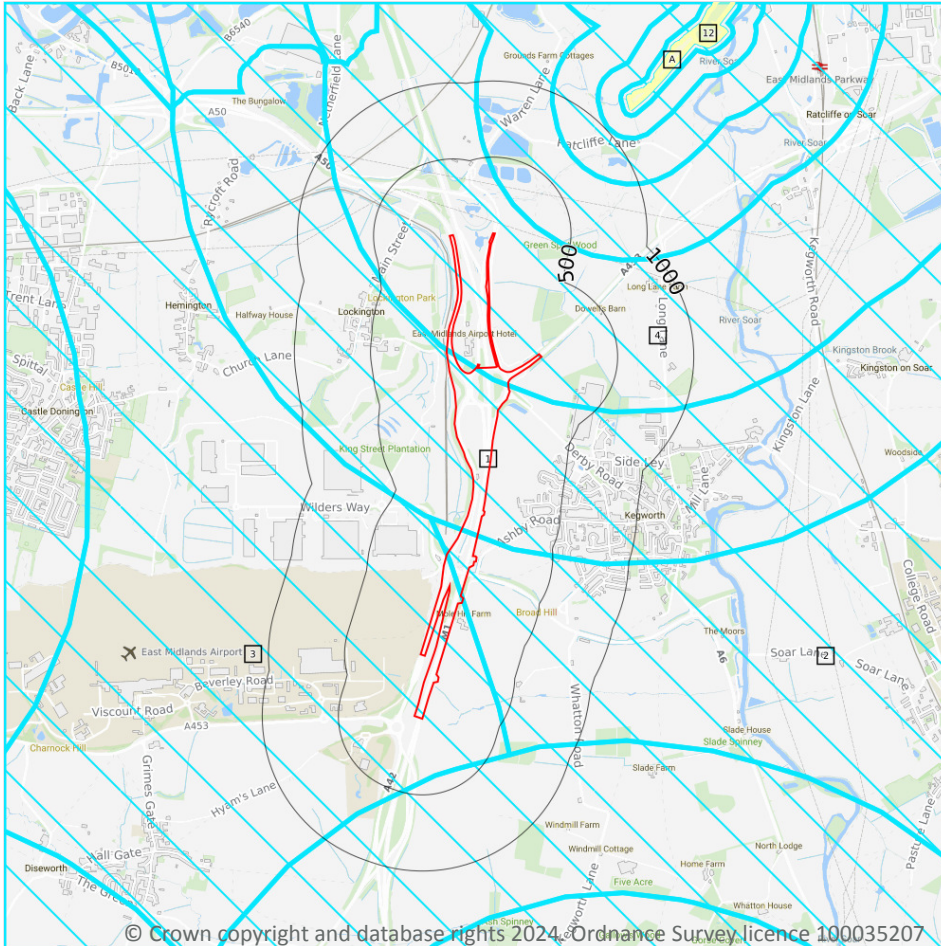
Location	Name	Type	NVZ ID	Status
On site	SOAR R NVZ	Surface Water	309	Existing
On site	SOAR R NVZ	Surface Water	309	Existing
On site	Burton	Groundwater	34	Existing
1322m SE	Burton	Groundwater	34	Existing

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





## SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

### 10.17 SSSI Impact Risk Zones

#### Records on site

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	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil &amp; gas exploration/extraction.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Discharges - Any discharge of water or liquid waste of more than 5m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream.</p>
2	On site	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Discharges - Any discharge of water or liquid waste of more than 20m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream.</p>
3	On site	<p>Infrastructure - Airports, helipads and other aviation proposals.</p> <p>Minerals, Oil and Gas - Oil &amp; gas exploration/extraction.</p> <p>Air pollution - Livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 750m<sup>2</sup>, manure stores &gt; 3500t.</p> <p>Discharges - Any discharge of water or liquid waste of more than 20m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream.</p>
4	On site	<p>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.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil &amp; gas exploration/extraction.</p> <p>Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.</p> <p>Rural residential - Any residential development of 100 or more houses outside existing settlements/urban areas.</p> <p>Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock &amp; poultry units with floorspace &gt; 500m<sup>2</sup>, slurry lagoons &amp; digestate stores &gt; 200m<sup>2</sup>, manure stores &gt; 250t).</p> <p>Combustion - General combustion processes &gt;20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p> <p>Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.</p> <p>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.</p> <p>Discharges - Any discharge of water or liquid waste of more than 5m<sup>3</sup>/day to ground (ie to seep away) or to surface water, such as a beck or stream.</p> <p>Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m<sup>2</sup> or more.</p>

*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

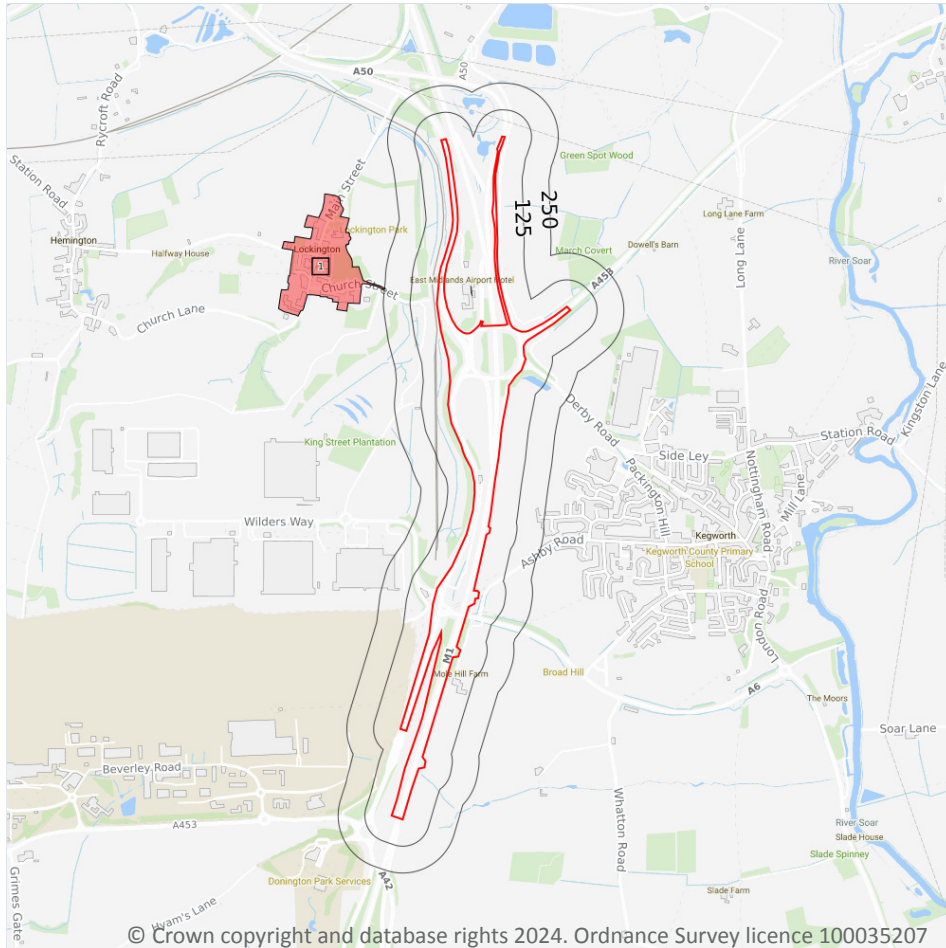
ID: 12  
Location: 1828m NE  
SSSI name: Lockington Marshes  
Unit name: South Carr  
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland  
Condition: Unfavourable - Recovering  
Reportable features:

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

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

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

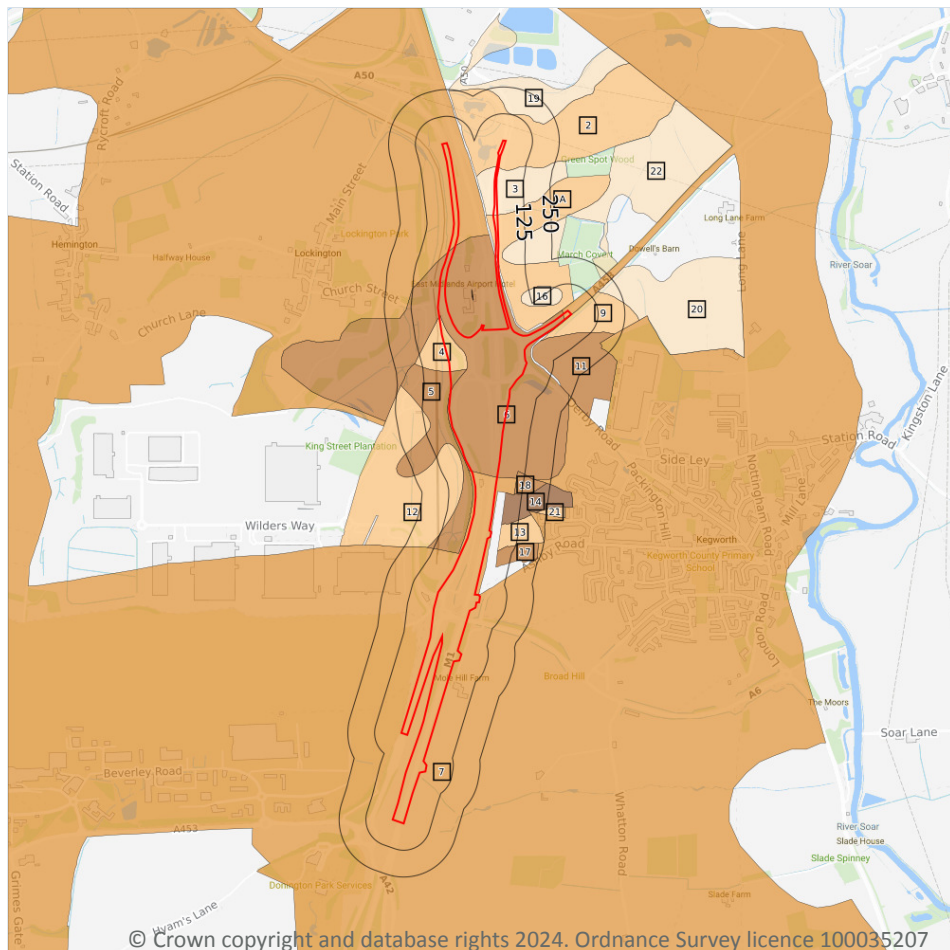
<b>Records within 250m</b>	<b>0</b>
----------------------------	----------

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

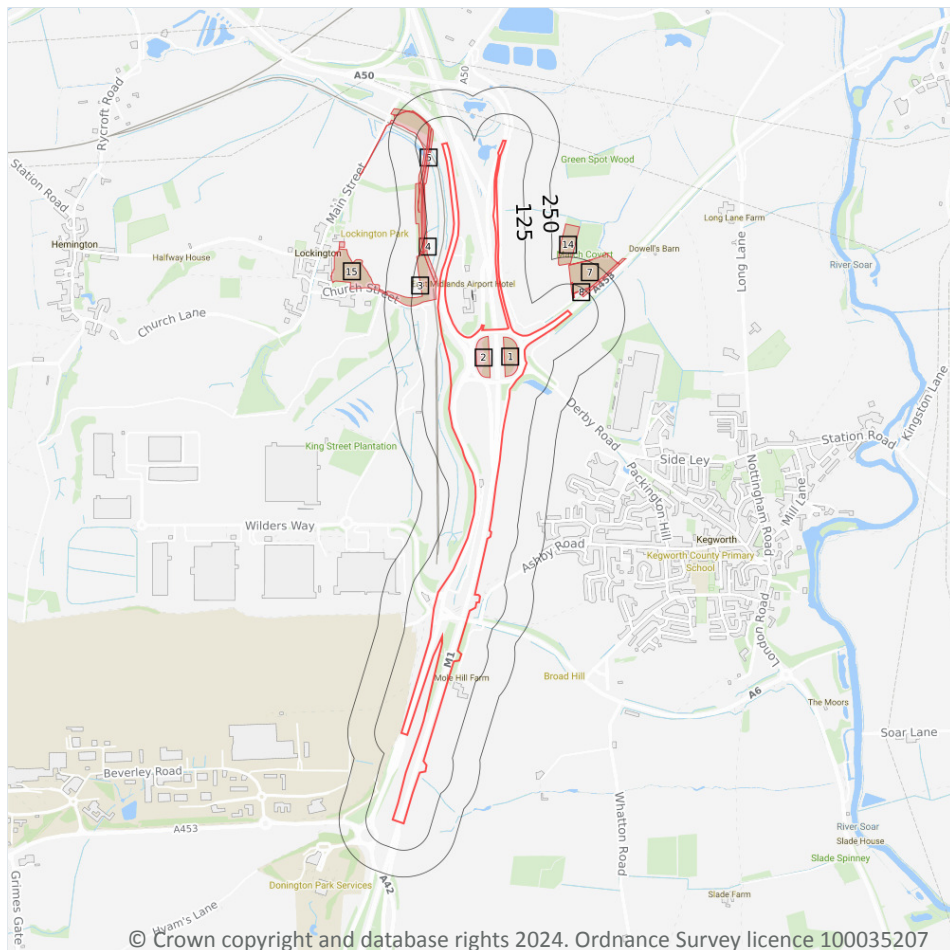
0

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

<b>Records within 250m</b>	<b>0</b>
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Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

*This data is sourced from Natural England.*

## 13.3 Open Mosaic Habitat

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

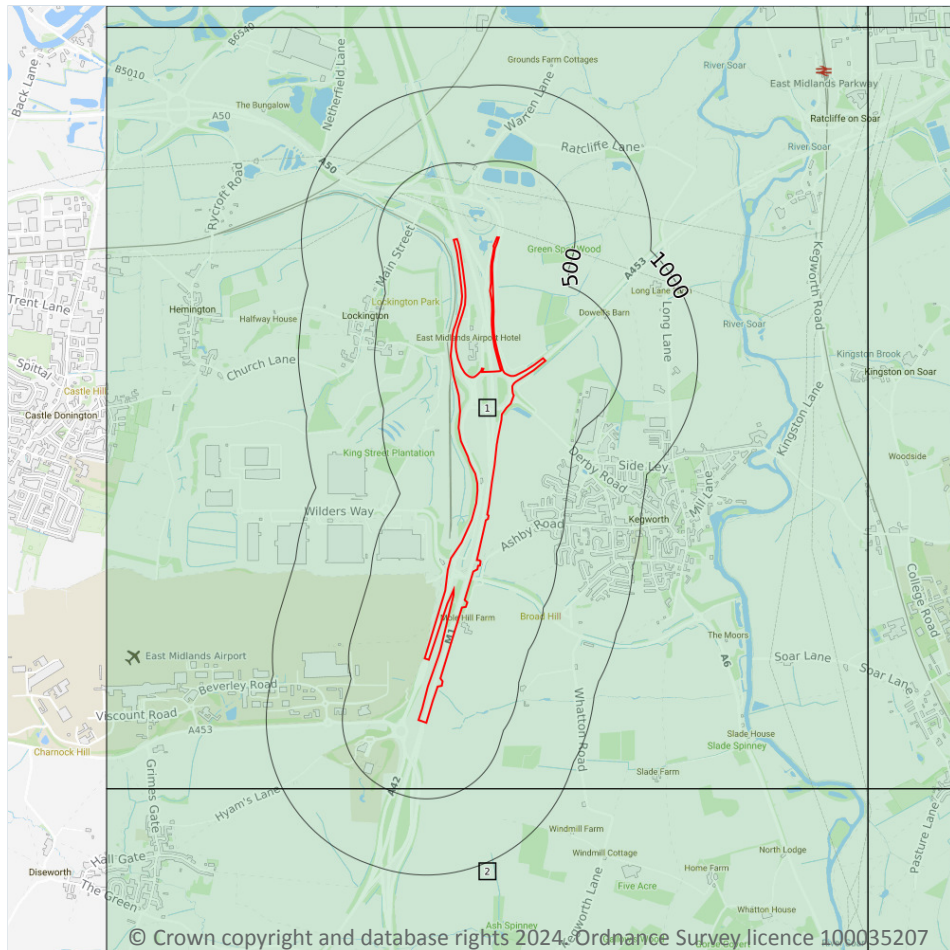
0

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.

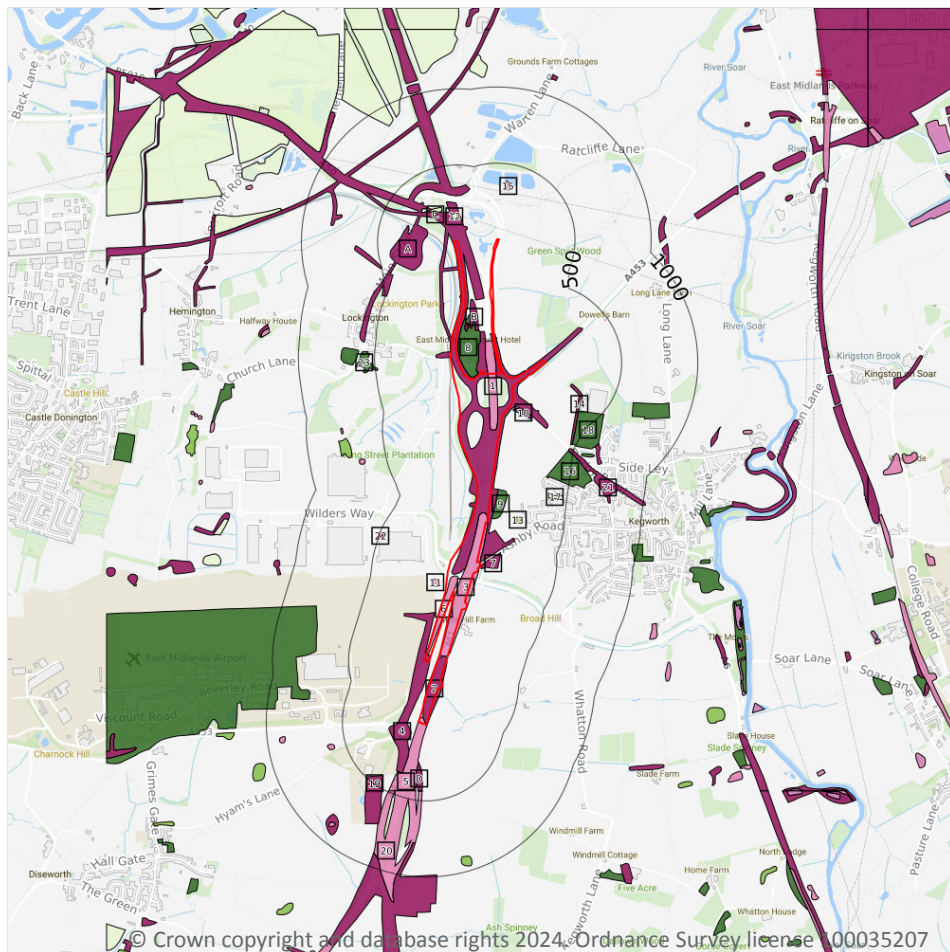
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 97](#) >

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



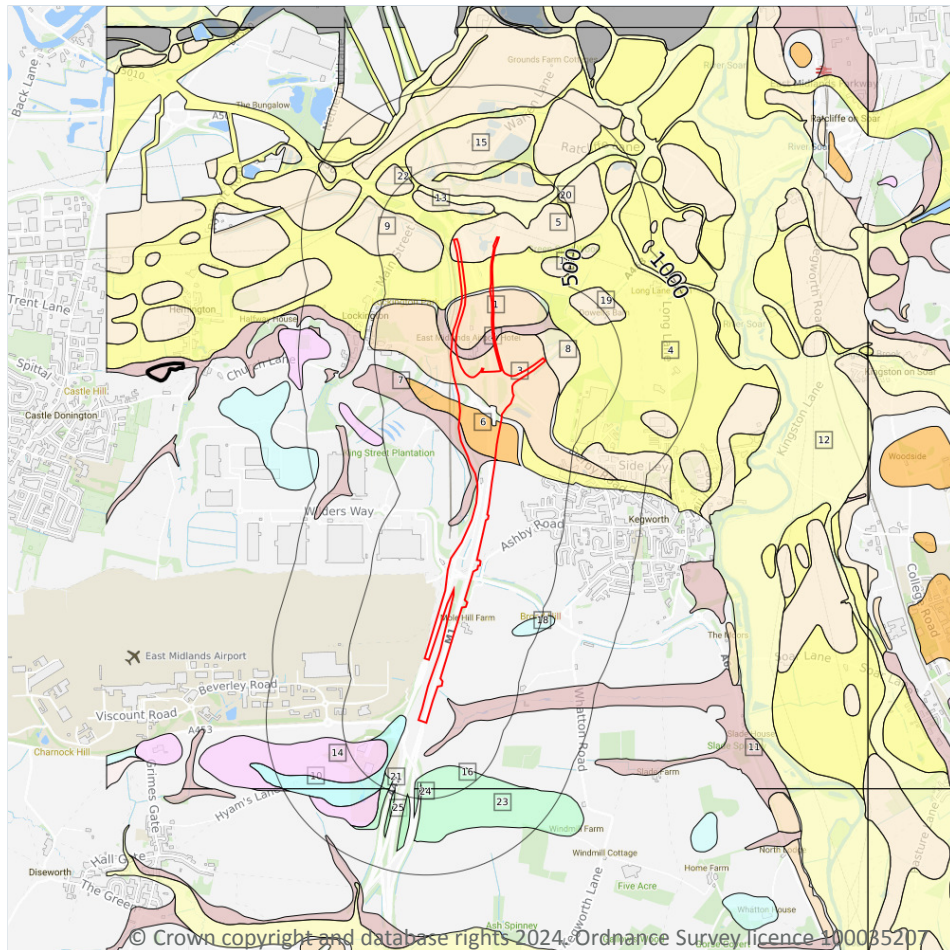
ID	Location	LEX Code	Description	Rock description
5	On site	WGR-VOID	Worked Ground (Undivided)	Void
6	On site	WGR-VOID	Worked Ground (Undivided)	Void
A	On site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	4m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	12m N	LSGR-UNKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
9	21m SE	LSGR-UNKNOWN	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-UNKNOWN	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-UNKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
17	376m E	WMGR-ARTDP	Infilled Ground	Artificial Deposit
18	382m NE	LSGR-UNKNOWN	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-UNKNOWN	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

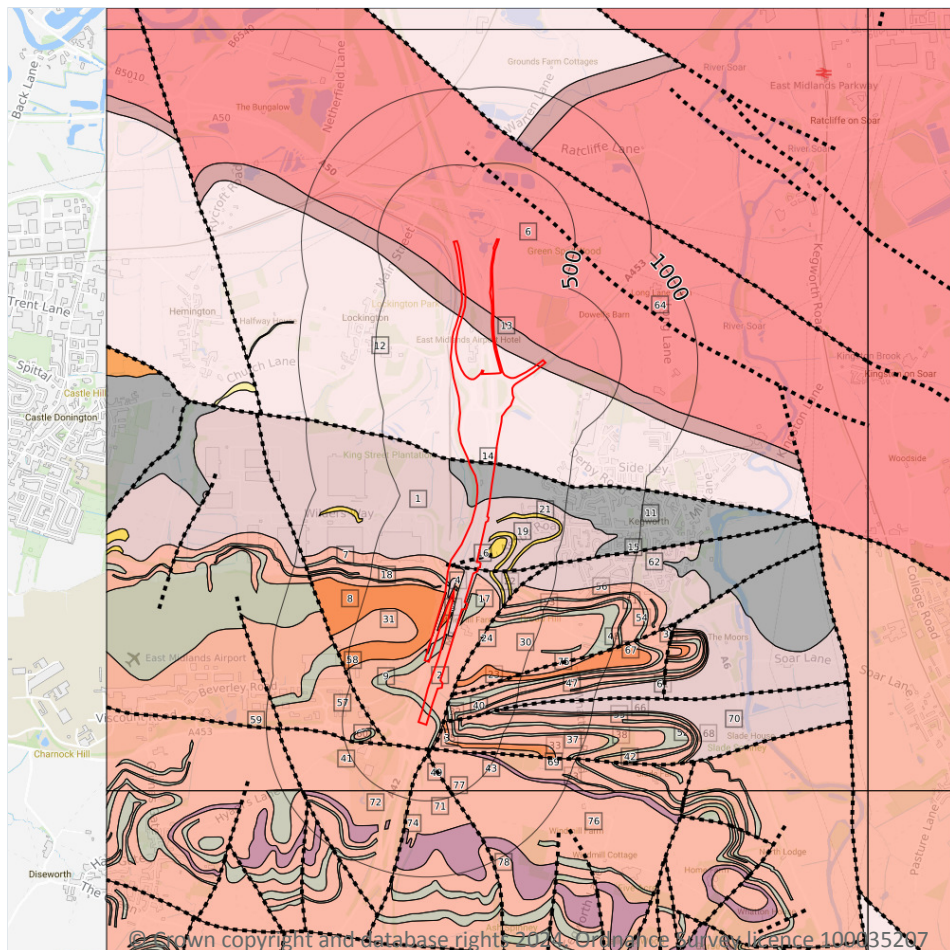
0

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



**— 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)

<b>Records within 500m</b>	<b>16</b>
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Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 103 >](#)

ID	Location	Category	Description
<b>14</b>	<b>On site</b>	<b>FAULT</b>	<b>Normal fault, inferred</b>
<b>15</b>	<b>On site</b>	<b>FAULT</b>	<b>Normal fault, inferred</b>
<b>16</b>	<b>On site</b>	<b>FAULT</b>	<b>Normal fault, inferred</b>
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



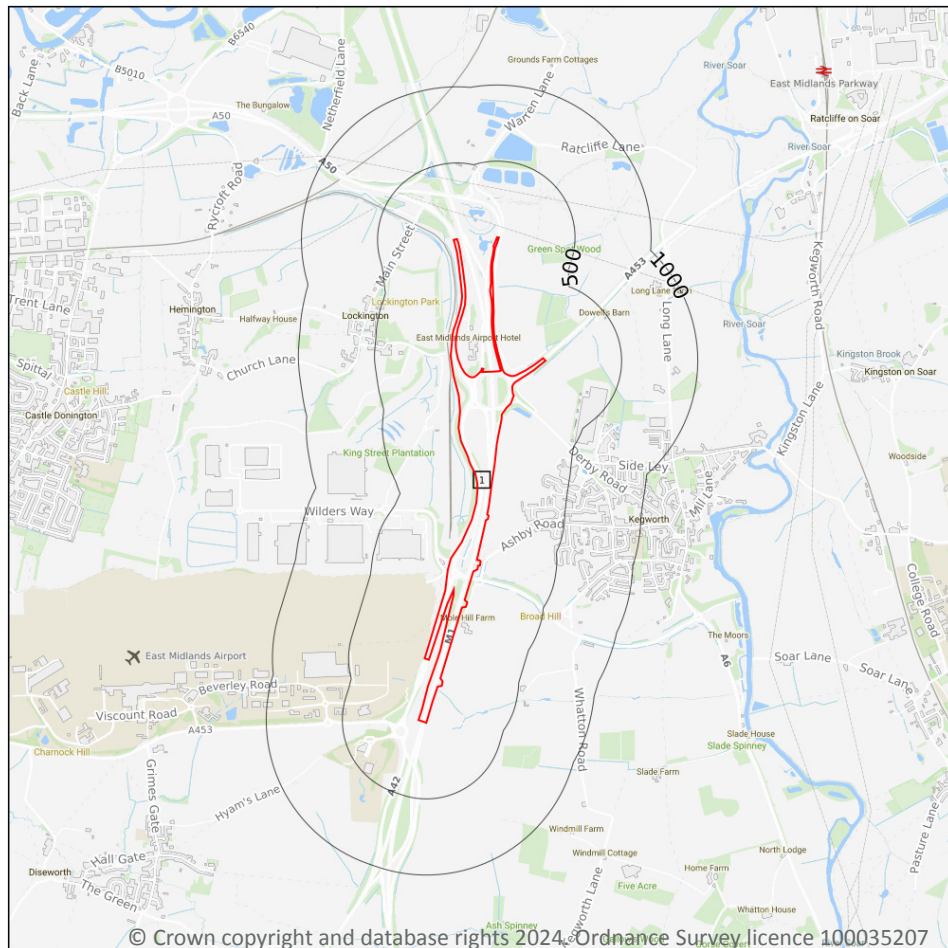


ID	Location	Category	Description
74	448m S	FAULT	Normal fault, inferred
77	460m S	FAULT	Normal fault, inferred
78	470m S	FAULT	Normal fault, inferred

*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

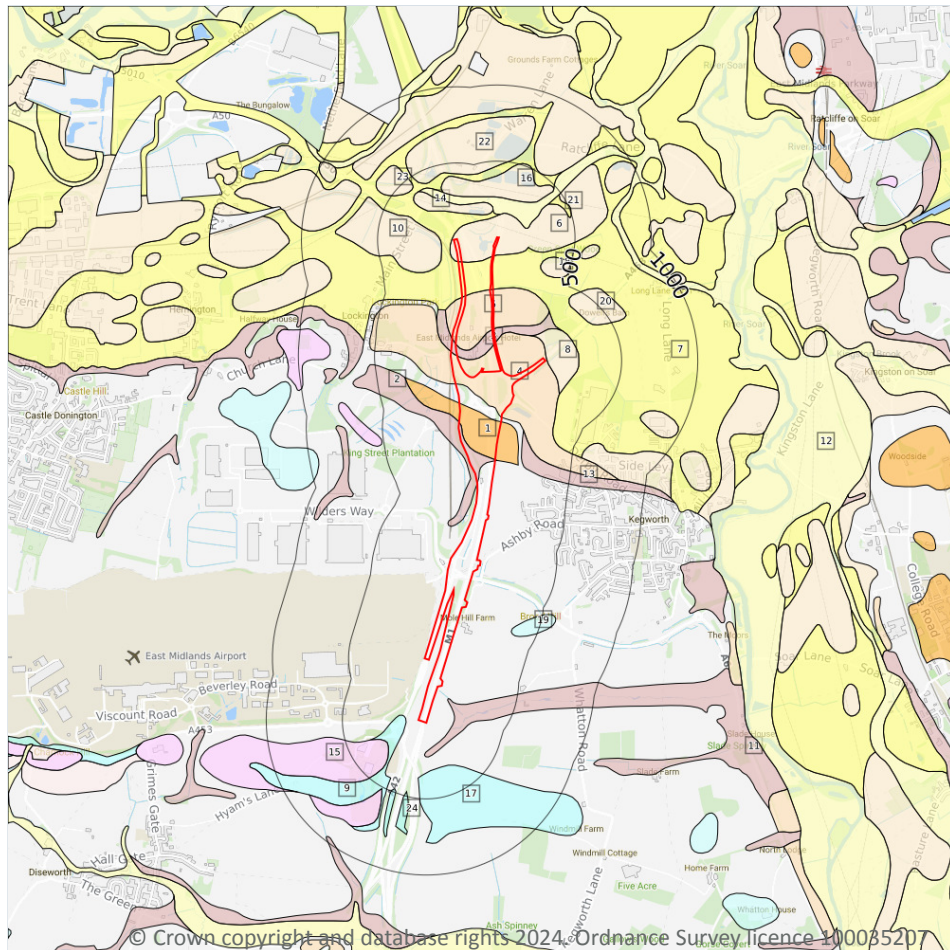
0

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

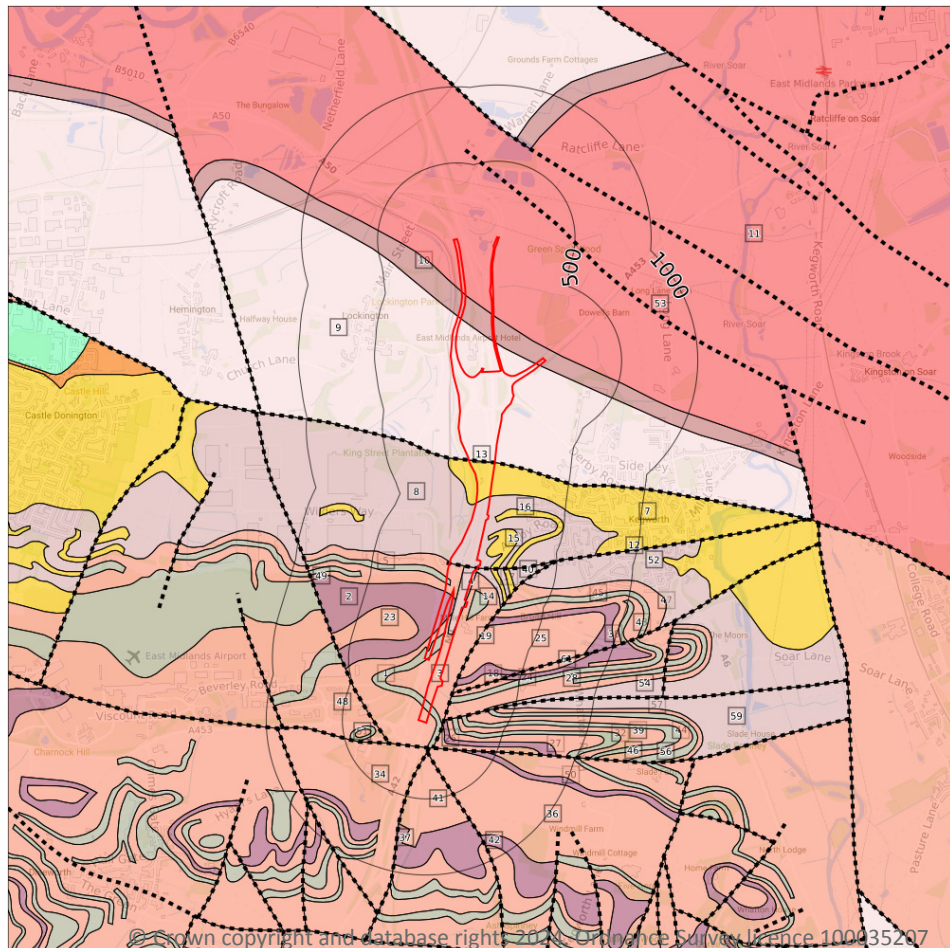
A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

*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	GUNTORPE MEMBER - SILTSTONE, DOLOMITIC	ANISIAN
2	On site	DIS-SDST	DISEWORTH SANDSTONE - SANDSTONE	LADINIAN
3	On site	GUN-MDST	GUNTORPE 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

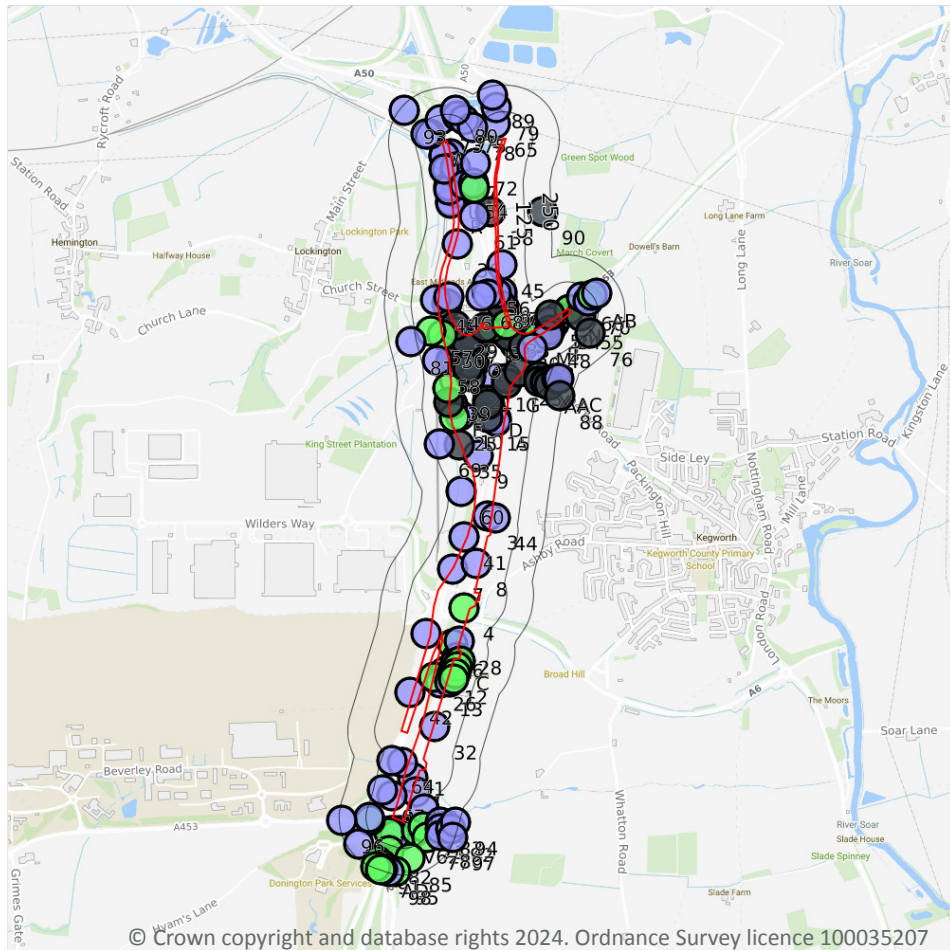


ID	Location	Category	Description
19	82m S	FAULT	Fault, inferred
21	85m S	FAULT	Fault, inferred
29	107m S	FAULT	Fault, inferred
35	162m S	FAULT	Fault, inferred
37	167m S	FAULT	Fault, inferred
42	193m S	FAULT	Fault, inferred
49	246m S	FAULT	Fault, inferred
53	309m N	FAULT	Fault, inferred

*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	<a href="#">218144</a> ↗
2	On site	447321 327682	A564 DERBY S BYPASS/SPUR BH139	24.45	N	<a href="#">218279</a> ↗
3	On site	447491 326858	A42 CASTLE DONINGTON 749	4.0	N	<a href="#">218211</a> ↗





ID	Location	Grid reference	Name	Length	Confidential	Web link
4	On site	447380 326430	M1 EXTENSIONS BH309 KEGWORTH	12.19	N	<a href="#">218147 ↗</a>
5	On site	447339 327496	A564 DERBY S BYPASS/SPUR BH140	30.2	N	<a href="#">218280 ↗</a>
6	On site	447330 326260	M1 EXTENSIONS BH308 KEGWORTH	15.24	N	<a href="#">218146 ↗</a>
7	On site	447330 326610	A42 CASTLE DONINGTON BH279	4.0	N	<a href="#">218251 ↗</a>
8	On site	447440 326640	M1 EXTENSIONS BH310 KEGWORTH	7.62	N	<a href="#">218148 ↗</a>
9	On site	447446 327143	A564 DERBY S BYPASS/SPUR TP234	3.0	N	<a href="#">218291 ↗</a>
10	On site	447365 327327	A564 DERBY S BYPASS/SPUR TP233	3.0	N	<a href="#">218290 ↗</a>
11	On site	447530 327500	M1 EXTENSIONS BH312 KEGWORTH	9.14	N	<a href="#">218150 ↗</a>
12	On site	447292 326133	A42 CASTLE DONINGTON 748	5.0	N	<a href="#">218210 ↗</a>
13	On site	447270 326080	M1 EXTENSIONS BH307 KEGWORTH	9.14	N	<a href="#">218145 ↗</a>
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	<a href="#">18189587 ↗</a>
25	On site	447337 327319	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1085	11.17	N	<a href="#">18913750 ↗</a>
26	On site	447240 326105	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1079	15.5	N	<a href="#">18913771 ↗</a>
27	On site	447556 327905	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D120L	3.2	N	<a href="#">19511278 ↗</a>
28	On site	447358 326274	M1 J23a to J25 Ground Investigation CPT01	6.45	N	<a href="#">21246666 ↗</a>
A	On site	447530 327315	A42 CASTLE DONINGTON BH751	7.0	N	<a href="#">218213 ↗</a>



ID	Location	Grid reference	Name	Length	Confidential	Web link
A	On site	447530 327300	M1 EXTENSIONS BH311 KEGWORTH	6.09	N	<a href="#">218149 ↗</a>
B	On site	447773 327733	A453 CLIFTON TO M1 4	12.6	N	<a href="#">218319 ↗</a>
B	On site	447738 327733	A453 CLIFTON TO M1 2	16.4	N	<a href="#">218317 ↗</a>
B	On site	447756 327746	A453 CLIFTON TO M1 108	14.0	N	<a href="#">218375 ↗</a>
C	On site	447349 326201	A42 CASTLE DONINGTON BH737R	8.0	N	<a href="#">218206 ↗</a>
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	<a href="#">18127251 ↗</a>
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	<a href="#">218278 ↗</a>
Q	On site	447320 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP1A	1.2	N	<a href="#">18127234 ↗</a>
L	1m NE	447780 327767	A453 CLIFTON TO M1 TP1	1.0	N	<a href="#">218301 ↗</a>
31	2m N	447510 327740	M1 EXTENSIONS BH313 KEGWORTH	12.19	N	<a href="#">218151 ↗</a>
Q	2m N	447320 328550	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP1/WS1	3.6	N	<a href="#">18127227 ↗</a>
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	<a href="#">218160 ↗</a>
N	3m NE	447874 327824	A453 CLIFTON TO M1 5	15.0	N	<a href="#">218320 ↗</a>
32	4m S	447243 325878	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1078	3.02	N	<a href="#">18913749 ↗</a>
33	4m N	447582 327754	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 CP1086	12.94	N	<a href="#">18913751 ↗</a>
P	5m N	447350 328370	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP8	1.2	N	<a href="#">18127722 ↗</a>
R	5m N	447320 328330	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP4/WS4	3.8	N	<a href="#">18127253 ↗</a>
R	6m N	447320 328320	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT01	1.2	N	<a href="#">18127864 ↗</a>
S	6m N	447290 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP6	5.0	N	<a href="#">18127259 ↗</a>
S	6m N	447290 328540	SCHEME 758 A50 ABNORMAL LOADS LAYBYS OT04	1.2	N	<a href="#">18127866 ↗</a>



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	<a href="#">18127865 ↗</a>
U	7m N	447310 328400	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP5/WS5	5.0	N	<a href="#">18127257 ↗</a>
34	8m N	447340 328460	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP2/WS2	2.9	N	<a href="#">18127235 ↗</a>
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	<a href="#">18127724 ↗</a>
36	11m N	447351 328129	A564 DERBY S BYPASS/SPUR TP231	3.0	N	<a href="#">218288 ↗</a>
C	11m S	447322 326116	A42 CASTLE DONINGTON BH731	8.0	N	<a href="#">218200 ↗</a>
C	11m S	447331 326144	A42 CASTLE DONINGTON BH733	8.0	N	<a href="#">218202 ↗</a>
C	11m S	447340 326173	A42 CASTLE DONINGTON BH735R	8.0	N	<a href="#">218204 ↗</a>
C	12m S	447314 326087	A42 CASTLE DONINGTON BH729R	8.0	N	<a href="#">218198 ↗</a>
37	12m N	447340 328490	SCHEME 758 A50 ABNORMAL LOADS LAYBYS TP7	1.2	N	<a href="#">18127721 ↗</a>
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	<a href="#">218281 ↗</a>
40	14m S	447155 325573	A42 CASTLE DONINGTON 747	7.0	N	<a href="#">218209 ↗</a>
C	14m S	447362 326181	A42 CASTLE DONINGTON BH736	14.0	N	<a href="#">218205 ↗</a>
41	14m S	447380 326760	A42 CASTLE DONINGTON BH280	6.0	N	<a href="#">218252 ↗</a>
42	15m S	447129 326038	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1080	1.2	N	<a href="#">18913778 ↗</a>
43	15m N	447247 327868	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1089	4.0	N	<a href="#">18913784 ↗</a>
44	16m SE	447525 326851	A42 CASTLE DONINGTON BH750	7.0	N	<a href="#">218212 ↗</a>
45	16m N	447558 328033	A42 CASTLE DONINGTON BH752	7.05	N	<a href="#">218214 ↗</a>
46	17m N	447312 327881	A564 DERBY S BYPASS/SPUR TP232	3.0	N	<a href="#">218289 ↗</a>
47	17m N	447531 327899	NOTTINGHAMSHIRE/DERBYSHIRE COA NMCS2 UPGRADE D1B	3.0	N	<a href="#">19513368 ↗</a>



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



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





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	<a href="#">18189548 ↗</a>
74	126m N	447352 328725	A564 DERBY SOUTH'BYPASS TP5674	2.0	N	<a href="#">218566 ↗</a>
75	128m N	447380 328710	M1 EXTENSION BH316 LOCKINGTON	6.4	N	<a href="#">218159 ↗</a>
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	<a href="#">218245 ↗</a>
78	137m N	447421 328675	A564 DERBY SOUTH'BYPASS TP5665	3.0	N	<a href="#">218564 ↗</a>
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	<a href="#">218161 ↗</a>
79	150m N	447533 328768	A564 DERBY SOUTH'BYPASS TP5663	3.0	N	<a href="#">218563 ↗</a>
80	150m N	447340 328755	A564 DERBY SOUTH'BYPASS BH5666	10.0	N	<a href="#">218535 ↗</a>
81	151m N	447133 327673	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 TP1087	3.5	N	<a href="#">18913783 ↗</a>
82	153m S	447031 325296	A42 CASTLE DONINGTON BH728R	20.0	N	<a href="#">218197 ↗</a>
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	<a href="#">218247 ↗</a>
AC	170m NE	447825 327502	SOAR VALLEY SAND AND GRAVEL	7.5	N	<a href="#">218262 ↗</a>
84	173m S	447270 325400	A42 CASTLE DONINGTON TP444	3.0	N	<a href="#">218246 ↗</a>
85	175m S	447127 325261	M1 WIDENING JUNCTION 21-30 PRELIMINARY GI CONTRACT 2 RC1074	15.0	N	<a href="#">18913769 ↗</a>
86	182m S	447270 325370	A42 CASTLE DONINGTON TP446	4.0	N	<a href="#">218248 ↗</a>
87	200m S	446890 325330	A42 CASTLE DONINGTON BH275	5.0	N	<a href="#">218221 ↗</a>
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	<a href="#">218533 ↗</a>
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	<a href="#">218231 ↗</a>

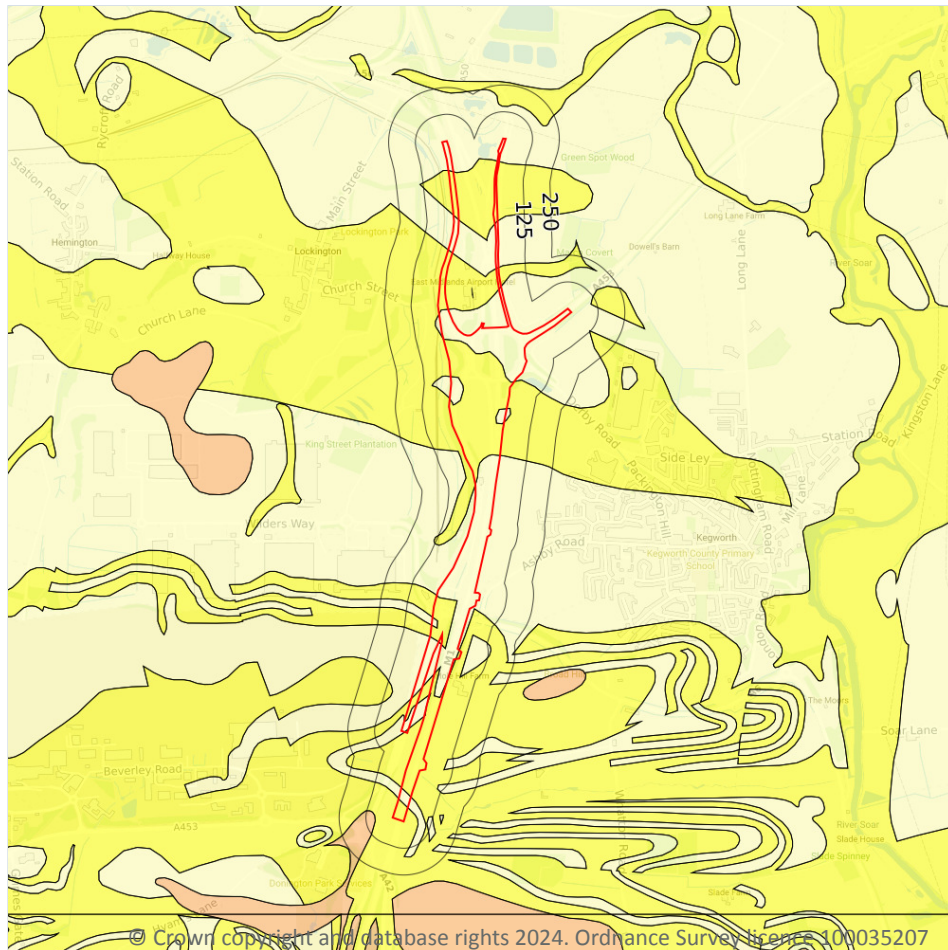


ID	Location	Grid reference	Name	Length	Confidential	Web link
92	221m S	447320 325400	A42 CASTLE DONINGTON TP447	3.0	N	<a href="#">218249 ↗</a>
AD	225m S	447000 325230	A42 CASTLE DONINGTON BH272	25.0	N	<a href="#">218229 ↗</a>
93	231m N	447101 328752	A564 DERBY S BYPASS/SPUR TP229	2.0	N	<a href="#">218286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

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



## 17 Natural ground subsidence - Shrink swell clays



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

### 17.1 Shrink swell clays

#### Records within 50m

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.*





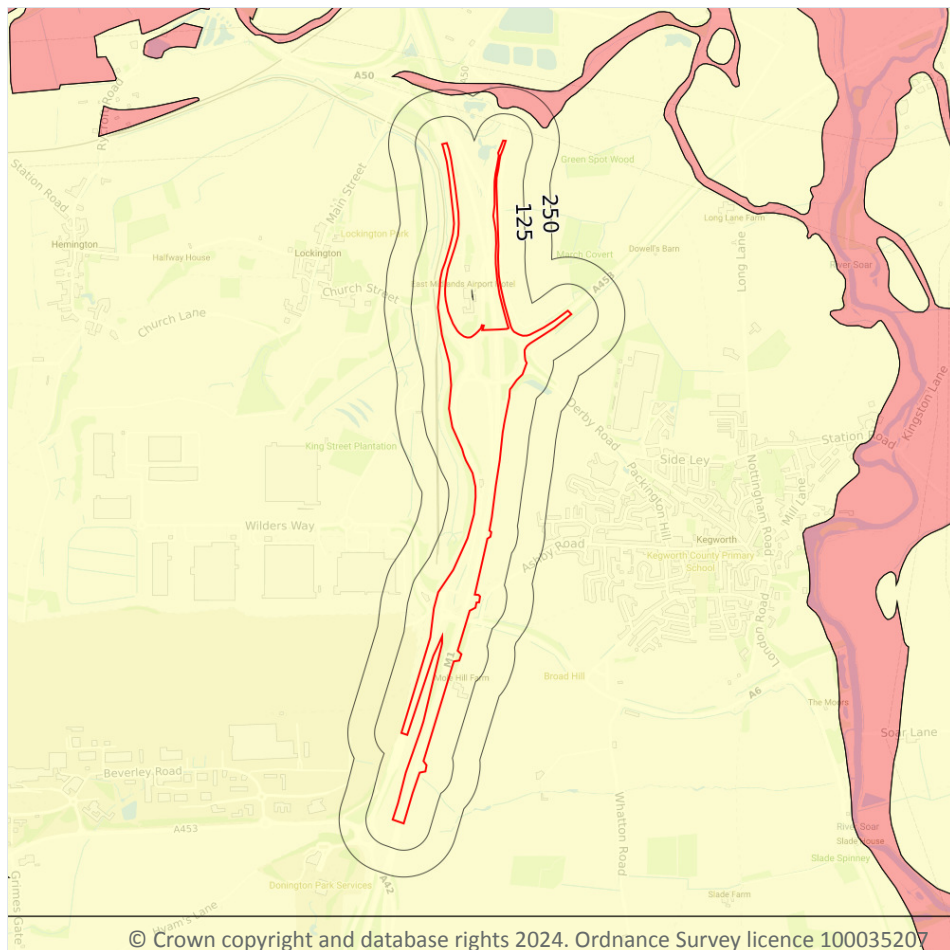
Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

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





## Natural ground subsidence - Compressible deposits



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

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### 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.

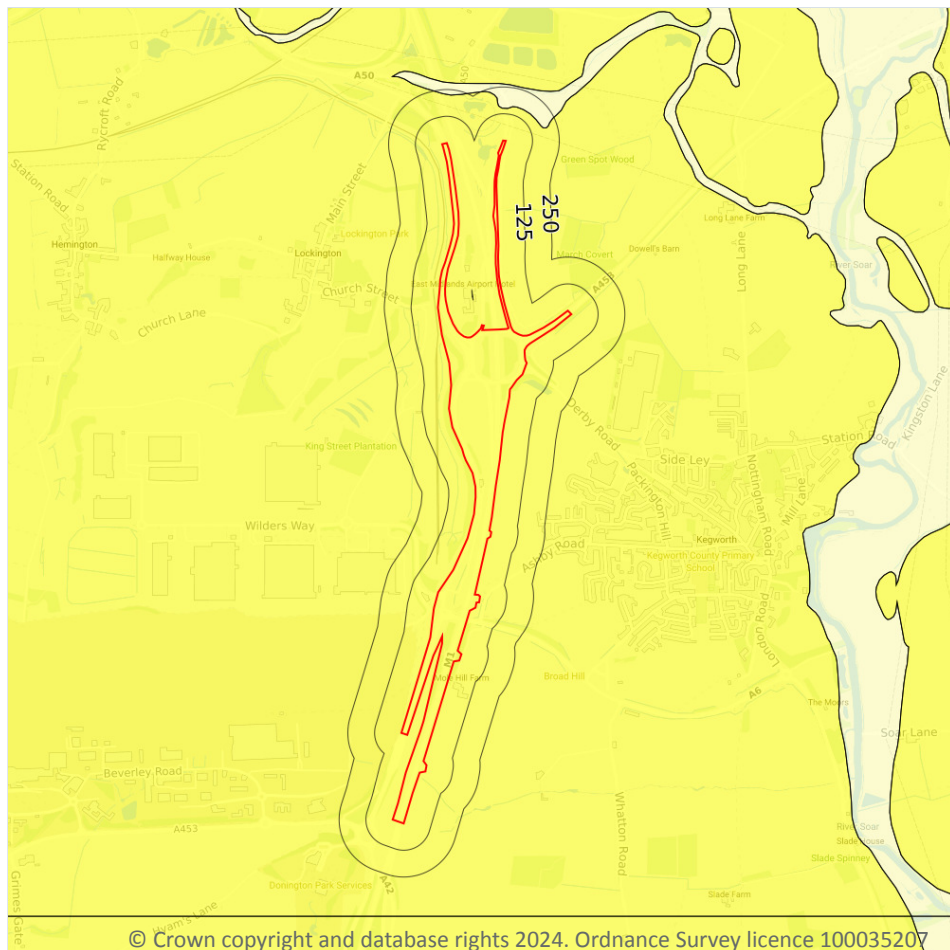
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 131](#) >

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.

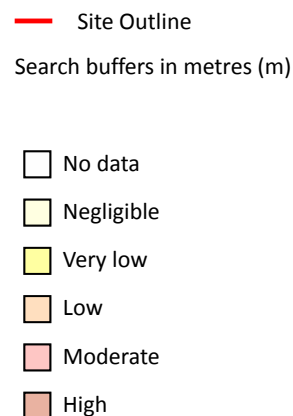
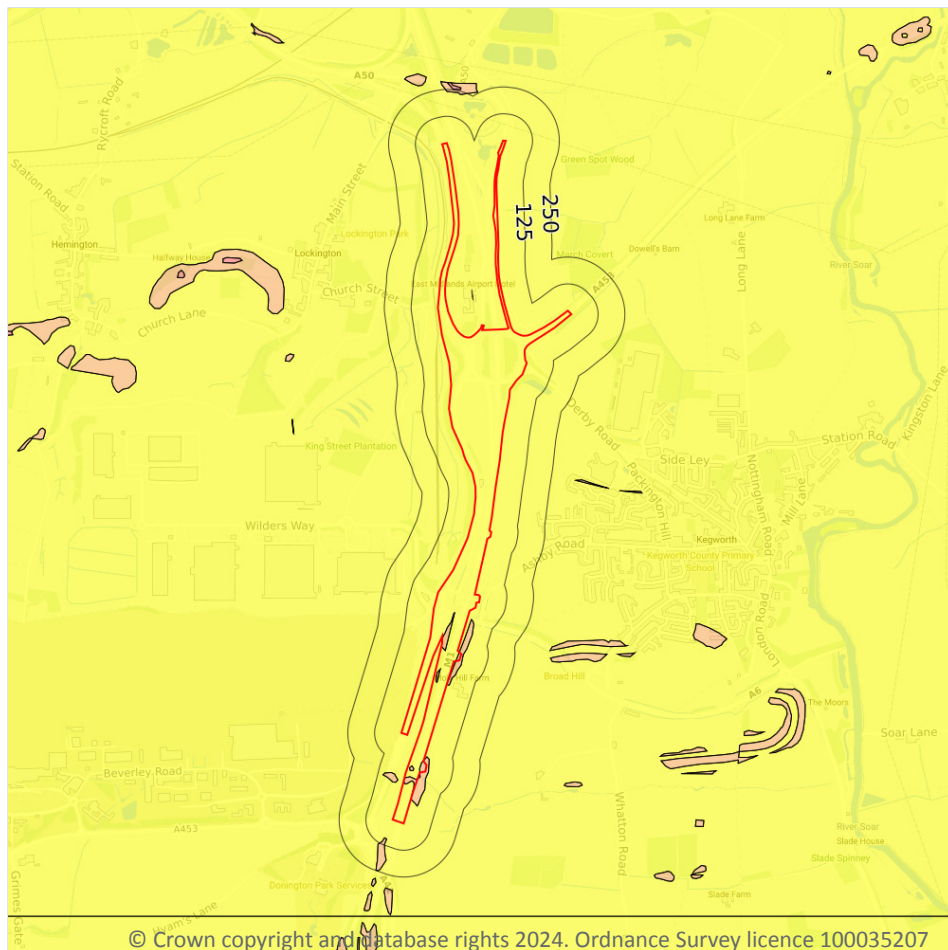
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 132 >](#)

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



### 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.

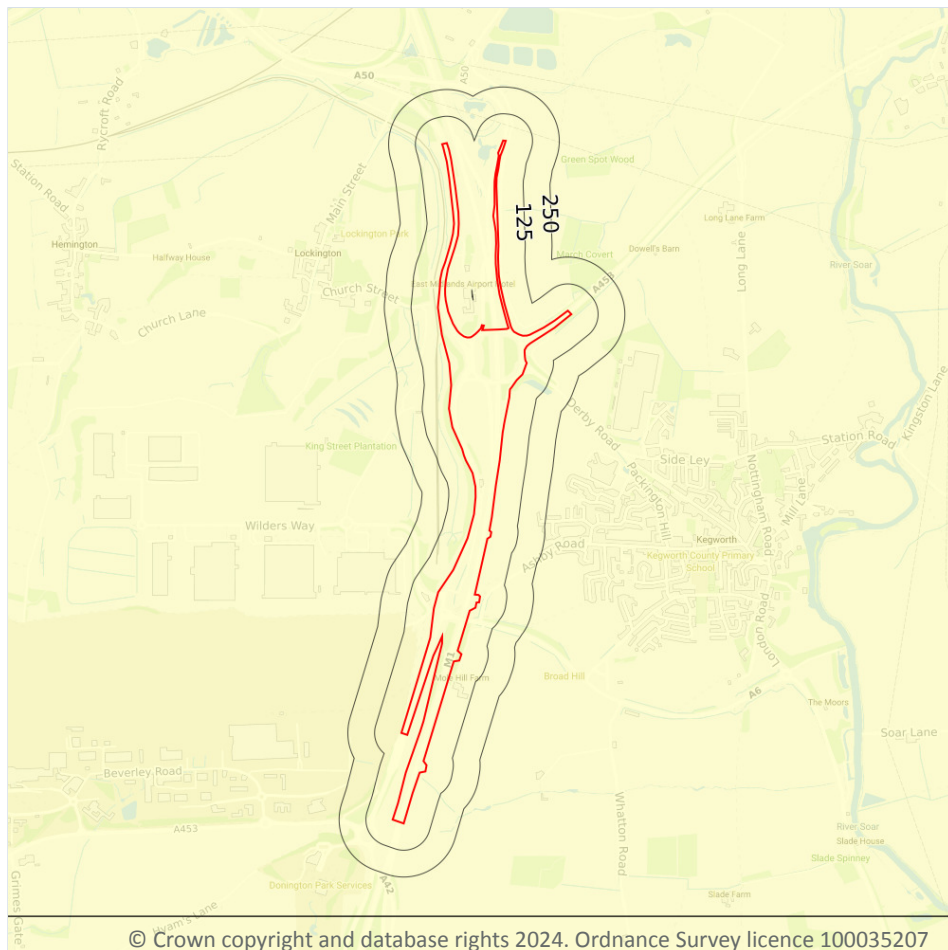


Location	Hazard rating	Details
On site	Low	<b>Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.</b>
28m S	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically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

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



## Natural ground subsidence - Ground dissolution of soluble rocks



### 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.

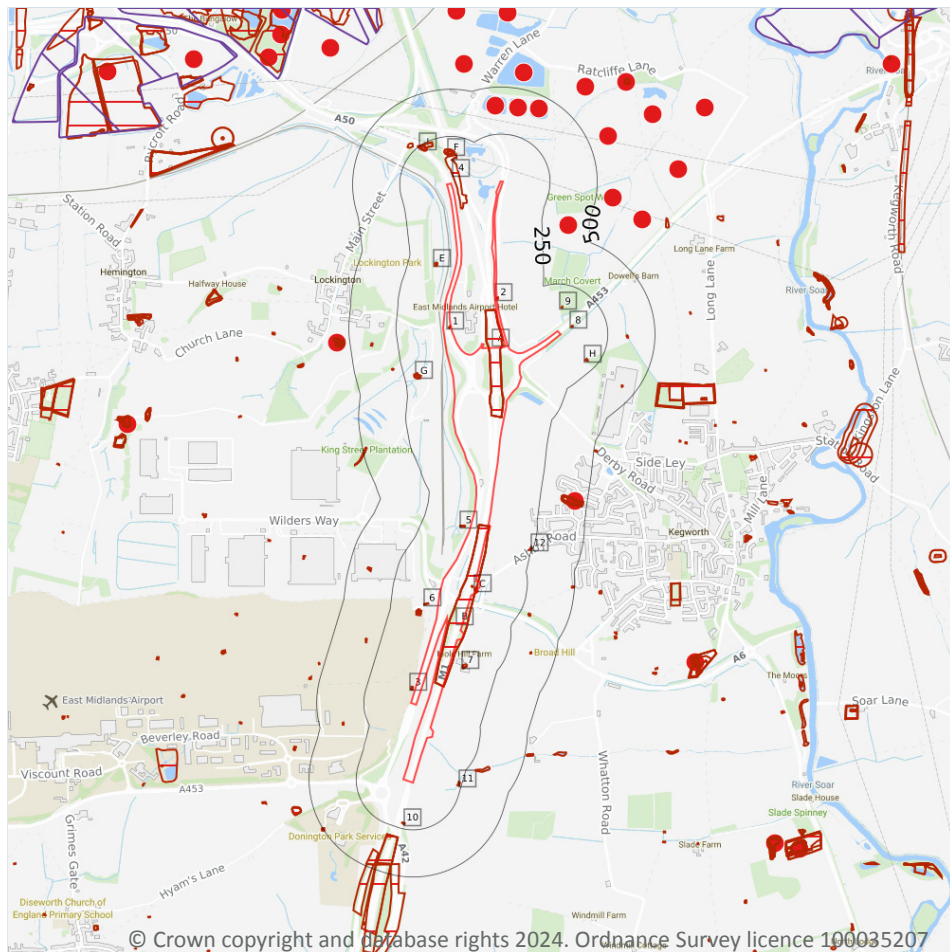


*This data is sourced from the British Geological Survey.*





## 18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
  - Sporadic underground mining of restricted extent possible
  - Localised small scale underground mining possible
  - Small scale mining possible
  - Underground mining known or likely within or in close proximity
  - Underground mining known within or in very close proximity

### 18.1 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.

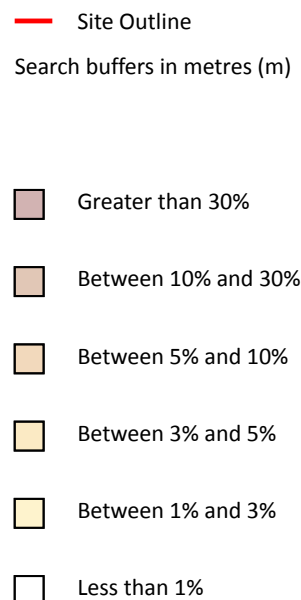
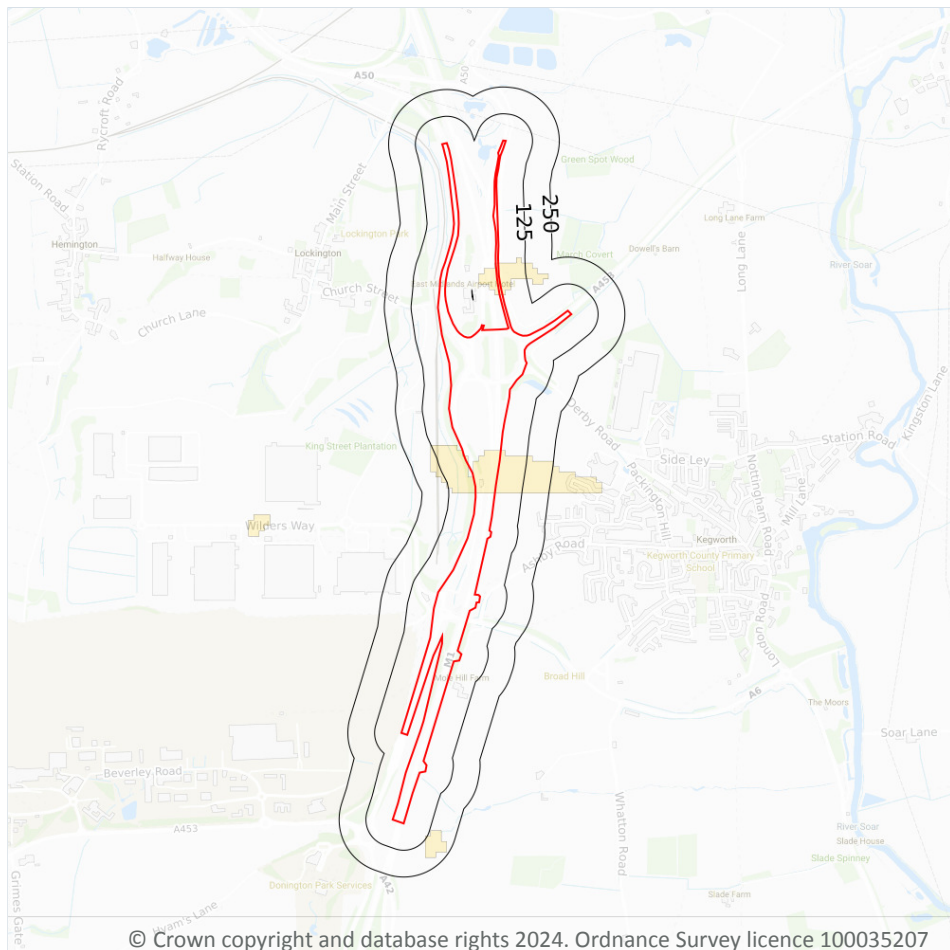
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over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



### 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<sup>2</sup>. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km<sup>2</sup>; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 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
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
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<sup>2</sup>).

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



## 21.3 BGS Measured Urban Soil Chemistry

Records within 50m

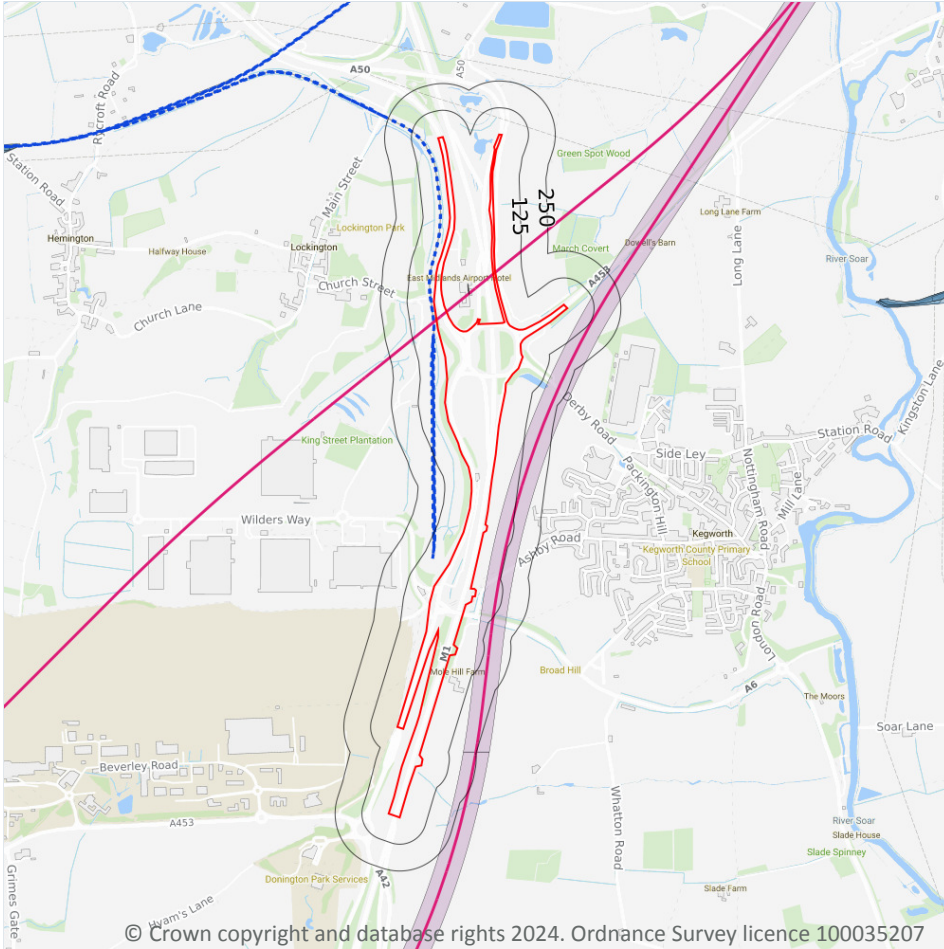
0

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<sup>2</sup>.

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



## 22 Railway infrastructure and projects



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

### 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

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

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

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

## 22.9 HS2

<b>Records within 500m</b>	<b>18</b>
----------------------------	-----------

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

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
<b>On site</b>	<b>Bridge/Viaduct</b>	<b>249mph</b>	<b>400kph</b>	<b>Section is scheduled for cancellation</b>
<b>On site</b>	<b>Bridge/Viaduct</b>	<b>199mph</b>	<b>320kph</b>	<b>Section is scheduled for cancellation</b>
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.*



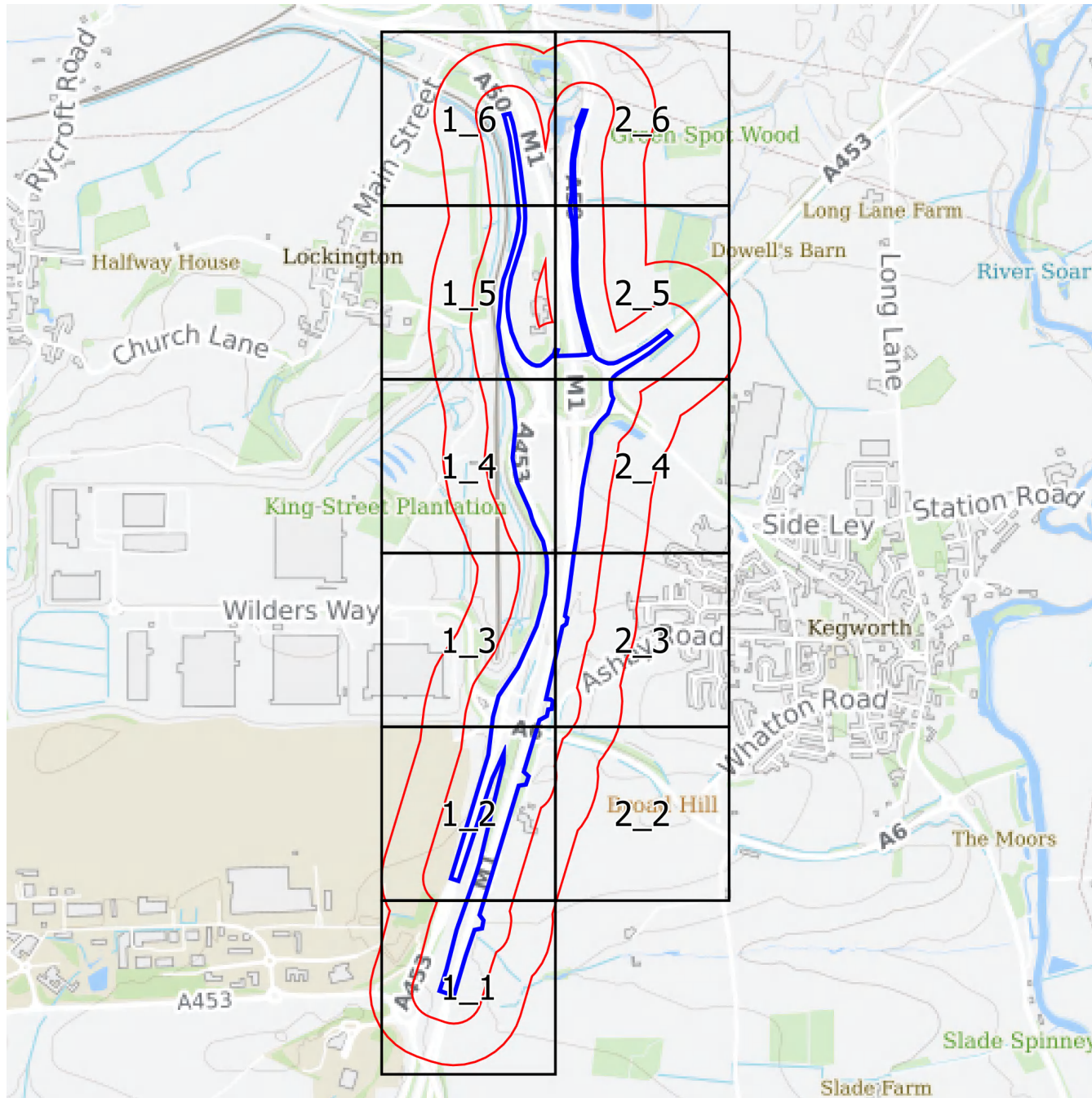
## Data providers

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> ↗.

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1:2,500 Scale Grid Index



**Site Details:**

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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_1\_1  
**Grid Ref:** 447165, 325527

**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



2003

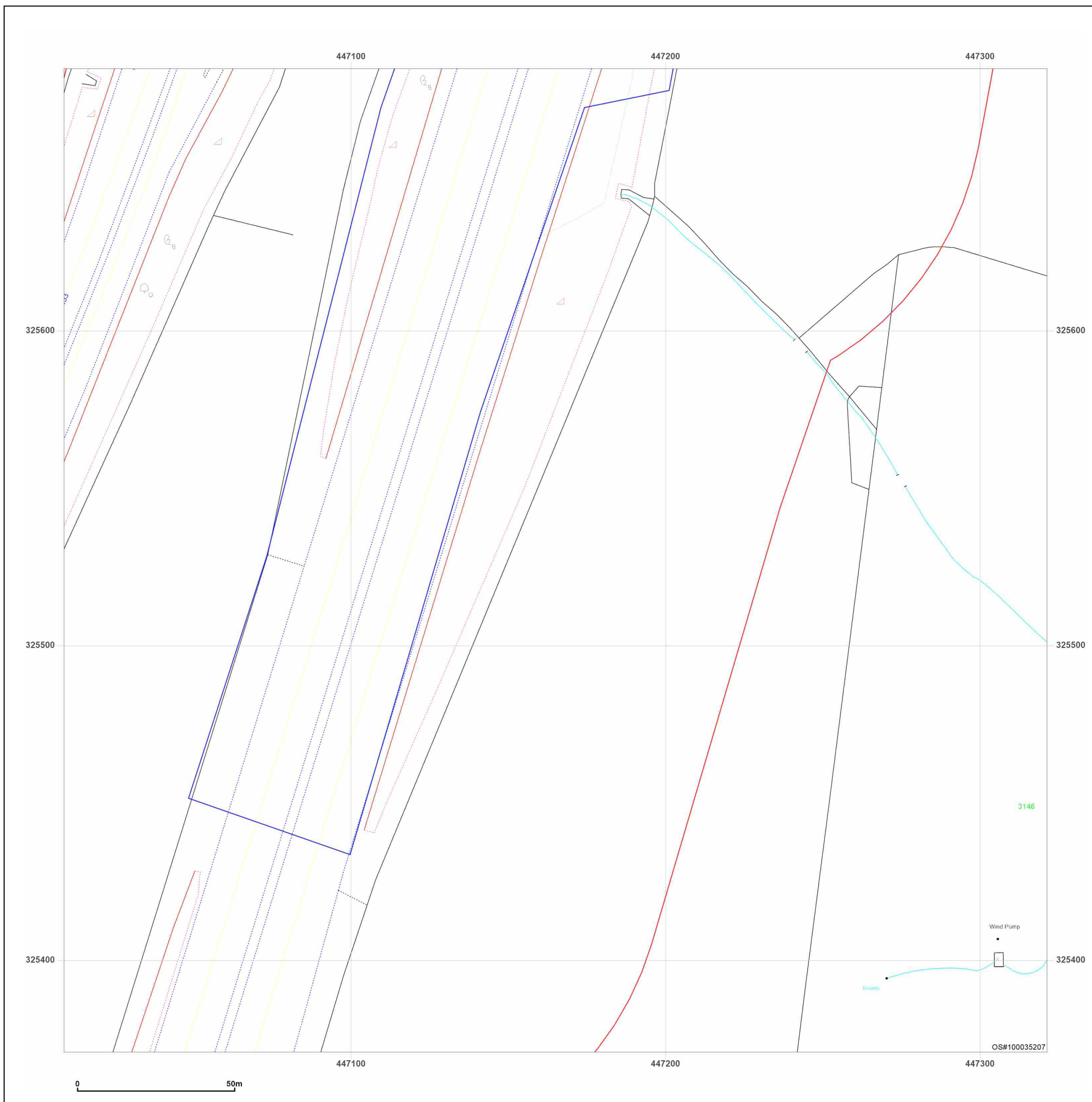


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**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_1\_2  
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**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



2003

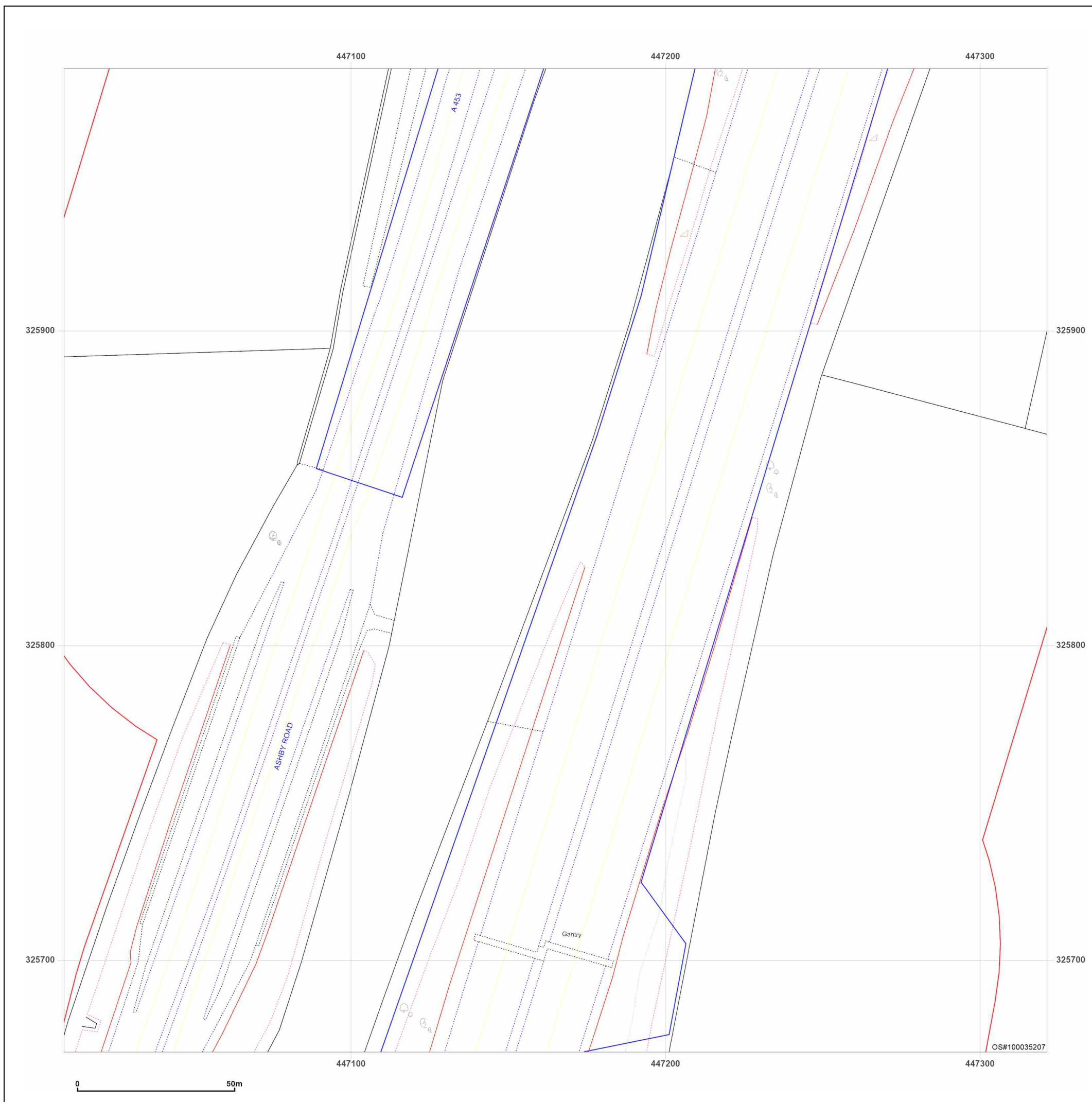


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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_1\_3  
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**Map date:** 2003

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**Printed at:** 1:1,250

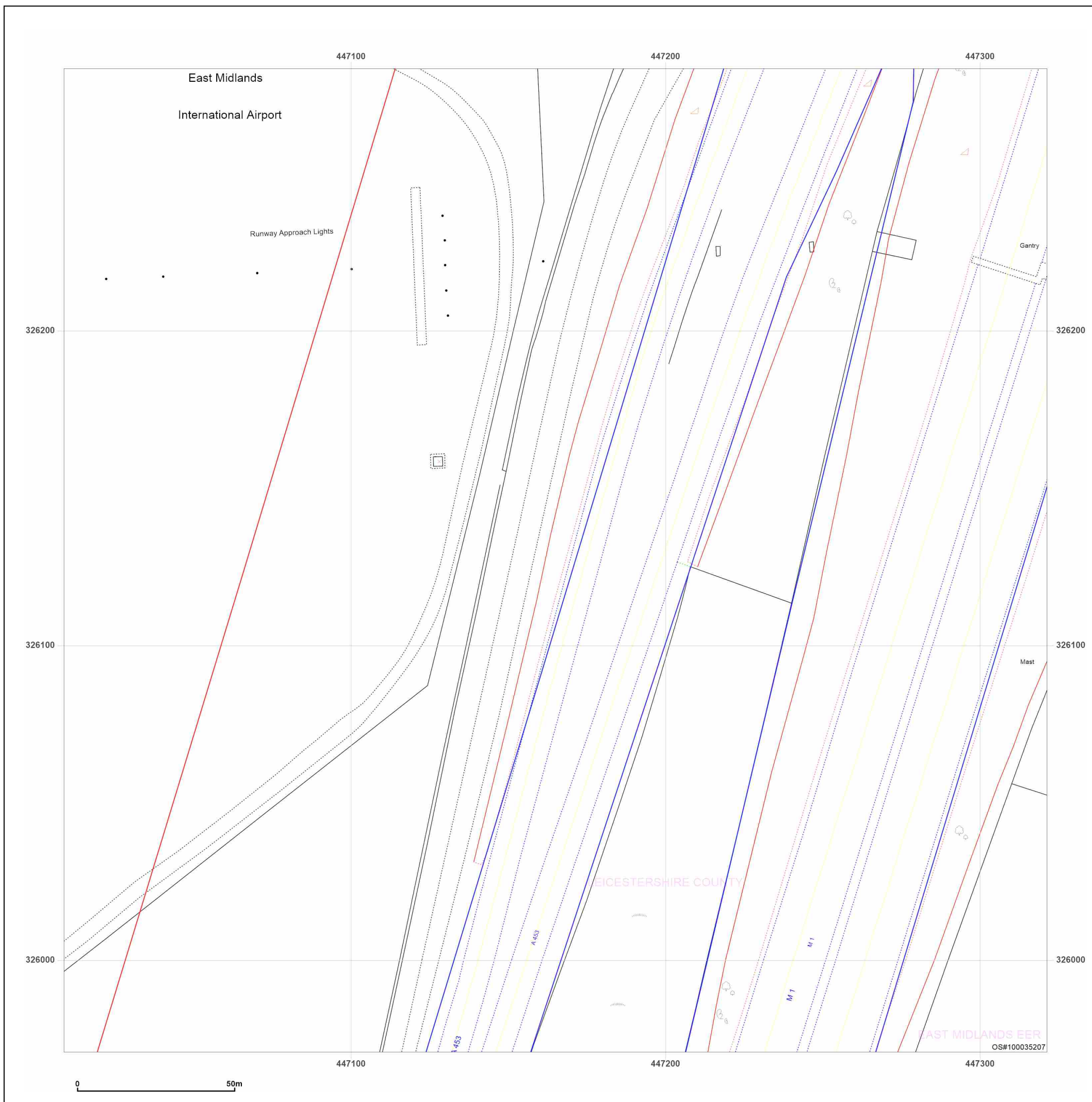


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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_1\_4  
**Grid Ref:** 447165, 326427

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**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



2003

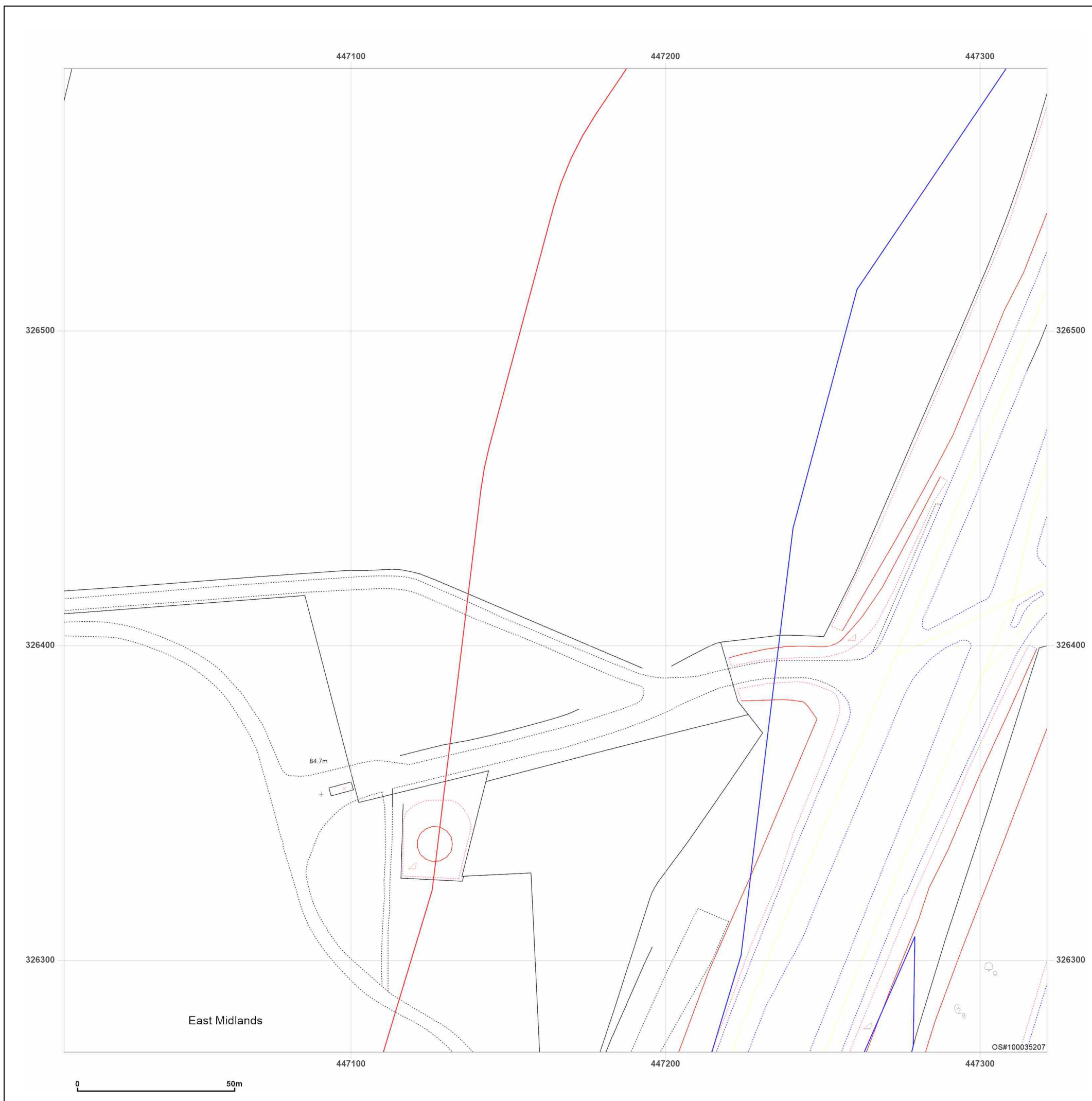


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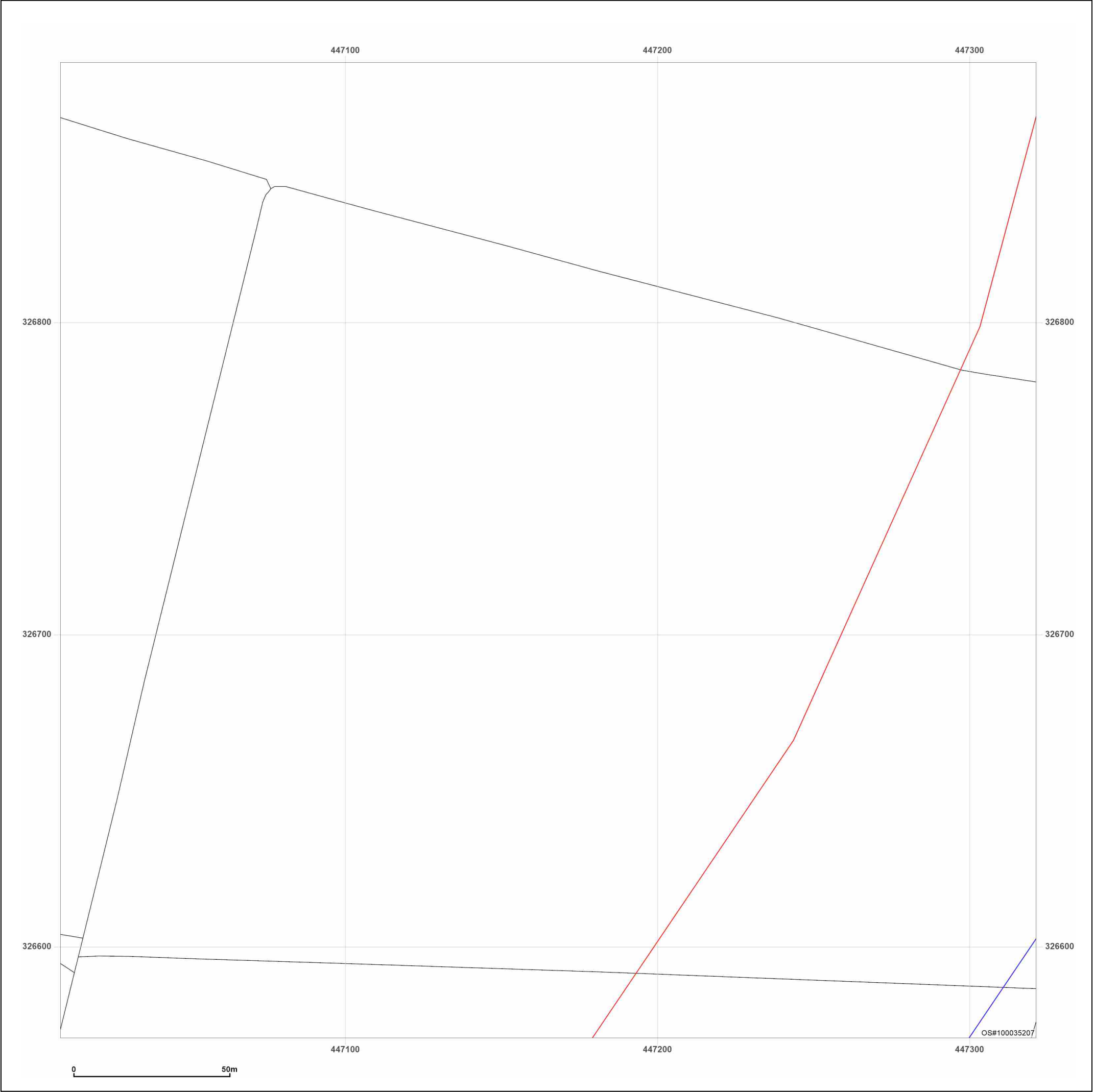
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**Grid Ref:** 447165, 326727

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2003

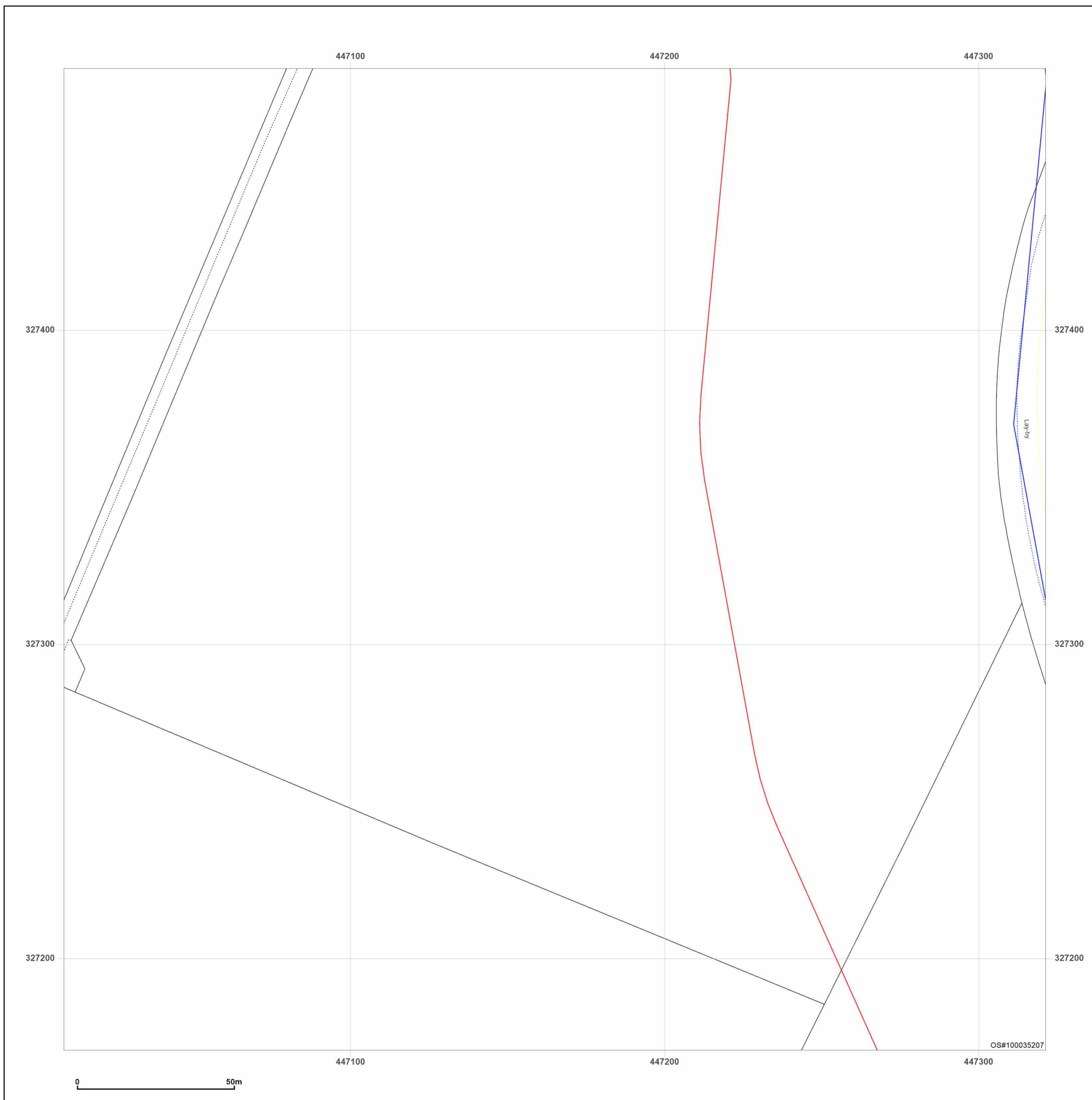


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**Client Ref:** 220500 - 10250  
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2003

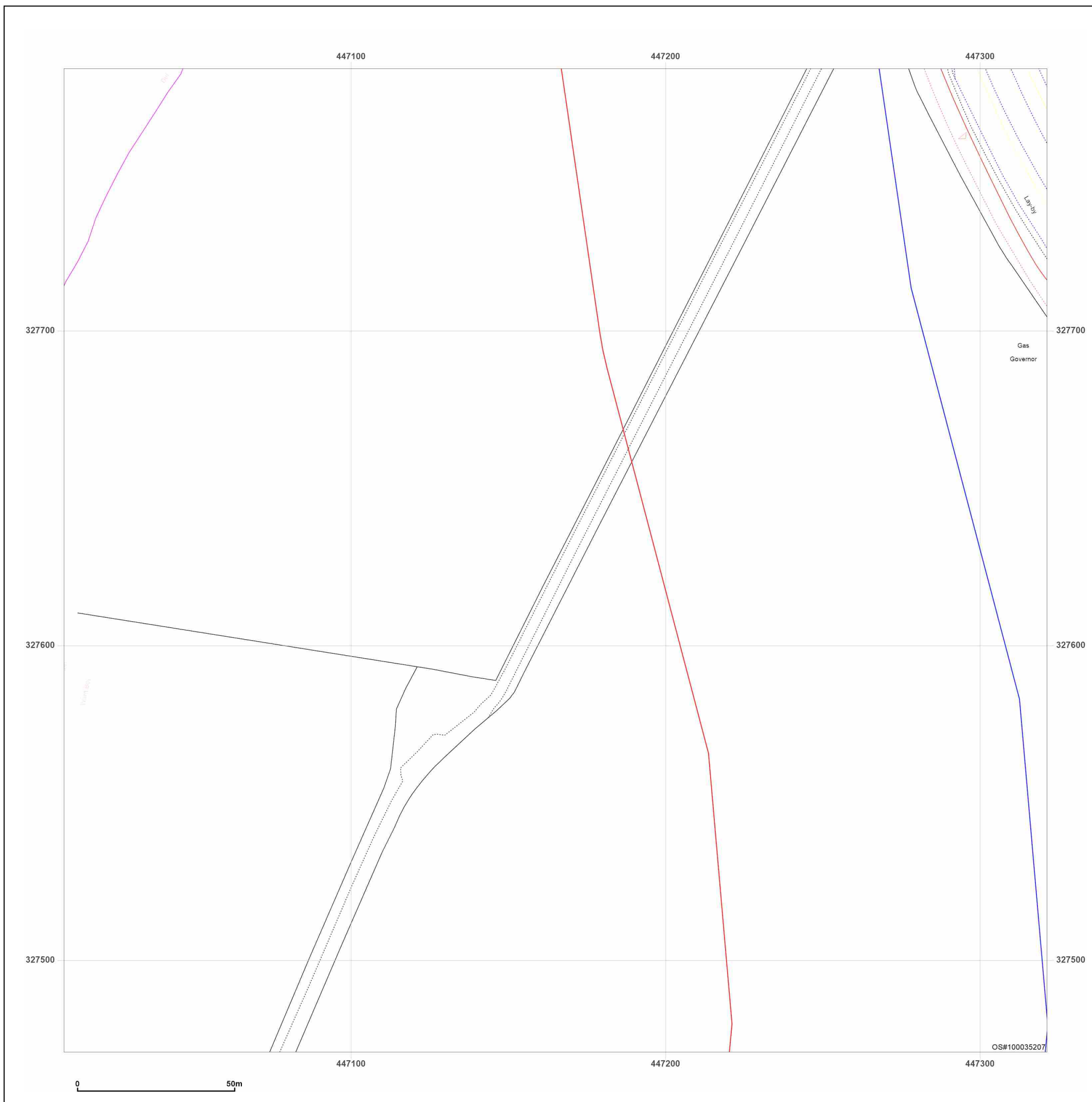


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**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_1\_9  
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**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



2003

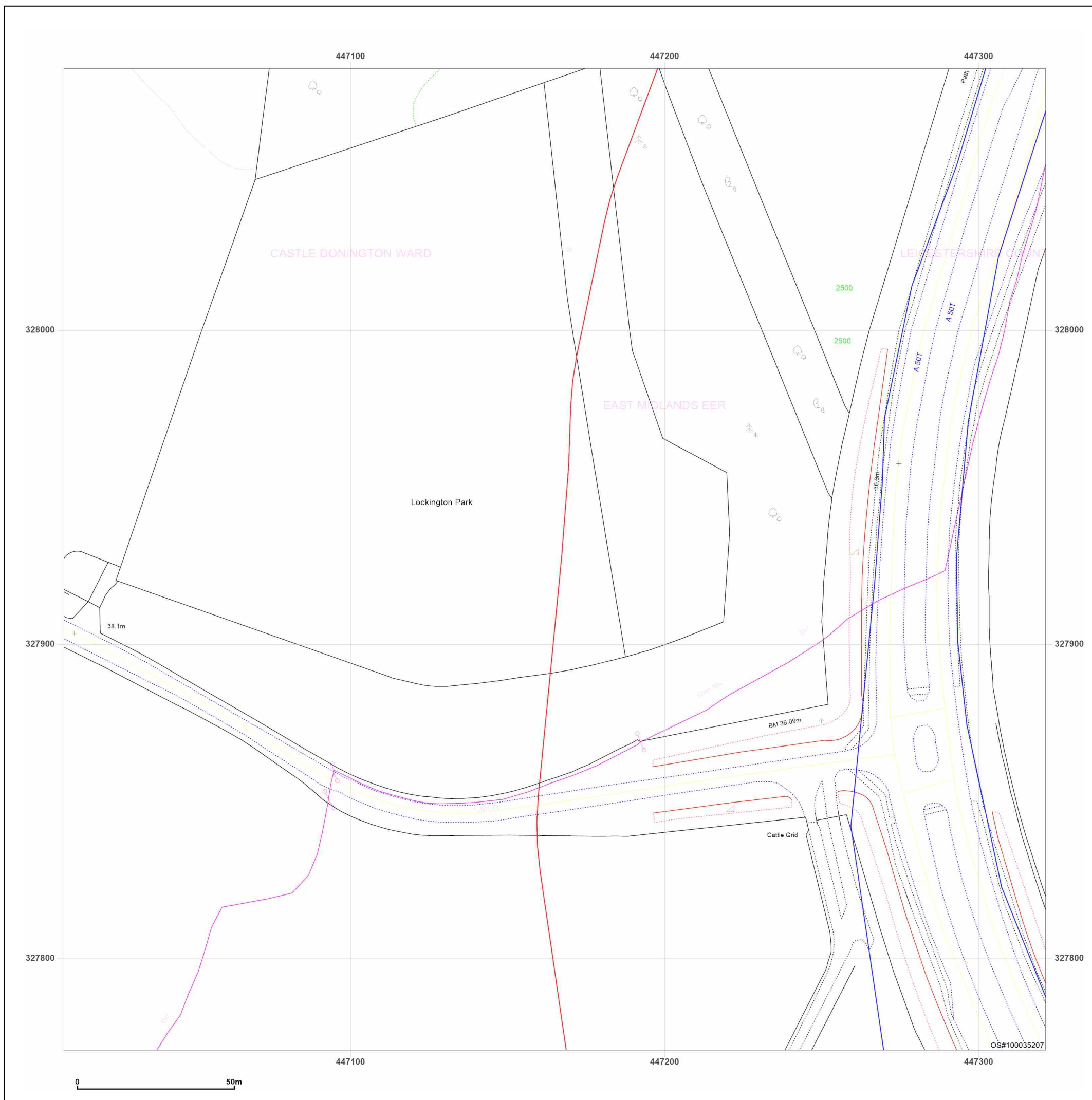


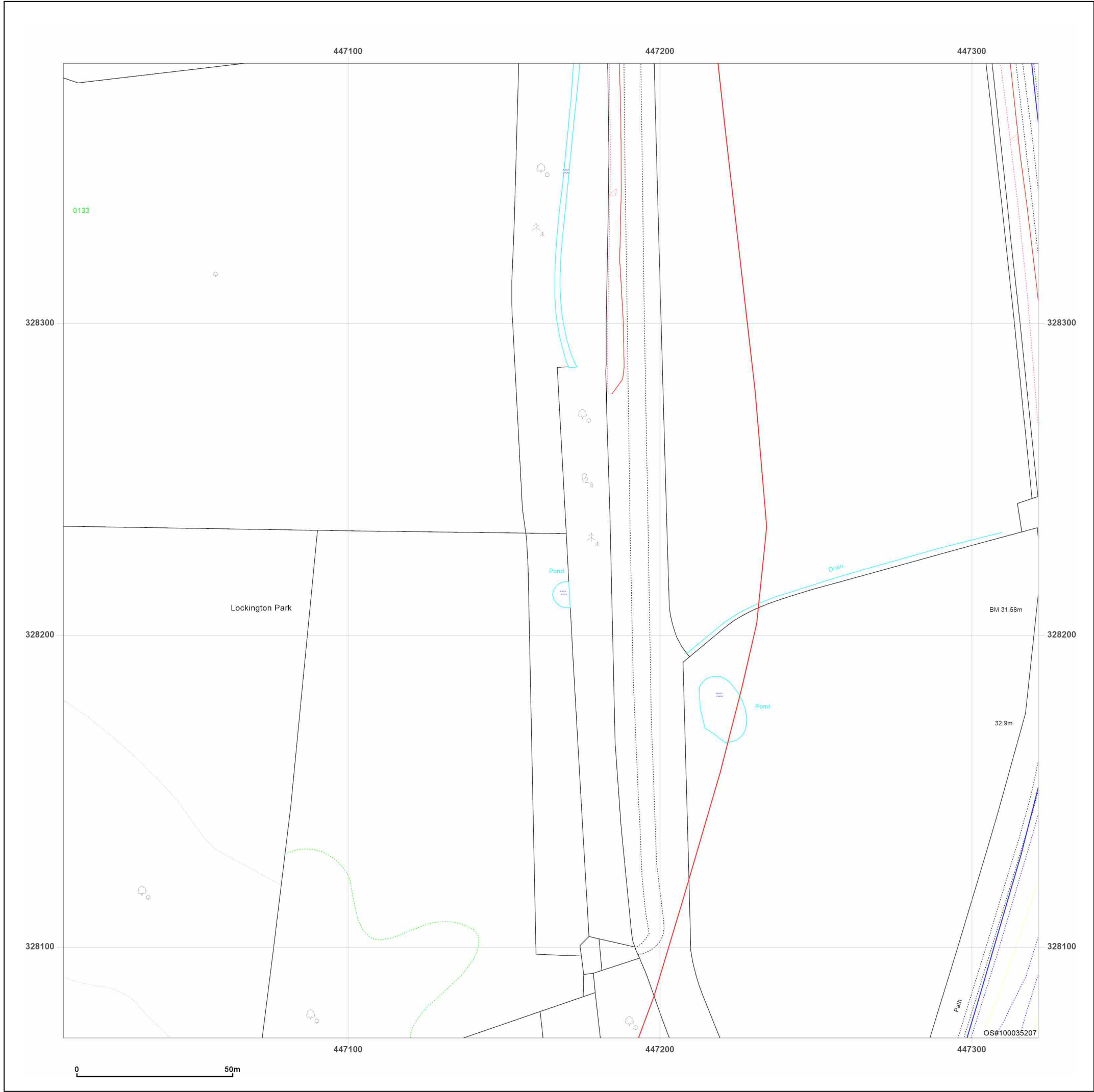
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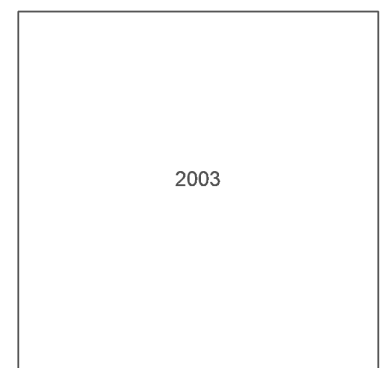
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**Grid Ref:** 447165, 328227

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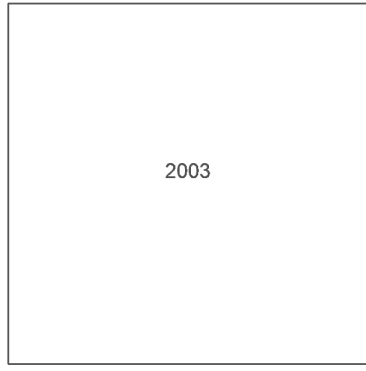
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**Client Ref:** 220500 - 10250  
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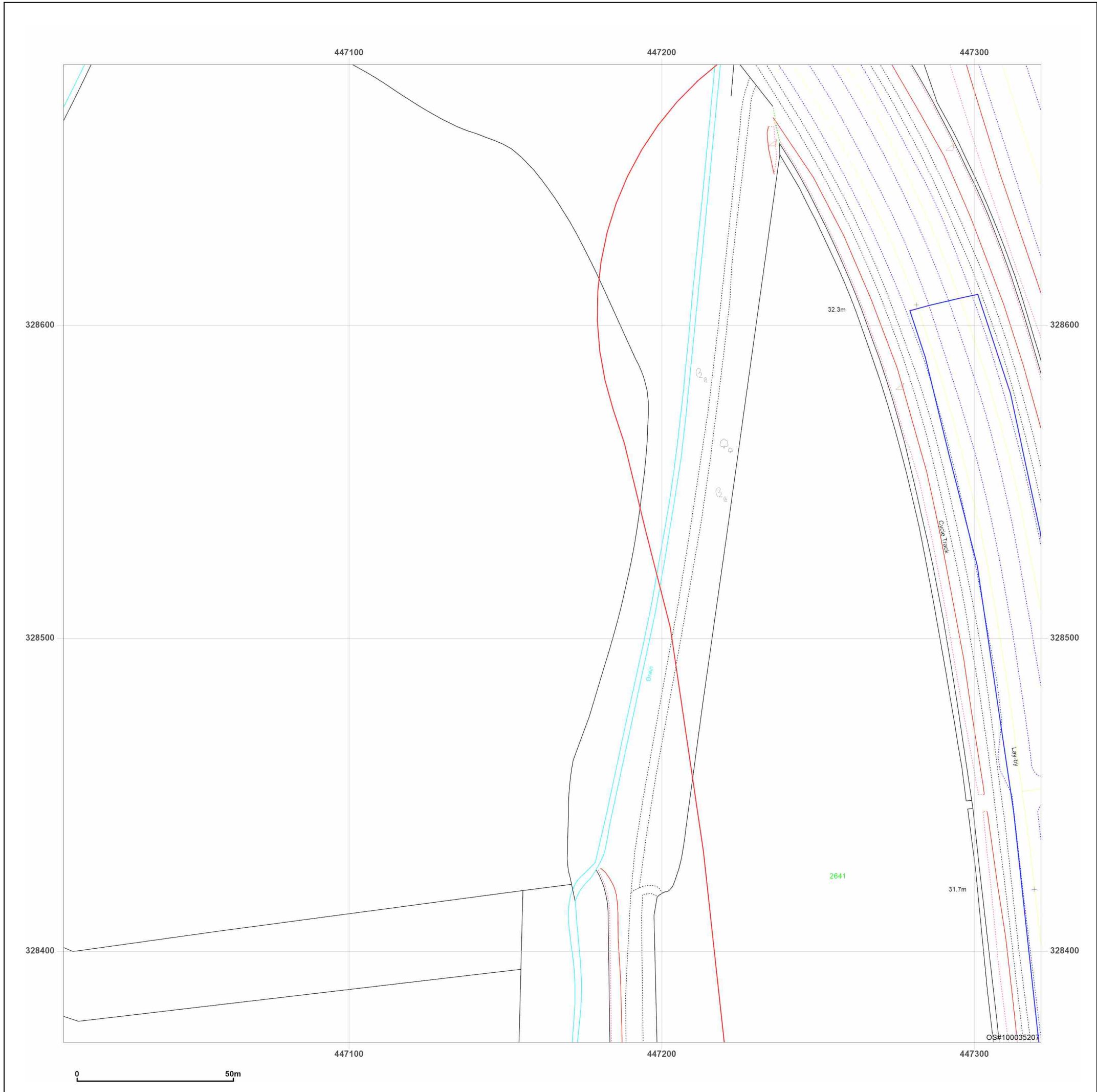


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Report Ref:

GS-RVB-OMG-RQL-AYQ\_Landline\_2\_3

Grid Ref:

447465, 326127

Map Name:

LandLine

Map date:

2003

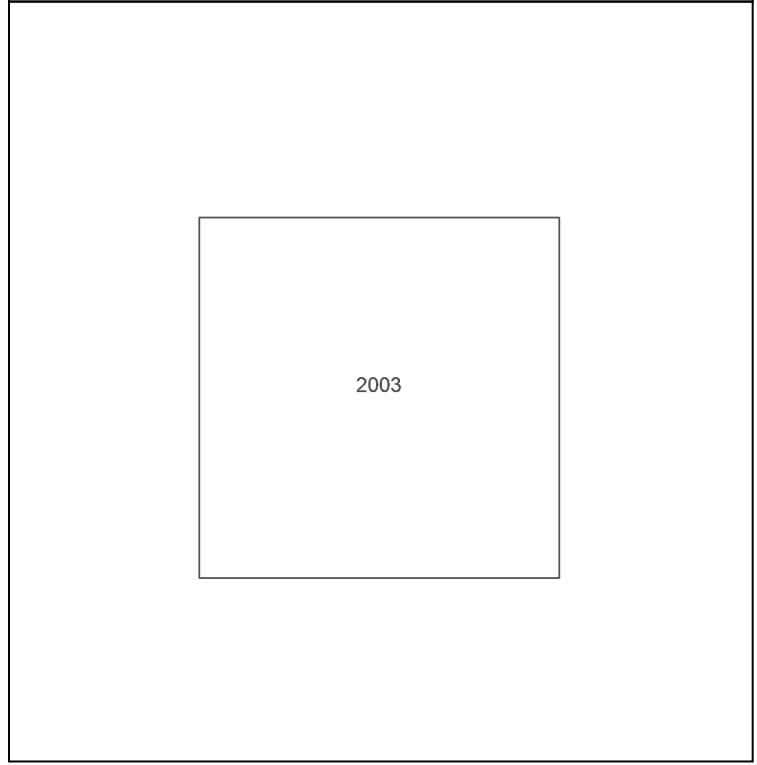
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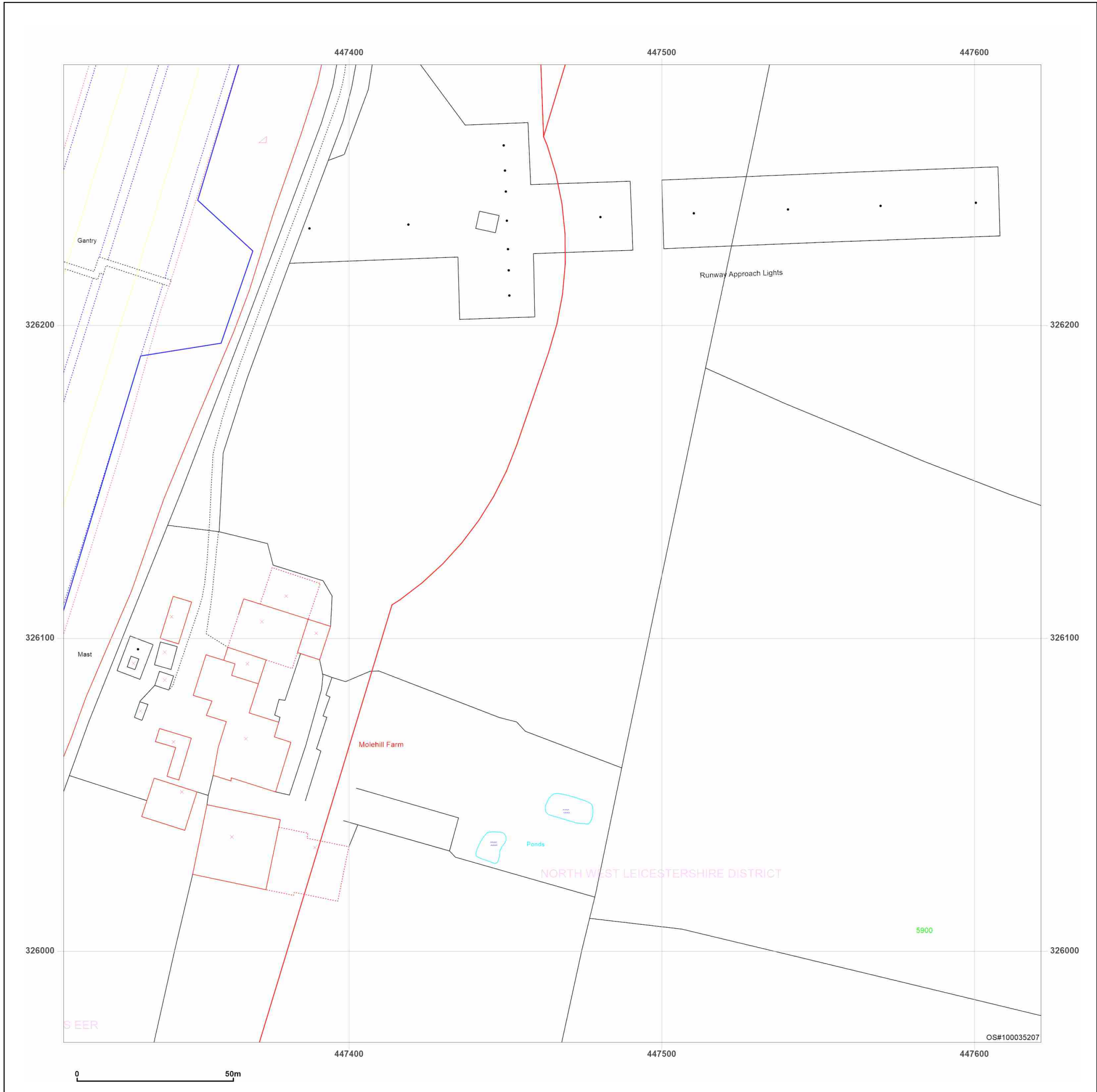
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**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_2\_4  
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**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



2003

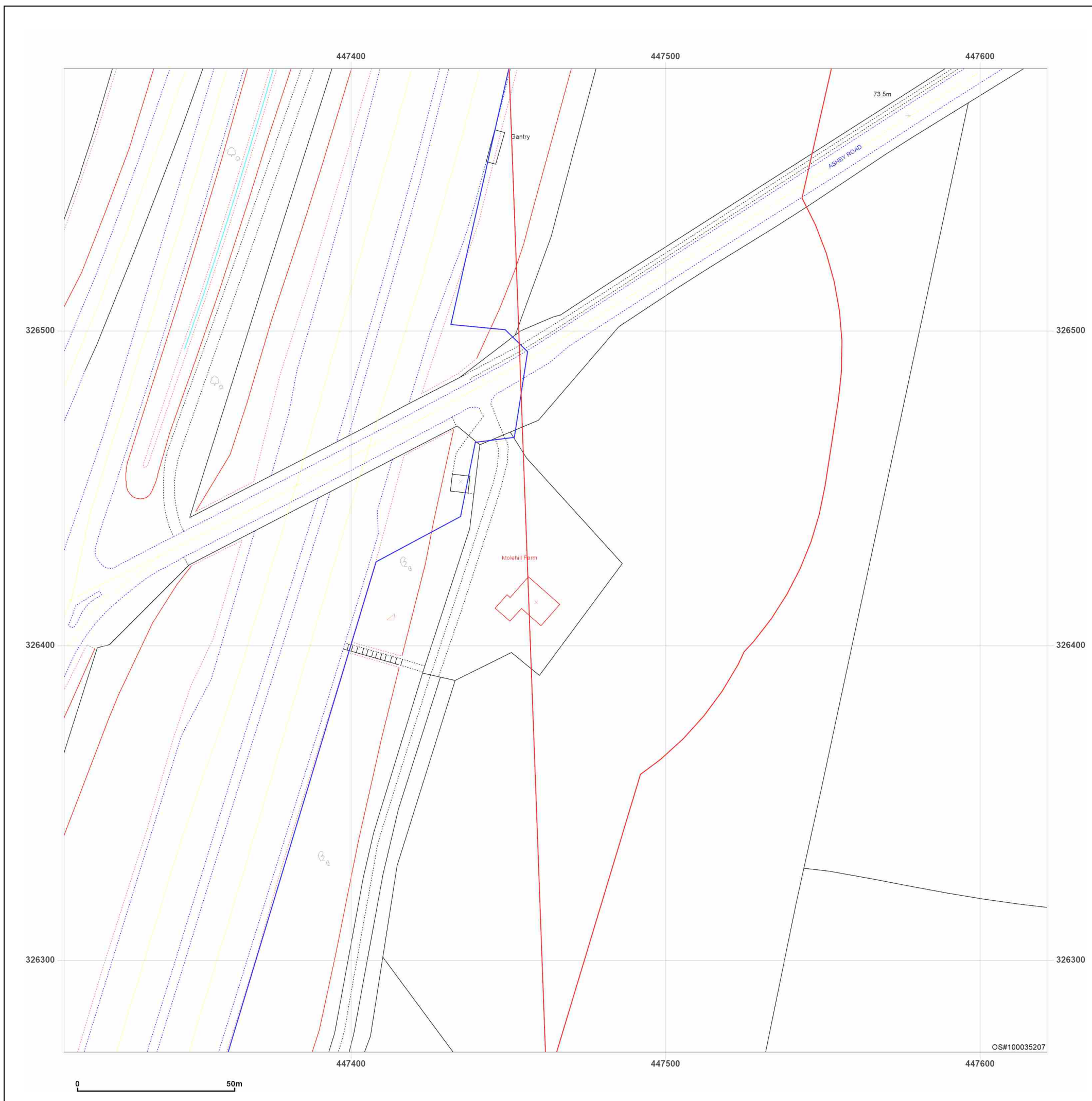


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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_2\_5  
**Grid Ref:** 447465, 326727

**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



2003

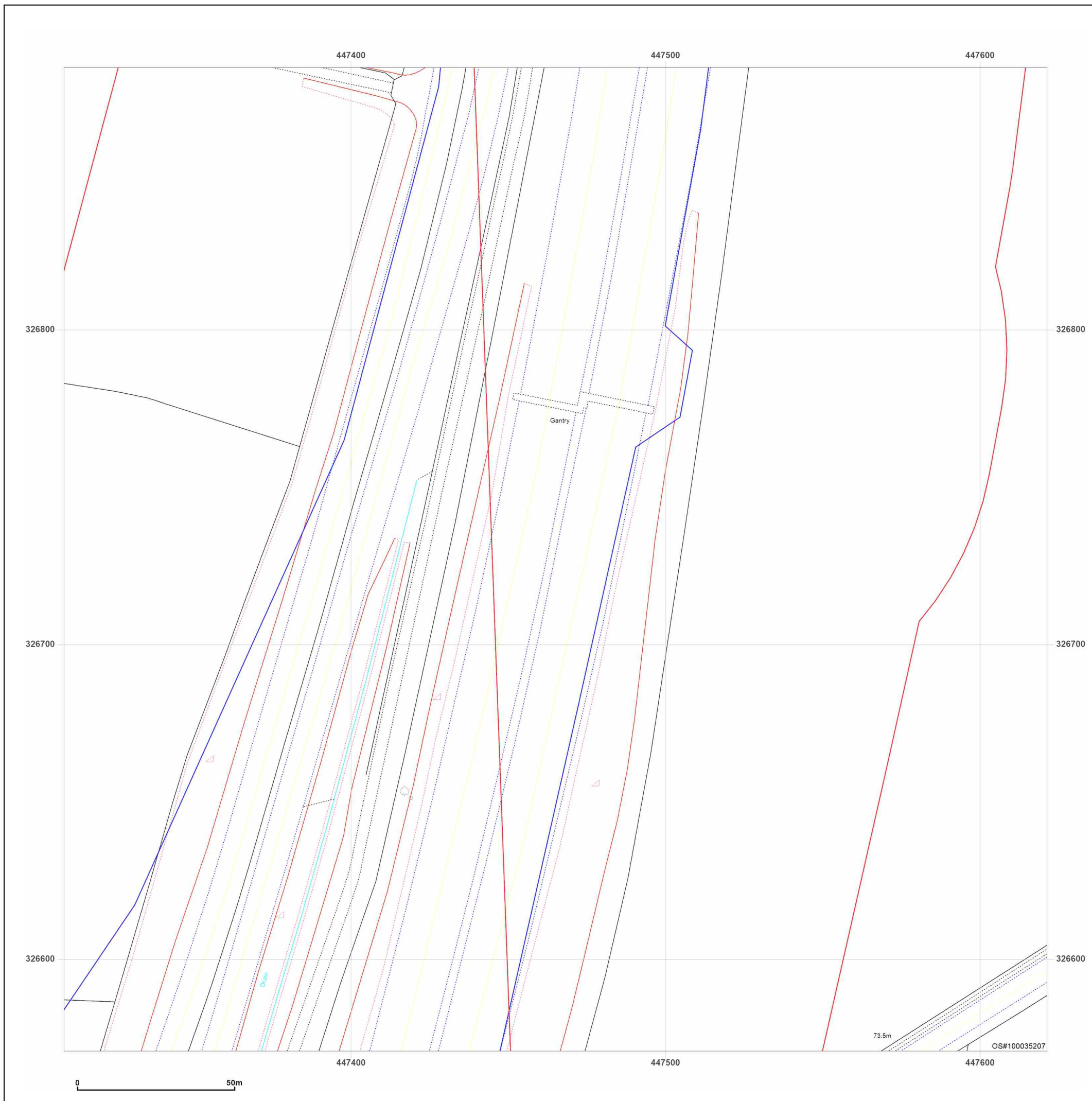


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

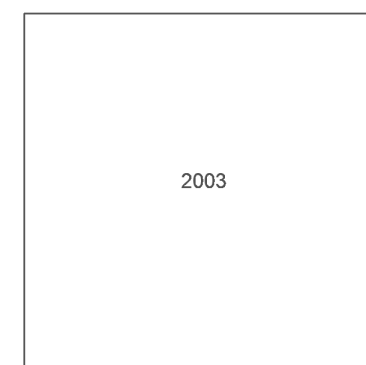
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**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_2\_6  
**Grid Ref:** 447465, 327027

**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250

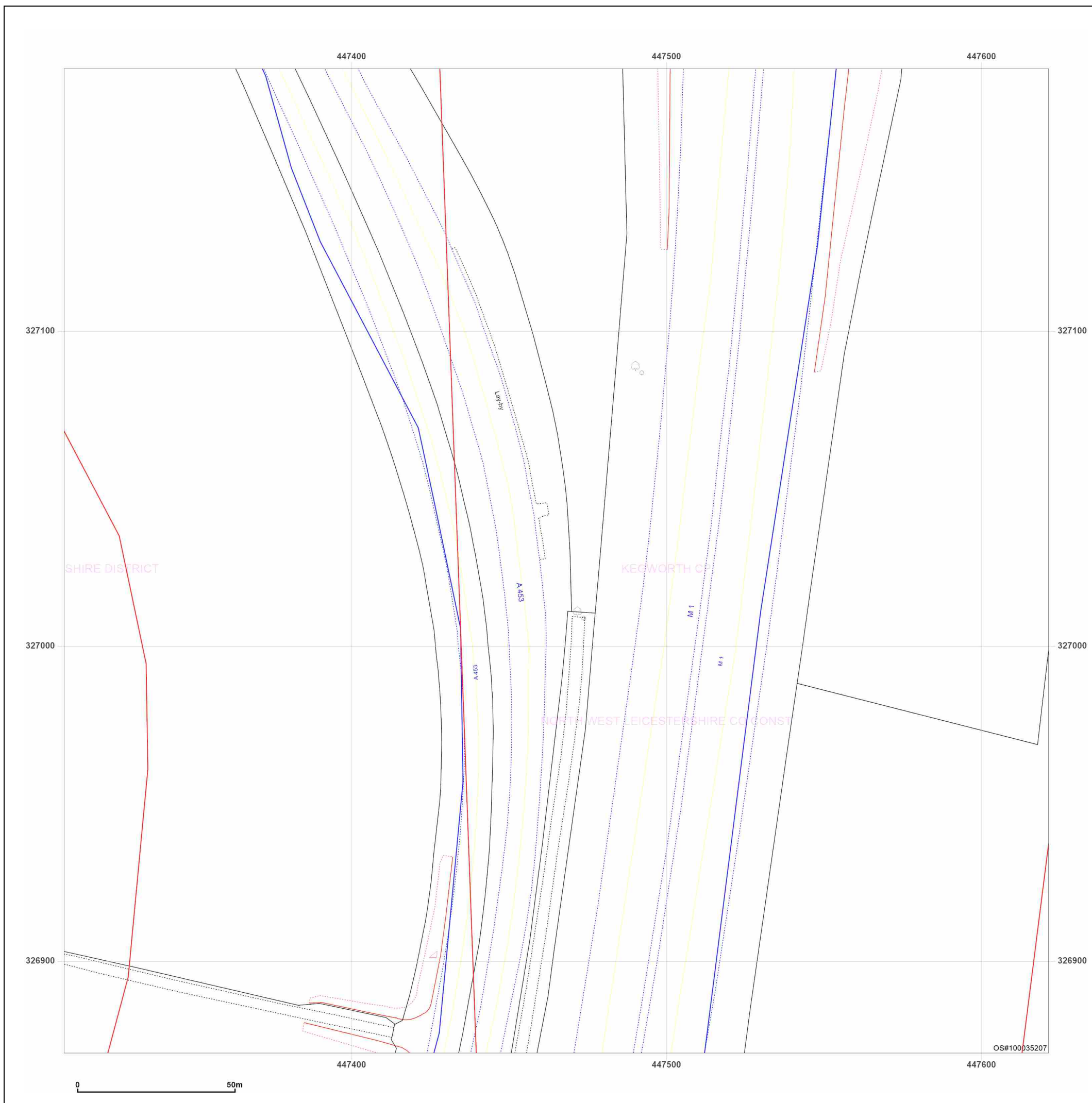


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Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

Client Ref:

220500 - 10250

Report Ref:

GS-RVB-OMG-RQL-AYQ\_Landline\_2\_7

Grid Ref:

447465, 327327

Map Name:

LandLine

Map date:


2003

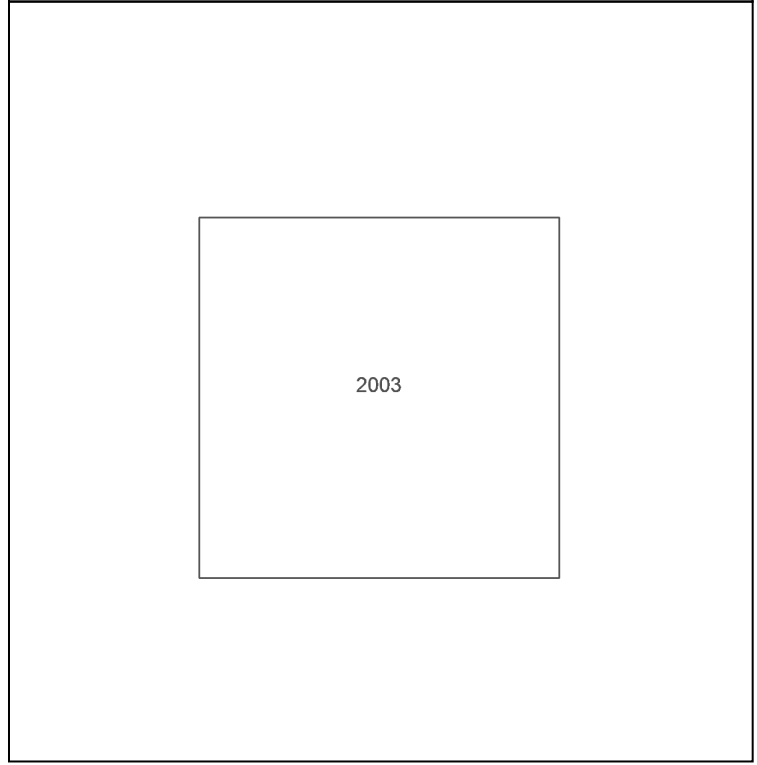
Scale:

1:1,250

Printed at:

1:1,250





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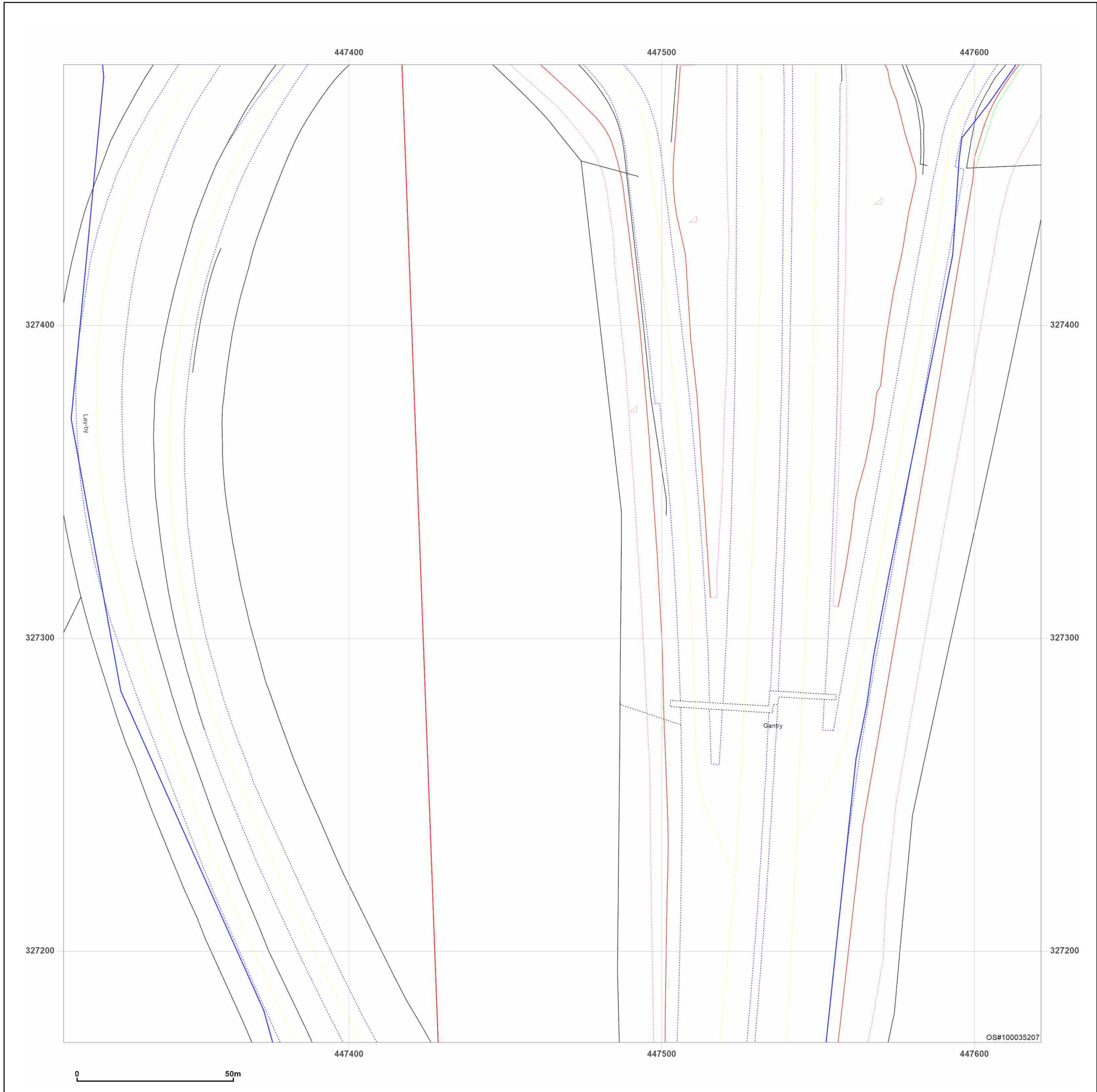
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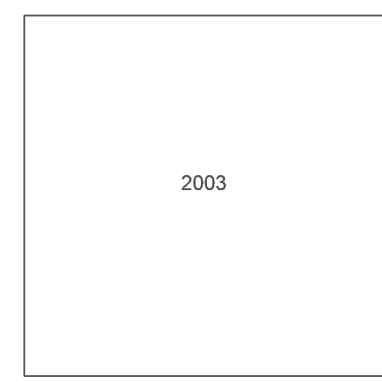


**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_2\_8  
**Grid Ref:** 447465, 327627

**Map Name:** LandLine  
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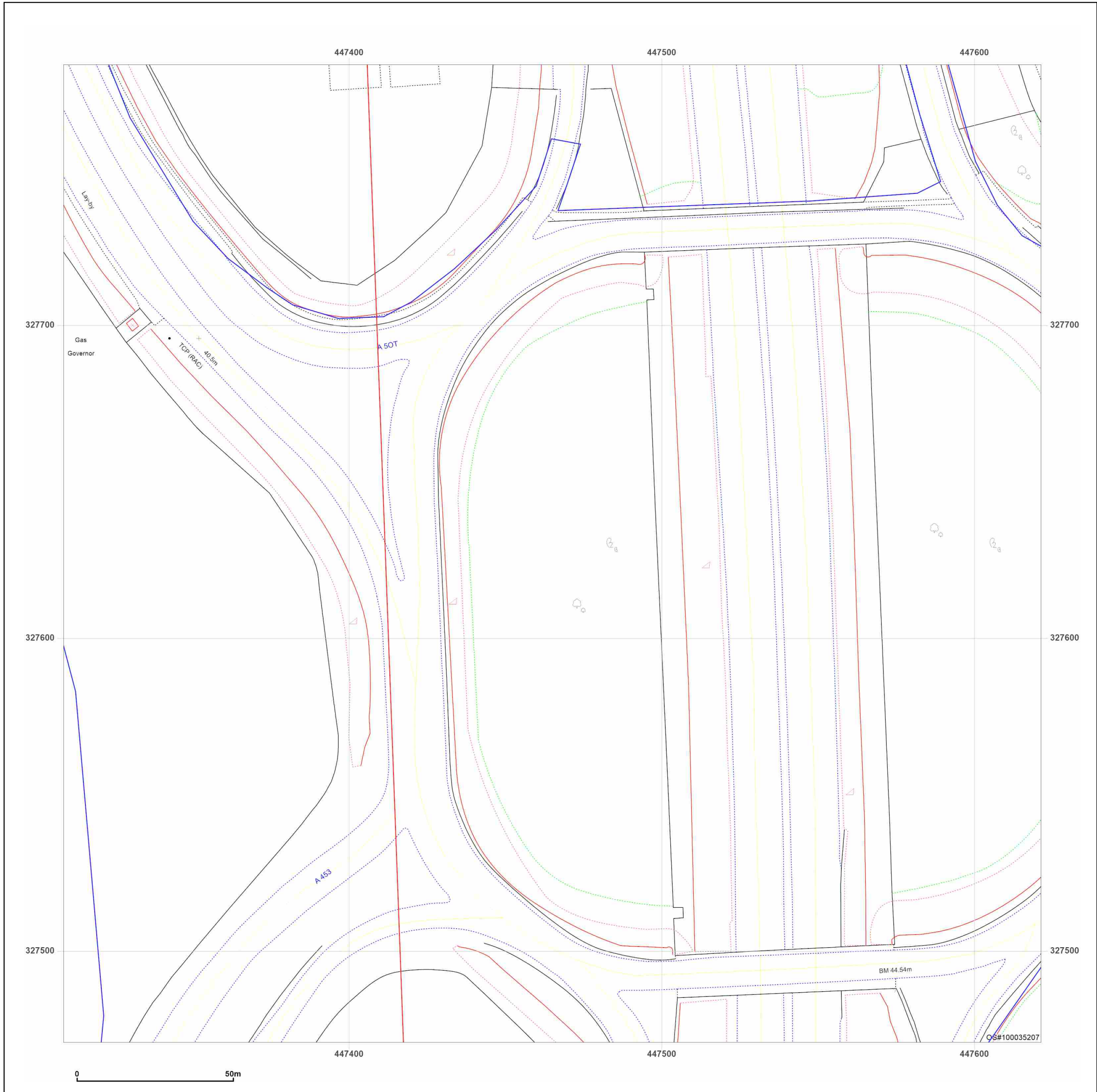


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_2\_9  
**Grid Ref:** 447465, 327927

**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



2003

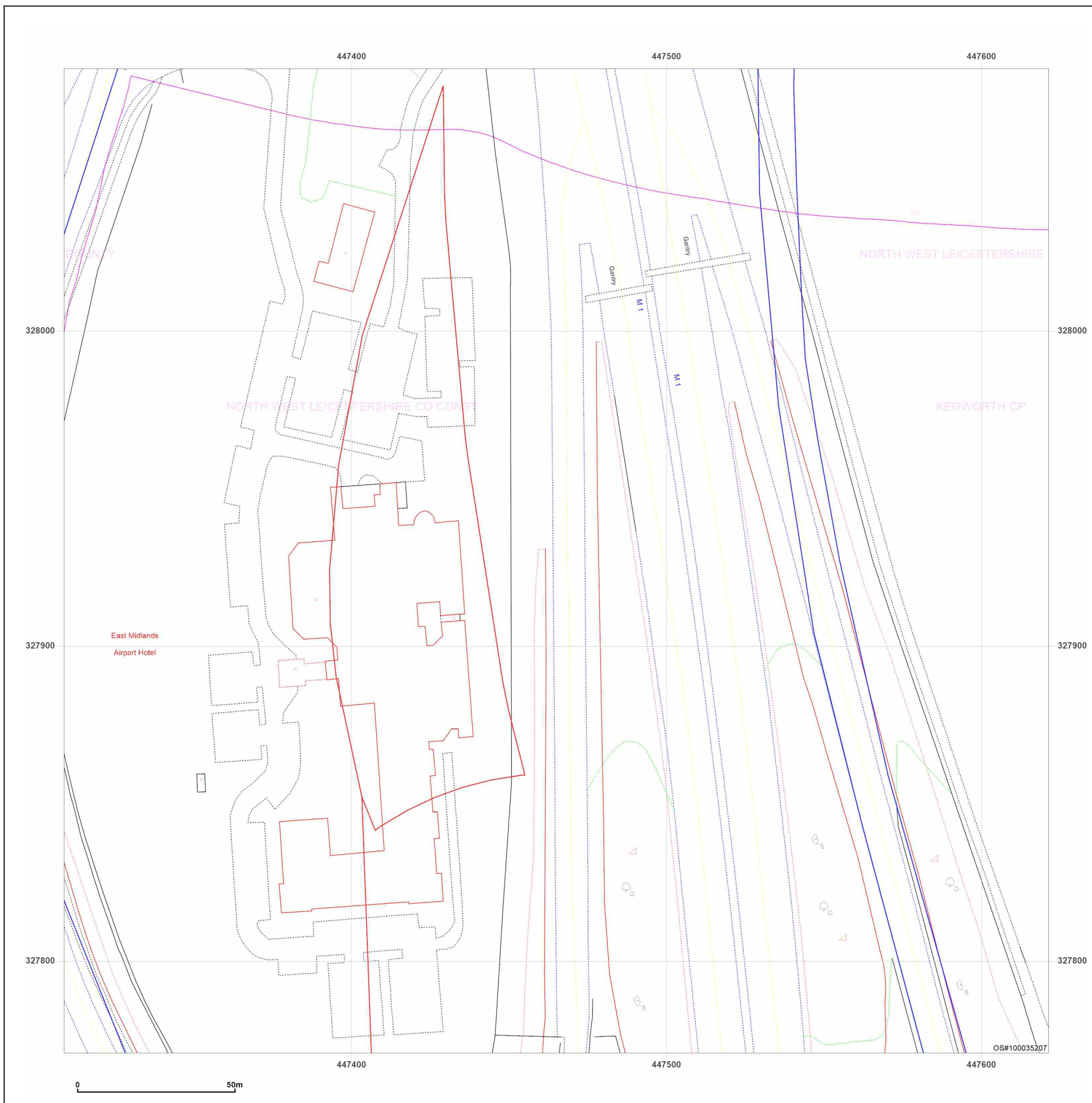


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_2\_10  
**Grid Ref:** 447465, 328227

**Map Name:** LandLine

**Map date:** 2003

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2003

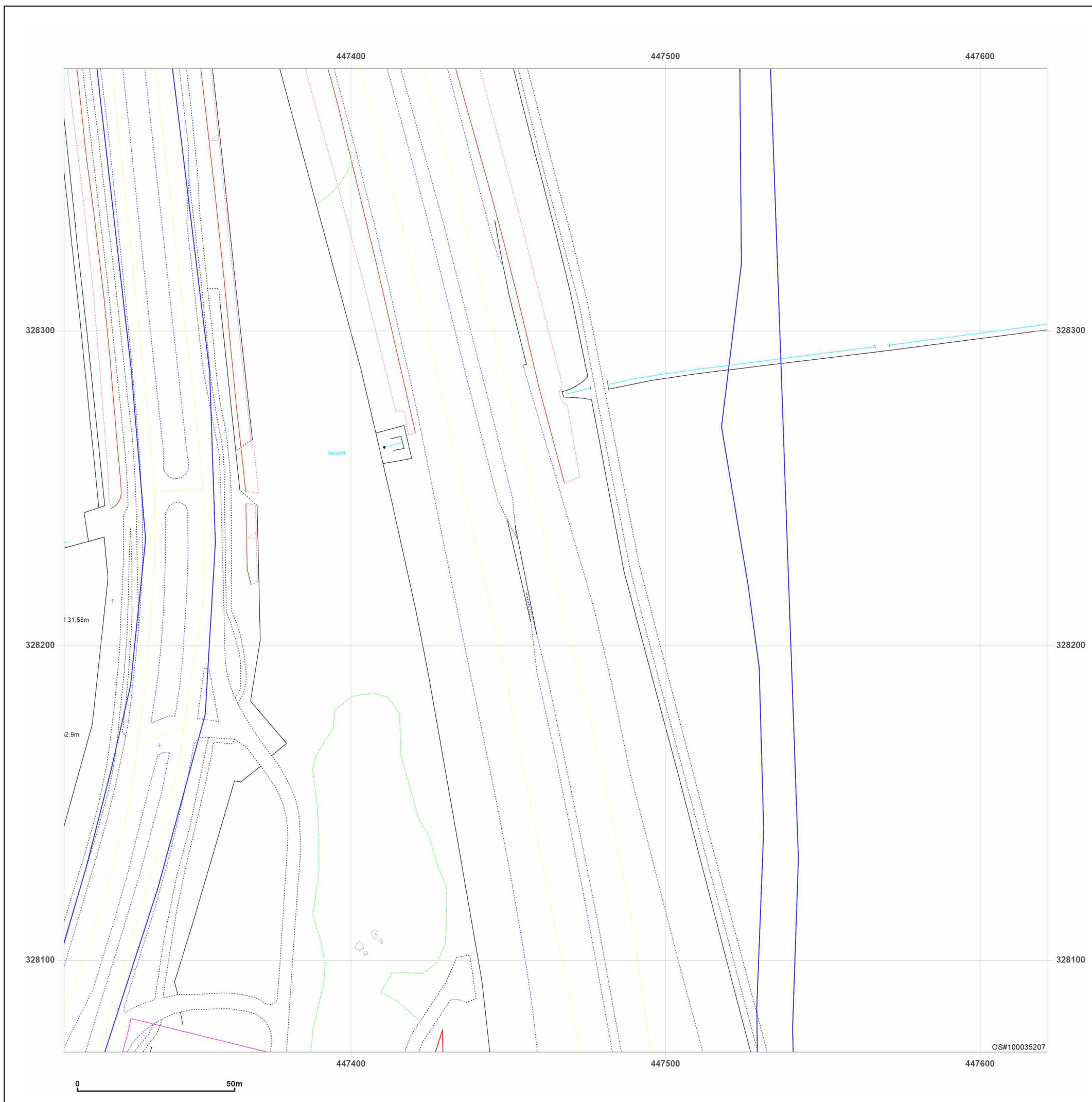


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Grid Ref:** 447465, 328527

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**Printed at:** 1:1,250



2003

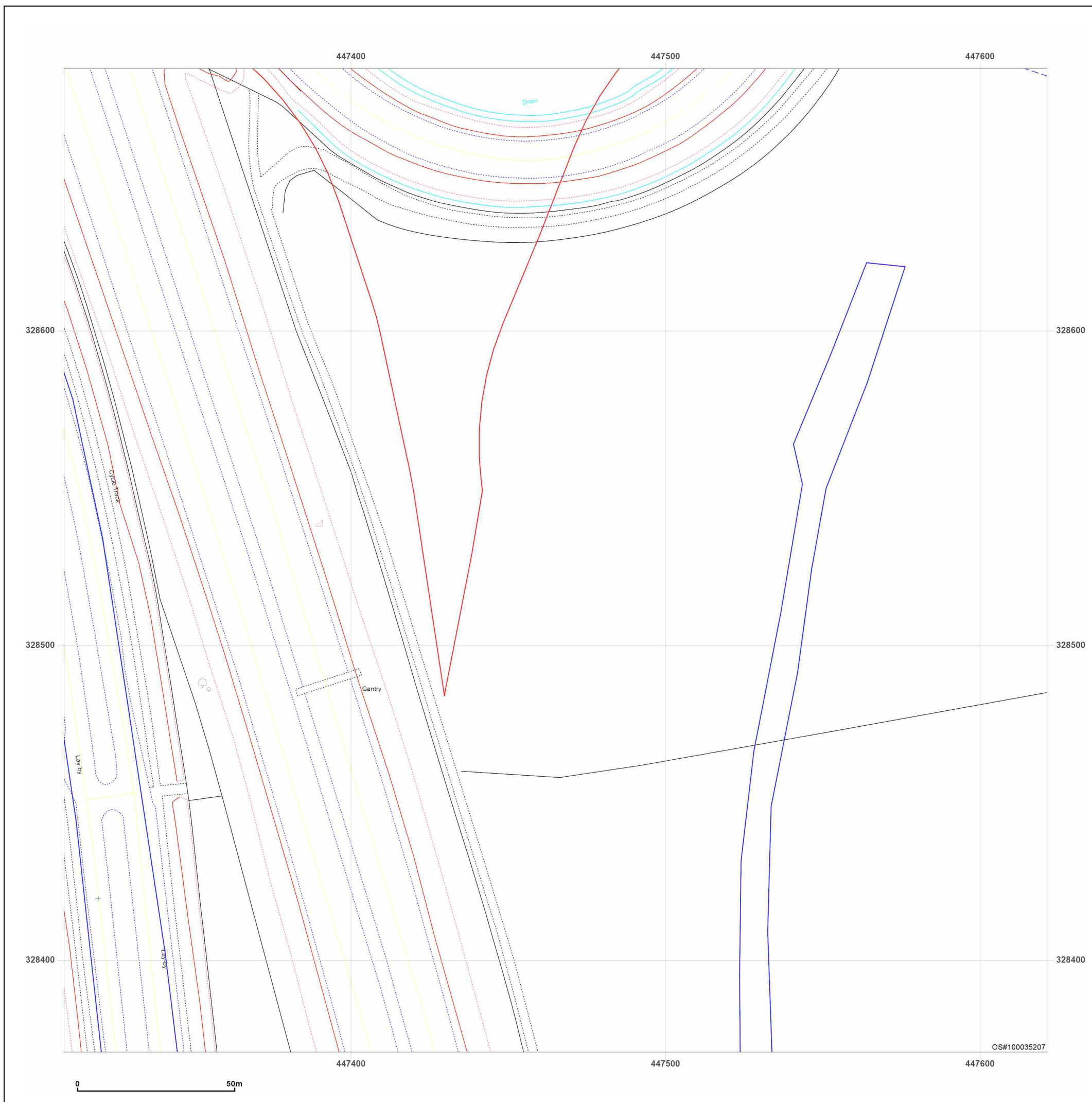


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_3\_8  
**Grid Ref:** 447765, 327627

**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

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2003

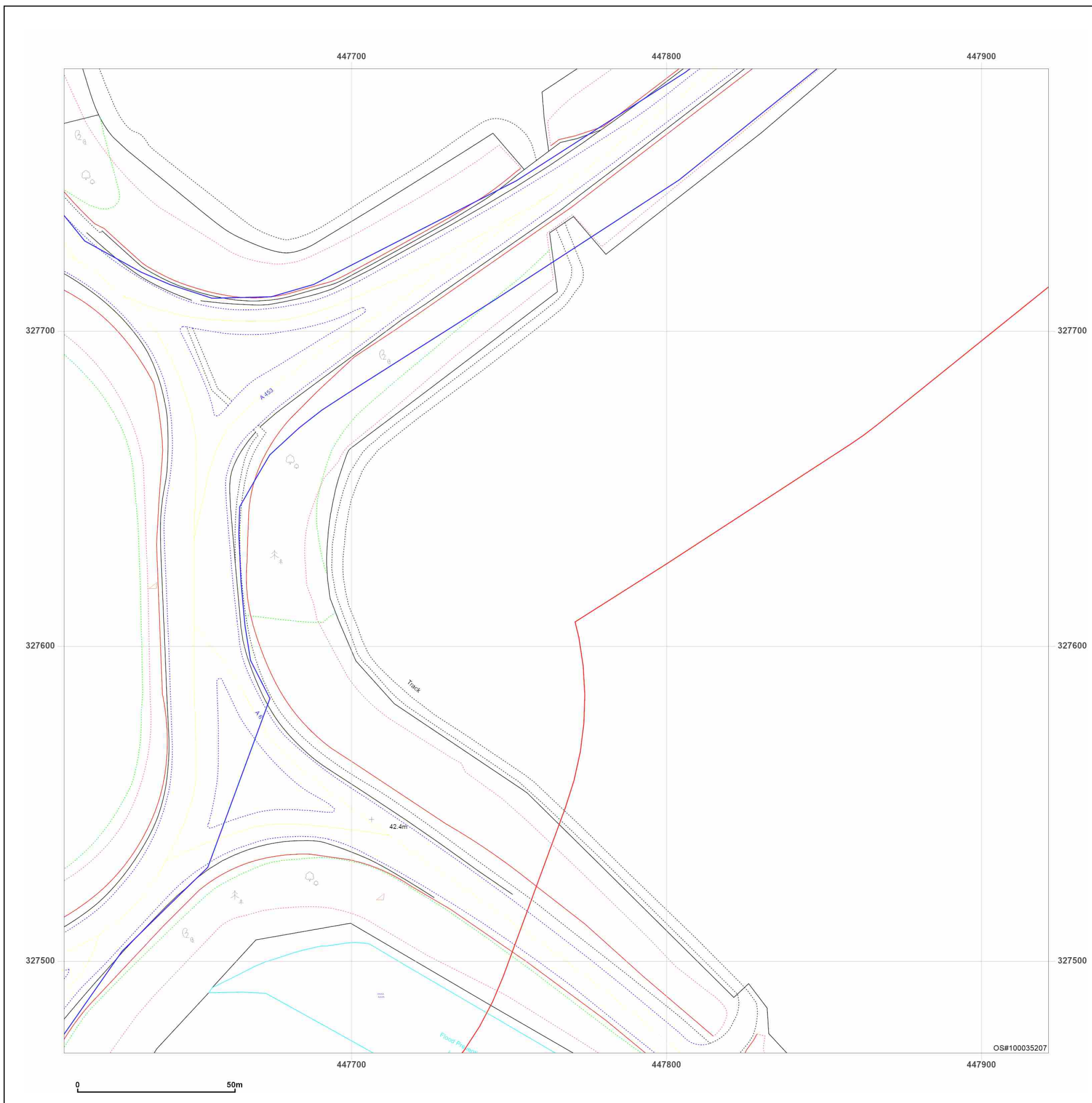


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_Landline\_3\_9  
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**Map Name:** LandLine

**Map date:** 2003

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2003

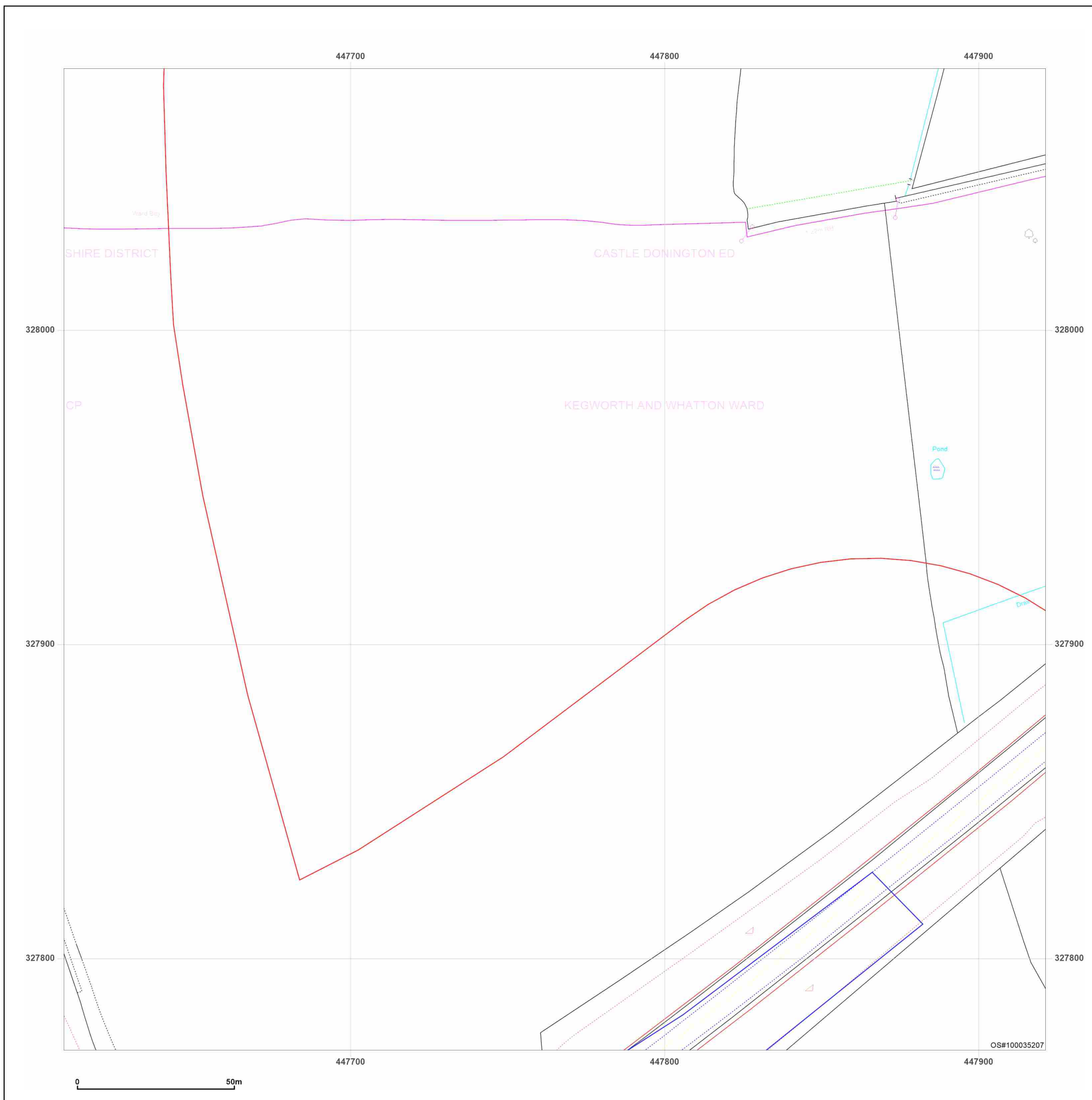


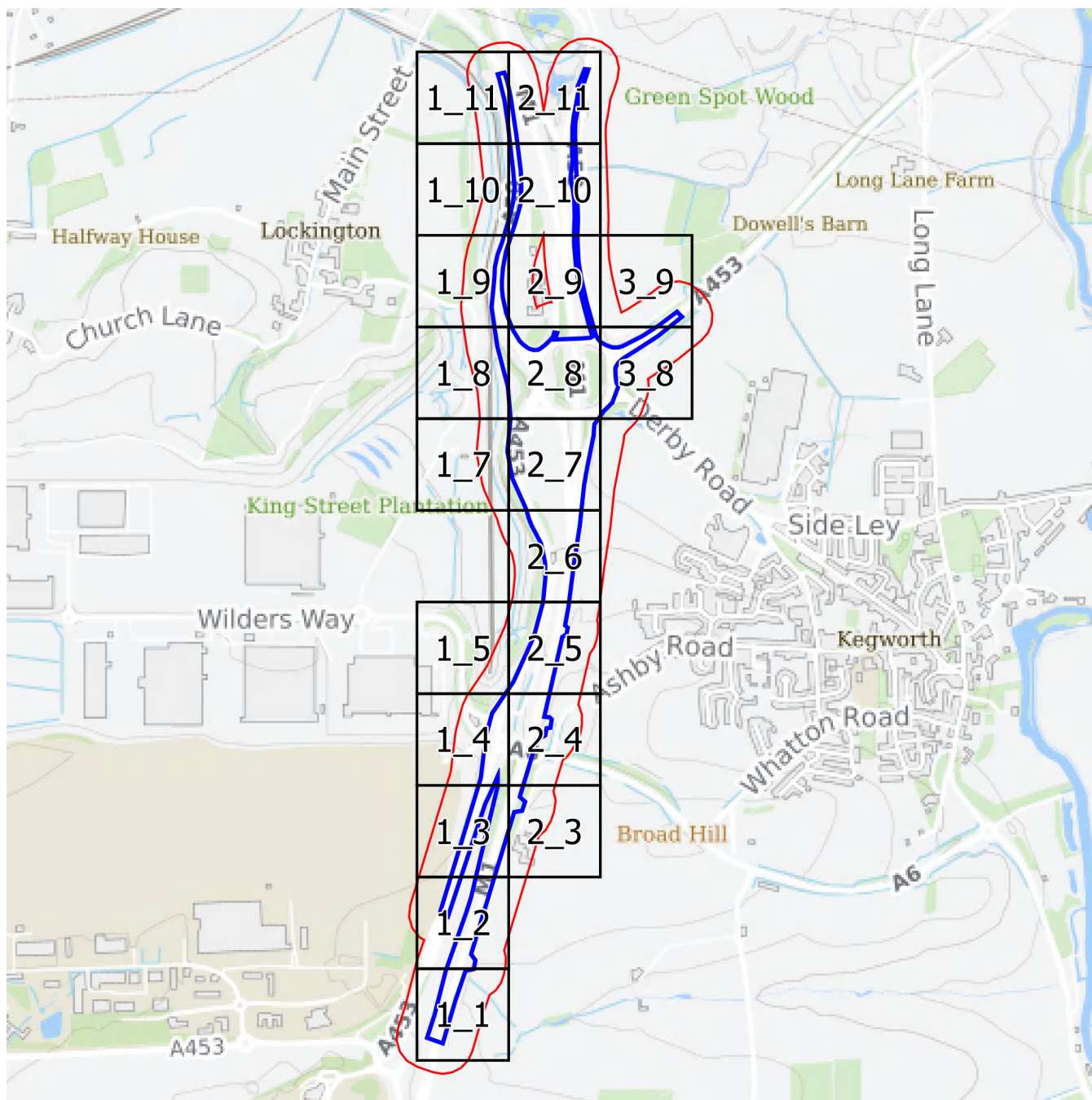
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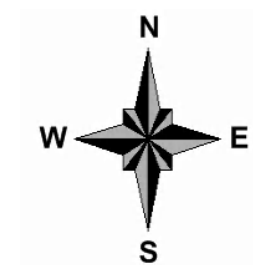
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Landline Scale Grid Index





#### 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:** 1884

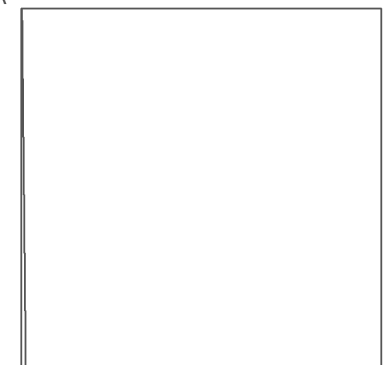
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Revised 1884  
Edition N/A  
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Levelled N/A

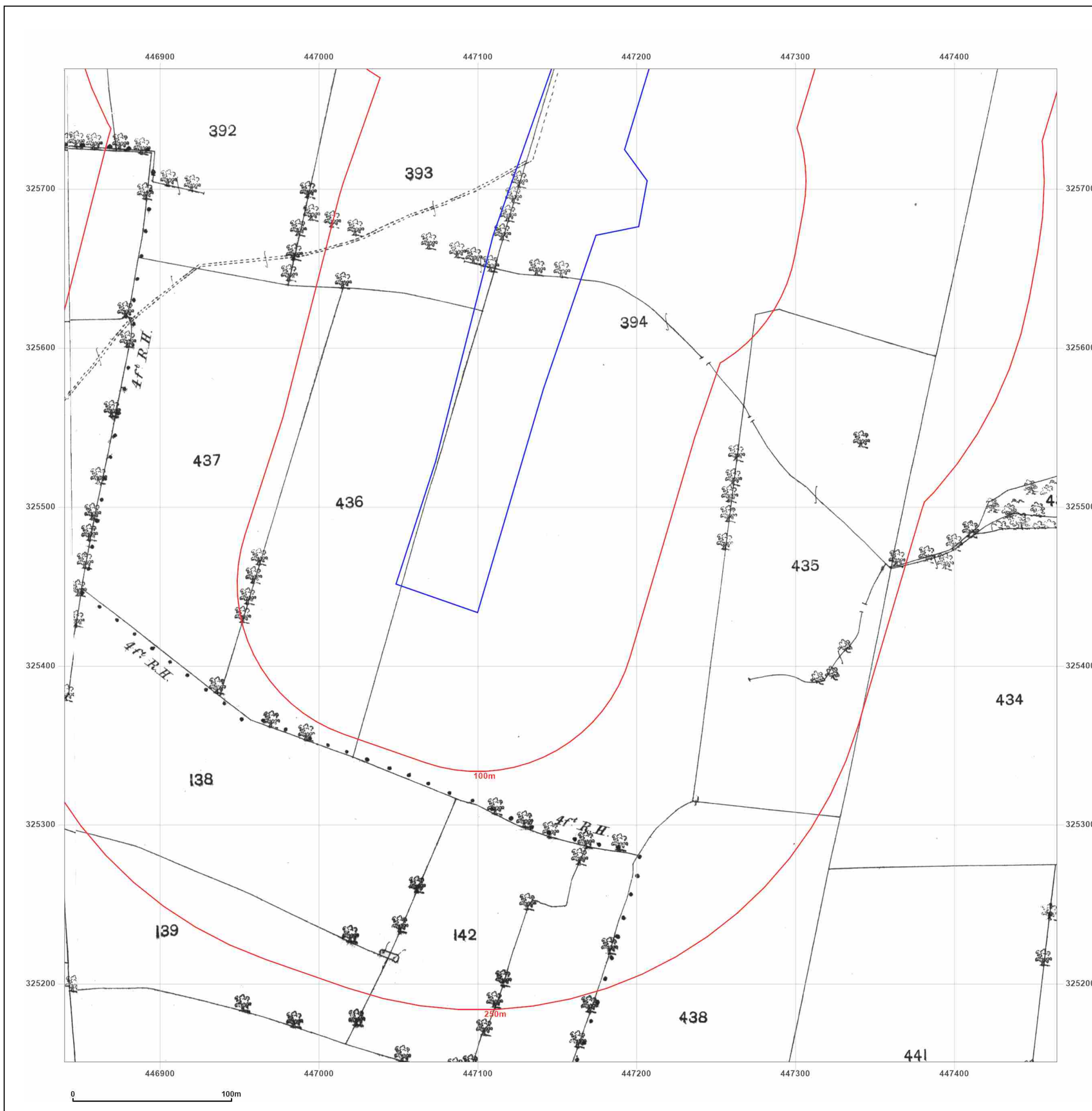


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#### Site Details:

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

**Scale:** 1:2,500

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



Surveyed 1900  
Revised 1900  
Edition N/A  
Copyright N/A  
Levelled N/A

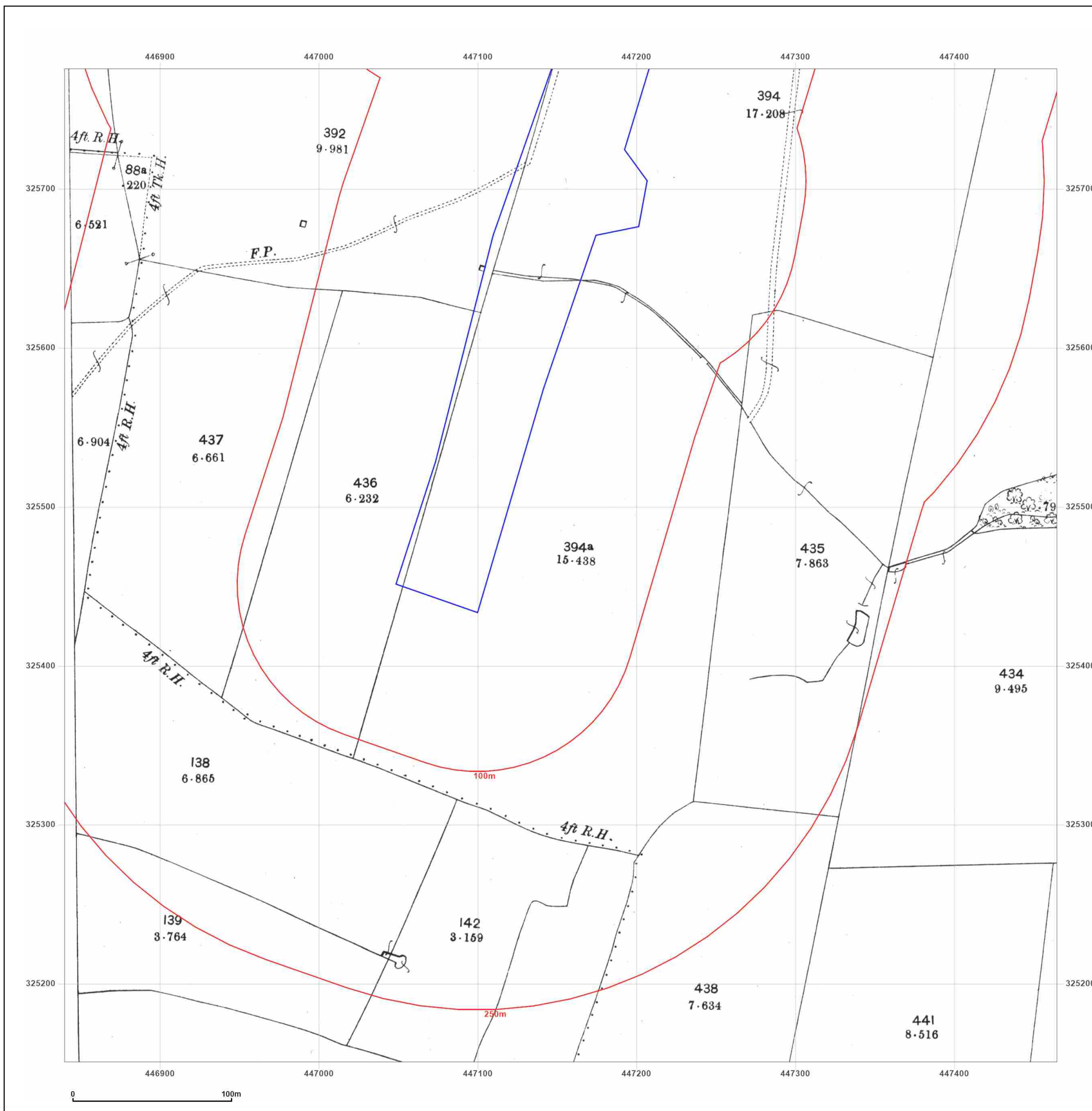


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Grid Ref:** 447152, 325463

**Map Name:** County Series

**Map date:** 1900-1903

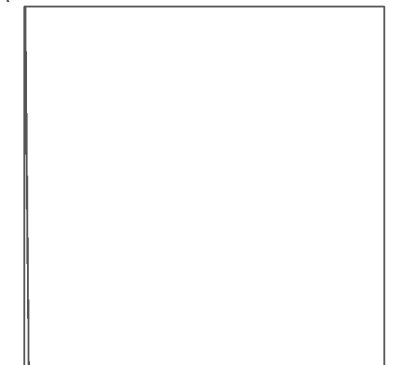
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**Printed at:** 1:2,500



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Revised 1903  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1900  
Revised 1900  
Edition N/A  
Copyright N/A  
Levelled N/A

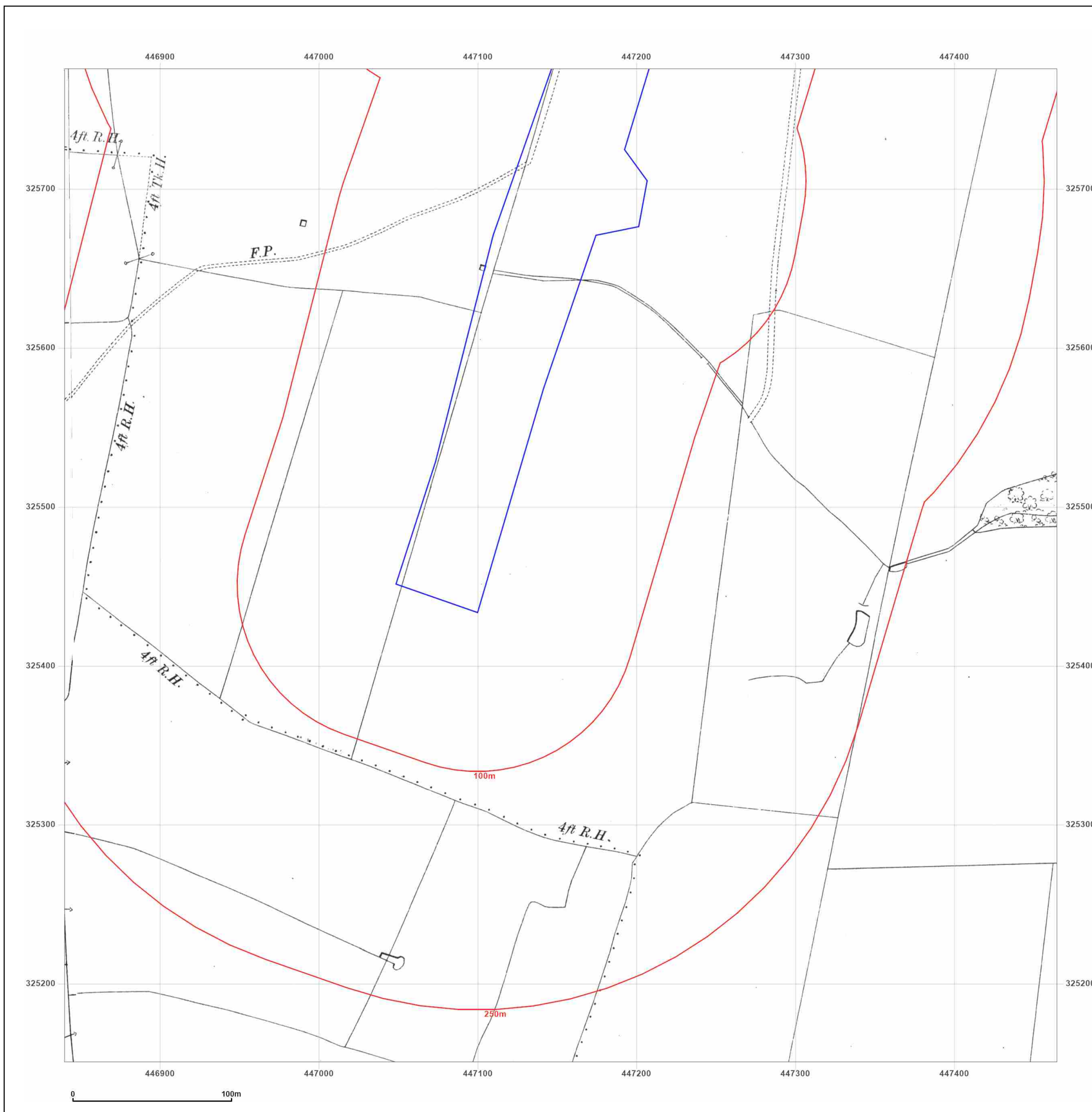


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_1  
**Grid Ref:** 447152, 325463

**Map Name:** County Series

**Map date:** 1921

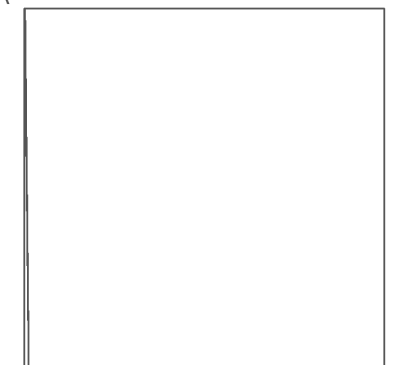
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Revised 1921  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1921  
Revised 1921  
Edition N/A  
Copyright N/A  
Levelled N/A

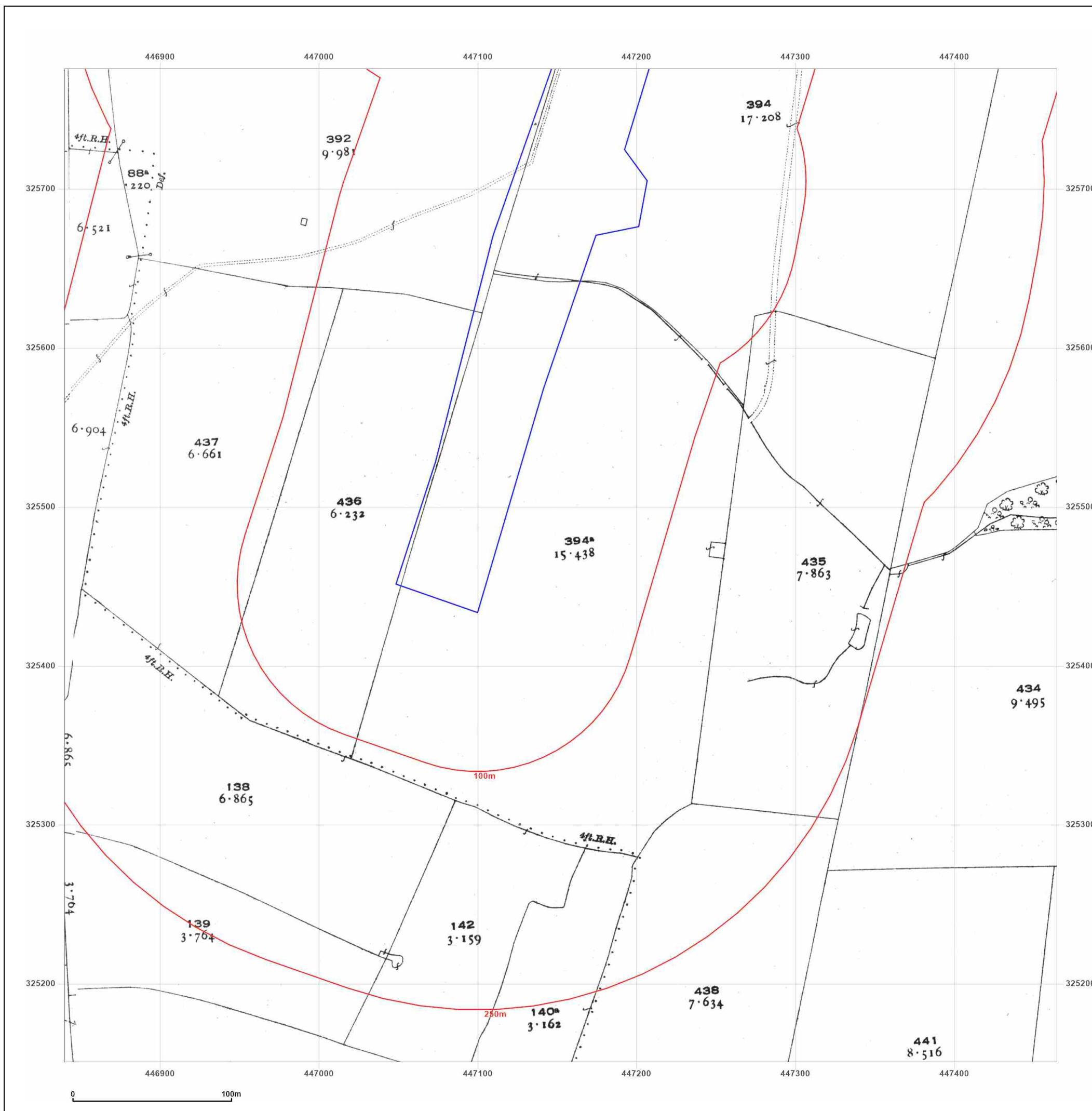


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_1  
**Grid Ref:** 447152, 325463

**Map Name:** National Grid

**Map date:** 1962

**Scale:** 1:2,500

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



Surveyed 1961  
Revised 1961  
Edition N/A  
Copyright 1962  
Levelled 1944

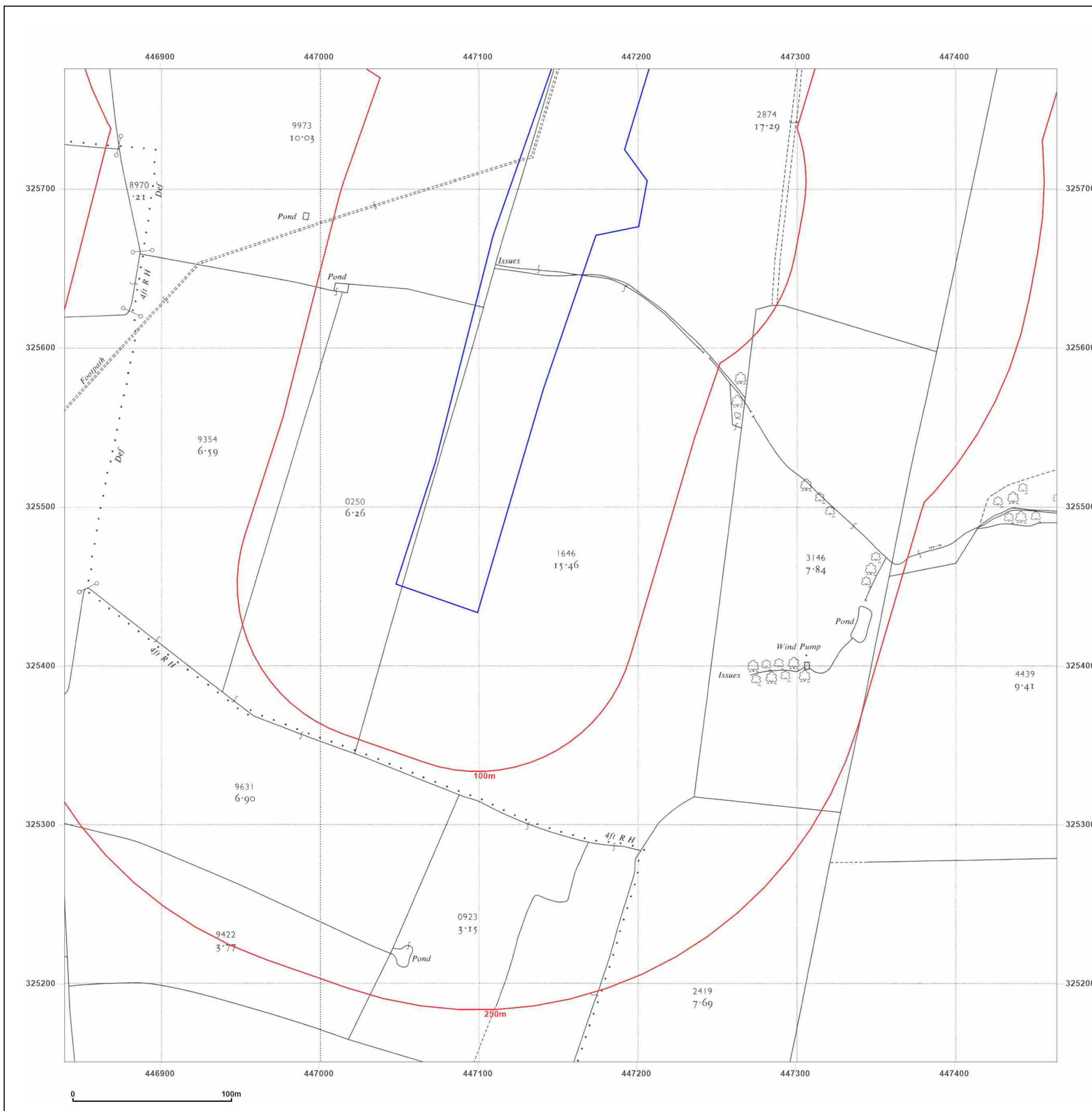


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#### Site Details:

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



Surveyed 1966  
Revised 1966  
Edition N/A  
Copyright 1967  
Levelled 1944

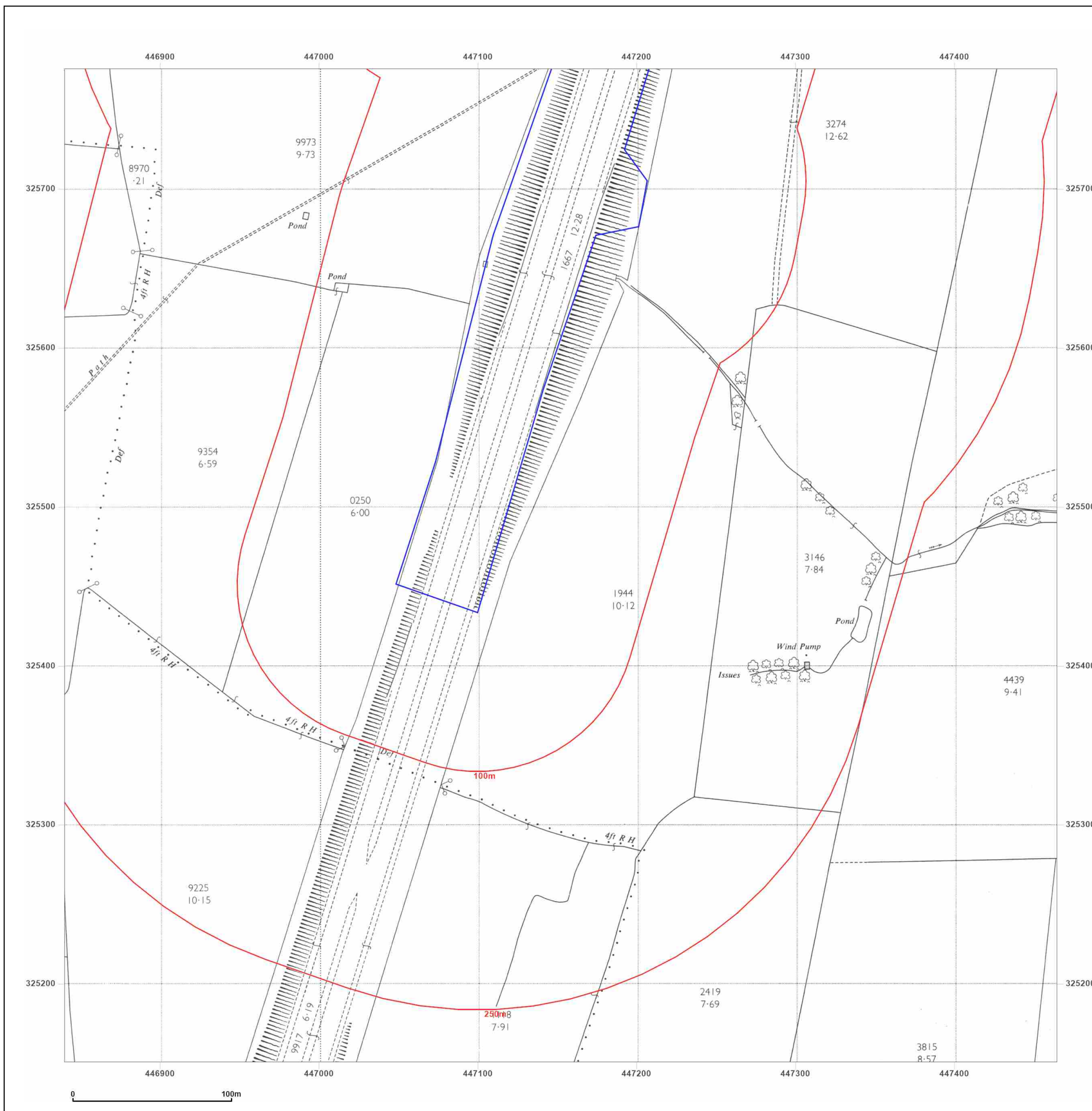


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#### Site Details:

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



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

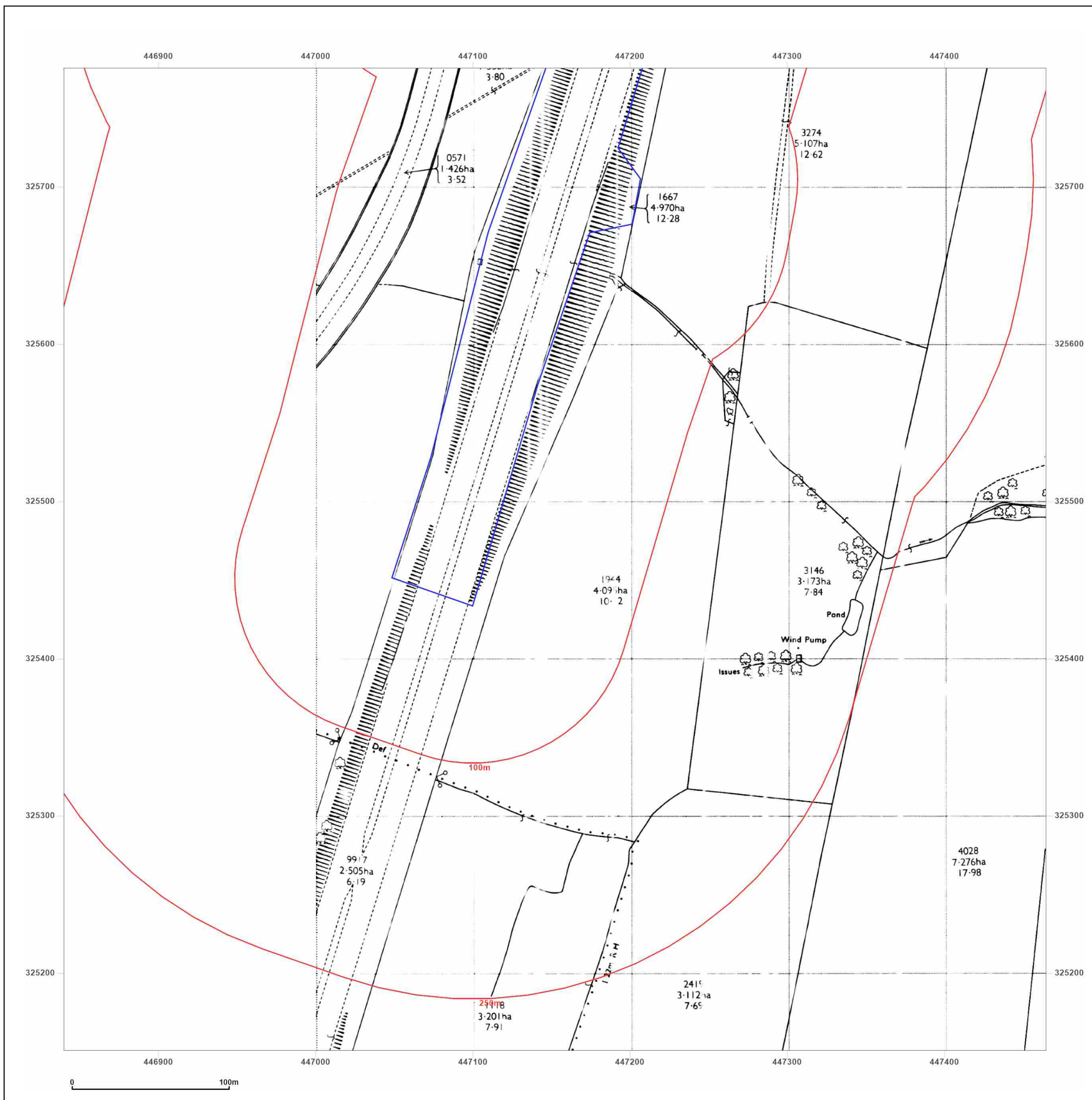


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#### Site Details:

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



Surveyed 1971  
Revised 1971  
Edition N/A  
Copyright 1972  
Levelled 1966

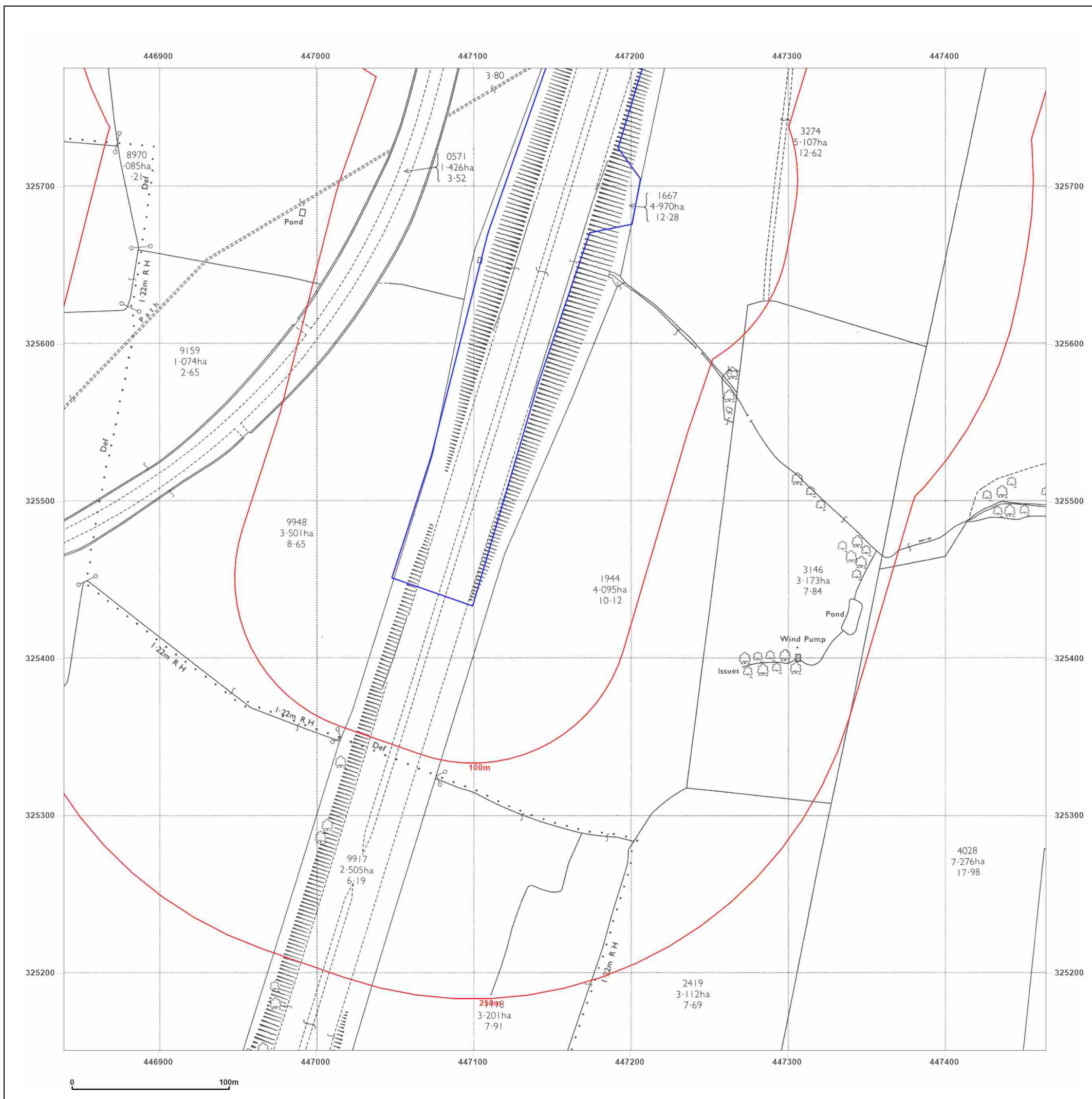


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**Site Details:**

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



Surveyed 1966  
Revised 1984  
Edition N/A  
Copyright 1984  
Levelled 1966

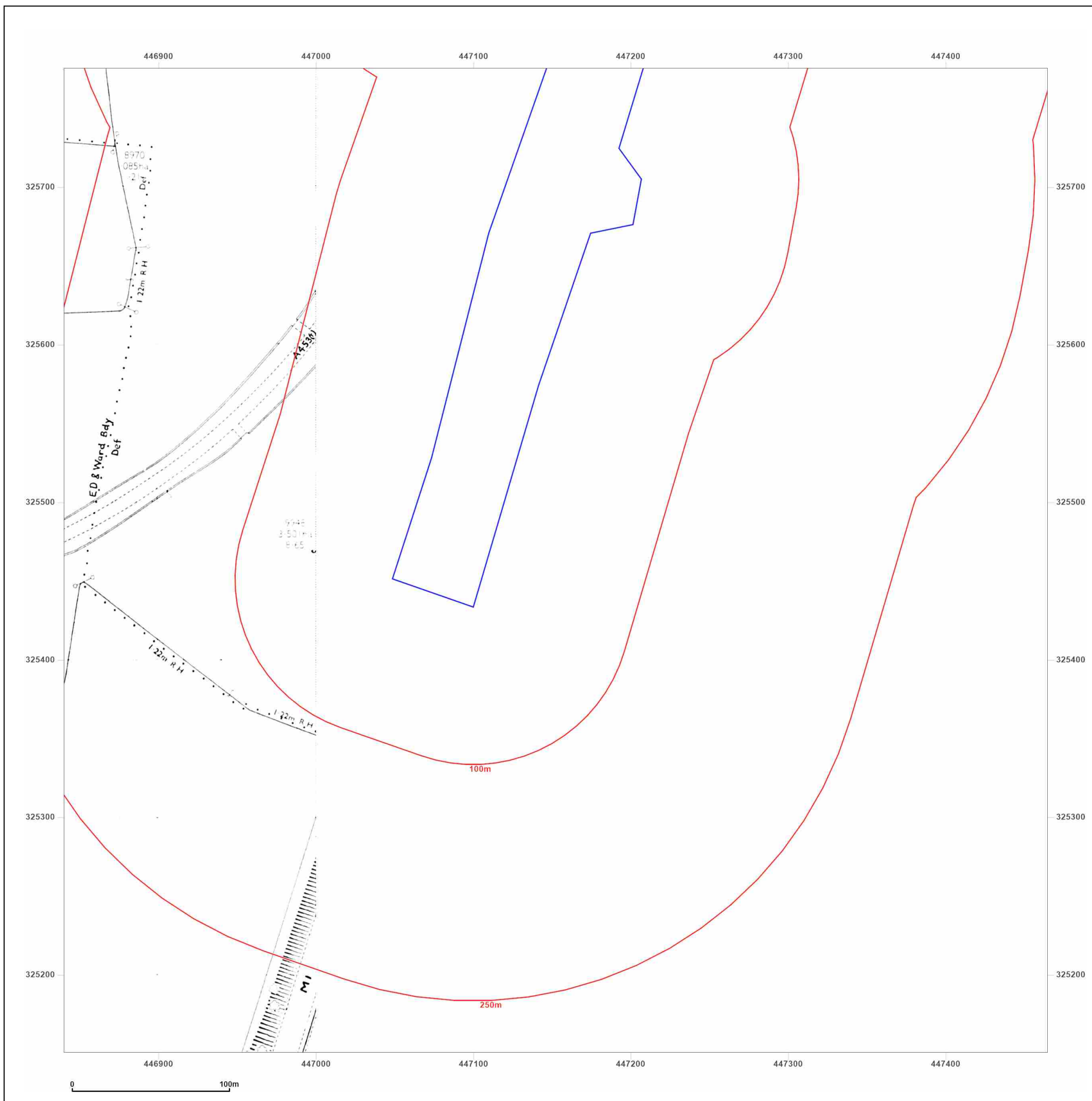


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#### Site Details:

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:** 1988-1991

**Scale:** 1:2,500

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



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Revised 1991  
Edition N/A  
Copyright 1991  
Levelled N/A

Surveyed 1966  
Revised 1988  
Edition N/A  
Copyright 1988  
Levelled 1966

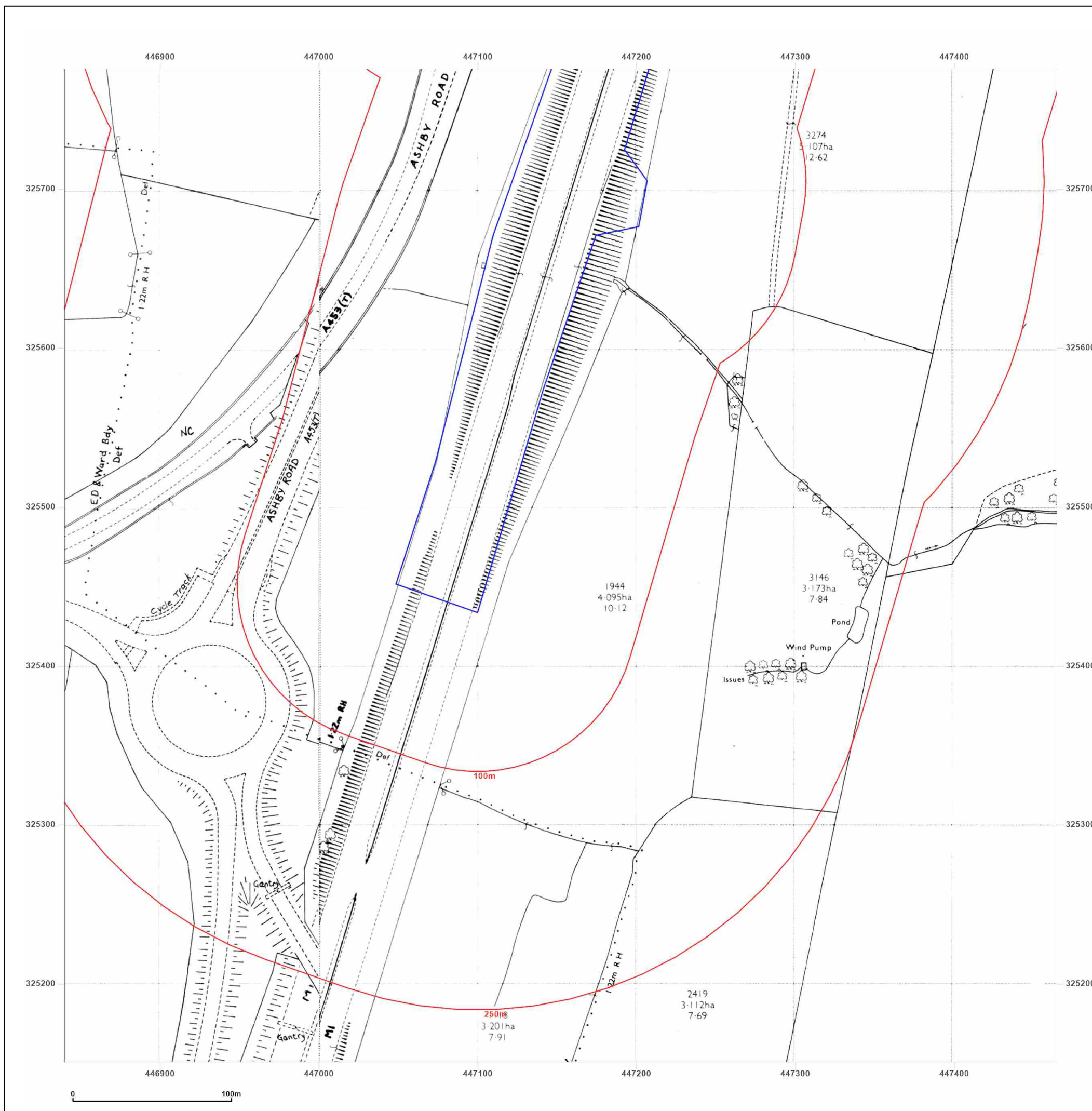


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#### Site Details:

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



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

Surveyed 1966  
Revised 1991  
Edition N/A  
Copyright 1991  
Levelled 1966

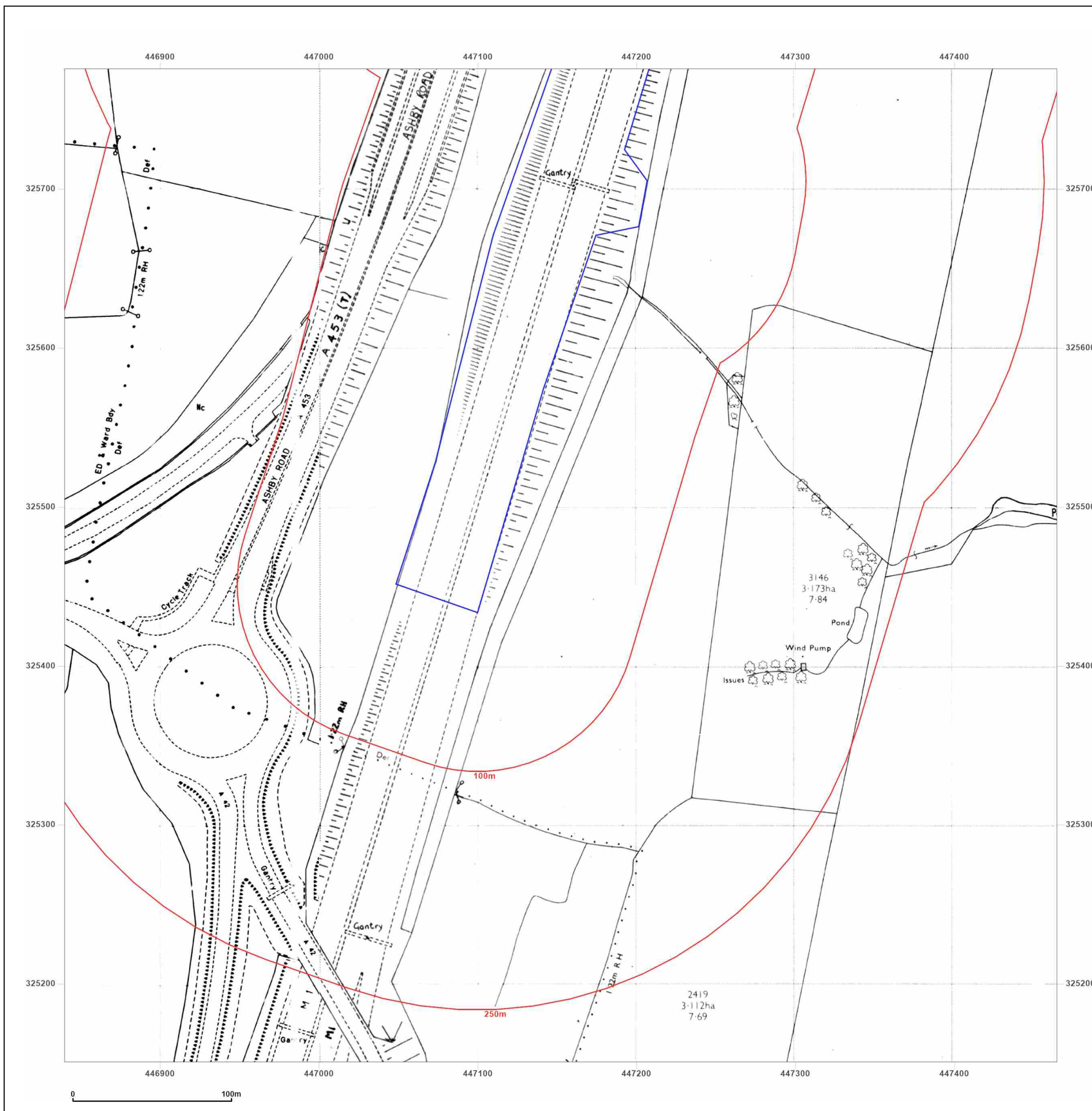


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**Site Details:**

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



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

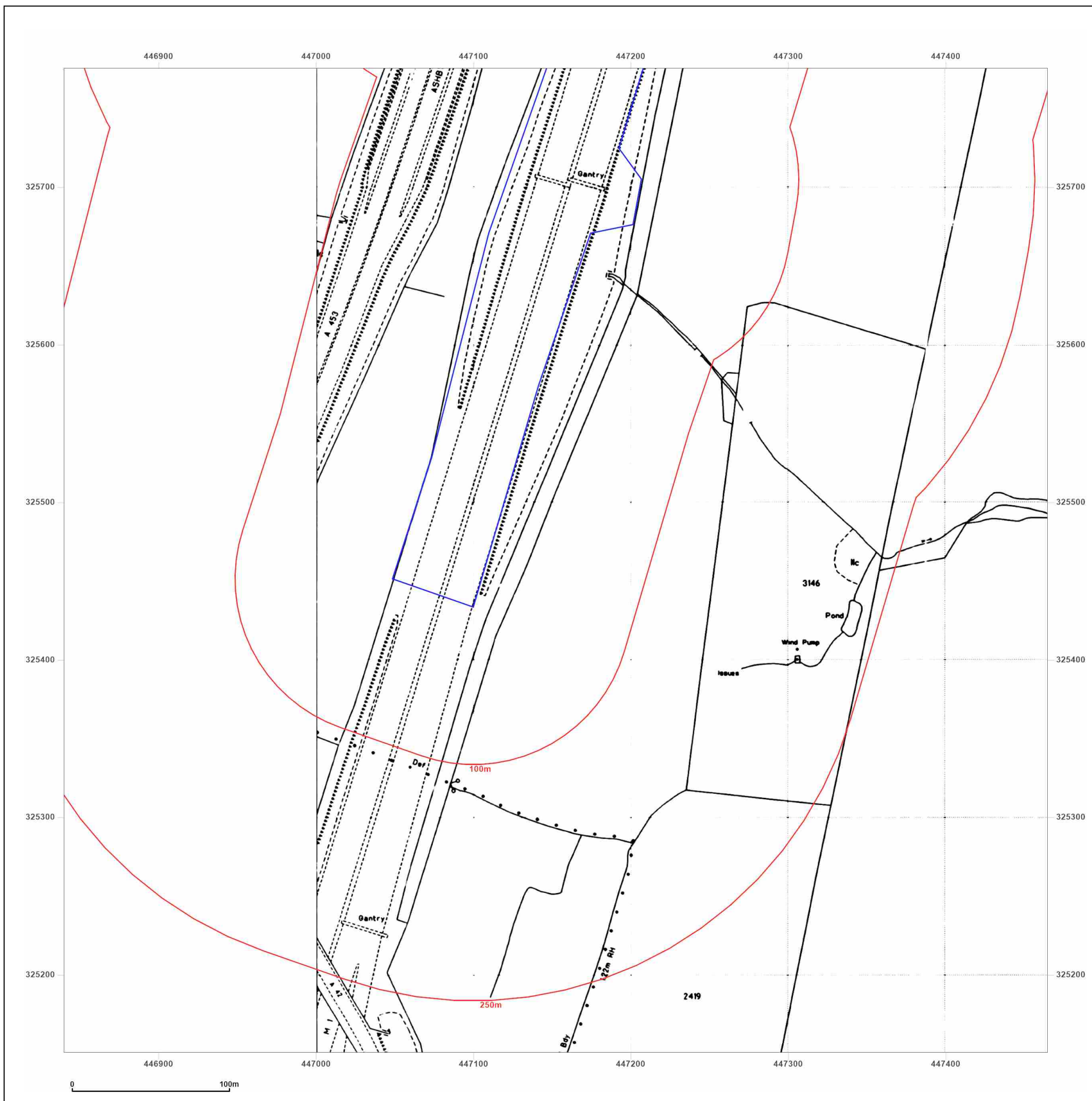


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#### Site Details:

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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_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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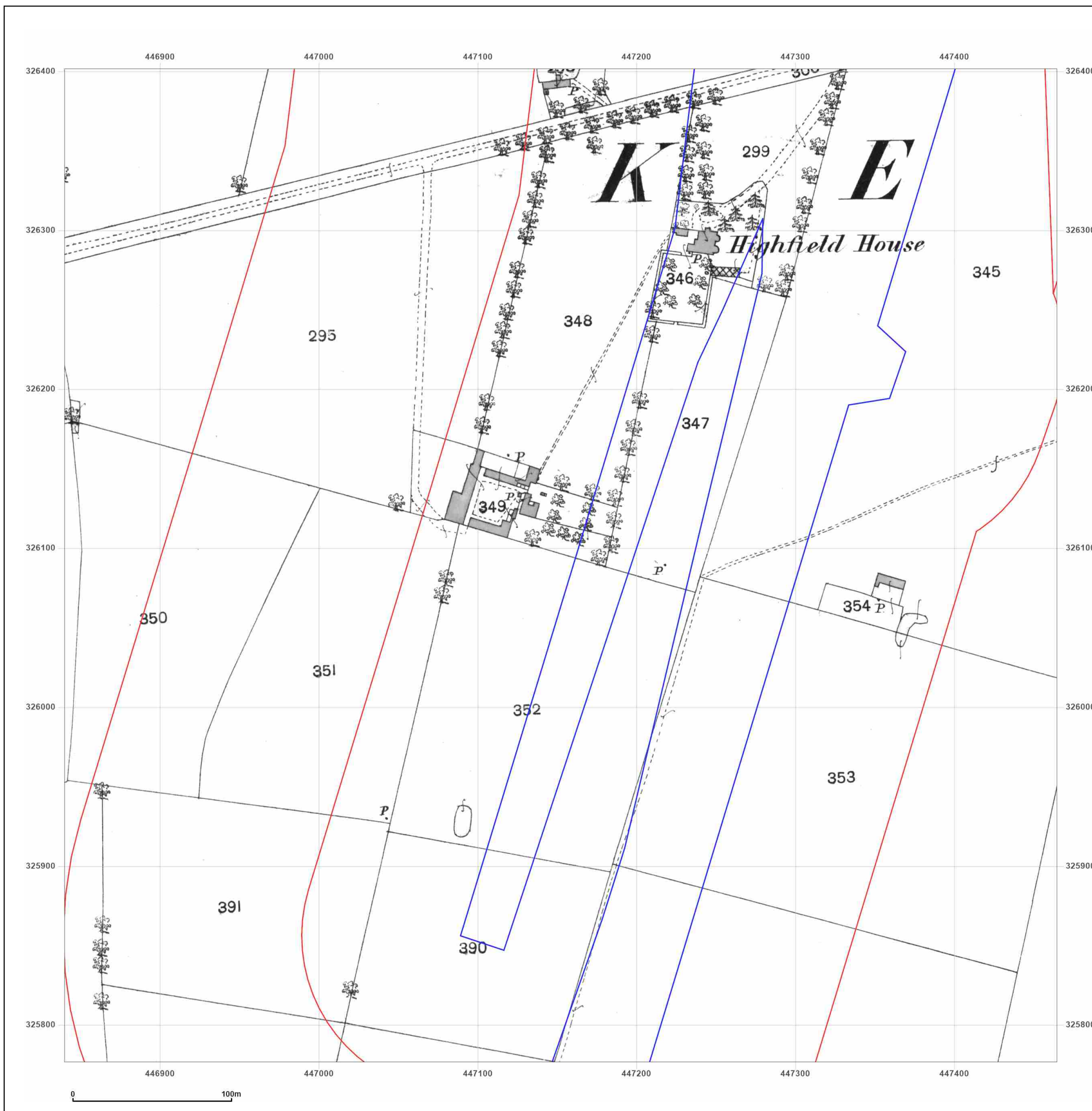


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_2  
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**Map Name:** County Series

**Map date:** 1900

**Scale:** 1:2,500

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



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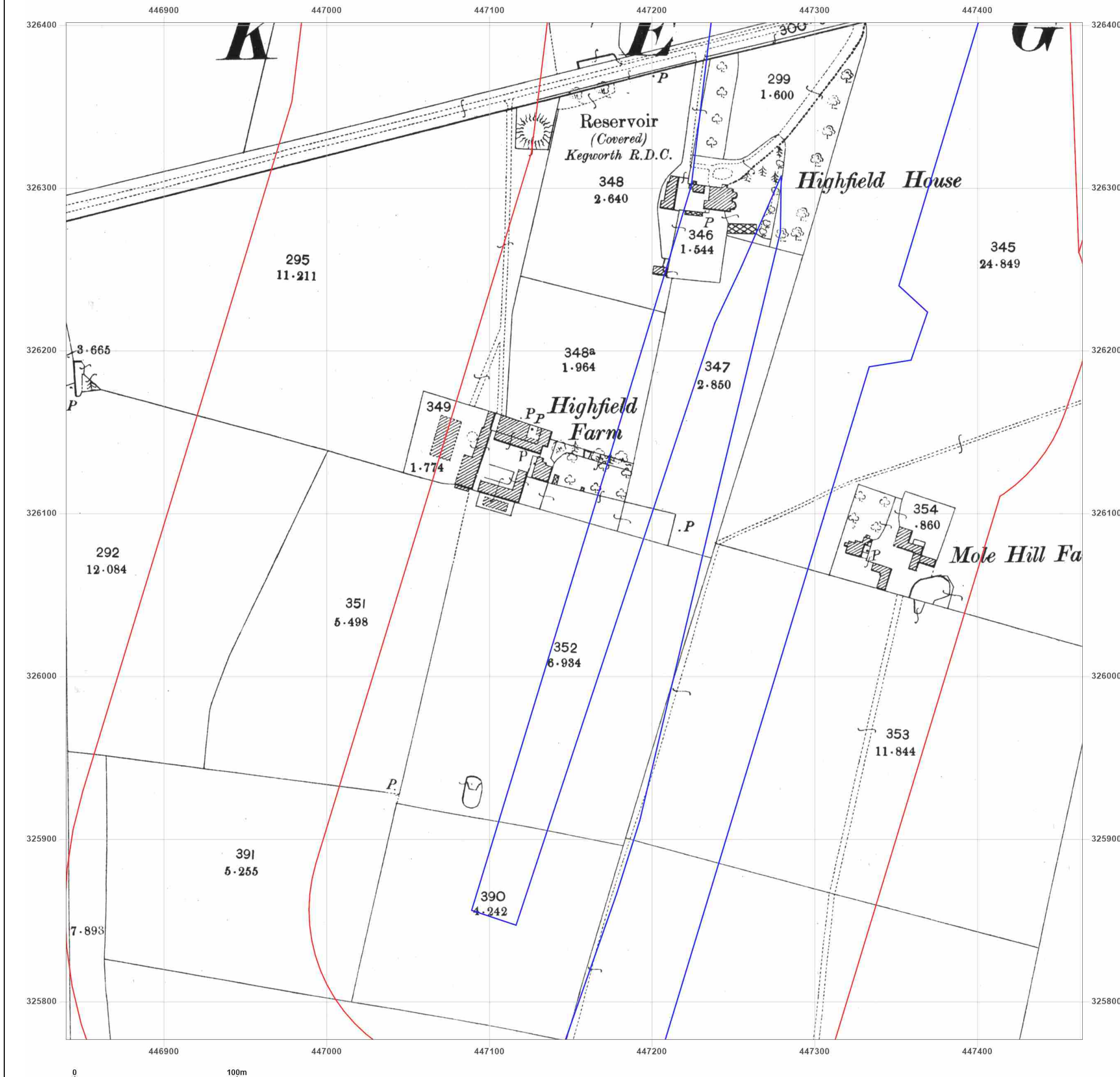


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Map Name:** County Series

**Map date:** 1900-1903

**Scale:** 1:2,500

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



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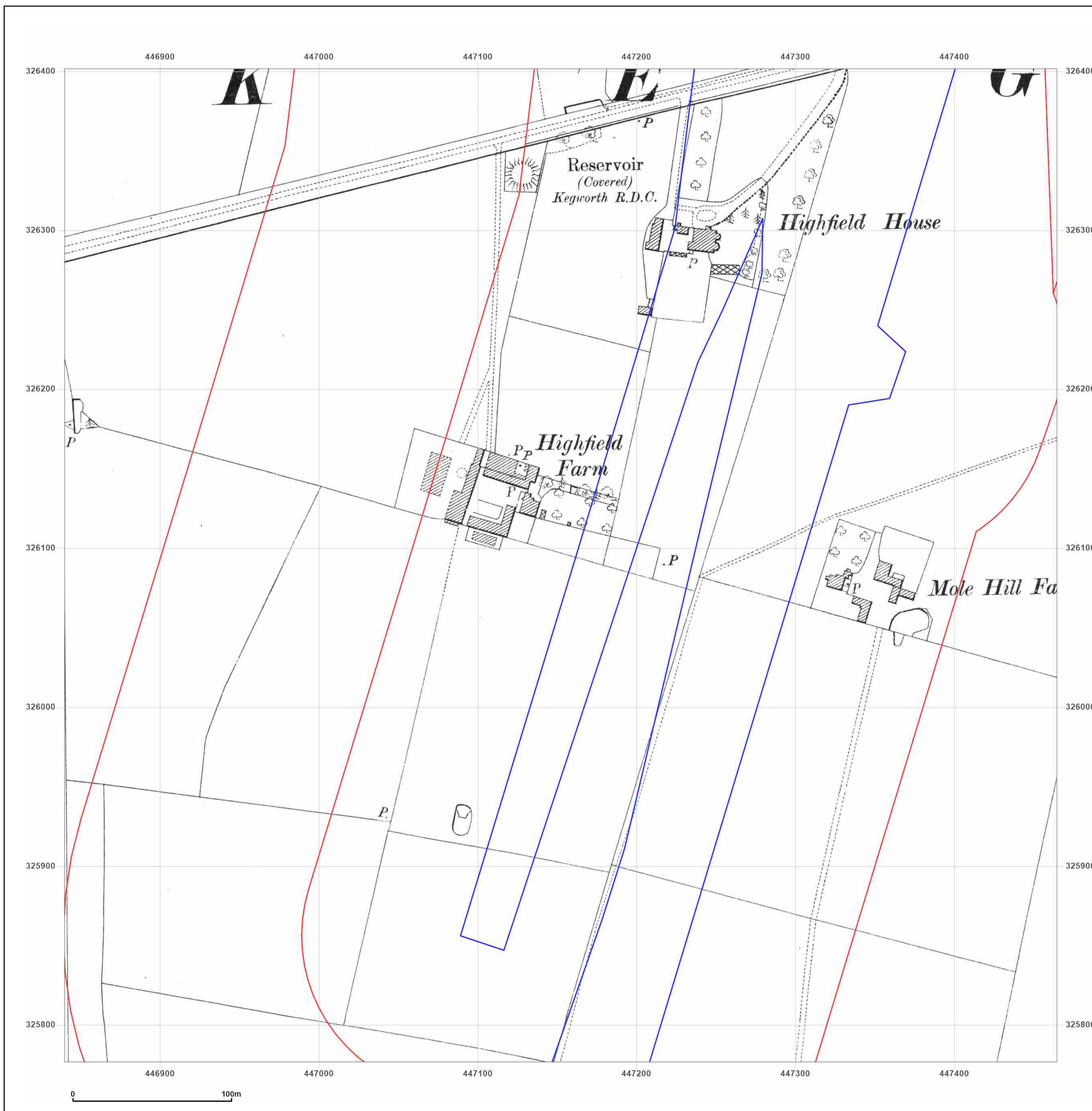


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

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**Map Name:** County Series

**Map date:** 1921

**Scale:** 1:2,500

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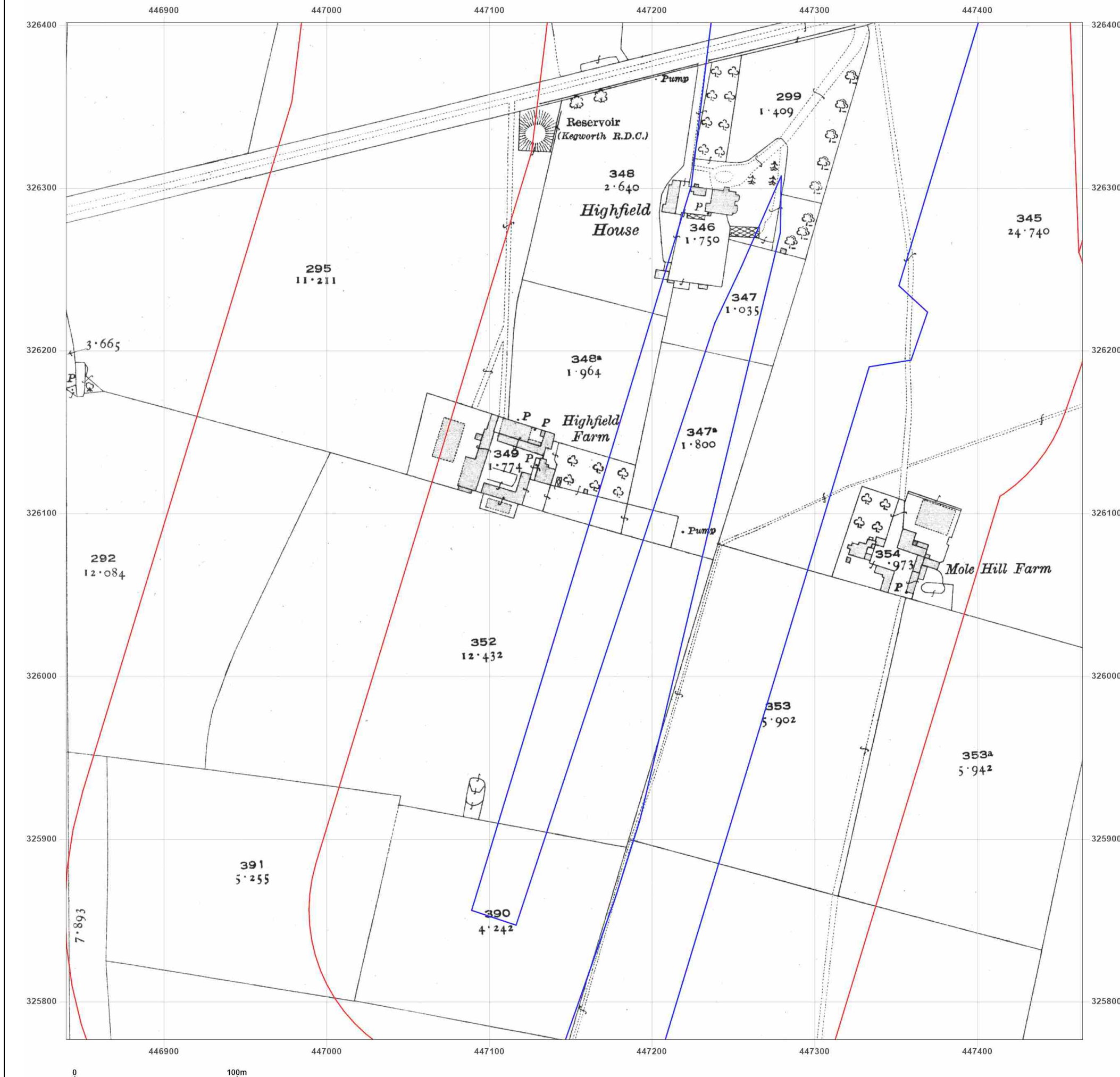


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

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**Map Name:** National Grid

**Map date:** 1962

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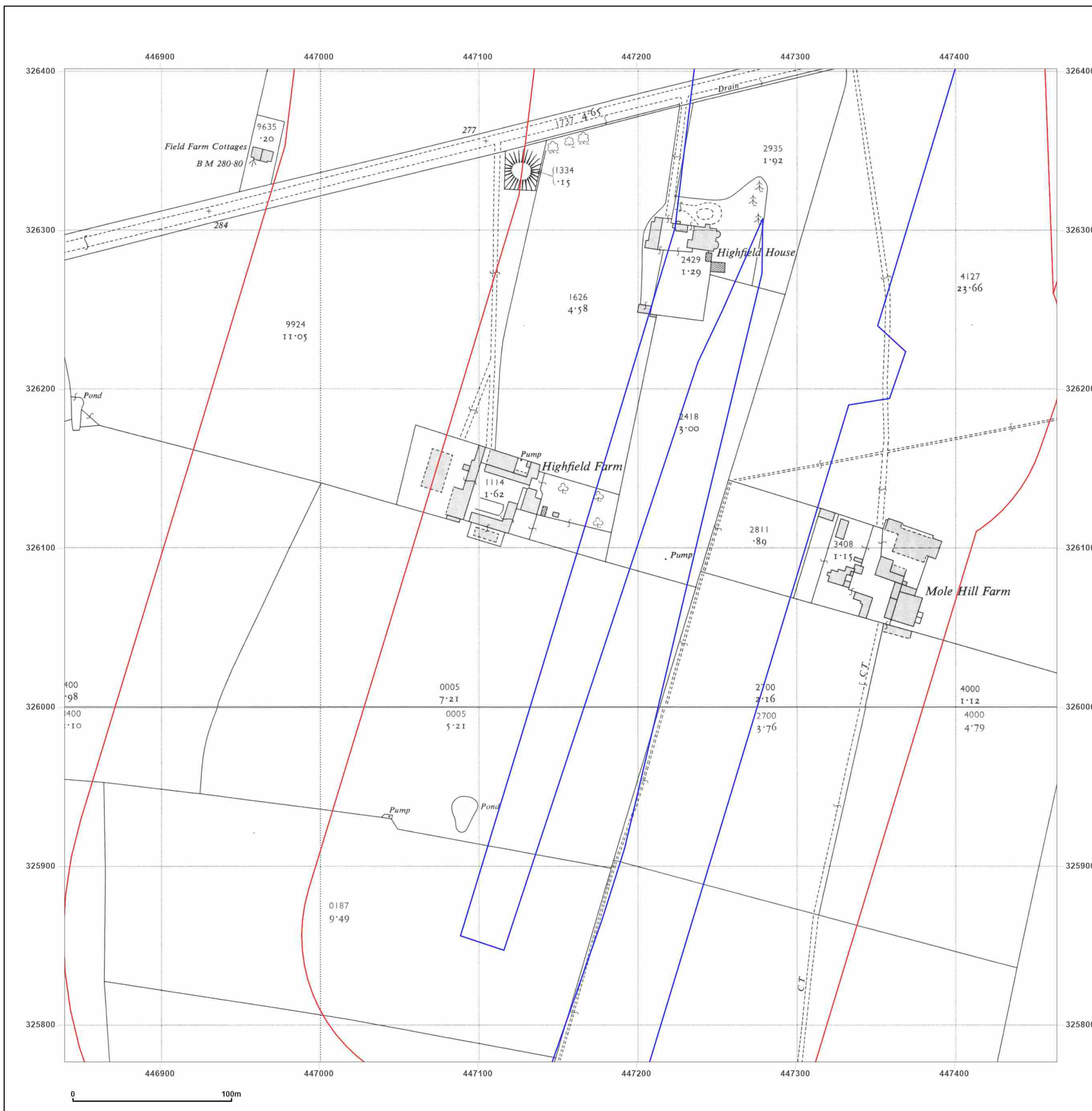


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#### Site Details:

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M1 (NH Land)

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**Map Name:** National Grid

**Map date:** 1967

**Scale:** 1:2,500

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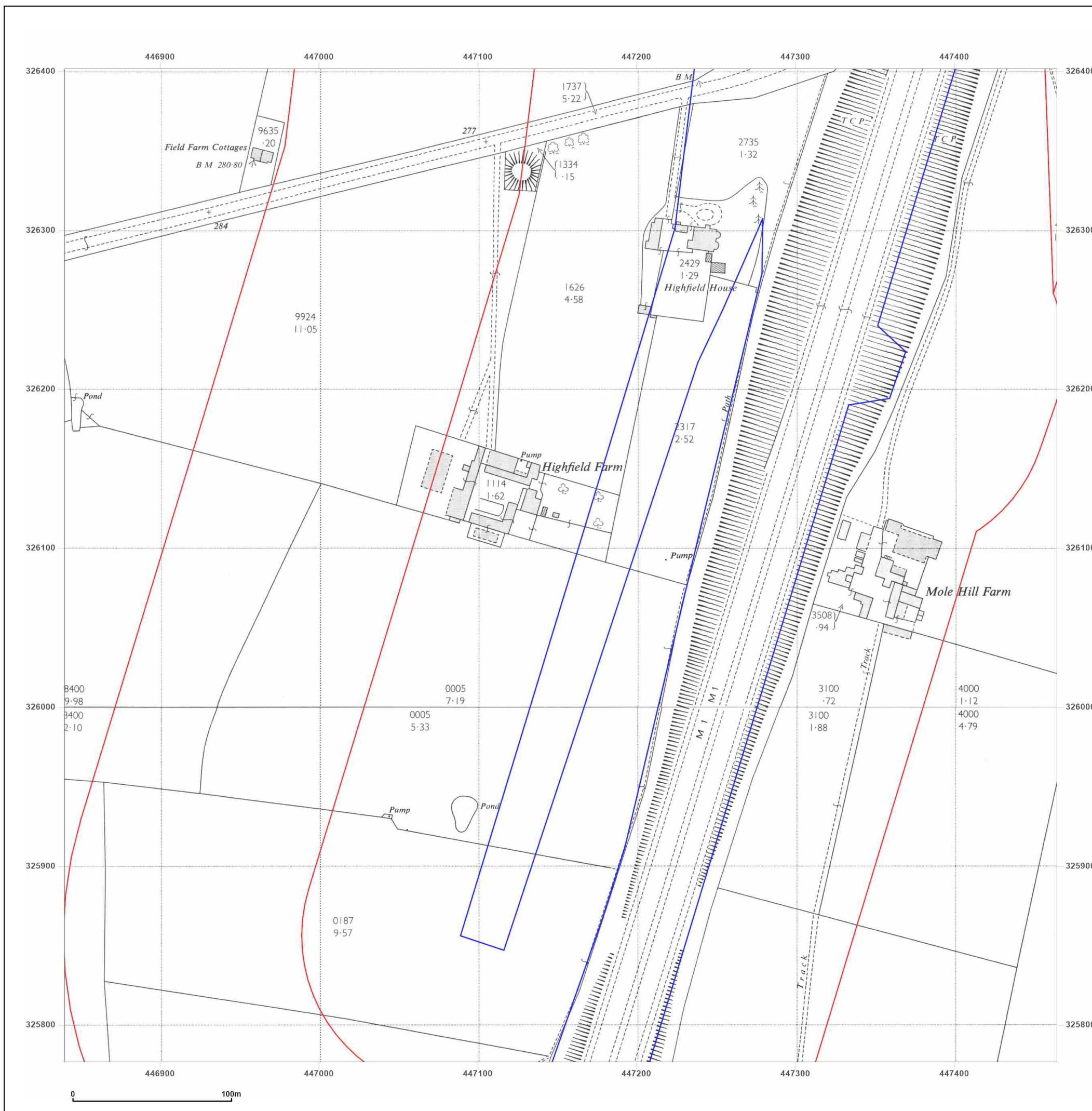


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

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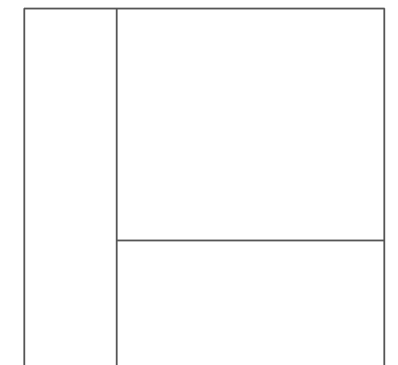
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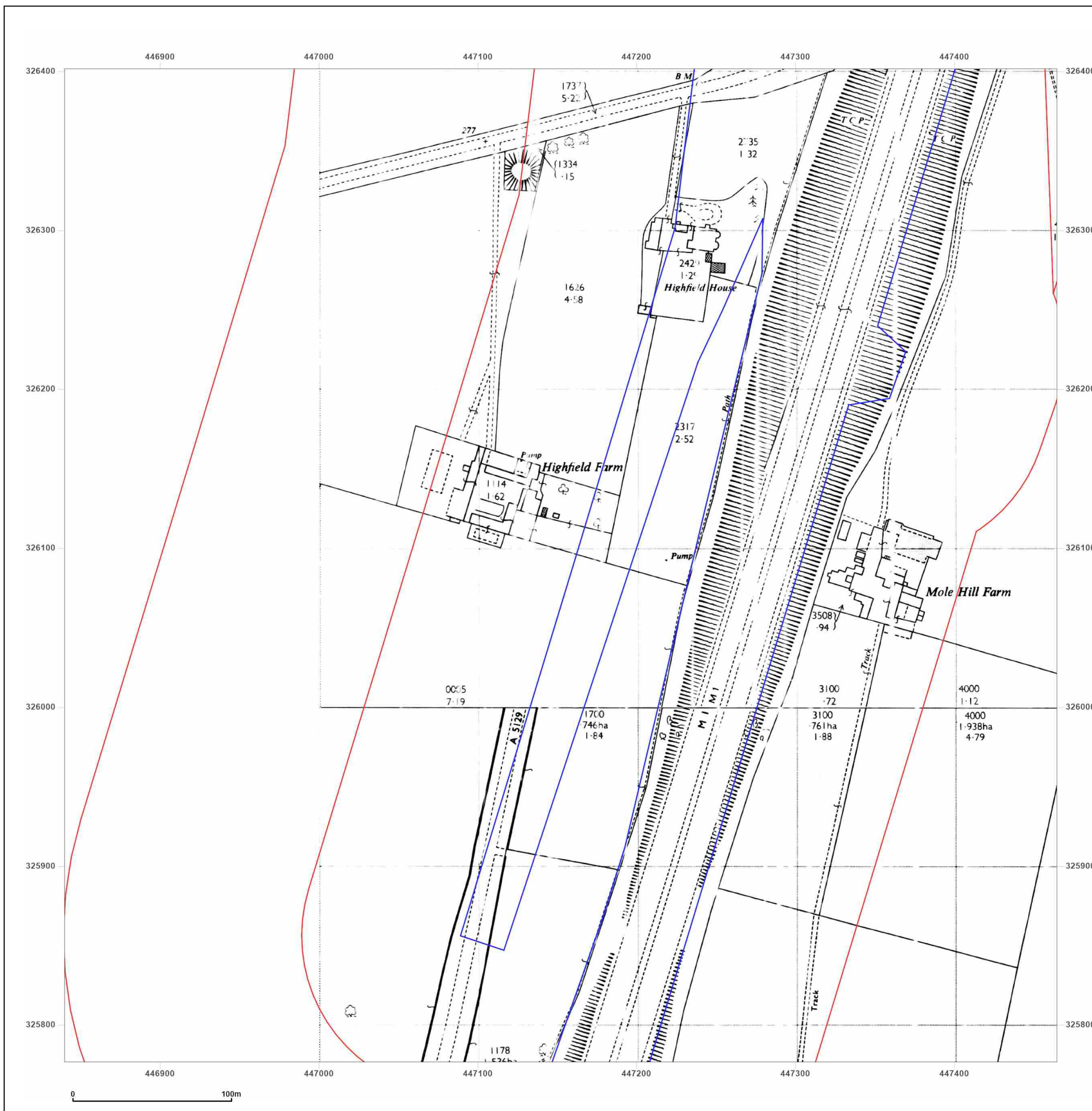


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

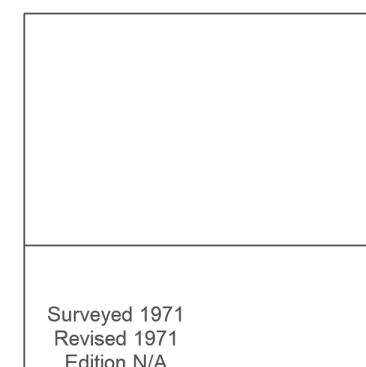
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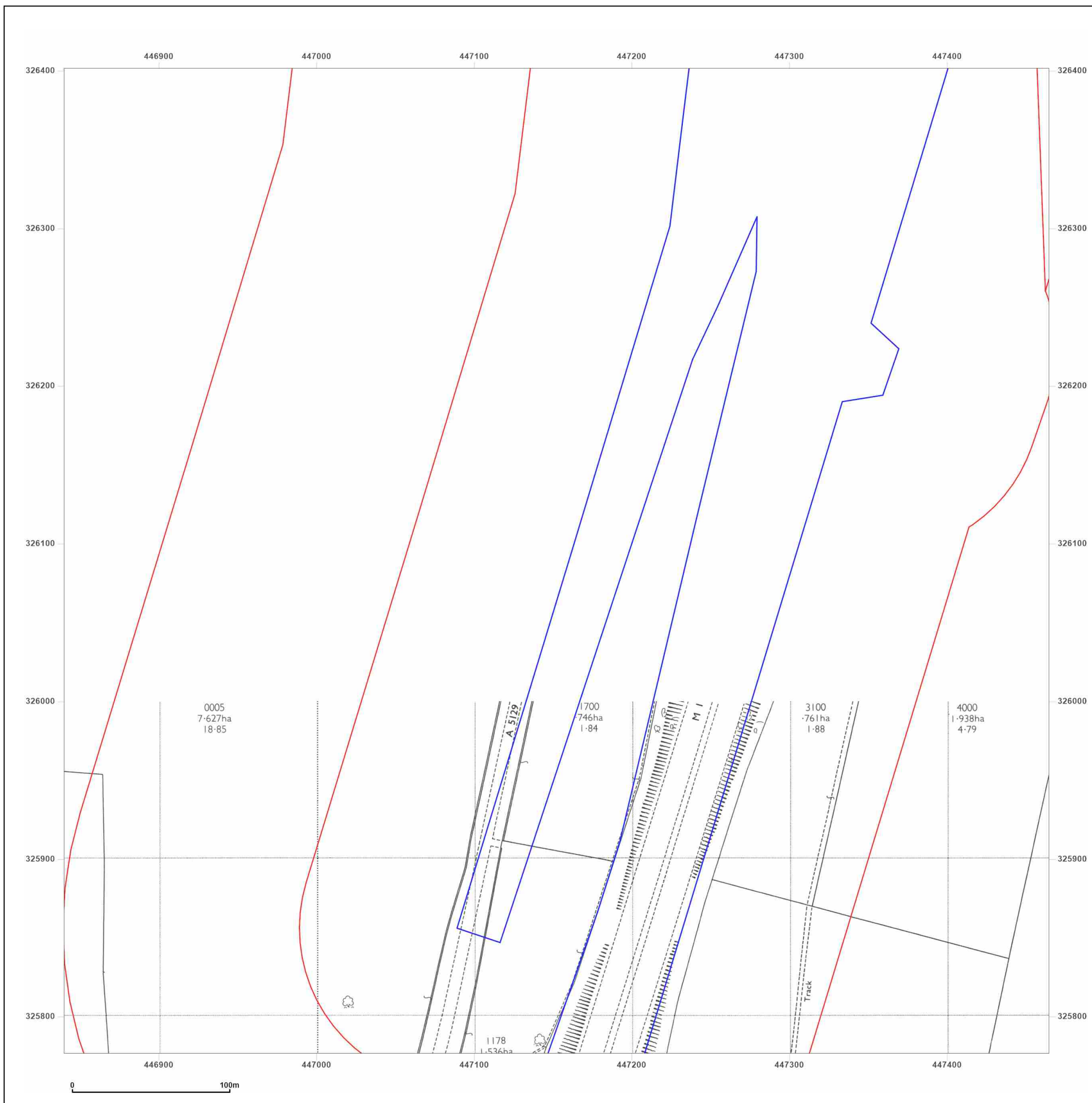


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#### Site Details:

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M1 (NH Land)

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**Grid Ref:** 447152, 326089

**Map Name:** National Grid

**Map date:** 1984-1988

**Scale:** 1:2,500

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



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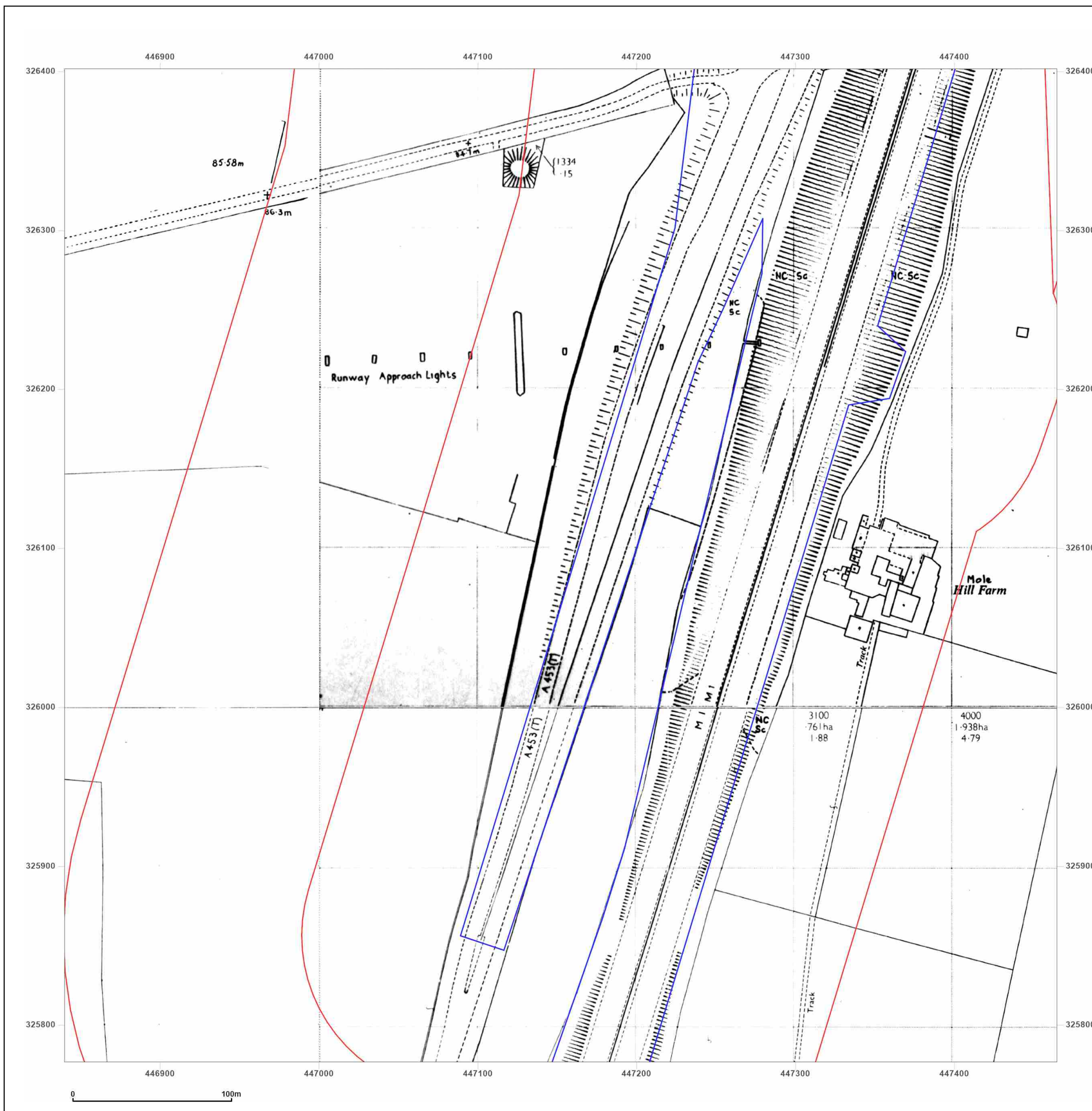


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#### Site Details:

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M1 (NH Land)

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**Map Name:** National Grid

**Map date:** 1989-1991

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



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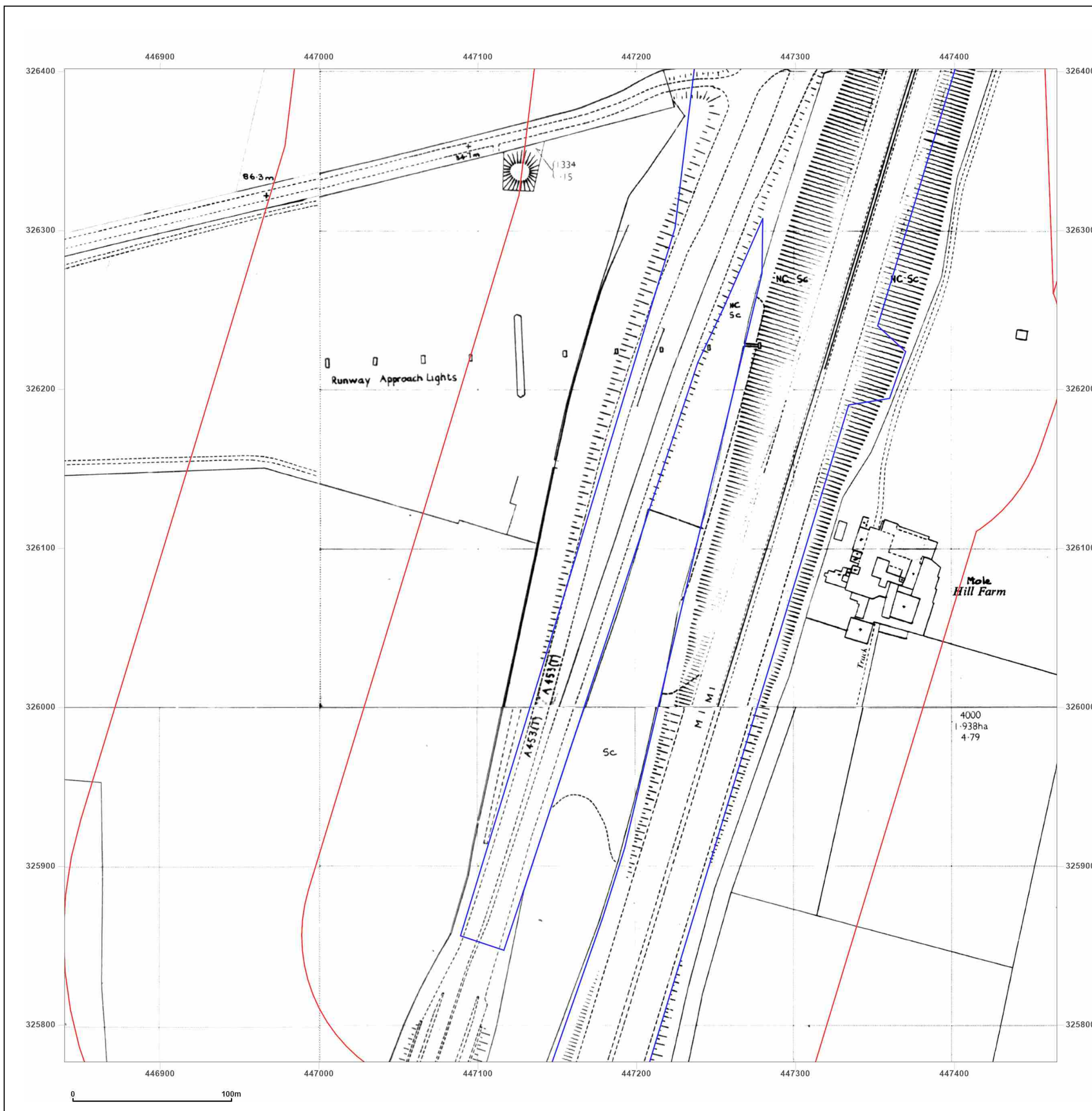


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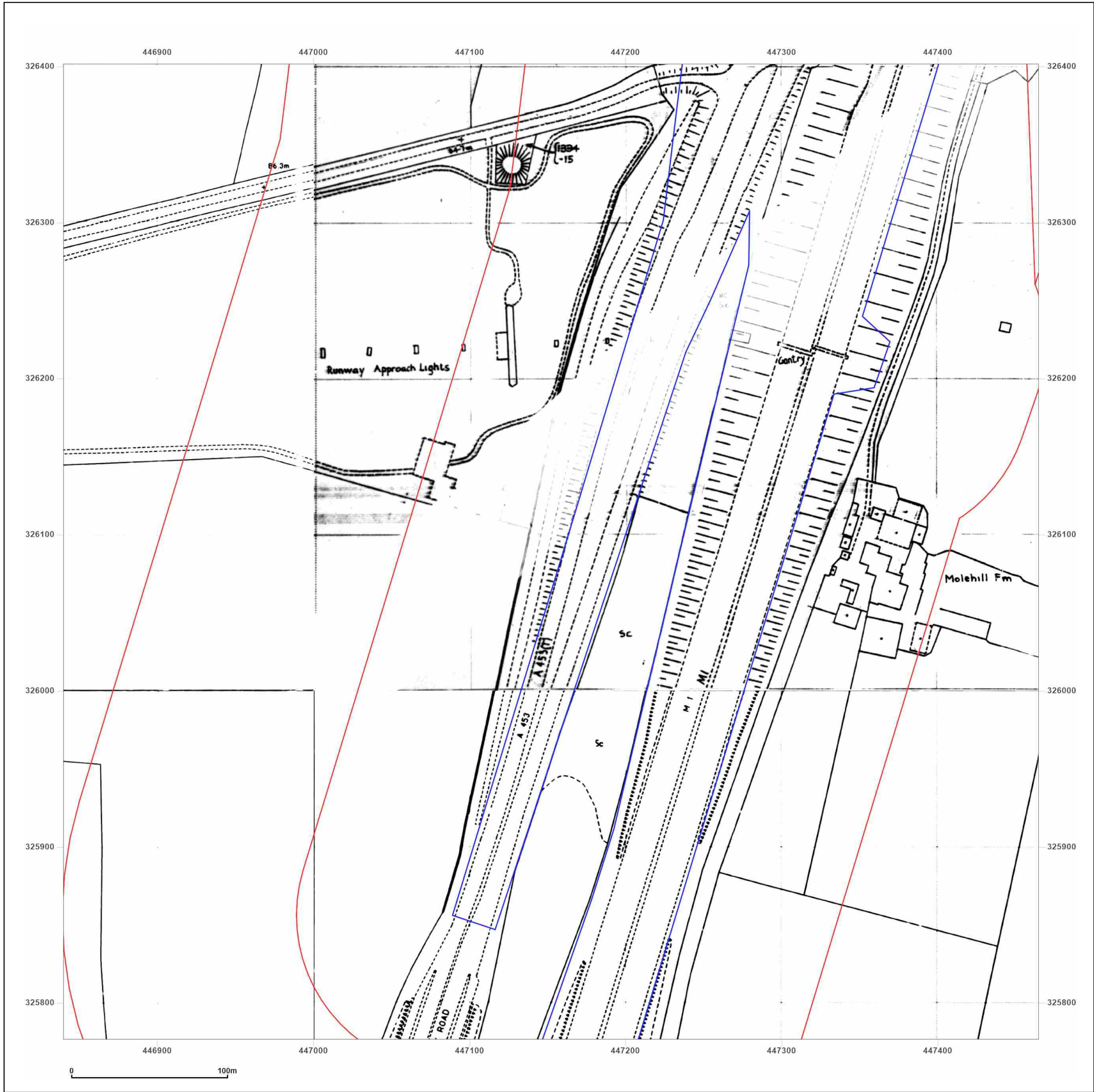
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**Site Details:**

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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_2  
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**Map date:** 1991-1993  
**Scale:** 1:2,500  
**Printed at:** 1:2,500



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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:

1993

Scale:

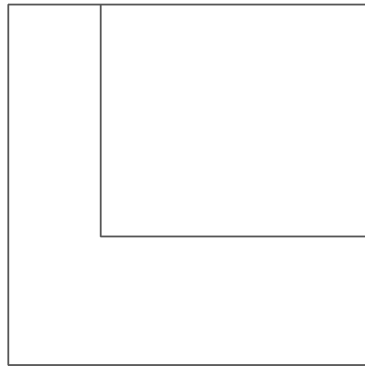
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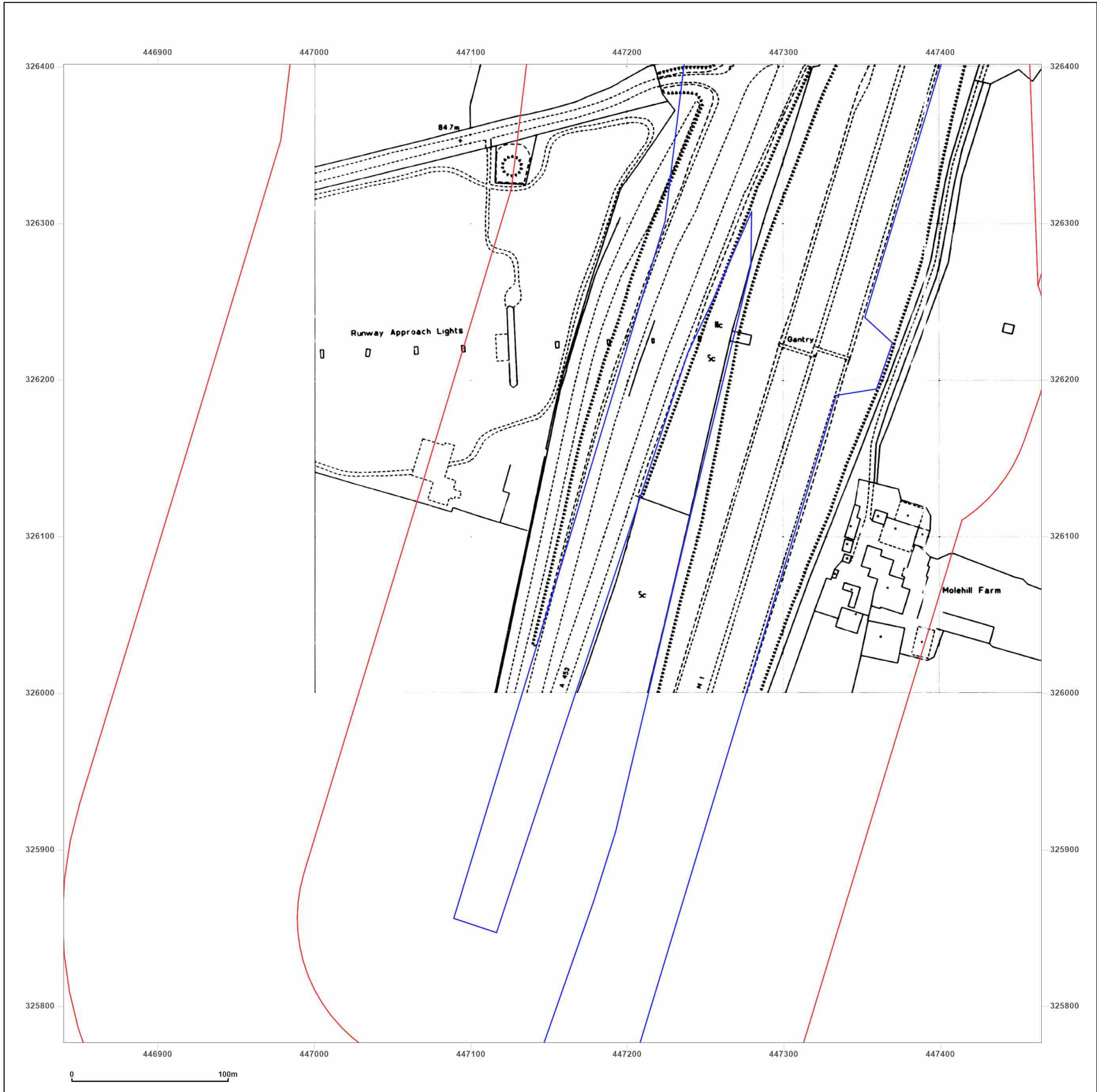
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#### Site Details:

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**Grid Ref:** 447152, 326714

**Map Name:** County Series

**Map date:** 1884

**Scale:** 1:2,500

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



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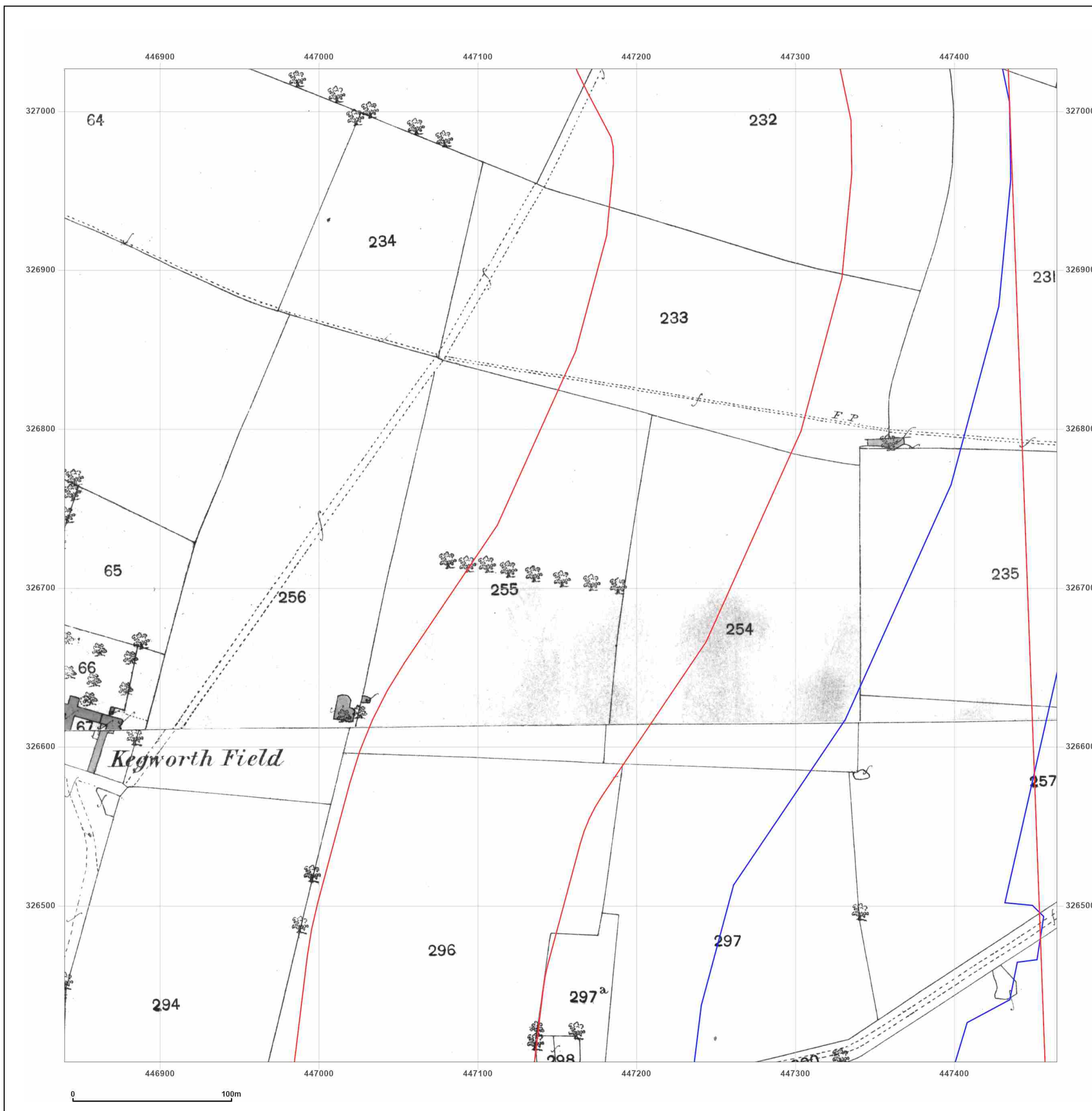


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**Client Ref:** 220500 - 10250  
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**Map Name:** County Series

**Map date:** 1900

**Scale:** 1:2,500

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



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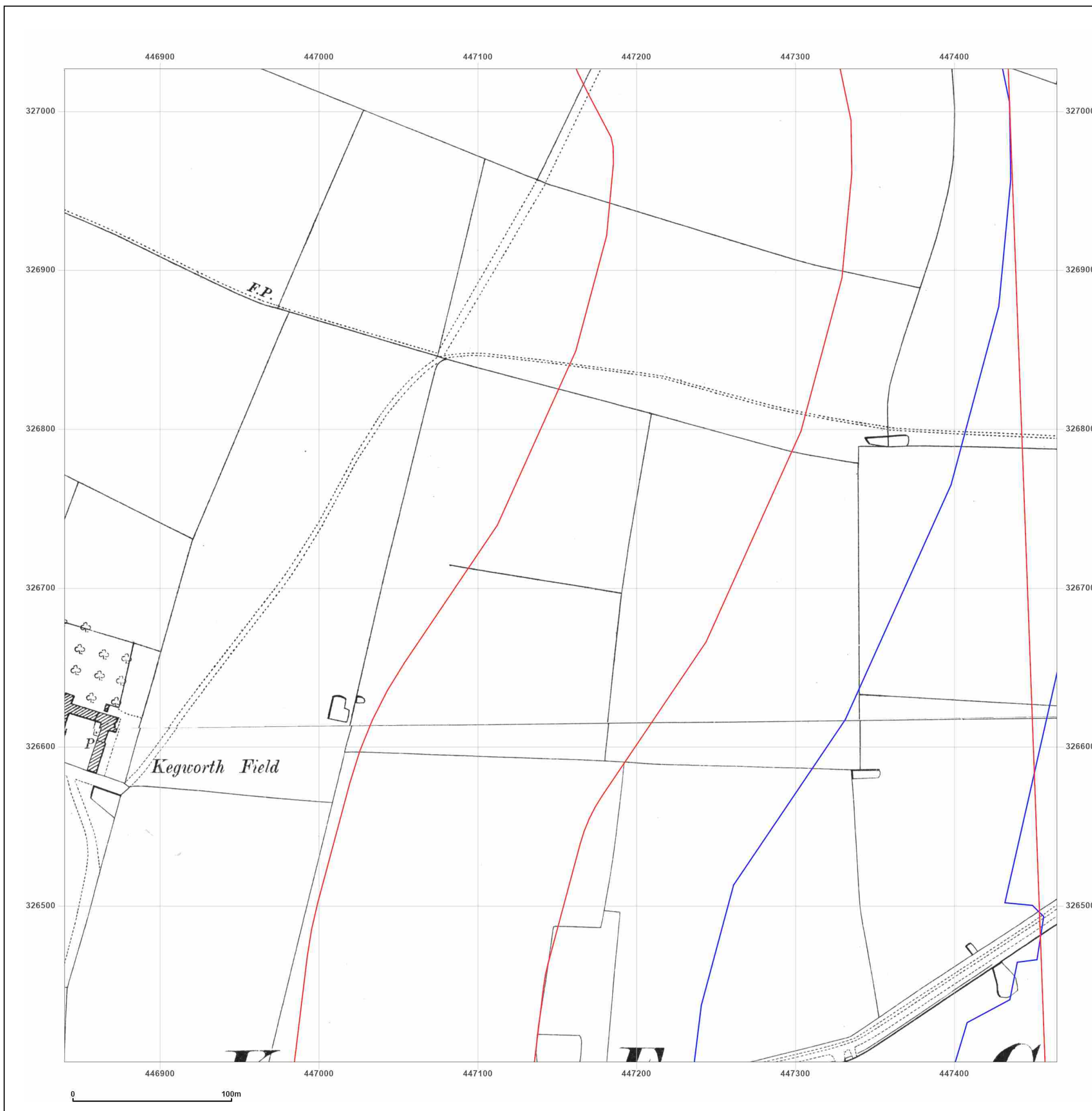


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**Site Details:**

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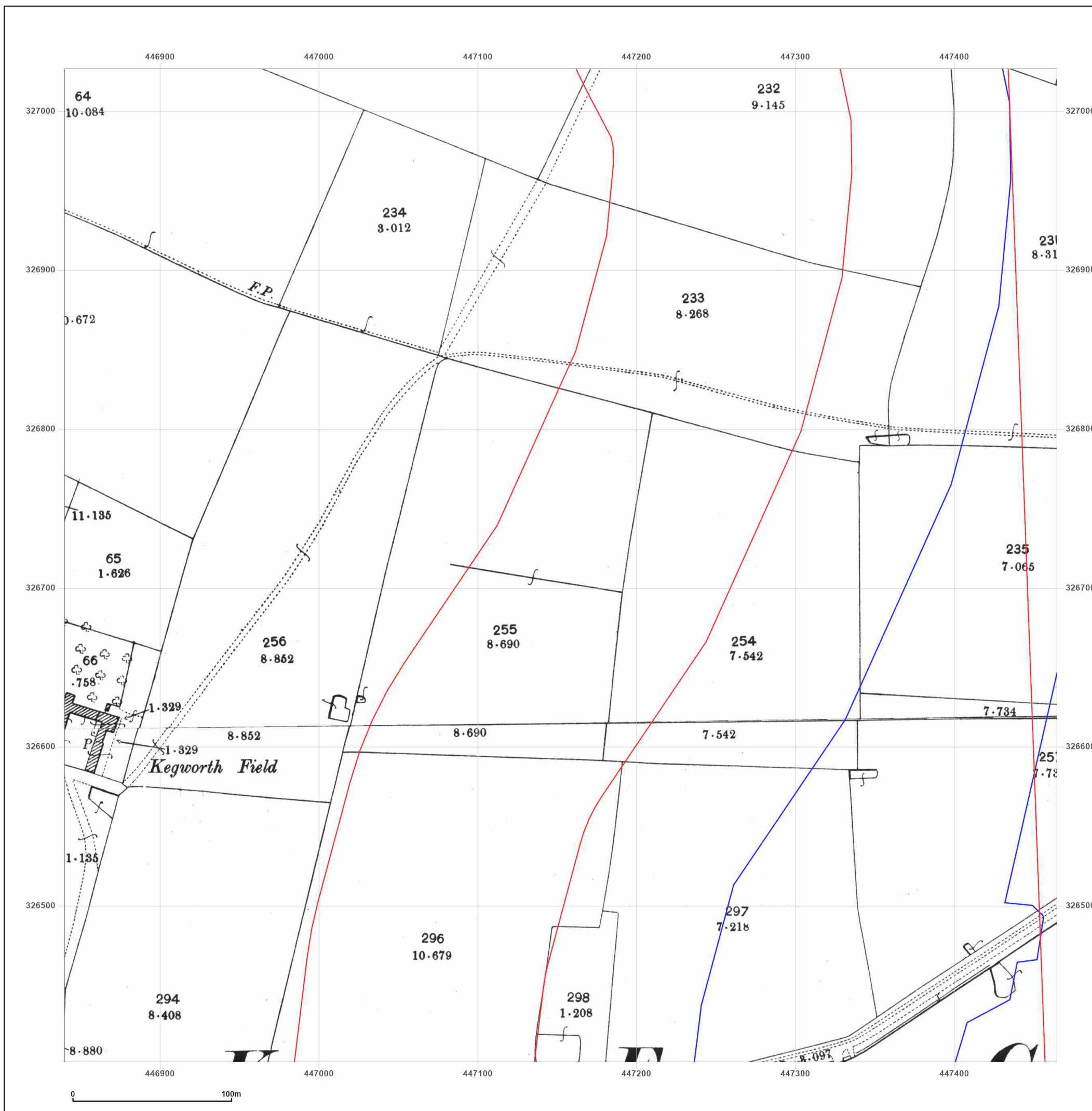


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

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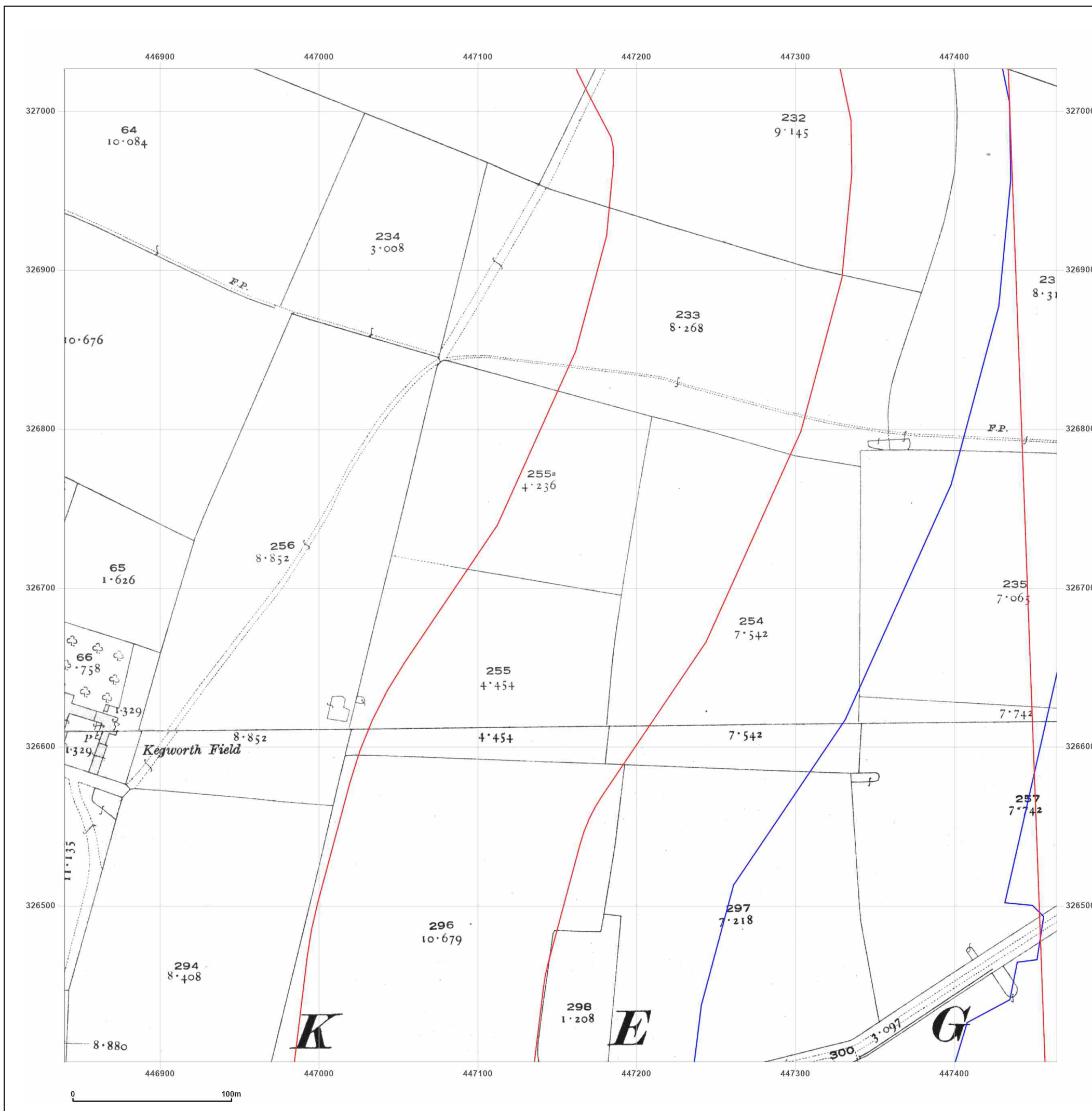


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

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**Map Name:** National Grid

**Map date:** 1962

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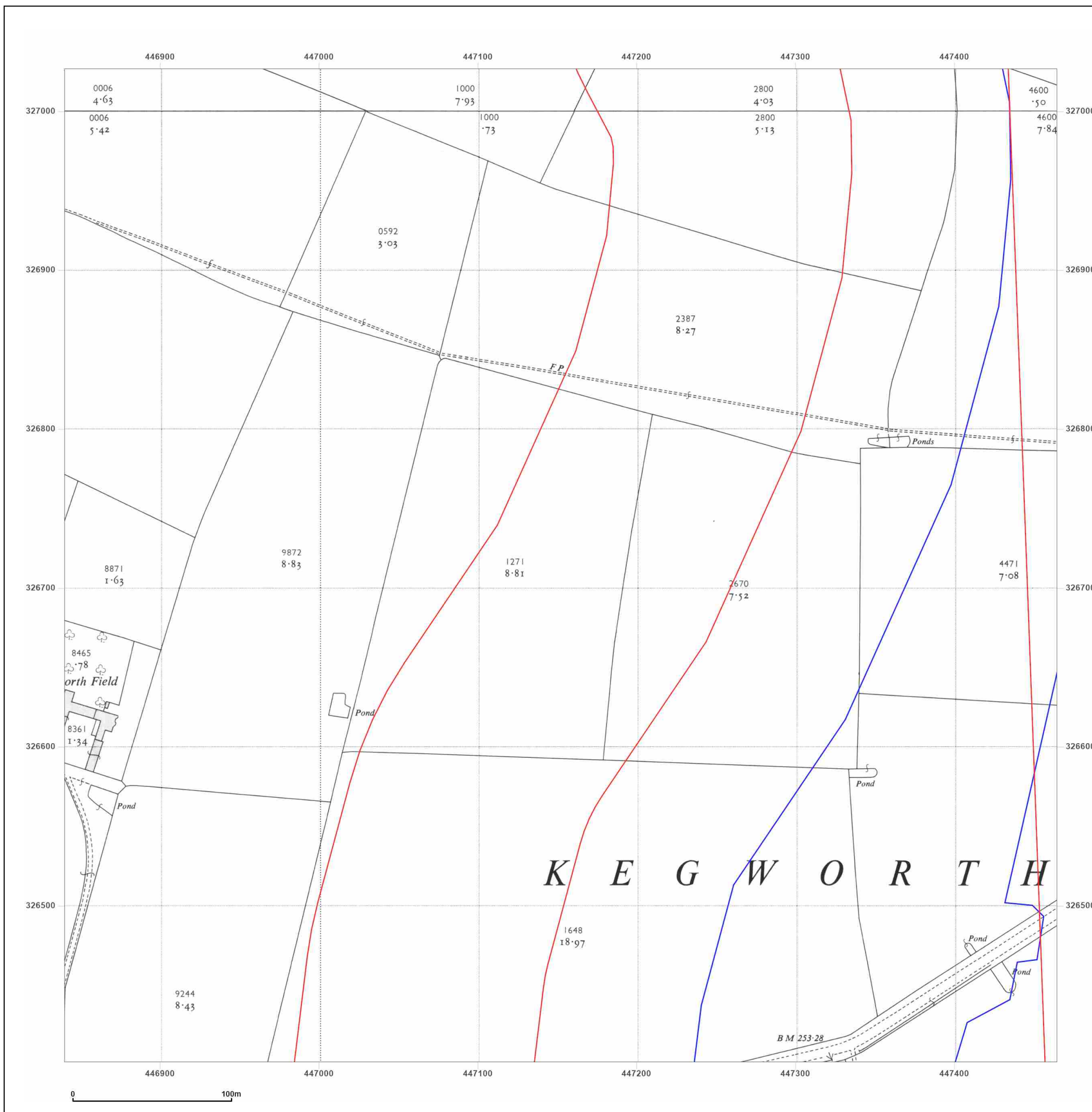


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

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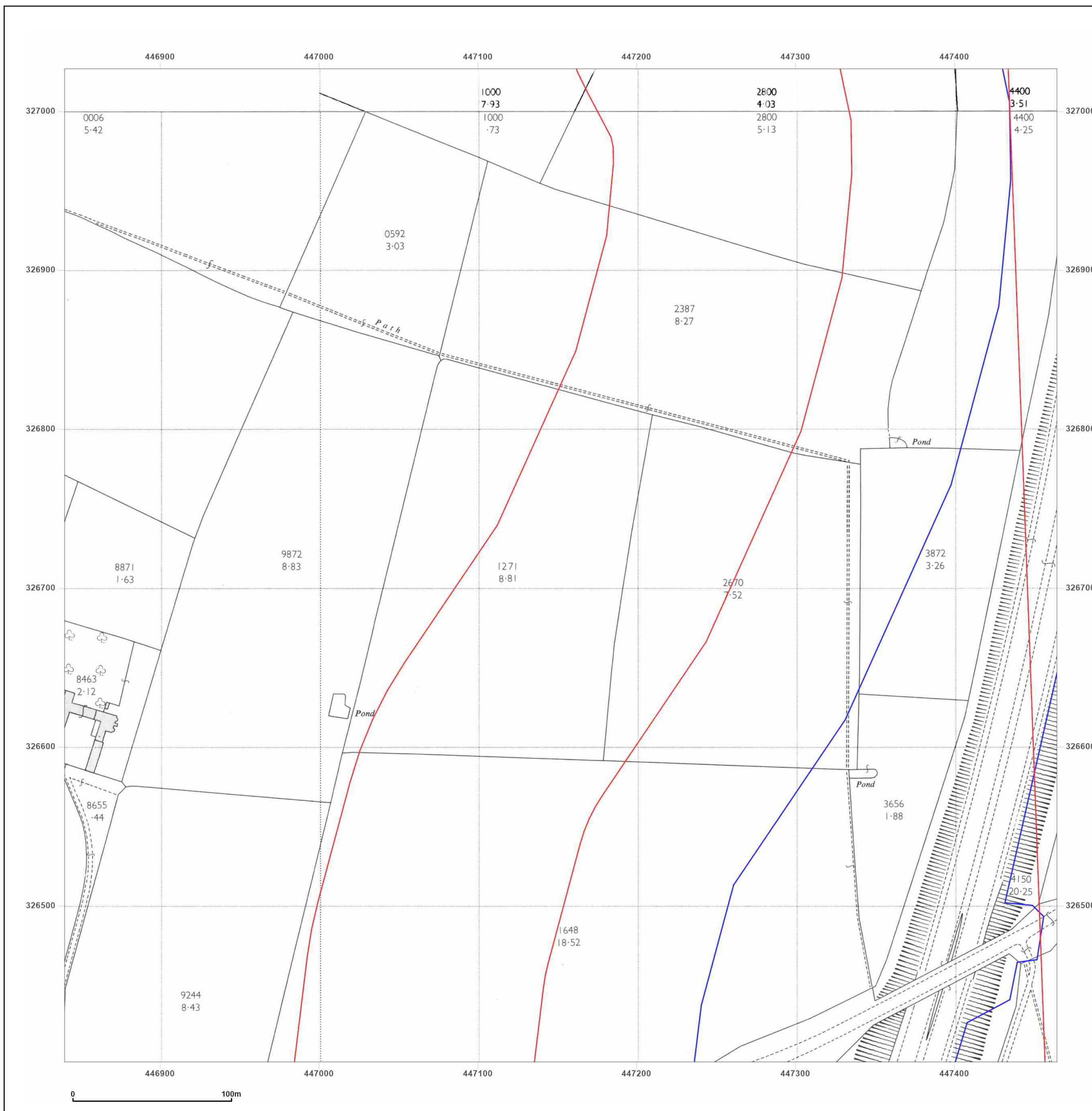


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#### Site Details:

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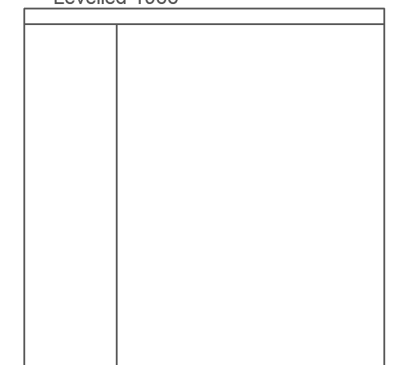
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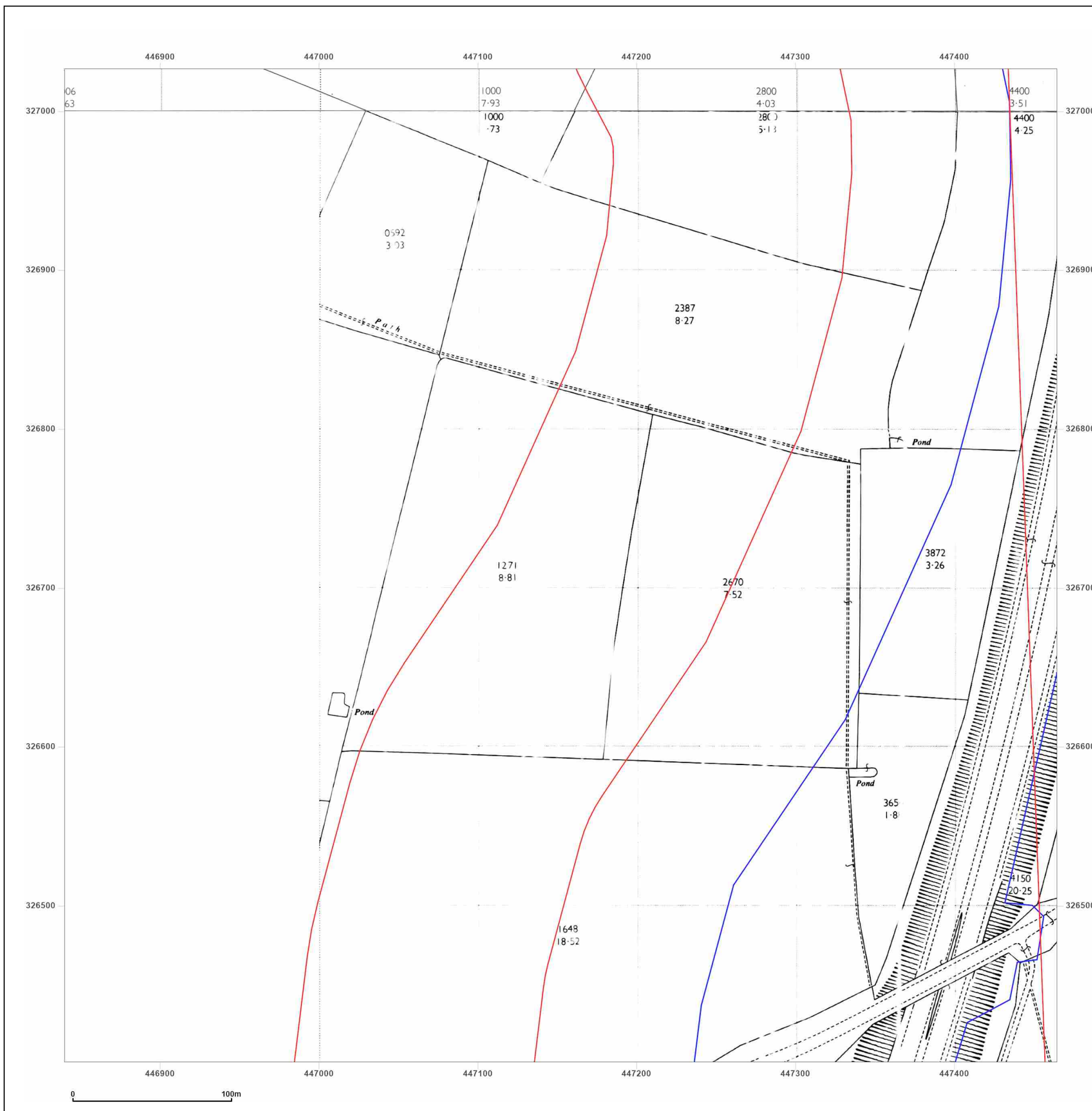


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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_3  
**Grid Ref:** 447152, 326714

**Map Name:** National Grid

**Map date:** 1982-1984

**Scale:** 1:2,500

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



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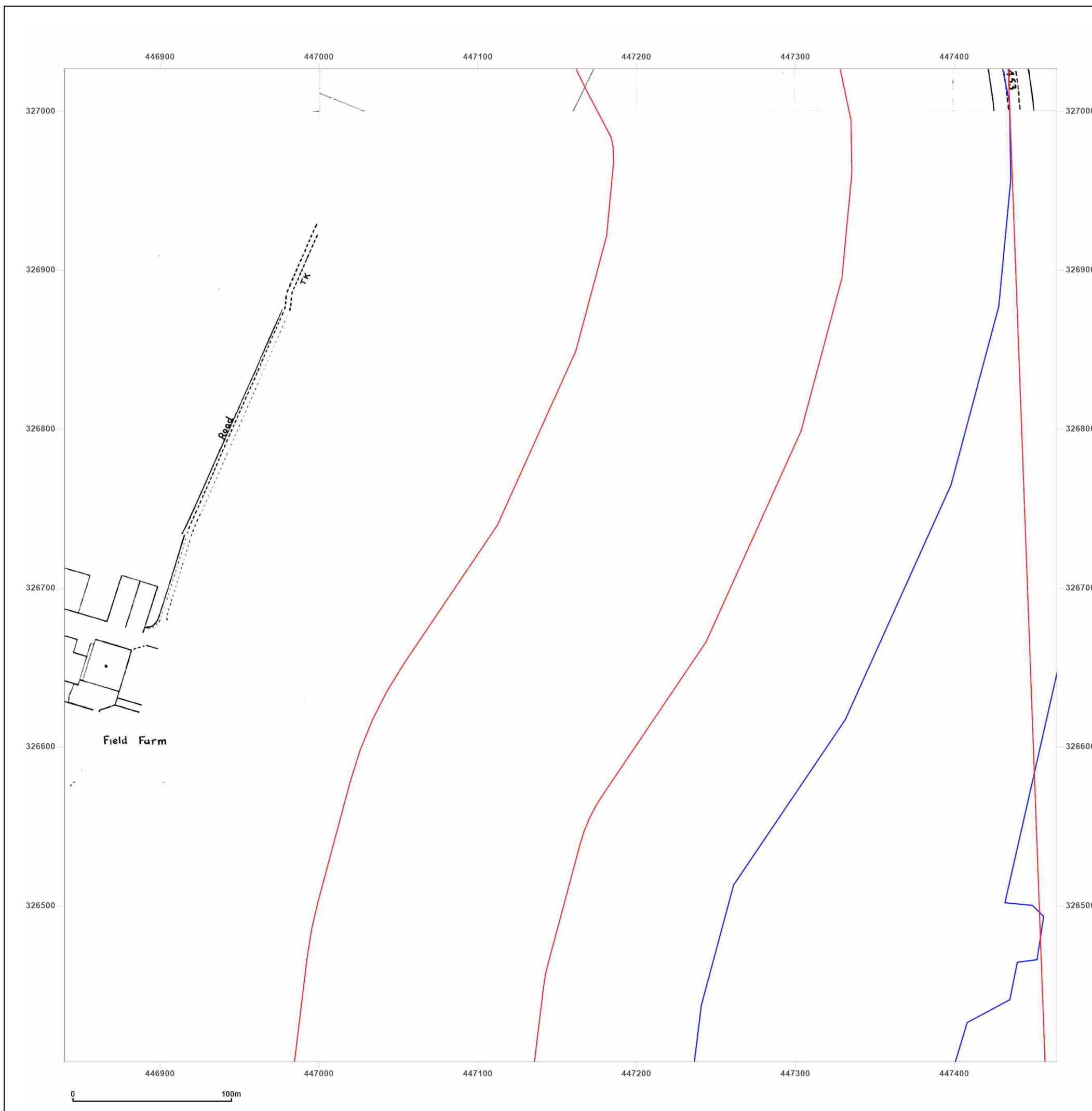


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_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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Revised 1991  
Edition N/A  
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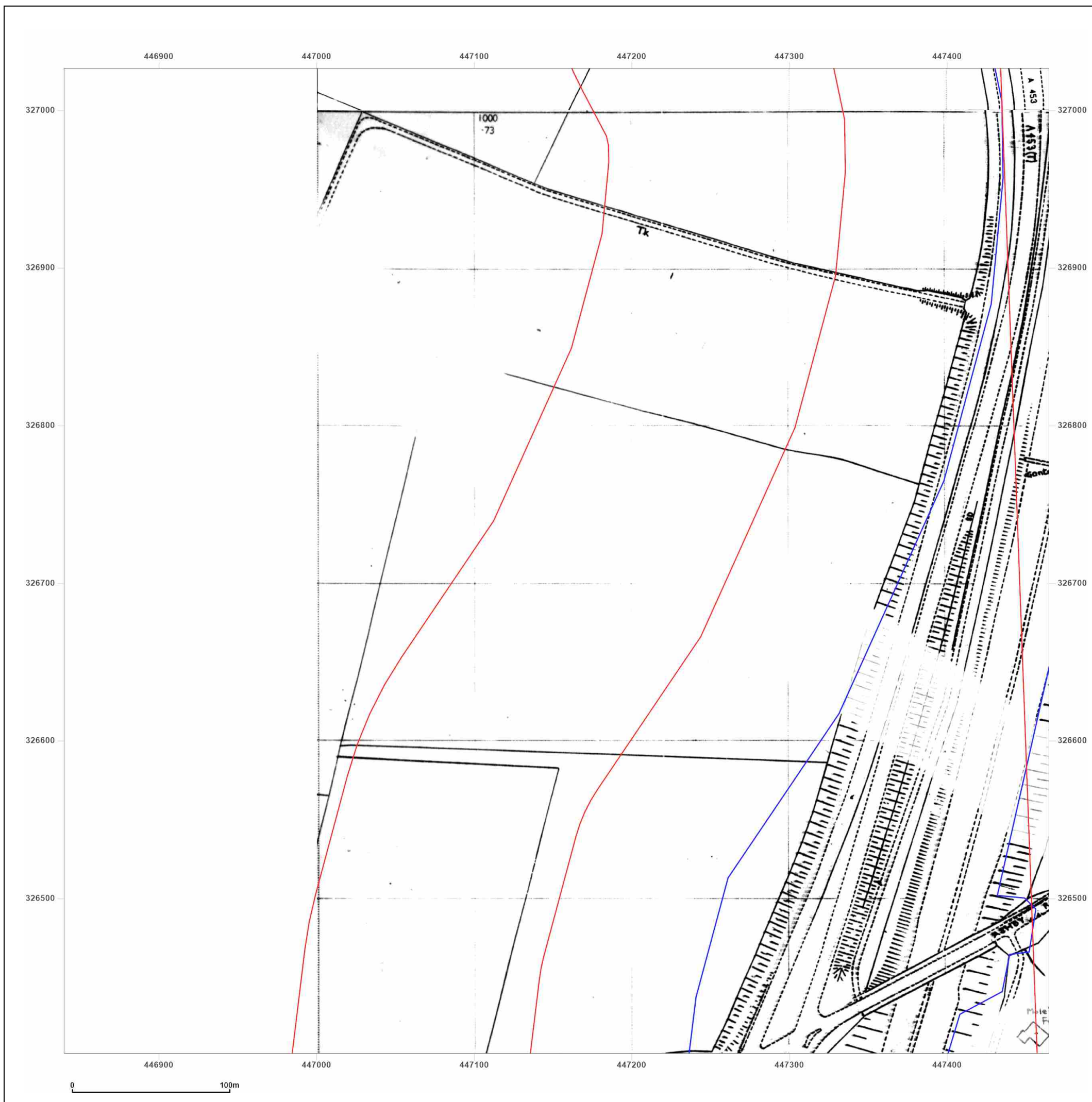


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

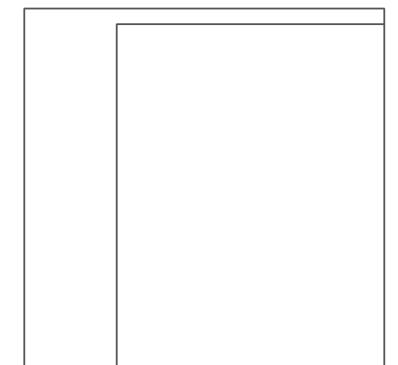
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**Map Name:** National Grid

**Map date:** 1993

**Scale:** 1:2,500

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



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Revised N/A  
Edition N/A  
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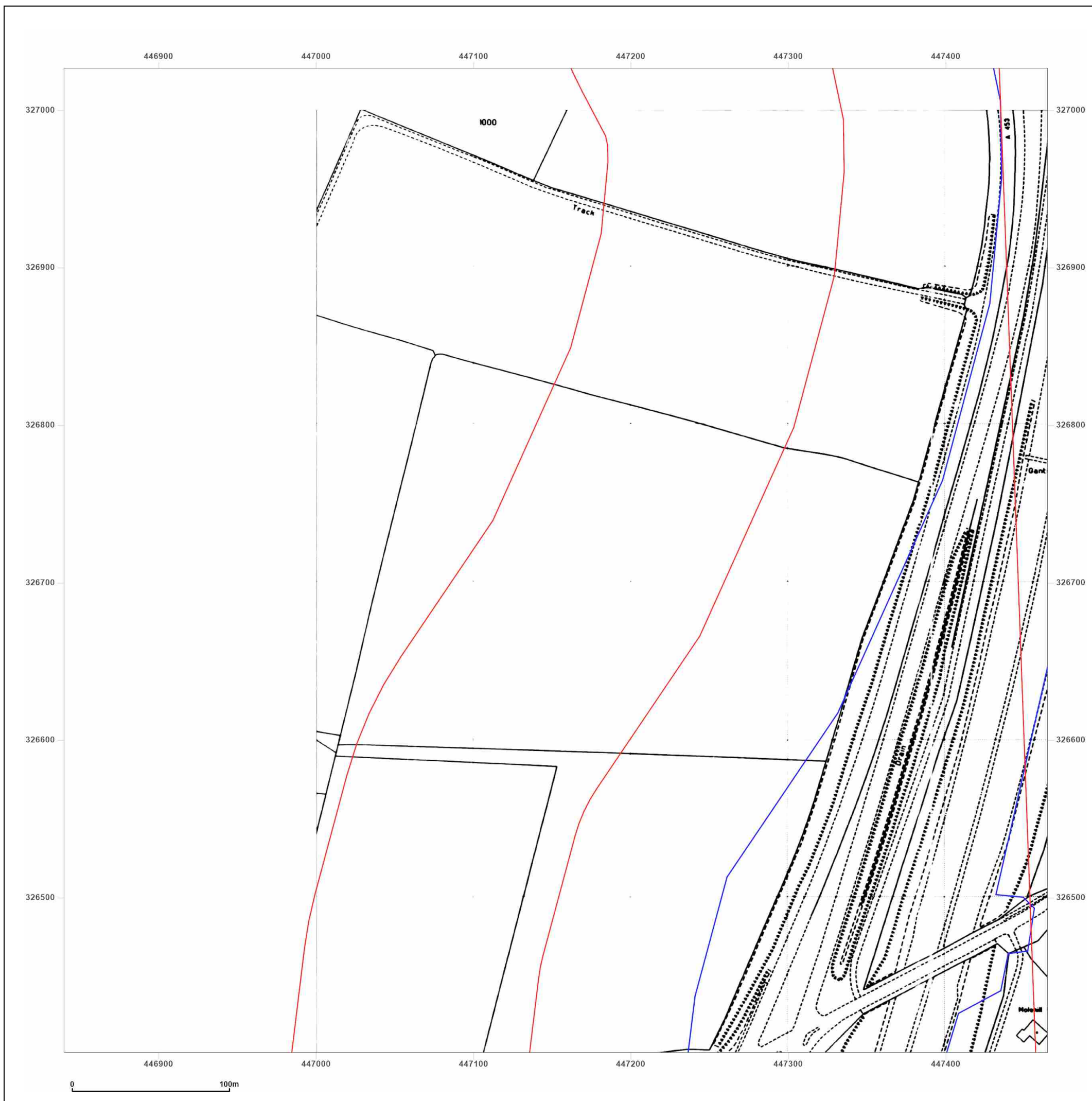


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Grid Ref:** 447152, 326714

**Map Name:** National Grid

**Map date:** 1988-1993

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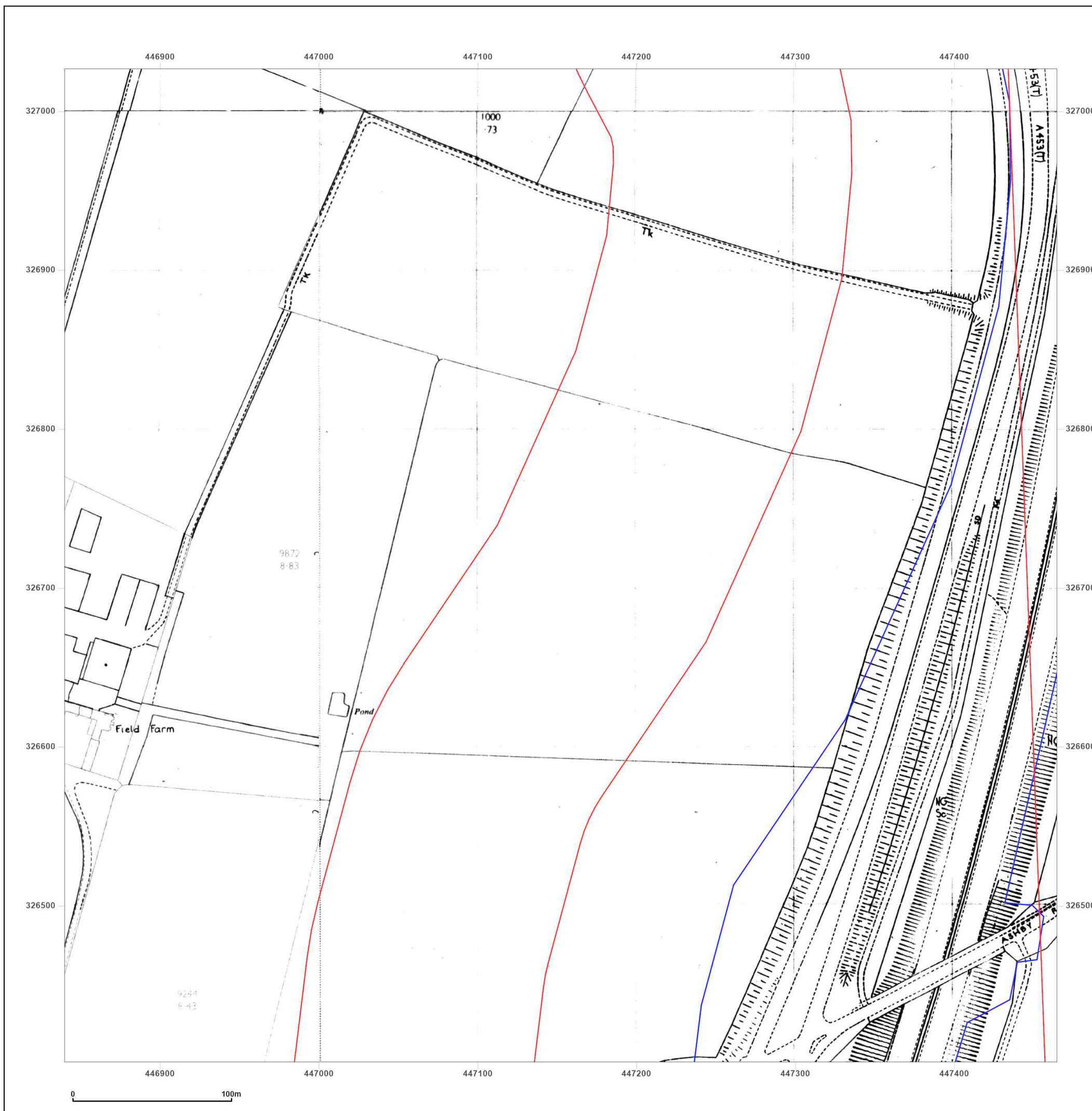


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_4  
**Grid Ref:** 447152, 327340

**Map Name:** County Series

**Map date:** 1884

**Scale:** 1:2,500

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



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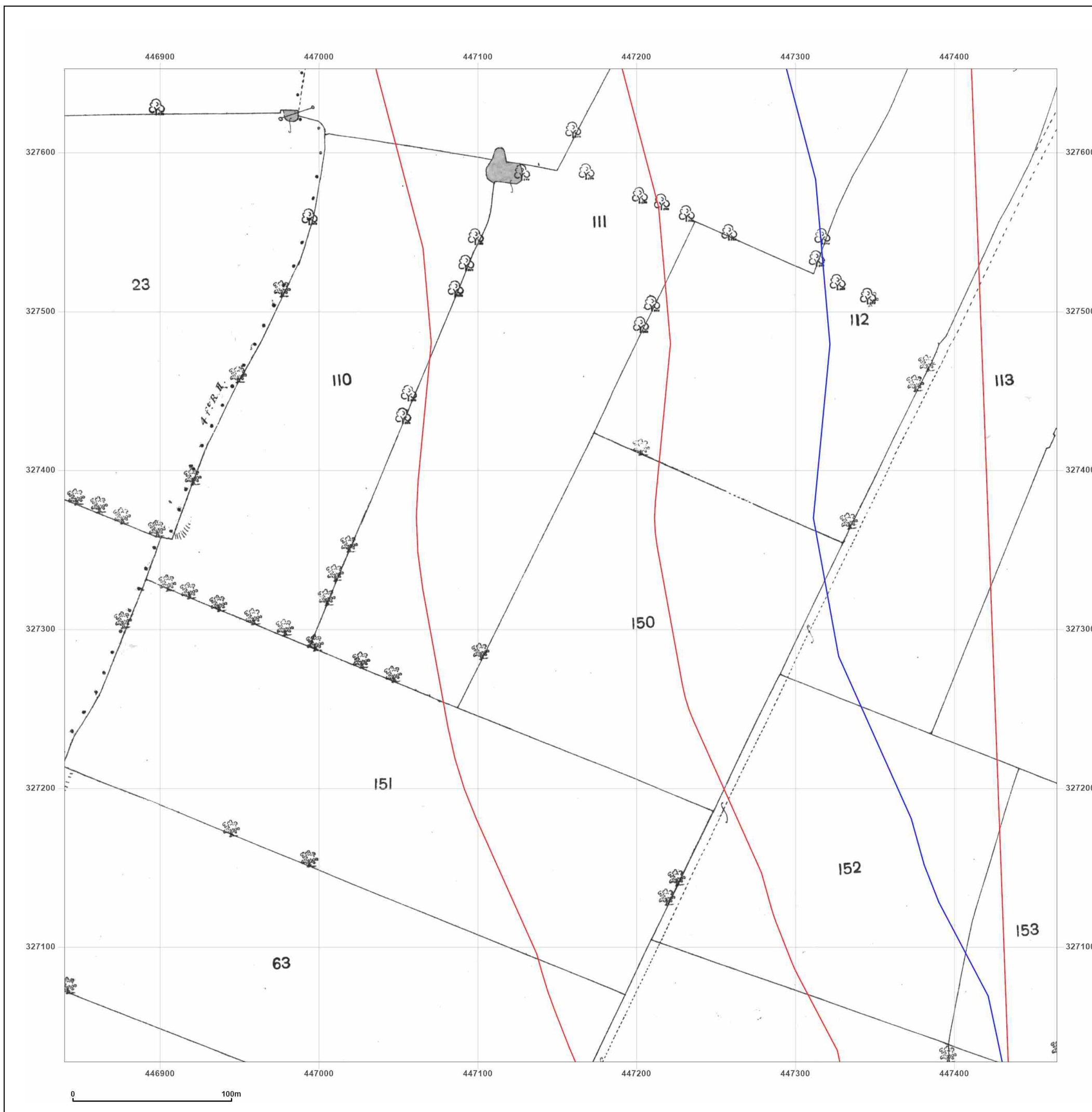


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_4  
**Grid Ref:** 447152, 327340

**Map Name:** County Series

**Map date:** 1900

**Scale:** 1:2,500

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



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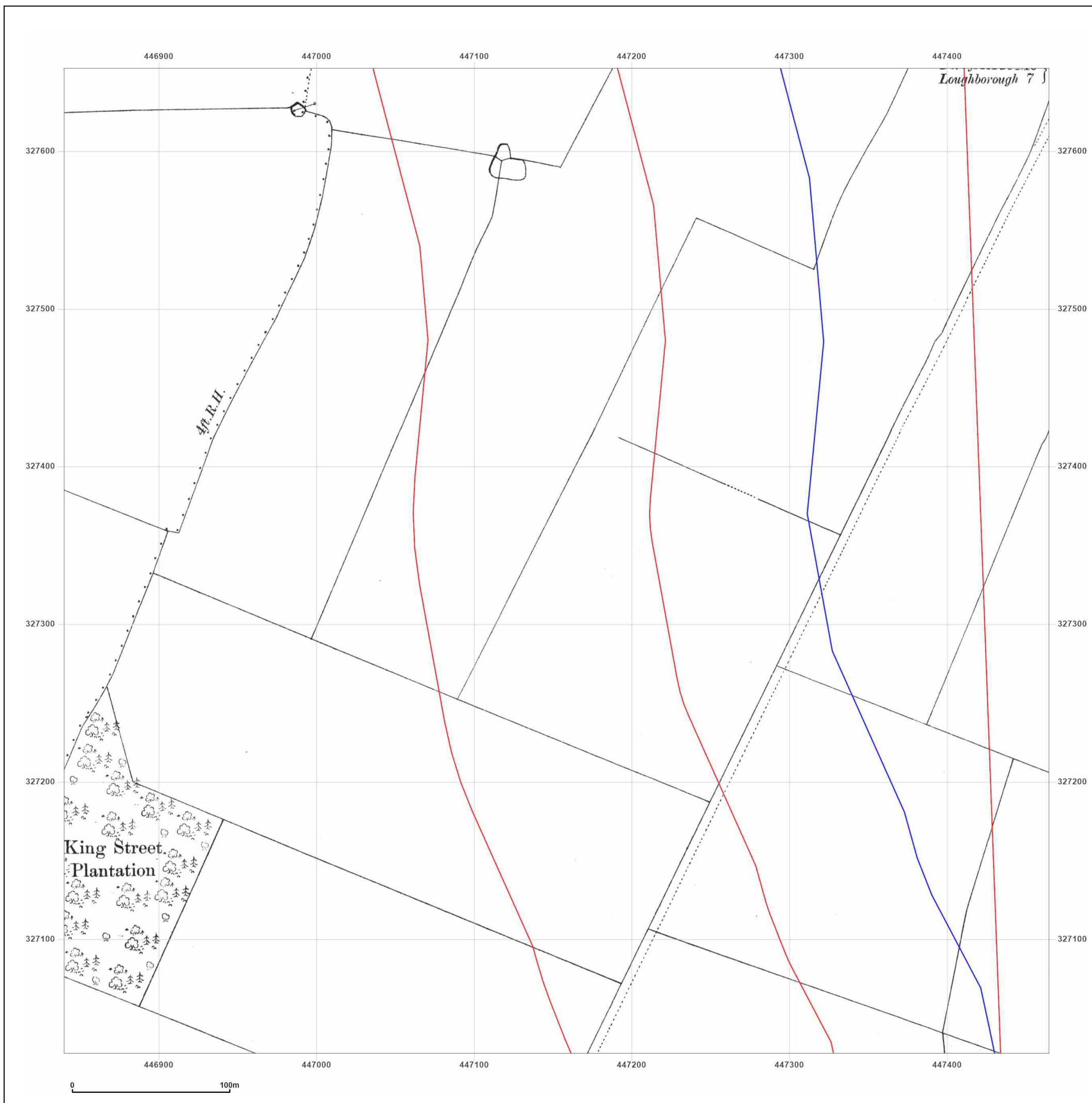


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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Surveyed 1900  
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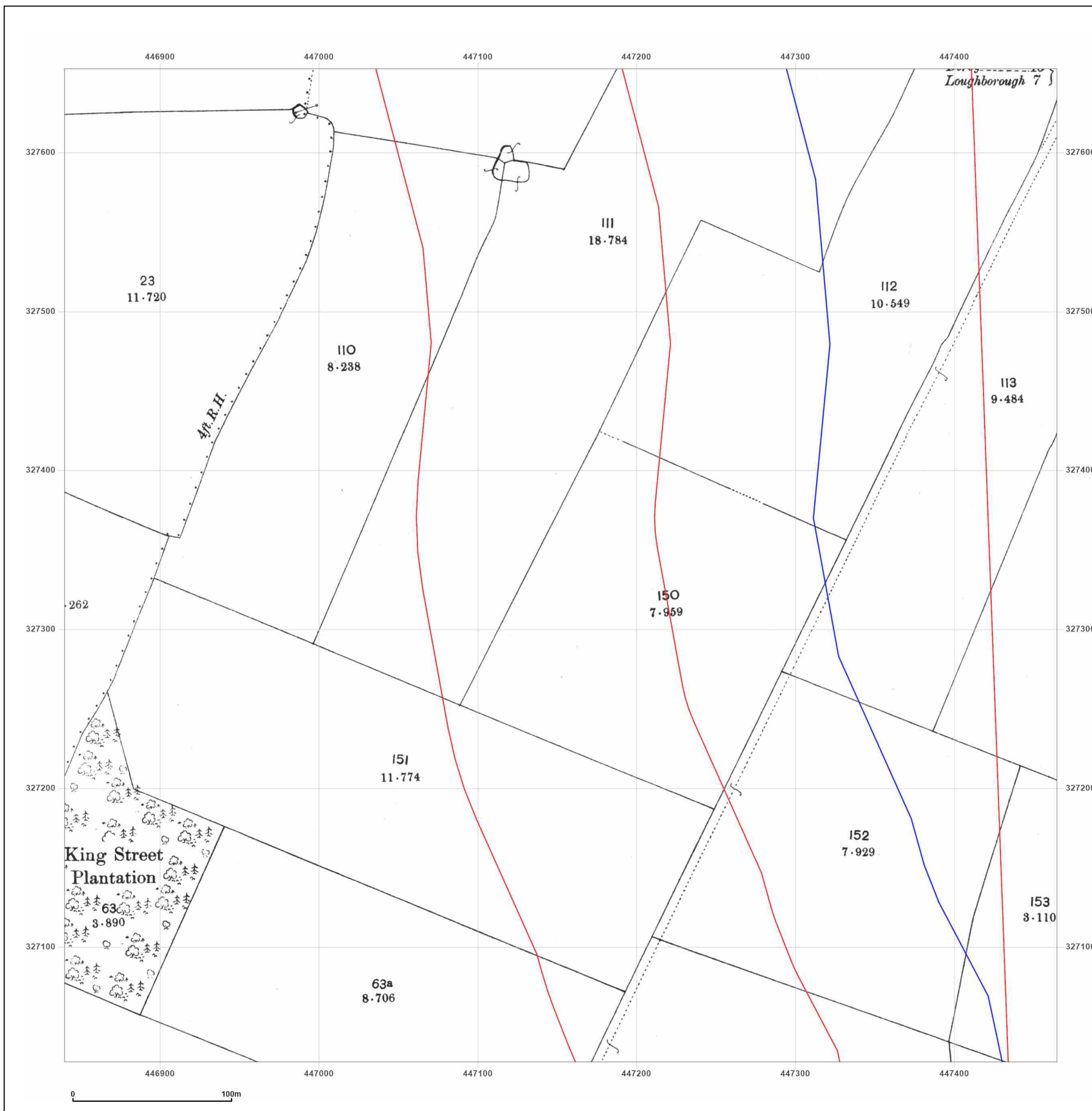


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Map Name:** County Series

**Map date:** 1921

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Surveyed 1921  
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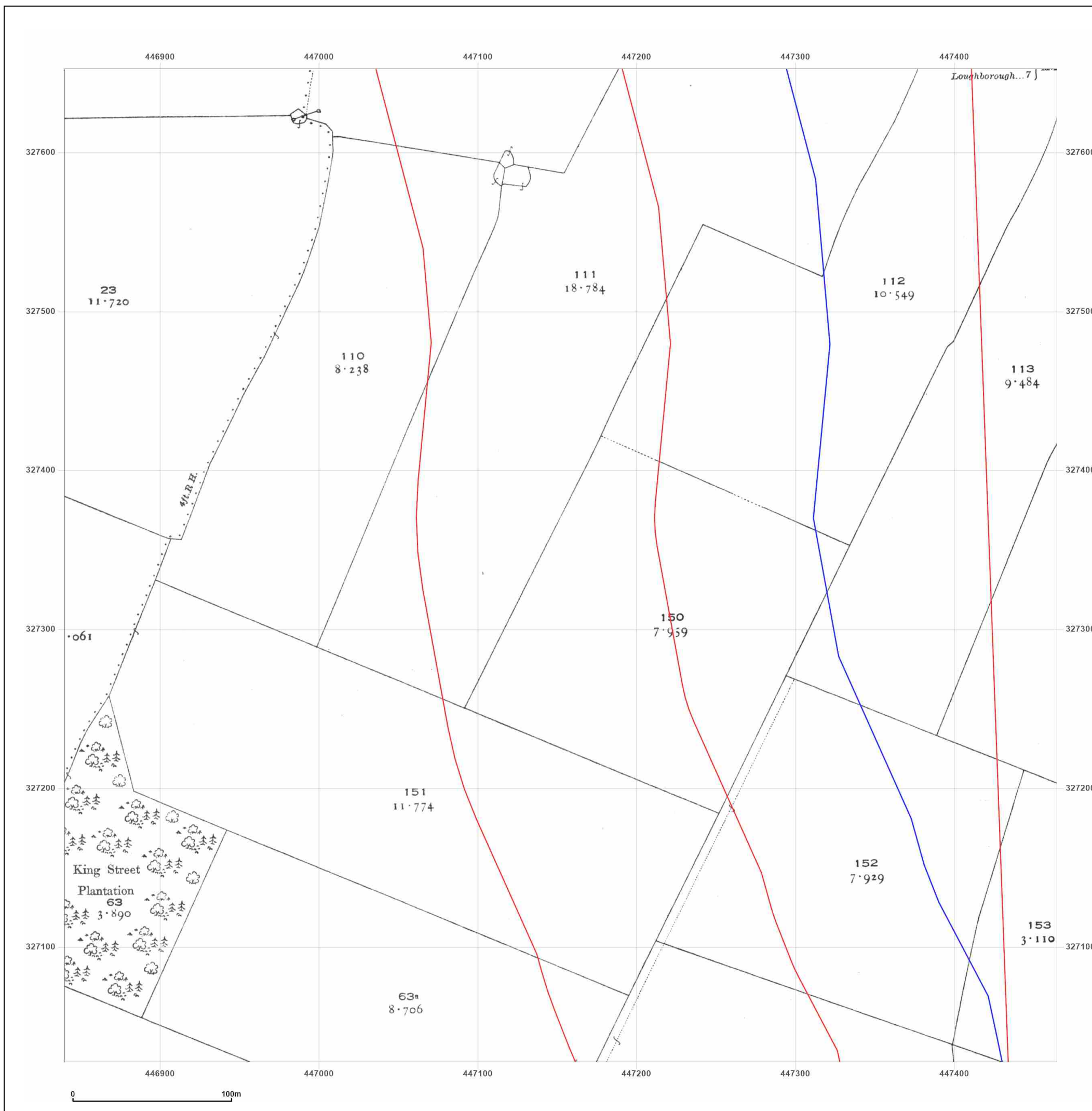


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Grid Ref:** 447152, 327340

**Map Name:** National Grid

**Map date:** 1962

**Scale:** 1:2,500

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



Surveyed 1961  
Revised 1961  
Edition N/A  
Copyright 1962  
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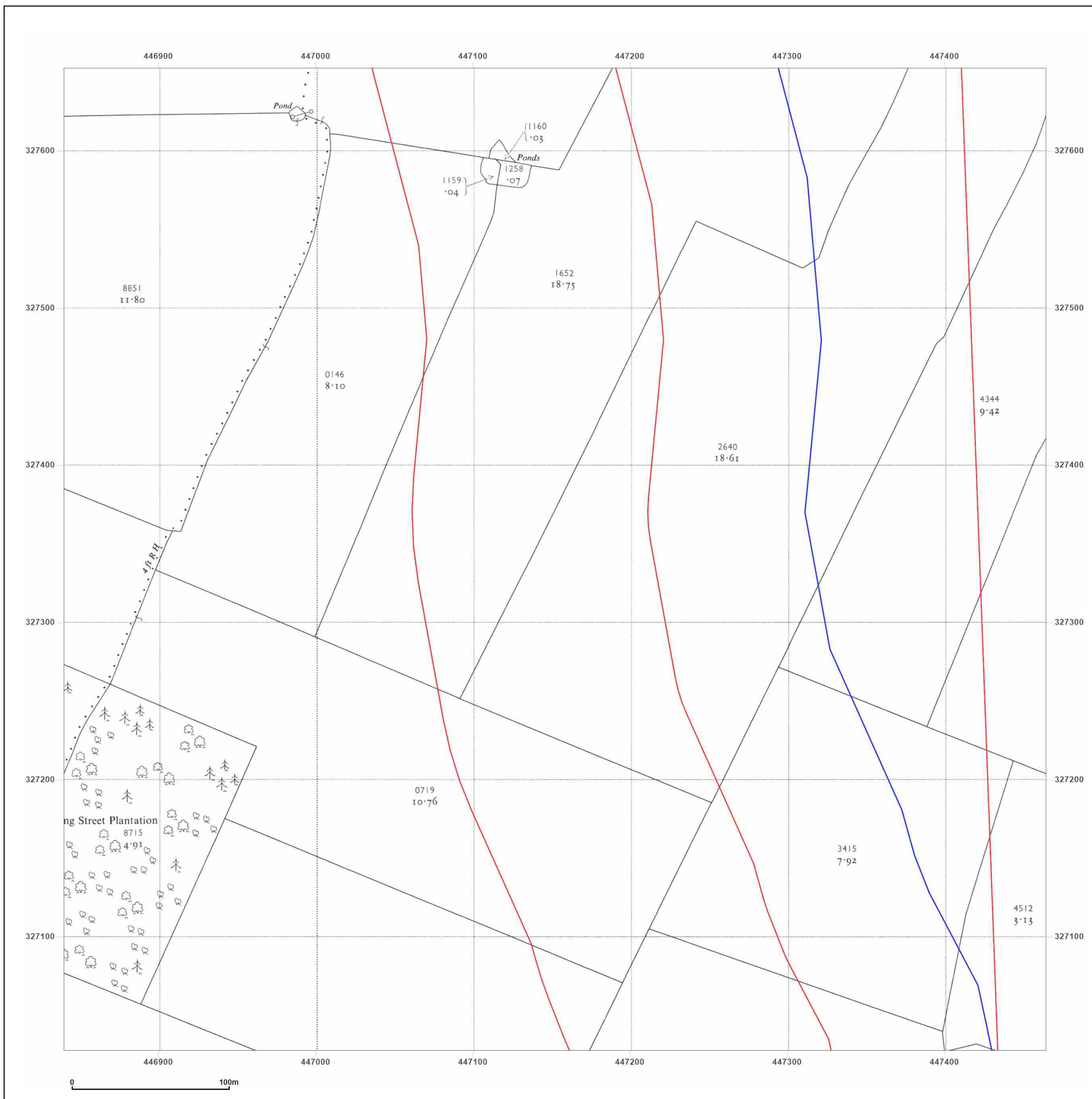


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_4  
**Grid Ref:** 447152, 327340

**Map Name:** National Grid

**Map date:** 1967

**Scale:** 1:2,500

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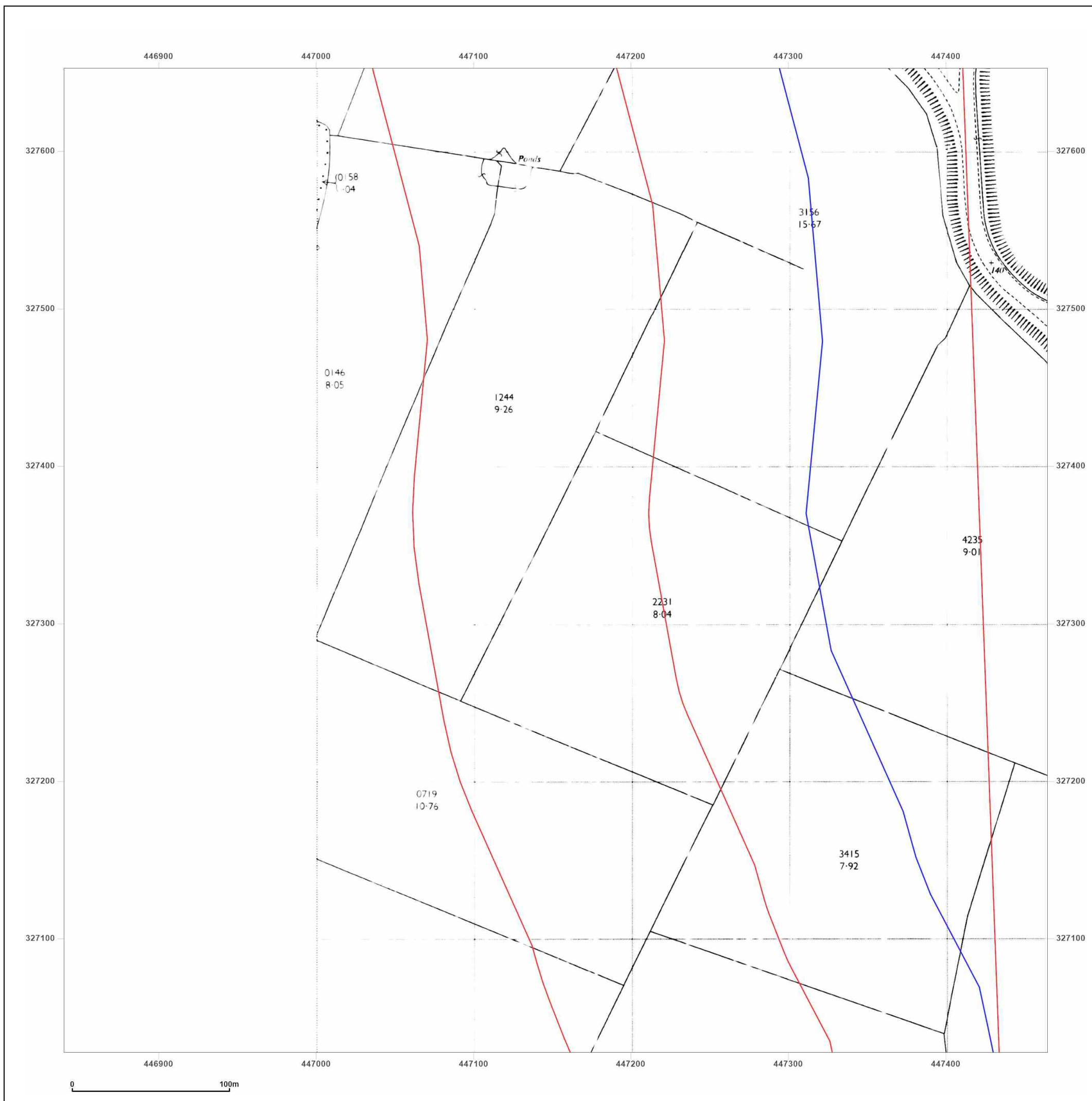


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Grid Ref:** 447152, 327340

**Map Name:** National Grid

**Map date:** 1967

**Scale:** 1:2,500

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



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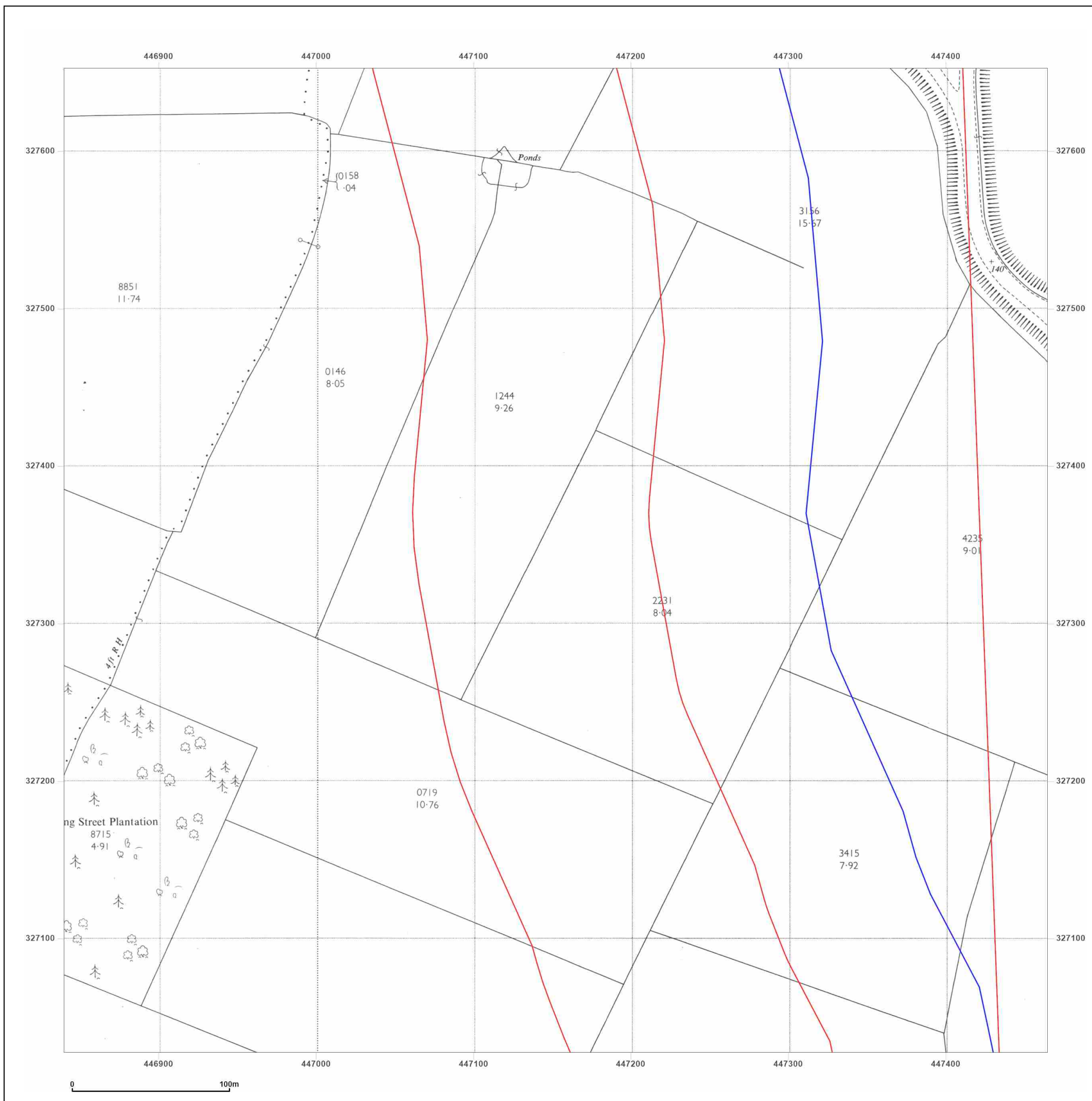


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#### Site Details:

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M1 (NH Land)

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**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



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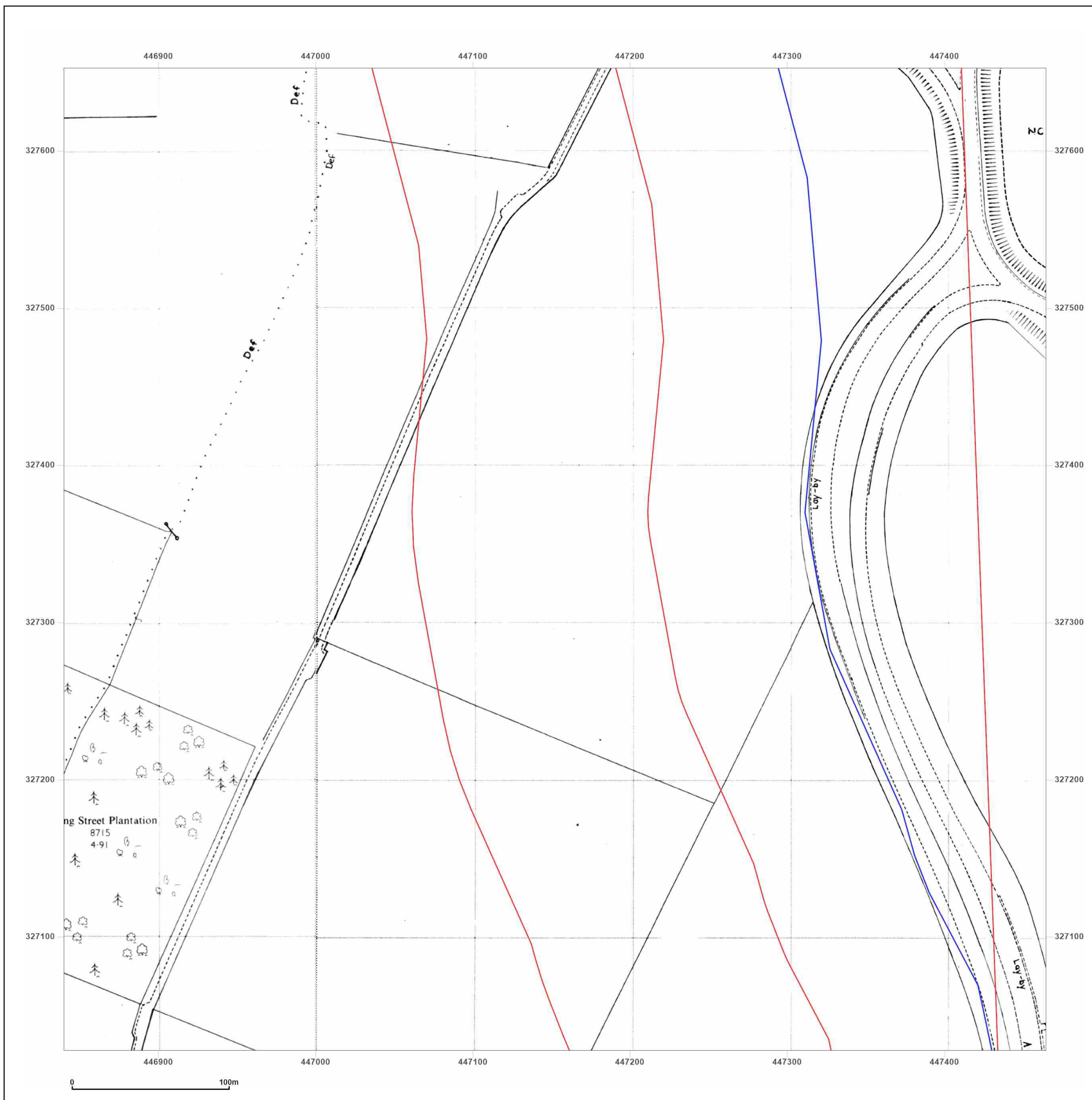


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

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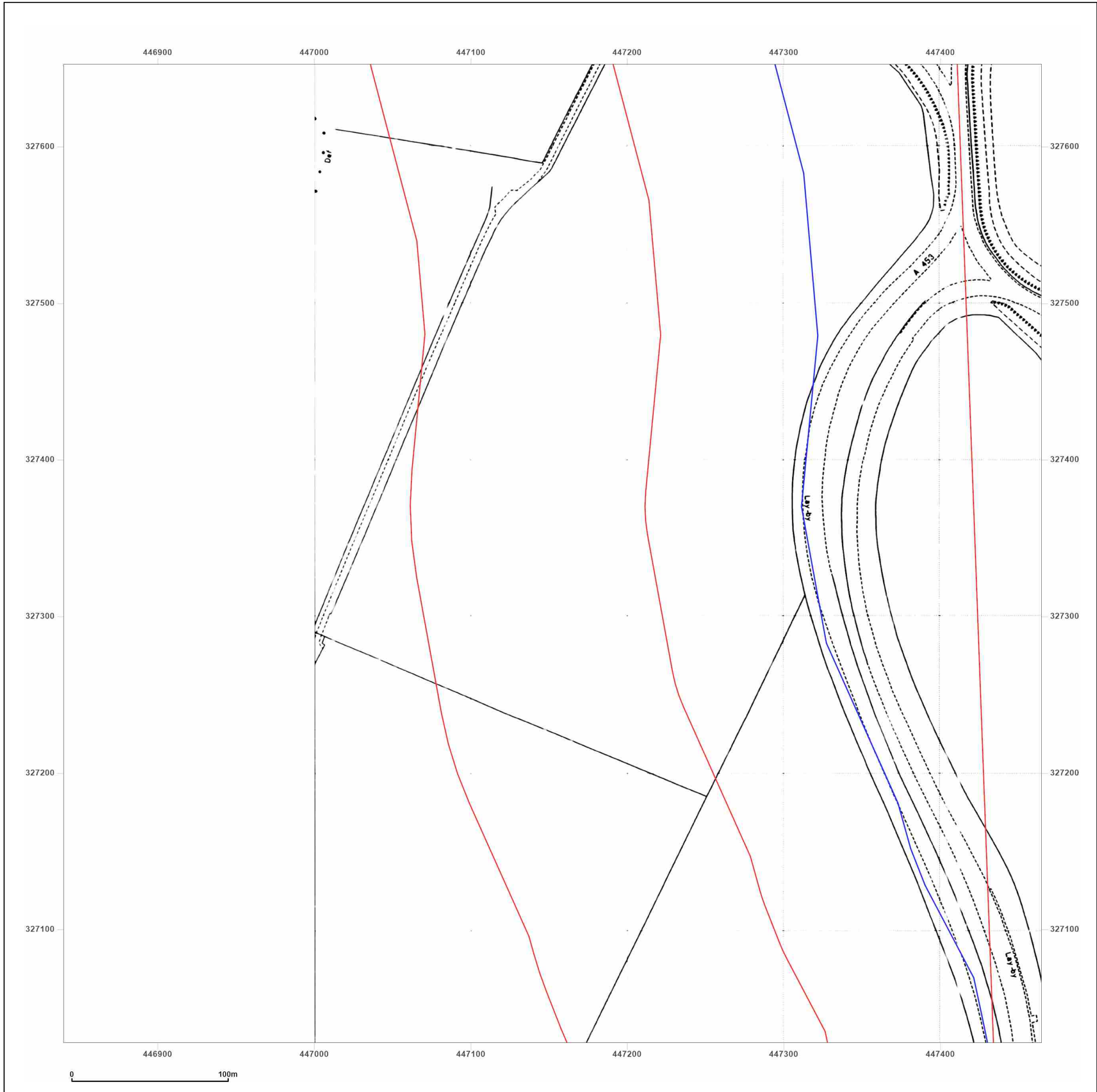


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**Site Details:**

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M1 (NH Land)

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**Map date:** 1988-1993

**Scale:** 1:2,500

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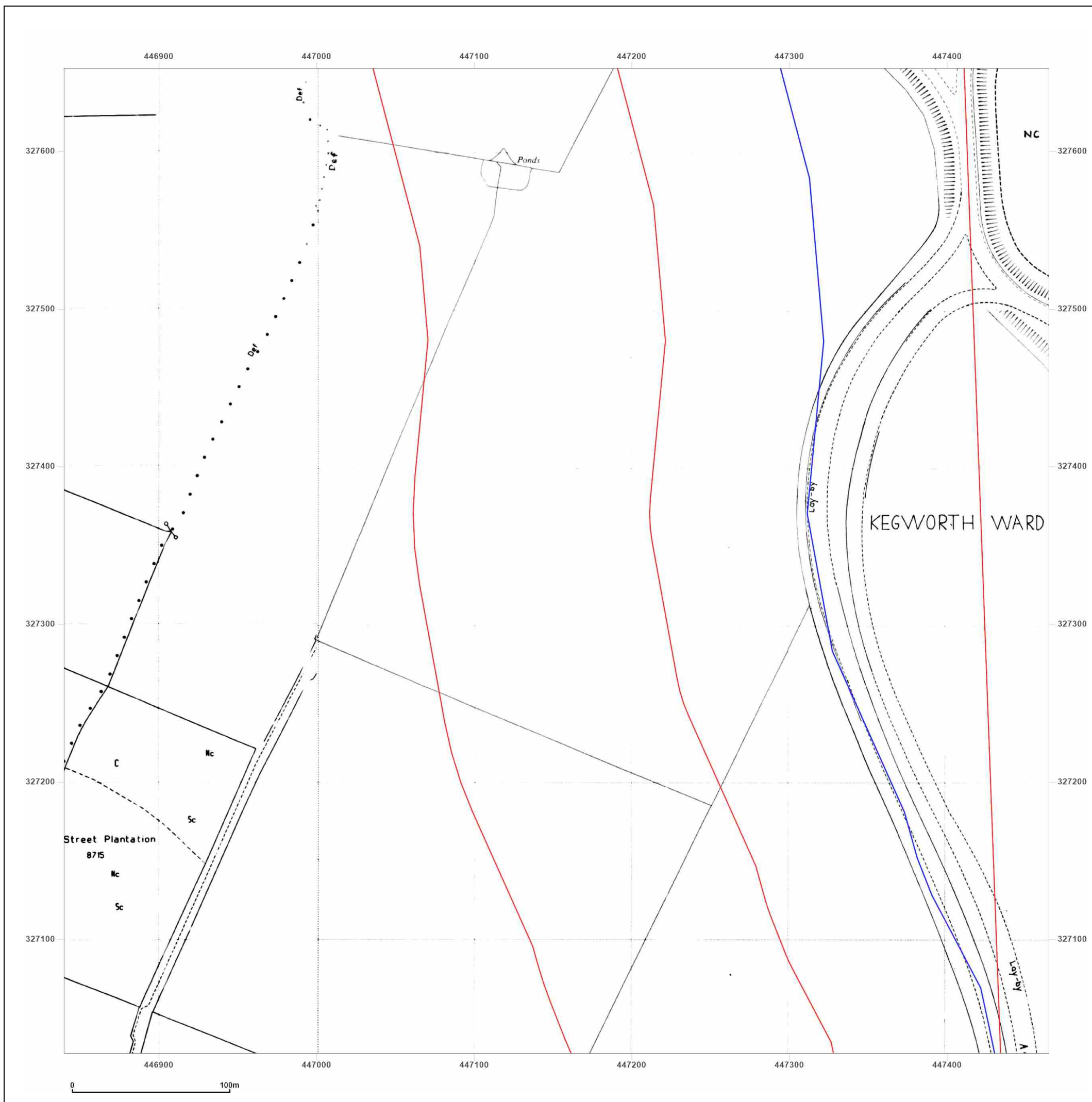


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#### Site Details:

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M1 (NH Land)

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**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



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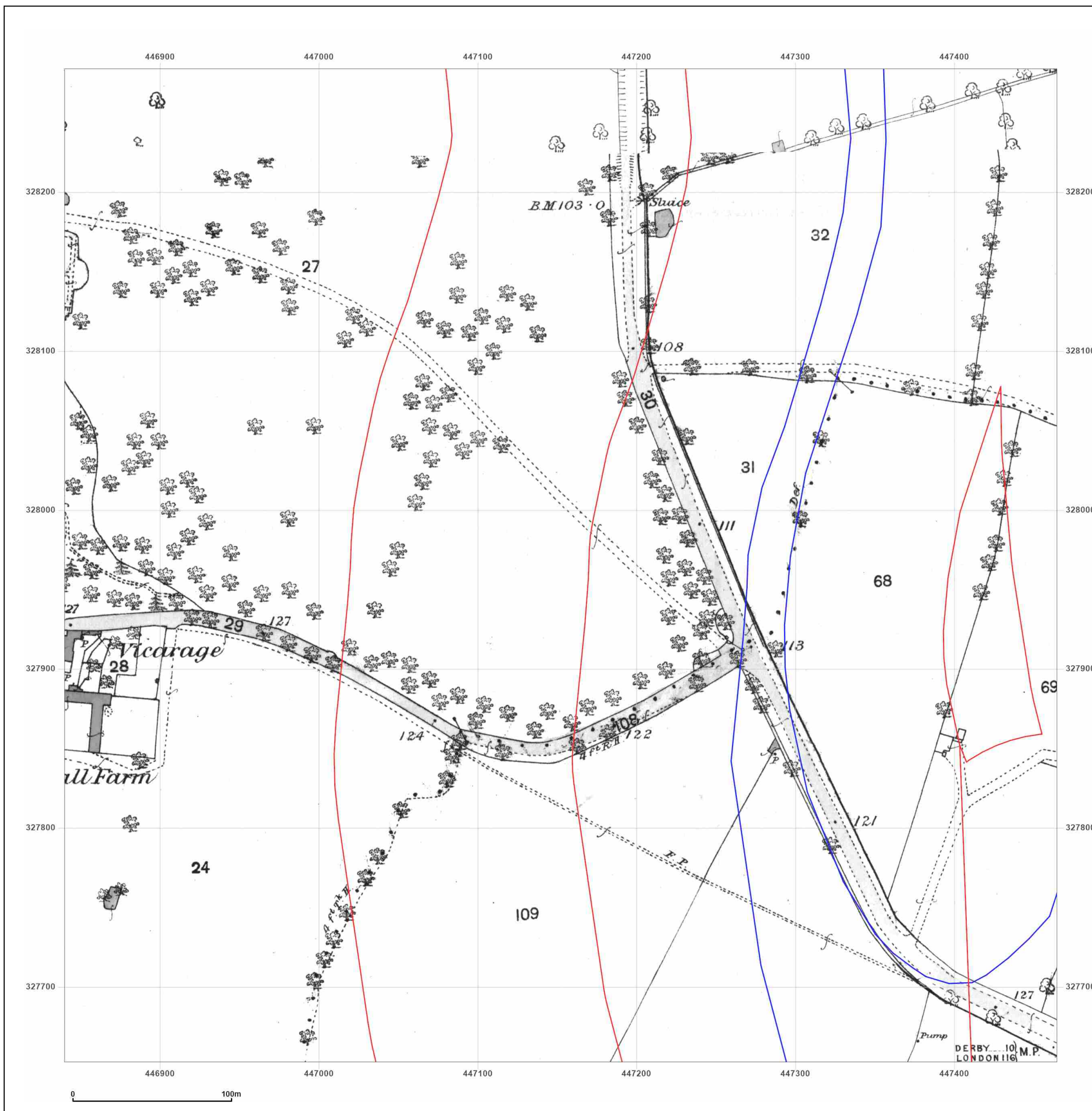


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#### Site Details:

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M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Map Name:** County Series

**Map date:** 1899-1900

**Scale:** 1:2,500

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



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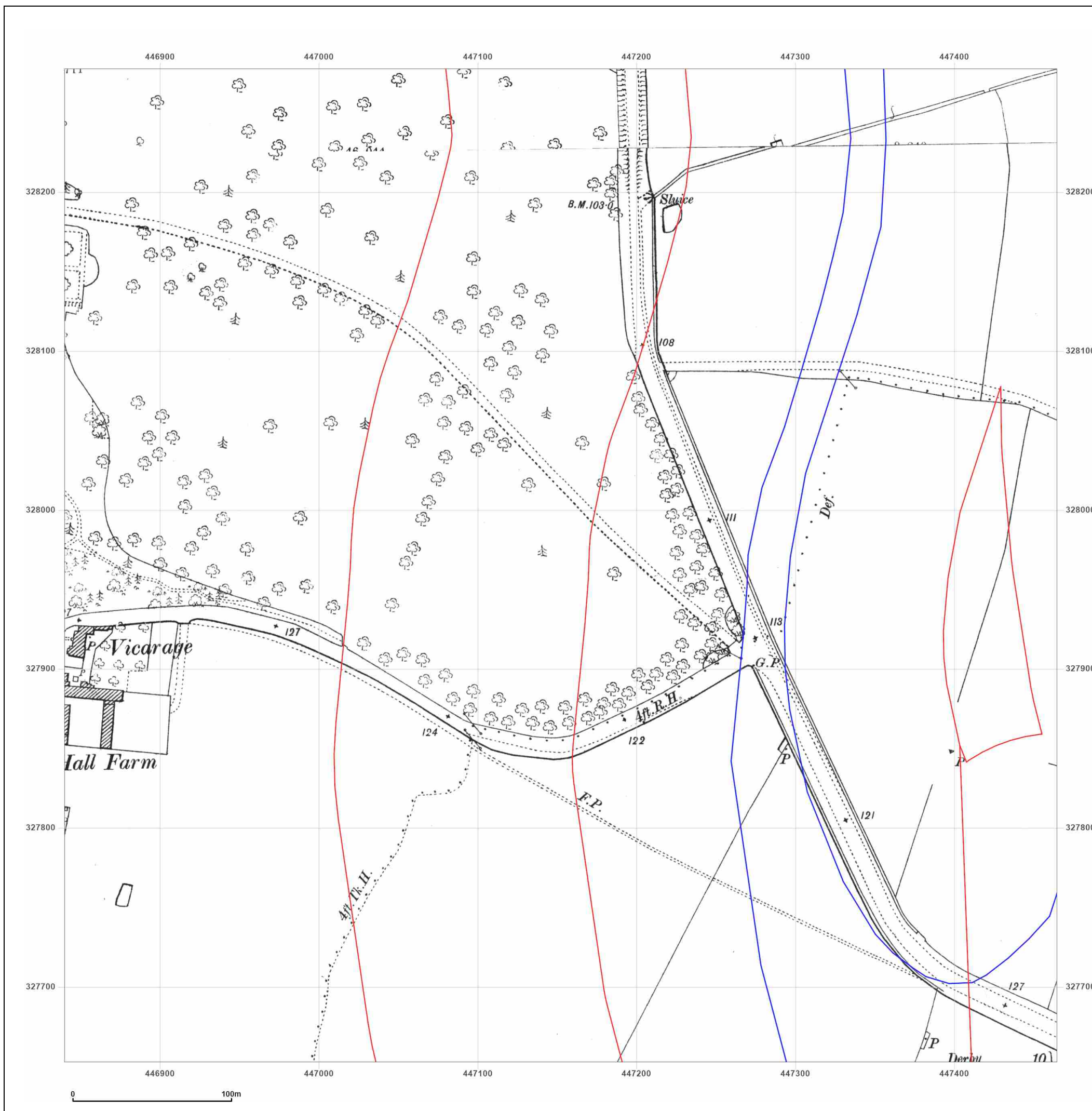


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

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**Map Name:** County Series

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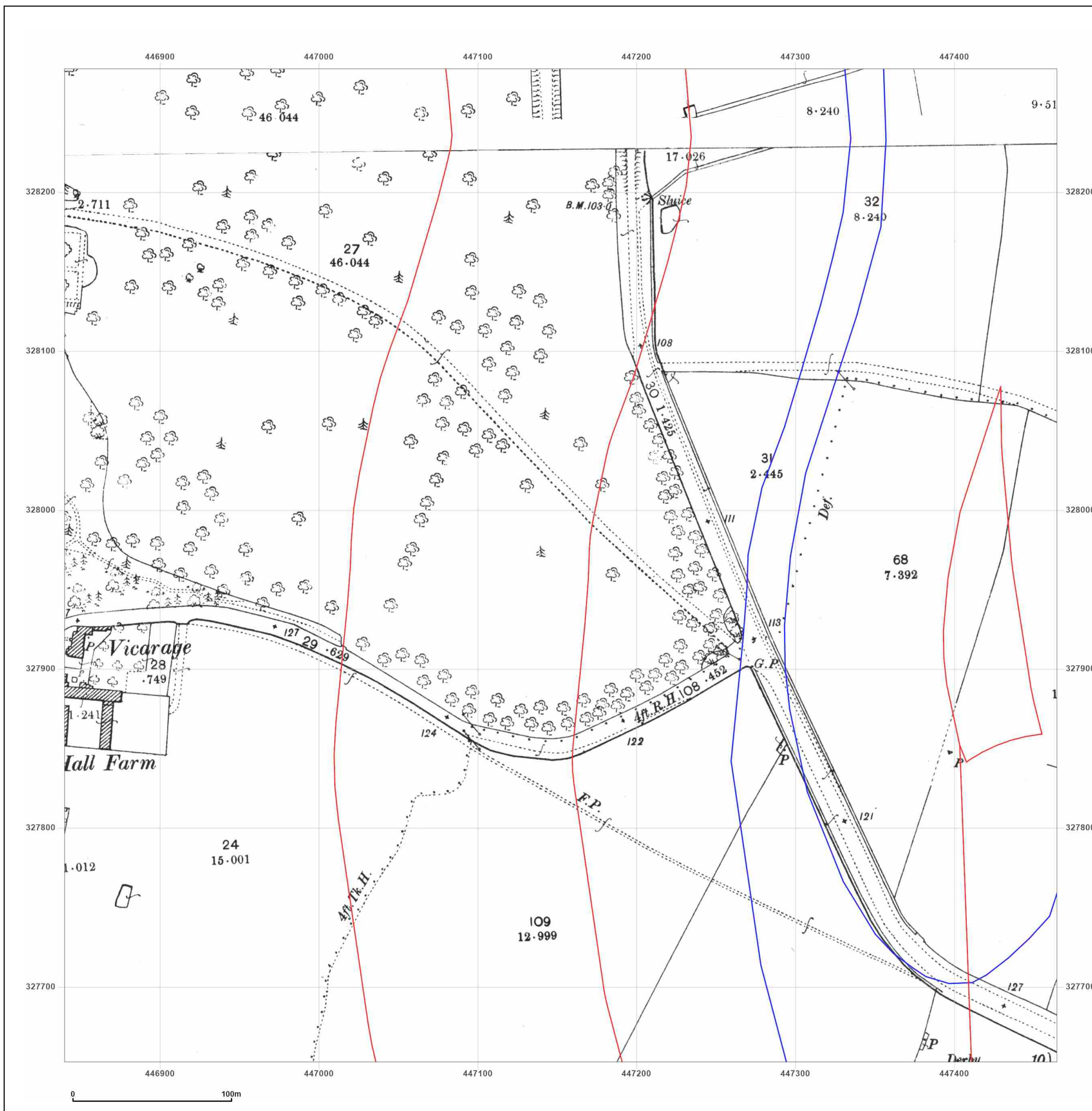


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_5  
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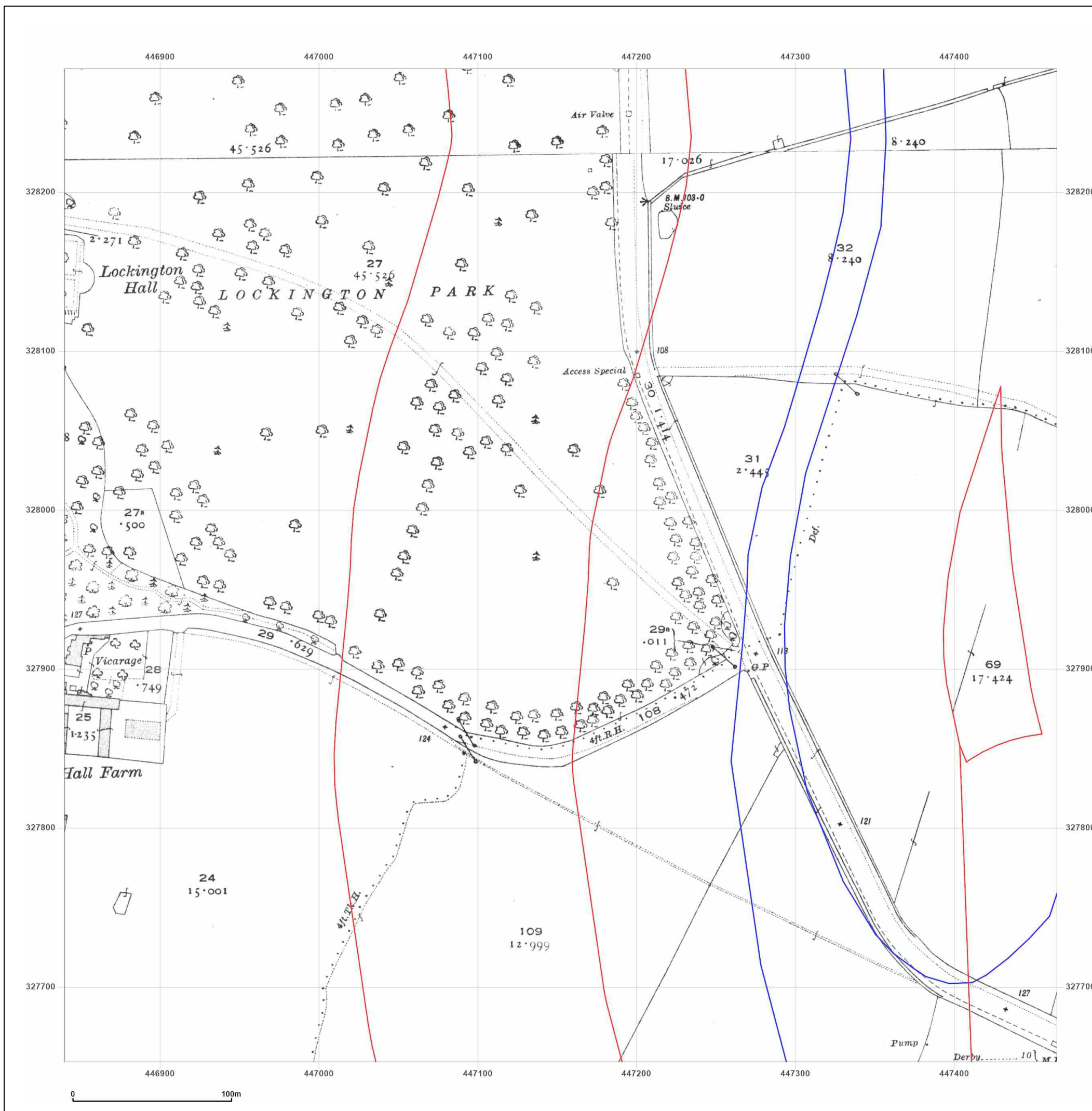


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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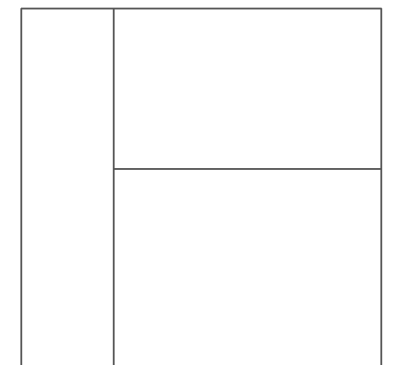
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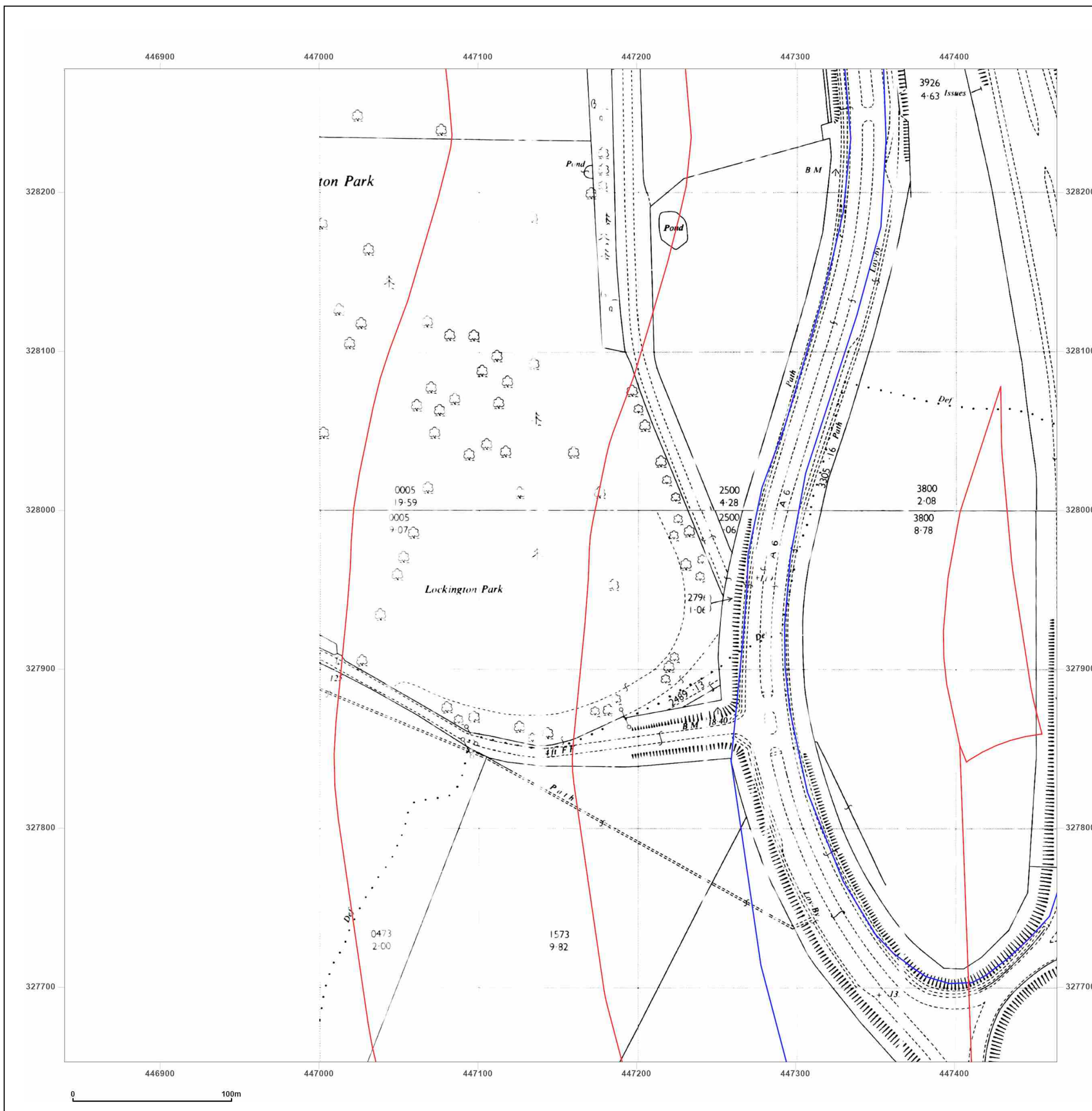


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

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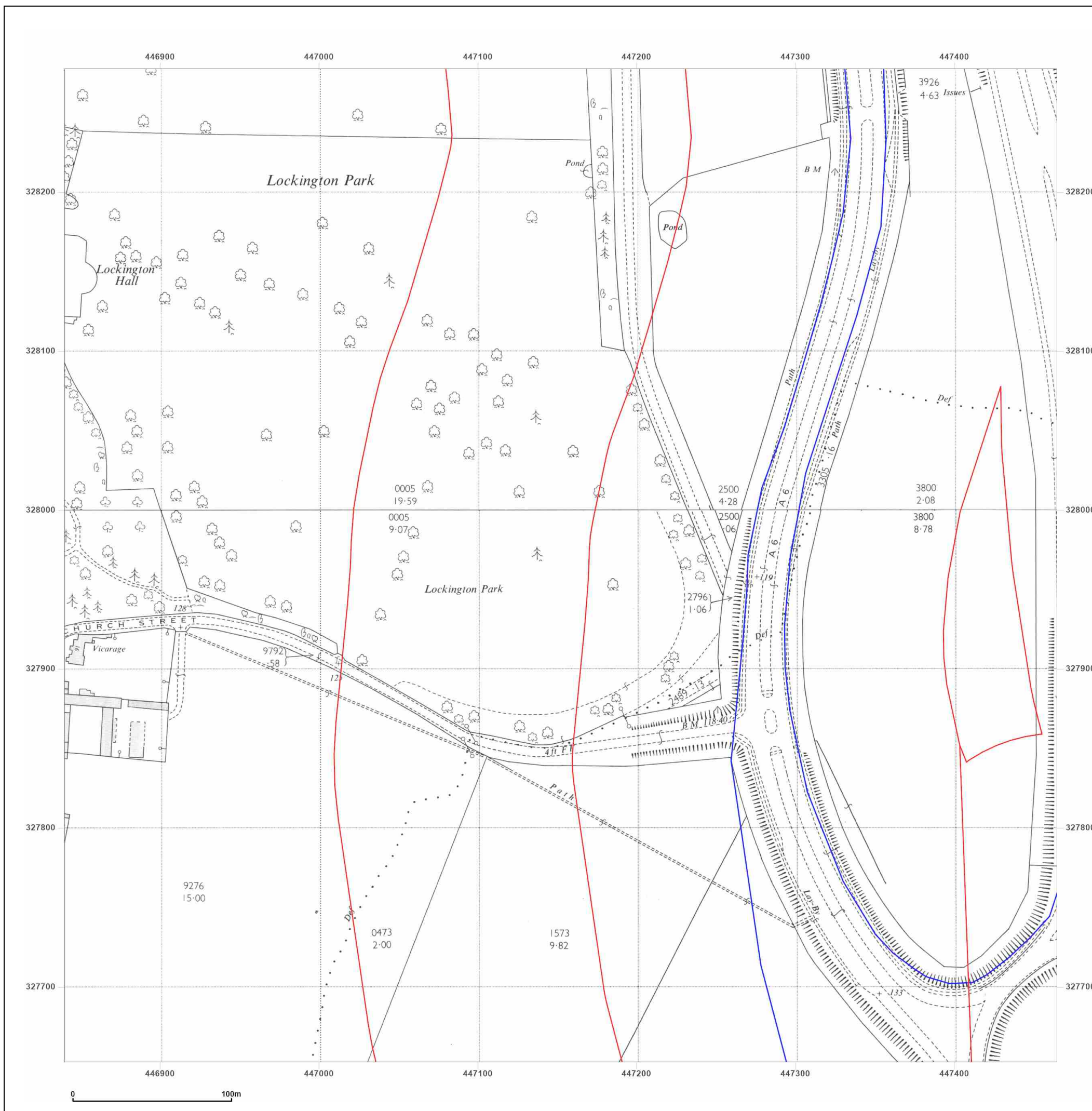


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

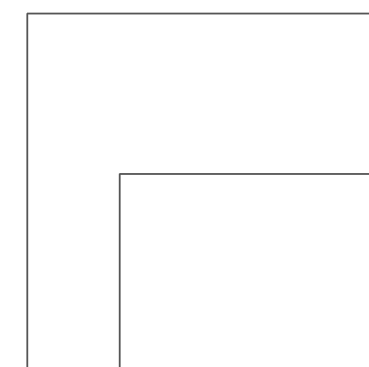
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**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_5  
**Grid Ref:** 447152, 327965

**Map Name:** National Grid

**Map date:** 1982

**Scale:** 1:2,500

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



Surveyed N/A  
Revised N/A  
Edition N/A  
Copyright 1982  
Levelled 1966

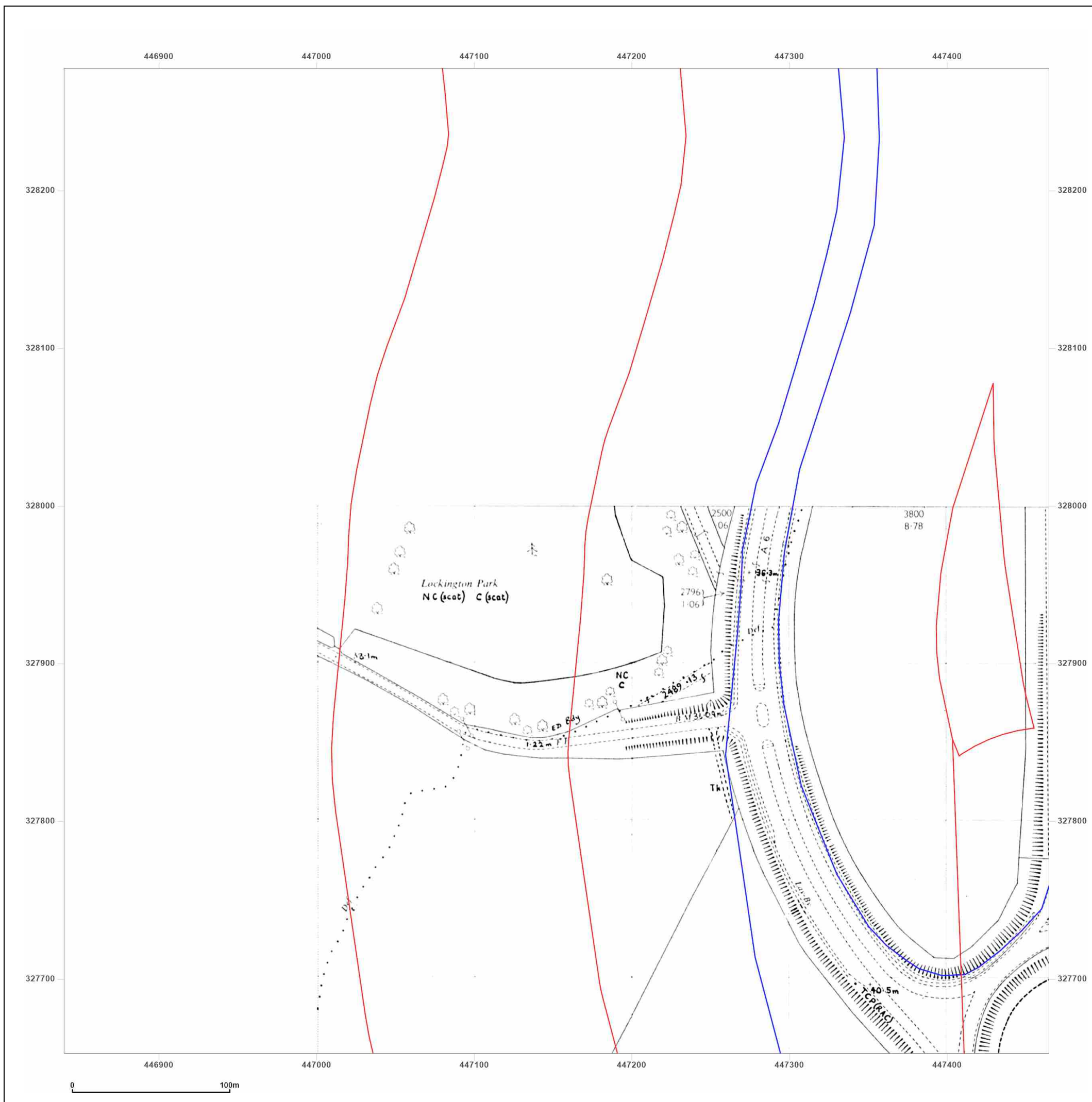


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_5  
**Grid Ref:** 447152, 327965

**Map Name:** National Grid

**Map date:** 1991-1993

**Scale:** 1:2,500

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



Surveyed 1966  
Revised 1991  
Edition N/A  
Copyright 1991  
Levelled 1966

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

Surveyed 1966  
Revised 1991  
Edition N/A  
Copyright 1991  
Levelled 1966

Surveyed N/A  
Revised N/A  
Edition N/A  
Copyright 1991  
Levelled 1966

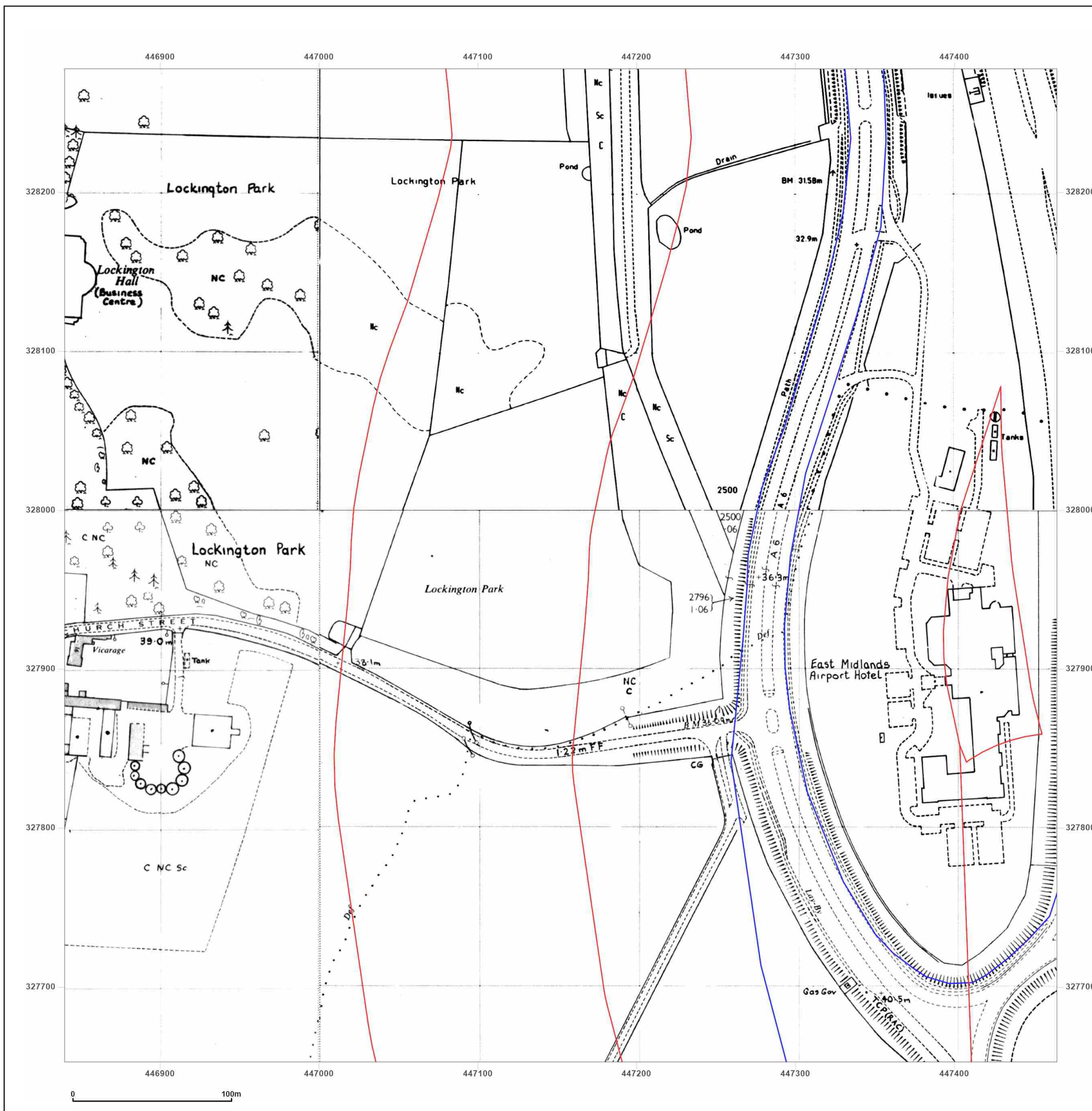


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**Site Details:**

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

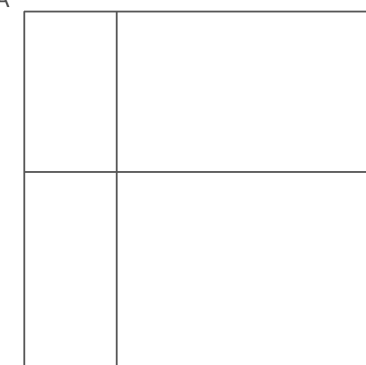
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**Scale:** 1:2,500

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



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



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

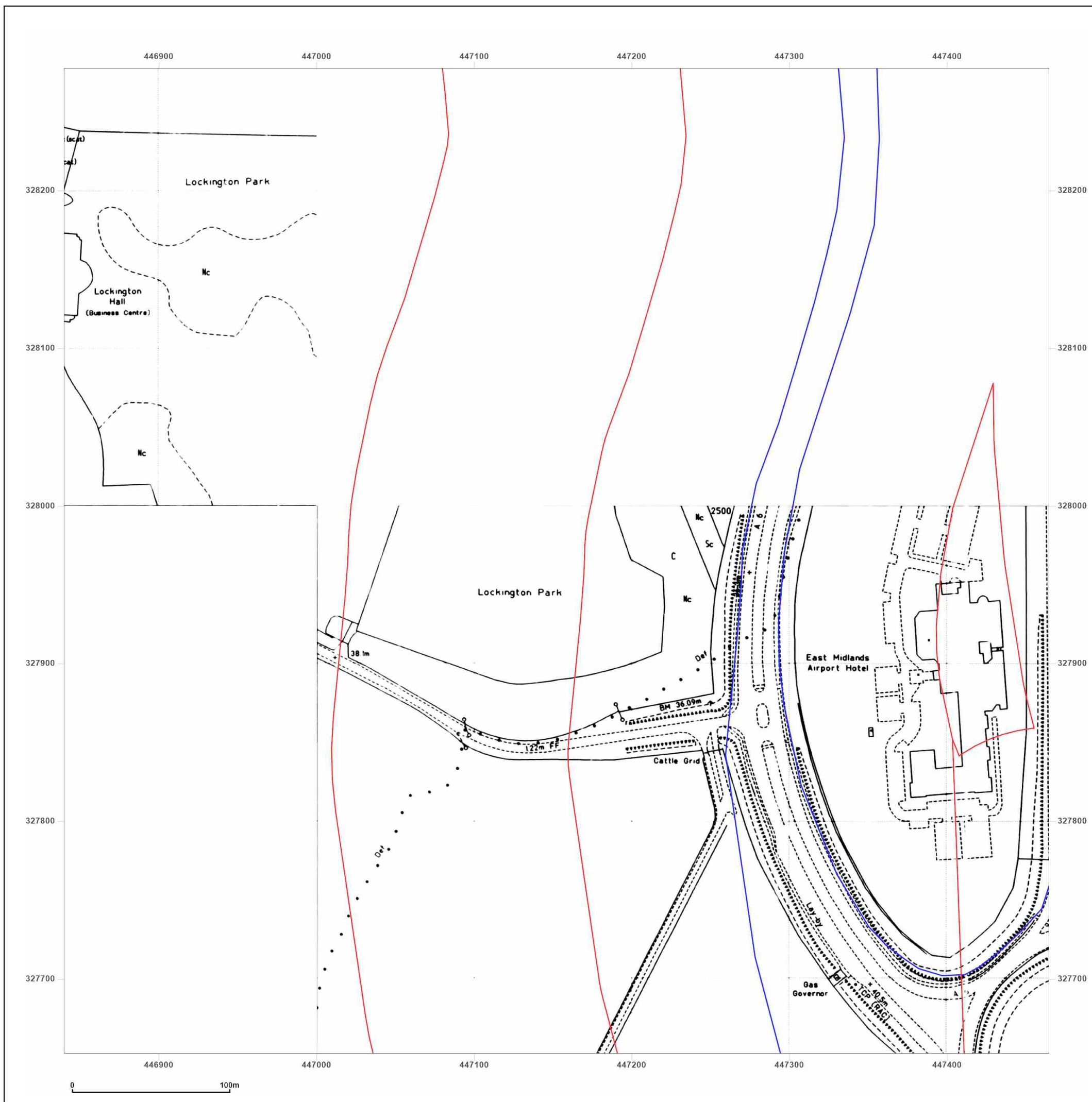


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_5  
**Grid Ref:** 447152, 327965

**Map Name:** National Grid

**Map date:** 1988-1993

**Scale:** 1:2,500

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



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

Surveyed N/A  
Revised N/A  
Edition N/A  
Copyright 1988  
Levelled 1966

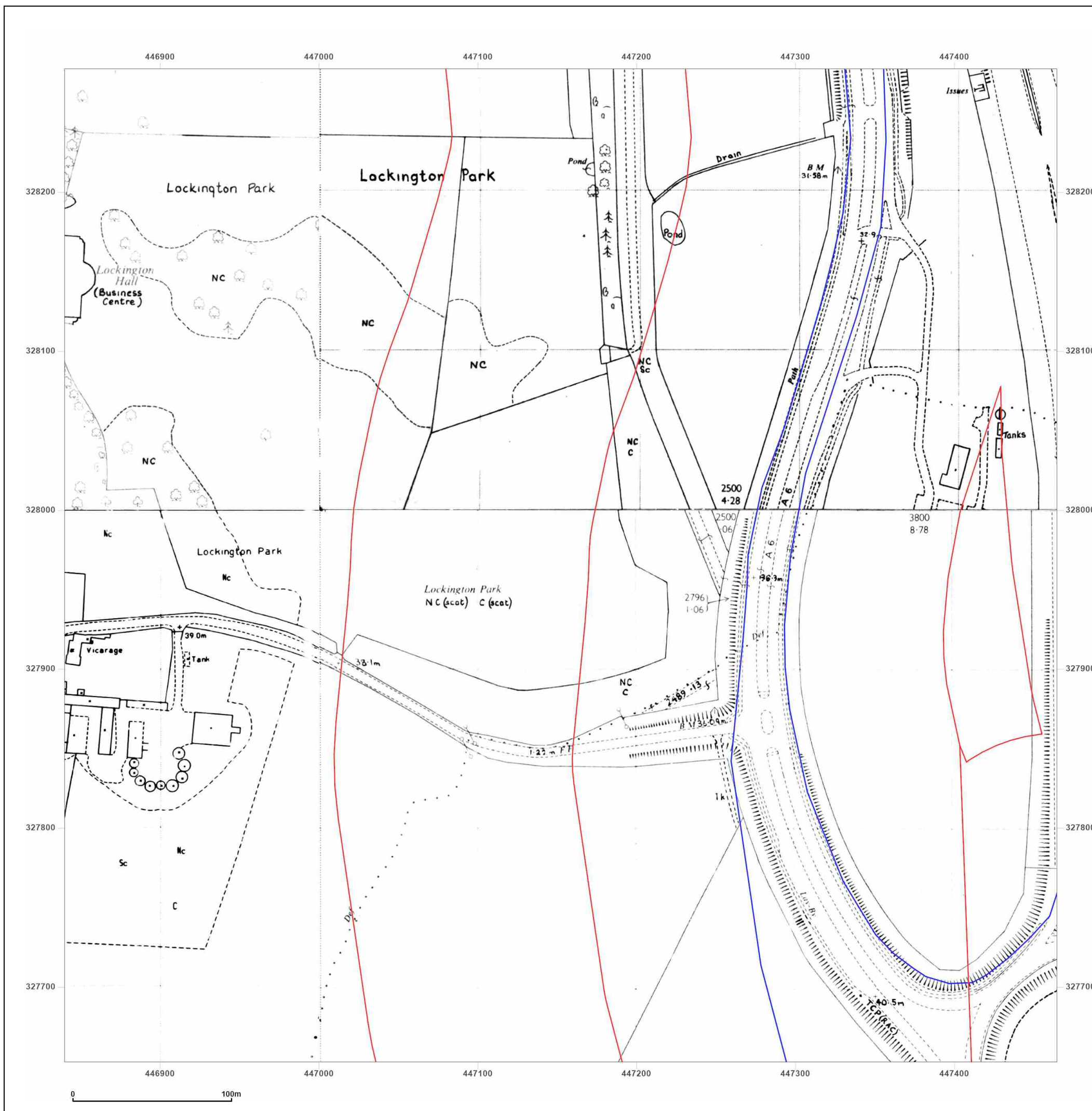


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#### Site Details:

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



Surveyed 1885  
Revised 1885  
Edition N/A  
Copyright N/A  
Levelled N/A

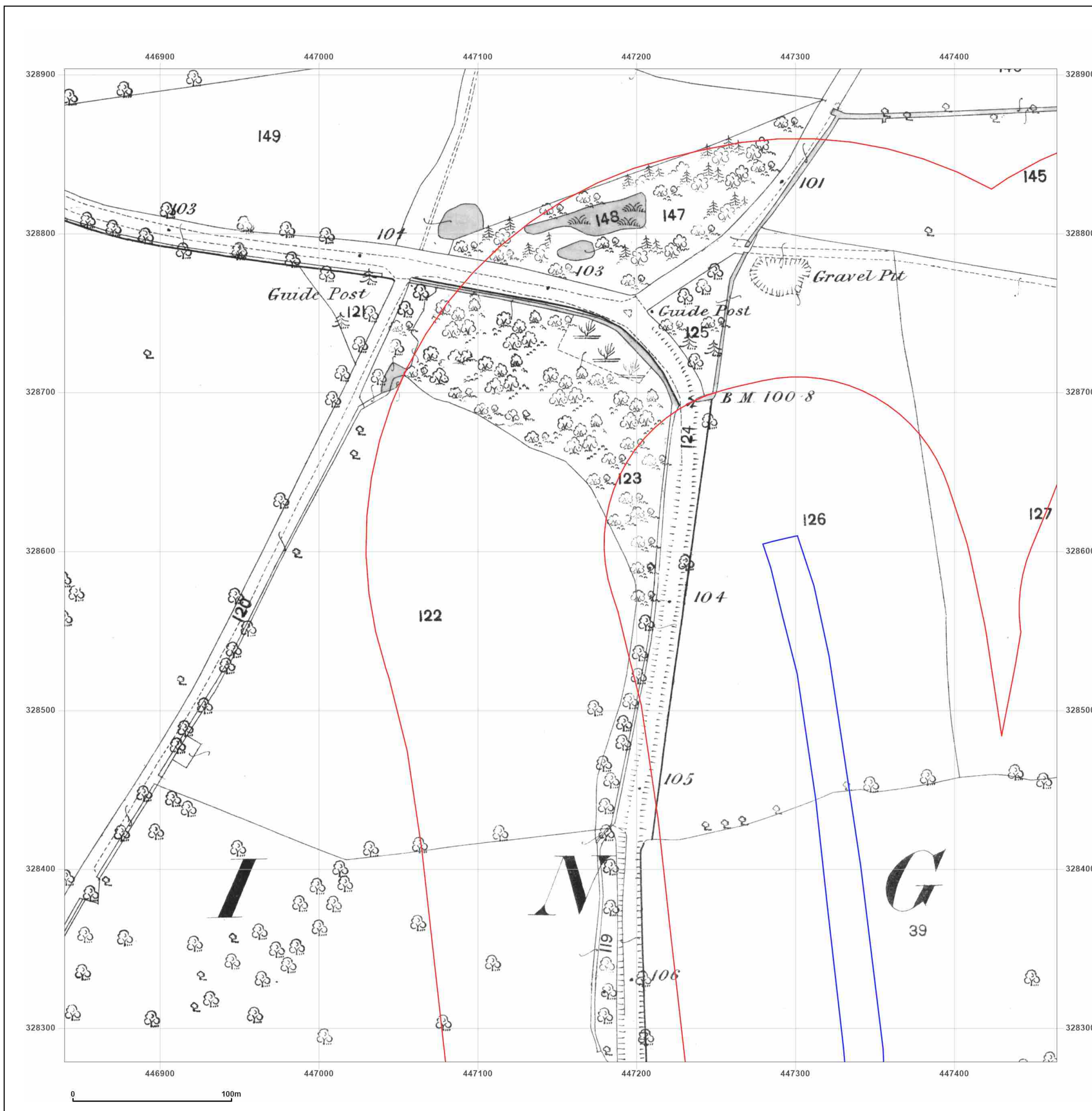


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_6  
**Grid Ref:** 447152, 328591

**Map Name:** County Series

**Map date:** 1900

**Scale:** 1:2,500

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



Surveyed N/A  
Revised N/A  
Edition N/A  
Copyright N/A  
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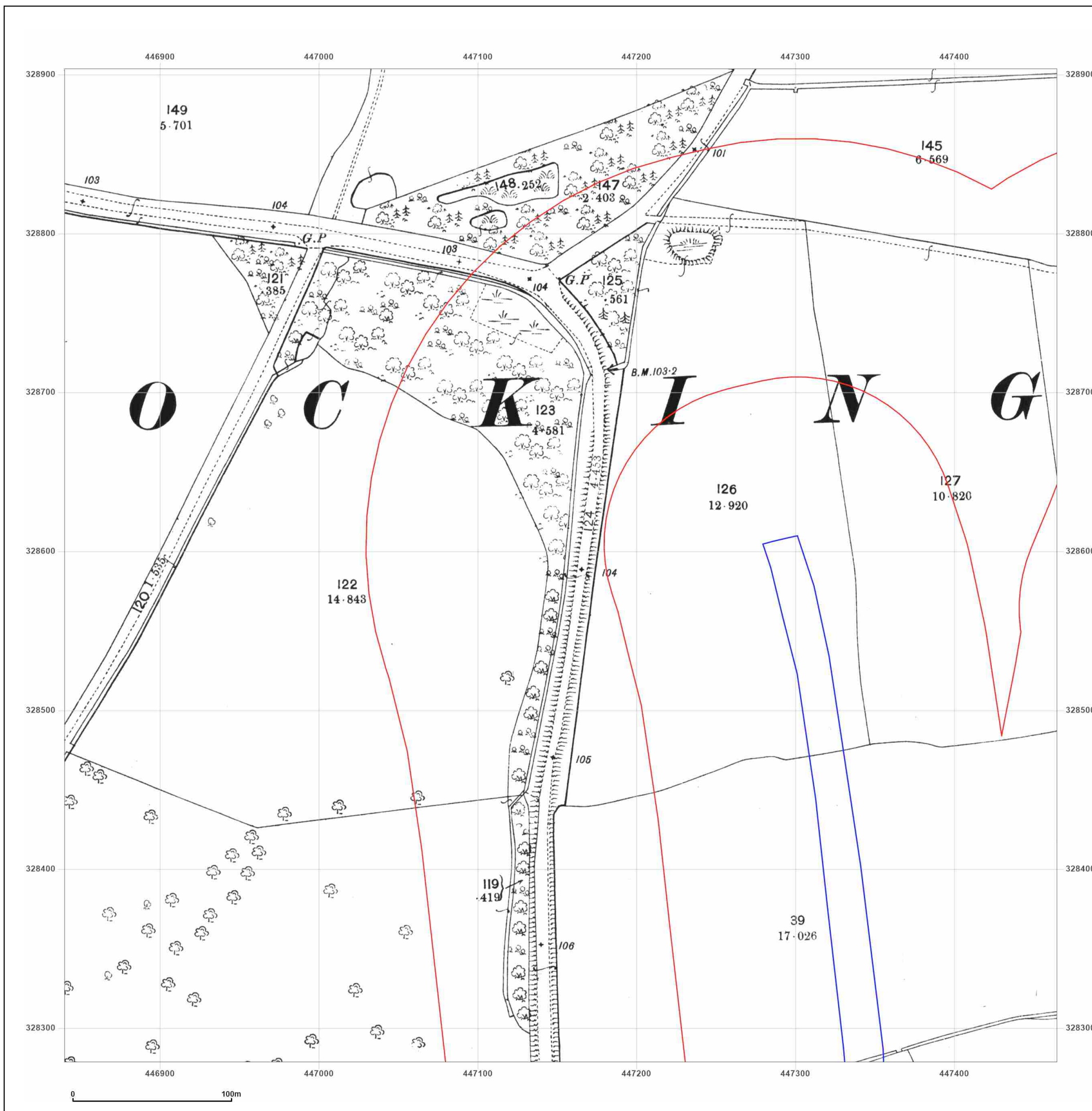


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Grid Ref:** 447152, 328591

**Map Name:** County Series

**Map date:** 1900

**Scale:** 1:2,500

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



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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\_6  
Grid Ref: 447152, 328591

Map Name: County Series

Map date: 1921

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1921  
Revised 1921  
Edition N/A  
Copyright N/A  
Levelled N/A

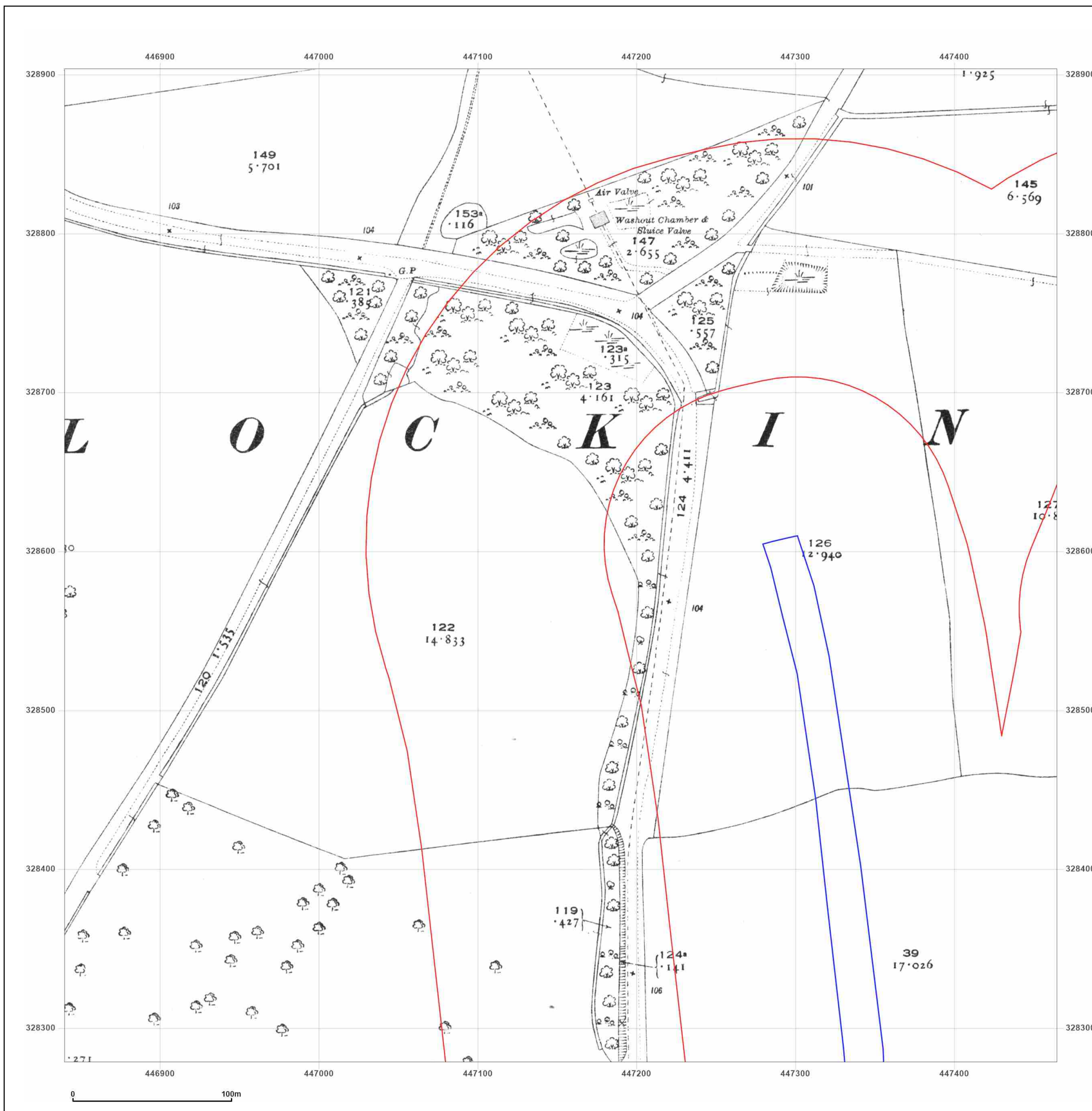


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_6  
**Grid Ref:** 447152, 328591

**Map Name:** National Grid

**Map date:** 1963

**Scale:** 1:2,500

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



Surveyed 1961  
Revised 1961  
Edition N/A  
Copyright 1963  
Levelled 1944

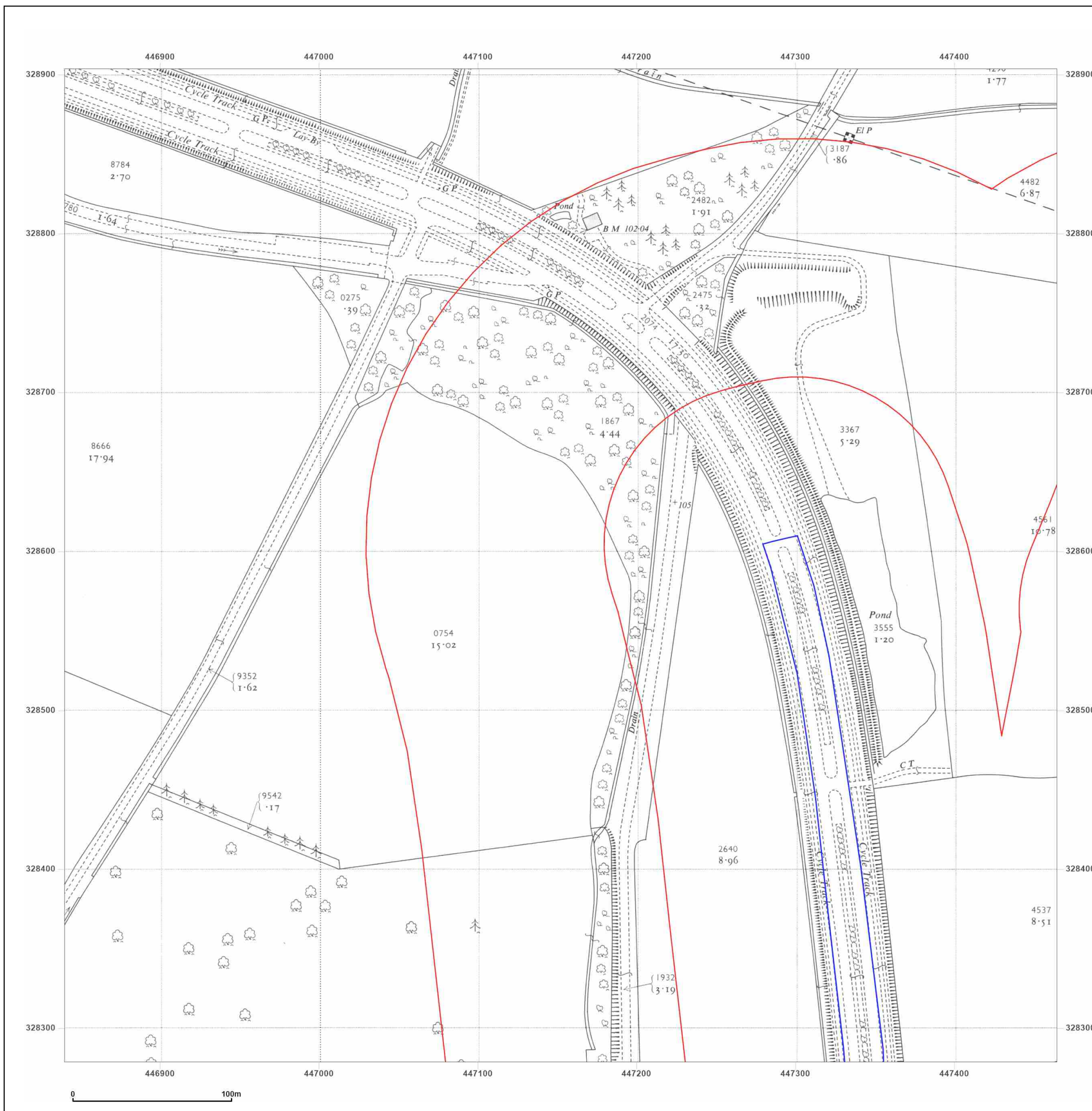


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

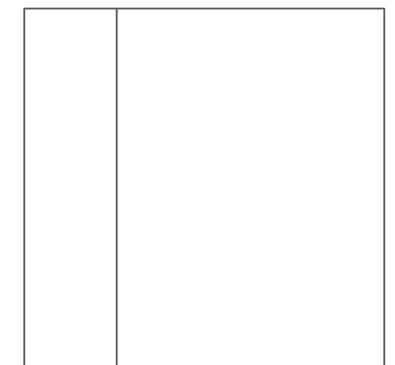
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**Grid Ref:** 447152, 328591

**Map Name:** National Grid

**Map date:** 1967

**Scale:** 1:2,500

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



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

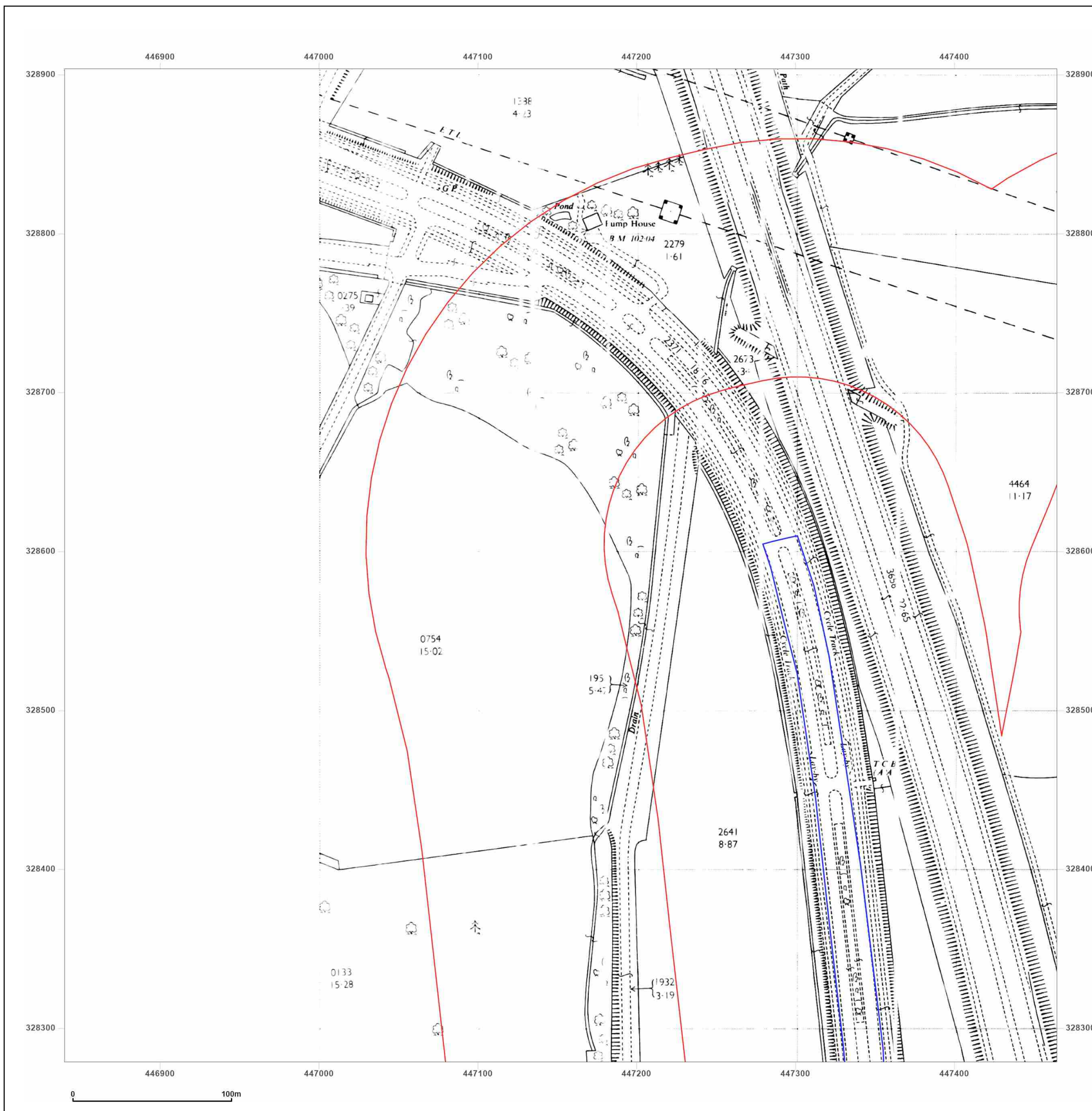


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_6  
**Grid Ref:** 447152, 328591

**Map Name:** National Grid

**Map date:** 1967

**Scale:** 1:2,500

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



Surveyed 1966  
Revised 1966  
Edition N/A  
Copyright 1967  
Levelled 1966

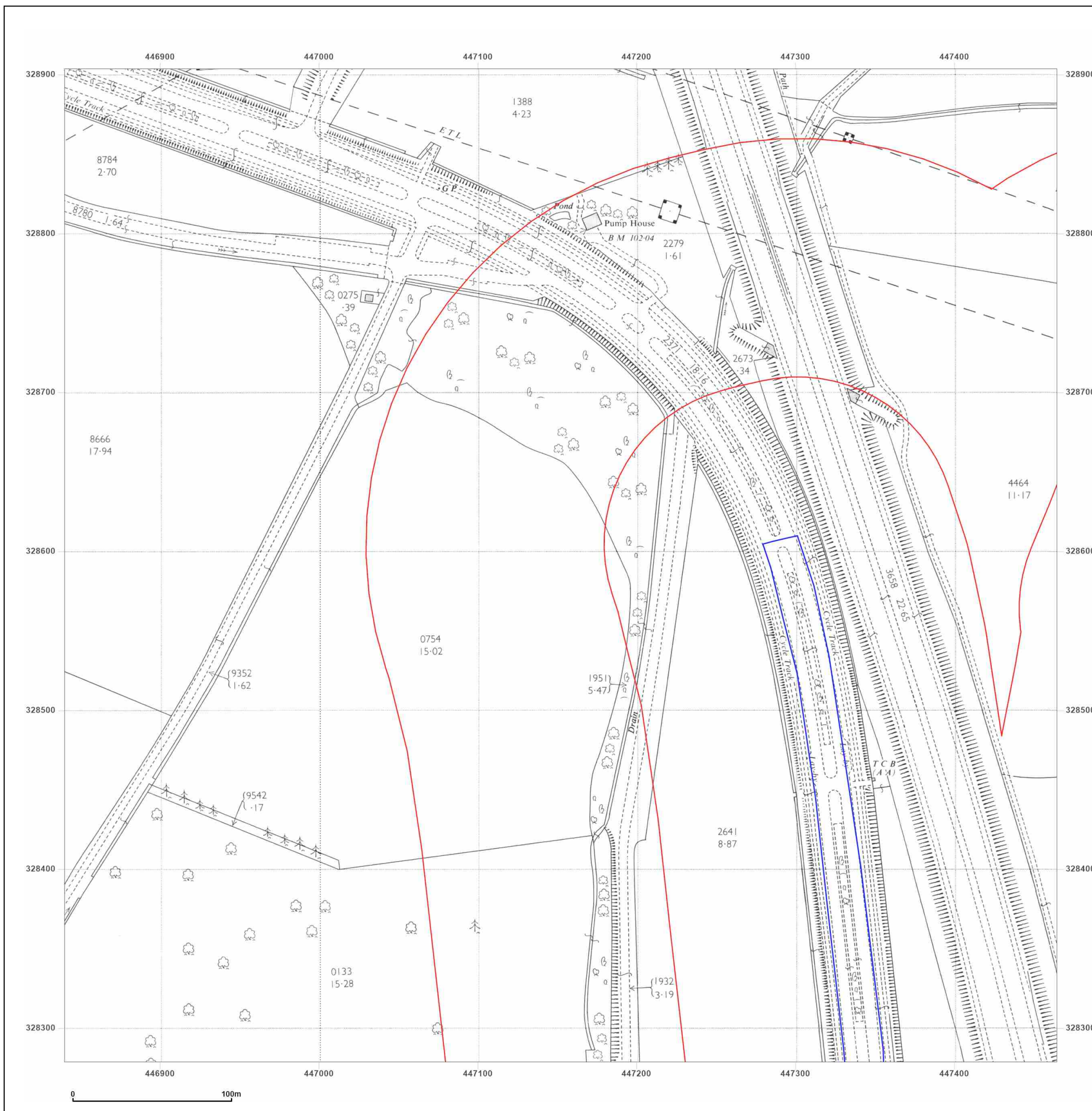


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_6  
**Grid Ref:** 447152, 328591

**Map Name:** National Grid

**Map date:** 1991

**Scale:** 1:2,500

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



Surveyed 1966  
Revised 1991  
Edition N/A  
Copyright 1991  
Levelled 1966

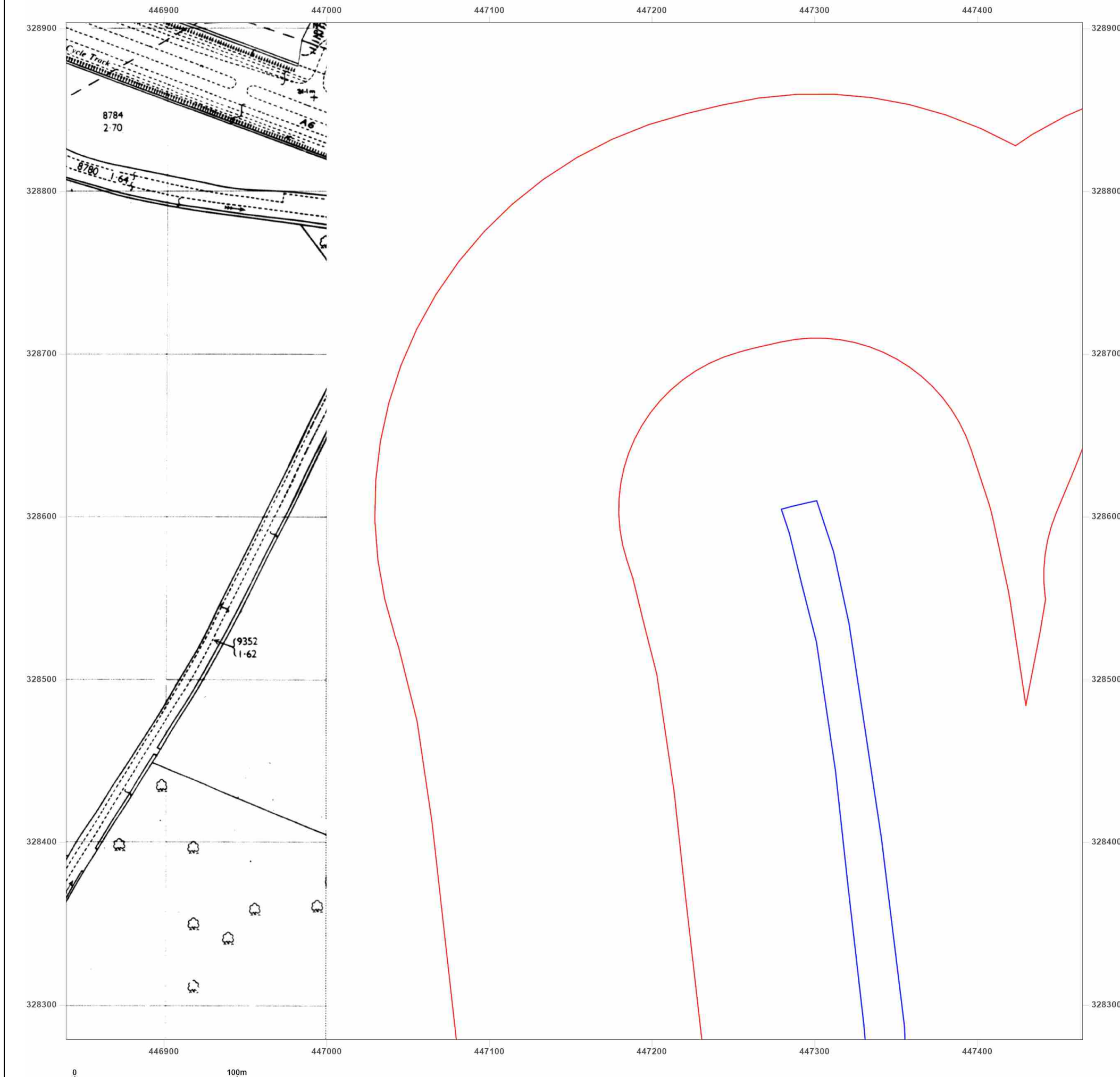


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Grid Ref:** 447152, 328591

**Map Name:** National Grid

**Map date:** 1991

**Scale:** 1:2,500

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



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Edition N/A  
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Levelled 1966

Surveyed 1966  
Revised 1991  
Edition N/A  
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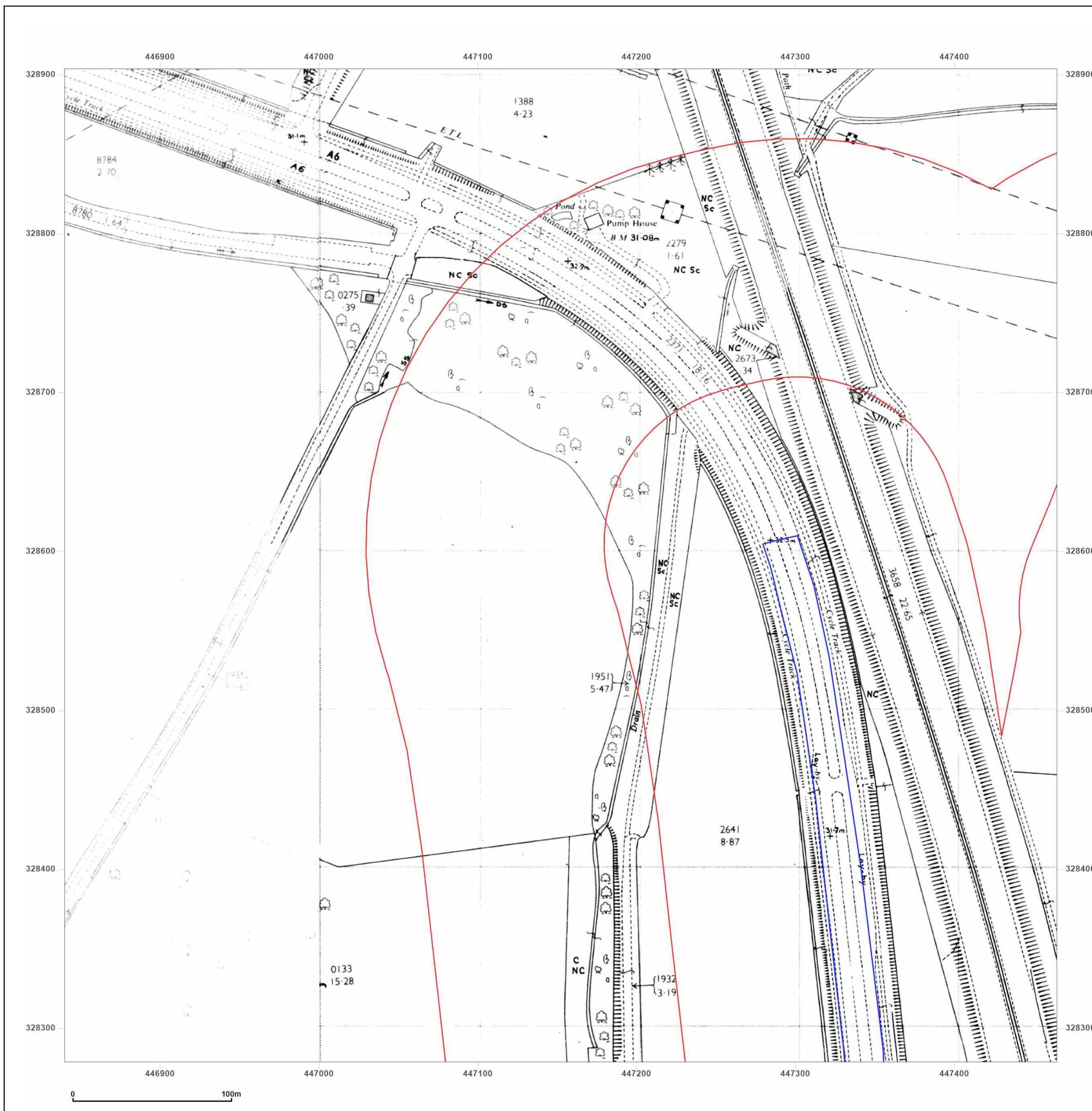


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_1\_6  
**Grid Ref:** 447152, 328591

**Map Name:** National Grid

**Map date:** 1993

**Scale:** 1:2,500

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



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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:** County Series

**Map date:** 1884

**Scale:** 1:2,500

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



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

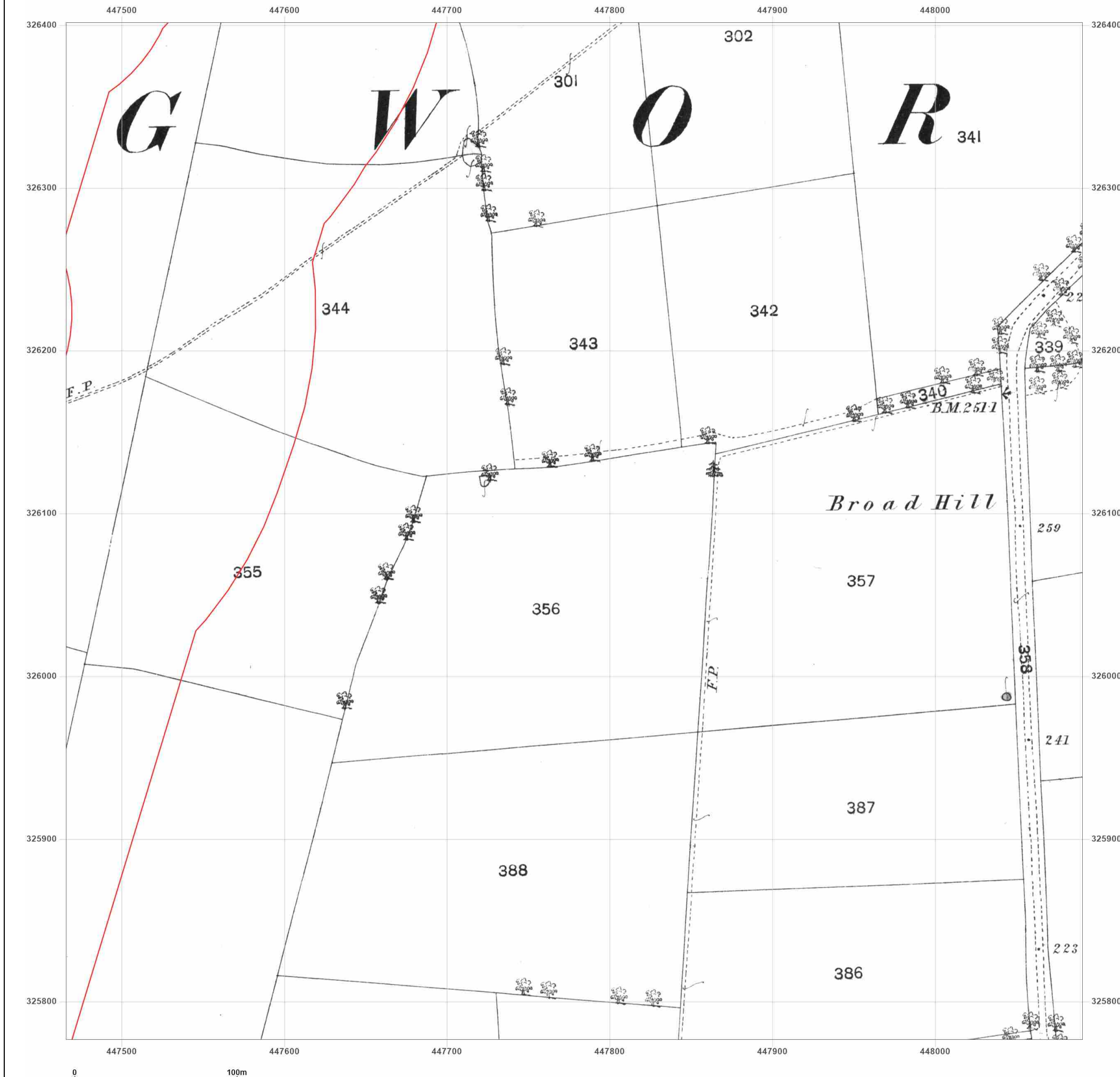


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
**Grid Ref:** 447778, 326089

**Map Name:** County Series

**Map date:** 1900

**Scale:** 1:2,500

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



Surveyed 1900  
Revised 1900  
Edition N/A  
Copyright N/A  
Levelled N/A

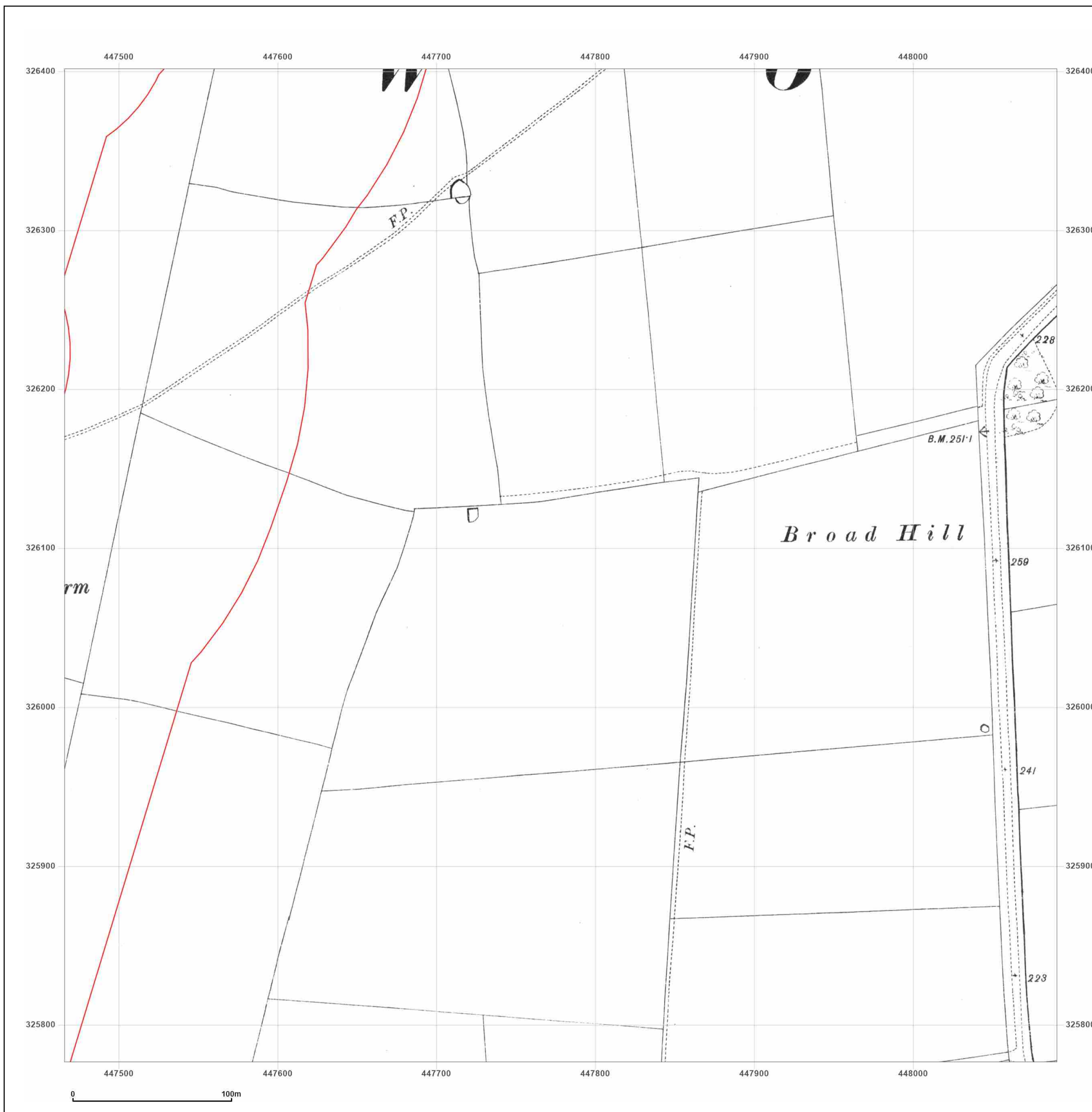


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
**Grid Ref:** 447778, 326089

**Map Name:** County Series

**Map date:** 1900

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Surveyed 1900  
Revised 1900  
Edition N/A  
Copyright N/A  
Levelled N/A

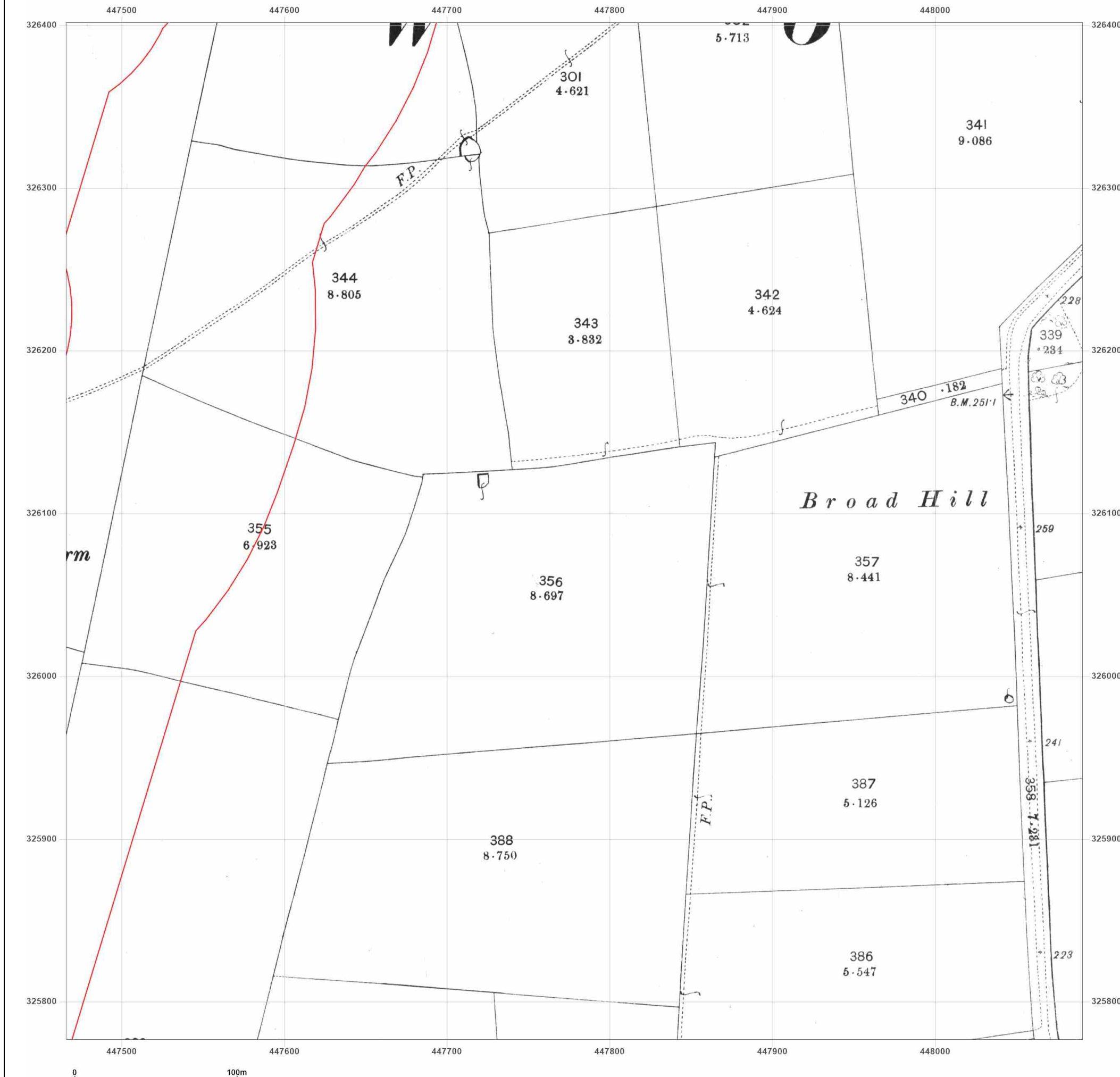


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
**Grid Ref:** 447778, 326089

**Map Name:** County Series

**Map date:** 1921

**Scale:** 1:2,500

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



Surveyed 1921  
Revised 1921  
Edition N/A  
Copyright N/A  
Levelled N/A

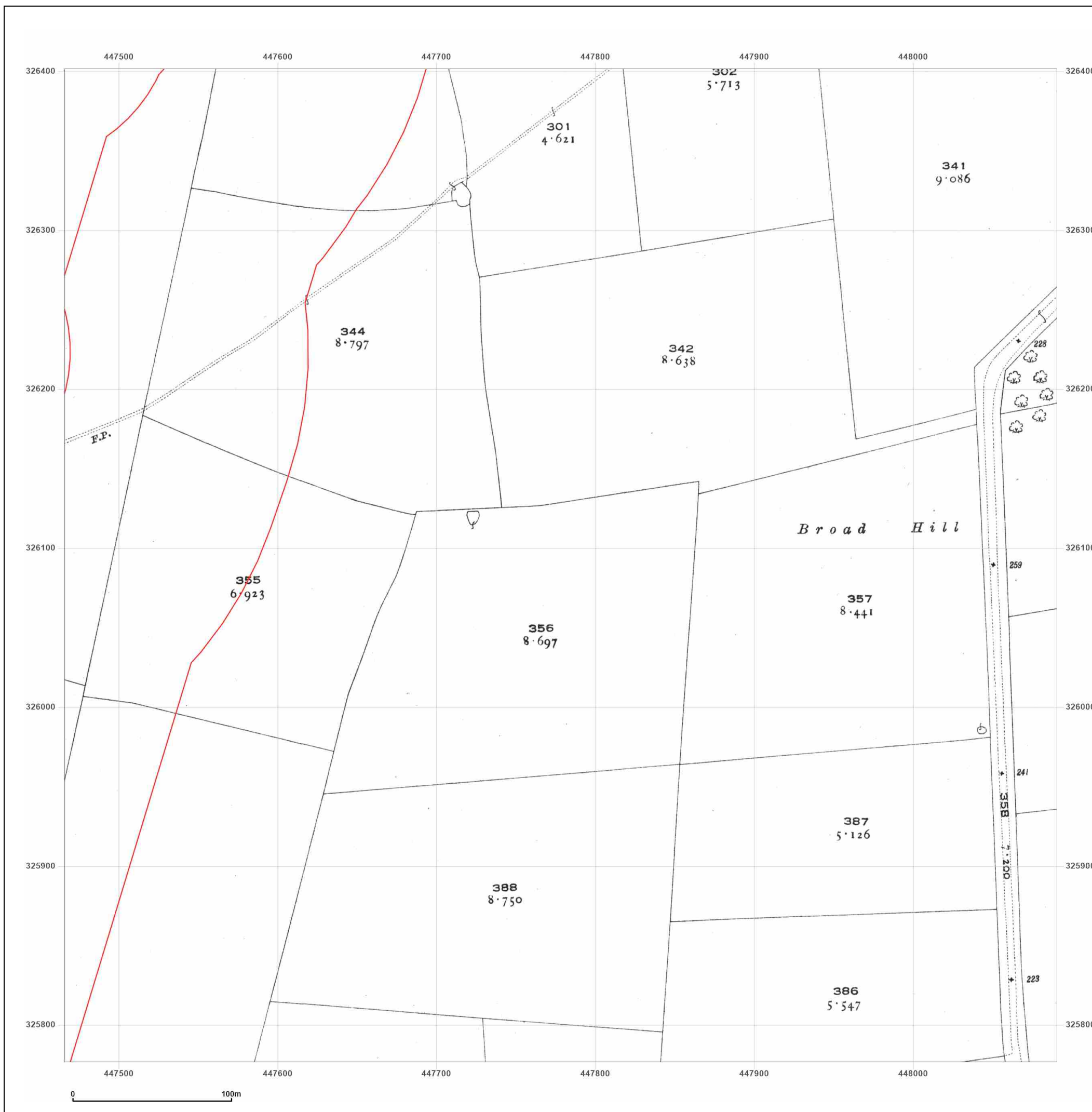


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
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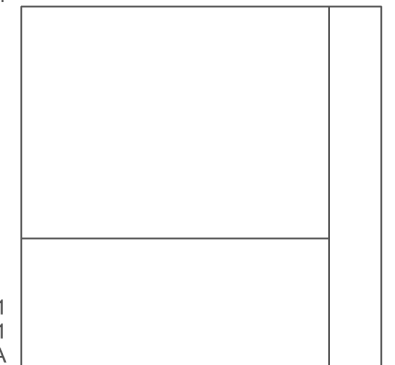
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**Printed at:** 1:2,500



Surveyed 1961  
Revised 1961  
Edition N/A  
Copyright 1962  
Levelled 1944



Surveyed 1961  
Revised 1961  
Edition N/A  
Copyright 1962  
Levelled 1944

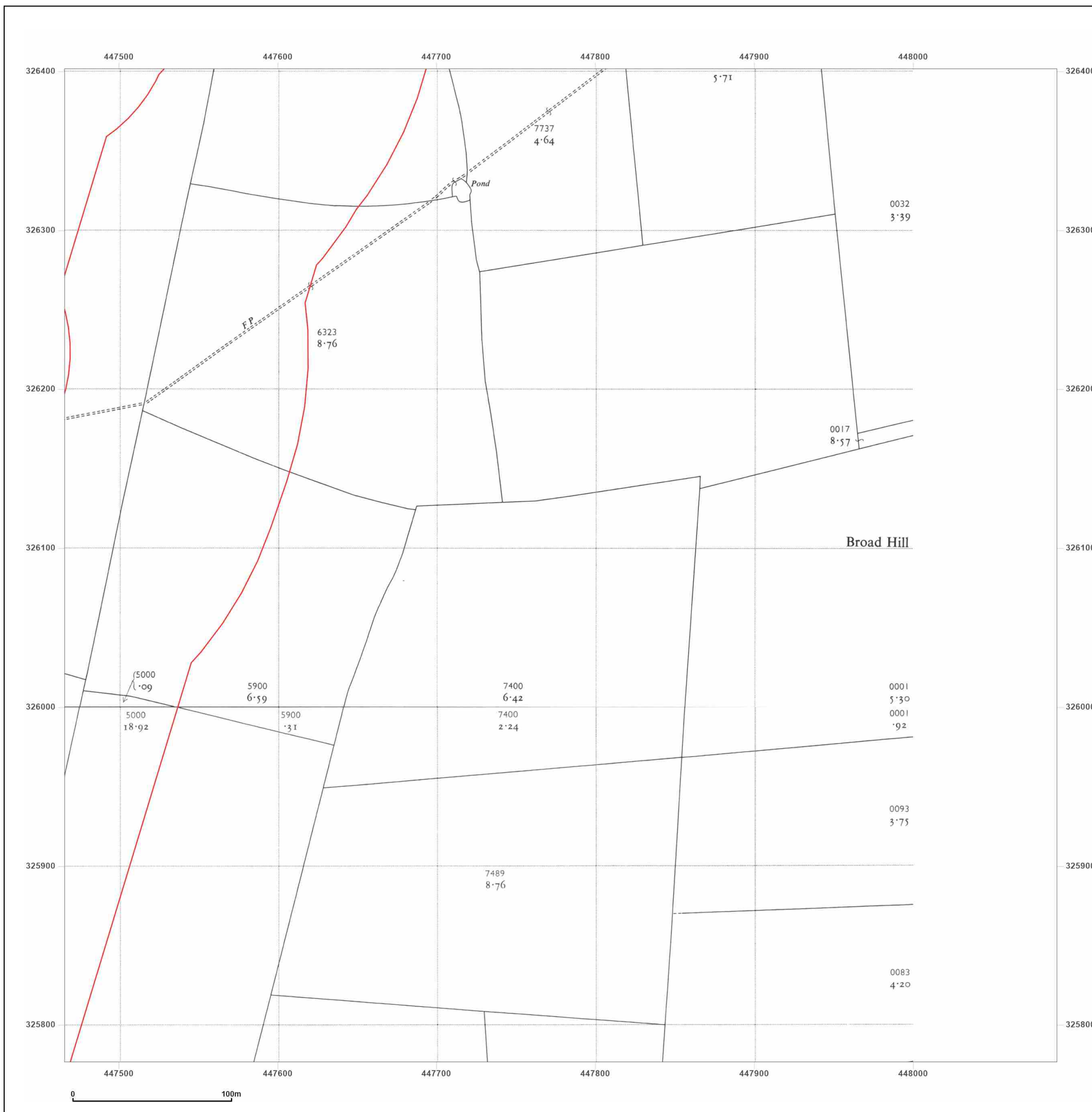


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
**Grid Ref:** 447778, 326089

**Map Name:** National Grid

**Map date:** 1967-1969

**Scale:** 1:2,500

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



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Edition N/A  
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Levelled 1966

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Revised 1968  
Edition N/A  
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Levelled 1966

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Revised 1966  
Edition N/A  
Copyright 1967  
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Surveyed 1968  
Revised 1968  
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Copyright 1969  
Levelled 1966

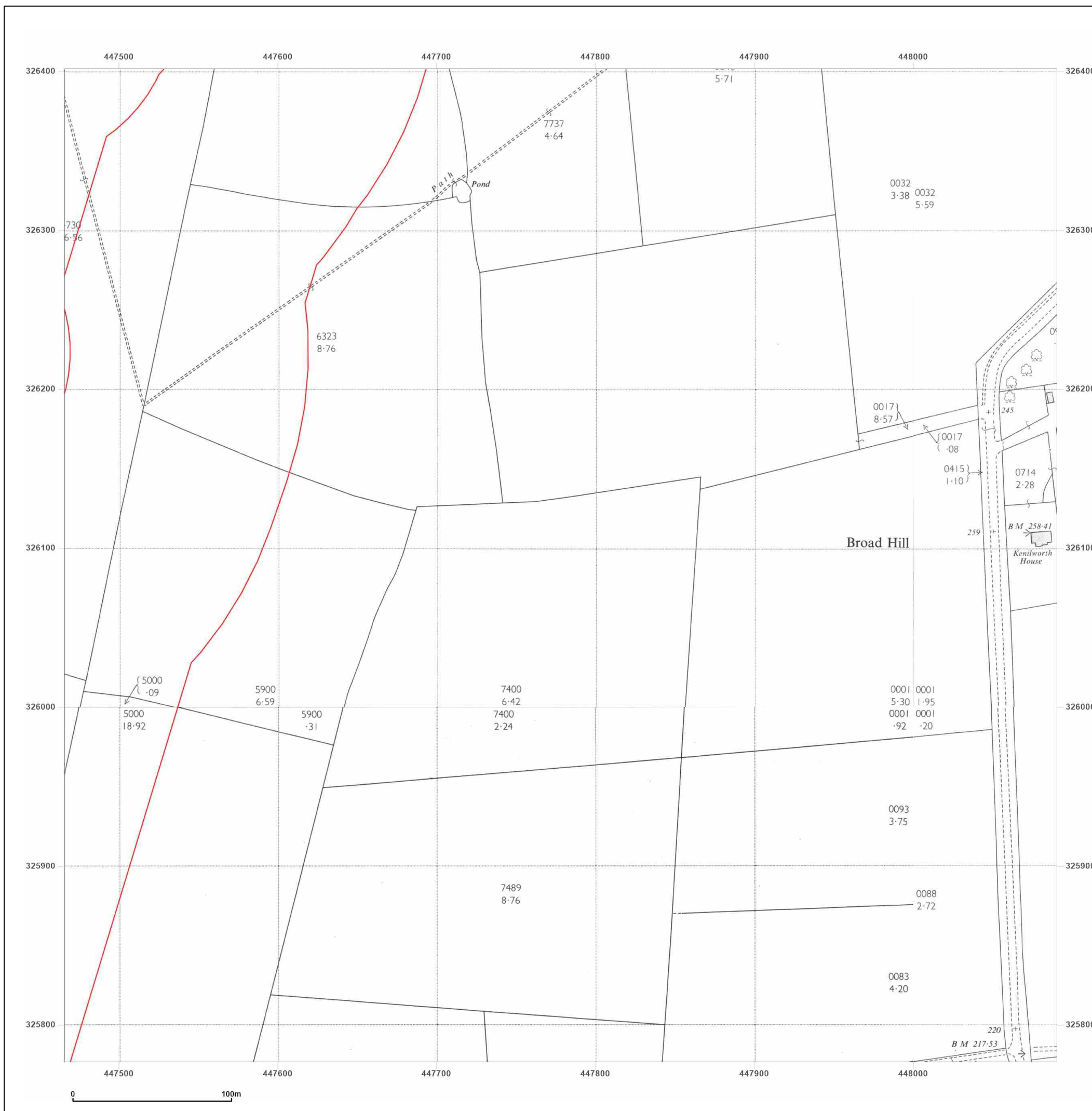


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
**Grid Ref:** 447778, 326089

**Map Name:** National Grid

**Map date:** 1972

**Scale:** 1:2,500

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



Surveyed 1971  
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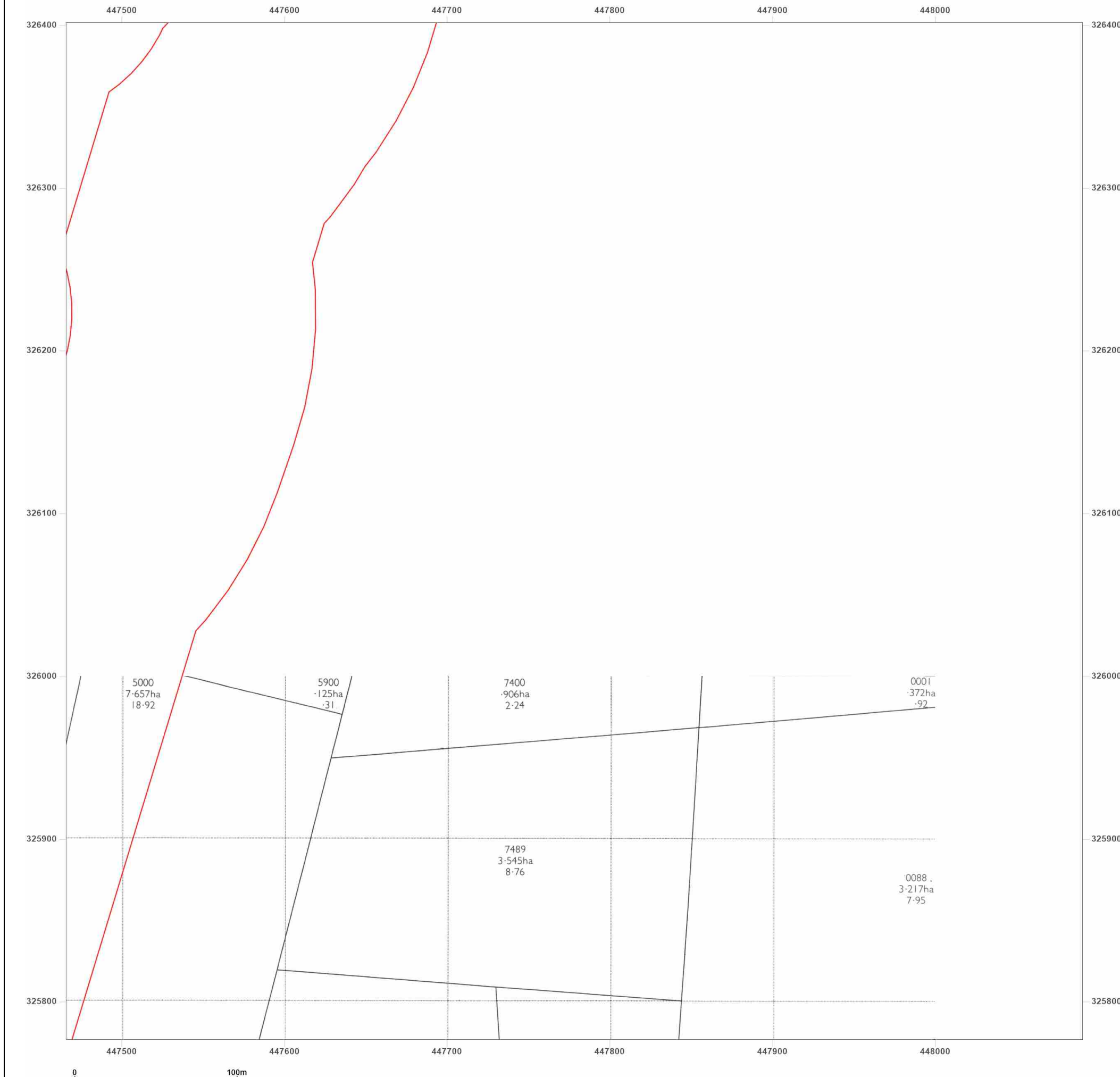


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
**Grid Ref:** 447778, 326089

**Map Name:** National Grid

**Map date:** 1983-1988

**Scale:** 1:2,500

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



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Revised 1981  
Edition N/A  
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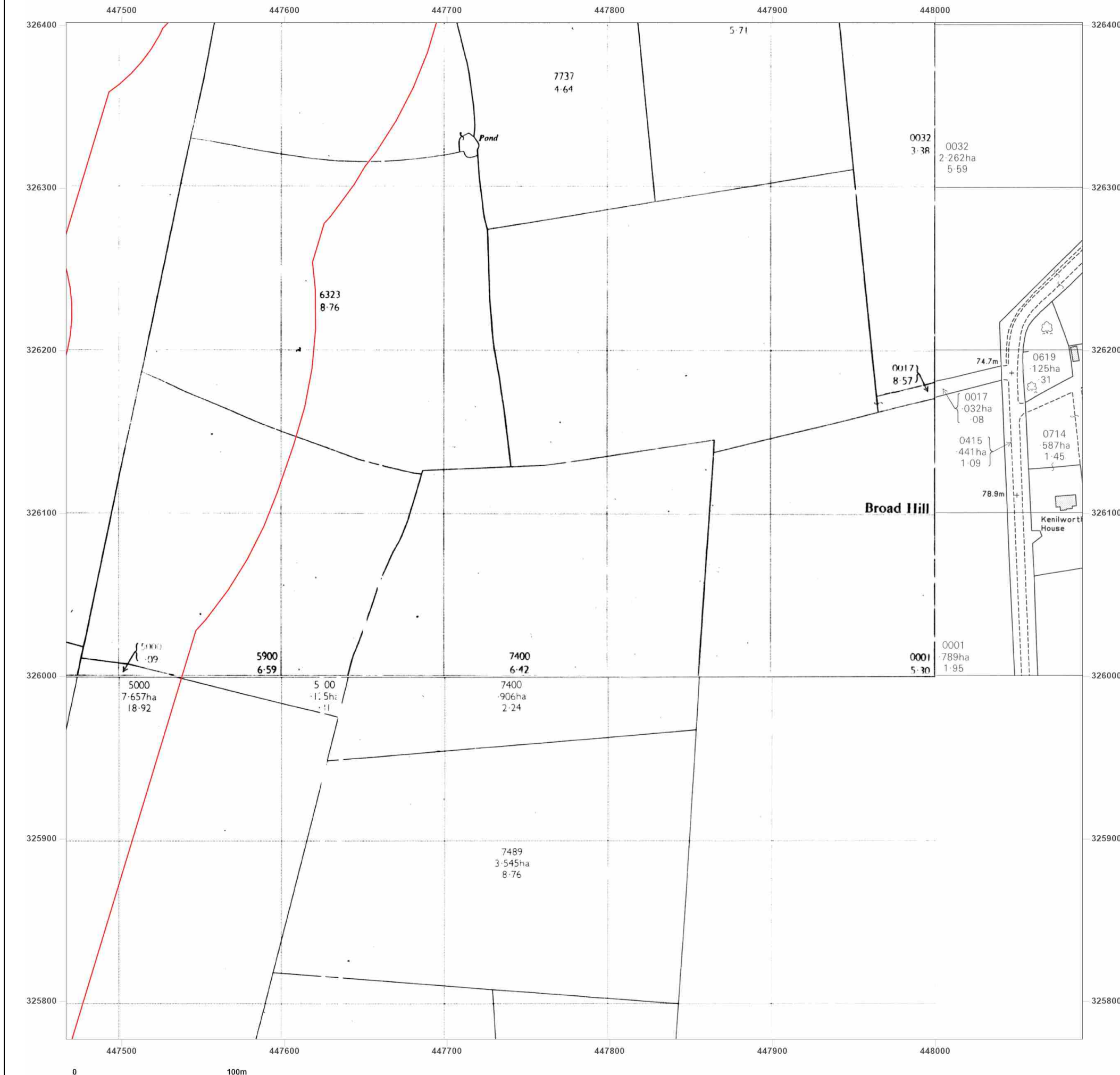


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
**Grid Ref:** 447778, 326089

**Map Name:** National Grid

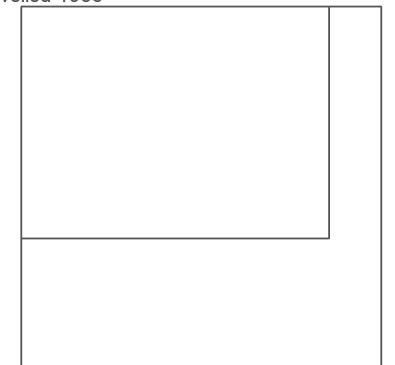
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Revised 1991  
Edition N/A  
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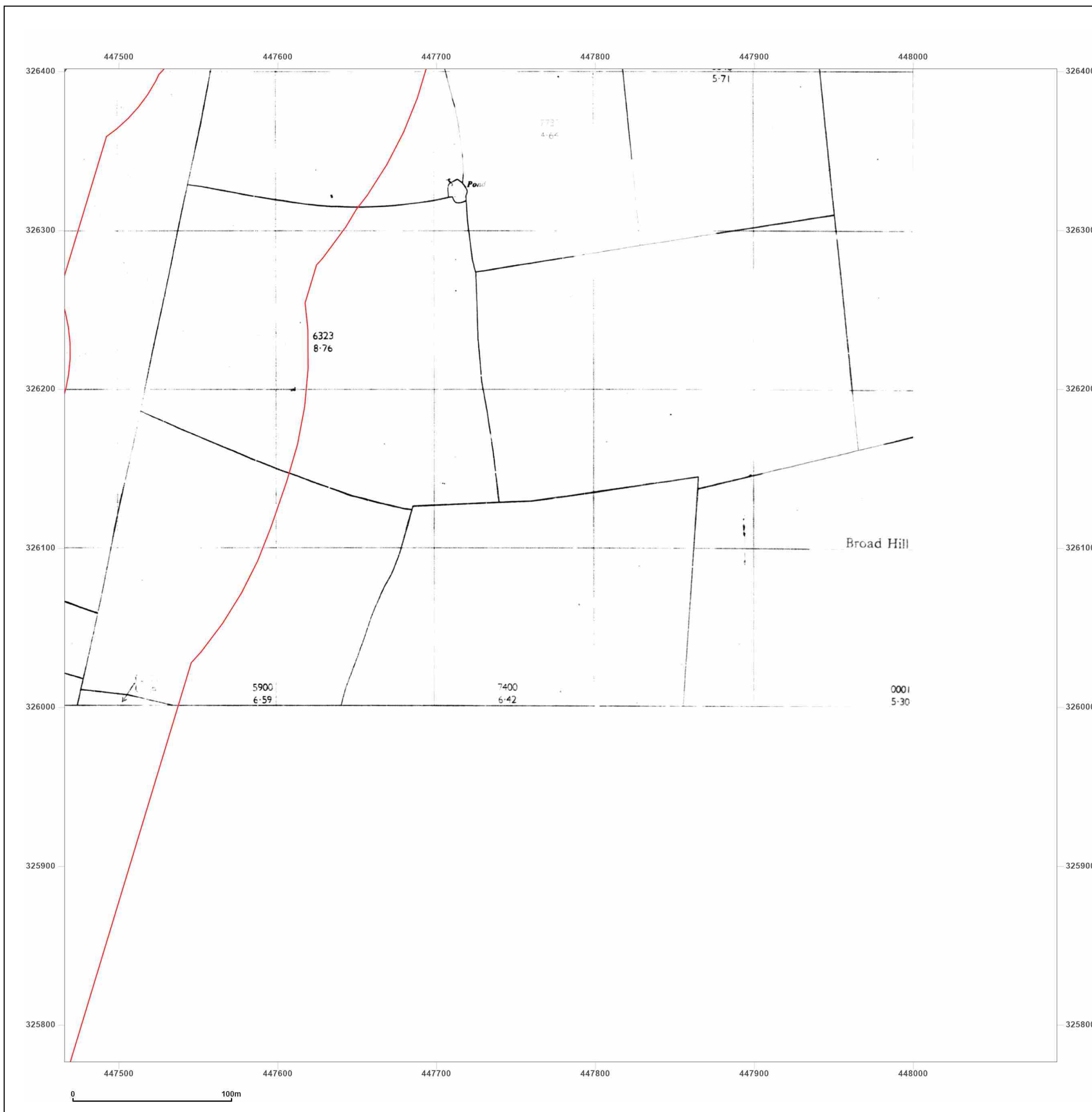


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_2  
**Grid Ref:** 447778, 326089

**Map Name:** National Grid

**Map date:** 1989-1993

**Scale:** 1:2,500

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



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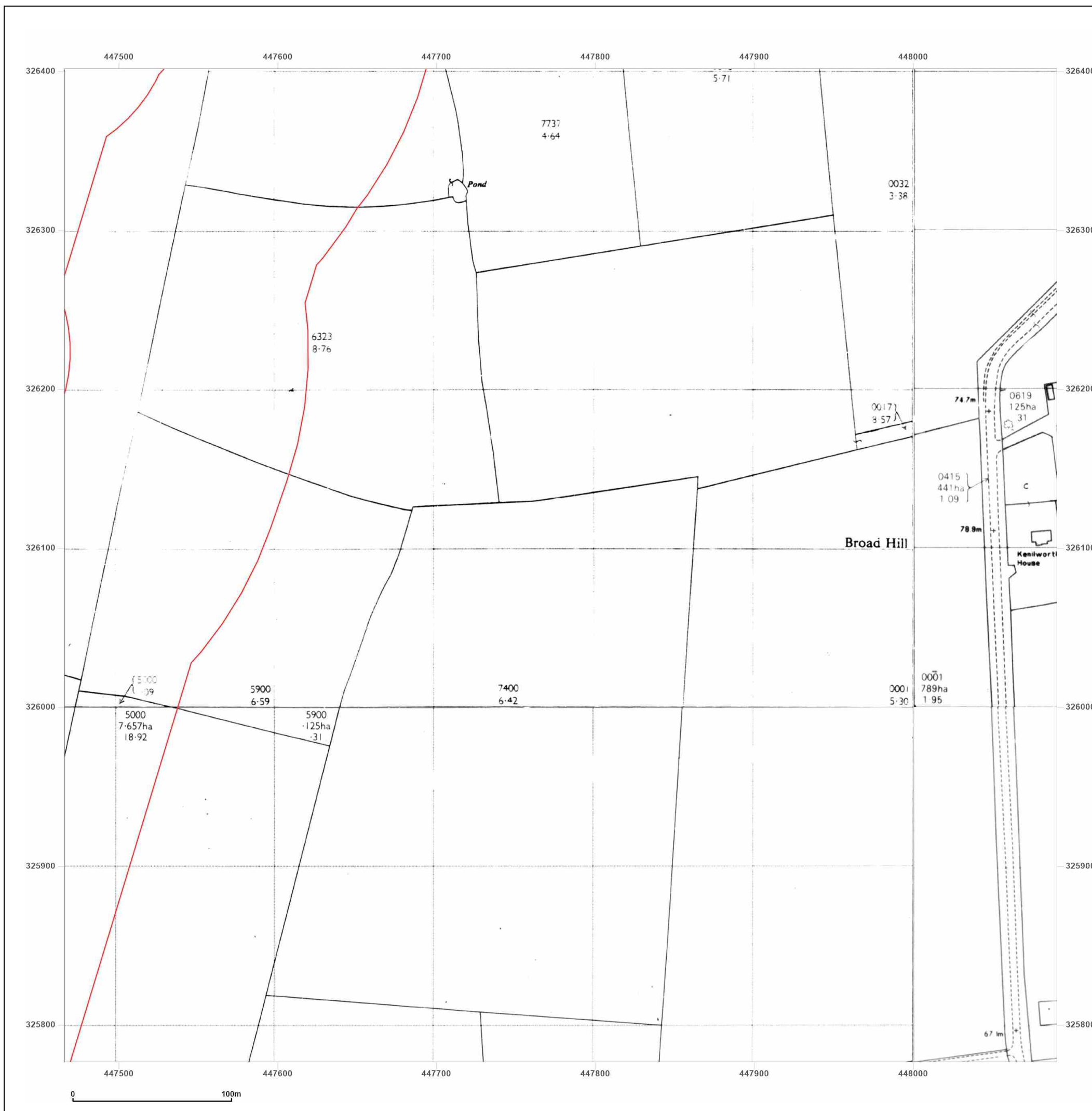


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_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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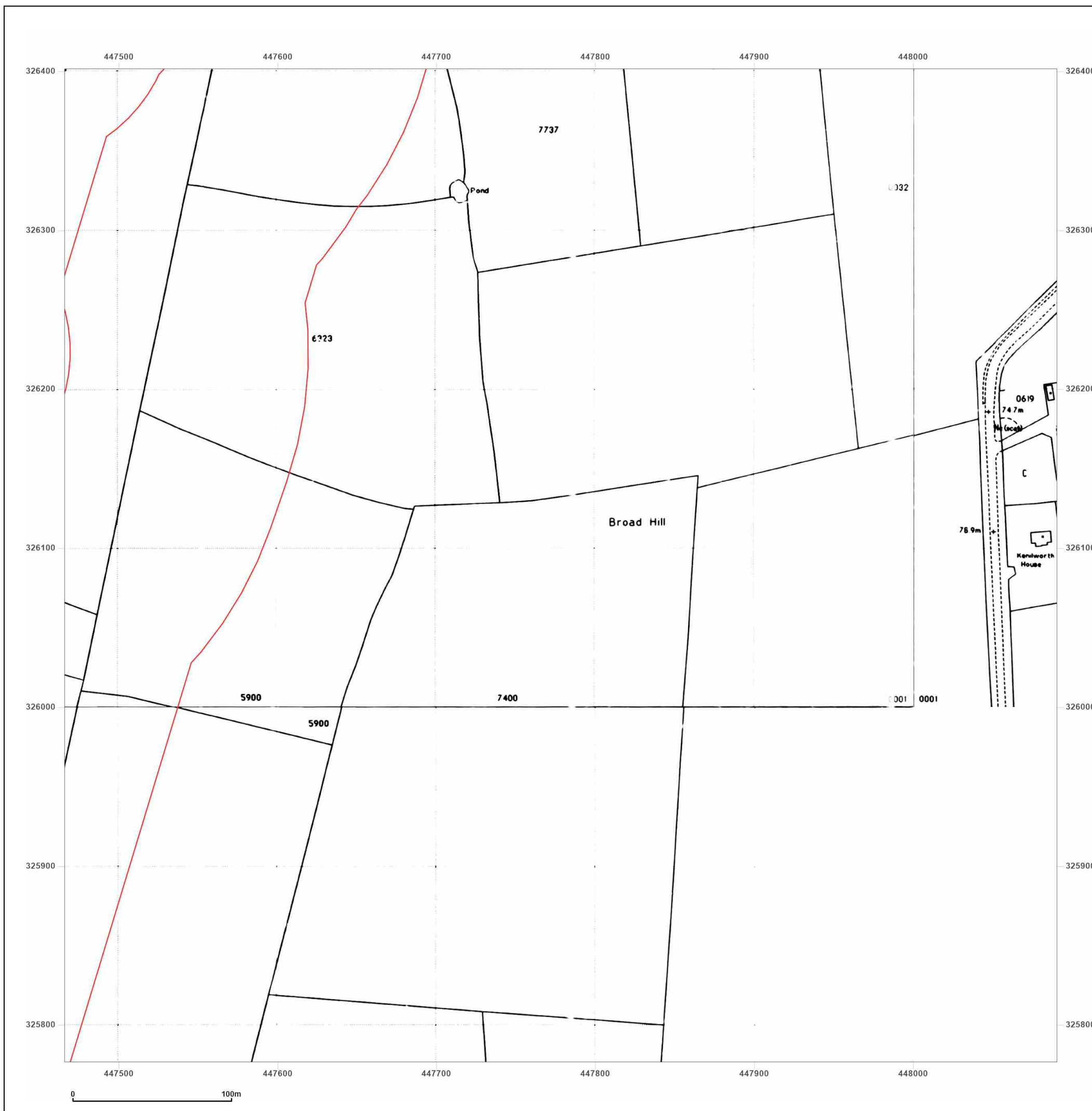


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#### Site Details:

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:** 1884

**Scale:** 1:2,500

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



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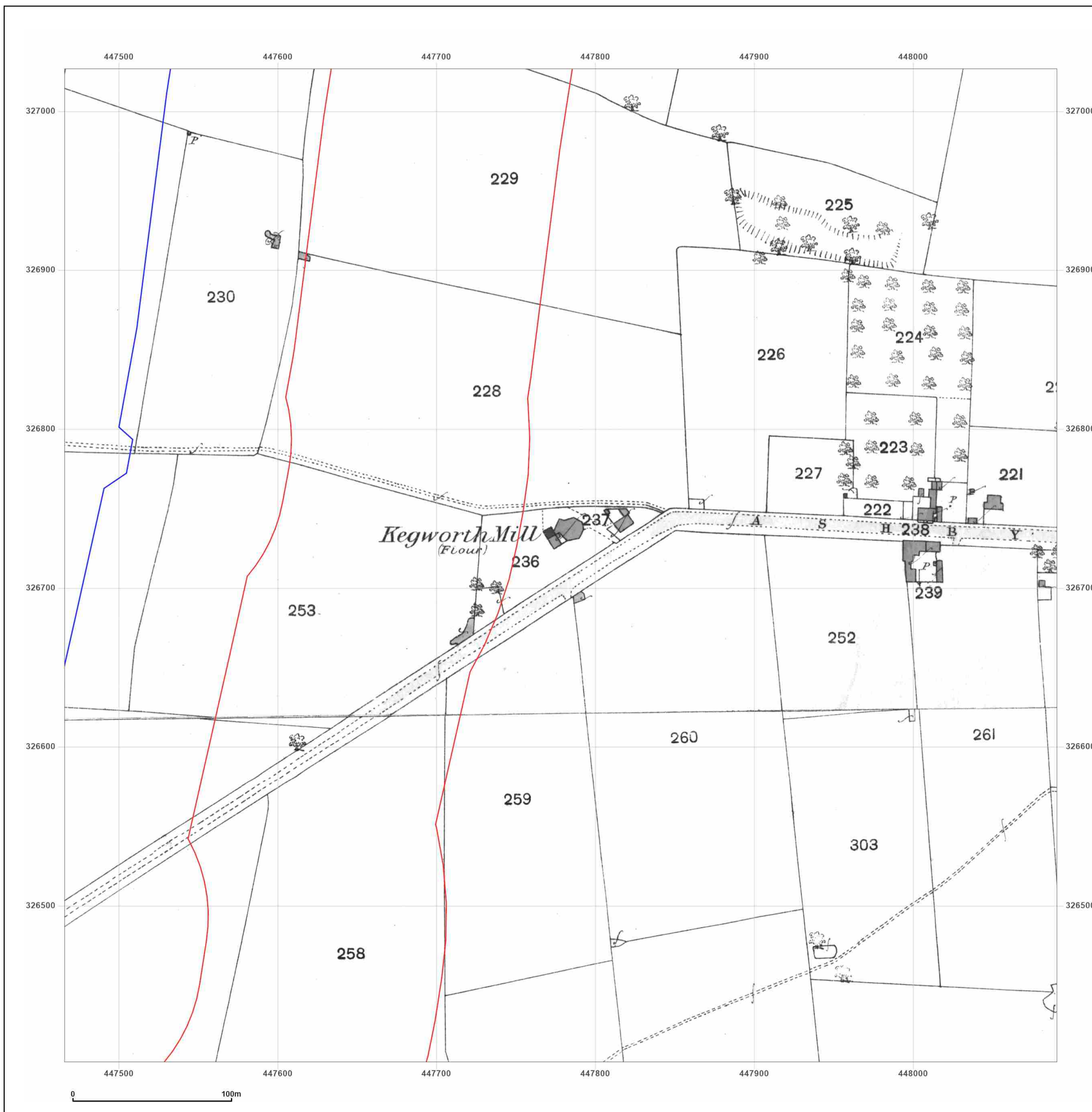


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_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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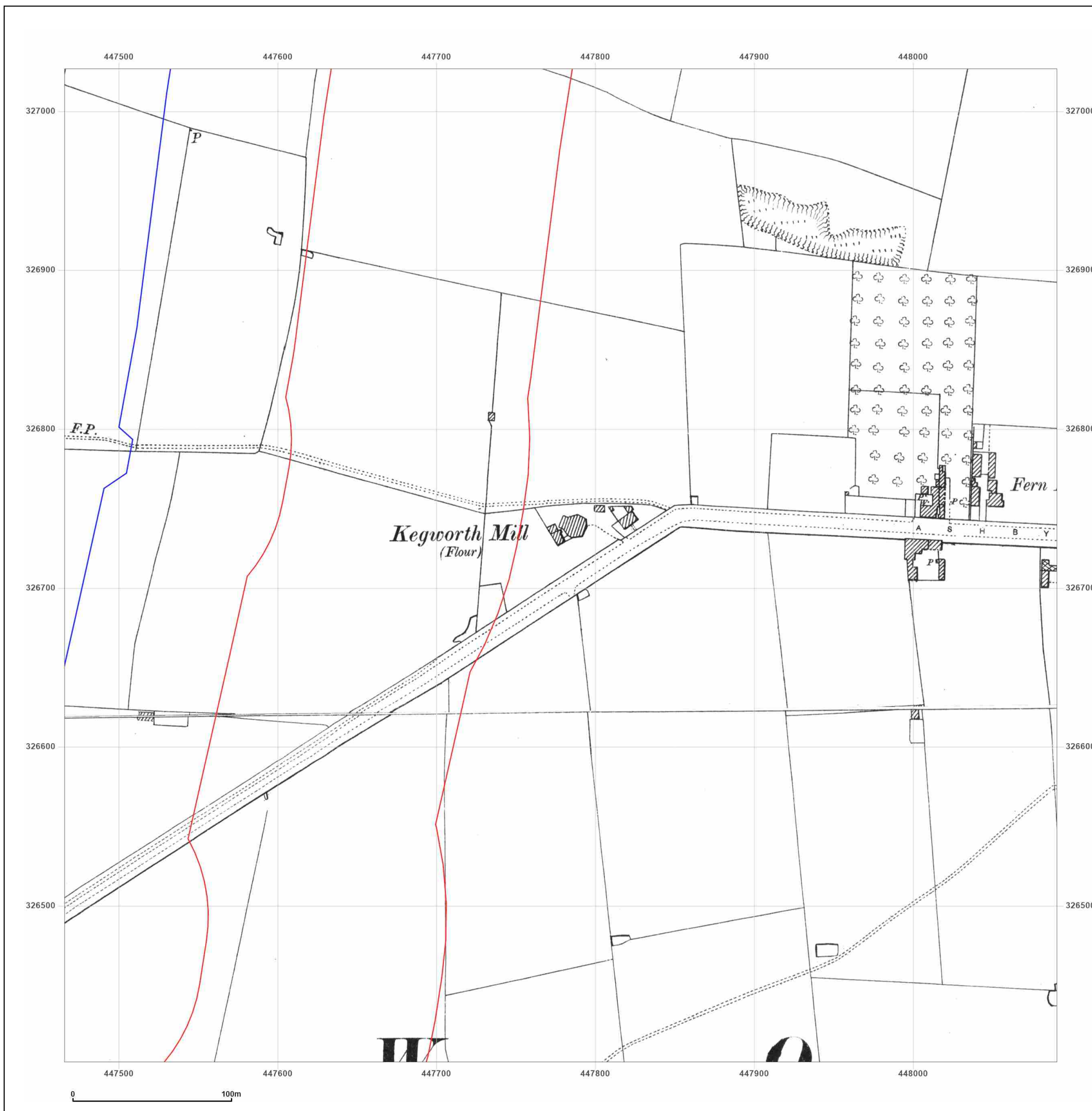


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
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**Map date:** 1900

**Scale:** 1:2,500

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



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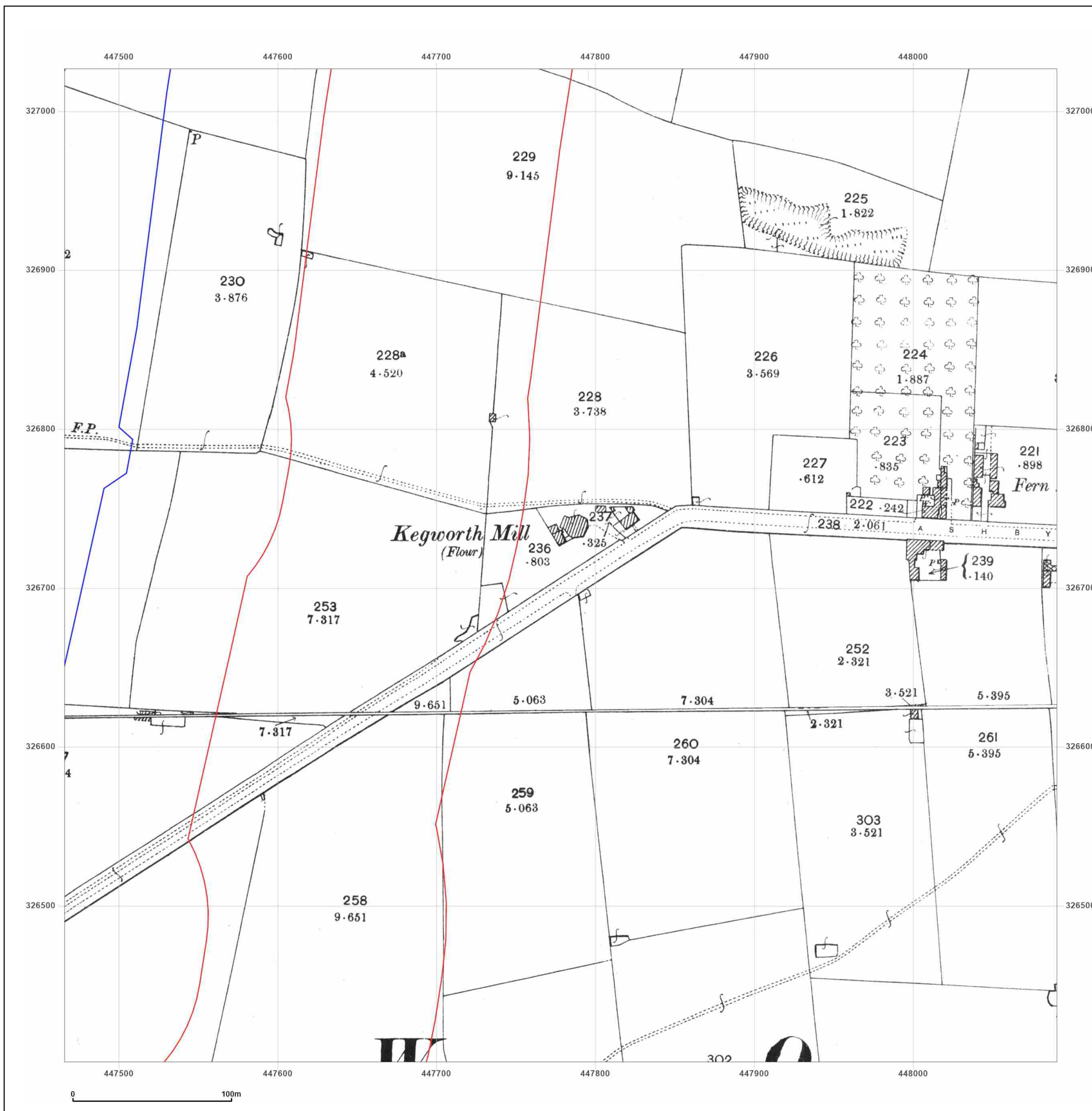


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#### Site Details:

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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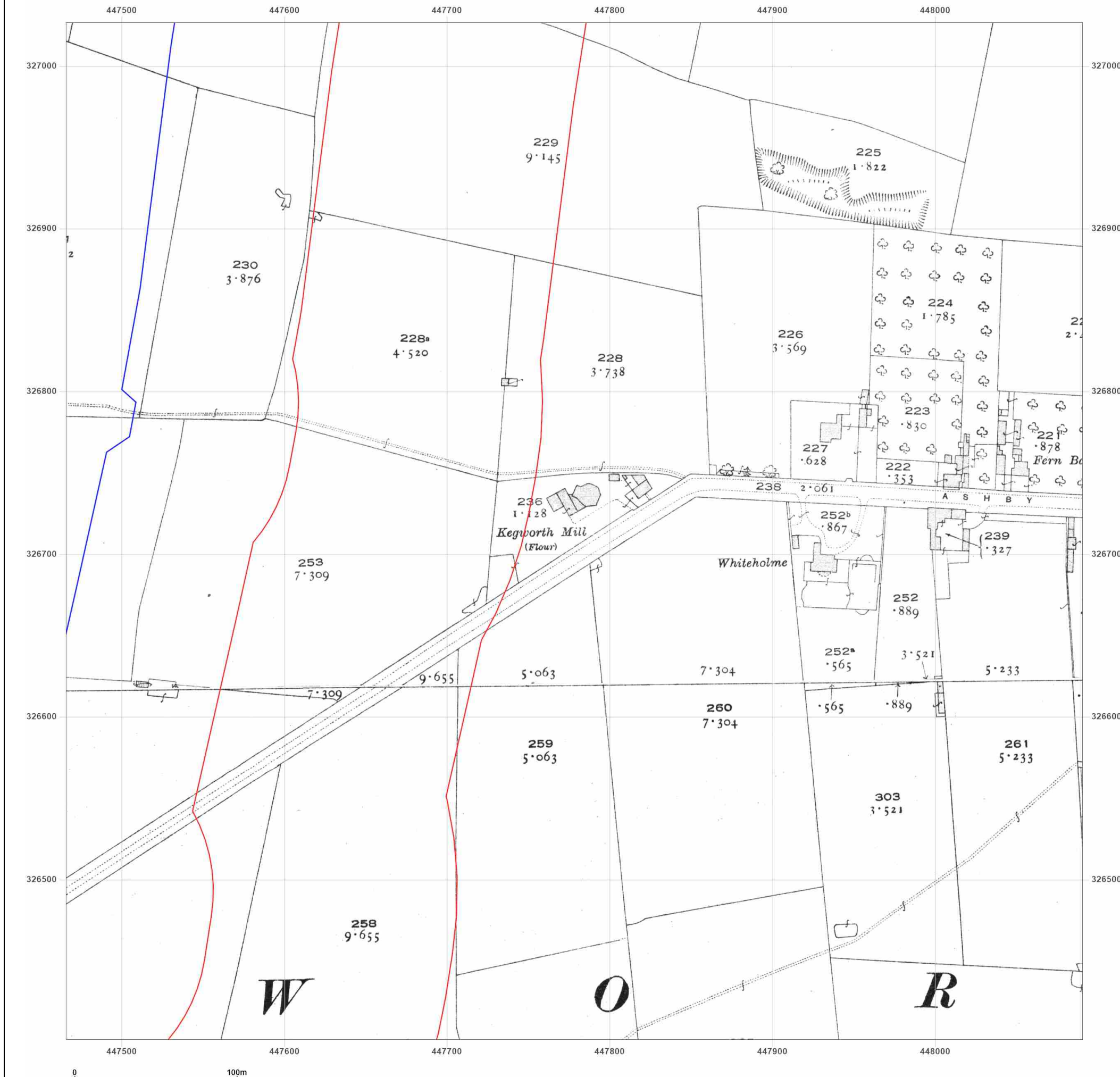


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#### Site Details:

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



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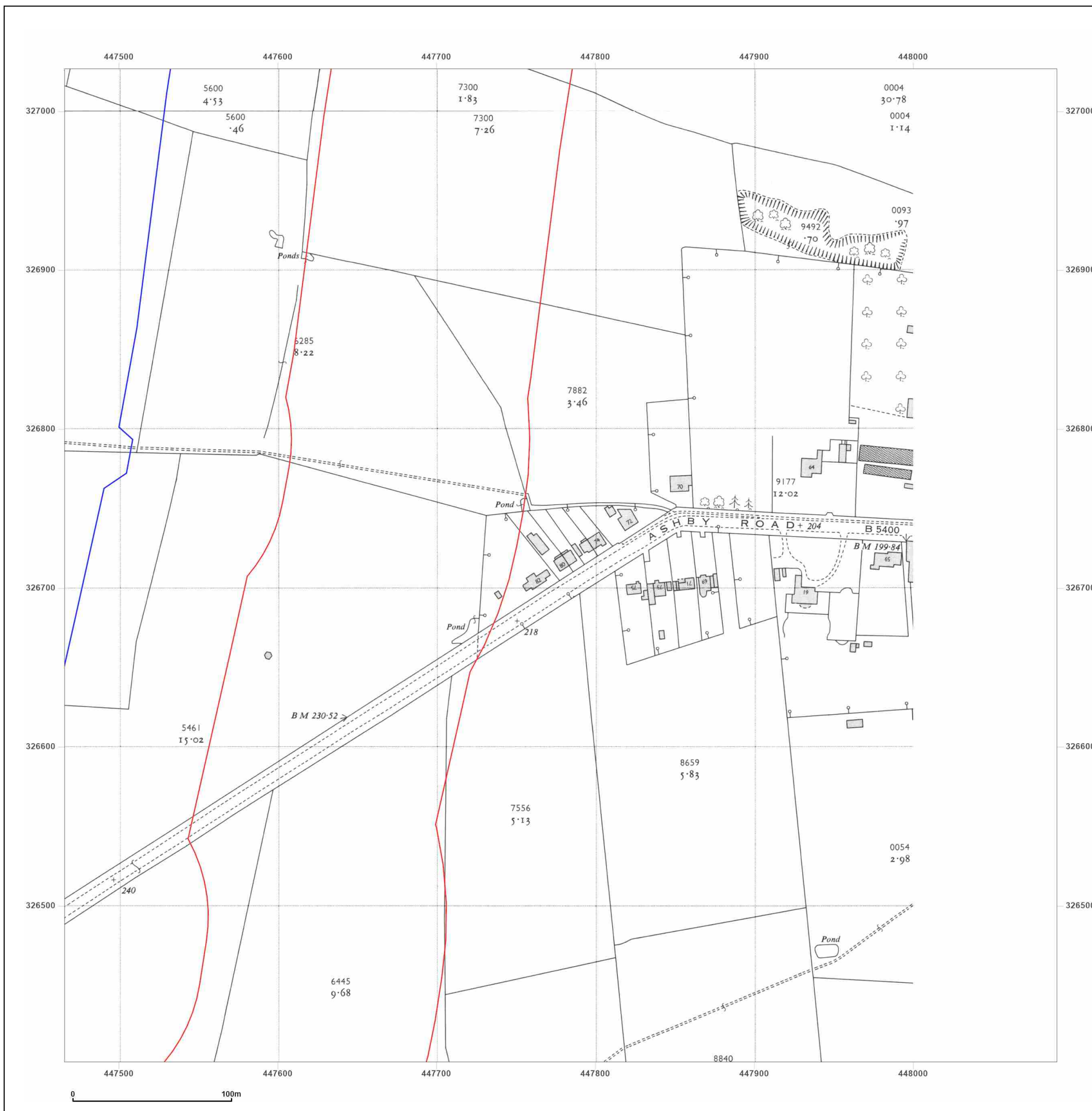


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#### Site Details:

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:** 1967-1970

**Scale:** 1:2,500

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



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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



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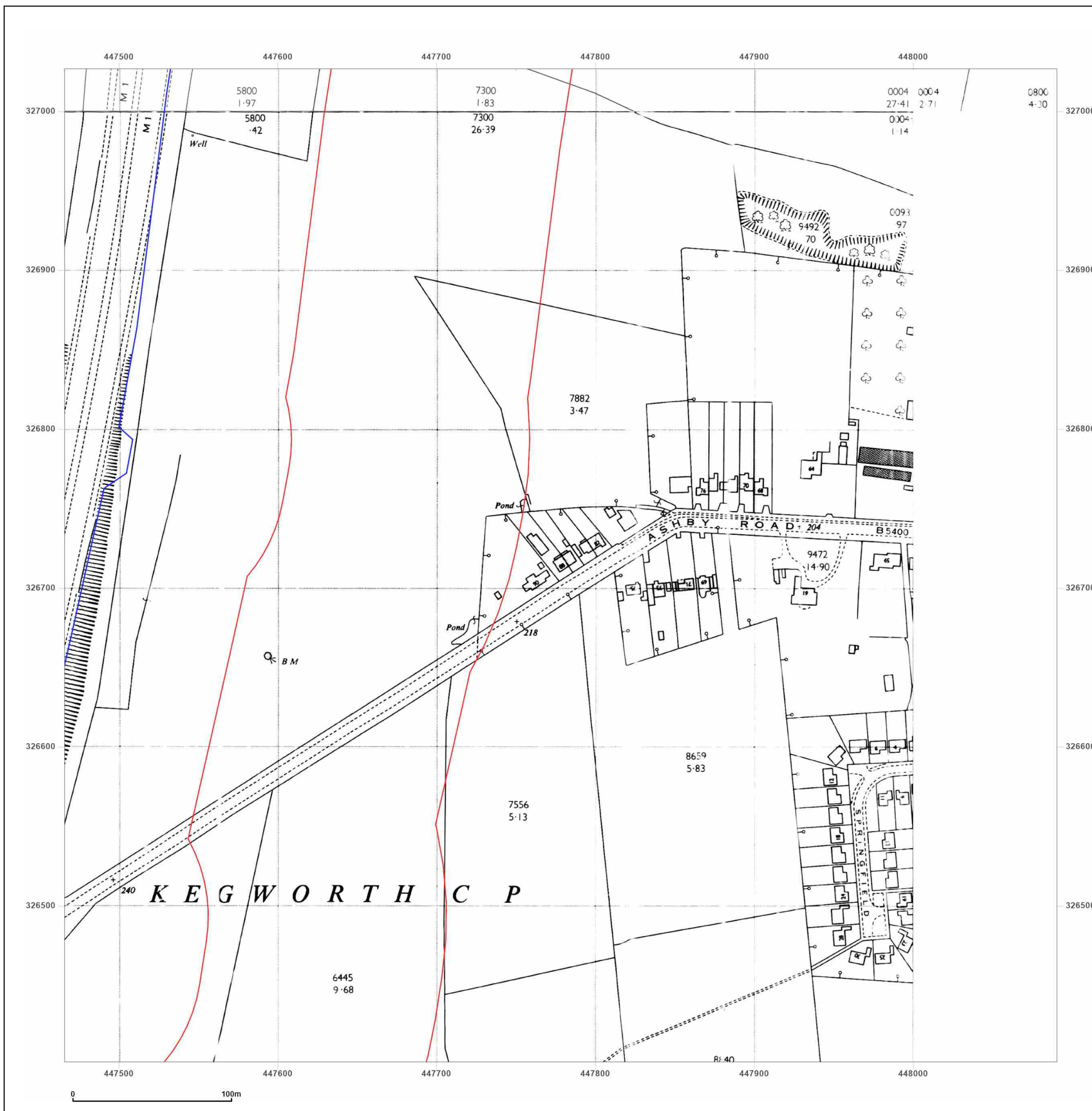


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#### Site Details:

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:** 1986-1991

**Scale:** 1:2,500

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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

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**Map Name:** National Grid

**Map date:** 1991-1993

**Scale:** 1:2,500

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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

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**Grid Ref:** 447778, 326714

**Map Name:** National Grid

**Map date:** 1993

**Scale:** 1:2,500

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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



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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



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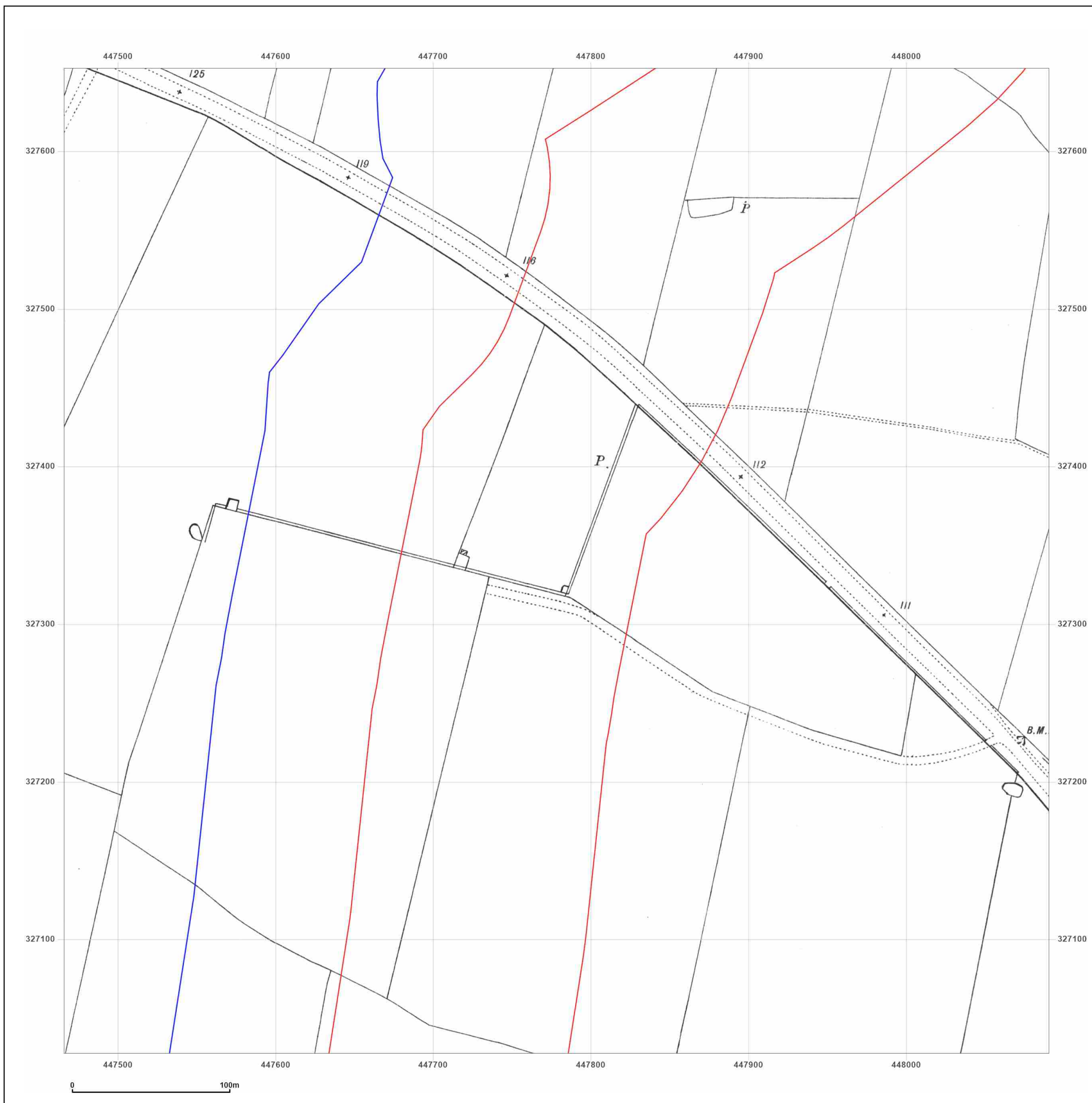


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_4  
**Grid Ref:** 447778, 327340

**Map Name:** County Series

**Map date:** 1900

**Scale:** 1:2,500

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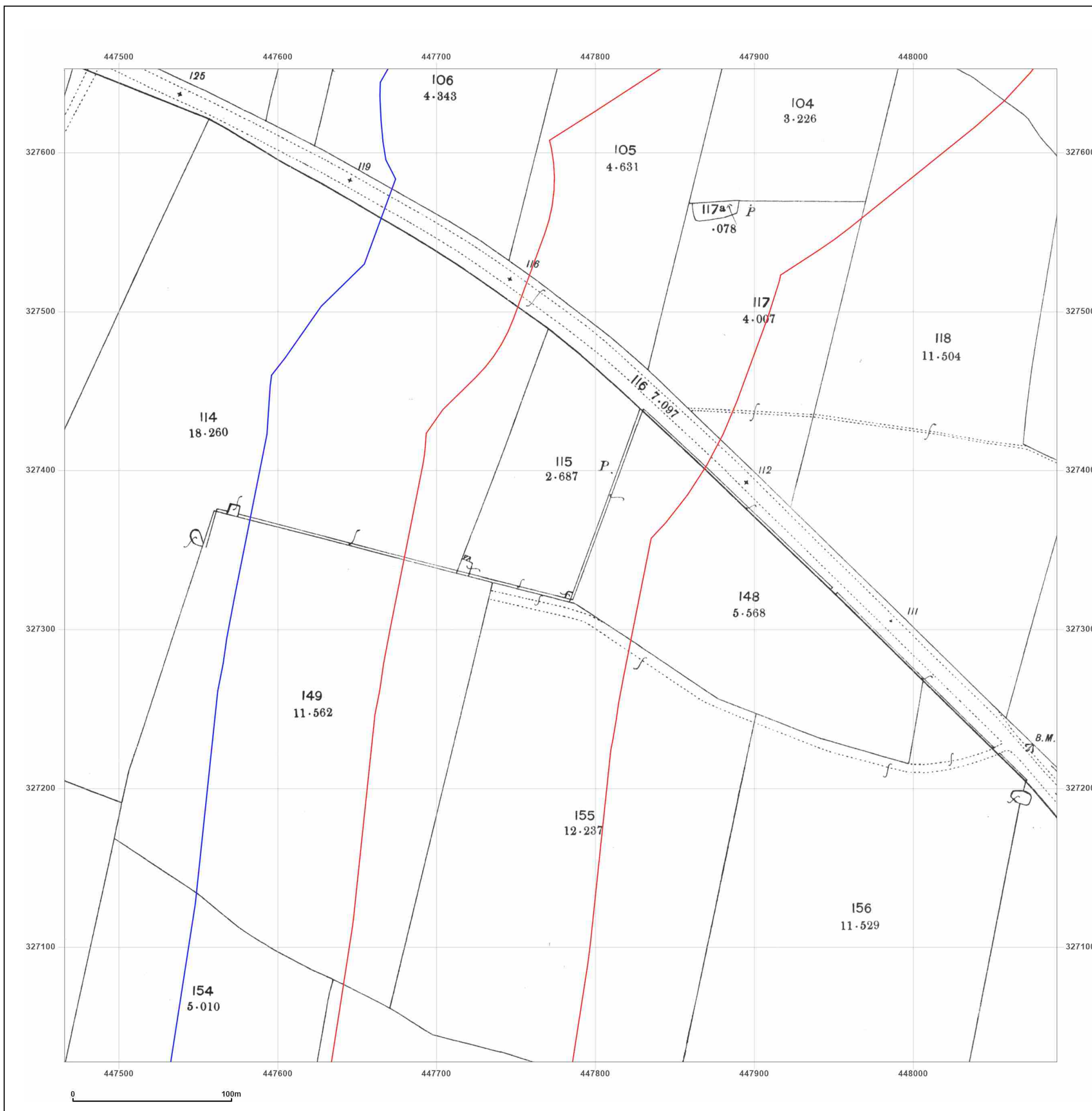


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_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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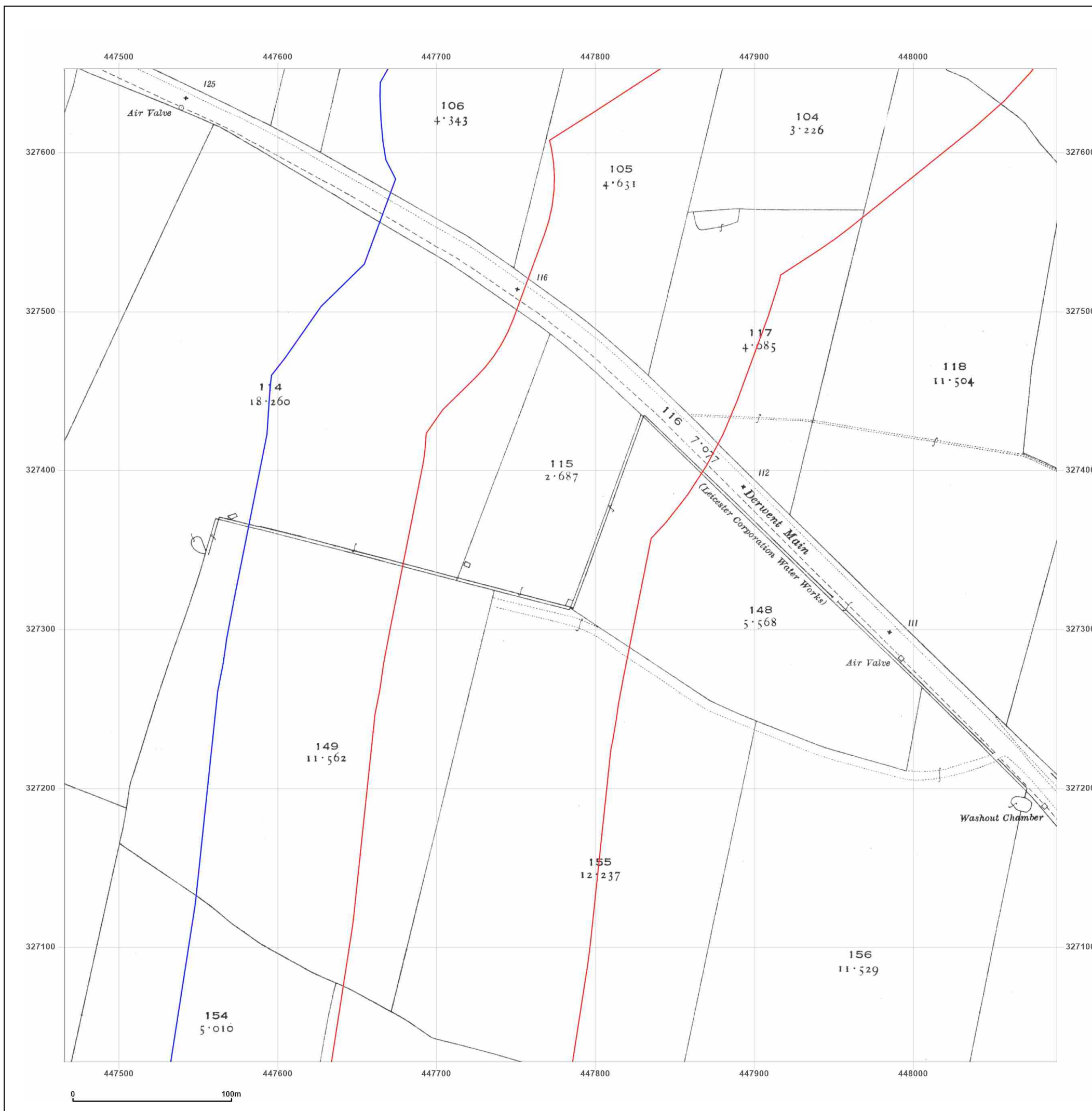


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

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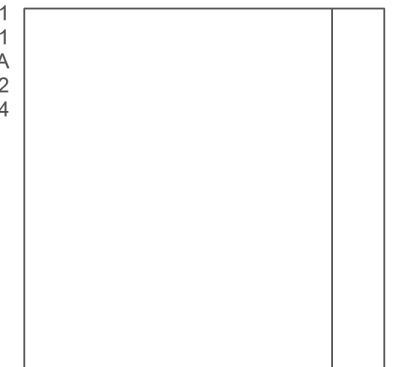
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Edition N/A  
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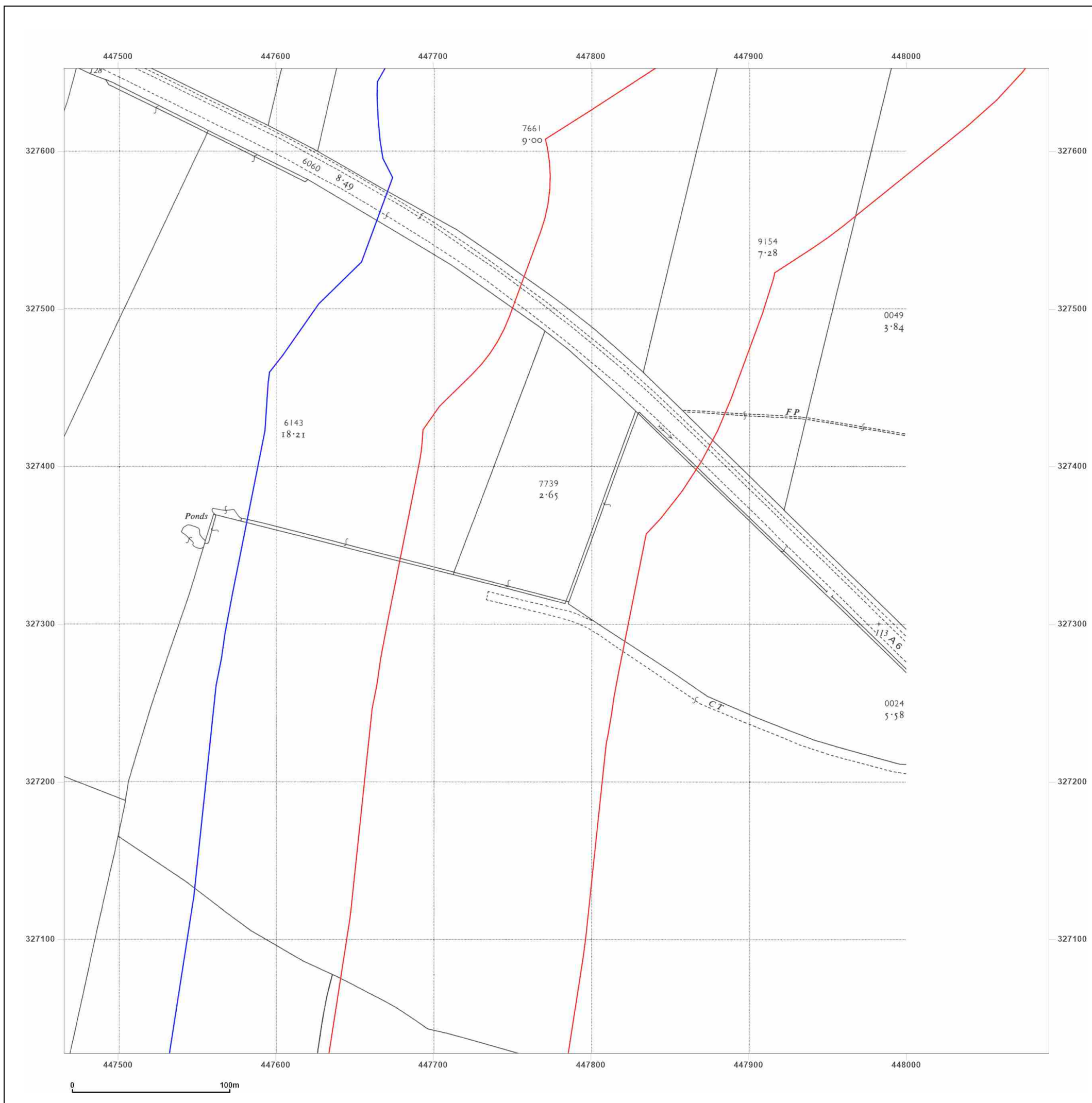


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#### Site Details:

East Midlands Gateway 2, J24  
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**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 1968  
Revised 1968  
Edition N/A  
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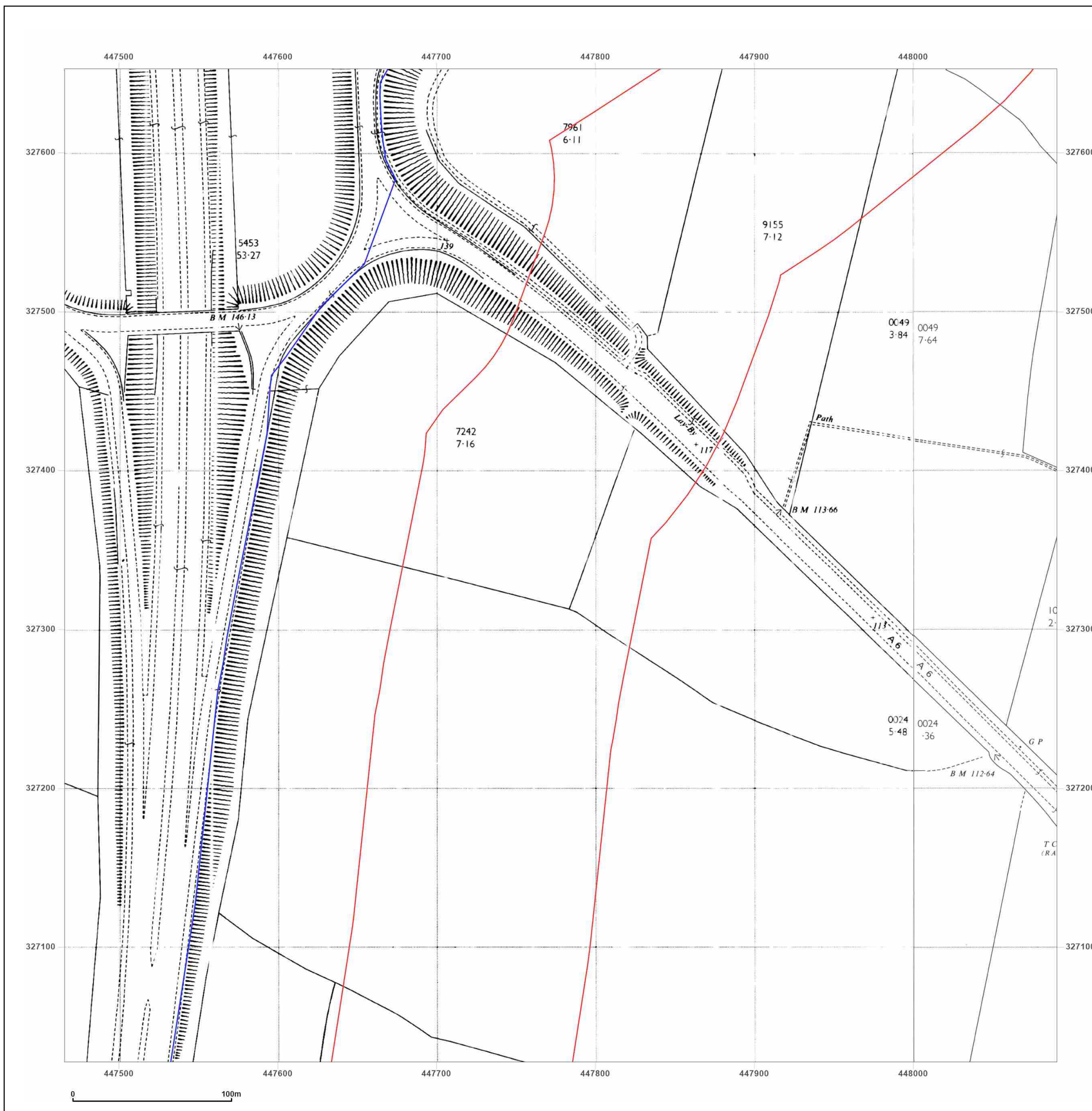


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_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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Revised N/A  
Edition N/A  
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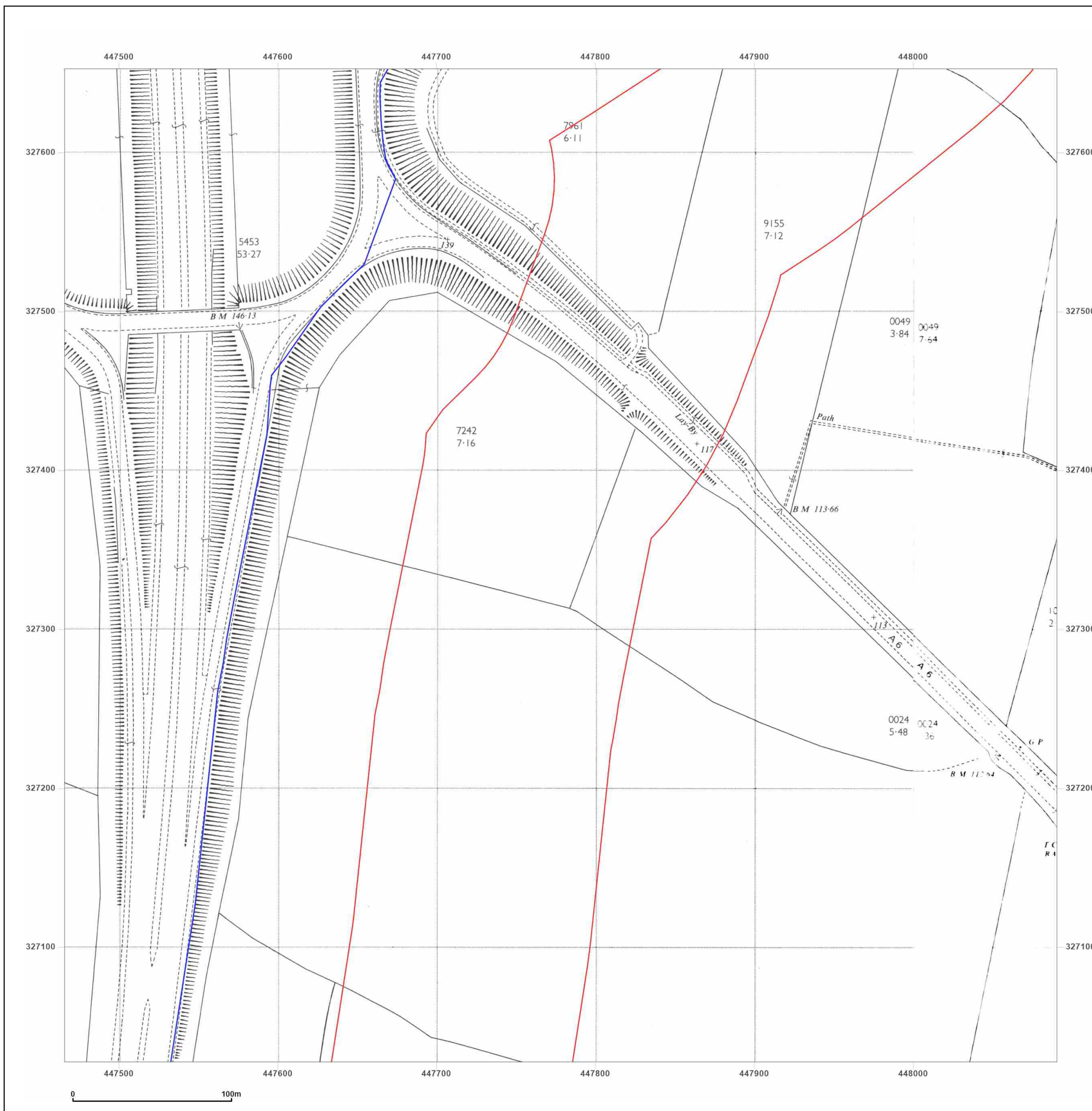


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_4  
**Grid Ref:** 447778, 327340

**Map Name:** National Grid

**Map date:** 1982

**Scale:** 1:2,500

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



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Edition N/A  
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Copyright 1982  
Levelled 1966

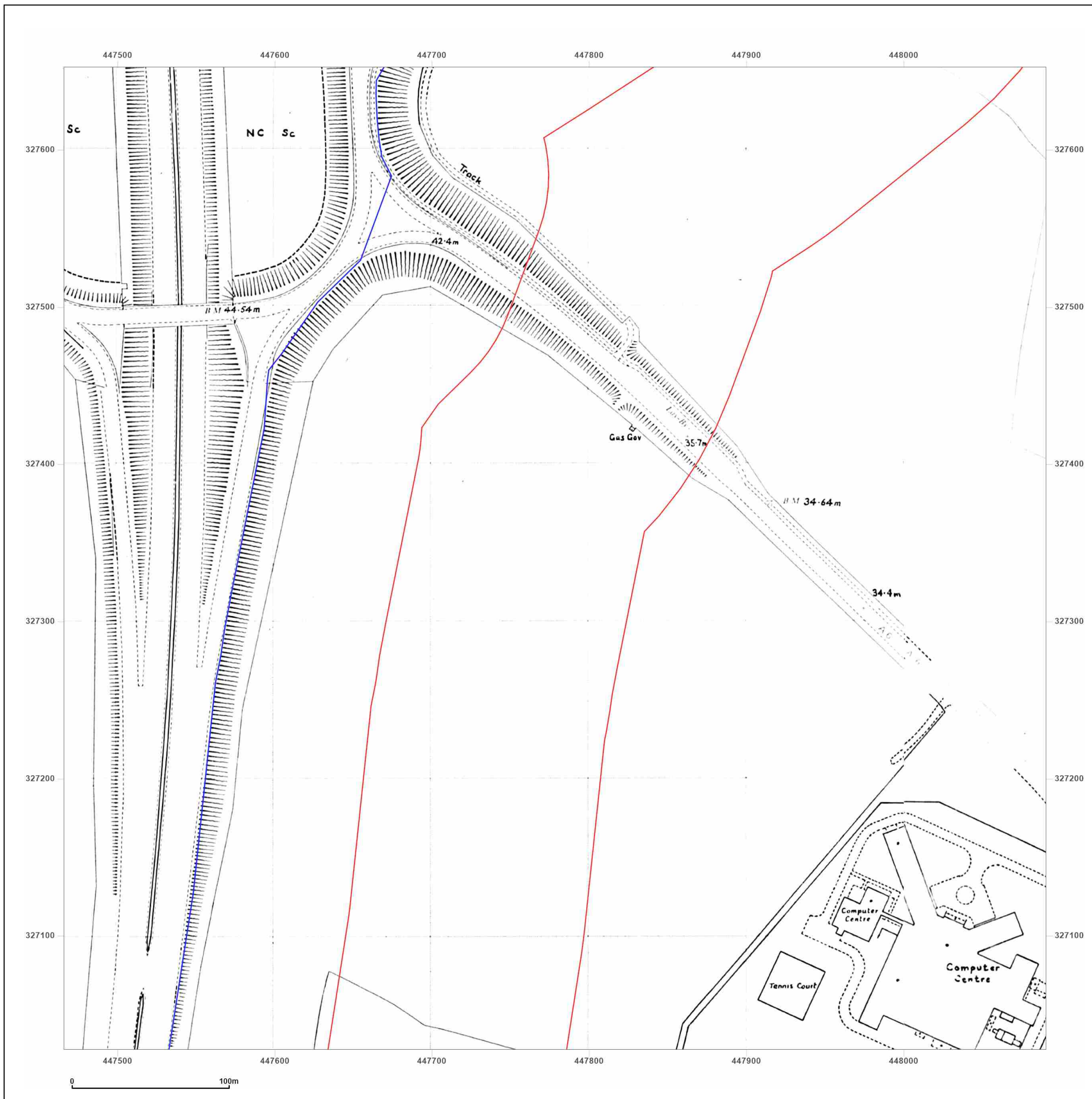


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**Site Details:**

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:** 1986-1988

**Scale:** 1:2,500

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



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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:** 1991

**Scale:** 1:2,500

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



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Edition N/A  
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Levelled 1966

Surveyed 1966  
Revised 1991  
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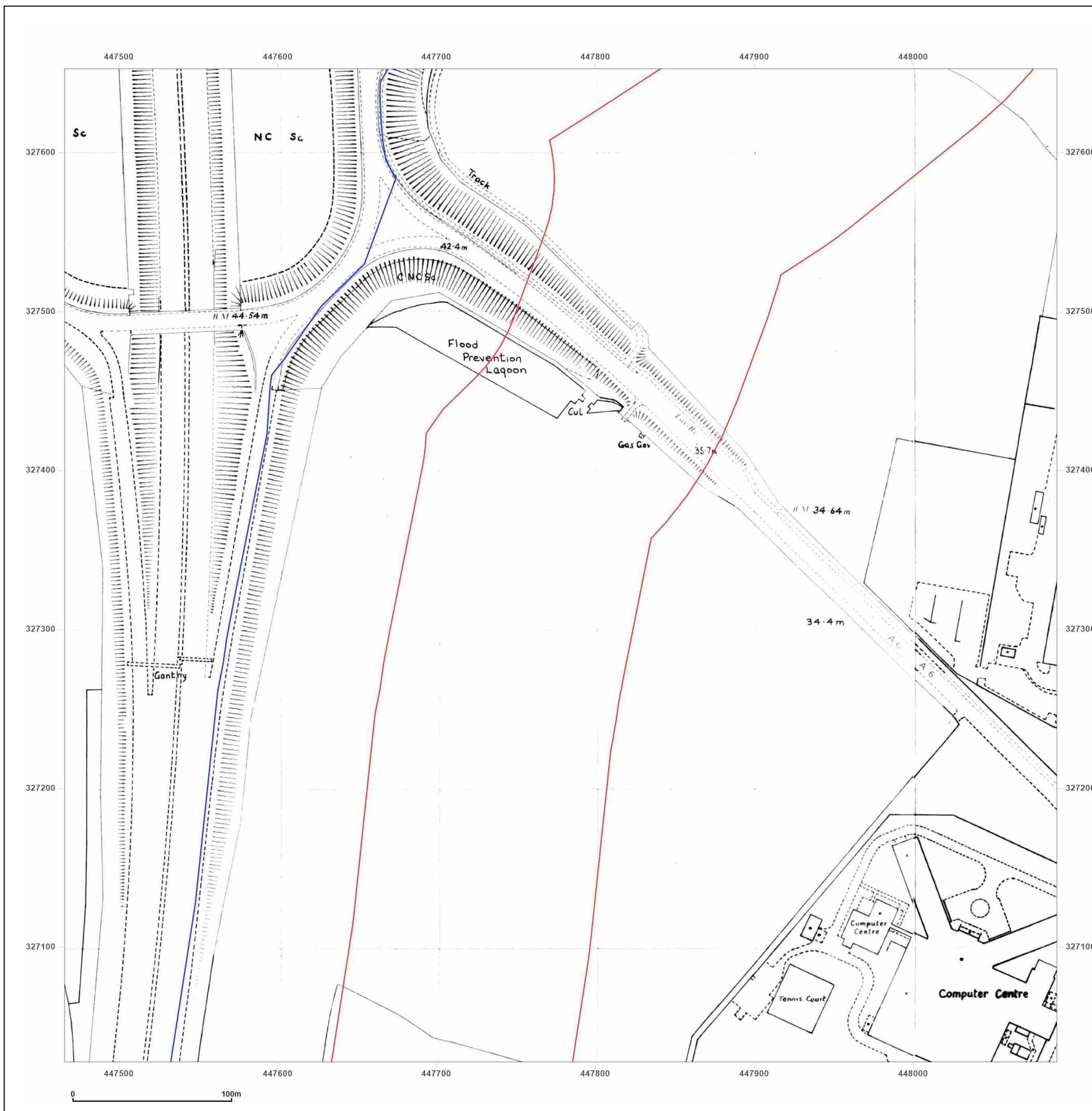


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

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**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



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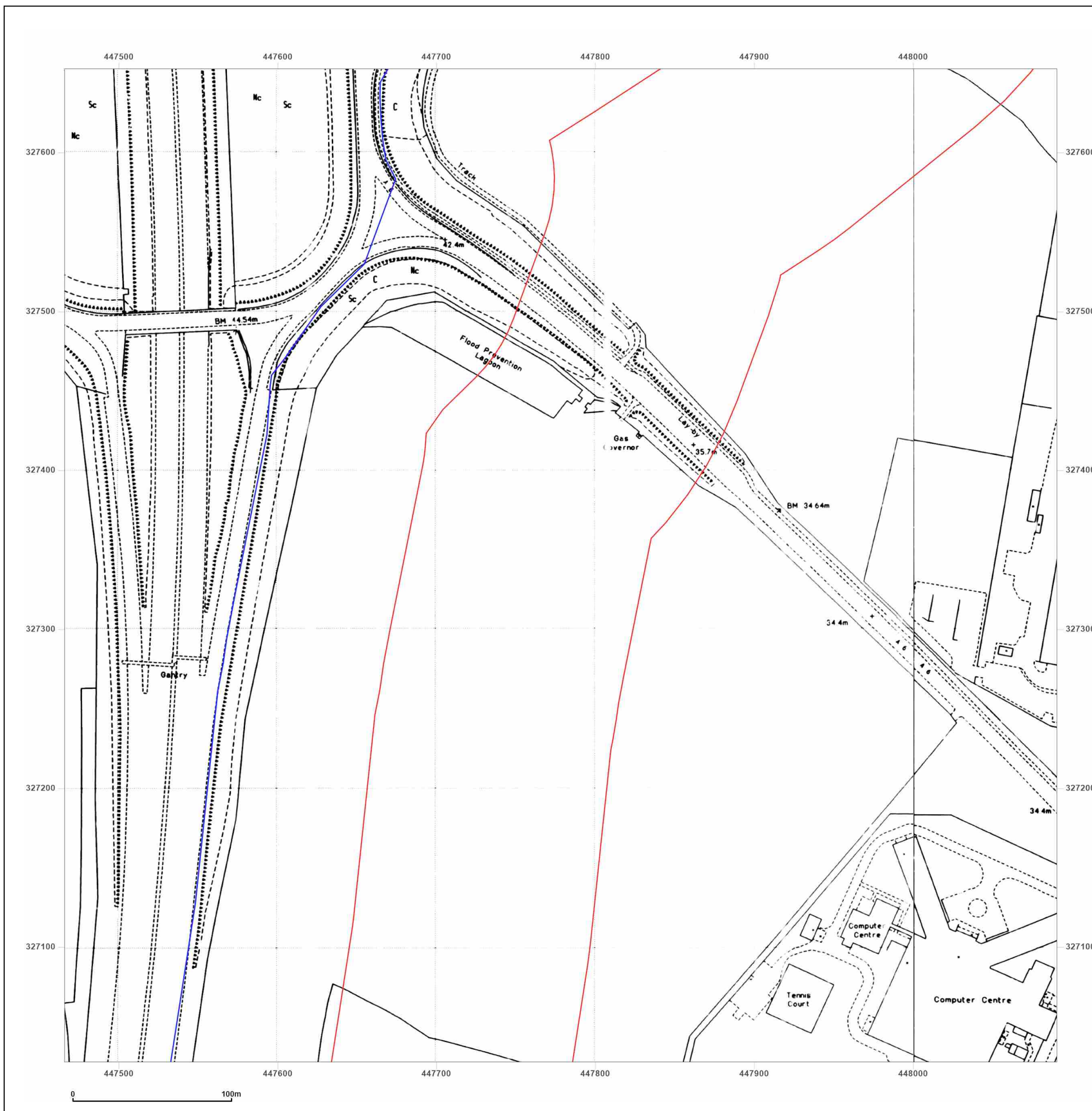


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_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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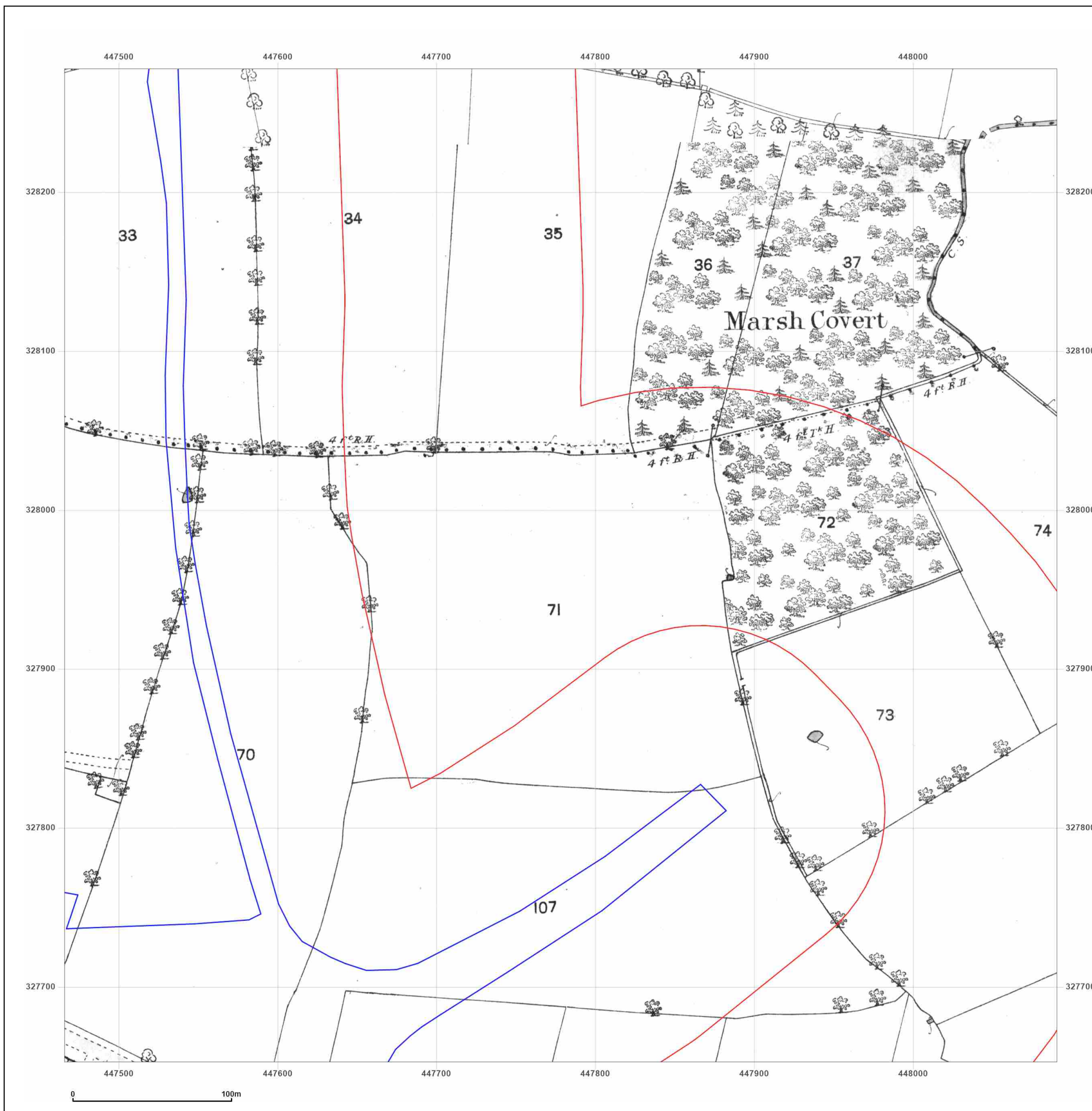


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_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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Revised 1900  
Edition N/A  
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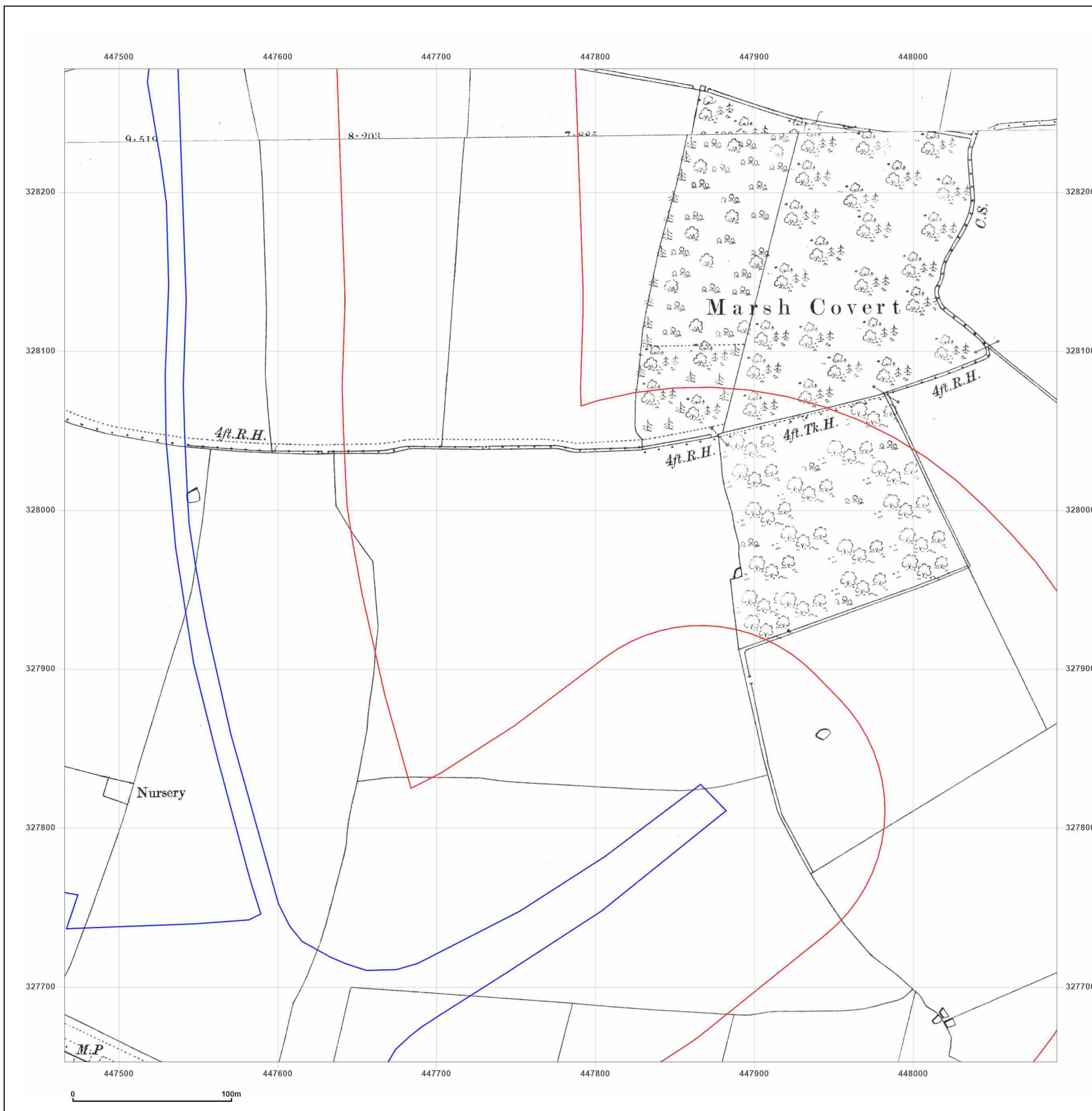


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#### Site Details:

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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_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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Edition N/A  
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Revised 1900  
Edition N/A  
Copyright N/A  
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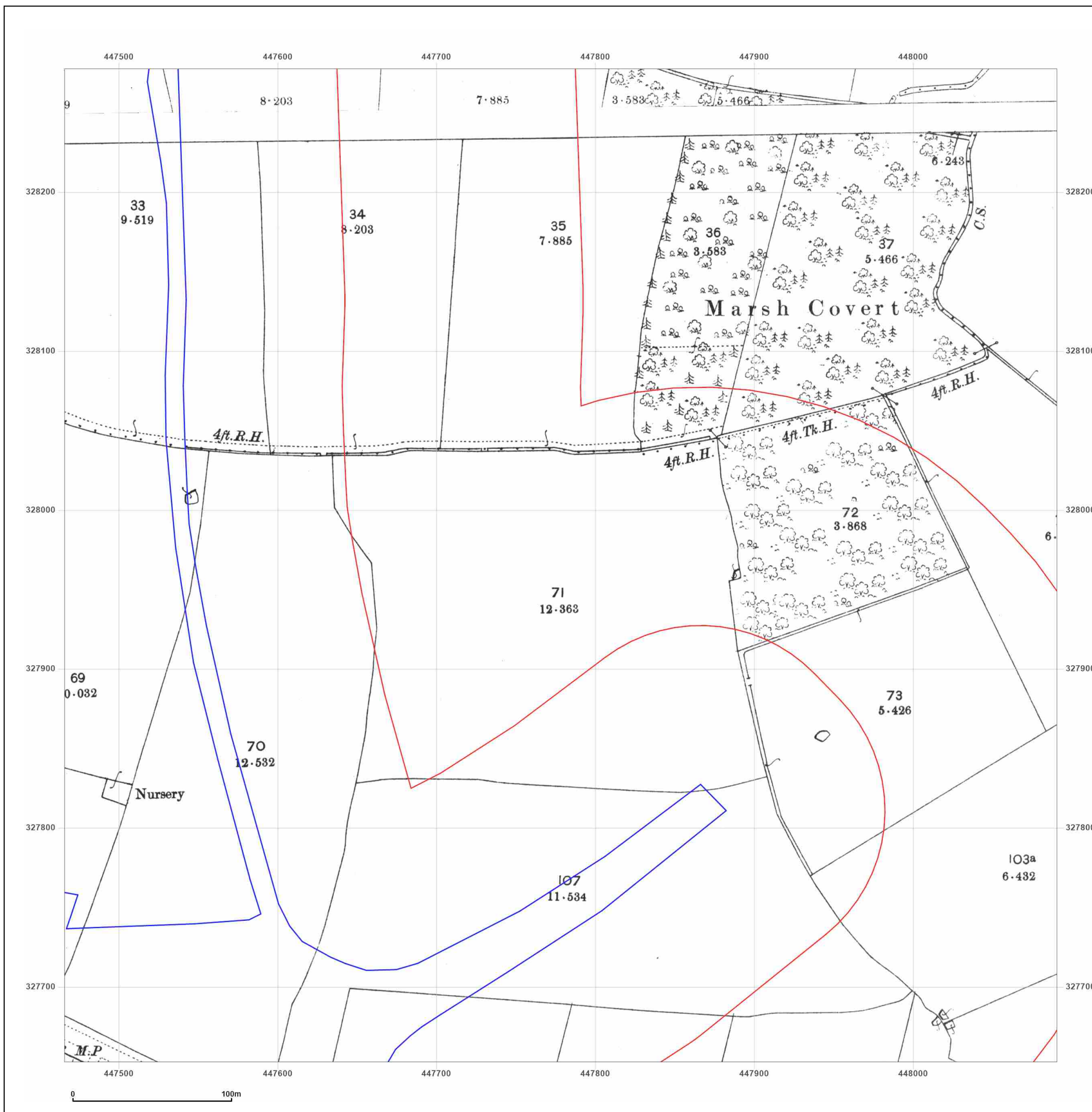


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#### Site Details:

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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_5  
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**Map Name:** County Series

**Map date:** 1921

**Scale:** 1:2,500

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



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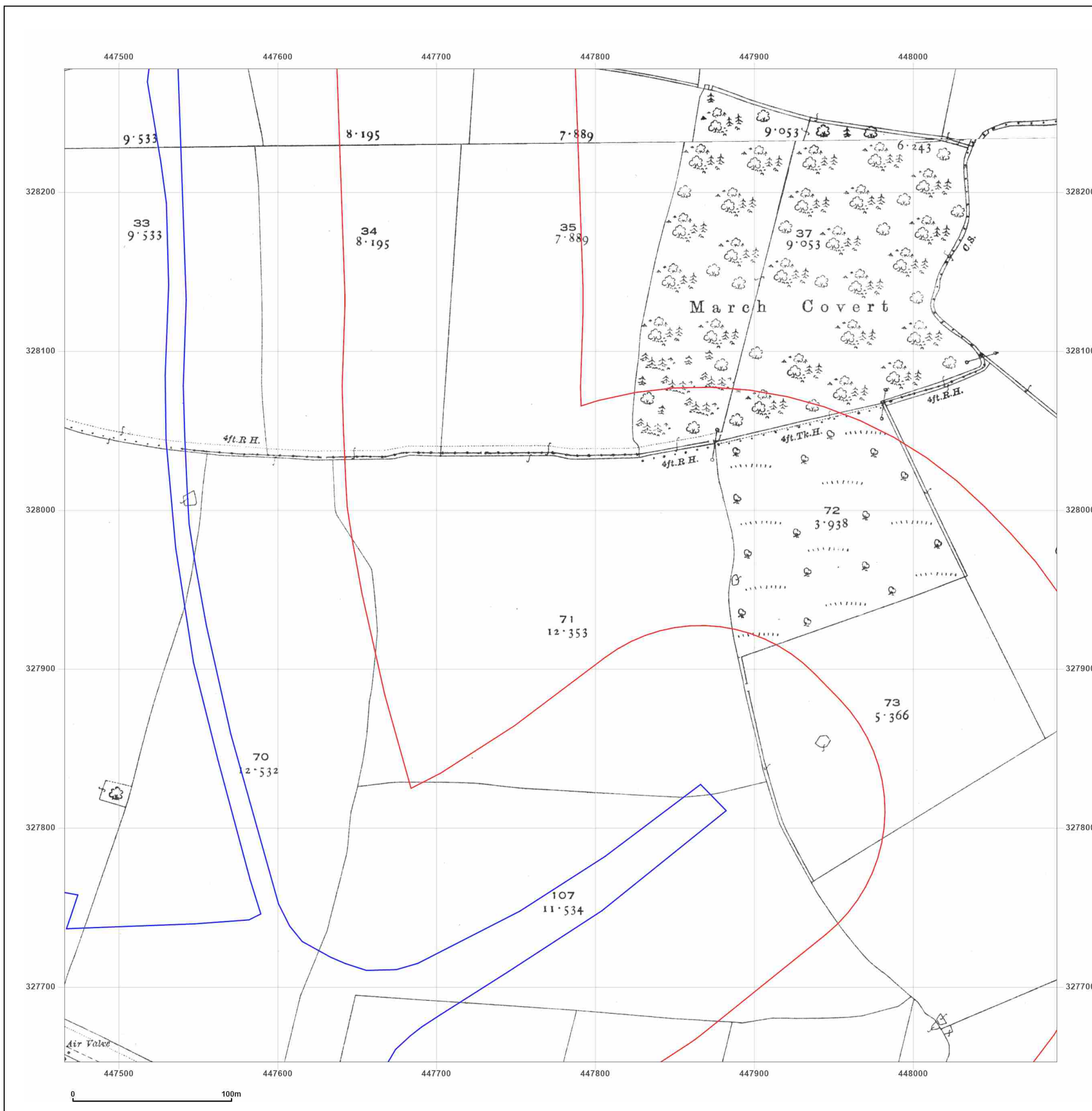


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_5  
**Grid Ref:** 447778, 327965

**Map Name:** National Grid

**Map date:** 1962-1963

**Scale:** 1:2,500

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



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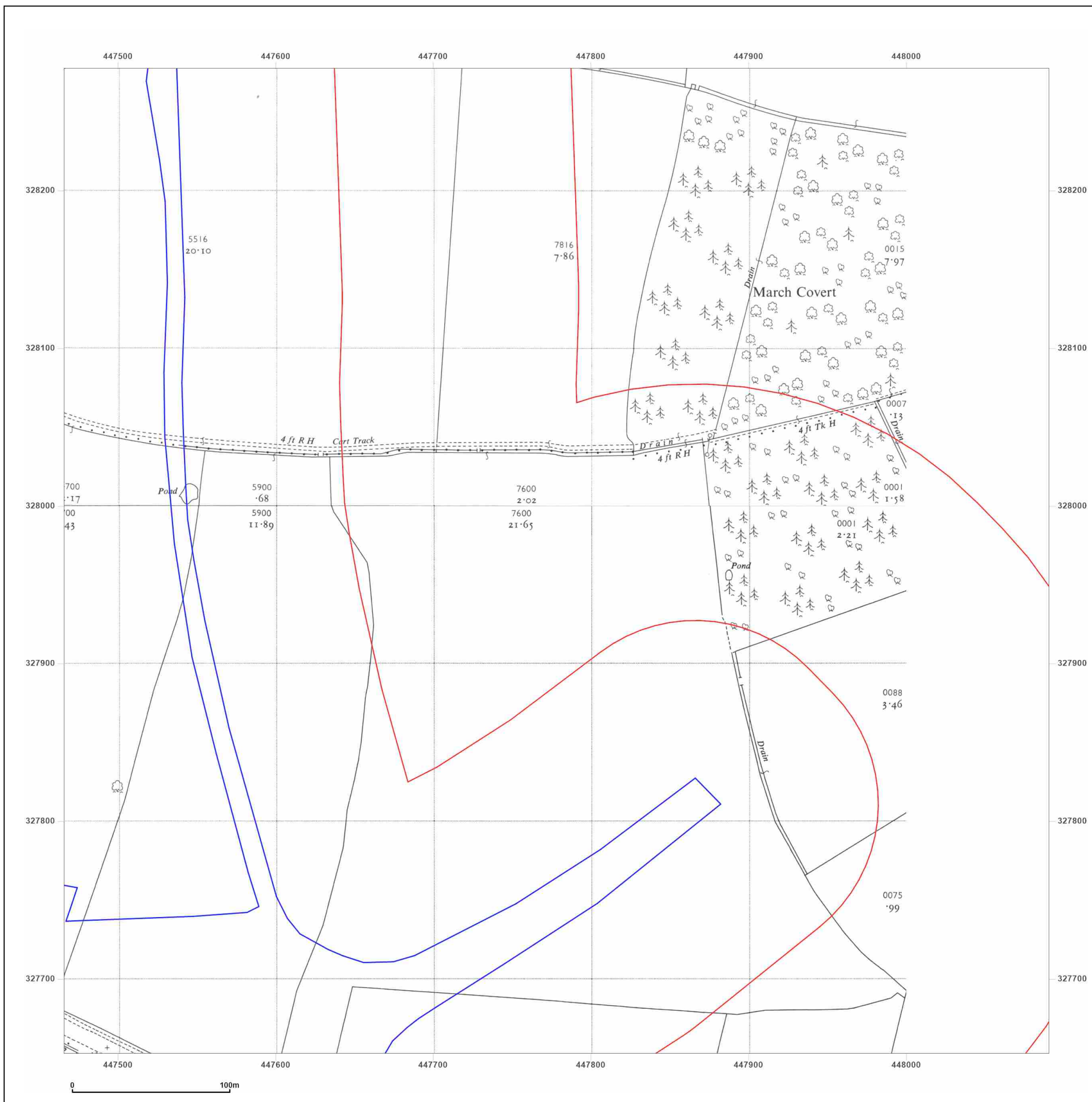


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_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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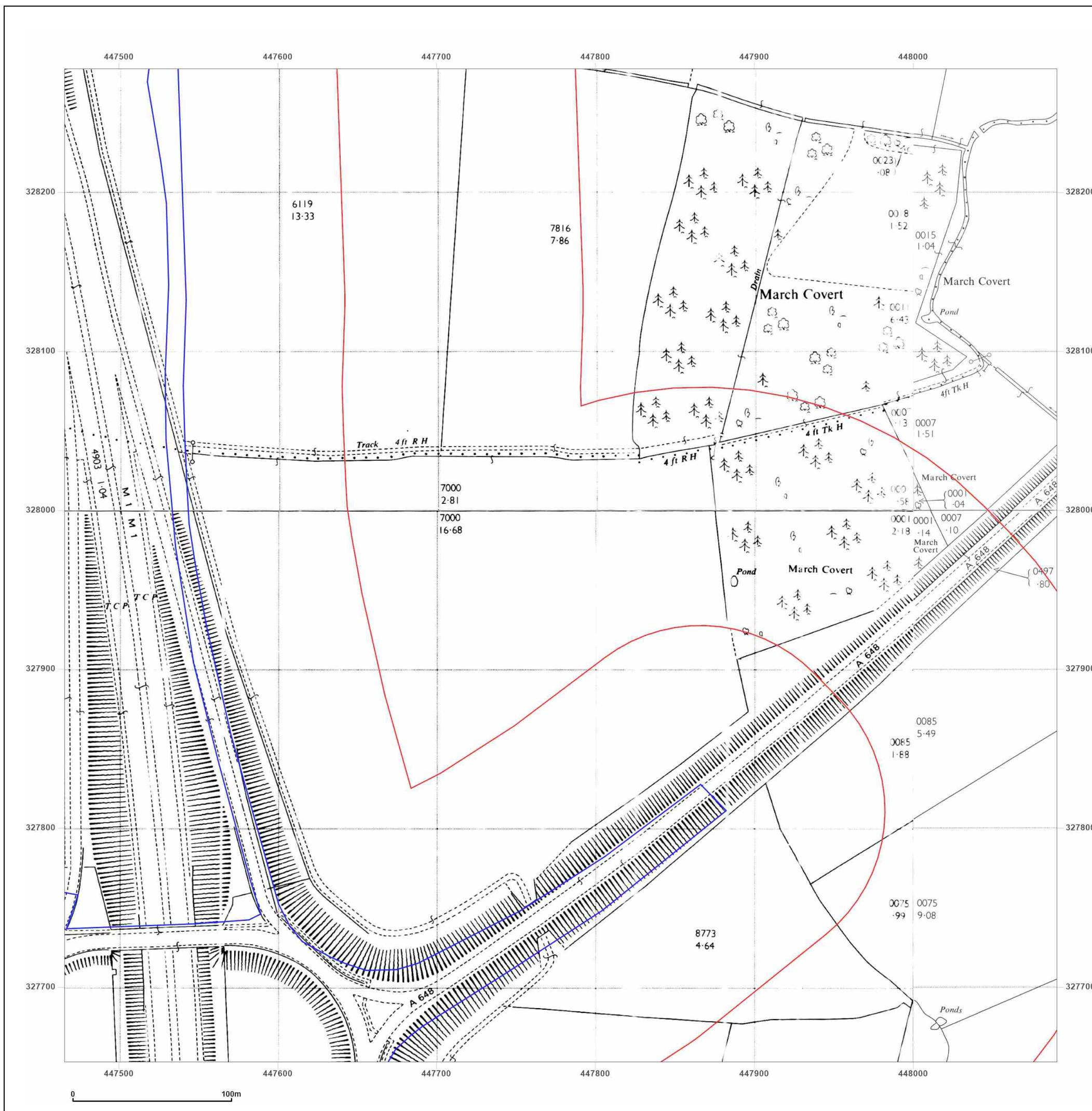


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#### Site Details:

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M1 (NH Land)

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**Grid Ref:** 447778, 327965

**Map Name:** National Grid

**Map date:** 1967-1970

**Scale:** 1:2,500

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Revised N/A  
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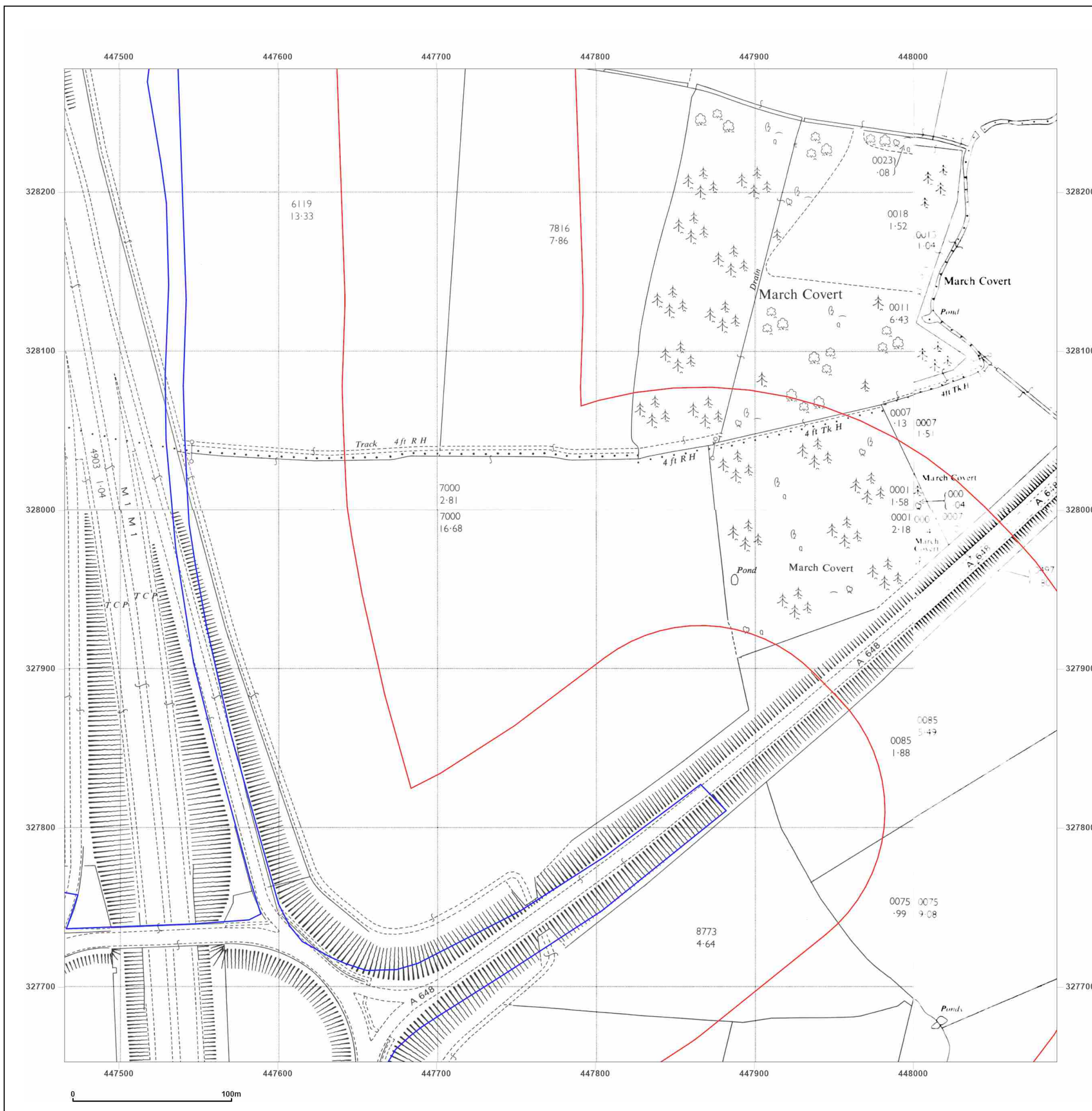


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

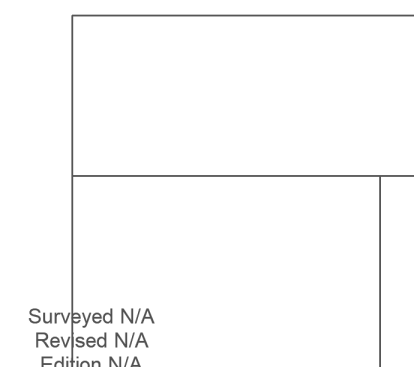
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**Map Name:** National Grid

**Map date:** 1982

**Scale:** 1:2,500

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



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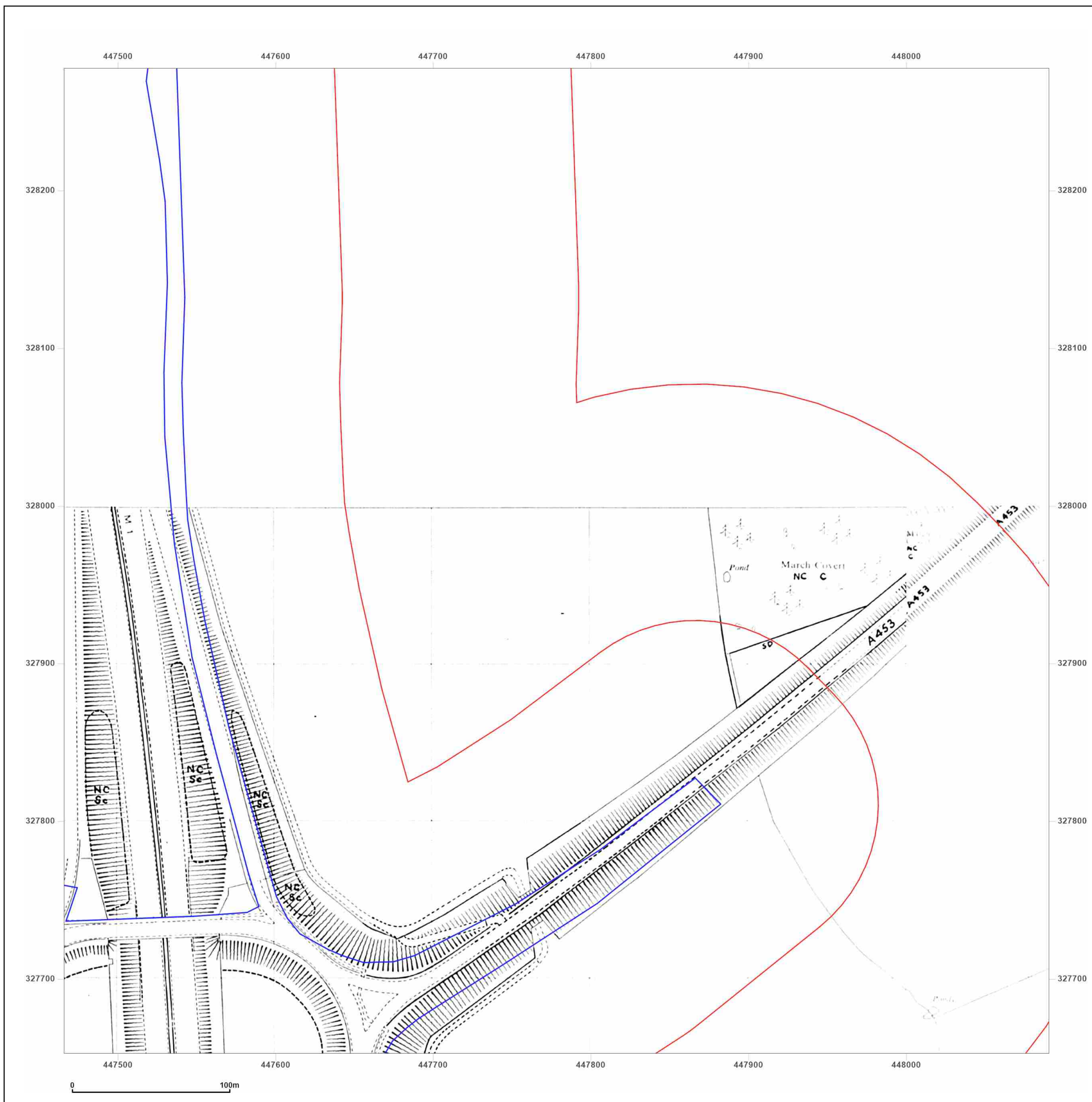


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_5  
**Grid Ref:** 447778, 327965

**Map Name:** National Grid

**Map date:** 1986-1991

**Scale:** 1:2,500

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



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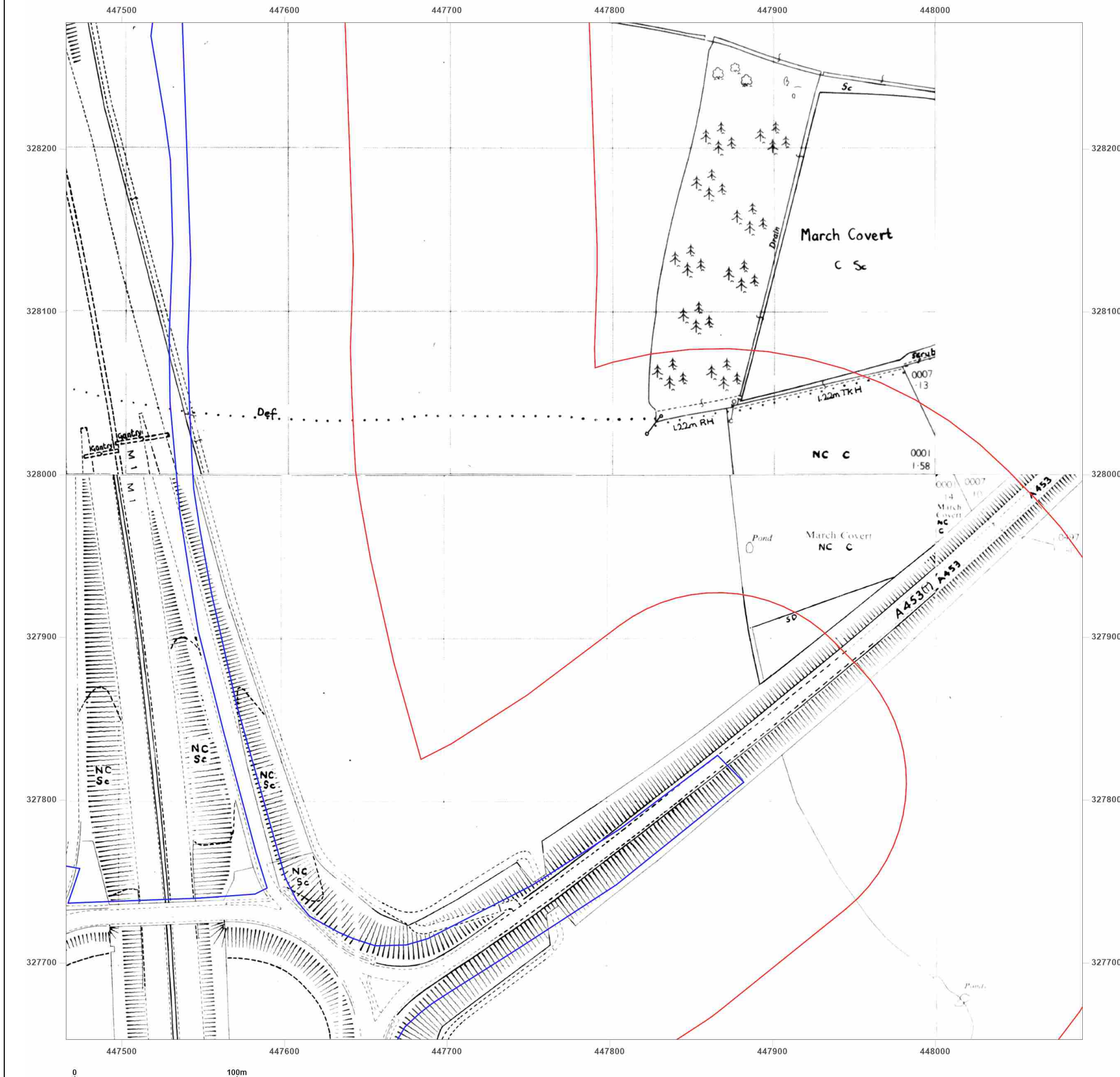


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

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**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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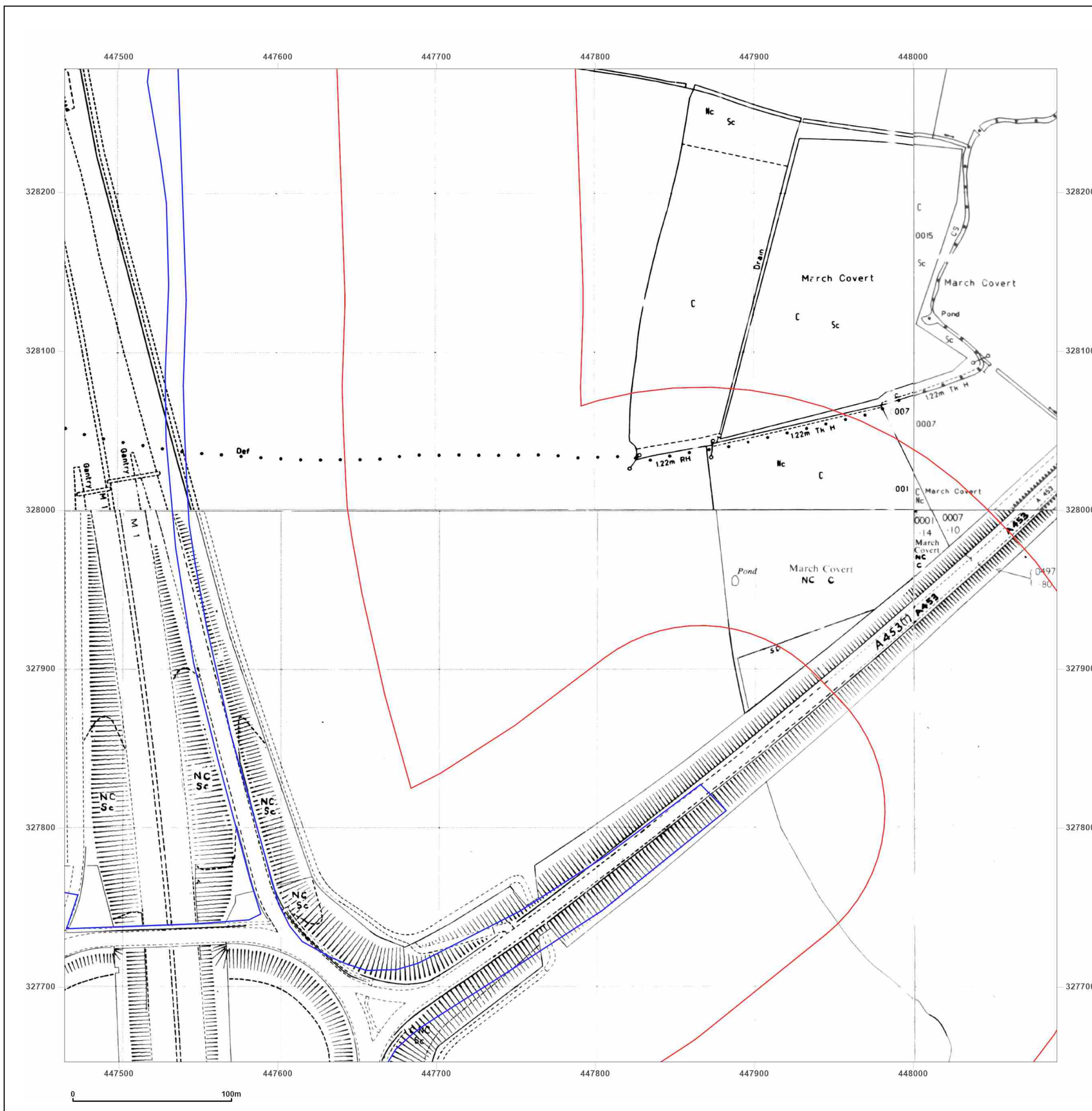


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

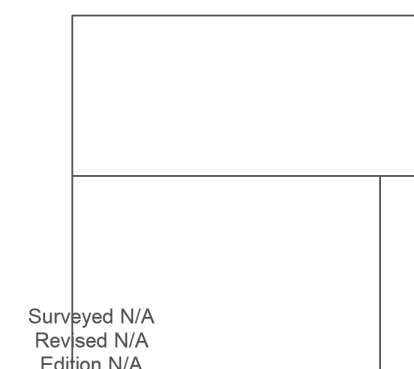
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**Map Name:** National Grid

**Map date:** 1993

**Scale:** 1:2,500

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



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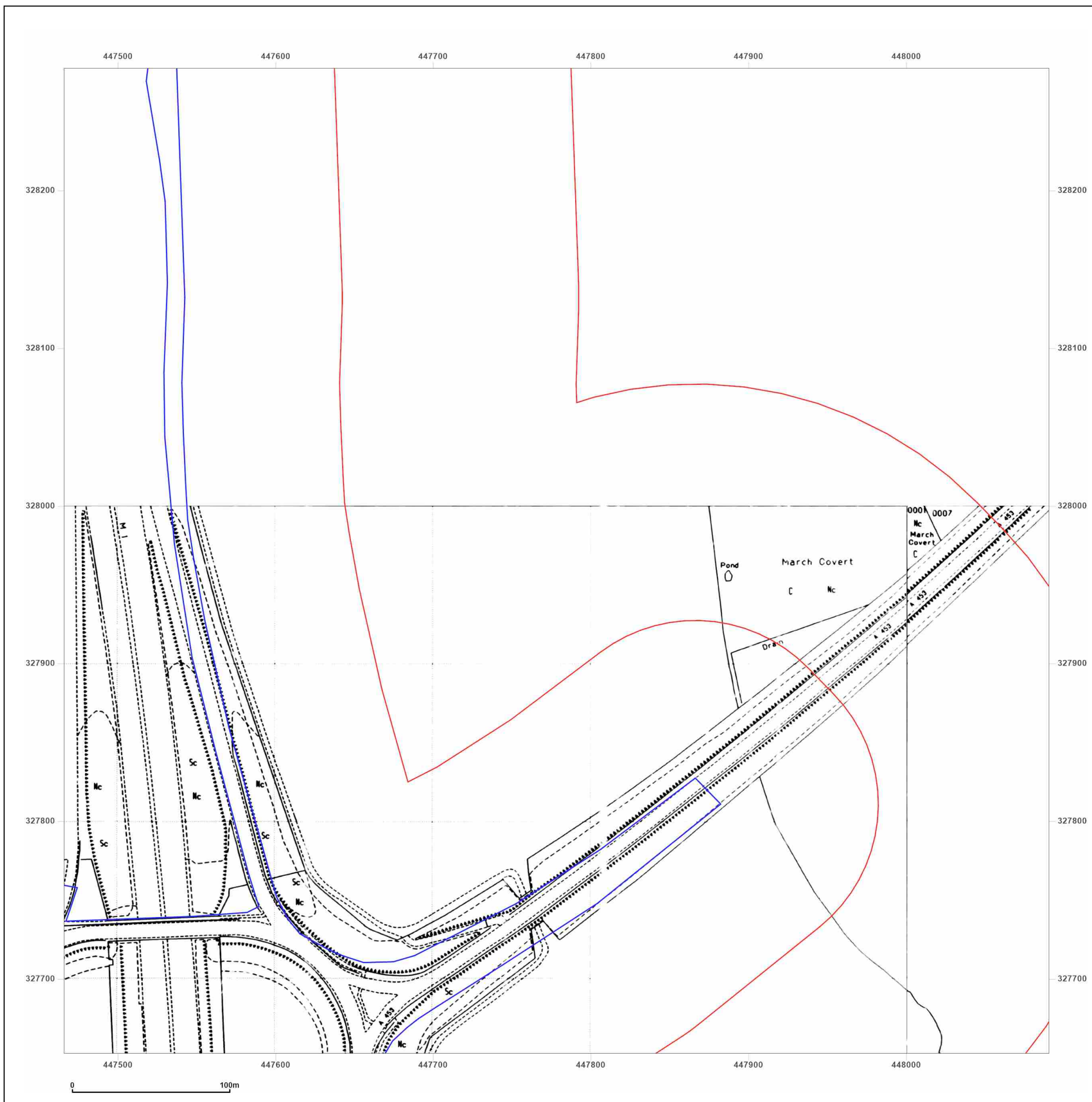


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#### Site Details:

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



Surveyed 1885  
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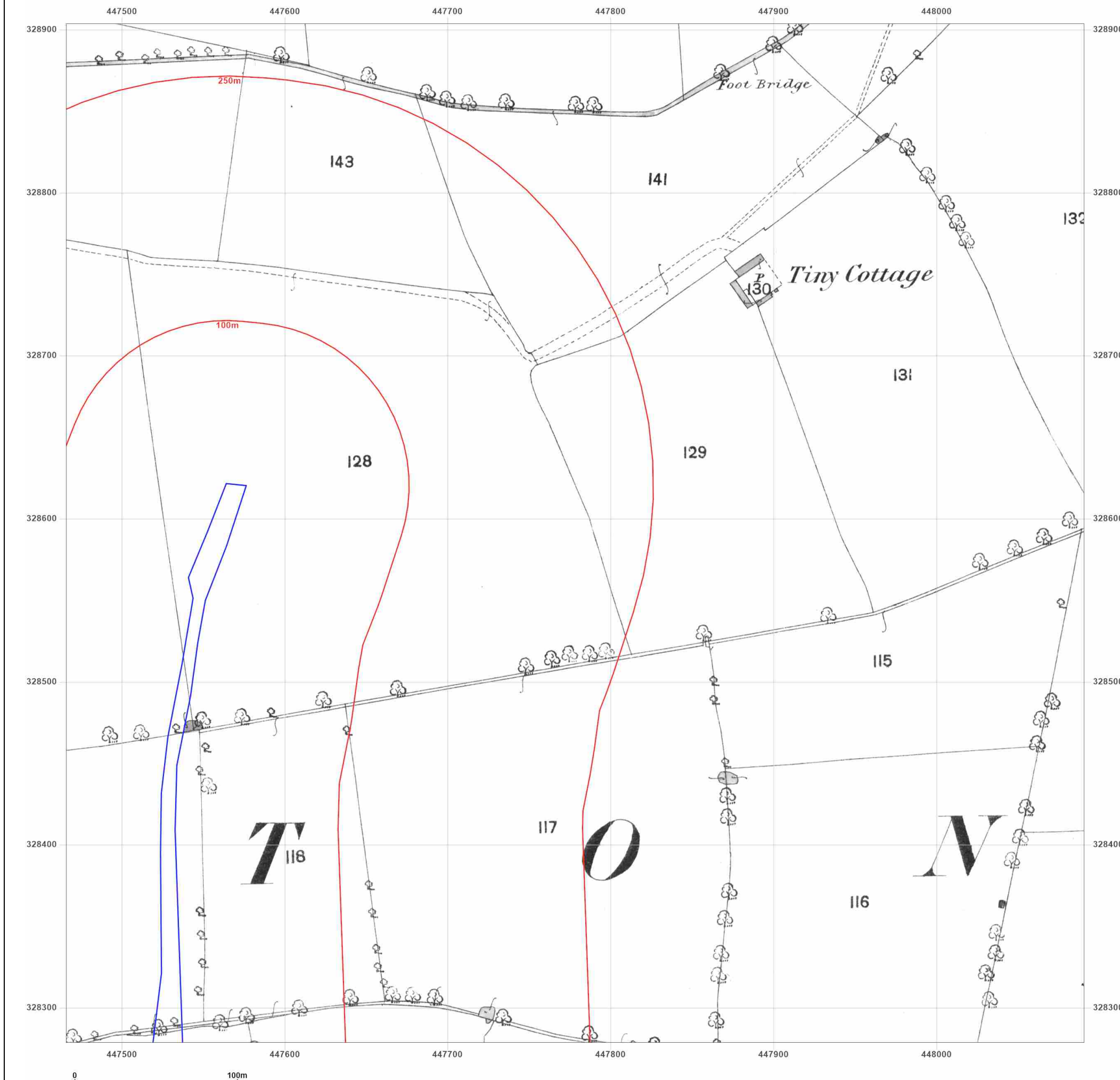


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#### Site Details:

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M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_6  
**Grid Ref:** 447778, 328591

**Map Name:** County Series

**Map date:** 1899

**Scale:** 1:2,500

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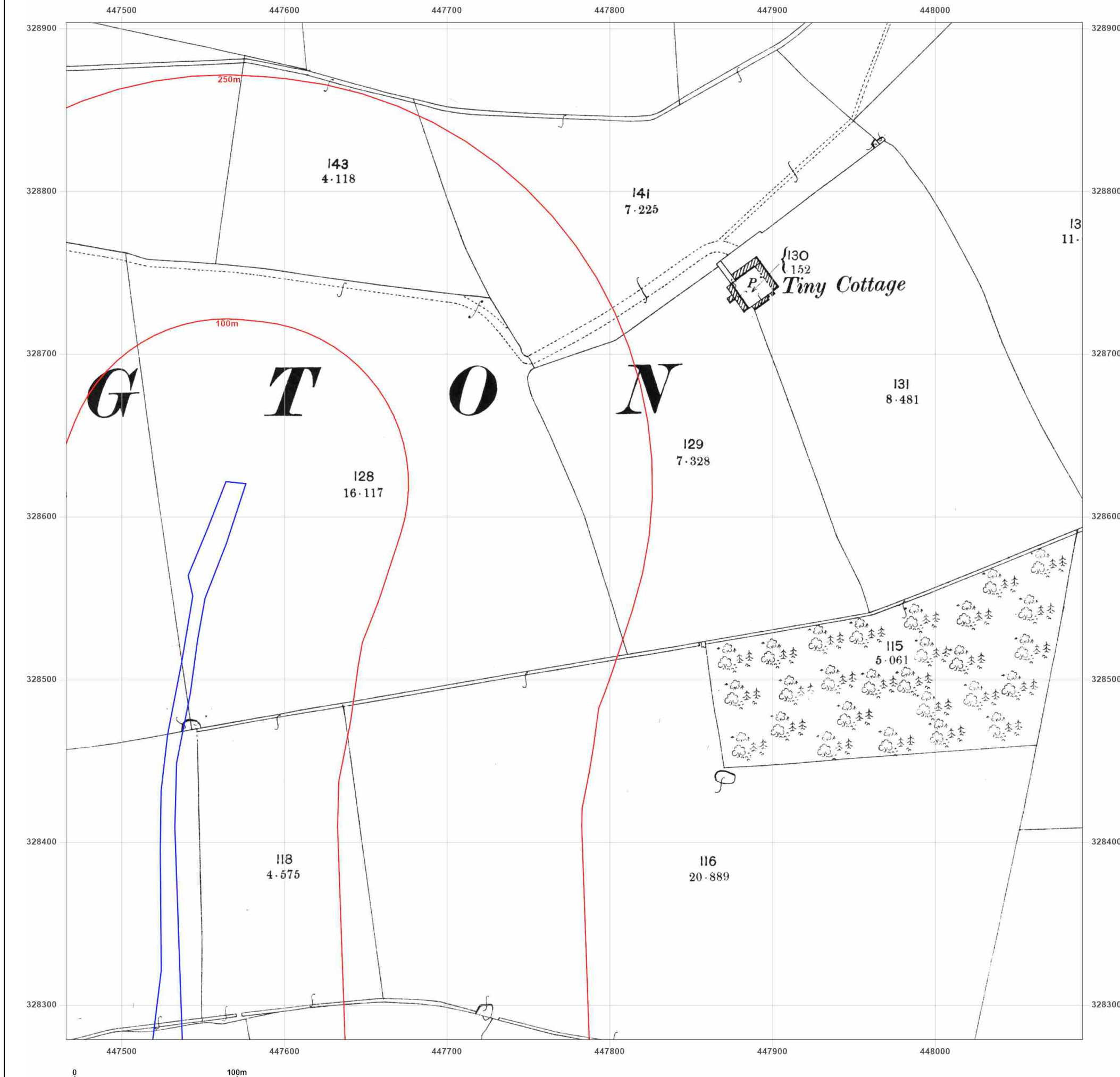


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

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**Map date:** 1900

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Edition N/A  
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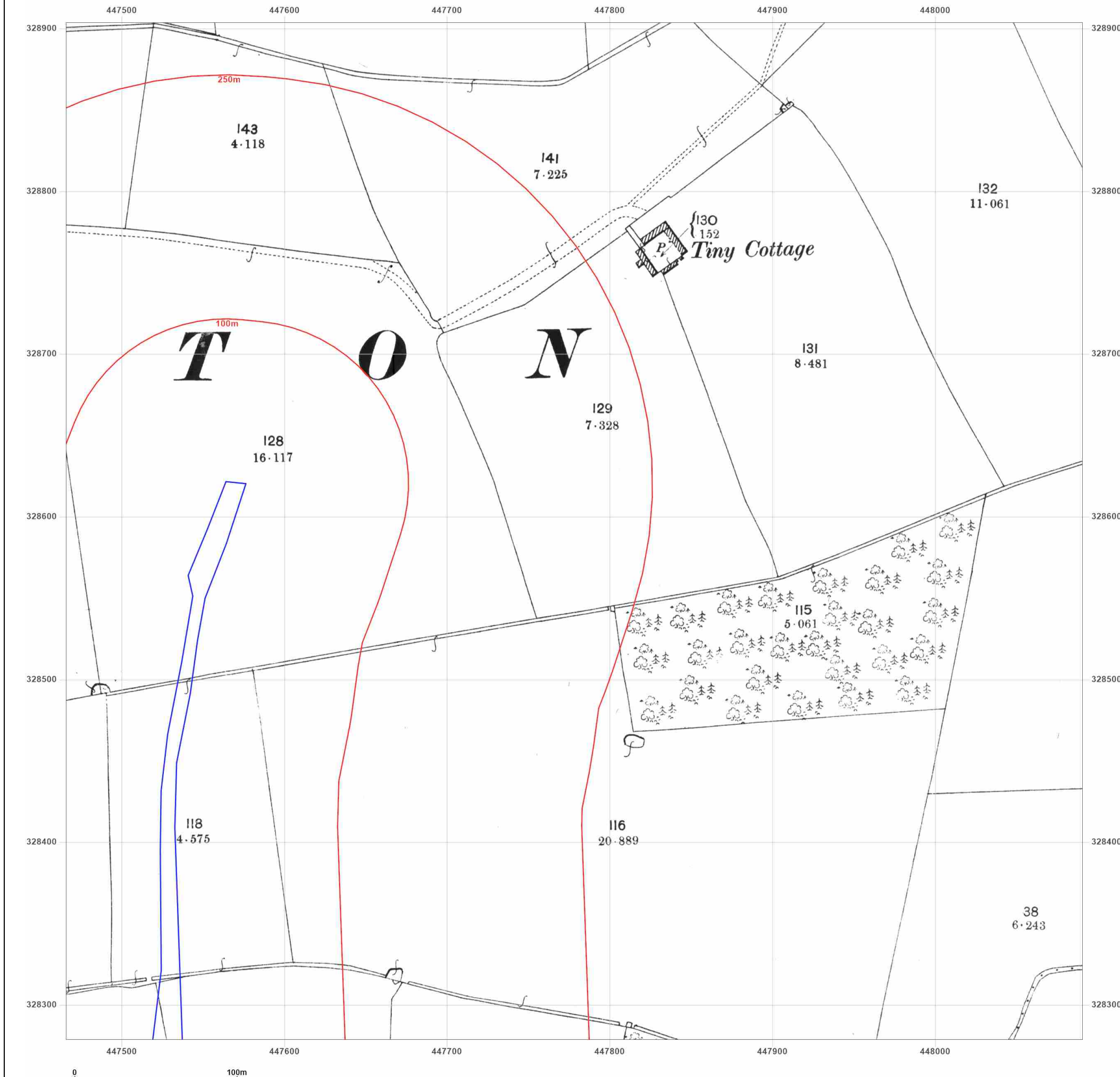


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_6  
**Grid Ref:** 447778, 328591

**Map Name:** County Series

**Map date:** 1900

**Scale:** 1:2,500

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



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

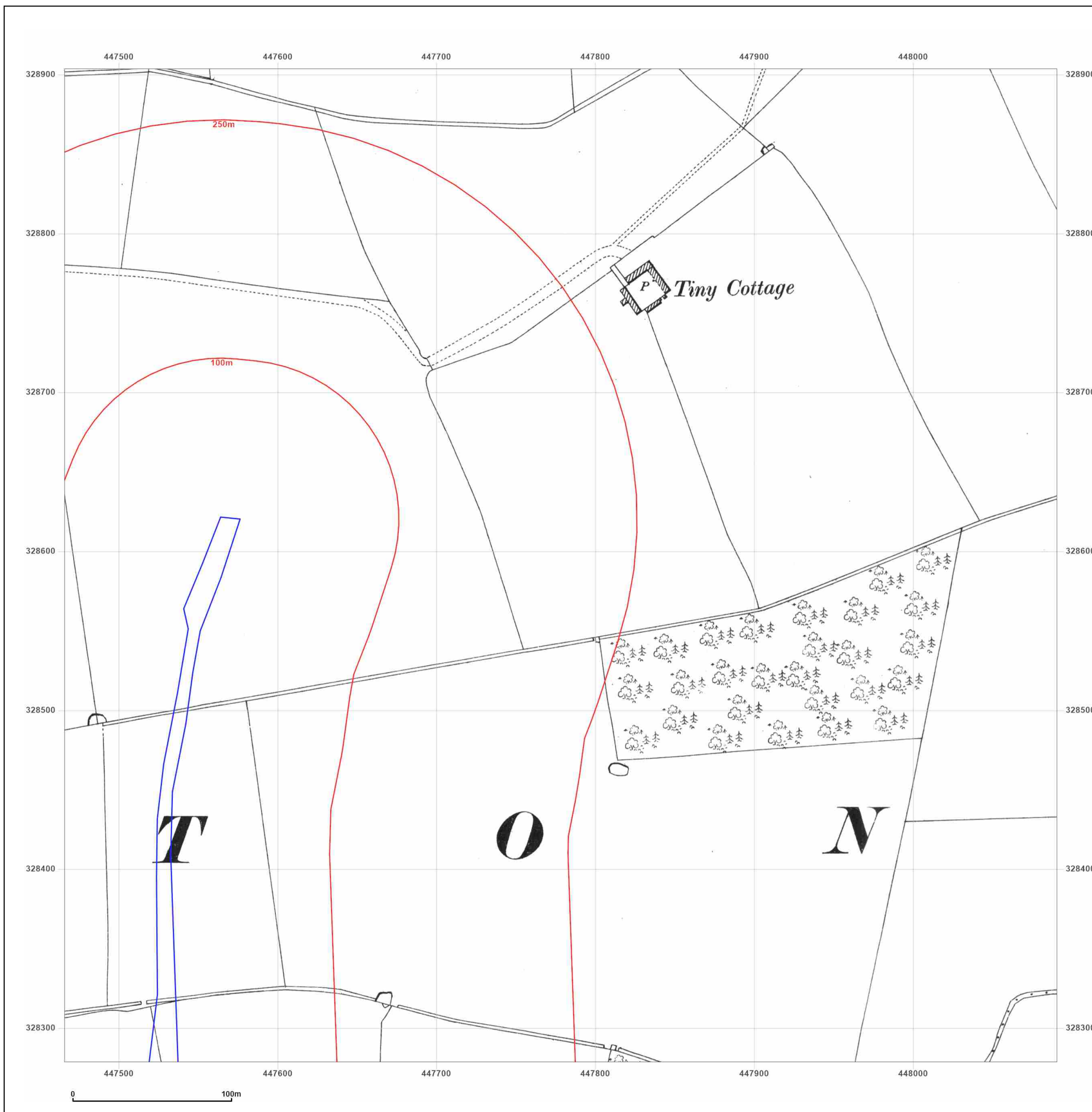


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#### Site Details:

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:** County Series

**Map date:** 1921

**Scale:** 1:2,500

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



Surveyed 1921  
Revised 1921  
Edition N/A  
Copyright N/A  
Levelled N/A

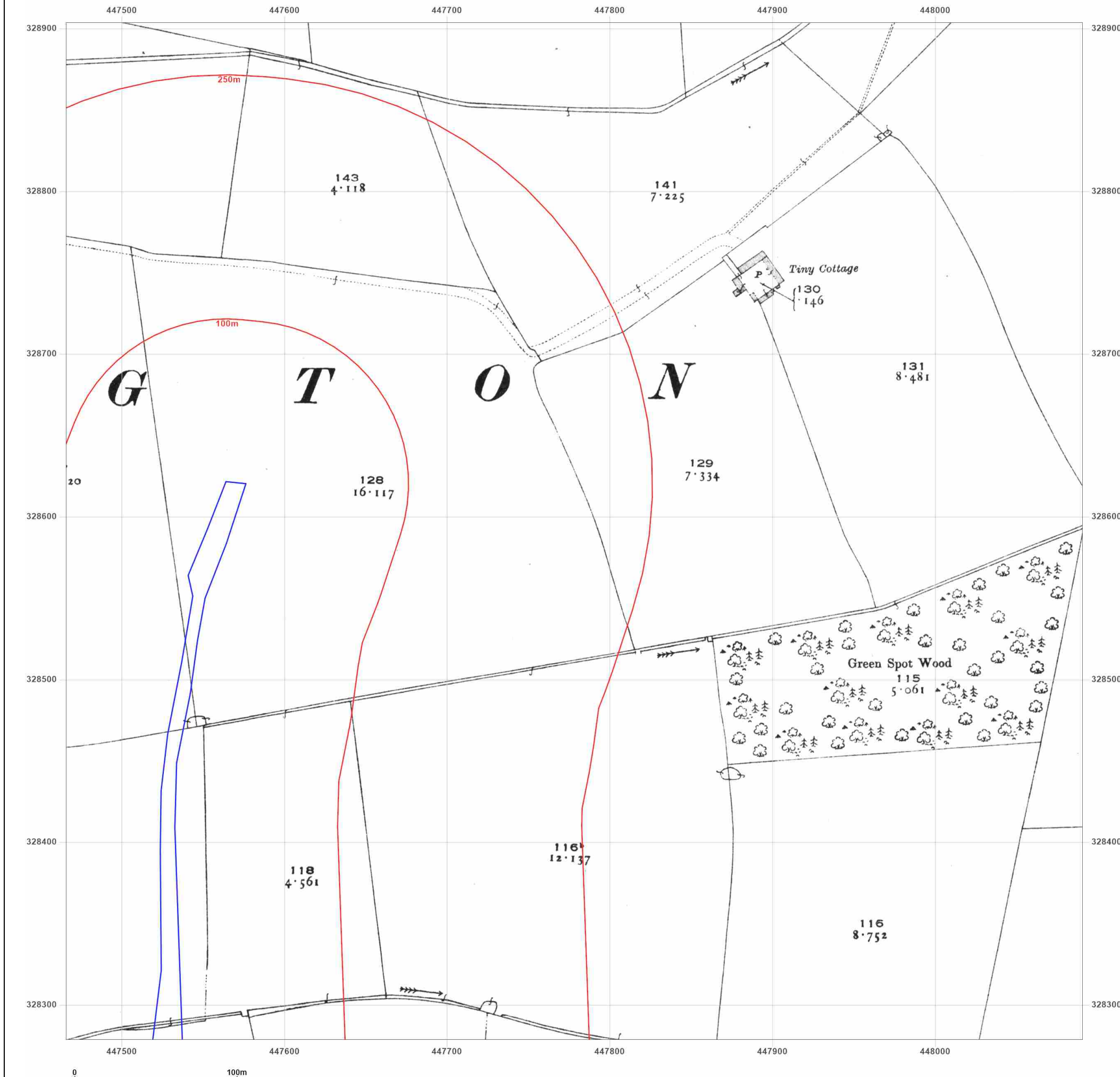


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_6  
**Grid Ref:** 447778, 328591

**Map Name:** National Grid

**Map date:** 1963

**Scale:** 1:2,500

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



Surveyed 1961  
Revised 1961  
Edition N/A  
Copyright 1963  
Levelled 1944

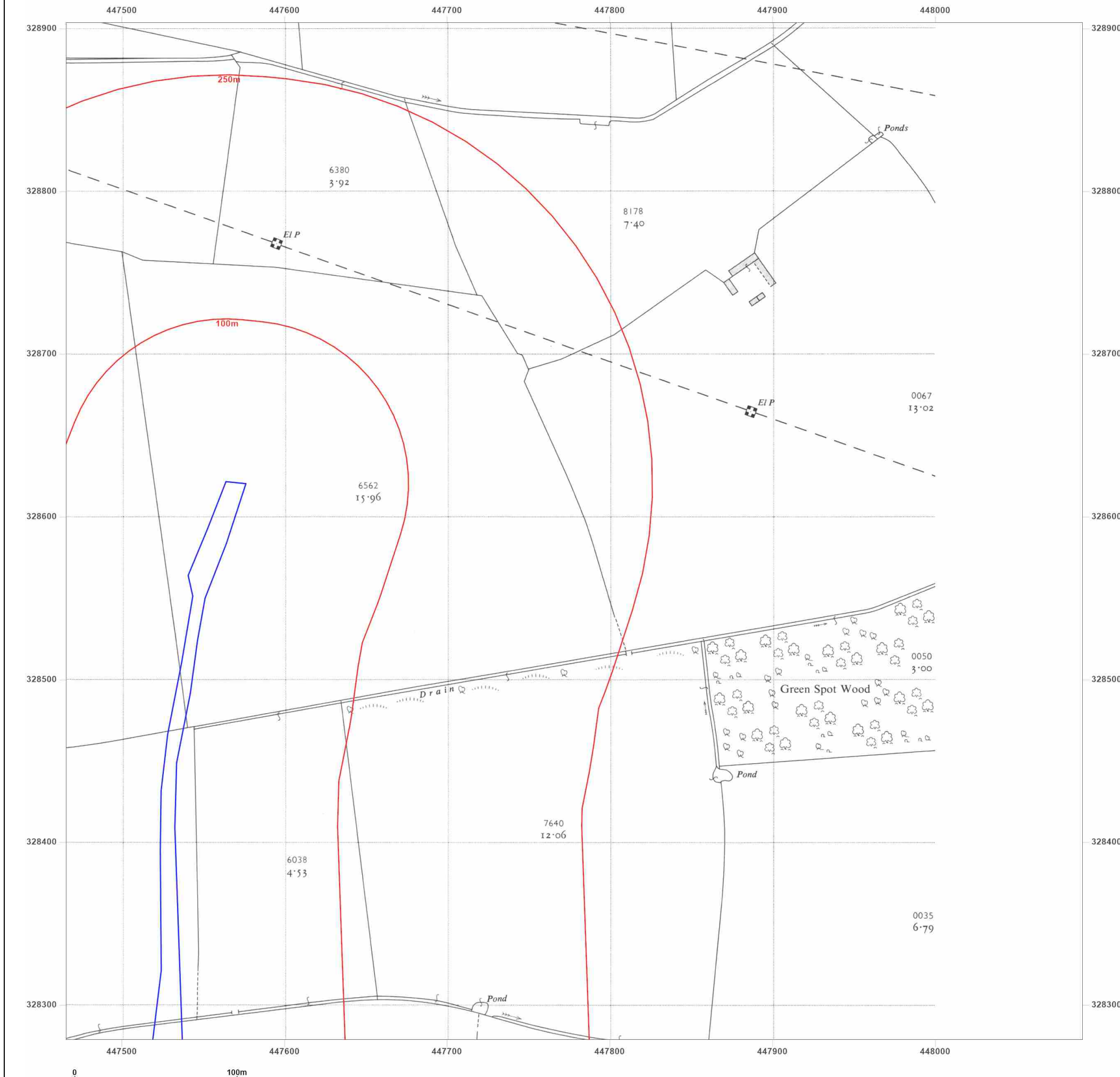


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_6  
**Grid Ref:** 447778, 328591

**Map Name:** National Grid

**Map date:** 1967-1970

**Scale:** 1:2,500

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



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

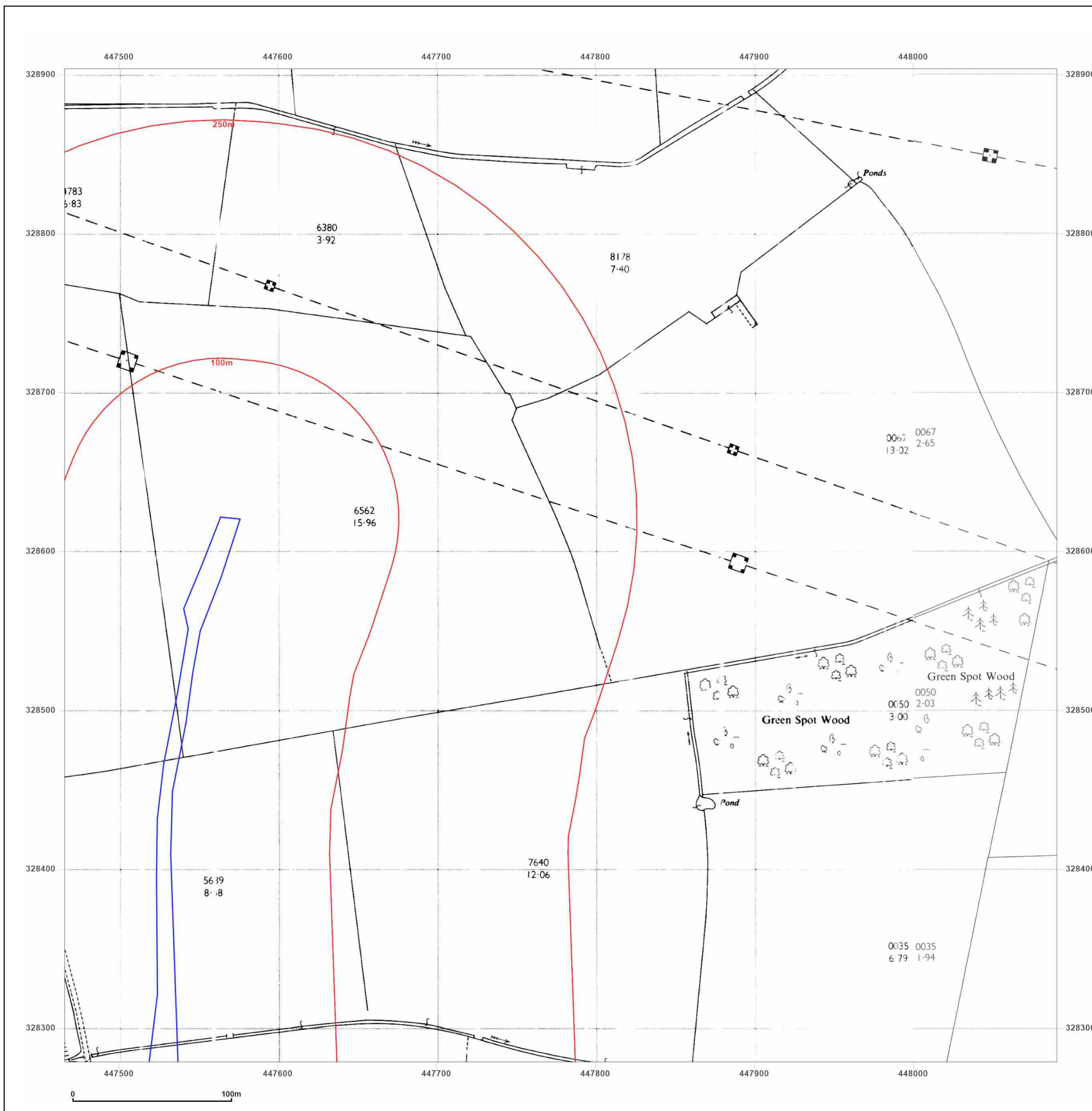


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#### Site Details:

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



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

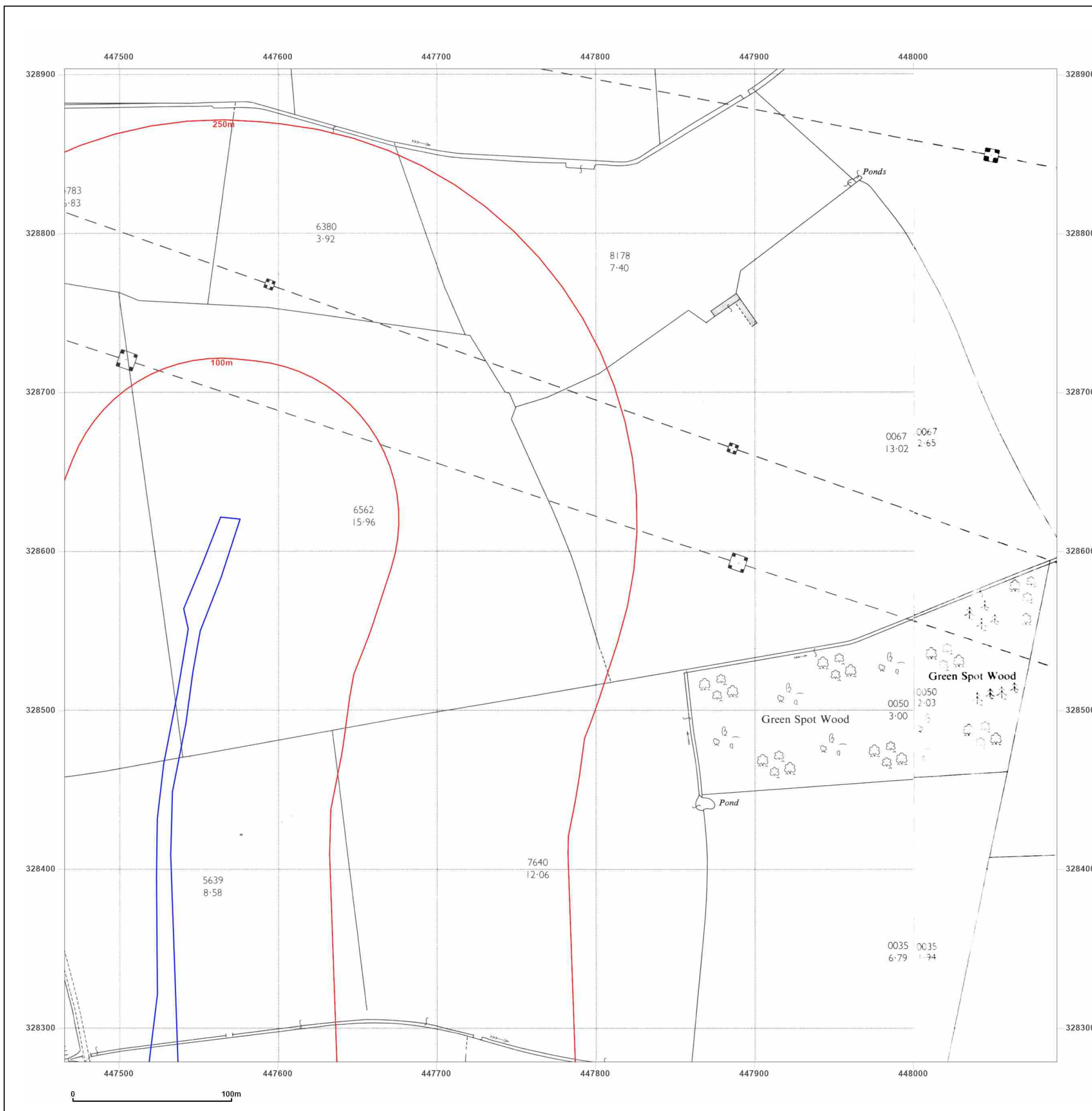


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

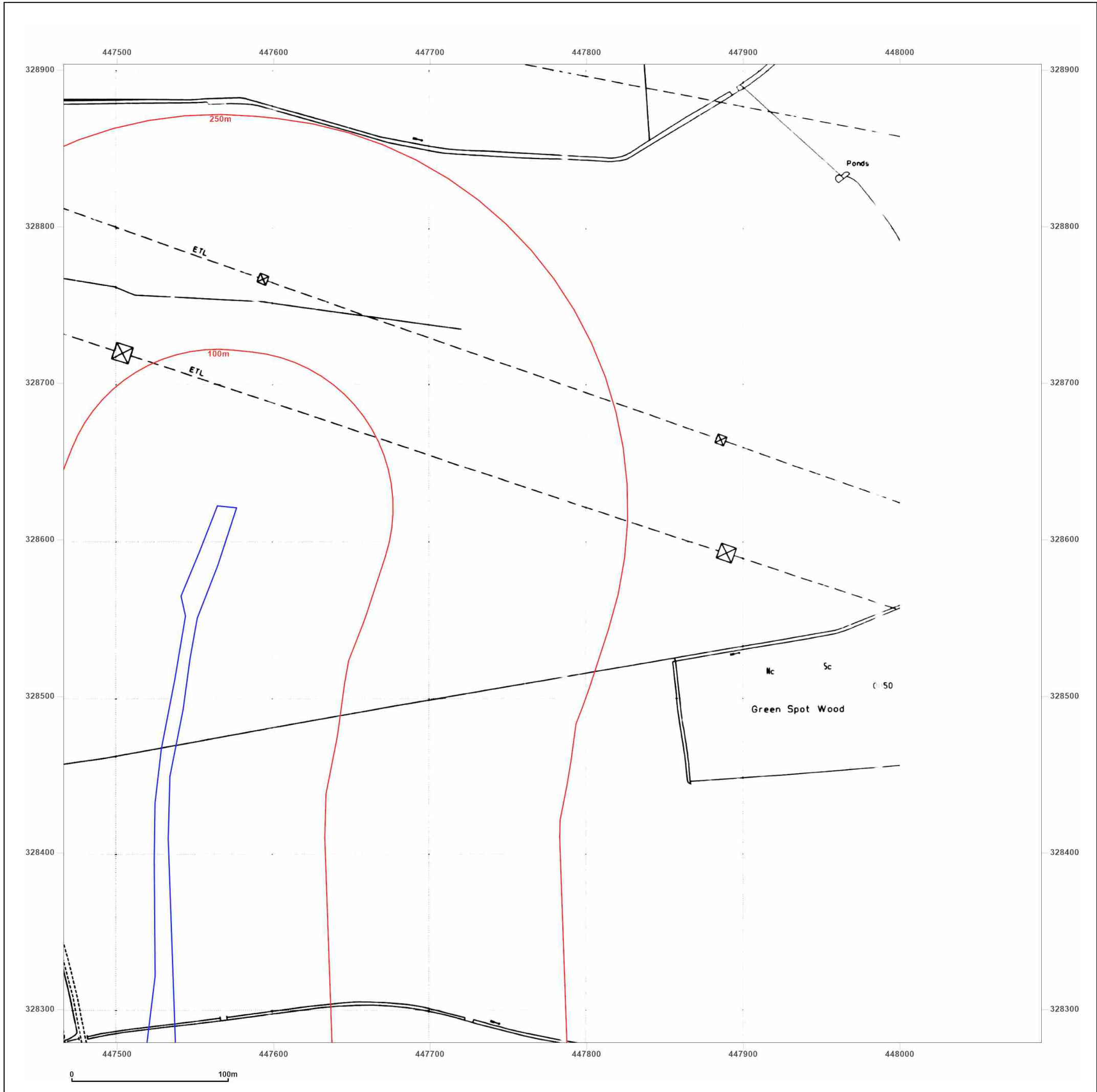
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**Report Ref:** GS-RVB-OMG-RQL-AYQ\_LS\_2\_6  
**Grid Ref:** 447778, 328591

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

N  
W E  
S

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\_6  
**Grid Ref:** 447778, 328591

**Map Name:** National Grid

**Map date:** 1991-1993

**Scale:** 1:2,500

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



Surveyed 1966  
Revised 1991  
Edition N/A  
Copyright 1991  
Levelled 1966

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

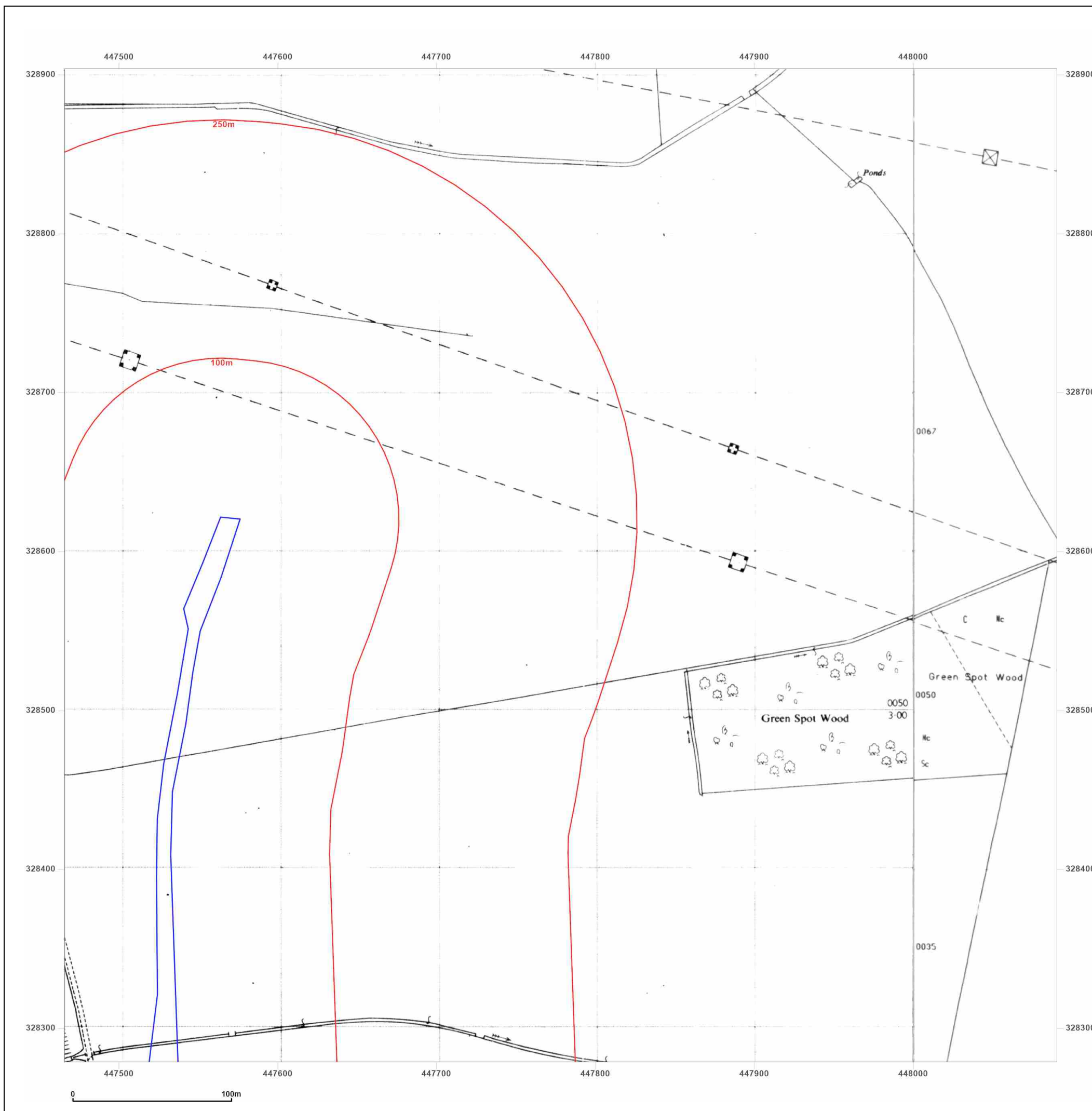


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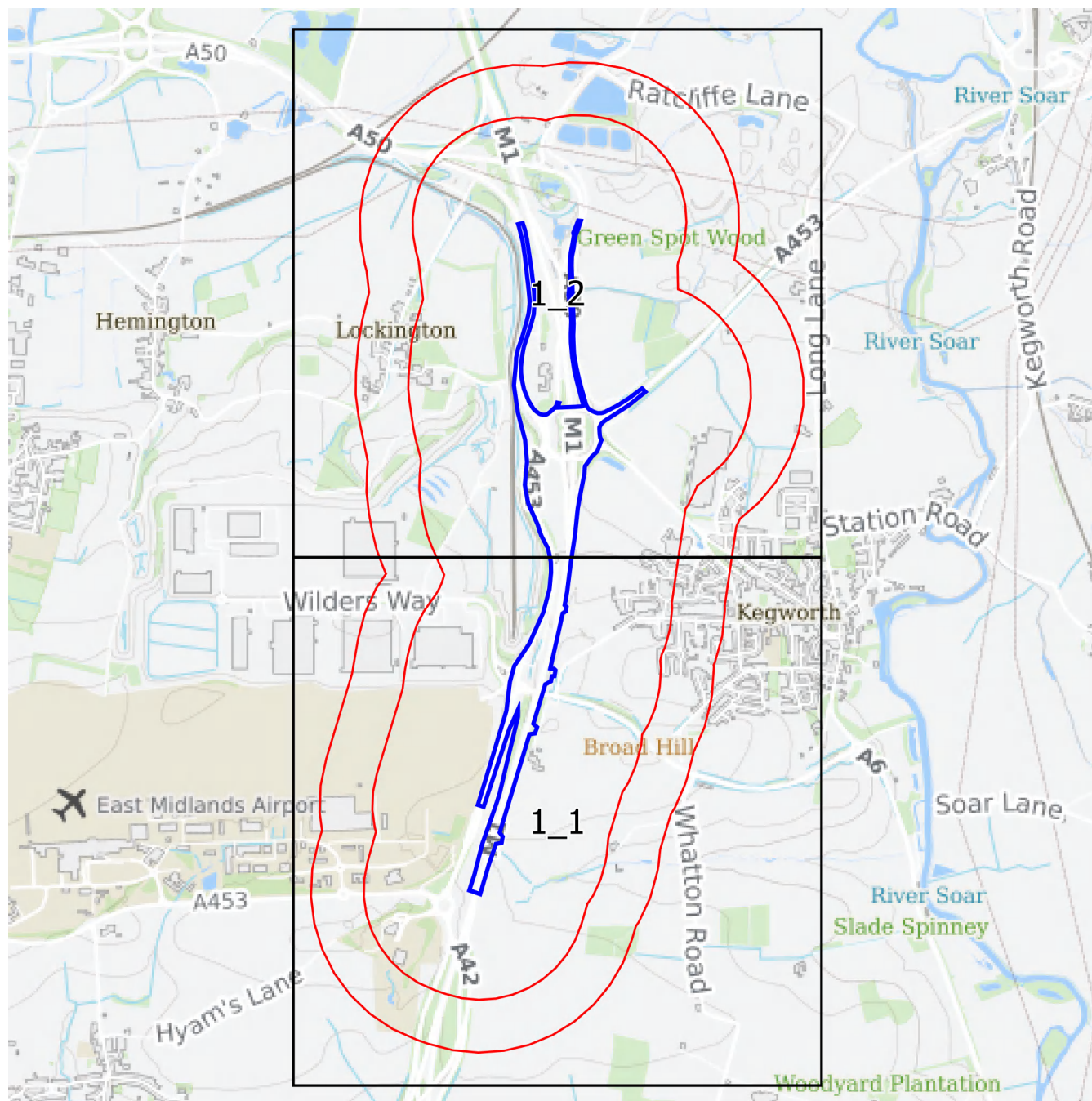
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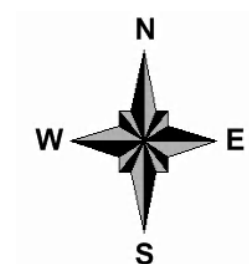






**Groundsure**  
INSIGHTS

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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:** 1883

**Scale:** 1:10,560

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



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

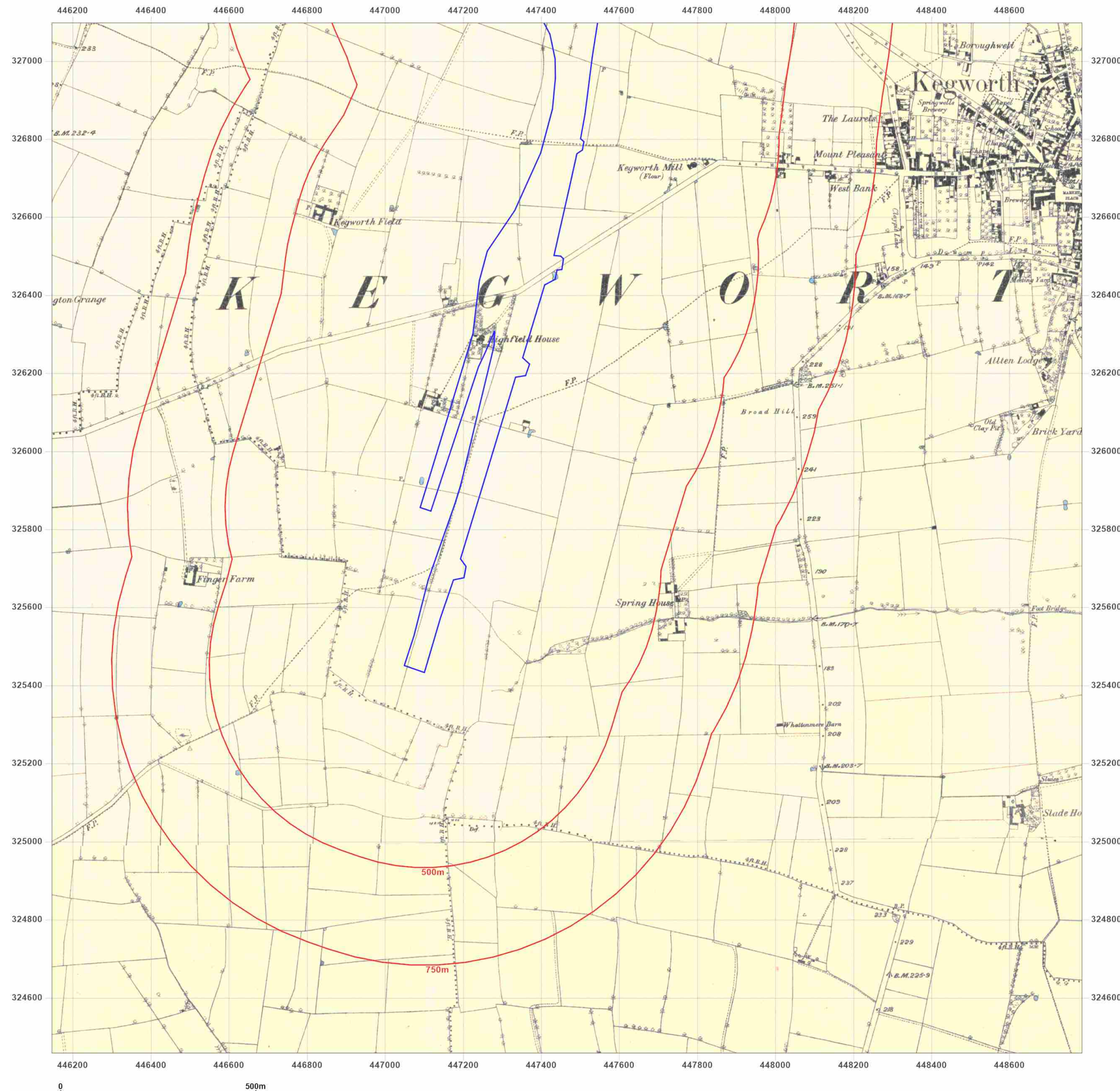


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**Site Details:**

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



Surveyed 1883  
Revised 1901  
Edition N/A  
Copyright N/A  
Levelled N/A

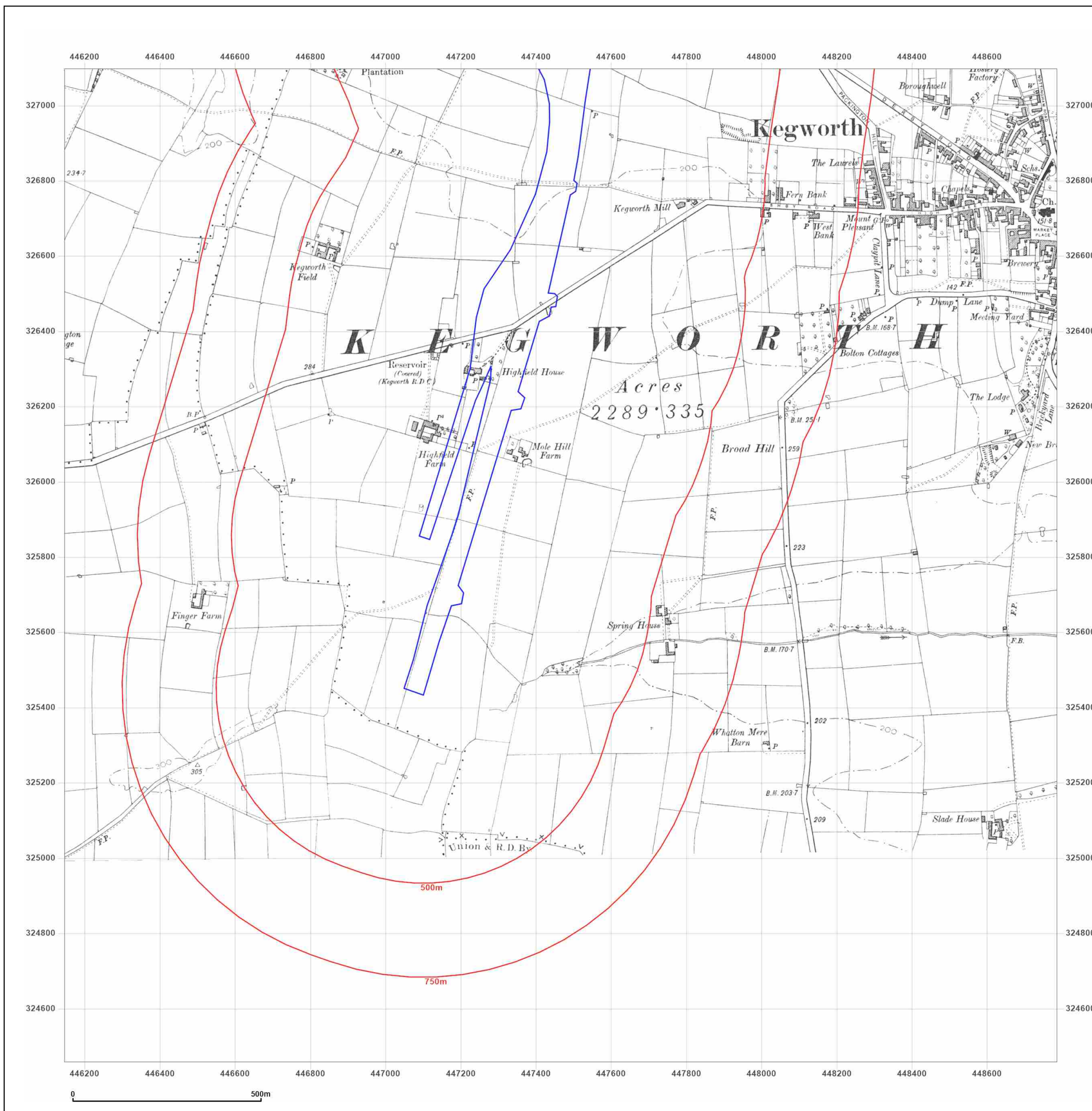


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**Site Details:**

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



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

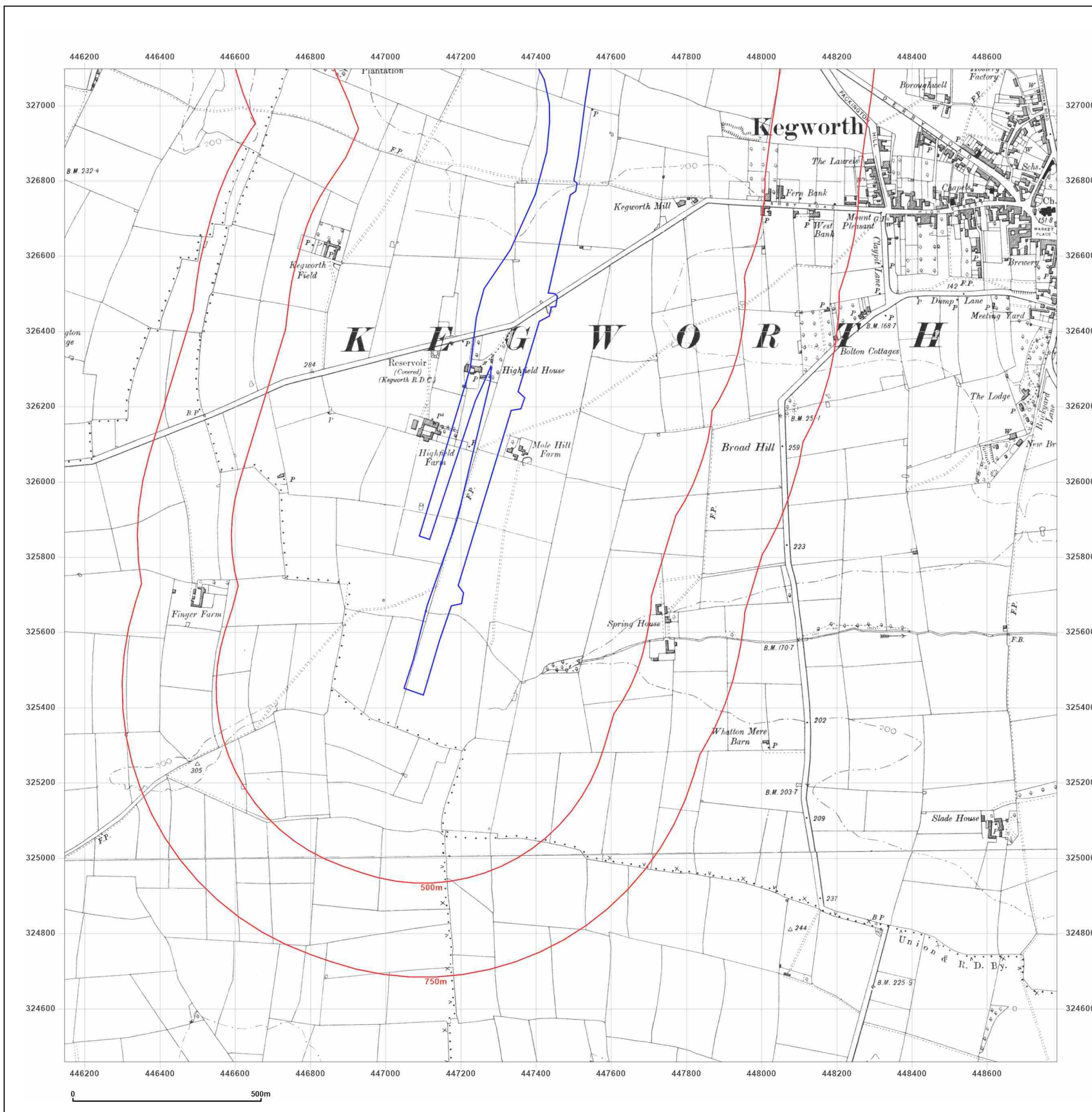


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**Site Details:**

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



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

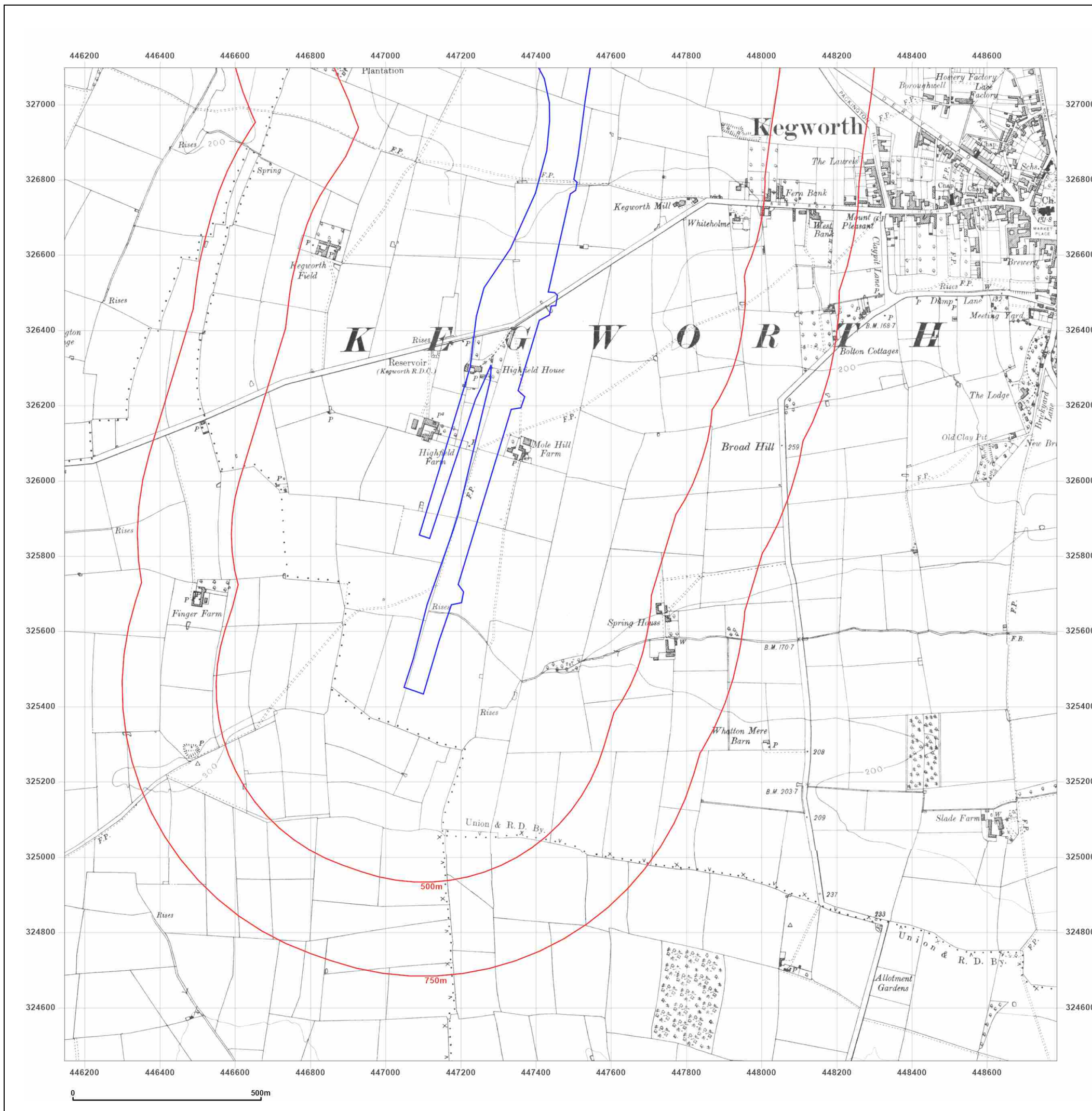


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#### Site Details:

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



Surveyed 1883  
Revised 1922  
Edition N/A  
Copyright N/A  
Levelled N/A

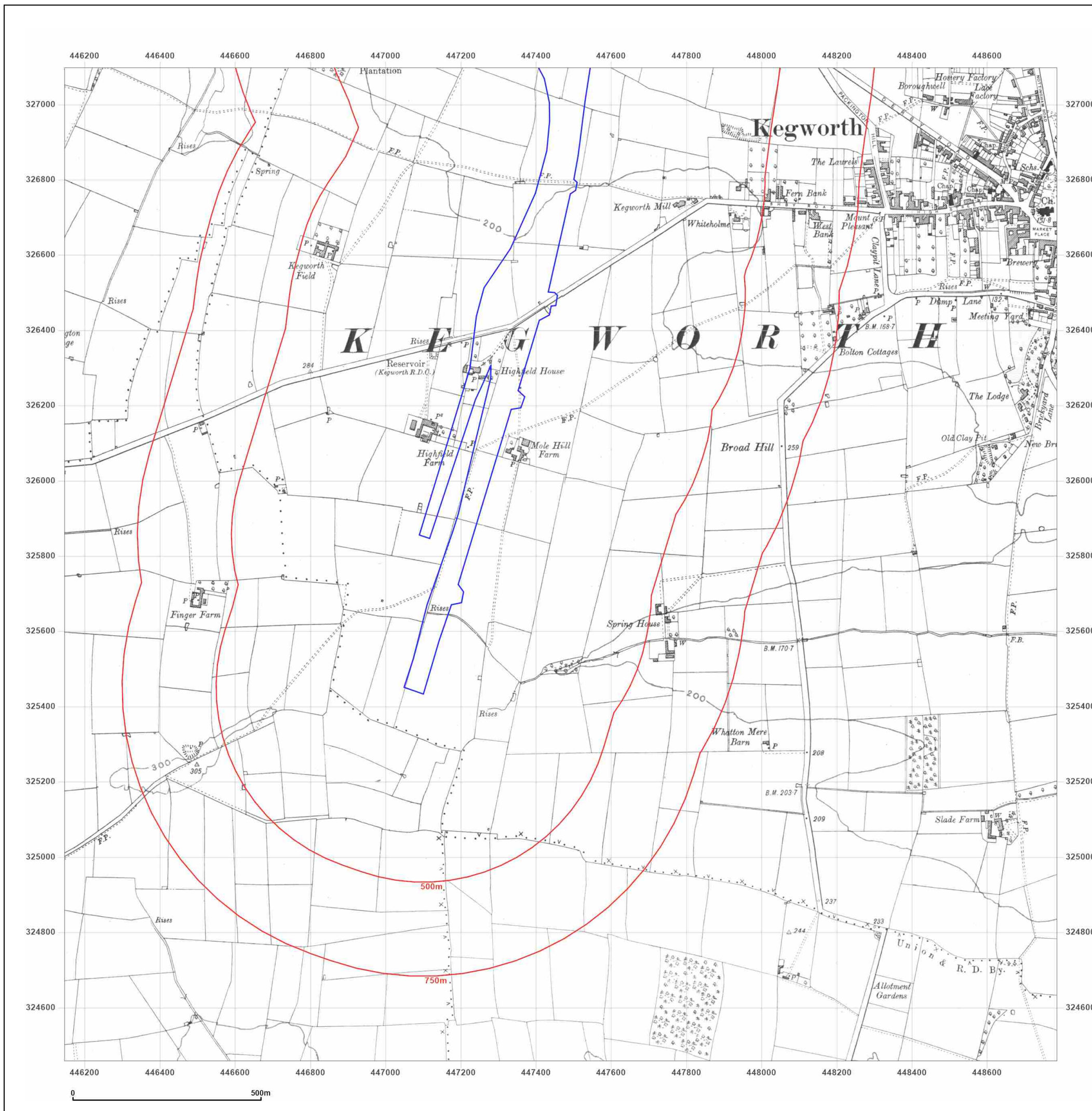


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**Site Details:**

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:** Provisional

**Map date:** 1955

**Scale:** 1:10,560

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



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

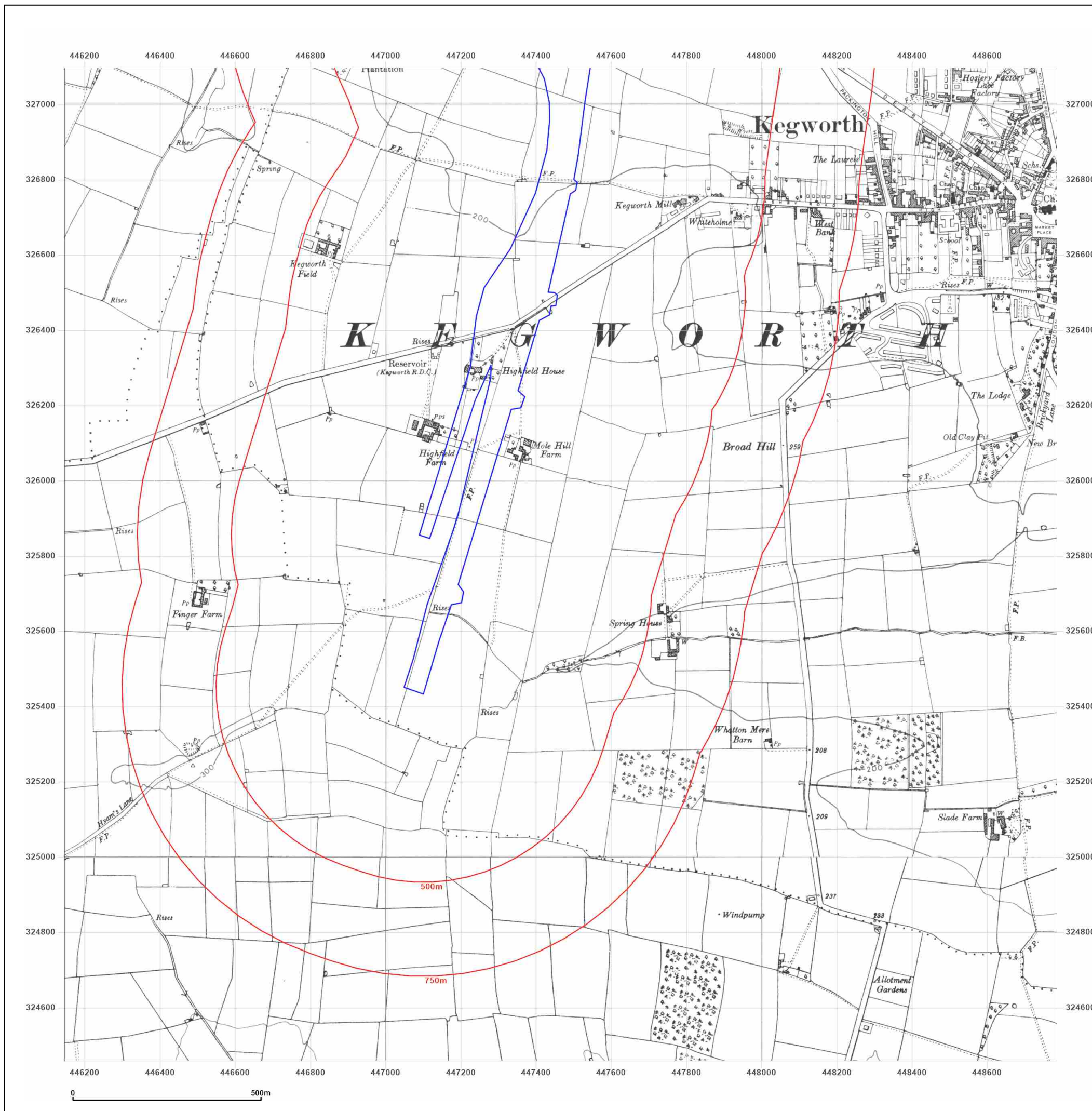


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**Site Details:**

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



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

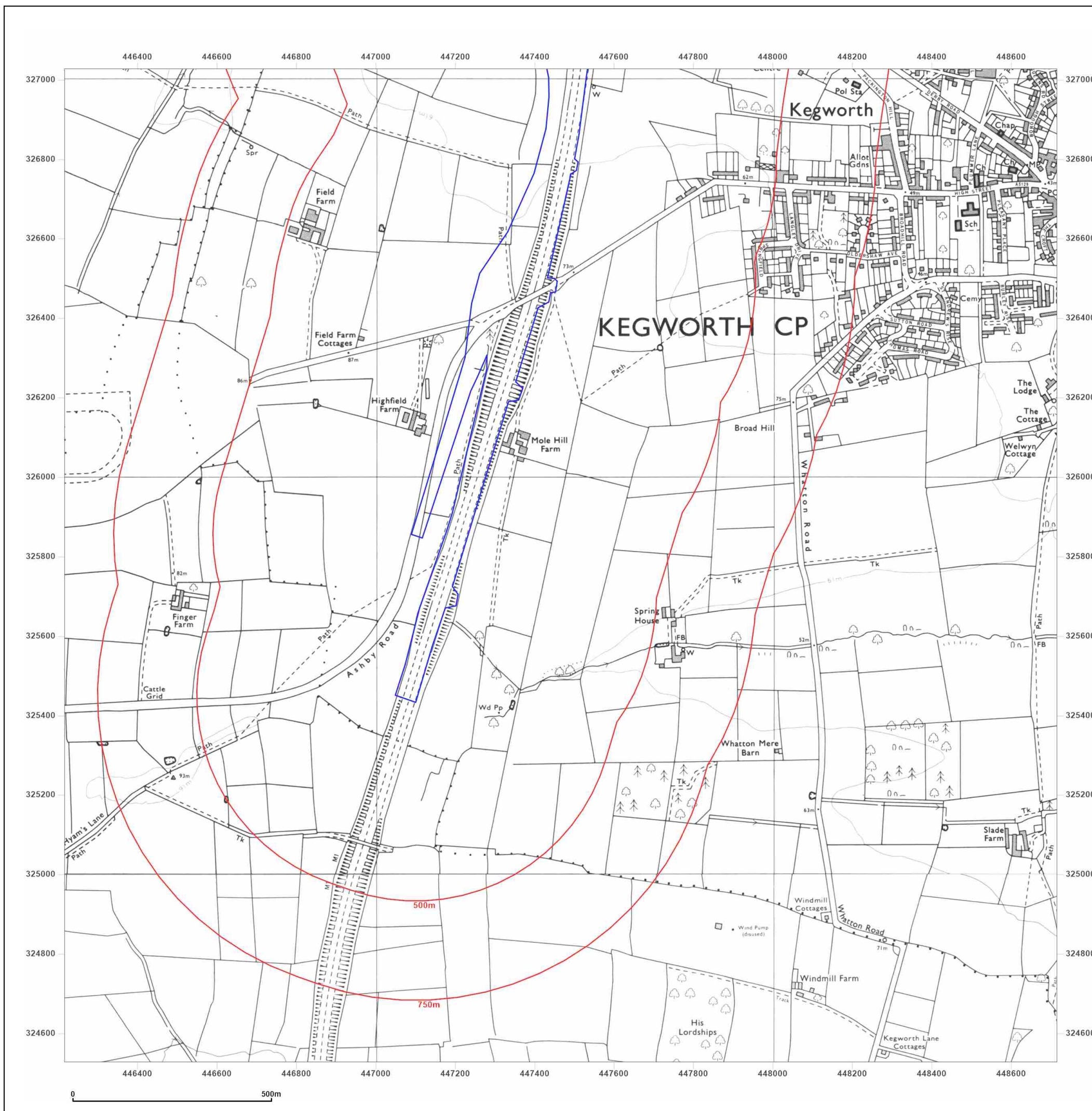


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**Site Details:**

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



Surveyed 1971  
Revised 1978  
Edition N/A  
Copyright 1972  
Levelled 1975

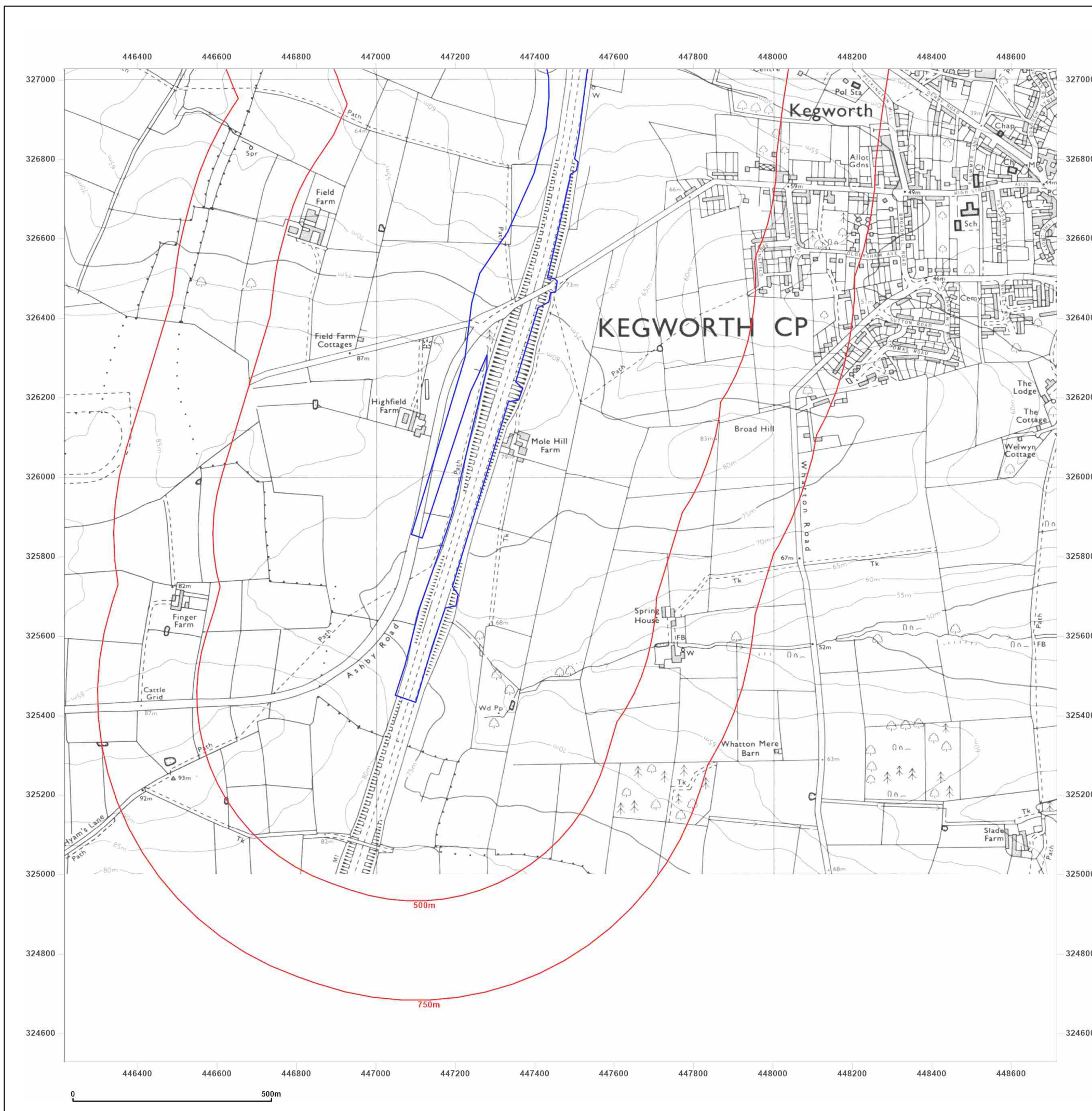


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**Site Details:**

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:** National Grid

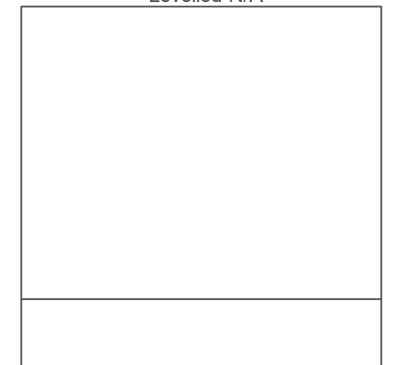
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Surveyed 1971  
Revised 1982  
Edition N/A  
Copyright N/A  
Levelled N/A

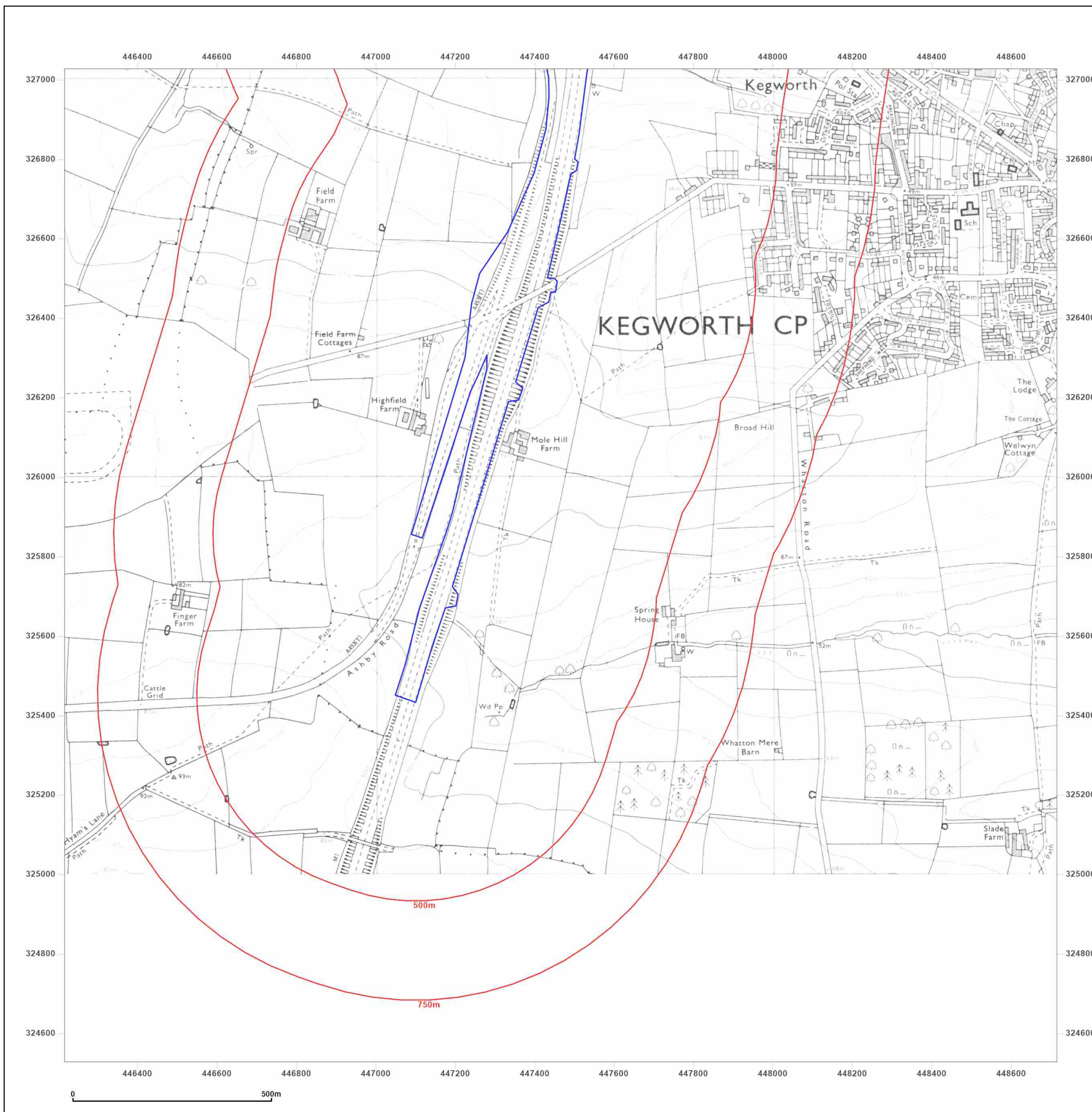


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**Site Details:**

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:** National Grid

**Map date:** 1992-1993

**Scale:** 1:10,000

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



Surveyed 1991  
Revised 1992  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1969  
Revised 1993  
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\_SS\_1\_1  
**Grid Ref:** 447465, 325777

**Map Name:** National Grid

**Map date:** 2010

**Scale:** 1:10,000

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



2010

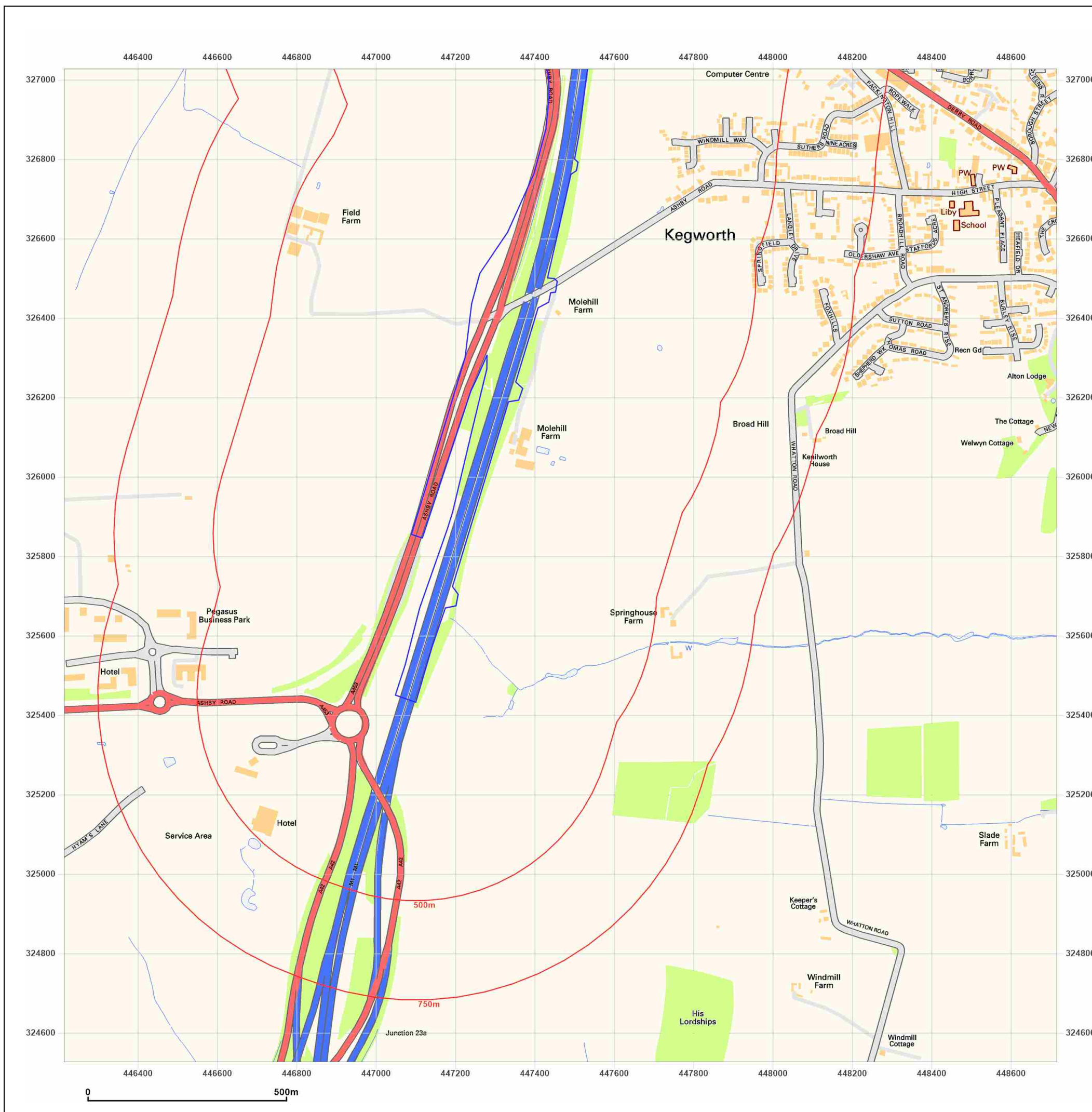


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**Site Details:**

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:** National Grid

**Map date:** 2024

**Scale:** 1:10,000

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



2024

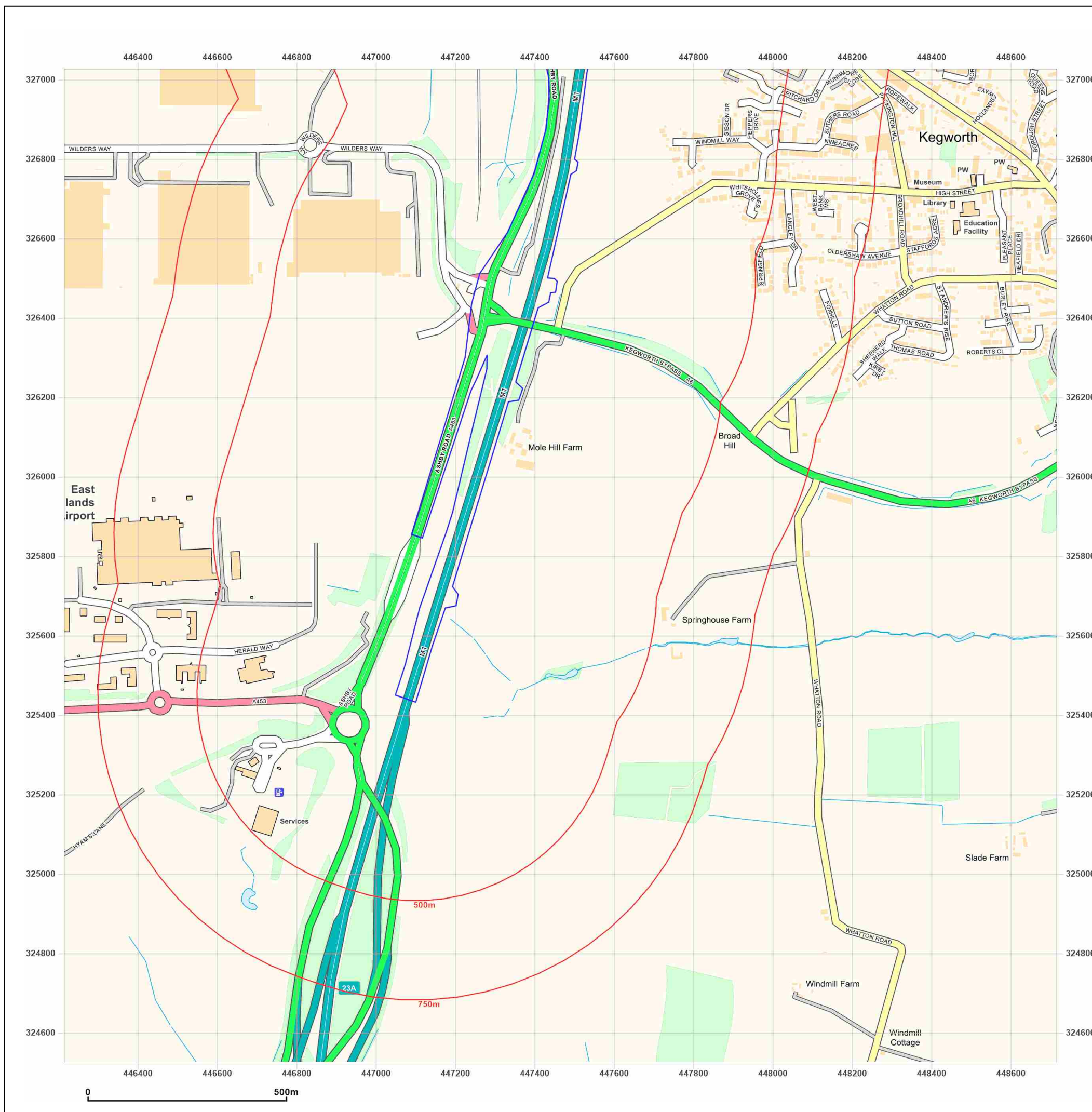


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**Site Details:**

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:** County Series

**Map date:** 1883

**Scale:** 1:10,560

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



Surveyed 1883  
Revised 1883  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1883  
Revised N/A  
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\_SS\_1\_2  
**Grid Ref:** 447465, 328277

**Map Name:** County Series

**Map date:** 1883

**Scale:** 1:10,560

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



Surveyed 1883  
Revised 1883  
Edition N/A  
Copyright N/A  
Levelled N/A

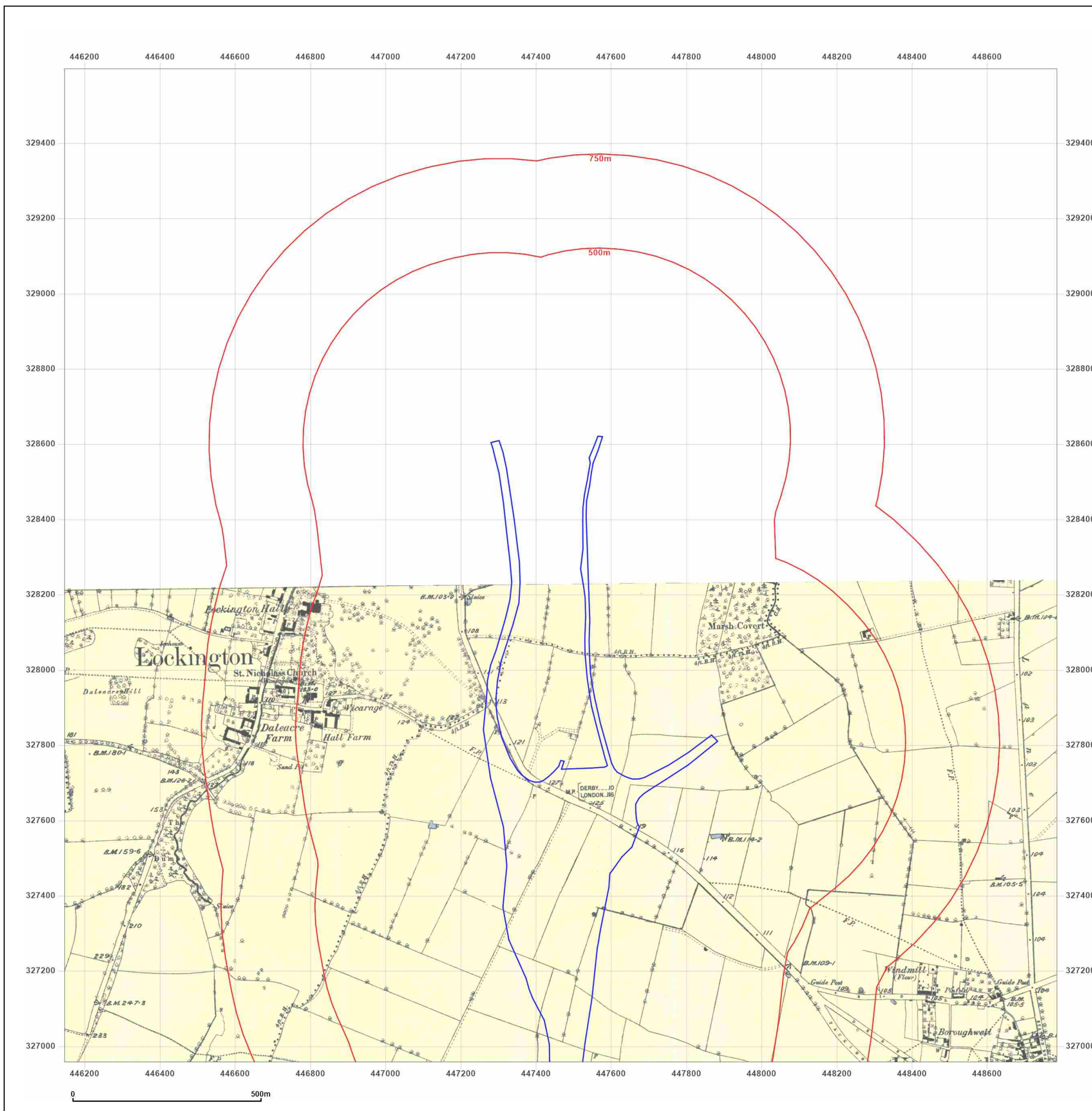


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#### Site Details:

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_SS\_1\_2  
**Grid Ref:** 447465, 328277

**Map Name:** County Series

**Map date:** 1899-1901

**Scale:** 1:10,560

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



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

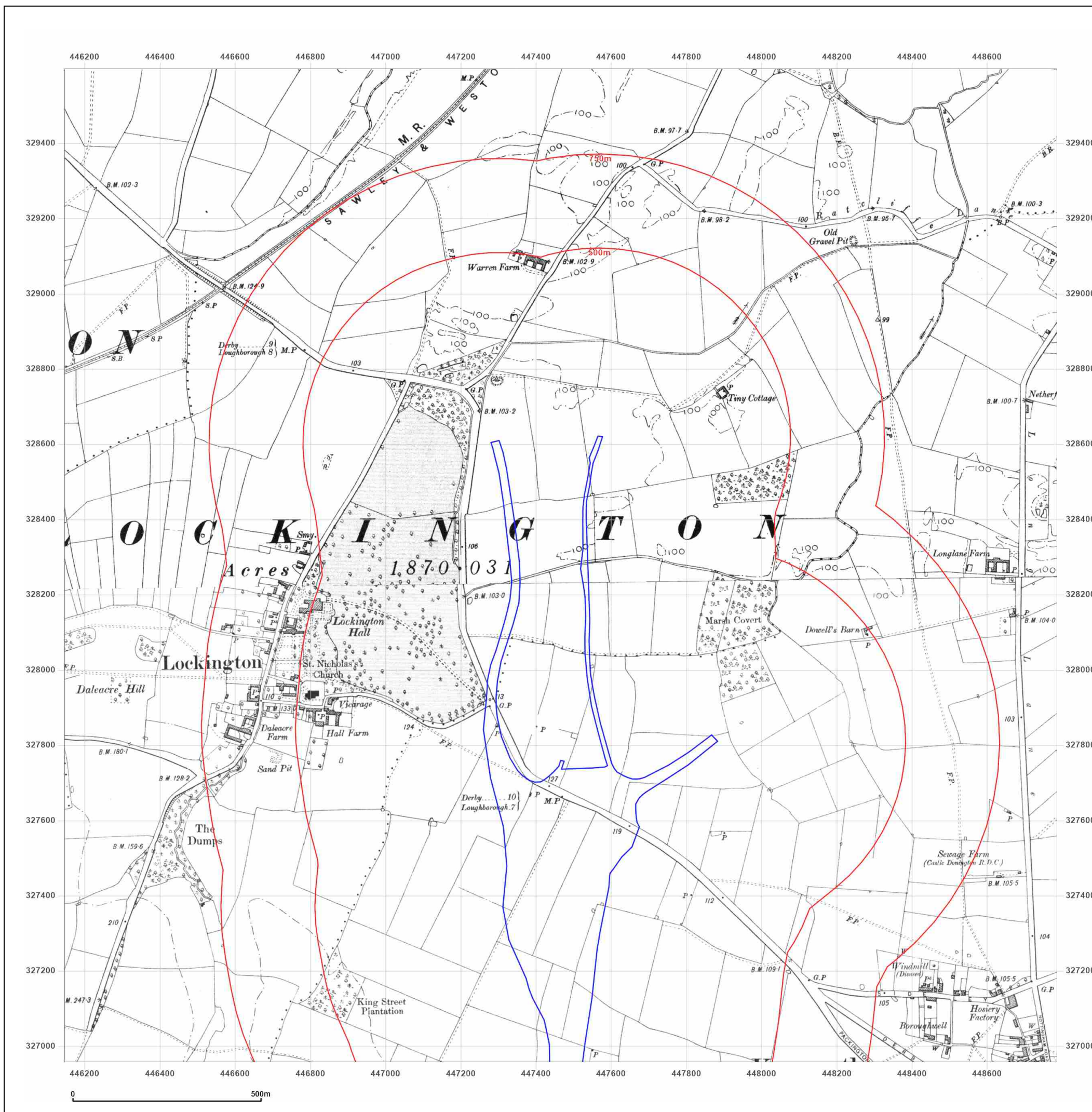


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**Site Details:**

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



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

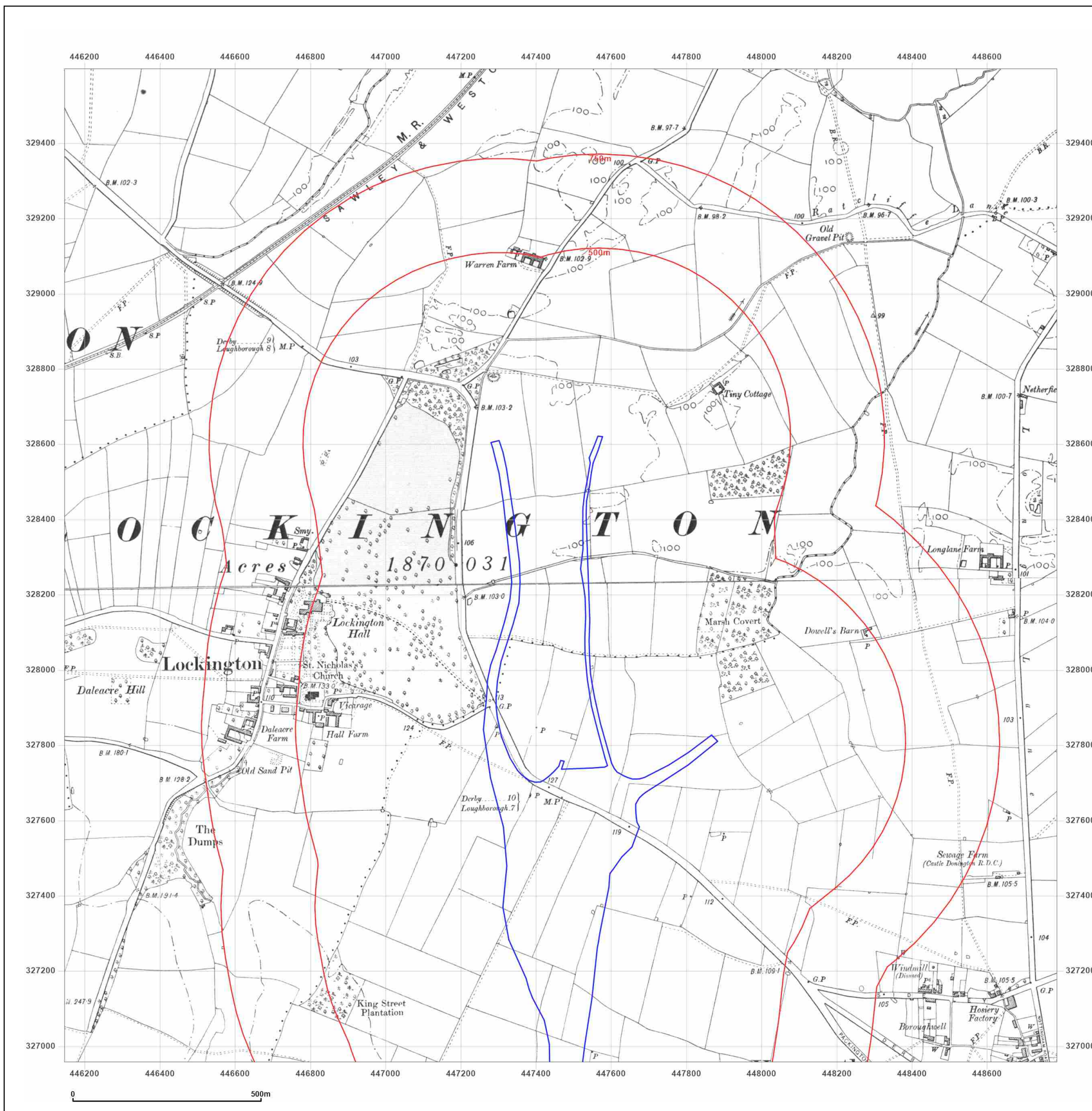


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**Site Details:**

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



Surveyed 1881  
Revised 1921  
Edition N/A  
Copyright N/A  
Levelled N/A

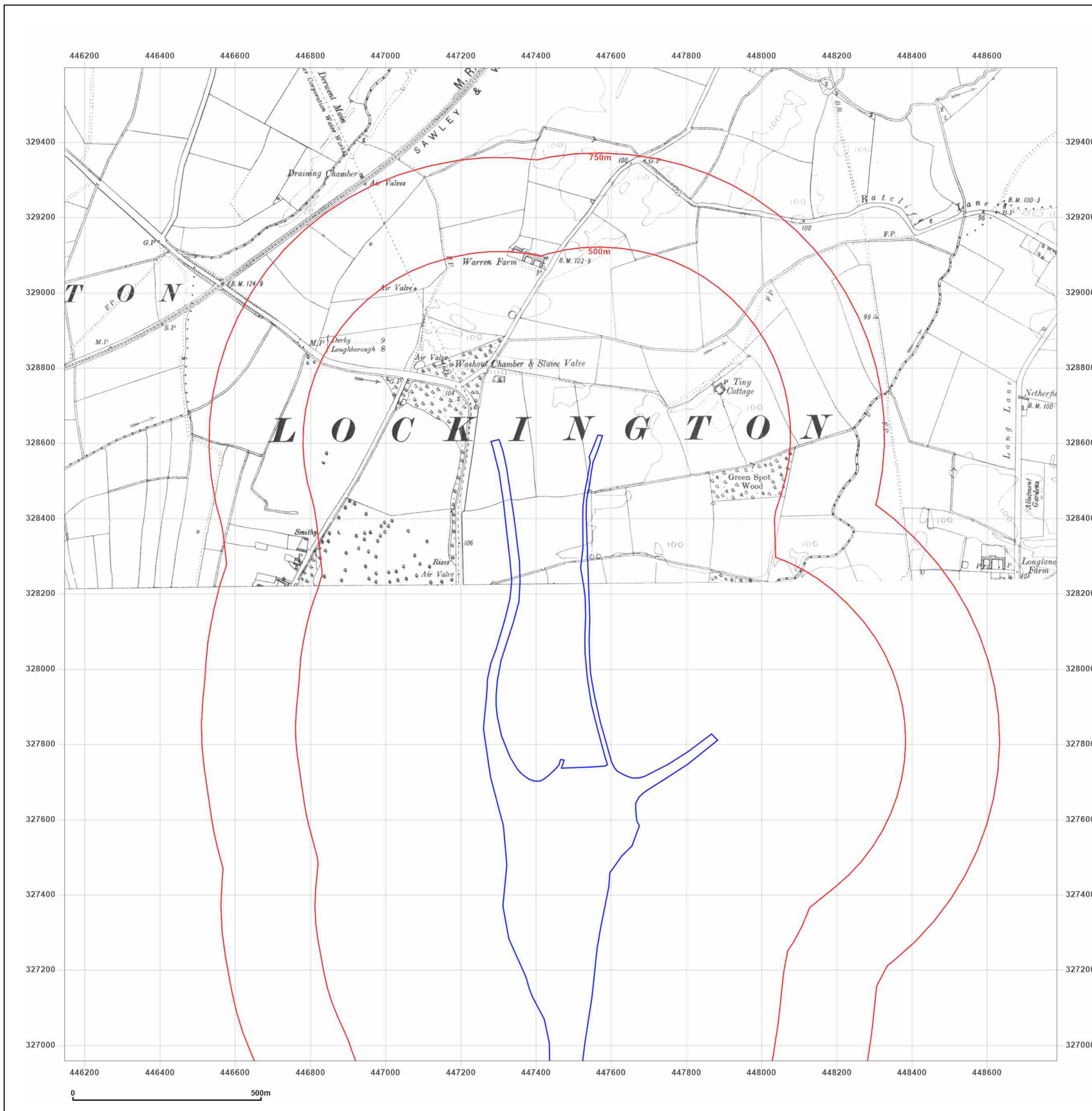


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_SS\_1\_2  
**Grid Ref:** 447465, 328277

**Map Name:** County Series

**Map date:** 1921-1922

**Scale:** 1:10,560

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



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

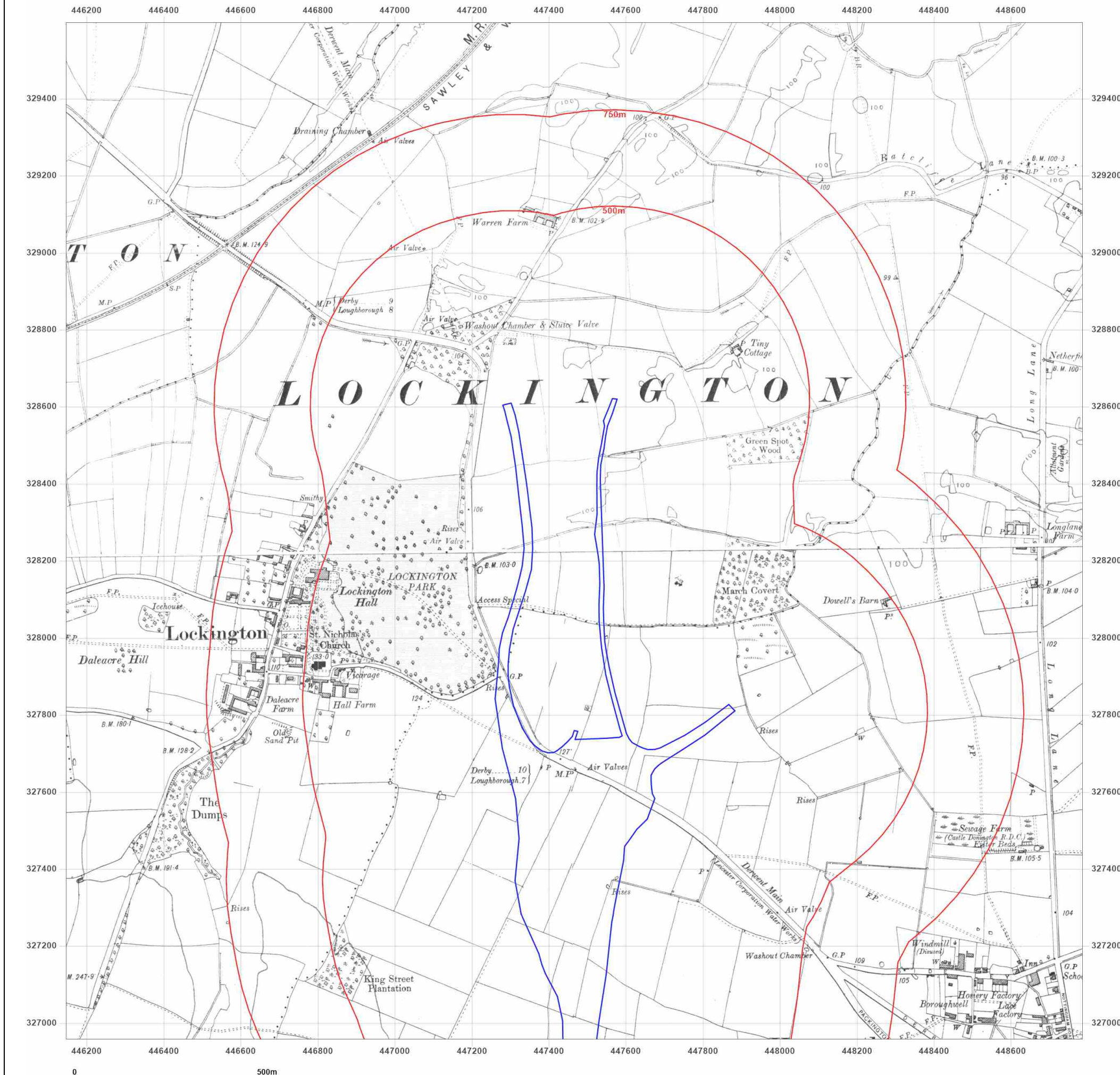


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#### Site Details:

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



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

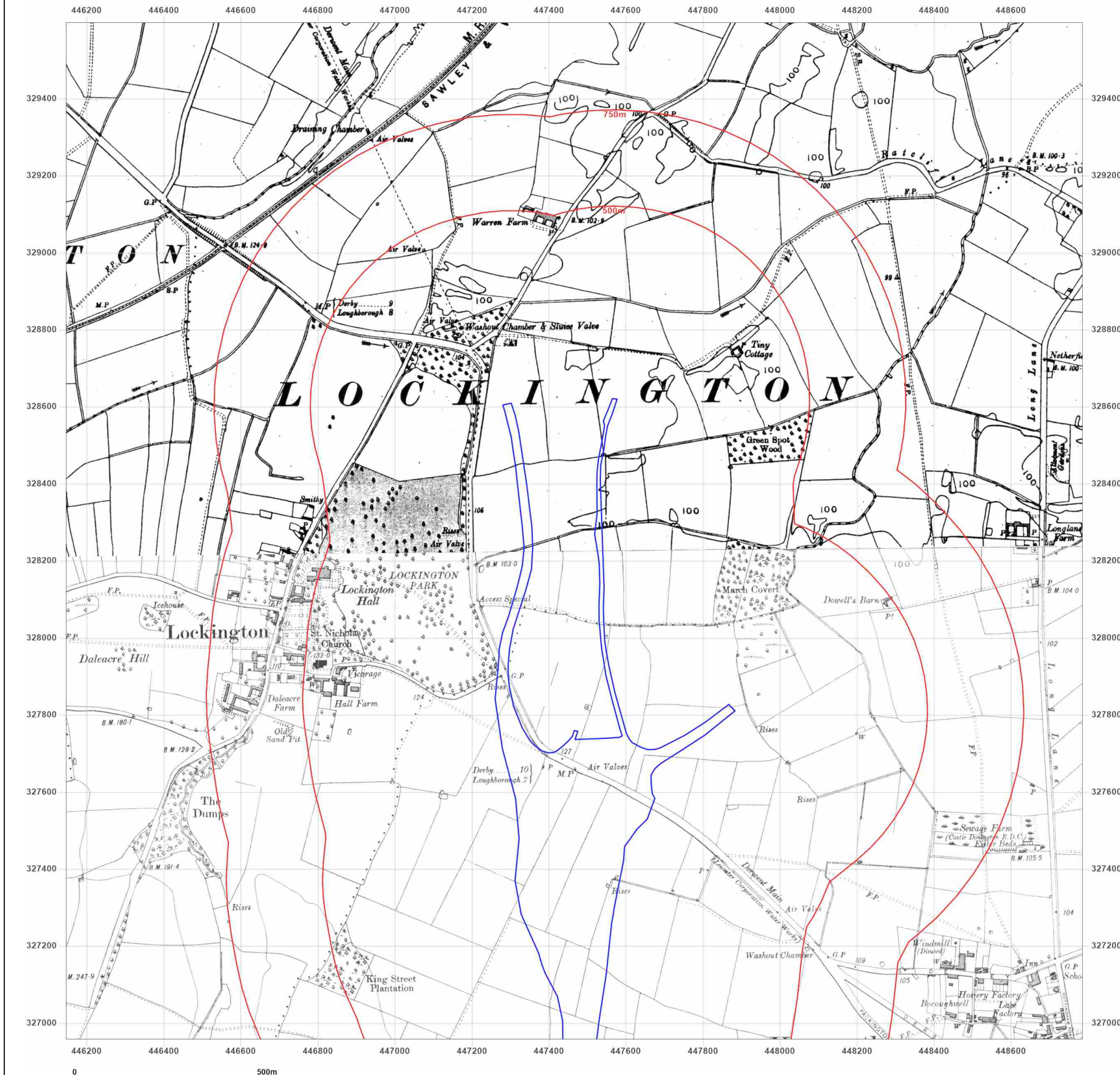


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#### Site Details:

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



Surveyed 1881  
Revised 1938  
Edition 1938  
Copyright N/A  
Levelled N/A

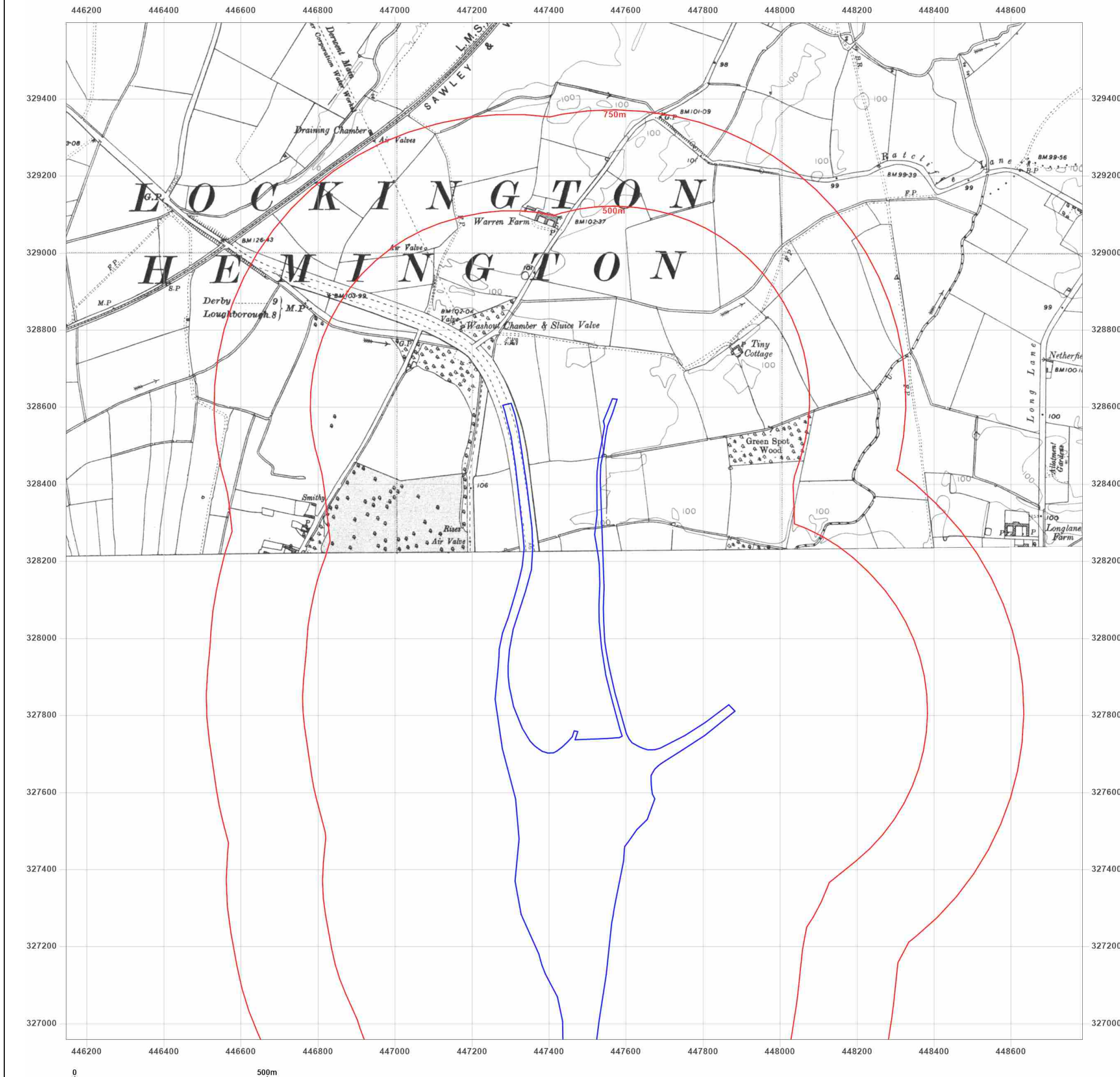


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_SS\_1\_2  
**Grid Ref:** 447465, 328277

**Map Name:** Provisional

**Map date:** 1955

**Scale:** 1:10,560

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



Surveyed N/A  
Revised 1954  
Edition 1955  
Copyright N/A  
Levelled N/A

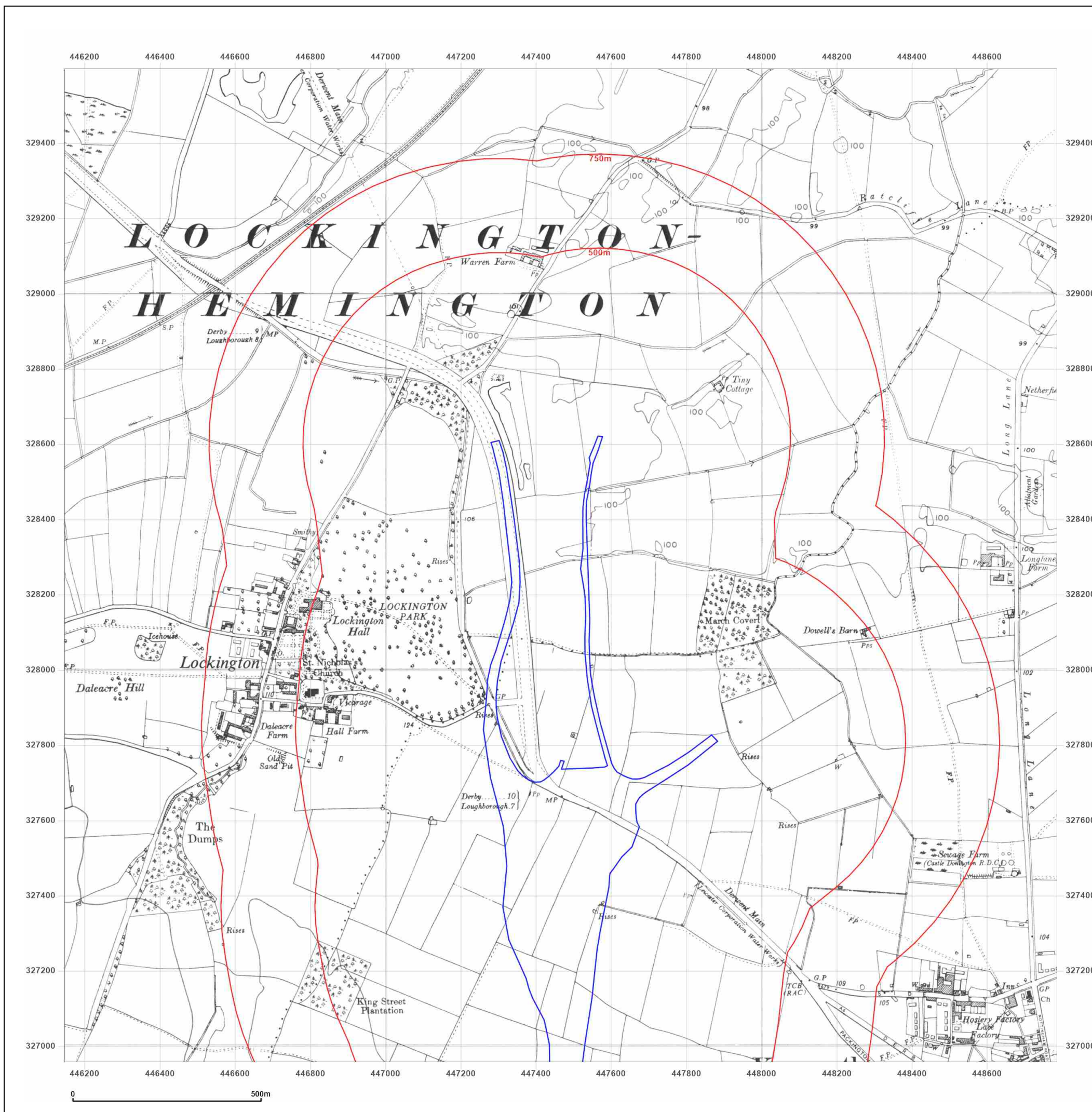


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_SS\_1\_2  
**Grid Ref:** 447465, 328277

**Map Name:** Provisional

**Map date:** 1966

**Scale:** 1:10,560

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



Surveyed 1950  
Revised 1965  
Edition 1955  
Copyright 1966  
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\_2  
**Grid Ref:** 447465, 328277

**Map Name:** National Grid

**Map date:** 1971

**Scale:** 1:10,000

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



Surveyed 1971  
Revised 1971  
Edition N/A  
Copyright N/A  
Levelled N/A

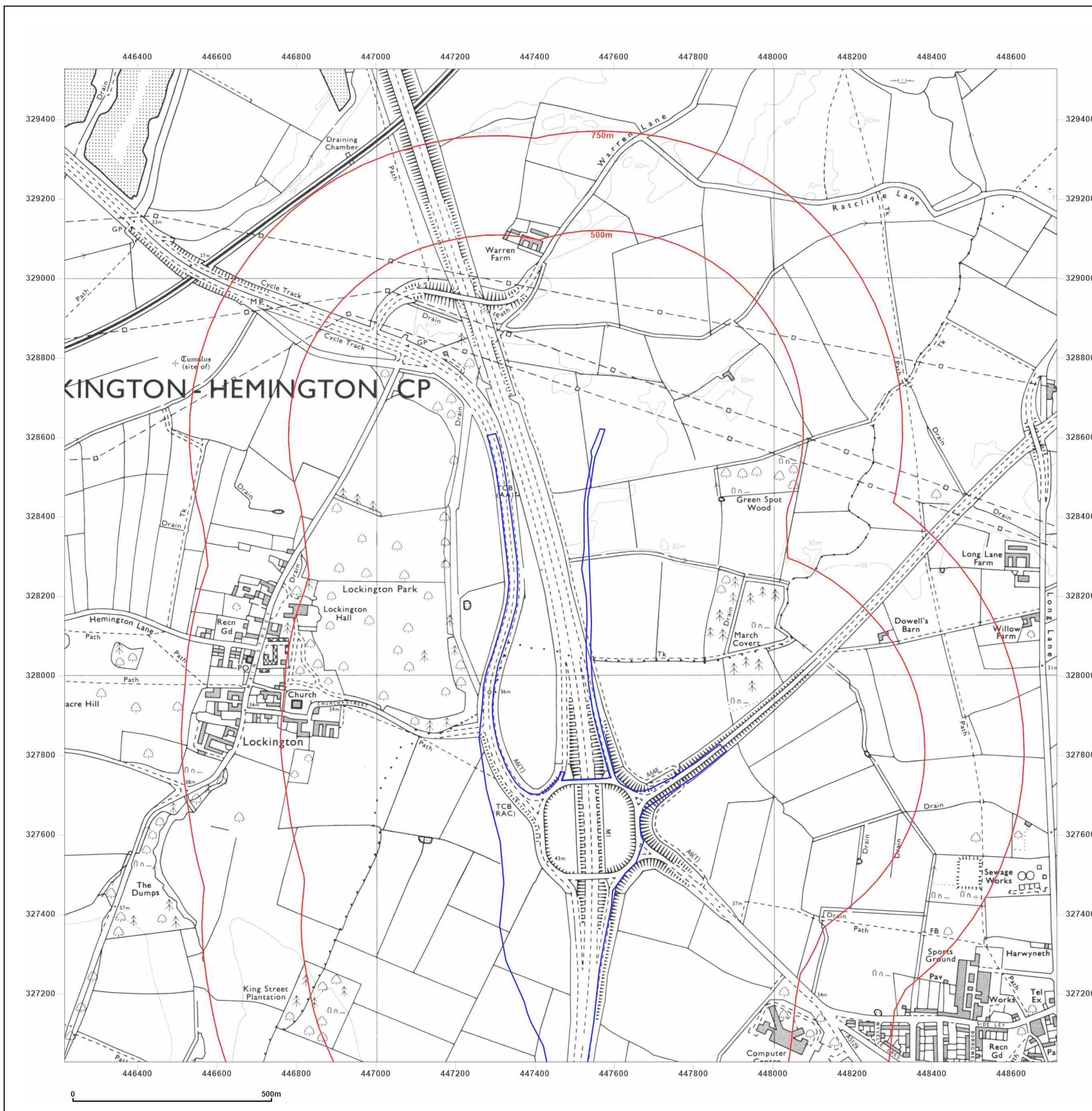


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_SS\_1\_2  
**Grid Ref:** 447465, 328277

**Map Name:** National Grid

**Map date:** 1978

**Scale:** 1:10,000

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



Surveyed 1971  
Revised 1978  
Edition N/A  
Copyright 1972  
Levelled 1975

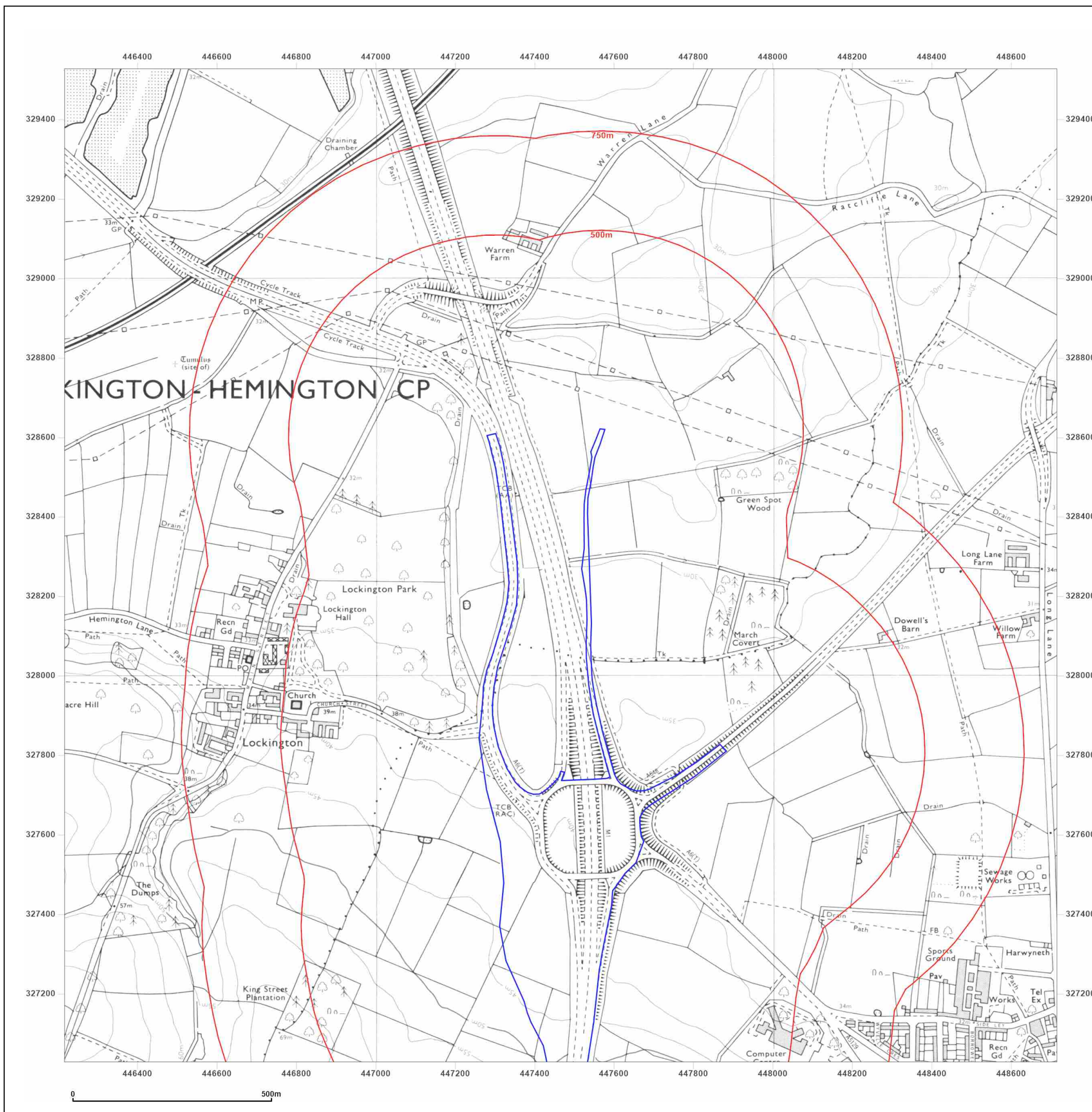


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#### Site Details:

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:** 1982

**Scale:** 1:10,000

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



Surveyed 1971  
Revised 1982  
Edition N/A  
Copyright N/A  
Levelled N/A

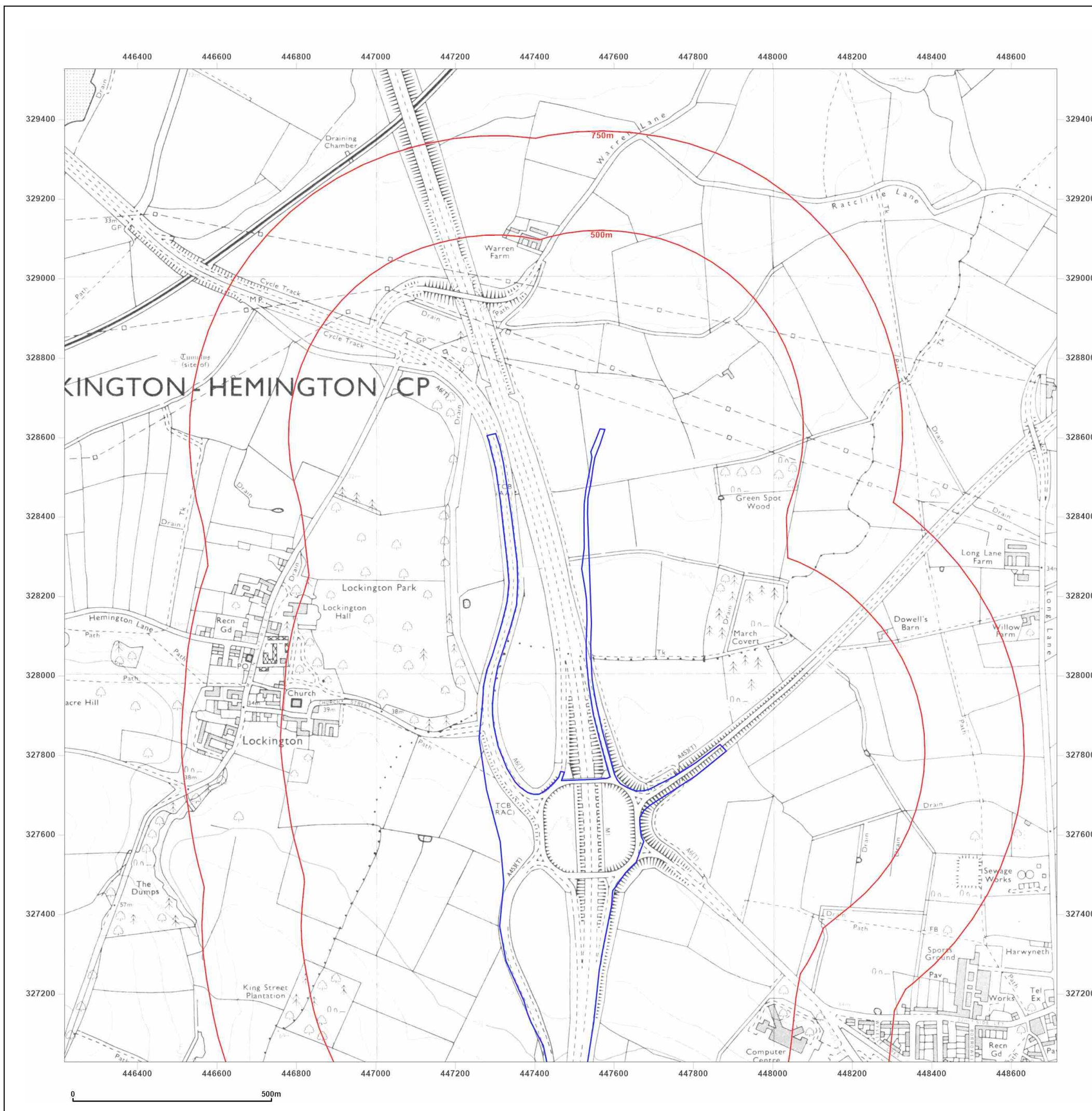


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_SS\_1\_2  
**Grid Ref:** 447465, 328277

**Map Name:** National Grid

**Map date:** 1992

**Scale:** 1:10,000

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



Surveyed 1991  
Revised 1992  
Edition N/A  
Copyright N/A  
Levelled N/A

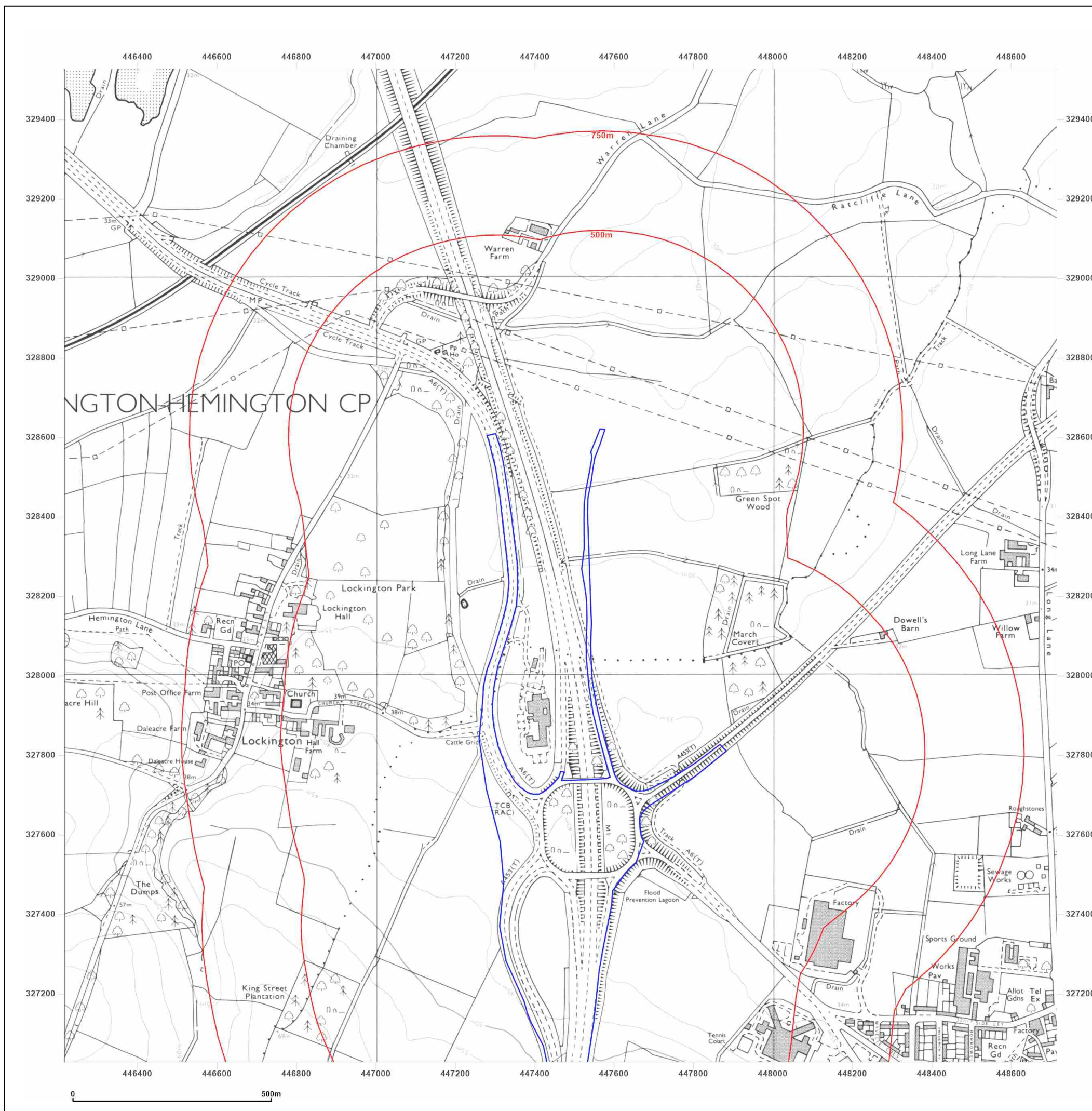


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**Site Details:**

East Midlands Gateway 2, J24  
M1 (NH Land)

**Client Ref:** 220500 - 10250  
**Report Ref:** GS-RVB-OMG-RQL-AYQ\_SS\_1\_2  
**Grid Ref:** 447465, 328277

**Map Name:** National Grid

**Map date:** 2001

**Scale:** 1:10,000

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



2001

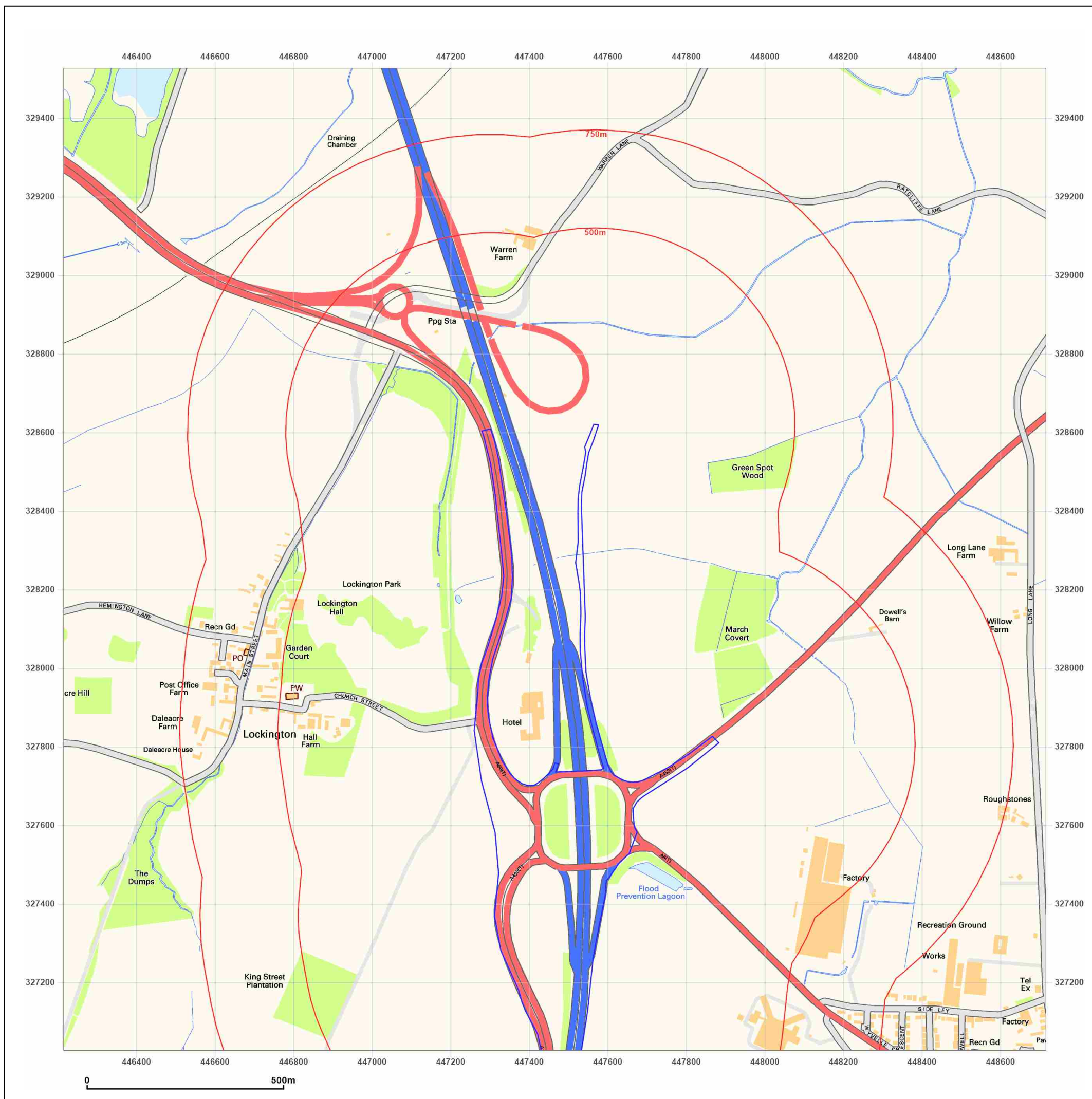


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**Site Details:**

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:** 2010

**Scale:** 1:10,000

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



2010

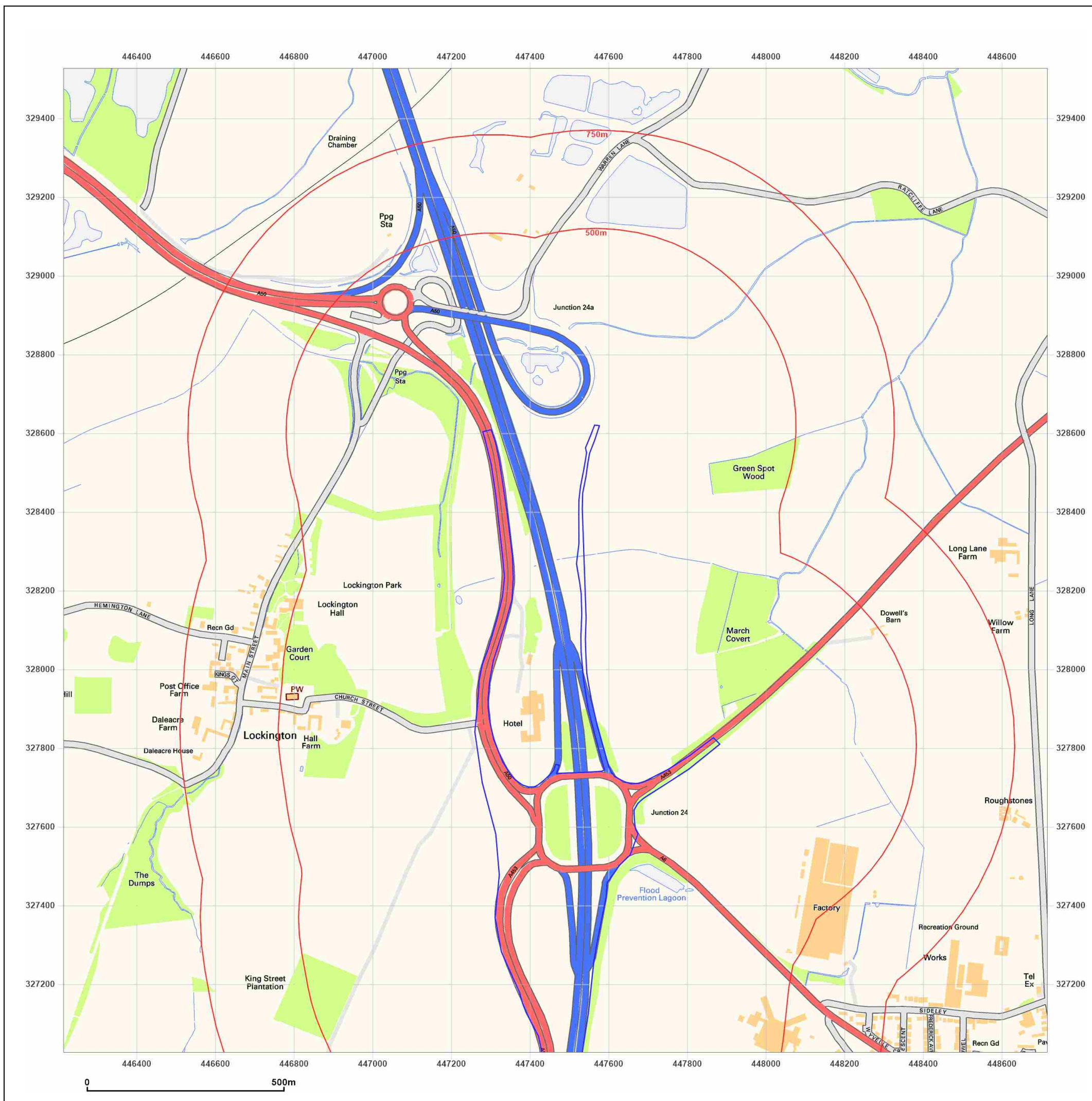


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**Site Details:**

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



2024

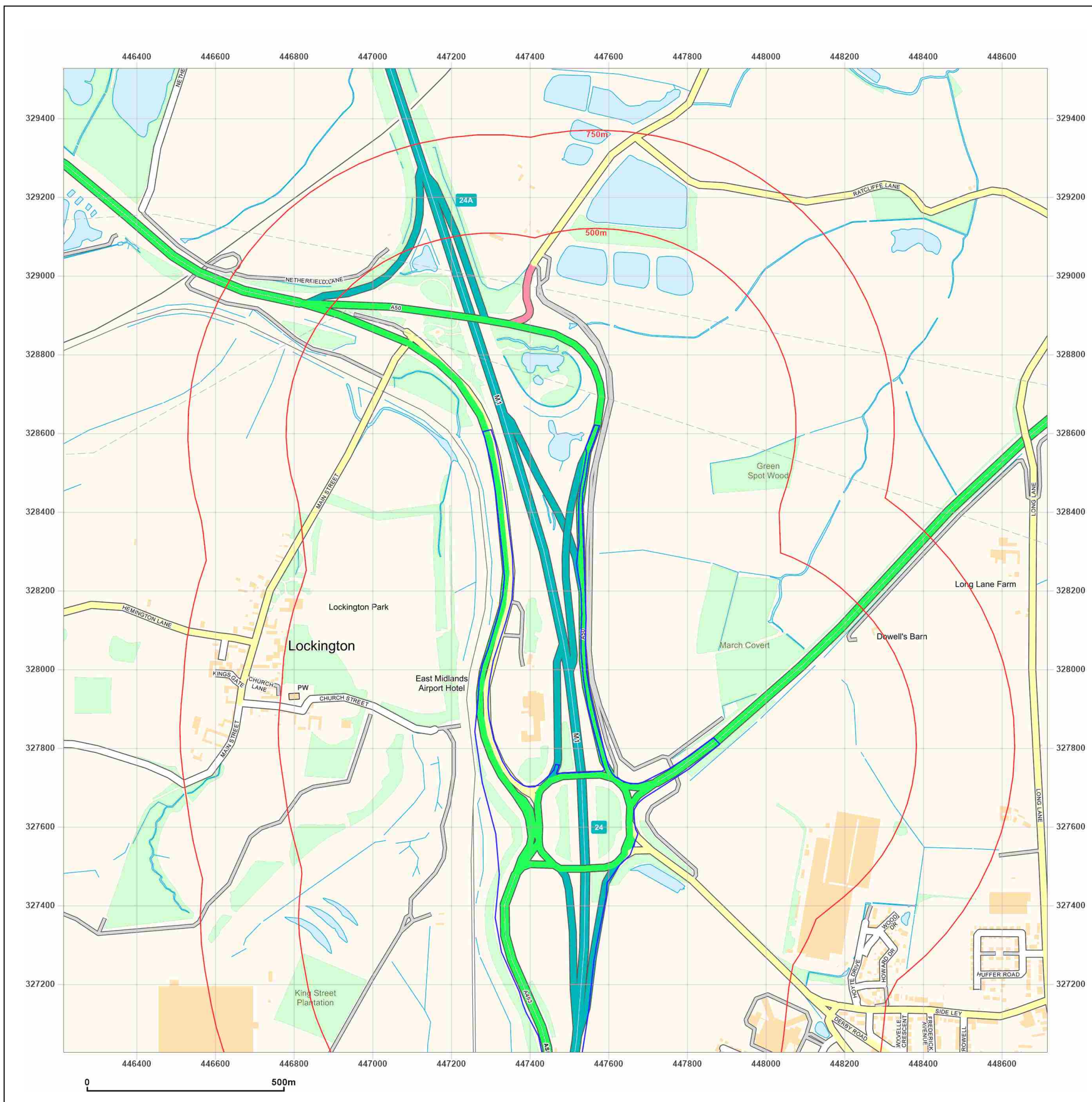


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### **Appendix 3: Historical Boreholes**



ALTERNATIVE LOG.

LE GRAND ADSCO LIMITED

SK/42NE/5  
4727 2608

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 Z62

Boring lined to a Depth of

Diameter 6"

BORING FOREMAN'S STRATA RECORD

Topsoil  
Red sandy marl  
Red marl

(0.30)  
(1.98)  
(6.86)

THICKNESS

Ft Ins

1 0  
6 6  
22 6

DEPTH

Ft Ins

0 30  
7 25  
30 0

WATER OBSERVATIONS

Date Time W.S. SWL

22.8.  
(8.14)

10'0" 15'0"

TOTAL DEPTH

30 0



## ALTERNATIVE LOG

**LE GRAND ADSCO LIMITED**

SK/42NE/6  
4783 2626  
n. 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		DEPTH		WATER OBSERVATIONS			
		Ft	In	Ft	In	Date	Time	W.S.	SWL
Topsoil	(0-23)		9	(0-23)	9	18.8.		15'0"	
Red Marl	(6-63)	21	9	(22-86)	6				
Hard Red Marl	(8-38)	27	6	(50-1524)	-	22.8.			15'0"
								after tubes withdrawn.	
TOTAL DEPTH		50	0						





308

1063 Wt. 22438/0384 10m 7/45 (51) F&S.

# RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)

1-inch Map Registered No.

Name and Number of Shaft or Bore 308

141

For Messrs.

Town or Village

County Six-inch quarter sheet

Exact site Grid Ref. 4733 2626

6-inch Map  
Registered  
No.

SK/42NE/6

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;  
occl. small pebbles to  
2 ft 6 in; green bands to  
7 ft 6 in; massive to 11 ft;  
sandy to 12 ft 6 in; silty  
to 15 ft; siltier to 17 ft 6 in;  
sandy to 22 ft 6 in; non  
silty to 26 ft; very soft  
silty to 32 ft 6 in; more  
massive to 36 ft 6 in;

(14.48)

47 6

~~26 0~~

47 6

Continued Overleaf

GEOLOGICAL SURVEY AND MUSEUM,  
SOUTH KENSINGTON,  
LONDON, S.W.7.

Date  
received

Correspond-  
ence File No.

1" N.S. Map  
No.

1" O.S. Map  
No.

Site marked (use symbol)  
on 1" Map on 6" Map

## ALTERNATIVE LOG

**LE GRAND ADSCO LIMITED**

SK/42NE/7  
4738 2643  
on. 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"

	THICKNESS		DEPTH		WATER OBSERVATIONS			
	Ft	In	Ft	In	Date	Time	W.S.	SWL
Topsoil	(6)	(23) 9	(6)	(23) 9	16.8	7.30 a.m.	14'6"	
Sandy soil	3	3	4	-				15'0"
Sandy Marl	(3)	(35) -	(4)	(57) -	17.8		after tubes withdrawn.	
Hard red Marl.	(7)	(62) -	(12)	(9) -				
	25	-	40	-				
TOTAL DEPTH			40	0				



1063 Wt. 26438/0384 10x 7/45 (51) F&S.

# 309 RECORD OF SHAFT OR BORE FOR MINERALS

Name and Number of Shaft or Bore

309.

(For Survey use only)

1-inch Map Registered No.

141

For Messrs.

Town or Village

County

Six-inch quarter sheet

Exact site

Nat Grid Ref: 4738 2643

6-inch Map  
Registered  
No.

SK/42NE/7

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

Keeper  
Marl

Pale brown fine loam

(0.76)

2

6

(0.76)

2

6

Soft brown silty clay

(0.46)

1

6

(5.23)

4

0

Yellow brown clayey silt

(0.30)

1

0

(1.52)

5

0

Reddish brown soft silty

marl

(2.29)

7

2

(3.81)

7

6

Reddish brown silty clay

mottled green

(0.91)

3

0

(4.72)

15

6

Chocolate brown silty marl,

var silty, from 25 to

32 ft 6 in; green bands

to 35 ft; more silty

to 40 ft

(7.47)

2

4

(12.19)

40

0

Continued

Overleaf

GEOLOGICAL SURVEY AND MUSEUM,  
SOUTH KENSINGTON,  
LONDON, S.W.7.

Date  
received

Correspond-  
ence File No.

1" N.S. Map  
No.

1" O.S. Map  
No.

Site marked (use symbol)  
on 1" Map on 6" Map

ALTERNATIVE LOG

**LE GRAND ADSCO LIMITED**

SK/42NE/8  
4744 2664  
141

**RECORD OF TEST BORING No. 310** at Enderby - Lockington.

For Sir Owen Williams and Partners. (Ministry of Transport)

O/No. 1941 Boring Completed on 18.3.61.

O.D. Level **217**

Boring lined to a Depth of 10'0"

Diameter 6"

BORING FOREMAN'S STRATA RECORD	THICKNESS		DEPTH		WATER OBSERVATIONS			
	Ft	Ins	Ft	Ins	Date	Time	W.S.	SWL
Top Soil Red/Brown Marl with traces grey sandstone	(0.15)	6	(0.15)	6				
	24	6	25	0			Nil	
	(7.47)		(7.62)					
TOTAL DEPTH			25	0				





1063 Wt. 22438/0384 10x 7/45 (51) F&S.

# RECORD OF SHAFT OR BORE FOR MINERALS

310

Name and Number of Shaft or Bore 310

(For Survey use only)

1-inch Map Registered No.

141

For Messrs.

Town or Village

County

Six-inch quarter sheet

Exact site Nat Grid Ref: 4744 2664

6-inch Map Registered No.

SK/42NE/8

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 #102	Yellow brown silty marl	(6.61)	2	0	(6.61)	2	0
	Reddish brown silty marl	(3.86)	13	0	(4.57)	15	0
	Reddish brown silty marl with siltstone bands	(2.05)	10	0	(2.62)	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



ALTERNATIVE LOG.

## LE GRAND ADSCO LIMITED

SK/42NE/9

7753 2730

RECORD OF TEST BORING No. 311 at Enderby - Lockington.

141

For Sir Owen Williams and Partners. (Ministry of Transport).

O/No. 1941. Boring Completed on 17.8.61.

O.D. Level 13/

Boring lined to a Depth of 10'0"

Diameter 6"

BORING FOREMAN'S STRATA RECORD	THICKNESS		DEPTH		WATER OBSERVATIONS			
	Ft	Ins	Ft	Ins	Date	Time	W.S.	SWL
Top Soil	1	0	1	0	16.8.	Damp from down.		4 ft.
Earth, sand & stones (dry)	2	0	3	0				
Brown sand, clay and stones (Damp)	5	0	8	0	17.8.		4'0"	
Red/Brown Marl, traces of grey sandstone.	12	0	20	0				
TOTAL DEPTH	20	0						



1063 WE 22438/0384 10x 7/45 (51) F.&S.

# RECORD OF SHAFT OR BORE FOR MINERALS

311

Name and Number of Shaft or Bore

311

(For Survey use only)

1-inch Map Registered No.

141

For Messrs.

Town or Village

County

Six-inch quarter sheet

Exact site

Nat Grid Ref: 4753 2730

6-inch Map  
Registered  
No.

SK/42NE/9

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

Ditch

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

Keeper  
Mare

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

Correspond-  
ence File No.

1" N.S. Map  
No.

1" O.S. Map  
No.

Site marked (use symbol)  
on 1" Map on 6" Map



ALTERNATIVE LOG.

LE GRAND ADSCO LIMITED

SK/42NE/10

RECORD OF TEST BORING No. 312 at Enderby - Lockington 4753 2750  
141.

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		DEPTH		WATER OBSERVATIONS			
	Ft	Ins	Ft	Ins	Date	Time	W.S.	SWL
Top Soil (0.30)	1	0	1	0	14.8.		13'0"	damp
Sand, soil and stones (0.61)	2	0	3	0	15.8.		final water level	
				(0.31)			13'0"	sample taken
Brown sand, clay and stones becoming gravelly at 10'0" (3.05)	10	0	13	0				
				(3.36)				
Red/brown marl and grey sandstone (5.16)	17	0	30	0				
				(9.14)				
TOTAL DEPTH	30	0						



1063- Wt 22438/0384 10M 7/45 (51) F.&S.

## RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)

1-inch Map Registered No.

Name and Number of Shaft or Bore

For Messrs.

Town or Village Kearworth

County \_\_\_\_\_

Six-inch quarter sheet.

Exact site Natural Grid Reference : 4753 2750

6-inch Map  
Registered  
No.

SK/42NE/10

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 <sup>shaft</sup><sub>bore</sub> is up, down, horizontal or

inclined; in latter cases give angle of inclination and direction

**Made by**

Information from Perussion samples Date of Sinking 1961

## Specimens

Additional Notes in Space Overleaf

[illegible]

GEOLOGICAL SURVEY AND MUSEUM,  
SOUTH KENSINGTON,  
LONDON, S.W.7.

Date  
received

Correspondence File No.

1" N.S. M.  
No.

1" O.S. Map  
No.

Site marked (use symbol)	
on 1" Map	on 6" Map

ALTERNATIVE LOG  
**LE GRAND ADSCO LIMITED**

SK/42NE/11  
4751 2724  
141.

**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		DEPTH		WATER OBSERVATIONS			
	Ft	Ins	Ft	Ins	Date	Time	W.S.	SWL
Top Soil	(0)	(46)	(0)	(46)	10.8.	seepage at 10'0"		
Red/Brown sandy clay and sand	8	6	10	6		Shut off with casing		
Red/Brown sand and fine gravel (Soggy from 15'0").	(2)	(44)	(5)	(49)	11.8.	10ft. after casing pulled.		
Red/brown sandy clay traces grey sandstone.	22	0	40	0	Unable to get water sample.			
TOTAL DEPTH	40	0						

313

## GEOLOGICAL SURVEY OF GREAT BRITAIN

## RECORD OF SHAFT OR BORE FOR MINERALS

**Name of Shaft or Bore given by Geological Survey:**

**Name and Number given by owner:**

For whom made

Town or Village Kegworth

County.

Exact site

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made. Extension to M1 Motorway

Ground Level at <sup>shaft</sup><sub>bore</sub> relative to O.D.

If not ground level give O.D. of beginning of shaft bore.

**Made by**

Date of sinking

**Information from**

Date received \_\_\_\_\_

**Examined by:**

## SPECIMEN NUMBERS AND ADDITIONAL NOTES

(For Survey use only)	GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	THICKNESS		DEPTH	
			FT	in.	FT	in.
	DRIFT	Soil, brown sandy loam	2	0	2	0
		Yellowish brown pebbly	(0.6)		(0.6)	
		clayey sand with thin				
		reddish brown clay				
		wisps	15	0	17	0
		Dull reddish brown gravel,	(4.57)		(5.18)	
		silty with green & pebbles;				
		with green bands from				
		20 ft to 25 ft also small	(2.44)		(2.62)	
		bands of "rice".	8	0	25	0
	Kemper Marl	Reddish brown silt, marl? silty	15	0	40	0
			(4.57)		(12.19)	



*ALTERNATIVE LOG*  
**LE GRAND ADSCO LIMITED**

SK/42NE/12  
4749 2795

**RECORD OF TEST BORING No. 314** at Enderby Lockington.  
For Sir. O. Williams Partners (Ministry of Transport.)

141.

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		DEPTH		WATER OBSERVATIONS			
	Ft	Ins	Ft	Ins	Date	Time	W.S.	SWL
Top soil.	(0.23)	9	(0.23)	9	9/8/		8'0"	
Redish sand.	(0.89)	3	(1.22)	4	10/8			10'3"
Loamy sand and gravel.	(7.62)	2	6	6				
Red marl.	(3.48)	11	(1.35)	17	-			
Red sandstone.	(0.28)	1	(5.41)	19				
Layers of marl and soft sandstone.	(3.35)	11	(5.79)	30				
			(9.14)					
TOTAL DEPTH			30'	-				





GEOLOGICAL SURVEY OF GREAT BRITAIN

314 RECORD OF SHAFT OR BORE FOR MINERALS

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.

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

Information from *Perussion samples*

Examined by

(For Survey use only)

6-inch Map Registered No.

*SK/42NE/12*

Nat. Grid Reference

*4749 2795-*

1" N.S. Map  
No.

1" O.S. Map  
No.

Confidential  
or not

*141*

SPECIMEN NUMBERS AND ADDITIONAL NOTES

(For Survey use only) GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	THICKNESS		DEPTH	
		FT	IN.	FT	IN.
DRIFT	<i>Brown sandy loam</i>	<i>2</i>	<i>6</i>	<i>2</i>	<i>6</i>
	<i>Dull brown pebbly clayey</i>	<i>2</i>	<i>6</i>	<i>2</i>	<i>6</i>
	<i>sand</i>	<i>1</i>	<i>6</i>	<i>4</i>	<i>0</i>
	<i>Reddish brown sandy clay;</i>	<i>2</i>	<i>6</i>	<i>1</i>	<i>22</i>
	<i>with green part</i>	<i>2</i>	<i>6</i>	<i>6</i>	<i>6</i>
	<i>Dull brown and green sandy</i>	<i>1</i>	<i>6</i>	<i>8</i>	<i>6</i>
	<i>clay</i>	<i>1</i>	<i>6</i>	<i>2</i>	<i>44</i>
	<i>Reddish brown silty marl</i>	<i>3</i>	<i>6</i>	<i>12</i>	<i>6</i>
	<i>with green bands</i>	<i>1</i>	<i>07</i>	<i>3</i>	<i>81</i>
	<i>Sandstone fine grained</i>	<i>5</i>	<i>3</i>	<i>17</i>	<i>9</i>
Kemp Marl	<i>grey green</i>	<i>1</i>	<i>60</i>	<i>5</i>	<i>41</i>
	<i>Reddish brown marl, slightly</i>	<i>3</i>	<i>9</i>	<i>2</i>	<i>1</i>
	<i>sandy</i>	<i>1</i>	<i>14</i>	<i>6</i>	<i>55</i>
	<i>(Bottom 6 feet missing)</i>			<i>27</i>	<i>6</i>
				<i>8</i>	<i>38</i>



1" : 141

SK 42 NE / 20

LEONARD FRODOUGH LIMITED.										Borehole No. 1			
Ground Engineering Site Investigation										Sheet No. 1			
Contract 4772.2769										No. of Sheets 1 of 2			
Location										Ground Level. 34.4m			
Client										Commenced. 7.6.73			
Casing.										Completed. 8.6.73			
dia: 254 mm to 10 cordia: to													
Type of Rig										Grading % Passing			
254 mm Shell & Paper										Triaxial Test			
Water Conditions.										Water Remarks			
S.P.T. Blow Count (N)										BULK DENSITY			
INDEX PROPERTIES.										C			
MC %										Kg/M <sup>3</sup>			
PL										Kg/M <sup>2</sup>			
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SK 42 NE / 20

LEONARD FAIRCLOUGH LIMITED.														Borehole No. 1							
Ground Engineering Site Investigation														Sheet No. 2							
Contract CLIFTON TO M1 DUALLING														No. of Sheets 2 of 2							
Location.														Ground Level. 34.4m							
Client Nottinghamshire C.C.						Casing. dia: 254mm to 100mm dia: to:								Commenced. 7.6.73							
														Completed. 9.6.73							
Weather Conditions.						Type of Rig 254mm Shell & Auger						Grading % Passing						Triaxial Test		Water Remarks	
Stratum Scale 1:50		Depth M	Sample No.	S.P.T. Blow Count (N)	Legend	M.C. Q.N.C. %	INDEX PROPERTIES.				70 40 20 10 5					BULK DENSITY Kg/M <sup>3</sup>	C Kn/M <sup>2</sup>	φ°			
Thickness							LL	PL	PI	Flow	75 600 210 150 75										
Red & grey MARL		8.00 8.34 9.30 10.06	B4 UL 6 DL 6 PT												1985	183	0	End of Borehole			
		1.77		125																	
REMARKS.						Sample Depth		Soil Type	C.B.R						Compaction						
						MC %	PL	5. charge	Top		Bottom		Vol %	AS 1377 No	Maximum Dry Density	Optim M.C					
									01	02	01	02									

<b>Soil Mechanics</b>				<b>BOREHOLE No. 7298</b> Sheet 1 of 2					
<b>Equipment &amp; Methods</b> 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 <span style="float: right;"><b>SK42NE58</b></span> Location A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4							
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		<b>Ground Level</b> 74.35 m A.O.D.		<b>Coordinates</b> 47314.0 mE 16087.5 mN		<b>Date</b> 28.01.88 to 29.01.88			
Description	Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log		Field Records and Test Results	
Inspection pit dug to 0.40m	74.35		(0.40)	Depth	W	TCR	SCR	RQD	If
very stiff red brown CLAY  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)  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.  From 2.70m to 3.00m very thinly interbedded with light grey green slightly fine sandy SILTSTONE strong	73.95	x x x	0.40	0.40 - 1.50		95	82	64	NI 150 200
assessed zone of core loss  light grey green locally mottled red brown and grey green siltstone weak to very weak		x x x		1.50 - 3.00		77	60	56	NI 60
assessed zone of core loss  light grey green locally mottled red brown and grey green siltstone weak to very weak		x x x		3.00 - 4.20		83	67	58	NI 130 190
assessed zone of core loss  light grey green locally mottled red brown and grey green siltstone weak to very weak		x x x	(6.25)	4.20 - 6.65		95	93	80	20 120 250
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)  non intact	67.70	x x x	6.65	6.65 - 8.00		78	59	54	NI 150 250
BOREHOLE ENDS AT 8.10 m.	67.40	x x x	(0.30)						
BOREHOLE ENDS AT 8.10 m.	66.25	x x x	(1.15 pan)						
BOREHOLE ENDS AT 8.10 m.		x x x	8.10						
<b>Remarks</b>									Logged by ANC
<b>Notes:</b> 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.									Scale 1:50 Fig.





Soil Mechanics					BOREHOLE No. 729R																																
Equipment & Methods As sheet 1					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 Coordinates Date As sheet 1																																
Description					Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log			Field Records and Test Results																								
								Depth	W	TCR	SCR	RQD	If																								
<table border="1"><caption>Water Level Observations During Boring</caption><thead><tr><th>Date</th><th>Time</th><th>Depth of Hole (m)</th><th>Depth of Casing (m)</th><th>Depth to Water (m)</th><th>Remarks</th></tr></thead><tbody><tr><td>1988</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>28.01</td><td>1800</td><td>3.00</td><td></td><td>DRY</td><td></td></tr><tr><td>29.01</td><td>0800</td><td>3.00</td><td></td><td>DRY</td><td></td></tr></tbody></table>														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	
Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks																																
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28.01	1800	3.00		DRY																																	
29.01	0800	3.00		DRY																																	
Remarks																																					
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																																					
Logged by AAC Scale 1:50 Fig. 57																																					

Soil Mechanics SKA2NE 58				BOREHOLE No. 738			
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 47333.0 mE 26097.0 mN	
						Date 02.02.88	
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records
				Depth	Sample Type No.	Test	
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		
band of light greenish grey fine sandy siltstone moderately weak	78.86		0.40	0.50 - 0.95	U 2		52 blows
				1.00	D 3		
				1.00 - 1.45	D 4	S N=25	
			(1.80)				
Dense light grey green in parts mottled red brown fine sandy SILT locally with occasional fine to medium gravel sized lithorelics (KM 4a)							
band of light greenish grey fine sandy siltstone strong	77.06		2.20	2.00 - 2.45	U 5		100 blows
				2.50	D 6		
				2.50 - 2.95	D 7	S N=57	
light greenish grey and reddish brown mottled fine sandy silt with rare fine gravel sized lithorelics				3.50 - 3.95	U 8		140 blows
				4.00	D 9		
				4.00 - 4.45	D 10	S N=75	
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			(5.55 pen)	5.00 - 5.45	D 11	S N=77	
				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 45 mm
				7.60 - 7.71	D 14	S (72)	Chiselling from 7.10m to 7.60m 7.00 hour 22, 50 for 30mm
BOREHOLE ENDS AT 7.75 m.	71.51		7.75				
Remarks							
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.							
14.04.88/14.03 (Ver 3.1.0)							
53							



ϕ Soil Mechanics					BOREHOLE No. 730																																						
Equipment & Methods As sheet 1					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 Coordinates Date As sheet 1																																						
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records																																				
				Depth	Sample Type No.	Test																																					
<table border="1"><caption>Water Level Observations During Boring</caption><thead><tr><th>Date</th><th>Time</th><th>Depth of Hole (m)</th><th>Depth of Casing (m)</th><th>Depth to Water (m)</th><th>Remarks</th></tr></thead><tbody><tr><td>1988</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>02.02</td><td>-</td><td>2.10</td><td>1.50</td><td>ERY</td><td>DMP</td></tr><tr><td>02.02</td><td>-</td><td>3.60</td><td>3.00</td><td></td><td>DMP</td></tr><tr><td>02.02</td><td>-</td><td>5.10</td><td>4.50</td><td></td><td>DMP</td></tr><tr><td>02.02</td><td>-</td><td>7.75</td><td>4.50</td><td></td><td>DMP, end of borehole</td></tr></tbody></table>								Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks	1988						02.02	-	2.10	1.50	ERY	DMP	02.02	-	3.60	3.00		DMP	02.02	-	5.10	4.50		DMP	02.02	-	7.75	4.50		DMP, end of borehole
Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks																																						
1988																																											
02.02	-	2.10	1.50	ERY	DMP																																						
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																																											
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 borehole are in feet and inches.																																											
Logged by ANC Scale 1:50 Fig.																																											


<span style="font-size: 2em; vertical-align: middle;">Φ</span> Soil Mechanics						BOREHOLE No. 7302 Sheet 1 of 2					
<b>Equipment &amp; Methods</b> 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.				<b>Location No.</b> 7382 <b>Location</b> SK42NE 58 2 4 21333.0 46097.0 ? A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4							
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners				<b>Ground Level</b> 79.26 m A.O.D.		<b>Coordinates</b> 27333.0 mE 46097.0 mN			<b>Date</b> 04.02.88 to 05.02.88		
Description	Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log				Field Records and Test Results	
				Depth	W	TCR	SCR	RCD	If		
Cable Tool Boring to 7.75m	79.26		(7.00)								
<b>Assessed zone of core loss</b>	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)	71.16	non intact assessed zone of core loss sub-vertical joint with speckled black stain disturbed by SPT	(1.10) 8.10 (2.90)	7.00 - 8.40 8.40 - 9.40 9.40 - 11.40	21 70 85	6 60 63	0 60 15	W 30 M 190 240	at 7.00m S:122 6.14/30.42. 50 for 75mm		
<b>Remarks</b> 1. Water added to assist drilling below 7.00m.											
<b>Notes:</b> 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											
Logged by MAC Scale 1:50 Fig.										at 9.40m S:114 15.17/28.32 28.28	



[illegible]

<b>Soil Mechanics</b>				<b>BOREHOLE No. 731R</b> Sheet 1 of 2						
<b>Equipment &amp; Methods</b> 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.		<b>Location No.</b> 7382 <span style="float: right;"><b>SK42NE60</b></span> <b>Location</b> A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4								
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		<b>Ground Level</b> 74.00 m A.O.D.		<b>Coordinates</b> 47322.0 mE 26116.0 mN		<b>Date</b> 26.01.88				
Description	Reduced Level	Legend	Depth (Thick)	Drilling Records Depth	W	TCR	SCR	RQD	If	Field Records and Test Results
Hand dug inspection pit to 0.30m	74.00		(0.30)							
<div style="border: 1px solid black; padding: 2px; display: inline-block;">           assessed zone of core loss         </div> 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)	73.70		0.30	0.30 - 1.30		85	10	10		
Assessed zone of core loss	72.70		1.30							
<div style="border: 1px solid black; padding: 2px; display: inline-block;">           highly to completely weathered; medium to coarse lithorelics in a silt matrix         </div> 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	1.30 - 2.90		69	47	14		at 1.30m S:52 8,30/52 for 75mm
<div style="border: 1px solid black; padding: 2px; display: inline-block;">           occasional bands of moderately weathered SILTSTONE weak to very weak         </div> Assessed zone of core loss	70.75		3.25	2.90 - 4.45		77	45	0		at 2.90m S:77 9,11/27,50 for 75mm
<div style="border: 1px solid black; padding: 2px; display: inline-block;">           light grey green fine sandy SILT with frequent medium to coarse gravel sized lithorelics         </div> 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)	67.40		6.60	4.45 - 6.30		89	68	20		at 4.45m S:75 10,10/25,50 for 75mm
<div style="border: 1px solid black; padding: 2px; display: inline-block;">           with bands of light grey green and red brown siltstone moderately weak         </div> Dense becoming hard red brown clayey SILT with occasional fine to medium gravel sized lithorelics (completely weathered SILTSTONE) (KM 4a)	66.20		7.80	6.30 - 8.00		82	71	65		at 6.30m S:83 11,17/27,56 for 75mm
<div style="border: 1px solid black; padding: 2px; display: inline-block;">           assessed zone of core loss         </div> Light grey brown moderately weathered very silty fine grained SANDSTONE weak to very weak (KEUPER SANDSTONE 2)	65.70		8.30							at 8.00m S:94 10,16/37,57 for 75mm
BOREHOLE ENDS AT 8.30 m.										
<b>Remarks</b>										<b>Logged by</b> AAC
<b>Notes:</b> 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.										<b>Scale</b> 1:50 <b>Fig.</b> EE



 Soil Mechanics						BOREHOLE No. 731R																										
Equipment & Methods  As sheet 1						Location No. 7382 SK42 NE 60 Location 47322.0 26116.0 A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4																										
						Ground Level		Coordinates		Date																						
Carried out for Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners						As sheet 1																										
Description						Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log			Field Records and Test Results																		
									Depth	W	TCR	SCR	RCD		If																	
<table border="1"><caption>Water Level Observations During Boring</caption><thead><tr><th>Date</th><th>Time</th><th>Depth of Hole (m)</th><th>Depth of Casing (m)</th><th>Depth to Water (m)</th><th>Remarks</th></tr></thead><tbody><tr><td>1988</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>26.01</td><td>-</td><td>6.30</td><td>4.45</td><td>6.30</td><td>water strike</td></tr></tbody></table>						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									
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																										
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						1:50																										
						Fig.																										
						55																										

<b>Soil Mechanics</b>				<b>BOREHOLE No. 732</b> Sheet 1 of 2			
<b>Equipment &amp; Methods</b> Cable tool boring, 150mm diameter, from ground level to 7.60m		<b>Location No.</b> 7382 <b>SK42NE61</b> <b>Location</b> A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4					
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		<b>Ground Level</b> 79.60 m A.O.D.		<b>Coordinates</b> 47341.0 mE 26126.0 mN		<b>Date</b> 01.02.88	
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records
				Depth	Sample Type	No. Test	
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	54 blows  2,3/3,5,7,9
dense light greenish grey slightly fine sandy SILT with occasional medium gravel sized lithorelics	78.70		0.90	0.50 - 0.95	U	2	
				1.00	D	3	
				1.00 - 1.45	D	4	
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	
				2.50 - 2.95	D	7	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	9,14/16,19,27,30
				5.00 - 5.45	D	12	10,22/28,30,31,40
				6.00 - 6.45	D	13	9,18/21,24,29,35
				7.00 - 7.21	D	14	15,27/50 for 50mm Chiselling from 7.00m to 7.40m 1.00 hour 21,36/50 for 33mm
				7.40 - 7.58	D	15	
BOREHOLE ENDS AT 7.60 m.			7.60				
<b>Remarks</b>							<b>Logged by</b> AAC
<b>Notes:</b> 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 centimetres.							<b>Scale</b> 1:50 <b>Fig.</b>





Soil Mechanics						BOREHOLE No. 732																																																																						
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		Coordinates As sheet 1																																																																						
Description				Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records																																																																		
							Depth	Sample			Test																																																																	
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Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks																																																																							
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Notes: Materials are described in accordance with Appendixes. 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.										Fig.																																																																		
14.04.88/14.05 (Ver 3.1.0)										56																																																																		

# Soil Mechanics

BOREHOLE No. 7322

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

SK42 NE61

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

47341.0 mE

26126.0 mN

Date

08.02.88

to 09.02.88

## Description

Reduced  
Level

Legend

Depth  
(Thick)

Drilling Records

Depth

W

TCR

SCR

RQD

If

Mechanical core log

Field Records  
and  
Test Results

Cable Tool Boring to 7.60m

## Assessed zone of core loss

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)

non intact

assessed zone of core loss

Light grey green moderately weathered slightly fine sandy SILTSTONE very weak (KM 2)

altered to a friable silt with frequent lithorelics

## Assessed zone of core loss

SILTSTONE (as sheet 2)

Remarks

79.60

72.60

72.25

70.45

70.10

69.80

(7.00)

7.00

(0.35)

7.35

(1.80)

9.15

(0.35)

9.50

(0.30)

9.80

7.00 - 8.50

8.50 - 9.50

9.50 - 11.50

63

37

27

70

50

29

85

45

34

at 7.00m  
S:M= 154  
2, 10, 18, 36,  
30, 40

at 8.50m  
S:M= 154  
10, 22, 31, 50  
for 7mm  
at 9.50m  
S:M= 94  
10, 18, 18, 18,  
28, 30

Logged by

MC

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.

11.04.88/13.51 (Ver 3.1.0)

<b><span style="font-size: 2em; vertical-align: middle;">Φ</span> Soil Mechanics</b>						BOREHOLE No. 732R Sheet 2 of 2																					
Equipment & Methods  As sheet 1			Location No. 7382 Location <div style="text-align: right; font-weight: bold;">SK42 NEG1 47341.0 26126.0</div> 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	Mechanical core log				Field Records and Test Results																		
				Depth	W	TCR	SCR	RGD	If																		
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)	68.35	x x x	(1.45)	9.50 - 11.50		85	45	34	NL 180																		
		x x x																									
		x x x																									
		x x x																									
		x x x																									
Very dense red brown clayey SILT (weathered SILTSTONE) (KEUPER MARL 4a/b) Below 12.40m locally with fine to coarse gravel sized lithorelics	66.50	x x x	(1.85)	11.50 - 14.00		88	80	28	NL 170																		
		x x x																									
		x x x																									
		x x x																									
		x x x																									
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)	65.46	x x x	(1.04 pan)						NL 290																		
		x x x																									
		x x x																									
		x x x																									
		x x x																									
BOREHOLE ENDS AT 14.14 m.																											
<b>Water Level Observations During Boring</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Depth of Hole (m)</th> <th>Depth of Casing (m)</th> <th>Depth to Water (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1988 08.02</td> <td>1800</td> <td>7.00</td> <td>7.00</td> <td></td> <td>cased off</td> </tr> <tr> <td>09.02</td> <td>0800</td> <td>7.00</td> <td>7.00</td> <td></td> <td>cased off</td> </tr> </tbody> </table>										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
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:																											
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.																											

Logged by  
AC  
Scale  
1:50  
Fig.

57

<b>Soil Mechanics</b>				<b>BOREHOLE No. 733R</b> Sheet 1 of 2					
<b>Equipment &amp; Methods</b> Inspection pit dug to 0.70m, Rotary core, air flush producing 92mm diameter core from 0.70m to 8.35m		<b>Location No.</b> 7382 <b>SK42NE62</b> <b>Location</b> A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4							
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		<b>Ground Level</b> 73.50 m A.O.D.		<b>Coordinates</b> 47331.0 mE 26144.5 mN		<b>Date</b> 28.01.88			
Description	Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log		Field Records and Test Results	
				Depth	W	TCR	SCR	RQD	If
Inspection pit dug to 0.70m	73.50		(0.70)						
Assessed zone of core loss	72.80		0.70 (0.45)						
72.35			1.15	0.70 - 1.50		44	31	0	NI 60 90
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)		Assessed zone of core loss  very stiff (hard) friable clay with mudstone lithorelics	(3.05)	1.50 - 3.00		33	20	15	NI 60 120
70 joint	69.30		4.20 (0.30)	3.00 - 4.50		97	90	60	NI 100 200
Red brown slightly weathered SILTSTONE strong with occasional light grey green siltstone pockets or lenses (KM 2)	69.00		4.50						
Assessed zone of core loss			(0.70)						
68.30			5.20 (0.60)						NI 120 150
Red brown slightly to moderately weathered locally silty MUDSTONE weak to moderately weak with occasional pockets of light green grey silt (KM 2)	67.70		5.80 (0.45)	4.50 - 7.00		72	34	25	
sub-vertical joint Light greenish grey slightly fine sandy siltstone very weak (non-intact)	67.25		6.25						NI 90 120
Firm to stiff becoming very stiff red brown very silty CLAY with frequent lithorelics (weathered MUDSTONE) (KM 3)		sub-vertical joint very dense silt with frequent lithorelics	(2.10 pen)	7.00 - 8.00		90	75	63	NI 150 180
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	
BOREHOLE ENDS AT 8.35 m.									at 8.20m S: (78) 28, 50 for 75mm
<b>Remarks</b> 1. Water level observations during boring: dry to 4.50m, damp 4.50m to base.  <b>Notes:</b> 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.									<b>Logged by</b> AAC  <b>Scale</b> 1:50  <b>Fig.</b> 58



[illegible]



Soil Mechanics					BOREHOLE No. 734																																																		
Equipment & Methods As sheet 1					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 Coordinates Date As sheet 1																																																		
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records																																																
				Depth	Sample Type No.	Test																																																	
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Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks																																																		
1988																																																							
29.01	0800	0.00	0.00																																																				
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Remarks																																																							
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Logged by AMC Scale 1:50 Fig. 59																																																							

Soil Mechanics				BOREHOLE No. 734			
Equipment & Methods				Location No. 7382			
Cable tool boring, 150mm diameter, from ground level to 7.10m				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 76154.0 mN	
						Date 29.01.88	
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records
				Depth	Sample Type No.	Test	
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)	79.81		(1.80)	0.20	D	1	60 blows  2,2/3,4,6,6
				0.50 - 0.95	U	2	
				1.00	D	3	
				1.00 - 1.45	D	4	
dense mottled red brown and grey green locally very clayey SILT with rare lithorelics  Stiff becoming very stiff (hard) red brown very silty CLAY with occasional pockets and lenses of light greenish grey silt  (KEUPER MARL 3/4a)  Below 2.40m with fine to medium gravel sized silty mudstone lithorelics Locally with very closely spaced fissures occasionally with speckled black staining  red brown locally green grey probably moderately weathered SILTSTONE band weak to very weak	78.01		1.80	1.80	D	5	55 blows  3,5/4,4,3,4  75 blows  5,7/7,10,12,16  150 blows  9,12/17,19,23,26  12,24/26,50 for 50mm Chiselling from 6.40m to 6.90m 1.00 hour 21,50 for 40mm
				1.90 - 2.35	U	6	
				2.40	D	7	
				2.40 - 2.95	D	8	
				3.40 - 3.85	U	9	
				3.90	D	10	
				3.90 - 4.35	D	11	
				4.90 - 5.25	U	12	
				5.30	D	13	
				5.30 - 5.75	D	14	
				6.30 - 6.58	D	15	
				6.90 - 7.02	D	16	
BOREHOLE ENDS AT 7.10 m.	72.71		7.10				

Remarks

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.

Logged by  
ANC

Scale  
1:50

Fig.

59



Φ Soil Mechanics					BOREHOLE No. 7342					
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		Mechanical core log				Field Records and Test Results
				Depth	W	TCR	SCR	RCD	If	
Cable Tool Boring to 7.10m	79.81		(6.00)							
Assessed zone of core loss										
Very stiff (hard) red brown very silty CLAY with occasional fine gravel sized lithorelics (KEUPER MARL 3/4s)										
Red brown and light greenish grey slightly to moderately weathered SILTSTONE moderately weak (KEUPER MARL 2)	73.81 73.66		6.00 (0.15) 6.15 (0.25)							
Assessed zone of core loss	73.41		6.40 (0.35)							
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)	73.06 72.46		6.75 (0.60) 7.35 (1.90)	6.00 - 7.50		60	23	0		at 6.00m 5:75 10.19/28.50 for 75mm
Light grey green locally red brown slightly to moderately weathered fine grained SANDSTONE weak to very weak (KM 2)				7.50 - 9.50		100	88	81		
Assessed zone of core loss	70.56 70.31		9.25 (0.25) 9.50 (0.40)	9.50 - 12.30		86	79	5		at 9.50m 5:50 50 for 50mm no recovery
SANDSTONE (as sheet 2)	69.91		9.90							
Remarks										Logged by ANC
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.										Scale 1:50 Fig. 60



<b>Soil Mechanics</b>				<b>BOREHOLE No. 7342</b> Sheet 2 of 2																																			
<b>Equipment &amp; Methods</b>  As sheet 1		<b>Location No. 7342</b> <b>Location</b> SK42NE63 AT349.0 26154.0 A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4																																					
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		<b>Ground Level</b>		<b>Coordinates</b>		<b>Date</b>  As sheet 1																																	
Description	Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log			Field Records and Test Results																														
				Depth	W	TCR	SCR	RQD	IF																														
Light greenish grey and red brown slightly locally moderately weathered SANDSTONE strong (KM 2)	69.06		(0.85) 10.75	9.50 - 12.30		86	79	5	NI 90 150																														
Very dense red brown very clayey SILT with occasional bands of light red brown very weak SILTSTONE (KM 3/4a)	67.76		(1.30) 12.05						at 12.30m S: (72) 22.50 for 70mm																														
Below 11.50m with fine to medium occasionally coarse gravel sized lithorelics <div style="border: 1px solid black; padding: 2px; margin-top: 5px; display: inline-block;">             non intact              assessed zone of core loss              non intact due to 2 intersecting sub-vertical joints stained black           </div>			(2.01 pen) 14.06						NI 110 270																														
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 <div style="border: 1px solid black; padding: 2px; margin-top: 5px; display: inline-block;">             sub-vertical joint stained black           </div>	65.75		14.06						at 14.00m S: (50) 50 for 60mm																														
BOREHOLE ENDS AT 14.06 m.																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="6" style="text-align: left; padding: 2px;">Water Level Observations During Boring</th> </tr> <tr> <th style="text-align: left; padding: 2px;">Date</th> <th style="text-align: left; padding: 2px;">Time</th> <th style="text-align: left; padding: 2px;">Depth of Hole (m)</th> <th style="text-align: left; padding: 2px;">Depth of Casing (m)</th> <th style="text-align: left; padding: 2px;">Depth to Water (m)</th> <th style="text-align: left; padding: 2px;">Remarks</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">1988</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">10.02</td> <td style="padding: 2px;">1730</td> <td style="padding: 2px;">12.30</td> <td style="padding: 2px;">6.70</td> <td style="padding: 2px;">10.80</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">11.02</td> <td style="padding: 2px;">0630</td> <td style="padding: 2px;">12.30</td> <td style="padding: 2px;">6.70</td> <td style="padding: 2px;">9.80</td> <td style="padding: 2px;"></td> </tr> </tbody> </table>										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	0630	12.30	6.70	9.80	
Water Level Observations During Boring																																							
Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks																																		
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11.02	0630	12.30	6.70	9.80																																			
<b>Remarks</b>									<b>Logged by</b> AAC																														
<b>Notes:</b> 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.									<b>Scale</b> 1:50 <b>Fig.</b> 60																														

Φ Soil Mechanics				BOREHOLE No. 735R						
Equipment & Methods				Location No. 7382						
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.				SK42NE64						
				Location A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4						
Carried out for				Ground Level		Coordinates				
Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners				72.95 m A.O.D.		47340.0 NE 25173.0 NW				
				Date 25.01.88 to 26.01.88						
Description	Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log				Field Records and Test Results
				Depth	W	TCR	SCR	RQD	If	
<b>TOPSOIL</b>	72.95		(0.20)							
Red brown moderately weathered SILTSTONE moderately weak to moderately strong with frequent black staining (KM 2)	72.75	x x x	0.20							
		x x x	(0.40)							
	72.35		0.60							
Assessed zone of core loss			(0.60)							
	71.75		1.20	0.60 - 1.50		33	9	0		
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										
assessed zone of core loss disturbed by SPT										
light greenish grey slightly fine sandy siltstone strong										
			(3.40)	1.50 - 2.80		77	46	11		at 1.50m S: 7, 8, 12, 13, 19
reddish brown moderately weathered siltstone band										
				2.80 - 4.60		83	65	47		at 2.80m S: 7, 8, 12, 13, 19
	68.35		4.60							
Stiff to very stiff red brown very silty CLAY (weathered MUDSTONE) (KM 4b)			(0.45)							
	67.90		5.05							
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			(1.40)	4.60 - 6.45		100	100	75		at 4.60m S: 7, 8, 12, 13, 15, 19
assessed zone of core loss										
	66.50		6.45							
			(0.50)							
	66.00		6.95							
			(0.55)	6.45 - 8.00		87	87	23		
Very stiff red brown very clayey SILT locally with up to coarse gravel sized lithorelics (weathered SILTSTONE) (KM 3/4a)										
	65.45		7.50							
			(0.00p)							
	64.80		8.15							at 8.00m S: (71) 21.50 for 75mm
Red brown slightly to moderately weathered sandy SILTSTONE moderately weak (KM 2)										
Very stiff (hard) red brown clayey SILT locally with closely spaced sub-horizontal fissures (weathered SILTSTONE) (KEUPER MARL 3)										
BOREHOLE ENDS AT 8.15 m.										
<b>Remarks</b>  <b>Notes:</b> 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.										Logged by
										AAC
										Scale
										1:50
										Fig.
										61

Soil Mechanics						Borehole No. 7352													
Equipment & Methods						Location No. 7382													
As sheet 1						Location													
Carried out for						Coordinates													
Client: Department of Transport (E. Midlands Reg. Office)						Date													
Engineer: Scott Wilson Kirkpatrick & Partners						As sheet 1													
Description						Ground Level													
Reduced Level						Legend													
Depth (Thick)						Drilling Records													
Mechanical core log						Field Records and Test Results													
Date						Depth													
Time						W													
Depth of Hole (m)						TCR													
Depth of Casing (m)						SCR													
Depth to Water (m)						ROD													
Remarks						If													
<p>Water Level Observations During Boring</p> <table border="1"> <thead> <tr> <th>Date</th> <th>Time</th> <th>Depth of Hole (m)</th> <th>Depth of Casing (m)</th> <th>Depth to Water (m)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1988</td> <td>0800</td> <td>1.50</td> <td></td> <td>DRY</td> <td></td> </tr> </tbody> </table>								Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks	1988	0800	1.50		DRY	
Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks														
1988	0800	1.50		DRY															
<p>Remarks</p>																			
<p>Notes:</p> <p>Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics</p> <p>All depths and reduced levels in metres. Thicknesses given in brackets in depth column.</p>																			
<p>Logged by</p> <p>ANC</p> <p>Scale</p> <p>1:50</p> <p>Fig.</p>																			
<p>61</p>																			

<b>Soil Mechanics</b>					<b>BOREHOLE No. 736</b> Sheet 1 of 2		
<b>Equipment &amp; Methods</b> Cable tool boring, 150mm diameter, from ground level to 7.50m	<b>Location No. 7382</b> <span style="float: right; font-size: 1.2em;"><b>SK42NE65</b></span> <b>Location</b> A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4						
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners	<b>Ground Level</b> 79.88 m A.O.D.		<b>Coordinates</b> 47362.0 mE 2 6181.0 mN		<b>Date</b> 22.01.88 to 23.01.88		
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records
TOPSOIL	79.88 79.58	[Symbol]	(0.30) 0.30	Depth	Sample Type	No.	Test
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)	78.68	[Symbol]	(0.90) 1.20	0.50 - 0.95	D	2	S N=24
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)		[Symbol]	1.20	1.30 - 1.75	U	4	61 blows
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		[Symbol]	(3.90)	1.80	D	5	S N=12
		[Symbol]		1.80 - 2.25	D	6	2,3/2,2,4,4
		[Symbol]		2.80 - 3.25	U	7	94 blows
		[Symbol]		3.30	D	8	
		[Symbol]		3.30 - 3.75	D	9	S N=56
		[Symbol]		4.30 - 4.60	U	10	150 blows
		[Symbol]		4.65	D	11	
		[Symbol]		4.65 - 5.10	D	12	S N=58
		[Symbol]		5.10	W	13	5,5/7,11,19,21
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)	74.78	[Symbol]	5.10	5.60 - 6.05	D	14	S N=77
By 6.60m becoming moderately weathered MUDSTONE very weak		[Symbol]	(2.40 pen)	6.60 - 6.80	D	15	S 50
		[Symbol]		7.20 - 7.31	D	16	S (67)
BOREHOLE ENDS AT 7.50 m.	72.38	[Symbol]	7.50				
<b>Remarks</b>  <b>Notes:</b> 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.							<b>Logged by</b> AAC  <b>Scale</b> 1:50  <b>Fig.</b> 62





Soil Mechanics					BOREHOLE No. 736																																																																	
					Sheet 2 of 2																																																																	
Equipment & Methods As sheet 1			Location No. 7362 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 As sheet 1																																																																	
Description			Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records																																																													
						Depth	Sample			Test																																																												
Type	No.																																																																					
<table border="1"><caption>Water Level Observations During Boring</caption><thead><tr><th>Date</th><th>Time</th><th>Depth of Hole (m)</th><th>Depth of Casing (m)</th><th>Depth to Water (m)</th><th>Remarks</th></tr></thead><tbody><tr><td>1988</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>22.01</td><td>1330</td><td>0.00</td><td>0.00</td><td></td><td></td></tr><tr><td>22.01</td><td>-</td><td>1.40</td><td>1.00</td><td>DRY</td><td></td></tr><tr><td>22.01</td><td>-</td><td>3.90</td><td>2.50</td><td>DRY</td><td></td></tr><tr><td>22.01</td><td>-</td><td>4.40</td><td>3.00</td><td>DRY</td><td></td></tr><tr><td>22.01</td><td>1700</td><td>5.10</td><td>3.00</td><td>DRY</td><td>End of shift</td></tr><tr><td>23.01</td><td>0800</td><td>5.10</td><td>3.00</td><td>4.00</td><td>Water sample taken</td></tr><tr><td>23.01</td><td>-</td><td>5.70</td><td>3.00</td><td></td><td>DMP</td></tr><tr><td>23.01</td><td>-</td><td>7.50</td><td>3.00</td><td></td><td>DMP End of cable tool boring</td></tr></tbody></table>						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		DMP	23.01	-	7.50	3.00		DMP End of cable tool 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																																																																	
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23.01	-	7.50	3.00		DMP End of cable tool boring																																																																	
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Notes:									Scale 1:50																																																													
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.									Fig. 12.04.88/15.13 (Ver 3.1.0)																																																													
									62																																																													

<div><div></div><div>Soil Mechanics</div></div>						DRAFT	BOREHOLE No. 7368 Sheet 1 of 3			
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		SKA2NE65						
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 $\pm 7362.0 \text{ NE}$ $Z = 6181.0 \text{ MN}$		Date 11.02.88 to 12.02.88				
Description	Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log	Field Records and Test Results			
				Depth	W	TOR	SQR	RQD	If	
Cable Tool Boring to 7.50m	79.88		(7.00)							
Very stiff (hard) red brown very silty CLAY with occasional fine gravel sized lithorelics (weathered MUDSTONE) (KEUPER MARL 3/4a)										
Red brown slightly to moderately weathered SILTSTONE weak to moderately weak (KM 2)	72.88		7.00							
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)	71.88	X X X	8.00							
	71.68	X X X	(0.20)							
	71.38	X X X	(0.30)							
			8.50							
Light greenish brown locally red brown slightly to moderately weathered very silty fine SANDSTONE (KEUPER SANDSTONE 2)	70.93		8.95							
From 9.80m to 10.10m stiff red brown silty CLAY with frequent fine to medium gravel sized lithorelics	70.43	.	9.45							
		.	(0.89)							
				7.00 - 8.50		33	30	13		at 7.00m S:N=90 7,14,18,16,24,30
				8.50 - 9.80		65	28	8	NK NI SO	
				9.80 - 11.50		82	68	8	NK NI SO	at 9.80m
Remarks										
										Logged by ANC
										Scale 1:50 Fig.
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)										63



Soil Mechanics				BOREHOLE No. 7362							
Equipment & Methods As sheet 1		Location No. 7382 Location A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4		Sheet 2 of 3 SK42NE65 47362.0 26181.0							
Carried out for Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		Ground Level		Coordinates		Date					
Description		Reduced Level	Legend	Depth (Thick)	Drilling Records	Mechanical core log	Field Records and Test Results				
					Depth	W	TCR	SCR	RCD	If	
SANDSTONE (as sheet 1)		69.54	(0.89)	10.34							at 9.80m S:81 6.21/31.50 for 75mm
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				(1.56)	9.80 - 11.50		82	68	8		
assessed zone of core loss		67.98		11.90							at 11.50m S:50 15.18/50 for 75mm
Light reddish green slightly to moderately weathered very silty fine SANDSTONE weak Closely spaced sub-horizontal fractures (KEUPER SANDSTONE 2/3)		67.28		(0.70)	11.50 - 14.00		96	86	52		
irregular 70 joint				12.60							
sub-vertical joint				(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) 18.50 for 50mm
stiff red brown very silty CLAY											
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 ANC
Notes:											Scale 1:50
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.											Fig. 63

<b>Soil Mechanics</b> <span style="float: right; margin-left: 20px;">SKA2NE65 # 7362.0 26181.0</span>		<b>BOREHOLE No.</b> 736R <b>Sheet</b> 3 of 3	
<b>Location No.</b> 7382 <b>Location</b> A42 CASTLE DONINGTON NORTH : GROUND INVESTIGATION CONTRACT 4		<b>Type of installation</b> Standpipe <b>Internal diameter of tubing</b> 19 mm <b>Length of filter</b> 12000 mm <b>Diameter of filter</b> 120 mm	
<b>Carried out for</b> <b>Client :</b> Department of Transport (E. Midlands Regional Office) <b>Engineer :</b> Scott Wilson Kirkpatrick and Partners			

Depth (m)		SUMMARY OF INSTALLATION	Legend	Depth below Ground Level (m)
From	To			
		Surface protection: Gas barrel with screw cap		0.00
0.00	2.00	Concrete		2.00
0.00	14.00	UPVC tubing		14.00
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.

Scale 1:100

**Fig.** 63



 <b>Soil Mechanics</b>				BOREHOLE No. 737R						
Equipment & Methods				Location No. 7382						
Hand dug inspection pit from ground level to 0.60m. Rotary core drilling, air flush, producing 92mm diameter core, from 0.60m to 8.37m				Location <b>SK42NE66</b>						
Carried out for				Ground Level		Coordinates				
Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners				72.50 m A.O.D.		47349.0 mE 26201.5 mN				
Description				Date		27.01.88				
Description	Reduced Level	Legend	Depth (Thick)	Drilling Records		Mechanical core log				Field Records and Test Results
				Depth	W	TCR	SCR	RCD	If	
Inspection pit dug to 0.60m	72.50		(0.60)							
Dense light greenish grey locally friable SILT with occasional lithorelics (KM 4a)	71.90	x x x	0.60 (0.43)							
	71.47	x x x	1.03							
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)				0.60 - 2.10		100	93	72		
assessed zone of core loss disturbed by SPT			(2.57)						NI 150 320	at 2.10m S:50 8.21/50 for 75mm
				2.10 - 3.60		87	77	59		
Assessed zone of core loss	68.90		3.60 (0.45)							
Very stiff locally stiff red brown very silty CLAY locally with occasional lithorelics (weathered MUDSTONE) (KM 3)	68.45		4.05 (0.90)	3.60 - 4.70		59	59	0		at 3.60m S:50 8.21/50 for 75mm no recovery
From 4.84m to 4.93m band of light greenish grey silt	67.55		4.95							at 4.70m S:108 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)				4.70 - 6.90		100	89	64		
stepped sub-vertical joint silty clay with frequent lithorelics assessed zone of core loss disturbed by SPT			(2.40)						NI 150 370	
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)							
BOREHOLE ENDS AT 8.38 m.	64.12		8.38							at 8.00m S:115 11.8/24.41, 50 for 75mm
Remarks										Logged by ANC
Notes:										Scale 1:50
Materials are described in accordance with Appendixes. 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.										Fig. 64
12.04.88/16.13 (Ver 3.1.0)										



<h1>ϕ Soil Mechanics</h1>				BOREHOLE No. 748																																							
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 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 73.45 m A.O.D.		Coordinates ▲ 7292.0 mE ▲ 6133.5 mN																																					
						Date 01.02.88 to 02.02.88																																					
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records																																				
				Depth	Sample Type No.	Test																																					
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)	72.65	xxx	(0.50)	0.50 - 0.70	1	b																																					
		xxx	0.80																																								
Very stiff red brown and dark brown mottled CLAY with occasional decayed plant matter and rare angular medium gravel (FILL)		o	(1.00)	1.00 - 1.45	D	2	N=34 5,9/7,5,8,14																																				
		o																																									
	71.65	xxx	1.80	2.00 - 2.45	D	3	N=71 6,8/8,12,22,29																																				
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		xxx																																									
(KEUPER MARL 4a)		xxx		3.00 - 3.45	D	4	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		xxx	(3.20 pen)																																								
		xxx		4.00 - 4.38	D	5	S 94 7,14/17,25,52 for 75mm																																				
Below about 4.80m becoming light grey green probably moderately weathered SILTSTONE weak to very weak		xxx					Chiselling from 4.40m to 4.70m 1.00 hour																																				
		xxx		4.70 - 5.00	D	6	S 54 13,24/54 for 75mm																																				
BOREHOLE ENDS AT 5.00 m.	68.45	xxx	5.00																																								
<table border="1"><caption>Water Level Observations During Boring</caption><thead><tr><th>Date</th><th>Time</th><th>Depth of Hole (m)</th><th>Depth of Casing (m)</th><th>Depth to Water (m)</th><th>Remarks</th></tr></thead><tbody><tr><td>1988</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>01.02</td><td>1800</td><td>1.50</td><td>1.50</td><td>IRY</td><td>End of shift</td></tr><tr><td>02.02</td><td>0800</td><td>1.50</td><td>1.50</td><td>IRY</td><td></td></tr><tr><td>02.02</td><td>-</td><td>2.00</td><td>1.84</td><td>IRY</td><td></td></tr><tr><td>02.02</td><td>-</td><td>5.00</td><td>1.84</td><td>IRY</td><td>End of cable tool boring</td></tr></tbody></table>								Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks	1988						01.02	1800	1.50	1.50	IRY	End of shift	02.02	0800	1.50	1.50	IRY		02.02	-	2.00	1.84	IRY		02.02	-	5.00	1.84	IRY	End of cable tool boring
Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks																																						
1988																																											
01.02	1800	1.50	1.50	IRY	End of shift																																						
02.02	0800	1.50	1.50	IRY																																							
02.02	-	2.00	1.84	IRY																																							
02.02	-	5.00	1.84	IRY	End of cable tool boring																																						
Remarks							Logged by AAC																																				
Notes:							Scale 1:50																																				
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.							Fig. 12.04.88/16.33 (Ver 3.1.0)																																				

<b>Soil Mechanics</b>				<b>BORERHOLE No. 749</b> Sheet 1 of 1				
<b>Equipment &amp; Methods</b> Hand dug inspection pit from ground level to 1.00m. Cable tool boring, 150mm diameter, from 1.00m to 3.61m.		<b>Location No. 7382</b> <b>Location</b> SK42NE71 A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4						
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		<b>Ground Level</b> 56.75 m A.O.D.		<b>Coordinates</b> 47491.5 mE 26858.5 mN		<b>Date</b> 02.02.88		
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records	
				Depth	Sample Type No.	Test		
<b>TOPSOIL</b>								
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 (KEUPER SERIES SANDSTONE 3)	56.75		(0.20)	0.20 - 0.80	B	1		
	56.55		0.20					
Very stiff (hard) red brown CLAY with occasional fine gravel sized lithorelics thinly to thickly interlaminated with very dense light grey green SILT 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 (KEUPER SERIES MARL 3/4a)			(0.80)	1.00 - 1.45	D	2	N=98	
			55.75				1.00	N=53
							1.70 - 2.15	N=53
							2.50 - 2.95	N=98
							3.00 - 3.19	50
							3.40 - 3.61	50
BOREHOLE ENDS AT 3.61 m.		53.14	3.61	8,9,12,15,24,47  7,15,19,9,8,17  8,14,17,21,26,34  12,37,50 for 40m Crispling from 3.00m to 3.40m 1-25 hours 9,28,50 for 55mm				
<b>Remarks</b>  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.							Logged by MC Scale 1:50 Fig. 74	



Soil Mechanics				BOREHOLE No. 750			
Equipment & Methods Cable tool boring from ground level to 7.20m.		Location No. 7382 Location A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4		Sheet 1 of 2 SK42NE72			
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 47525.0 mE 76851.5 mN		Date 25.01.88 to 26.01.88	
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records
				Depth	Sample Type No.	Test	
Very stiff red brown very silty locally slightly fine sandy CLAY with occasional fine gravel sized lithorelics and a little 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	N-64	3,10/15,12,17,20
				2.00 - 2.45	D 5	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)			(5.80 pen)	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
				5.00 - 5.12	D 8	S (70)	20,50 for 40mm
				6.00 - 6.23	D 9	S 50	17,36/50 for 75mm Chiselling from 6.70m to 7.00m 1.00 hour
Below 7.00m becoming probably moderately weathered red brown MUDSTONE very weak				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
Notes:							Scale 1:50
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.							Fig. 75





Soil Mechanics						BOREHOLE No. 750				
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 As sheet 1				
Description				Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records
							Depth	Sample		
						Type		No.		
<b>Water Level Observations During Boring</b>										
Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks					
1985										
25.01	-	2.10	1.50	DRY						
25.01	-	3.20	3.00	DRY						
25.01	-	5.10	5.00	DRY						
25.01	0800	5.10	5.00	DRY	End of shift					
26.01	-	6.10	6.00	DRY						
26.01	-	7.20	6.00	DRY	End of cable tool boring					
Remarks						Logged by AAC				
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.						Scale 1:50				
						Fig.				
						75				
12.04.88/16.43 (Ver 3.1.0)										

<span style="font-size: 2em; vertical-align: middle;">Φ</span> Soil Mechanics				BOREHOLE No. 751 Sheet 1 of 2			
<b>Equipment &amp; Methods</b> Hand dug inspection pit from ground level to 1.20m. Cable tool boring, 150mm diameter, from 1.20m to 7.00m.		<b>Location No.</b> 7382 <b>Location</b> SK42 NE 73 A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4					
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		<b>Ground Level</b> -----		<b>Coordinates</b> 47530.0 mE 27315.0 mN		<b>Date</b> 02.02.88 to 03.02.88	
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records
				Depth	Sample Type	No.	Test
<b>TOPSOIL</b>			(0.20)				
Stiff red brown very silty CLAY with a little gravel (FILL)		[Symbol]	0.20				
Angular sandstone COBBLES (FILL)		[Symbol]	(0.40)				
<b>TARMAC</b>			0.60				
			(0.30)				
			0.90				
			(0.20)	1.00 - 1.20	B	1	
			1.10	1.20 - 1.65	U	2	81 blows
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)		[Symbol]	(1.40)	1.70	D	3	
				1.70 - 2.15	D	4	S N=23 2,3/5,6,7
Light grey brown fine sandy locally very sandy SILT locally very clayey with rare sub-rounded fine to medium gravel (Probable RIVER TERRACE DEPOSITS)		[Symbol]	2.50	2.60	D	5	
			(0.50)	2.60 - 3.05	U	6	50 blows
			3.00	3.10	D	7	
				3.10 - 3.55	D	8	S N=31 3,5/7,6,8,10 No sample No. 9
				3.60	W	11	
Brown becoming orange brown medium SAND with a little to some sub-angular fine to medium occasionally coarse mainly chert gravel (Probable TERRACE DEPOSITS)		[Symbol]	(1.80)	4.00 - 4.50	B	10	
				4.05 - 4.50		N=23	3,3/6,7,6,4
			4.80	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 (KEUPER MARL 3/4a)		[Symbol]		5.00 - 5.45	U	14	87 blows
				5.50	D	15	
Below about 5.20m with frequent fine to medium gravel sized lithorelics		[Symbol]	(2.20 pen)	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		[Symbol]		6.50 - 6.95	D	17	S N=62 10,11/10,15,17,20
BOREHOLE ENDS AT 7.00 m.			7.00				
<b>Remarks</b>  <b>Notes:</b> 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.							<b>Logged by</b> ANC <b>Scale</b> 1:50 <b>Fig.</b> 76



# Soil Mechanics

BOREHOLE No. 751

Sheet 2 of 2

Equipment & Methods

As sheet 1

Location No. 7382

Location

SK42NE73

47530.0 27315.0

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 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	-	1.30	1.20	DRY	
02.02	-	2.70	2.60	DRY	
02.02	-	3.60	3.50	3.50	
02.02	-	4.10	4.00	1.70	water strike after 20 mins
02.02	1730	4.80	4.80	3.00	
03.02	0800	4.80	4.80	4.00	End of shift
03.02	-	5.10	5.00	4.70	
03.02	-	6.60	6.00		DMP
03.02	-	7.00	6.00		DMP DMP, End of cable tool boring

marks

as:

series are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1.  
depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics

Logged by

ANC

Scale

1:50

Fig.

<b>Soil Mechanics</b>				<b>BOREHOLE No. 752</b> Sheet 1 of 2			
<b>Equipment &amp; Methods</b> Hand dug inspection pit from ground level to 1.40m. Cable tool boring, 150mm diameter, from 1.40m to 7.05m.		<b>Location No.</b> 7382 <span style="float: right; font-size: 1.2em;"><b>SK42NE74</b></span> <b>Location</b> A42 CASTLE DONINGTON NORTH: GROUND INVESTIGATION CONTRACT 4					
<b>Carried out for</b> Client: Department of Transport (E. Midlands Reg. Office) Engineer: Scott Wilson Kirkpatrick & Partners		<b>Ground Level</b> 35.30 m A.O.D.		<b>Coordinates</b> 47558.0 mE 28033.0 mN		<b>Date</b> 03.02.88 to 04.02.88	
Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests			Field Records
				Depth	Sample Type No.	Test	
FILL (Foreman's description)	35.30 35.00		(0.30) 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		
Soft to firm red brown very silty becoming fine sandy CLAY with a little to some sub-angular to rounded fine to medium occasionally coarse assorted gravel (RIVER TERRACE DEPOSITS)	33.50 32.90		1.80 (0.60) 2.40	1.40 - 1.85 2.00 2.00 - 2.45	U 2 D 3 D 4	S N=18	4,4/5,4,4,5
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)	31.60 31.00		(1.30) 3.70 (0.60) 4.30	3.00 - 3.45 3.80 3.90 - 4.35	D 5 D 6 U 7	S N=16	3,3/4,4,3,5
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)	31.00 28.25		(2.75 pen) 4.30 7.05	4.50 4.60 - 5.00 4.60 - 5.05 5.50 - 5.95 6.60 - 7.05	D 8 B 10 D 9 D 11 D 12	S N=34 S N=24 S N=73	3,4/6,7,10,11 4,4/7,11,19,27 6,7/11,14,17,31
BOREHOLE ENDS AT 7.05 m.							
<b>Remarks</b>  <b>Notes:</b> Materials are described in accordance with Appendixes. 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.							<b>Logged by</b> ANC <b>Scale</b> 1:50 <b>Fig.</b>



Soil Mechanics						BOREHOLE No. 752						
Equipment & Methods						Location No. 7382						
As sheet 1						Location						
Carried out for						Ground Level						
Client: Department of Transport (E. Midlands Reg. Office)						Coordinates						
Engineer: Scott Wilson Kirkpatrick & Partners						Date						
As sheet 1												
Description						Reduced Level	Log	Depth (Thick)	Samples/Tests			Field Records
									Depth	Sample Type	Test	
<b>Water Level Observations During Boring</b>												
Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks							
1988	-	1.50	0.00	DRY								
03.02	-	2.00	0.00	DRY								
03.02	-	3.80	0.00	3.80	End of shift							
04.02	-	-	-	3.80	slight seepage							
04.02	-	-	-	3.80	after 20 mins							
04.02	-	4.00	3.34		DMP							
04.02	-	6.00	4.50		slurry							
04.02	-	7.05	4.50		slurry, end of							
					cable tool							
					boring							

**SCOTT WILSON KIRKPATRICK & PARTNERS**  
Consulting Engineers & Transportation Planners

Field Work by: Exploration Associates (Warwick) Limited  
Method: Cable Percussion  
Dates: 2.10.84  
Hole Dimensions: 150mm  
Casing Dimensions: 150mm

**BIRMINGHAM - NOTTINGHAM ROUTE**  
**A42 CASTLE DONINGTON NORTH**  
**MAIN SITE INVESTIGATION**  
**CONTRACT 2**

Coordinates: 67356.9 E.  
96648.9 N.  
Ground Level: 62.95 m OD.

Figure **A1**

Sheet **1 of 1**

Laboratory Testing by: \_\_\_\_\_

Dates: \_\_\_\_\_

Dates	Depth of Casing (m)	Depth to Water (m)	Sample Interval (m)		Change of Strata		Description of Strata	Standard Penetration Test Result	Sample Number	Natural Moisture Content (%)	Natural Dry Density (kg/m <sup>3</sup> )	Liquid Limit (%)	Plastic Limit (%)	% Passing 425 microns
			Depth (m)	Type & Number	Depth (m)	Reduced Level								
2.10.84			0.30	J1	0.30	62.65	TOPSOIL		1	15				
			0.50	(25)2	0.80	62.15	Soft to firm brown fissured silty sandy clay with occasional sub-angular gravel (sandstone, quartz) (GLACIAL TILL)		2	13	1790	27	17	100
			0.95	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)		5	22				
			1.45	J4										
			1.50	B5										
			1.80	J6										
			2.00	(36)7			Firm to stiff in parts.		7	26	1645	32	18	87
			2.45	J8			Stiff red brown and gray green fissured interstratified silty CLAY and highly weathered fissured very weak mudstone/siltstone (KEUPER MARL : ZONE III)							
			2.50	S(27) J9										
			2.95	J10 for										
			3.10	J11 for										
			3.45	J12			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(8) for										
2.10.84	Nil	Dry	4.10	J14			End of Shell and Auger Hole.							
							* Seating Blows - J11 = 20 J14 = 31							
							Hard Strata - 3.40 - 3.80 - 1 1/2 hours							

**Scale**

Disturbed Samples :  
W - Groundwater

• J - Jar  
• S - SPT  
• B - Bulk  
• M - Maxi

**Undisturbed Samples :**  
Soil Sample

In situ Tests :  
V C30 - Vane shear strength in KN / m<sup>2</sup>

☐ Groundwater first struck

☐ Core Cutter Density

☐ Core Cutter Density/CBR

☐ Sandbottle Density

☐ CBR

Cor 5 - SPT - one or spoon  
(25) - N value

CLAY

Particle size (mm)

0.0001 0.001 0.01 0.1 1 10 100

4738 2676

FIGURE A1

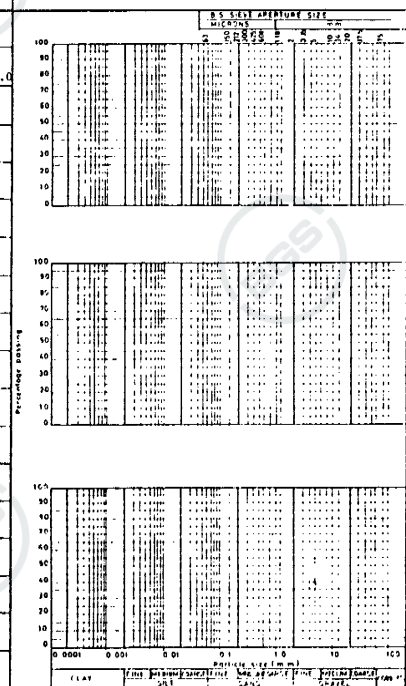
Sheet 1 of 1

Laboratory Testing by:

**Dates:**

BIRMINGHAM-NOTTINGHAM ROUTE  
A42 CASTLE DONINGTON NORTH  
MAIN SITE INVESTIGATION  
CONTRACT 2

Coordinates: 67404.6 E.  
96797.0 N.  
Ground Level: 57.18 m O.D.

[illegible]

Scale	Disturbed Samples :	<ul style="list-style-type: none"> <li>● J = Jar</li> <li>● S = S.P.T.</li> <li>● B = Bulk</li> <li>● M = Maxi</li> </ul>	Undisturbed Samples :	In Situ Tests :	<input type="checkbox"/> Core Cutter Density <input checked="" type="checkbox"/> Core Cutter Density/C.B.R.	<input checked="" type="checkbox"/> Sandpile Density <input type="checkbox"/> C.B.R.	Cor 5 S.P.T. - on or spoon (25) - N value
1.	W = Groundwater		Soil Sample	V C30 J = Vane shear strength in KN / m <sup>2</sup> - V = Groundwater first struck			



SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners						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	
Field Work by: Soil Mechanics Limited		Method: Cable tool boring		Dates: 15 to 18.4.88		Hole Dimensions: 150mm		Casing Dimensions: 150mm		
Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests		Change of Strata		Description of Strata		Piezol/Spice	
			Depth (m)	Type No.	Test Result	Legend	Depth (m)	Reduced Level		
			0.50	J1			(0.30) 0.30	38.43	TOPSOIL	
			1.00 - 1.45	U2	'35'		(0.90) 1.20	37.53	Firm brown very sandy CLAY with occasional subrounded fine quartz gravel (TERRACE CLAY)	
			1.50	J3			(0.80) 2.00	36.73	Firm orange brown sandy CLAY with a little subrounded gravel (TERRACE CLAY)	
			1.50 - 1.95	B4	C (9)		(1.50) 3.50	35.23	Dense brown SAND and angular to subrounded GRAVEL with occasional subrounded cobbles (TERRACE SANDS AND GRAVELS)	
			3.00 - 3.45	B5	C (35)		(0.75) 4.25	34.48	Firm red brown in parts mottled light greenish grey CLAY with rare fine quartz gravel (REWORKED KEUPER MARL)	
			3.60	J6			(0.75) 5.00	33.73	Firm to stiff red brown CLAY (KEUPER MARL : ZONE IVb)	
			4.00 - 4.45	U7	'35'		(5.80)		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)	
			4.50	J8	S (4)				below 7.00m, indistinct fissures	
			4.50 - 4.95	J9						
			5.00 - 5.50	B10						
			6.00 - 6.45	B11	'36'					
			6.50 - 6.95	J12	S (26)					
			7.00 - 7.50	B13						
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

**FIGURE** A1

**Disturbed Samples**  
W - Groundwater  
J - Jar  
B - Bulk  
Soil Sample

**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/m<sup>2</sup>  
Cor S - SPT cone or spoon (25) - N value  
\* - Penetration for casing blow





SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners						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		
Field Work by: As sheet 1											
Method:											
Dates:											
Hole Dimensions:											
Casing Dimensions:											
Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests			Change of Strata		Description of Strata	Piezo/ Spine		
			Depth (m)	Type No.	Test Result	Legend	Depth (m)			Reduced Level	
			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)						
			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 - 15.45	J30	S (62)		15.50	23.23			
			15.50 - 16.50	B31							
17.4.88	17.00	14.00	16.50 - 16.95	J32	S (60)						
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/m <sup>2</sup> Cor S - SPT cone or spoon (25) - N value P - Penetration for seating blows	FIGURE A1



<b>SCOTT WILSON KIRKPATRICK &amp; PARTNERS</b> Consulting Engineers & Transportation Planners						<b>SK42NE138</b> <b>A564 DERBY SOUTHERN BYPASS</b> <b>AND DERBY SPUR</b> <b>PRELIMINARY GROUND</b> <b>INVESTIGATION</b>			<b>BOREHOLE</b> <b>No. 137</b>	
Field Work by: <u>As sheet 1</u>									<b>SHEET 3 OF 5</b>	
Method: _____									<b>COORDINATES</b>	
Dates: _____									<b>E</b> <b>N</b>	
Hole Dimensions: _____								<b>GROUND LEVEL</b>		
Casing Dimensions: _____								<b>MOD</b>		
Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests			Change of Strata		Description of Strata	Piezo/ S'pipe	
			Depth (m)	Type No.	Test Result	Legend	Depth (m)			Reduced Level
18.4.88	22.50	19.00	20.00 - 21.00	B37	.		(7.45 pen)	KEUPER MARL (As sheet 2)		
			21.00 - 21.45	• J38	S (116)					
			21.50 - 22.50	B39	.					
			22.50 - 22.95	• J40	S (93)					
							22.95	15.78		
BORING COMPLETE AT 22.95m ROTARY FOLLOW ON										
<b>Remarks</b>									<b>SCALE</b> 1:50	
<b>Disturbed Samples</b> W - Groundwater			• J - Jar • B - Bulk	<b>Undisturbed Samples</b> ■ Soil Sample		<b>Insitu Tests</b> X Depth groundwater struck (m) and depth water rose to in X minutes		V [30] - Vane Shear Strength in KN/m <sup>2</sup> Cor S - SPT cone or spoon (25) - N value ■ - Penetration for seating blows	<b>FIGURE</b> A1	



SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners										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	
Fieldwork by: Soil Mechanics Limited Method: Rotary core drilling (water flush) Dates: 23 to 24.4.88 Core Diameter: 76mm Casing Diameter: 100mm													
Drilling					Change of Strata			Description of Strata					
Date	Depth (m)	Run	T CR %	ROD %	Test of I <sub>f</sub> (mm)	Legend	Depth (m)	Reduced Level	Detail	Main	Piez. Spig.		
									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						(1.40)						
		81	14		NI 30 140				Red brown and light greenish grey siltstone	Red brown thinly laminated slightly to moderately weathered MUDSTONE very weak to weak with a little to some clay (KEUPER MARL : ZONE II - III)			
23.4.88	25.00				S 103 for 175mm		25.00	13.73					
24.4.88		58	0										
	26.00												
		46	0										
	27.00				NI								
		62	0										
	28.00												
		72	29		S 80 for 150mm								
	29.00						28.75	9.98					
		75	37		NI 90 180								
	30.00						30.00	8.73	Non-intact Non-intact	Red brown slightly weathered SILTSTONE weak with occasional light greenish grey patches and reduction spots (KEUPER MARL : ZONE II)			
BOREHOLE COMPLETE AT 30.00m													
Remarks (Ground water seepages, Morning water levels, flush returns)										SCALE 1:50			
Disturbed Samples		Core Runs		Insitu Tests		CorS - SPT cone or spoon		FIGURE A2					
W - Groundwater		50 100	core recovery %	Depth groundwater struck (m)		1251 - N value							
J - Jar						Penetration for seating blows							



<b>SCOTT WILSON KIRKPATRICK &amp; PARTNERS</b> Consulting Engineers & Transportation Planners										<b>SK42NE138</b> A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION										<b>DRILLHOLE</b> No 137																										
Fieldwork by: <u>As sheet 4</u>																				<b>SHEET 5 OF 5</b>																										
Method: _____																				<b>COORDINATES</b>																										
Dates: _____																				<b>E</b> <b>N</b>																										
Core Diameter: _____																				<b>GROUND LEVEL</b>																										
Casing Diameter: _____																				<b>m OD</b>																										
<b>Drilling</b>						<b>Change of Strata</b>				<b>Description of Strata</b>										<b>Piezometer</b>																										
<b>Date</b>	<b>Depth (m)</b>	<b>Run</b>	<b>T CR %</b>	<b>POD %</b>	<b>Test of 1/2 (mm)</b>	<b>Legend</b>	<b>Depth (m)</b>	<b>Reduced Level</b>	<b>Detail</b>					<b>Main</b>					<b>Spice</b>																											
<table border="1"><caption>Water Level Observations During Boring</caption><thead><tr><th>Date 1988</th><th>Time</th><th>Depth of Hole m</th><th>Depth of Casing m</th><th>Depth to Water m</th><th>Remarks</th></tr></thead><tbody><tr><td>23.4.</td><td>0800</td><td>23.00</td><td>23.00</td><td>2.10</td><td rowspan="4">Borehole complete</td></tr><tr><td></td><td>1615</td><td>25.00</td><td>24.00</td><td>0.00</td></tr><tr><td>24.4.</td><td>0800</td><td>25.00</td><td>24.00</td><td>2.40</td></tr><tr><td></td><td>-</td><td>30.00</td><td>25.00</td><td>-</td></tr></tbody></table>																		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	Borehole complete		1615	25.00	24.00	0.00	24.4.	0800	25.00	24.00	2.40		-	30.00	25.00	-		
																		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	Borehole complete																							
																			1615	25.00	24.00	0.00																								
																		24.4.	0800	25.00	24.00	2.40																								
																			-	30.00	25.00	-																								
<b>Remarks (Ground water seepages, Morning water levels, flush returns)</b>																		<b>SCALE</b> 1:50																												
<b>Disturbed Samples</b>				<b>Core Runs</b> core recovery %		<b>In situ Tests</b> Depth groundwater struck (m)		<b>CorS - SPT cone or spoon</b> (25) - N value * - Penetration for seating blows										<b>FIGURE</b> A2																												
W - Groundwater																																														
J - Jar																																														





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 : Method : Dates : Hole Dimensions : Casing Dimensions :		Soil Mechanics Limited Cable tool boring 20 to 21.4.88 150mm 150mm									
Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests			Change of Strata		Description of Strata		Piezoe/ S'pipe	
			Depth (m)	Type No.	Test Result	Legend	Depth (m)	Reduced Level			
			0.50	J1			(0.40) 0.40	38.44	TOPSOIL		
			1.00 - 1.45	U2	'40'		(1.50)		Soft becoming firm orange brown mottled brown sandy CLAY with a little subrounded quartz gravel (TERRACE)		
			1.50	J3							
			1.50 - 1.95		C (9)		1.90	36.94			
			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)				
			3.00 - 4.00	B5							
	4.00	Dry	4.10 - 4.55		C (4)		4.10	34.74			
			4.10 - 5.00	B6			(0.90)		Soft red brown sandy CLAY with a little subangular to subrounded gravel (REWORKED KEUPER MARL)		
			5.50	J7			5.00	33.84			
			6.00 - 6.45	U8	'50'				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)		
			6.50	J9							
			6.50 - 6.95	J10	S (38)						
			7.00 - 7.50	B11							
			7.50 - 7.95	U12	'100'		(13.50)				
	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 W - Groundwater		J - Jar B - Bulk Soil Sample		Insitu Tests Depth groundwater struck (m) and depth water rose to in X minutes V [30] = Vane Shear Strength in KN/m <sup>2</sup> Cor S = SPT cone or spoon (25) = N value = Penetration for seating blow		FIGURE A1	



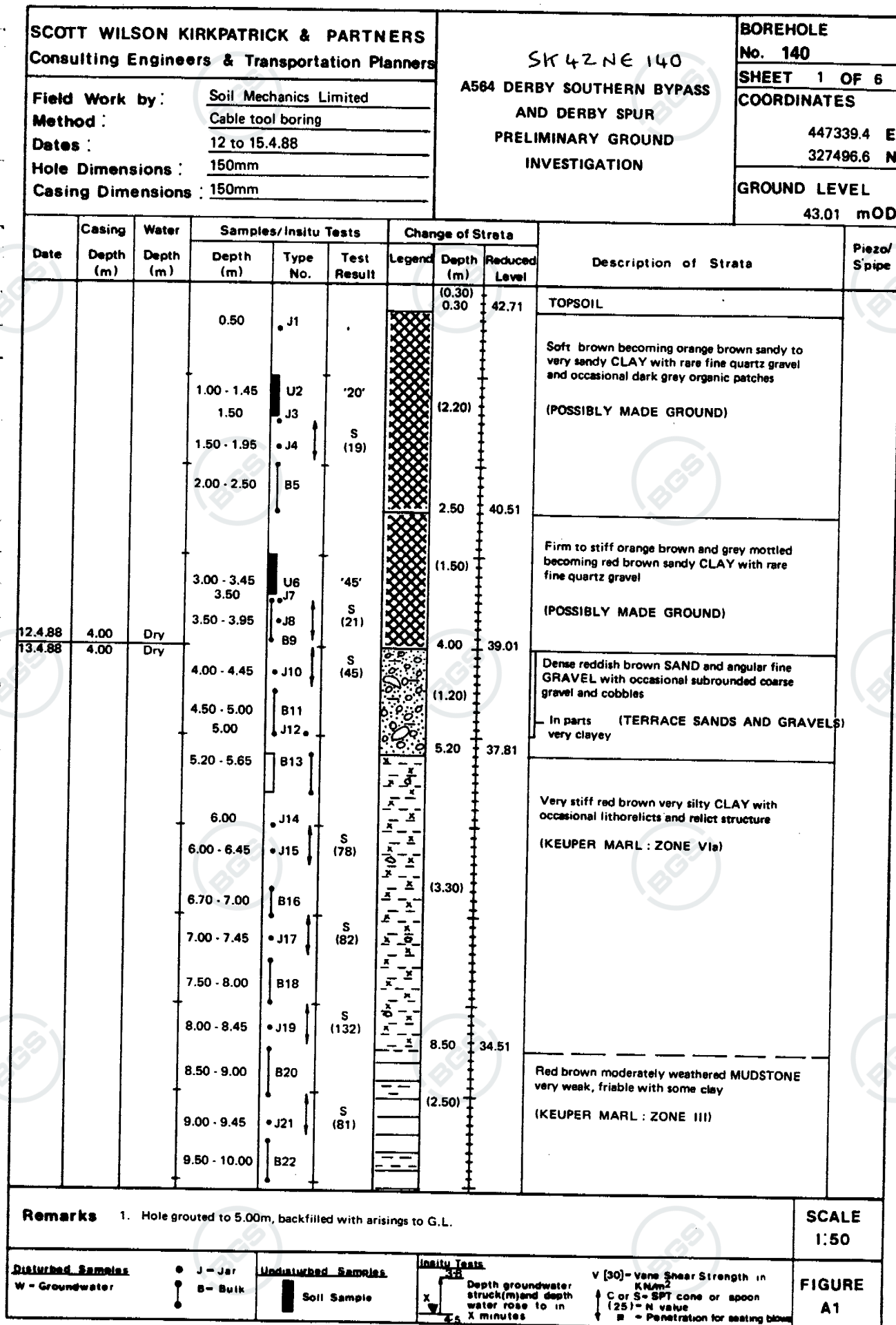
SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners						SK42NE 139 A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION				BOREHOLE No. 139 SHEET 2 OF 3 COORDINATES E N GROUND LEVEL mOD	
Field Work by : As sheet 1 Method : Dates : Hole Dimensions : Casing Dimensions :											
Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests			Change of Strata		Description of Strata		Piezo/ S/pipe	
			Depth (m)	Type No.	Test Result	Legend	Depth (m)	Reduced Level			
			10.00 - 10.50	B20							
			10.50 - 10.95	U21	'120'						
			11.00	J22							
			11.00 - 11.45	J23	S (61)				With occasional bands of highly weathered very weak MUDSTONE		
	12.00	Dry	11.50 - 12.00	B24							
			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							
			13.50 - 13.95	J29	S (81)				KEUPER MARL (As sheet 1)		
			14.00 - 15.00	B30			(13.50)				
			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 - 18.95	J37	S (132)		18.50	20.34			
			19.00 - 19.50	B38			(5.95 pen)		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		
			19.50 - 19.95	J39	S (92)				(KEUPER MARL : ZONE III)		

Remarks				SCALE 1:50	
<b>Disturbed Samples</b> W - Groundwater J - Jar B - Bulk Soil Sample				<b>Undisturbed Samples</b> Insitu Tests Depth groundwater struck(m) and depth water rose to in X minutes V (30) - Vane Shear Strength in KN/m <sup>2</sup> C or S - SPT cone or spoon (25) - N value P - Penetration for seating blows	

FIGURE  
A1



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 3 OF 3 COORDINATES E N GROUND LEVEL mOD	
Field Work by: As sheet 1 Method: Dates: Hole Dimensions: Casing Dimensions:											
Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests			Change of Strata		Description of Strata		Piezo/ Spine	
			Depth (m)	Type No.	Test Result	Legend	Depth (m)	Reduced Level			
			20.00 - 21.00	B40					KEUPER MARL (As sheet 2)		
			21.00 - 21.45	J41	S (75)						
			21.50 - 22.50	B42							
			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	
<div>Disturbed Samples W - Groundwater</div> <div>J - Jar B - Bulk</div> <div>Undisturbed Samples Soil Sample</div> <div>Insitu Tests Depth groundwater struck (m) and depth water rose to in X minutes</div> <div>V (30) - vane Shear Strength in KN/m<sup>2</sup> C or S - SPT cone or spoon (25) - N value = Penetration for seating blow</div>										FIGURE A1	







SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners						SK42NE140 A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION			BOREHOLE No. 140 SHEET 2 OF 6 COORDINATES E N GROUND LEVEL MOD		
Field Work by: As sheet 1 Method: Dates: Hole Dimensions: Casing Dimensions:											
Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests			Change of Strata		Description of Strata	Piezo/ S'pipe		
			Depth (m)	Type No.	Test Result	Legend	Depth (m)			Reduced Level	
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	10.50 - 11.00	W24							
			11.00 - 11.45	B25	S (70)		11.00	32.01	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	• J26							
			12.00 - 12.45	B27	S (85)						
			12.50 - 12.95	• J28	S 92 for 150mm		(3.95 pen)				
14.4.88	6.00	11.00	13.50 - 13.87	• J29	S 107 for 220mm						
15.4.88	6.00	3.00	14.00 - 14.50	B31							
			14.50 - 14.95	• J30	S (103)		14.95	28.06	BOREHOLE COMPLETE AT 14.95m ROTARY HOLE DRILLED ADJACENT		
15.4.88	6.00	7.50		• J32							
Remarks										SCALE 1:50	
<div>Disturbed Samples W - Groundwater</div> <div>• J - Jar • S - Bulk</div> <div>Undisturbed Samples ■ Soil Sample</div> <div>Insitu Tests X Depth groundwater struck (m) and depth water rose to in X minutes</div> <div>V [30] - Vane Shear Strength in KN/m<sup>2</sup> C or S - SPT cone or spoon (25) - N value B - Penetration for casing blow</div>										FIGURE A1	

SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners						SK42 NE 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								Piez
Date	Depth (m)	Run	T CR %	RQD %	Test or I <sub>p</sub> (mm)	Legend	Depth (m)	Reduced Level	Detail				Main	Slips			
									ROTARY OPEN HOLE DRILLING 0.00 TO 14.00m								
Remarks (Ground water seepages, Morning water levels, flush returns) Water flush below 8.50m															SCALE 1:50		
Disturbed Samples		Core Runs		Insitu Tests		CorS - SPT cone or spoon (25) - N value		FIGURE A2									
W - Groundwater		50 core recovery		Depth groundwater struck (m)		Penetration for seating blows											
J - Jar		100 %															



SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners										SK42 NE 140 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 %	ROC %	Test or I <sub>f</sub> (mm)	Legend	Depth (m)	Reduced Level	Detail	Main	Piezometer		
									ROTARY OPEN HOLE DRILLING 0.00 TO 14.00m				
20.4.88	14.00		94	14			14.00	29.01					
	15.00		100	44									
	16.00				N1 30 140								
	17.00		17	0									
					S (124)		(9.00)						
	17.00		37	0					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)				
	18.50												
			77	11					Subvertical fractures generally non-intact				
	20.00												
Remarks (Ground water seepages, Morning water levels, flush returns)										SCALE 1:50			
Disturbed Samples W - Groundwater J - Jar		Core Runs core recovery %		Insitu Tests Depth groundwater struck (m)		CorS - SPT cone or spoon (25) - N value - Penetration for seating blows		FIGURE A2					




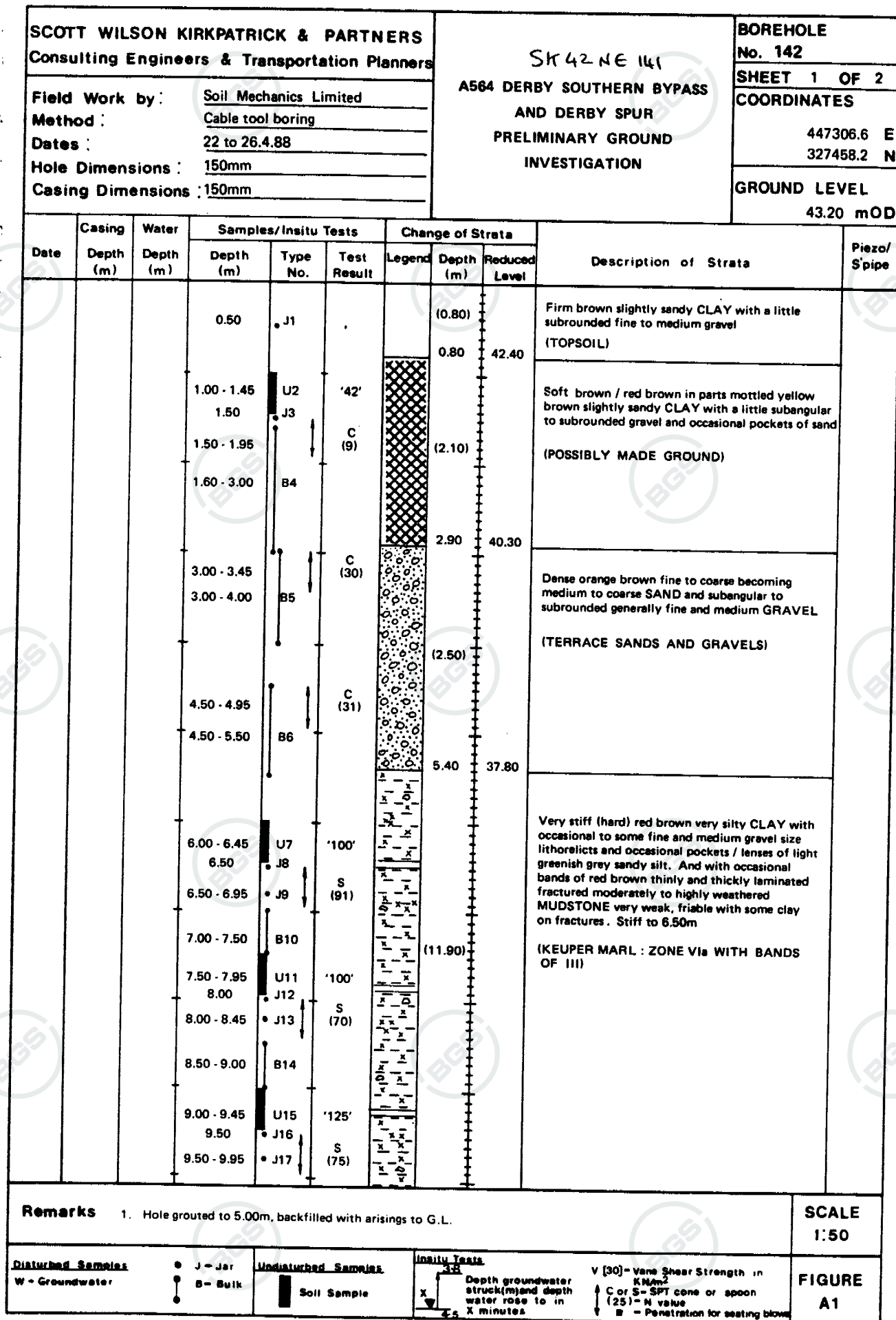
SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners										SK42NE140 A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION		DRILLHOLE No 140 SHEET 5 OF 6 COORDINATES E N GROUND LEVEL m OD	
Fieldwork by: As sheet 3 Method: Dates: Core Diameter: Casing Diameter:													
Drilling				Change of Strata			Description of Strata				Piezom Spigot		
Date	Depth (m)	Run CR %	T CR %	RCD %	Test or I <sub>r</sub> (mm)	Legend	Depth (m)	Reduced Level	Detail	Main			
	20.00				S 50 for 65mm					KEUPER MARL (As sheet 1)			
	21.00				NI 30 140								
20.4.88	21.50	100	0				(9.00)						
21.4.88	22.00	58	0										
	23.00	53	0										
	23.00				S 87 for 135mm		23.00	20.01					
	24.50	65	0		NI 40 160				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)			
	25.50	63	0				(4.50)						
	26.50	100	27						Extremely to very closely spaced subvertical planar rough fractures, core generally non-intact.				
	27.50						27.50	15.51					
21.4.88	28.50	65	38		NI 100 200	xxxx			Subvertical planar rough fractures	Red brown slightly weathered SILTSTONE moderately weak to weak with occasional light greenish grey reduction spots (KEUPER MARL : ZONE II)			
22.4.88	29.50	93	54			xxxx	(2.70 pen)		Light greenish grey siltstone moderately weak with subvertical fractures				

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)		CorS - SPT cone or spoon (25) - N value * - Penetration for seating blows		FIGURE A2			





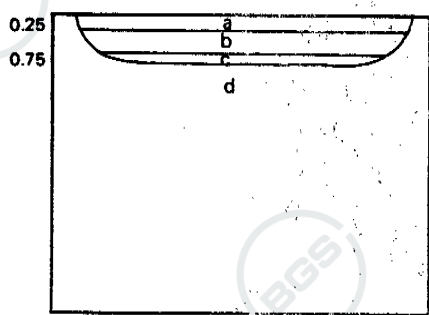
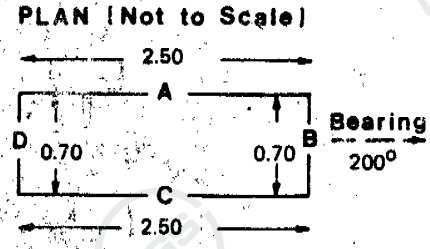
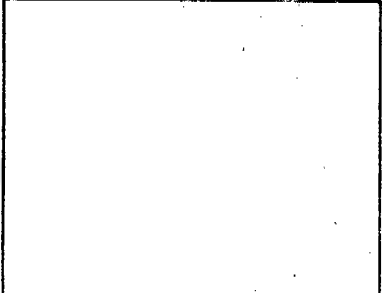

SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners										SK42NE140 A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION		DRILLHOLE No 140 SHEET 6 OF 6 COORDINATES E N GROUND LEVEL m OD																																																																																																					
Fieldwork by: <u>As sheet 3</u> Method: _____ Dates: _____ Core Diameter: _____ Casing Diameter: _____																																																																																																																	
Drilling					Change of Strata			Description of Strata																																																																																																									
Date	Depth (m)	Run	T CR %	RQD %	Test of $t_f$ (mm)	Legend	Depth (m)	Reduced Level	Detail	Main	Piezometer Spigot																																																																																																						
22.4.88	30.20		93	54		***	30.20	12.81	KEUPER MARL	(As sheet 2)	e																																																																																																						
BOREHOLE COMPLETE AT 30.20m																																																																																																																	
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Remarks (Ground water seepages, Morning water levels, flush returns)										SCALE 1:50																																																																																																							
Disturbed Samples W - Groundwater J - Jar				Core Runs core recovery %		Insitu Tests Depth groundwater struck (m)		CorS - SPT cone or spoon [25] - N value * - Penetration for seating blows		FIGURE A2																																																																																																							





SCOTT WILSON KIRKPATRICK & PARTNERS Consulting Engineers & Transportation Planners						SK42NE141 A564 DERBY SOUTHERN BYPASS AND DERBY SPUR PRELIMINARY GROUND INVESTIGATION			BOREHOLE No. 142 SHEET 2 OF 2 COORDINATES E N GROUND LEVEL mod		
Field Work by: As sheet 1 Method: Dates: Hole Dimensions: Casing Dimensions:											
Date	Casing Depth (m)	Water Depth (m)	Samples/Insitu Tests			Change of Strata		Description of Strata		Piezo/ S'pipe	
			Depth (m)	Type No.	Test Result	Legend	Depth (m)	Reduced Level			
			10.00 - 10.50	B18					KEUPER MARL (As sheet 1) with mudstone bands becoming more frequent below 11.00m		
			10.50 - 10.95	U19	'125'						
			11.00	J20							
			11.00 - 11.45	J21	S (118)						
			11.50 - 12.00	B22							
22.4.88	12.00	Added	12.00 - 12.30	U23	'150'						
25.4.88	12.00	8.30	12.35	J24							
				W25							
			12.50 - 12.95	J26	S (121)						
			13.00 - 13.50	B27							
			13.50 - 13.95	J28	S (94)		(11.90)				
			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) BOREHOLE COMPLETE AT 17.65m		
5.4.88	15.00	-					17.65	25.55			
Remarks										SCALE 1:50	
<div>Disturbed Samples W - Groundwater</div> <div>J - Jar B - Bulk</div> <div>Undisturbed Samples Soil Sample</div> <div>Insitu Tests X Depth groundwater struck(m) and depth water rose to in X minutes</div> <div>V [30] - Vane Shear Strength in KN/m<sup>2</sup> C or S - SPT cone or spoon (25) - N value # - Penetration for seating blow</div>										FIGURE A1	



<b>SCOTT WILSON KIRKPATRICK &amp; PARTNERS</b> Consulting Engineers & Transportation Planners		<b>SK 42 NE 148</b> <b>A564 DERBY SOUTHERN BYPASS</b> <b>AND DERBY SPUR</b> <b>PRELIMINARY GROUND INVESTIGATION</b>																							
Fieldwork By <u>Soil Mechanics Limited</u>																									
Dates : <u>10.5.88</u>																									
<b>TRIAL PIT LOG</b>																									
Co-ordinates E. <u>447351.9</u> N <u>328129.1</u>		Ground Level <u>33.32</u> m A.O.D.																							
Dimensions (l x b x h) <u>2.50 x 0.70 x 0.75</u>		Excavation Plant <u>JCB 3CX</u>																							
<b>ELEVATIONS :</b> All faces similar		Trial Pit No. <u>231</u>																							
																									
<b>SIDE A</b>		<b>SIDE B</b>																							
																									
<b>SIDE C</b>		<b>SIDE D</b>																							
		<b>SAMPLES</b>																							
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No. & Type	Depth m																								
<b>No.</b>		<b>STRATA DESCRIPTION</b>																							
<b>Depth m</b>		<b>Cv/Cp kN m<sup>2</sup></b>																							
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																									
<b>NOTES</b> Cv/Cp Approx. value of undrained shear strength from hand vane/penetrometer Groundwater: — Pumping: — Supports/stability: Good																									
<b>FIGURE A3</b>																									





SCOTT WILSON KIRKPATRICK & PARTNERS  
Consulting Engineers & Transportation Planners

Fieldwork By Soil Mechanics Limited

Dates : 10.5.88

SK 42 NE 148  
A564 DERBY SOUTHERN BYPASS  
AND DERBY SPUR  
PRELIMINARY GROUND INVESTIGATION

TRIAL PIT LOG

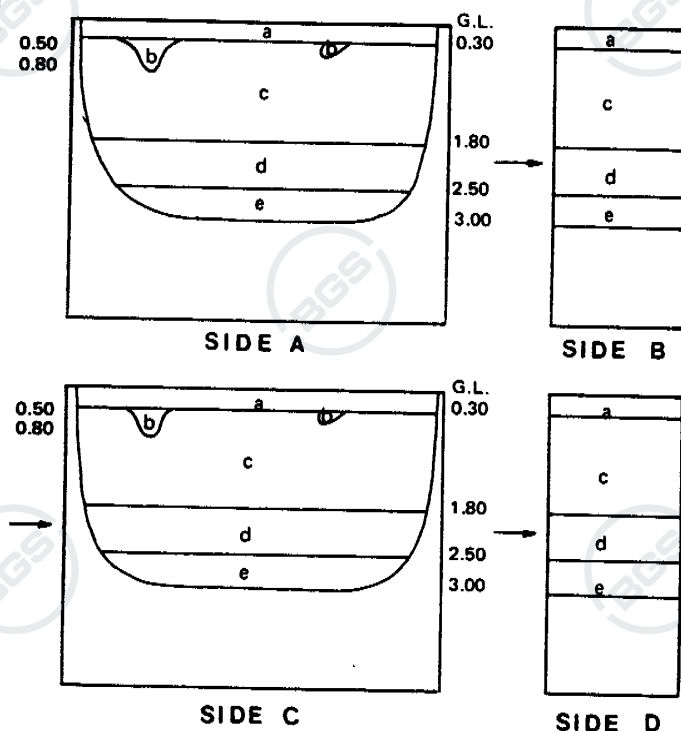
Co-ordinates E 447351.9 N 328129.1

Ground Level 33.32 m A.O.D.

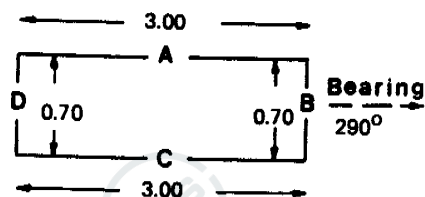
Dimensions (l x b x h) 2.80 x 0.70 x 3.00

Excavation Plant JCB 3CX

ELEVATIONS :



PLAN (Not to Scale)



SAMPLES

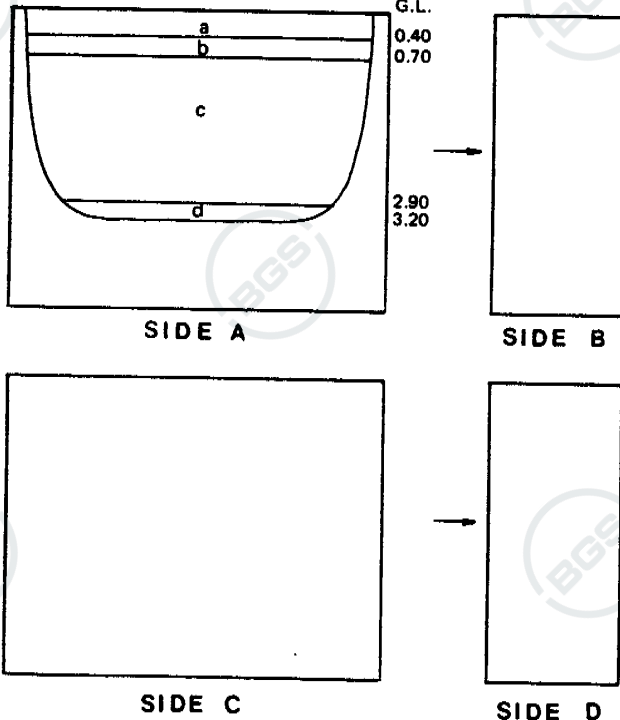
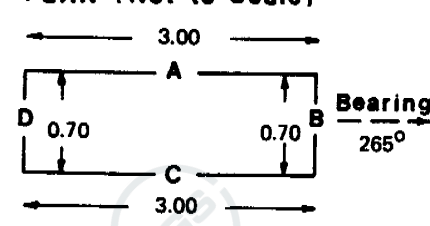
No. & Type	Depth m
D1	0.50
D2	1.00
B3	1.00
D4	1.80
D5	1.90
B6	2.20
D7	2.50
B8	3.00

Trial Pit No.  
231A

No.	Depth m	STRATA DESCRIPTION	Cv/Cp kN/m <sup>2</sup>
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 /  
Groundwater: -  
Pumping: -  
Supports/stability: Good

FIGURE A3

<b>SCOTT WILSON KIRKPATRICK &amp; PARTNERS</b> Consulting Engineers & Transportation Planners		SK 42 NE 149 A564 DERBY SOUTHERN BYPASS AND DERBY SPUR <b>PRELIMINARY GROUND INVESTIGATION</b>																																								
Fieldwork By <u>Soil Mechanics Limited</u>		<b>TRIAL PIT LOG</b>																																								
Dates: <u>10.5.88</u>																																										
Co-ordinates E <u>447312.5</u> N <u>327881.6</u>		Ground Level <u>35.63</u> m A.O.D.																																								
Dimensions (l x b x h) <u>3.00 x 0.70 x 3.20</u>		Excavation Plant <u>JCB 3CX</u>																																								
<b>ELEVATIONS</b> : All faces similar			Trial Pit No. <b>232</b>																																							
		<b>PLAN (Not to Scale)</b> 																																								
<b>SAMPLES</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">No. &amp; Type</th> <th style="width: 50%;">Depth m</th> </tr> </thead> <tbody> <tr><td>D1</td><td>0.50</td></tr> <tr><td>D2</td><td>1.00</td></tr> <tr><td>D3</td><td>1.10</td></tr> <tr><td>B4</td><td>1.30</td></tr> <tr><td>D5</td><td>1.80</td></tr> <tr><td>B6</td><td>2.00</td></tr> <tr><td>B7</td><td>3.20</td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>		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							<b>STRATA DESCRIPTION</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">No.</th> <th style="width: 10%;">Depth m</th> <th style="width: 60%;">Description</th> <th style="width: 20%;">Cv/Cp kN/m<sup>2</sup></th> </tr> </thead> <tbody> <tr> <td>a.</td> <td>0.00 – 0.40</td> <td>Firm becoming stiff greyish brown sandy CLAY (TOPSOIL)</td> <td rowspan="4" style="vertical-align: top;"> </td> </tr> <tr> <td>b.</td> <td>0.40 – 0.70</td> <td>Dense reddish and greyish brown clayey fine to medium SAND with some medium to coarse subrounded gravel (RIVER TERRACE DEPOSIT)</td> </tr> <tr> <td>c.</td> <td>0.70 – 2.90</td> <td>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)</td> </tr> <tr> <td>d.</td> <td>2.90 – 3.20</td> <td>Firm reddish brown very silty in places CLAY. Discoloured greenish grey in places (KEUPER MARL : ZONE IVb)</td> </tr> </tbody> </table>		No.	Depth m	Description	Cv/Cp kN/m <sup>2</sup>	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)
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<b>NOTES</b> Cv/Cp Approx. value of undrained shear strength from hand vane / penetrometer Groundwater: Slight seepage at 1.00m Pumping: – Supports/stability: Good		<b>FIGURE A3</b>																																								

**SCOTT WILSON KIRKPATRICK & PARTNERS**  
Consulting Engineers & Transportation Planners

Fieldwork By Soil Mechanics Limited

Dates : 10.5.88

**SK 42 NE 150**  
**A564 DERBY SOUTHERN BYPASS**  
**AND DERBY SPUR**  
**PRELIMINARY GROUND INVESTIGATION**

**TRIAL PIT LOG**

Co-ordinates E. 447365.9 N 327327.1

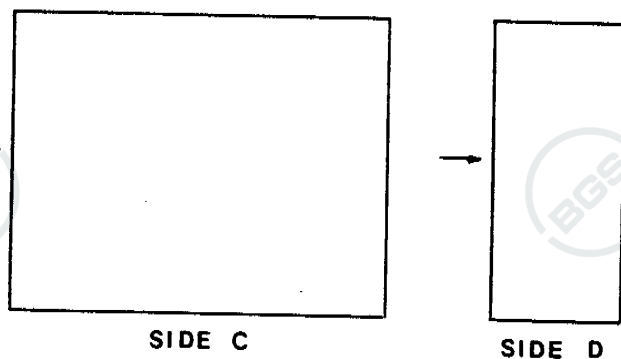
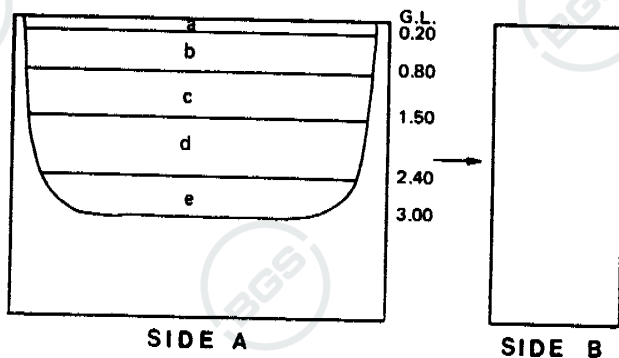
Ground Level 42.20 m A.O.D.

Dimensions (l x b x h) 3.00 x 0.70 x 3.00

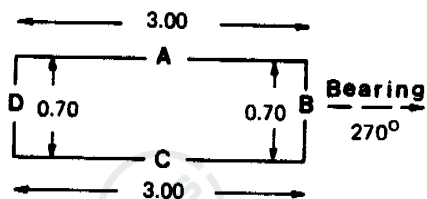
Excavation Plant JCB 3CX

**ELEVATIONS :** All faces similar

Trial Pit No.  
**233**



**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/m<sup>2</sup>

- |    |             |  |  |
|----|-------------|--|--|
| 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 /  
Groundwater: –  
Pumping: –  
Supports/stability: Collapsing below 2.40m

**FIGURE A3**



SCOTT WILSON KIRKPATRICK & PARTNERS  
Consulting Engineers & Transportation Planners

Fieldwork By Soil Mechanics Limited

Dates : 10.5.88

SK 42 NE 151  
A564 DERBY SOUTHERN BYPASS  
AND DERBY SPUR  
PRELIMINARY GROUND INVESTIGATION

### TRIAL PIT LOG

Co-ordinates E. 447446.1

N 327143.8

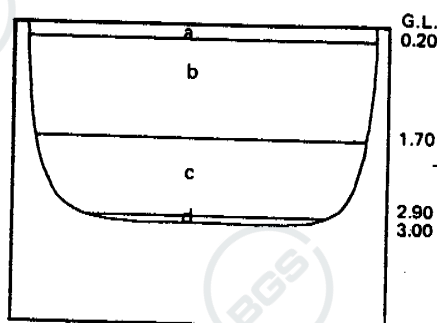
Ground Level 44.60 m A.O.D.

Dimensions (l x b x h) 3.00 x 0.70 x 3.00

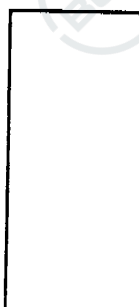
Excavation Plant JCB 3CX

ELEVATIONS : All faces similar

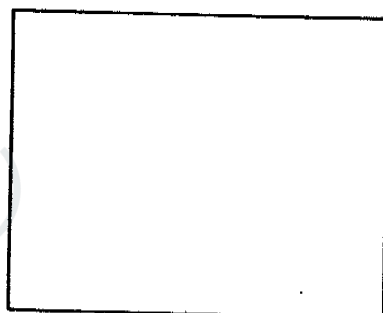
Trial Pit No.  
**234**



SIDE A



SIDE B

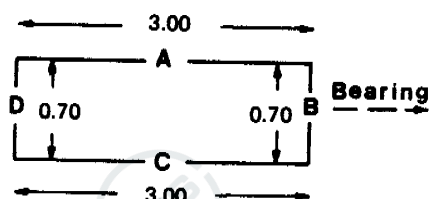


SIDE C



SIDE D

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/m<sup>2</sup>

- | No. | Depth m     | STRATA DESCRIPTION   | Cv/Cp kN/m <sup>2</sup> |
|-----|-------------|--|-------------------------|
| 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 /  
Groundwater: –  
Pumping: –  
Supports/stability: Good

FIGURE A3



D3/6 85 (c) Soil Mechanics Limited, Bracknell, England

Samples			Sketch of faces and description of strata		Depth below ground level (m)
Depth (m)	Face	No.	a	b	
0.00					0
1.05	U	3			1
1.05	H	1			1
	D	2			1
1.60	B	4			2
	D	5			2
2.30	B	6			3

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 lithorellia and occasional fibrous rootlets. (Keuper Marl 3)
d.	Greenish grey in parts thinly laminated SILTSTONE, moderately weak to moderately strong (Keuper Marl 1/2)

NOTES	
Soil Resistivity measurements carried out at ground level and Redox potential tests carried out at 1.40m	

Notes	
Sample positions shown on faces	
Ground water: Not encountered	Stability of faces: Stable
Ease of excavation: Easy	Weather: Overcast
Variability of faces: All faces similar	

Plan (Not to scale)	
	<p>Trend of pit 025°N</p>

Equipment & Methods	
Machine dug to 2.30m by JCB 3CX	
No support used	
Logged on excavated material below 0.00m	

Carried out for	
Client: Department of Transport	
Engineer: Scott Wilson Kierulff and Partners	

Location No.	
7382	

Location	
A42 CASTLE DONINGTON NORTH	
GROUND INVESTIGATION CONTRACT 4	

Ground Level	
72.57 m AOD	

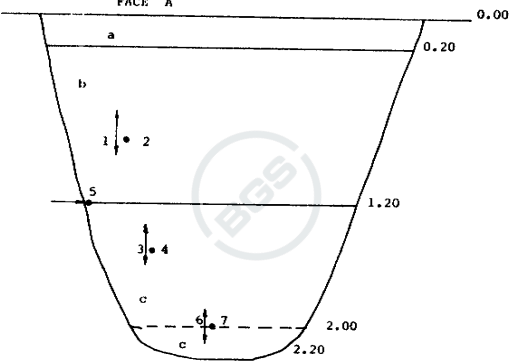
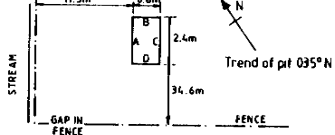
  

Coordinates	
E7044.0 mE	
N75719.0 mN	

Date	
23.1.88	
Dug: 23.1.88	
Logged: 23.1.88	

D3/8/85 © Soil Mechanics Limited, Bracknell, England

Samples			Sketch of faces and description of strata		Equipment & Methods		Location No.		Ground Level		Coordinates		Date		TRIAL PIT No.		
Depth (m)	Type	No.															
0.00					0.00												
0.80	B	1															
	D	2															
1.20	W	5															
1.50	B	3															
	D	4															
2.00	B	6															
	D	7															
			<p><b>Material Types</b></p> <p>a. TOPSOIL</p> <p>b. Firm red brown mottled orange brown locally slightly fine sandy CLAY with occasional dark grey organic pockets and rootlets (Possible Glacial Till)</p> <p>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)</p> <p>NOTE: Soil Resistivity measurements carried out at ground level and Redox potential tests carried out at 1.50m</p>		<p>Client: Department of Transport</p> <p>Engineer: Scott Wilson Kirkpatrick and Partners</p> <p>Ground Level: 71.27 m AOD</p> <p>Coordinates: 47094.0 m E, 25709.0 m N</p> <p>Dug: 23.1.88</p> <p>Logged: 23.1.88</p>		<p>Location No. 7382</p> <p>Location: A42 CASTLE DONINGTON NORTH</p> <p>GROUND INVESTIGATION CONTRACT 4</p>		<p>TRIAL PIT No. 826</p> <p>Sheet 1 of 1</p>								
<p>Notes: Sample positions shown on faces</p> <p>Ground water: Water entry at 1.20m from face A</p> <p>Base of excavation: Easy</p> <p>Variability of faces: All faces similar</p> <p>Materials are described in accordance with Appendices.</p> <p>Sample key: • D Small disturbed sample [ B Bulk disturbed sample + U Undisturbed sample • W Water sample</p>			<p>Plan (Not to scale)</p> 		<p>Stability of faces: Collapse of face A</p> <p>Weather: Fine</p>												



SK42NE 161 447780-27767

# Norwest Holst Soil Engineering Ltd.

Trial Pit No.

1

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

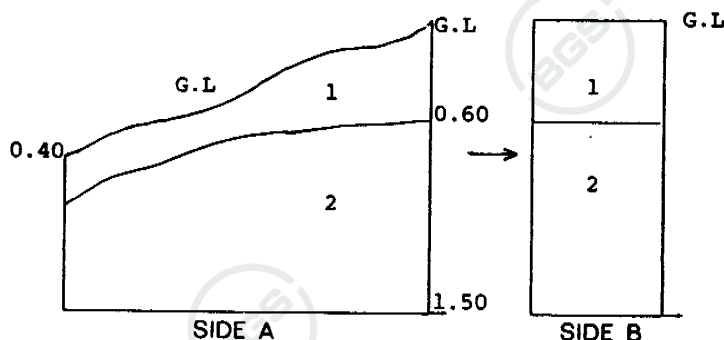
## TRIAL PIT LOG

Co-ords E.447780.9 N.327767.6

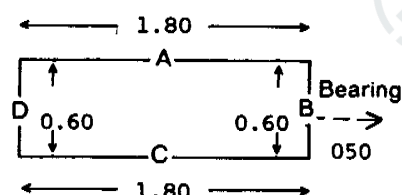
Ground Level 40.30 m.A.O.D.

Date 25/10/99

### 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/m<sup>2</sup>

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/m <sup>3</sup> Dry Density 1.63 Mg/m <sup>3</sup> 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



SK53SW 176 51794-31025

# Norwest Holst Soil Engineering Ltd.

Trial Pit No.

52

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

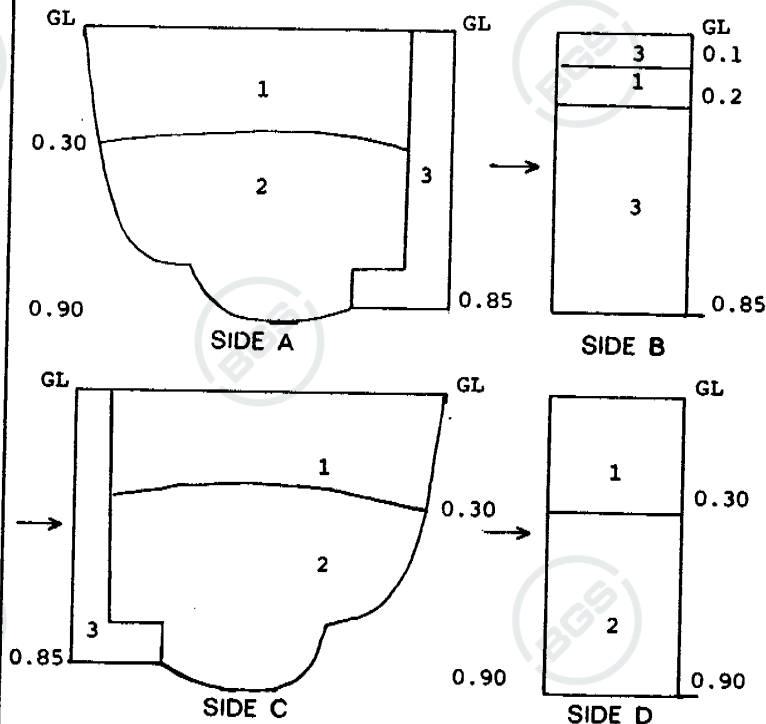
## TRIAL PIT LOG

Co-ords E451794.5 N331025.0

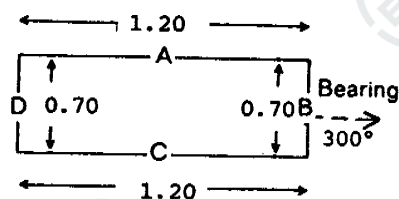
Ground Level 38.40 m.A.O.D.

Date 27/9/90

### ELEVATIONS:—



### PLAN (Not to scale)



### SAMPLES

No. & Type	Depth m.
B	0.30-0.90

No.	Depth m.
1	GL-0.30
2	0.30-0.90
3	GL-0.90

### STRATA DESCRIPTION

MADE GROUND: Grey slightly sandy coarse subangular to angular gravel and cobbles of limestone and bituminous cobbles

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

MADE GROUND: Concrete

Cv/Cp  
kN/m<sup>2</sup>

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





SK42NE 176 447699-27645

Norwest Holst Soil Engineering Ltd.				BOREHOLE LOG		Borehole No. 1	
Contract No. F8883		Method Cable Percussion		Sheet 1 of 1		Coords E 447699 N 327645	
Location A453(T): Clifton to M1		Borehole Diam 150 mm		Ground Level 34.62 m.A.O.D.			
Client Dept. of Transport		Date 05/10/90					
Consultant John Burrow & Ptnrs.							
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Sampling & Insitu Testing		Ground Water	
				Depth(m)	( ) & N		
TOPSOIL.				B 0.00	1.00		
Loose brown clayey sandy to very sandy fine to coarse angular to rounded GRAVEL.		0.40	34.22	B 1.00	2.00	8	
1.00-2.00m ... becoming clayey sand with some gravel.				B 2.00	3.00	8	
2.00-3.00m ... becoming clayey SAND and GRAVEL.				B 3.00	4.00	4	
3.00-4.00m ... becoming clayey sand with much gravel.				B 4.00	5.00	4	
(River Terrace Deposits)				B 5.00	6.00	4	
				B 6.00	7.00	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.		7.30	27.32	J 7.50	8.00		
(Reworked Mercia Mudstone)				U 8.05	8.50	(49)	
Soft red brown and dark grey green mottled clayey SILT with a little sand to fine angular gravel.		8.00	26.62	J 8.50	9.50		
(Mercia Mudstone Zone IVa)				U 9.55	10.00	(96)	
Borehole complete at 10.00m.		10.00	24.62				
Daily Progress		Hard Strata		Comments			
Date	Final Depth (m) of:		Depth(m)	Time			
	Borehole	Water	Casing				
05/10/90	10.00	Dry	7.50		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 Presurometer Test K Permeability Test () Blows to drive U100	S.P.T. 'N' for All C.P.T. 300mm penetration For given penetration Sealing 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/yr Standing Level — Level 20mins after strike [] Casing Depth		

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SK42NE 177 47738-27733

Norwest Holst Soil Engineering Ltd.				BOREHOLE LOG		Borehole No. 2	
Contract No. F8883		Method CABLE PERCUSSION		Sheet 1 of 2			
Location A45J(T): Clifton to M1		Borehole Diam 150 mm		Coords E 447738 N 327733			
Client Dept. of Transport		Date 20/09/90		Ground Level 41.55 m.A.O.D.			
Consultant John Burrow & Ptnrs.							
Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing		Ground Water	
MADEGROUND: Black bituminous road surfacing.		0.05	41.50	B	0.00 1.00		
MADEGROUND: Compacted brown clay fill.							
MADEGROUND: Firm to stiff red brown occasionally grey green mottled slightly silty clay with some angular fine to coarse gravel of mudstone.		0.70	40.85				
1.50-2.00m ...with some angular to rounded fine to coarse gravel of flint and quartzite.				U	1.05 1.50 (52)		
2.50-3.00m ...with some subangular coarse gravel sized fragments of gypsum.				J	1.50 1.50		
3.50-4.00m ...with a little angular fine gravel sized fragments of gypsum.				U	2.05 2.50 (57)		
4.50-5.00m ...with a little subangular to rounded fine and medium gravel of quartzite.				J	2.50 2.50		
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	3.05 3.50 (61)		
				J	3.50 3.50		
				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.	X - X	6.80	34.75	U	7.05 7.50 (46)		
	X - X			J	7.50 7.50		
	X - X			U	8.05 8.50 (39)		
	X - X			J	8.50 8.50		
Medium dense becoming very dense brown slightly clayey fine to coarse SAND with a little angular to rounded fine to medium gravel.	X - X	8.50	33.05	J	8.50 8.50	21	
8.80-9.05m ...becomes SAND AND GRAVEL.				B	9.00 10.00		
(River Terrace Deposits)							
(Continued.....)						22/9 pm 9.60	
Daily Progress		Hard Strata		Comments			
Date	Final Depth (m) of:	Depth(m)	Time				
	Borehole Water Casing						
20/09/90	6.80 Dry	2.50-2.90	1 hour	Inspection pit dug 1 hour.			
21/09/90	11.00 Dry	6.80	1hr 15 min	21/09/90 - Water added at 9.00m, casing at 8.90m.			
22/09/90	16.40 Dry	12.00					
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 O Blows to drive U100	S.P.T. ... N for All C.P.T. 300mm penetration ... For given penetration ... Sealing blow 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 30mins after strike [] Casing Depth	

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SK 42NE 177

[illegible]



SK42NE 178 447774-27705

Norwest Holst Soil Engineering Ltd.						BOREHOLE LOG		Borehole No. 3		
Contract No. F8883		Method Cable Percussion		Sheet 1 of 1		Coords E 447774 N 327705				
Location A453(T): Clifton to M1		Borehole Diam 150 mm		Ground Level 33.88 m.A.O.D.						
Client Dept. of Transport		Date 26/09/90								
Consultant John Burrow & Ptnrs.										
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Sampling & Insitu Testing		Ground Water				
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	U 2.55	3.00	(86)				
(Mercia Mudstone Zone IVb)				J 3.00	3.00					
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	3.50			3.00	1-3	
(Mercia Mudstone Zone IVa)				U 3.55	4.00	(47)				
				J 4.00	4.00					
				J 4.50	4.50					
				S 4.55	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 5.55	6.00	19				
(Mercia Mudstone Zone III)				J 6.50	6.50					
				S 6.55	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 8.50	8.50					
(Mercia Mudstone Zone IVb)				S 8.55	9.00	21				
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		Hard Strata		Comments						
Date	Final Depth (m) of:			Depth(m)	Time					
	Borehole	Water	Casing							
26/09/90	10.00	9.00	8.30							
				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 O Blows to drive U100		S.P.T. 'N' for All C.P.T. 300mm penetration 365 For given penetration 25 - Sealing blow 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 Σ Level 20mins after strike [] Casing Depth	



SK42NE 179 47773-27733

Norwest Holst Soil Engineering Ltd.

# BOREHOLE LOG

Borehole No.  
4

Contract No. F8883

### Method Cable Percussion

Sheet 1 of 2

Location A453(T): Clifton to M1

Borehole Diam 150 mm

Coords E 447773 N 327733

Client Dept. of Transport

Consultant John Burrow & Ptnrs.

Date 03/10/90

Ground Level 33.73 m.A.O.D.

[illegible]



SK42NE 179

<b>Norwest Holst Soil Engineering Ltd.</b>						<b>BOREHOLE LOG</b>		Borehole No. <b>4</b>	
Contract No. F8883		Method Cable Percussion		Sheet 2 of 2		Coords E 447773 N 327733			
Location A453(T): Clifton to M1		Borehole Diam 150 mm		Ground Level 33.73 m.A.O.D.					
Client Dept. of Transport		Date 03/10/90							
Consultant John Burrow & Ptnrs.									

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Sampling & Insitu Testing			Ground Water
				Depth(m)	( ) & N		
(....cont.)	— X — X — X — X — X — X — X — X — X	11.05	22.68	S	11.05	11.50	82
Very stiff, red brown silty CLAY. (Mercia Mudstone Zone IVb) Borehole complete at 12.60m.	— X — X — X — X — X — X — X — X — X — X — X — X	12.60	21.13	B	11.50	12.00	
				W	12.00	12.00	88
				S	12.05	12.30	150
				S	12.50	12.60	50
							75

Daily Progress			Hard Strata		Comments
Date	Final Depth (m) of:		Depth(m)	Time	
	Borehole	Water			
03/10/90	2.50		0.00	2.00-2.50	Inspection pit G.L. - 1.60m.
04/10/90	12.60		0.00	2.50-3.80	
			11.00	7.70-7.90	
				12.30-12.50	

Sample and Test Key	J Small Disturbed Sample	S Standard Penetration Test	S.P.T. "N" for All	Rotary Core Run (Recovery to Scale)	Ground Water
	B Bulk Disturbed Sample	C Cone Penetration Test	C.P.T. 300mm penetration	T.C.R. Total Core Recovery (%)	1 -> First Water Strike
	U Undisturbed U100 Sample	V Insitu Vane Test	For glen penetration	S.C.R. Solid Core Recovery (%)	2 -> Subsequent Water Strike
	W Water Sample	PR Pressuremeter Test	Sealing blows only	R.O.D. Rock Quality Designation	— cm/pm Standing Level
	N.R. No Recovery	K Permeability Test	N.P. No Penetration		— Level 20mins after strike
		O Blows to drive U100			[ ] Casing Depth

Casing maintained just above base of borehole unless stated

SK42 NE 180 47874.278244

Norwest Holst Soil Engineering Ltd.

# BOREHOLE LOG

Borehole No.  
5

Contract No. F8883

### Method Cable Percussion

Location A453(T): Clifton to M1

Borehole Diam 150 mm

Sheet 1 of 2

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		Ground Water
					Depth(m)	( ) & N	
TOPSOIL.			0.10	37.17			
MADE GROUND: Red brown clay with some fine to coarse gravel.		X X X			B U J B	0.50 0.50 0.80 1.00	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.		X X X	0.70	36.57	S B S B B	1.50 2.00 <del>2.50</del> <del>2.50</del> 2.95 3.00 3.40	1.95 15 53
MADE GROUND: Medium dense grey brown clayey fine to coarse sand with occasional rootlets.		X X X	4.30	32.97	B U C B B S B	4.00 4.005 4.25 4.30 5.10 5.10 5.60	4.25 50 4.30 10
MADE GROUND: Firm brown sandy clay with some fine to coarse angular to rounded gravel with occasional rootlets.		X X X	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)		X X X X X X X X X X X X X X X	5.80	31.47	B C B W B C	6.00 6.10 6.60 6.80 7.40 7.50	6.55 37 8/11 am 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)		X X	7.50	29.77	B C B	7.95 8.00	21
Stiff red brown and brown mottled silty to very silty CLAY. (Reworked Mercia Mudstone)		X X X X X X X X X X X X X X X	9.00	28.27	B S B	9.00 9.00 9.50	9.45 19 9.45
		X X X	10.00	27.27	J	10.00	
Daily Progress			Hard Strata		Comments		
Date	Final Depth (m) of:		Depth(m)	Time			
	Borehole	Water	Coring				
05/11/90	1.00		1.00	1 hour	07/11/90 - Water added.		
06/11/90	5.00		5.00	1hr 30min			
07/11/90	11.15	10.50	10.50	3 hour			
08/11/90	15.00	6.80am	15.00	45 mins			
					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 O Blows to drive U100	S.P.T. "N" for All C.P.T. 300mm penetration --- For given penetration -- * Sealing 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 ZZ Level 20mins after strike ( ) Casing Depth		



SK42NE 180

Norwest Holst Soil Engineering Ltd.				BOREHOLE LOG		Borehole No. 5	
Contract No. F8883		Method Cable Percussion		Sheet 2 of 2		Coords E 447874 N 327824	
Location A453(T): Clifton to M1		Borehole Diam 150 mm		Ground Level 37.27 m.A.O.D.			
Client Dept. of Transport		Date 05/11/90					
Consultant John Burrow & Ptnrs.							
Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing		Ground Water	
Very soft grey green occasionally red brown mottled silty CLAY. (Possibly reworked Mercia Mudstone I)	— X — X — X	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.	X — X X — X X — X X — X X — X X — X	12.20	25.07	J 11.15 J 11.80 J 12.20 J 12.43	(90)		
Very stiff red brown very silty CLAY with much fine to coarse angular mudstone lithorelicts. (Mercia Mudstone Zone III)	— X — X — X X — X X — X X — X X — X	13.50	23.77	B 13.50 S 13.50	13.95 50		
Firm red brown SILT. (Mercia Mudstone Zone IVb)	X — X X — X X — X X — X	14.50	22.77	B 14.50 S 14.50	14.95 57		
Firm red brown SILT with some sand and fine gravel sized mudstone lithorelicts. (Mercia Mudstone Zone IVa) Borehole complete at 15.00m.	X — X X — X	15.00	22.27	B 15.00			
Daily Progress		Hard Strata		Comments			
Date	Final Depth (m) of:		Depth(m)	Time			
	Borehole	Water	Casing				
05/11/90	1.00		1.00	0.80–1.00	1 hour		
06/11/90	5.00		5.00	1.00–2.00	1hr 30min		
07/11/90	11.15	10.50	10.50	3.20–3.90	3 hour		
08/11/90	15.00	8.80m	15.00	4.30–4.80	45 mins		
					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 all C.P.T. 300mm penetration ... For given penetration ... Sealing 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 [ ] Casing Depth
						Ground Water 1→ First Water Strike 2→ Subsequent Water Strike — cm/pm Standing Level 32 Level 20mins after strike [ ] Casing Depth	





SK42NE 181 447960-27862

Norwest Holst Soil Engineering Ltd.					BOREHOLE LOG		Borehole No. 6	
Contract No. F8883		Method Cable Percussion		Sheet 1 of 1		Coords E 447960 N 327862		
Location A453(T): Clifton to M1		Borehole Diam 150 mm		Ground Level 31.34 m.A.O.D.				
Client Dept. of Transport		Date 05/10/90						
Consultant John Burrow & Ptnrs.								
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Sampling & Insitu Testing		Ground Water		
				Depth(m)	() & N			
Loose becoming medium dense light brown sandy fine to coarse GRAVEL. 1.00-2.00m ... Become light brown silty SAND and GRAVEL. (River Terrace Deposit)				B 0.00 1.00				
				B 1.00 2.00 C 1.05 1.50	6	6/10 am		
				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. (Mercia Mudstone Zone IVa) Borehole complete at 6.50m.		3.80	27.54	U 4.05 4.50	(46)			
				J 4.50 5.00				
				U 5.05 5.50	(62)			
				J 5.50 6.00				
				U 6.05 6.50	(63)			
		6.50	24.84					
Daily Progress		Hard Strata		Comments				
Date	Final Depth (m) of:		Depth(m)	Time				
	Borehole	Water	Casing					
05/10/90	3.50		3.00		05/10/90 - Water added to bail gravels from 0.80m.			
06/10/90	6.50	1.10	4.50					
Casing maintained just above base of borehole unless etc								
Sample and Test Key	J Small Disturbed Sample	S Standard Penetration Test	S.P.T. 'N' for full	Rotary Core Run		Ground Water		
	B Bulk Disturbed Sample	C Cone Penetration Test	C.P.T. 300mm penetration	(Recovery to Scale)		1 -> First Water Strike		
	V Insitu Vane Test	V Insitu Vane Test	For given penetration	T.C.R. Total Core Recovery (%)		2 -> Subsequent Water Strike		
	U Undisturbed U100 Sample	PR Pressurimeter Test	Sealing blows only	S.C.R. Solid Core Recovery (%)		am/pm Standing Level		
	W Water Sample	K Permeability Test	N.P. No Penetration	R.Q.D. Rock Quality Designation		Level 20mins after strike		
	N.R. No Recovery	Q Blows to drive U100				() Casing Depth		



SK42 NE 235 447756-27746

Norwest Holst Soil Engineering Ltd.						BOREHOLE LOG		Borehole No. 108	
Contract No. F8883		Method CABLE PERCUSSION				Sheet 1 of 2			
Location A453(T): Clifton to M1		Borehole Diam 150 mm				Coords E 447756 N 327746			
Client Dept. of Transport		Date 24/09/90				Ground Level 41.15 m.A.O.D.			
Consultant John Burrow & Ptnrs.									
Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Sampling & Insitu Testing		Ground Water	Piezometer/ Standpipe		
				Depth(m)	( ) & N				
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.		2.00	39.15	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.		2.50	38.65	U 2.05	2.50	(46)			
				J 2.50	2.50				
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.		4.00	37.15	U 3.55	4.00	(48)			
				B 4.00	4.50				
MADEGROUND: Stiff reddish brown mottled dark grey clay with some fine to coarse sub-angular to rounded gravel of quartzite and roadstone.		10.00	31.15	B 4.50	5.50	(47)			
				U 4.55	5.00				
				B 5.50	6.50	60			
				S 5.55	6.00				
				B 6.50	7.50	26			
				S 6.55	7.00				
				B 7.55	8.55	50			
				S 7.55	8.00	0			
				U 8.55	9.00	(46)			
				J 9.00	9.00				
U 9.55	10.00	(82)							
Daily Progress		Hard Strata		Comments		Logged by:			
Date	Final Depth (m) of:		Depth(m)	Time					
	Borehole	Water	Casing						
24/09/90	8.00	Dry	7.50	2.50 to 3.50	0.75 hrs				
25/09/90	14.00	9.20	12.00	5.50 to 6.00	0.75 hrs				
				7.50 to 8.50	1 hr				
				10.00 to 10.30	0.75 hrs				
Casing maintained just above base of borehole unless stated									
Sample and Test Key	J Small Disturbed Sample	S Standard Penetration Test	S.P.T. N for All	Rotary Core Run (Recovery to Soils)		Ground Water		Piezometer	
	B Bulk Disturbed Sample	C Cone Penetration Test	C.P.T. 300mm penetration	T.C.R. Total Core Recovery (%)		1 -> First Water Strike		Upper Seal	
	U Undisturbed U100 Sample	V Insitu Vane Test	For given penetration	S.C.R. Solid Core Recovery (%)		2 -> Subsequent Water Strike		Sand Cell	
	W Water Sample	PR Presurimeter Test	Sealing Mass only	R.Q.D. Rock Quality Designation		am/pm Standing Level		Piezometer Tip	
	M.R. No Recovery	K Permeability Test	N.P. No Penetration			Level 20mins after strike		Lower Seal	
		Q Blows to drive U100				[ ] Casing Depth		Grout	

5K42NE 235

<b>Norwest Holst Soil Engineering Ltd.</b>						<b>BOREHOLE LOG</b>		Borehole No. <b>108</b>
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		Date 24/09/90				Ground Level 41.15 m.A.O.D.		
Consultant John Burrow & Ptnrs.								
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)	X — X X — X X — X	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 IVc)	— — — — — — — — —	12.00	29.15	J S	12.00 12.00 12.05 12.30	30		
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		Hard Strata		Comments		Logged by:		
Date	Final Depth (m) of: Borehole    Water    Casing		Depth(m)	Time				
24/09/90	8.00	Dry	7.50	2.50 to 3.50	0.75 hrs	Standpipe installed to 14.00m.		
25/09/90	14.00	Dry	12.00	5.50 to 6.00	0.75 hrs			
				7.50 to 8.50	1 hr			
				10.00 to 10.30	0.75 hrs			
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 In situ Vane Test PR Piezometer Test K Permeability Test () Blows to drive U100	S.P.T. "N" for All C.P.T. 300mm penetration For given penetration = Sealing 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/bm Standing Level JZ Level 20mins after strike [] Casing Depth	Piezometer Upper Seal Sand Cell Piezometer Tip Lower Seal Grout		

# TP1 & ASSOCIATED SERVICE TRENCH

Sheet 1 of 3

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10<sup>th</sup> & 13/12/2004

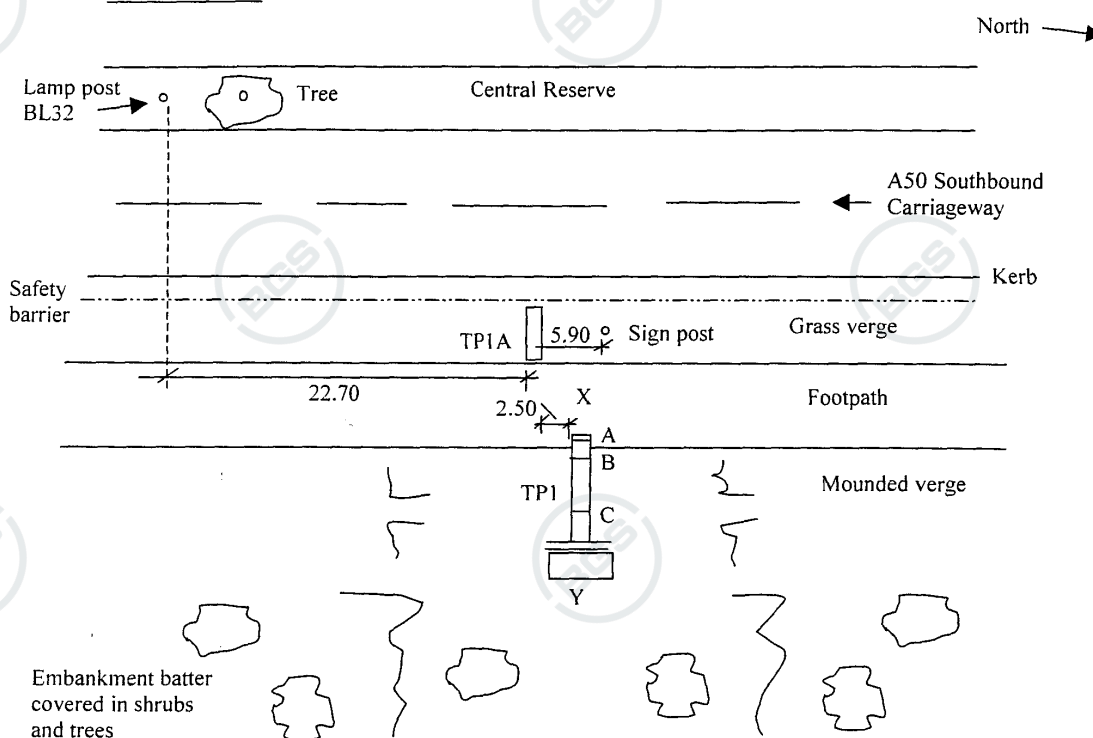
Plant/Method of  
Excavation: Hand  
Excavated

Ground Level: 32.55m AOD (adjacent to footpath), 32.60m AOD (geotechnical pit)

National Grid Co-ordinates: 447325E  
328551N

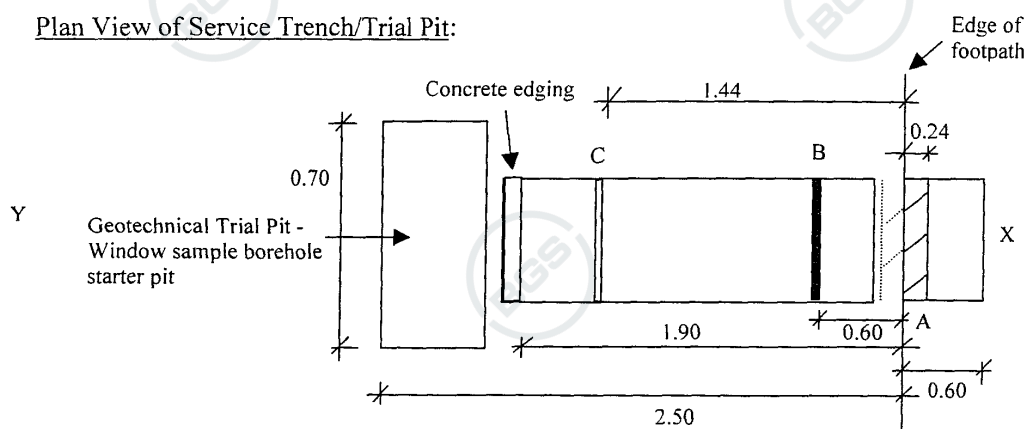
Services Encountered:  
Yes (see below)

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**

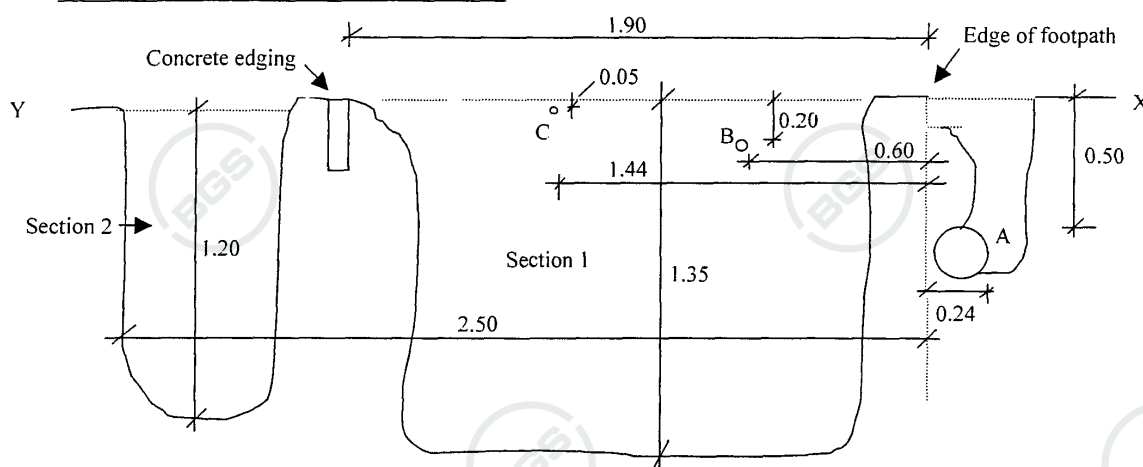
Services Encountered:

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)

**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)

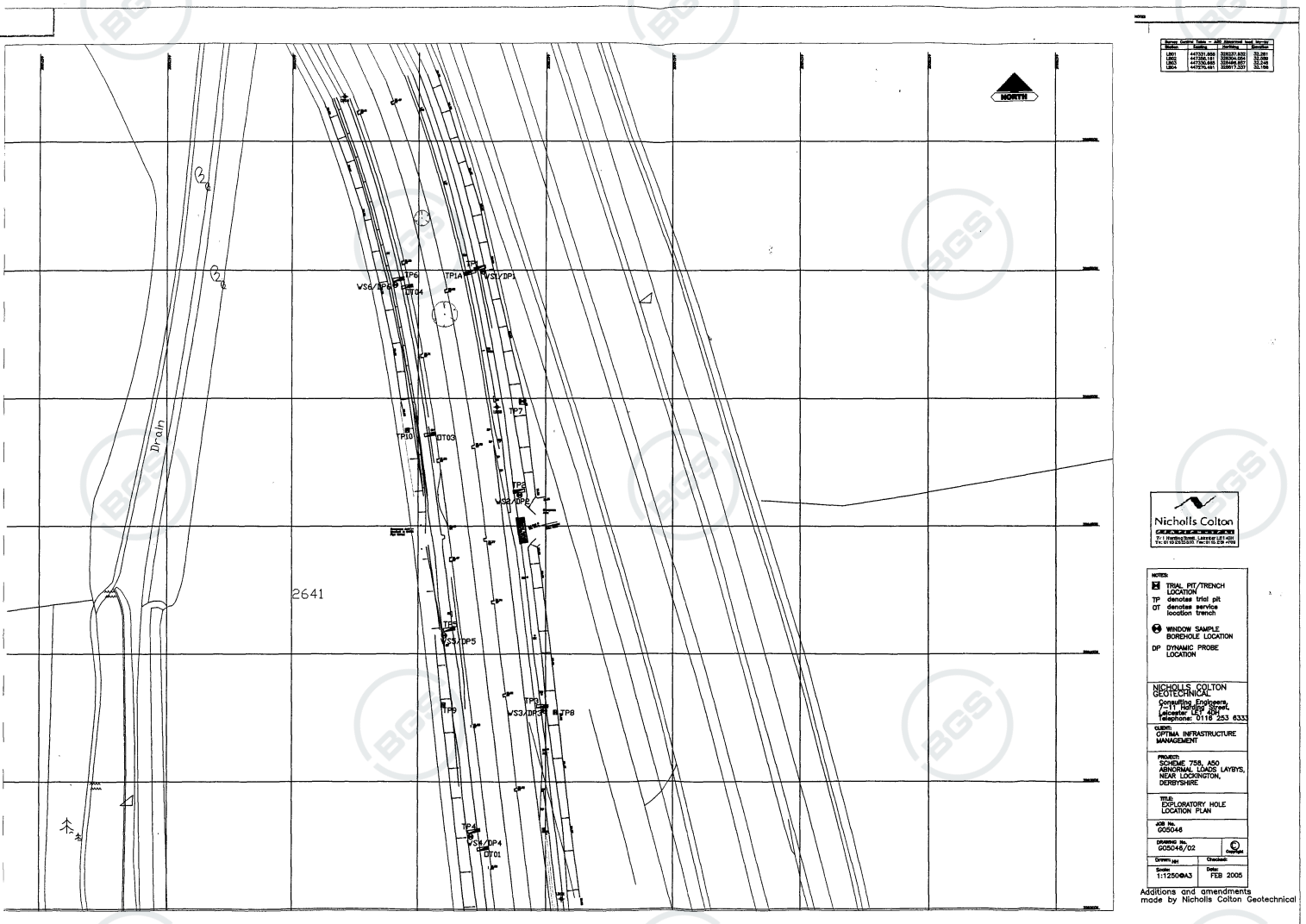
Samples: (Section 2 Window sample Starter pit)

<u>Type / No.</u>	<u>Depth (m)</u>
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.

NICHOLLS COLTON AND PARTNERS LTD. Tel: 0116 - 2536333				<b>BOREHOLE RECORD</b> (Window Sampler)				Borehole Number <b>WS1</b>	
Site Scheme 758: A50 Abnormal Loads Laybys									
Client Optima Infrastructure Management				Boring diameter: 92 mm To 3.60m		Casing diameter:		Logged by: NB	
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							
1.20-2.00	D 1			31.40	1.20	MADE GROUND - hand dug, see trial pit TP1 for soil descriptions and sample details			
2.00-2.30	D 2					MADE GROUND - red and orange brown silty slightly gravelly fine sand (gravel is fine to coarse sub-angular to rounded quartz)			
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			29.40	3.20	....with occasional thin bands of firm red brown and pale grey sandy gravelly clay from 2.90m			
				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 <i>End of Borehole at 3.60 m</i>			
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.									





## TP1A

## Sheet 1 of 2

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10/12/2004

Plant/Method of

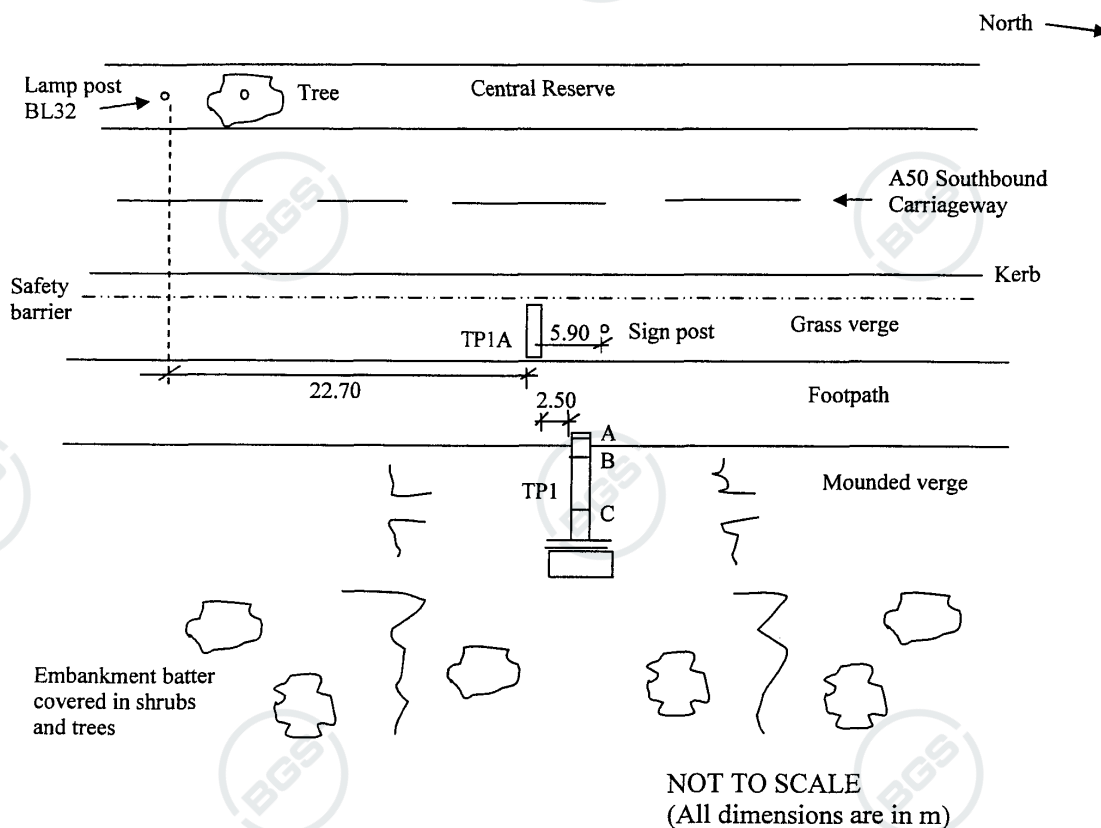
Excavation: Hand  
Excavated

Ground Level: 32.74m AOD

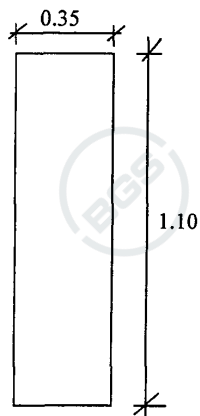
National Grid Co-ordinates: 447320E  
328549N

Services Encountered:  
None

Location Plan:



Plan View of Trial Pit:



NICHOLLS COLTON GEOTECHNICAL

LR: G05046

**TP1A & ASSOCIATED SERVICE TRENCH (continued)**

**Sheet 2 of 2**

Descriptions:

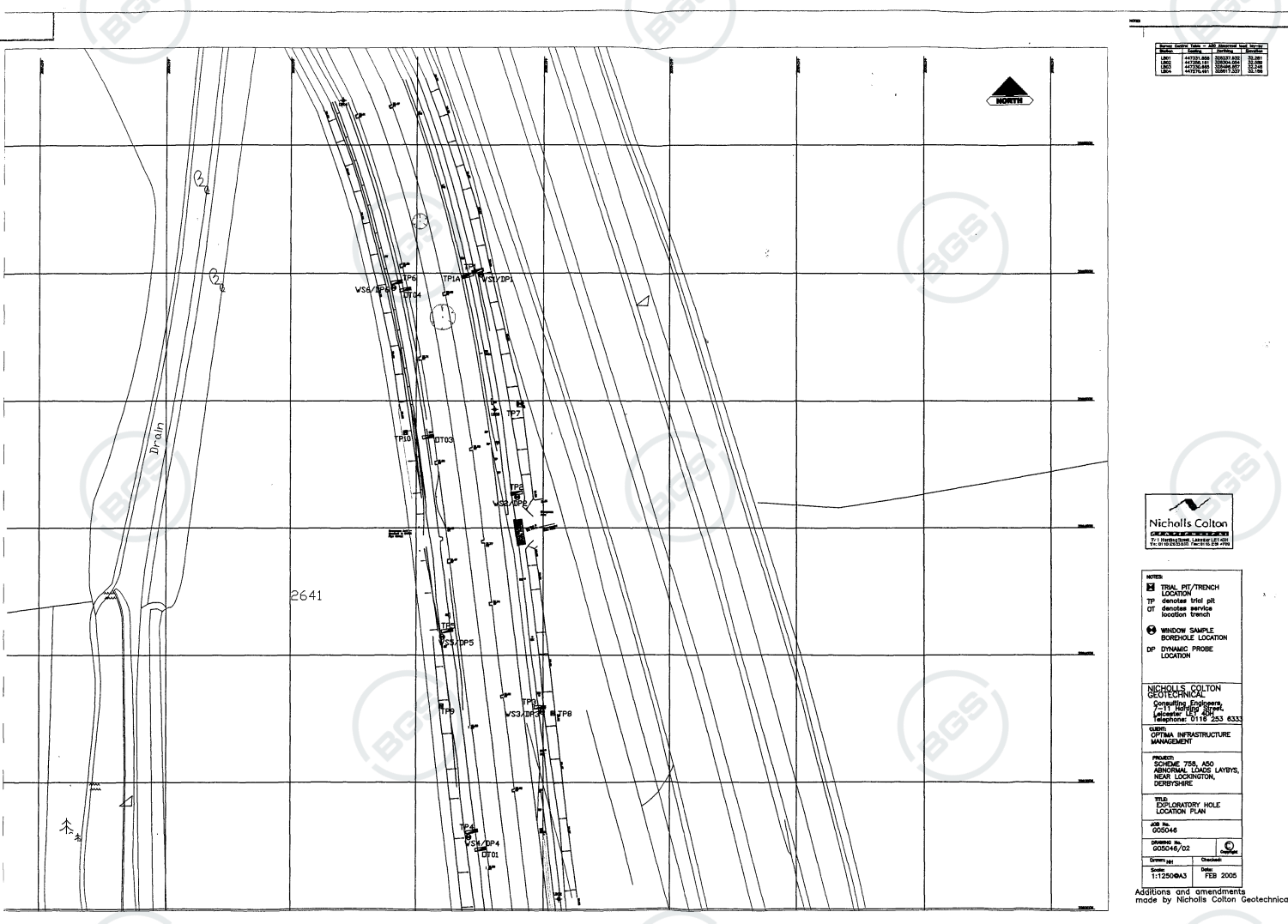
Depth (m)	Description
0.00 – 0.18	MADE GROUND – turf over topsoil with many roots
0.18 – 0.40	MADE GROUND – brown clayey gravelly fine to medium sand and topsoil (gravel is fine to coarse sub-angular to sub-rounded quartz)
0.40 – 0.80	MADE GROUND – brown clayey gravelly fine to medium sand with occasional 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:

<u>Type / No.</u>	<u>Depth (m)</u>
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.



## TP2 & ASSOCIATED SERVICE TRENCH

Sheet 1 of 2

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10<sup>th</sup> & 13/12/2004

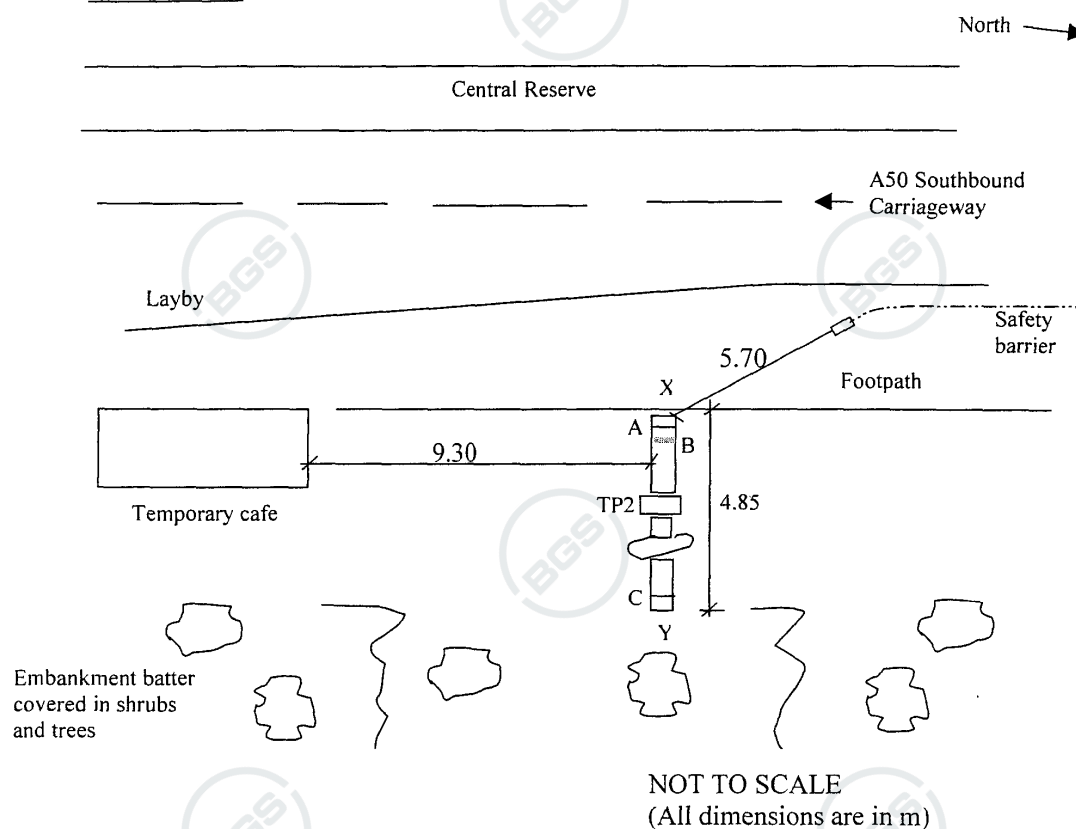
Plant/Method of  
Excavation: Hand  
Excavated

Ground Level: 32.18m AOD (adjacent to footpath), 32.23m AOD (geotechnical pit)

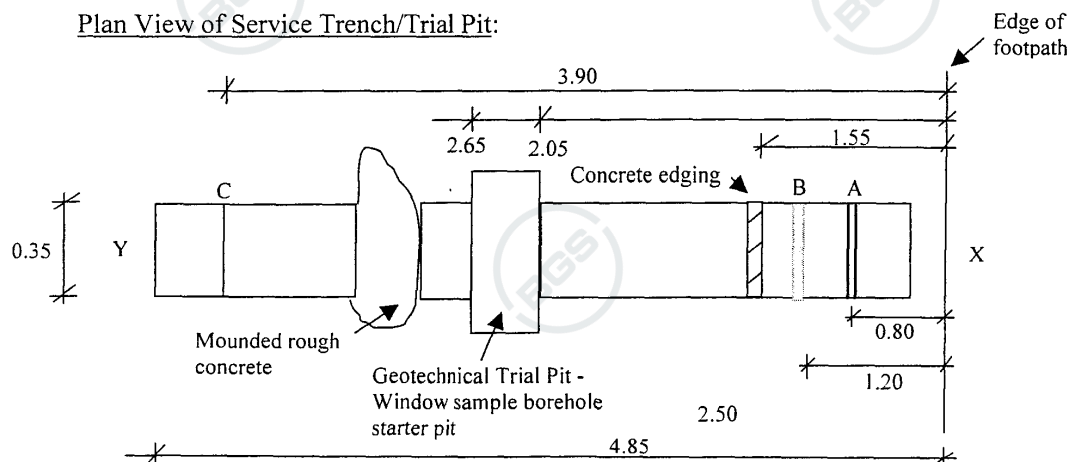
National Grid Co-ordinates: 447340E  
328463N

Services Encountered:  
Yes (see below)

Location Plan:



Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL

LR: G05046



**TP2 & ASSOCIATED SERVICE TRENCH (continued)**

**Sheet 2 of 2**

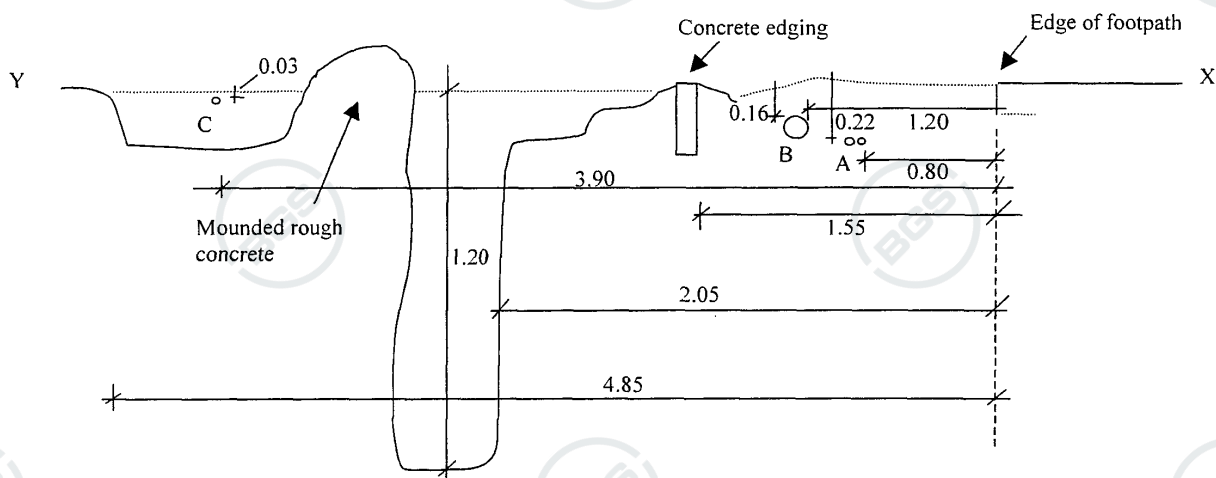
Services Encountered:

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)

<u>Type / No.</u>	<u>Depth (m)</u>
B 1	0.50m
B 2	1.00m

Remarks:

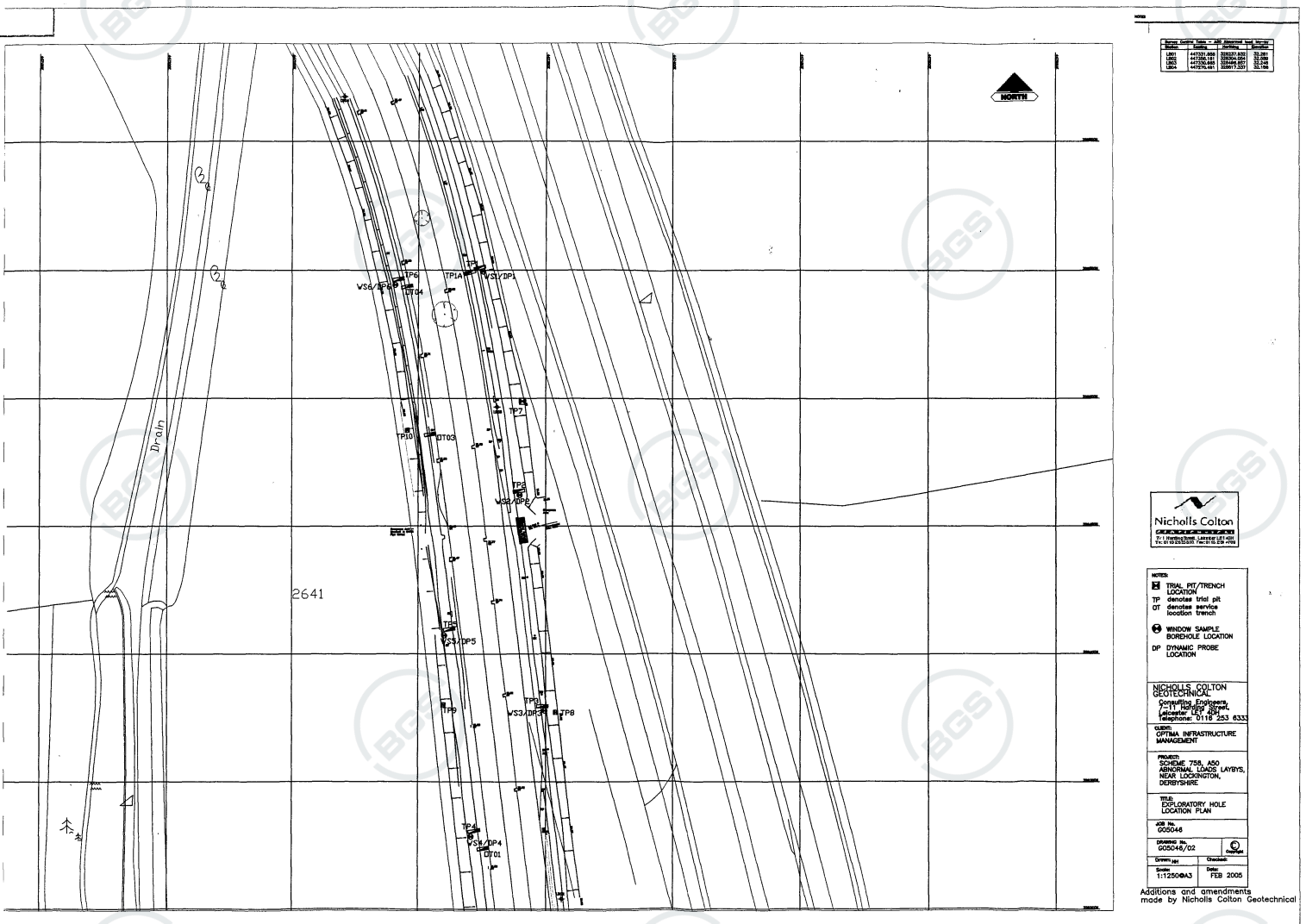
1. No groundwater seepages were encountered at the time of excavation.
2. No collapse of the trial pit/trench sides occurred.
3. The trial pit/trench was backfilled with arisings upon completion.

NICHOLLS COLTON GEOTECHNICAL

LR: G05046



NICHOLLS COLTON AND PARTNERS LTD. Tel: 0116 - 2536333				<b>BOREHOLE RECORD</b> (Window Sampler)			Borehole Number <b>WS2</b>	
Site Scheme 758: A50 Abnormal Loads Laybys								
Client Optima Infrastructure Management				Boring diameter: 92 mm To 2.90m		Casing diameter:		Logged by: NB
LR: G05046				Ground Level: 32.23 m		Date: 15/12/2004		Scale: 1:50
						Location: 447340E - 328463N		Sheet 1 of 1
Samples & Tests			Water	Level (m)	Depth (m)	Description	Legend	Install- ation
Depth (m)	Type	SPT N						
1.20-2.00	D 1			31.03	1.20	MADE GROUND - hand dug, see trial pit TP2 for soil descriptions and sample details		
2.10-2.50	D 2			30.13	2.10	MADE GROUND - red brown locally clayey slightly gravelly fine sand (gravel is fine to coarse sub-angular to rounded quartz)		
2.50-2.90	D 3			29.73	2.50	Orange and red brown silty fine to coarse SAND and fine to coarse angular to rounded flint and quartz GRAVEL		
				29.33	2.90	Orange slightly gravelly fine to coarse SAND (gravel is fine to coarse sub-angular to rounded quartz) <i>End of Borehole at 2.90 m</i>		
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.								



### 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

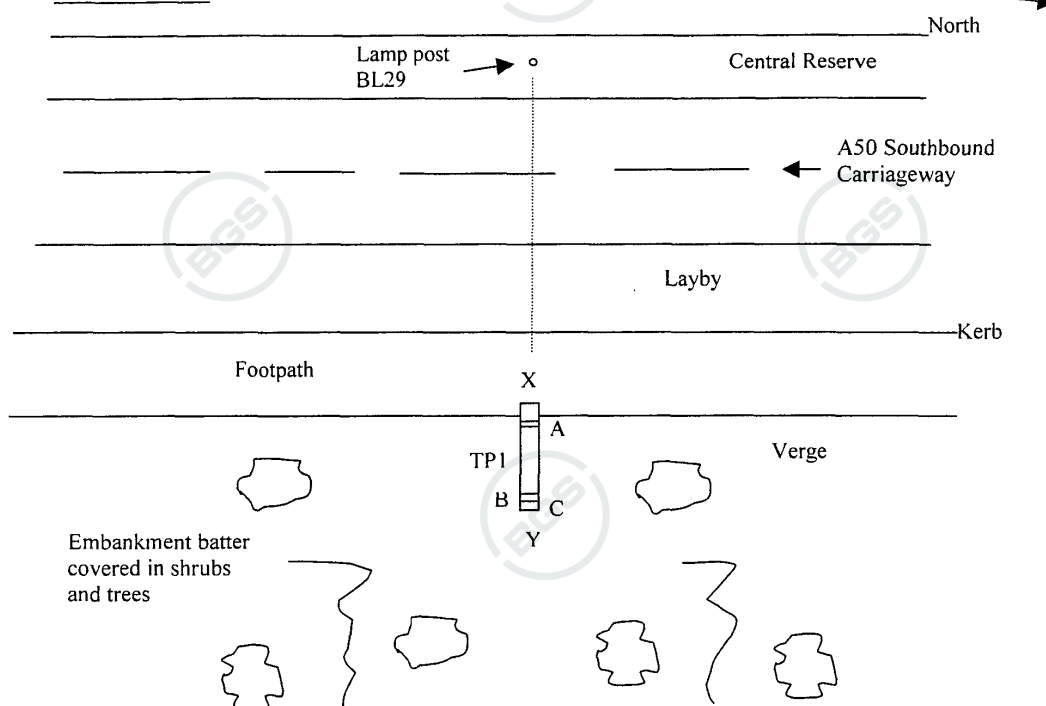
Excavation: Hand  
Excavated

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

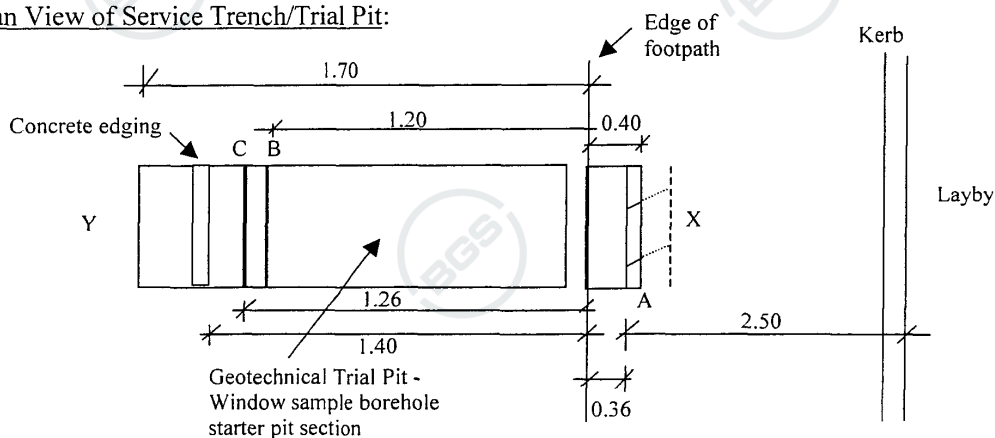
Services Encountered:  
Yes (see below)

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

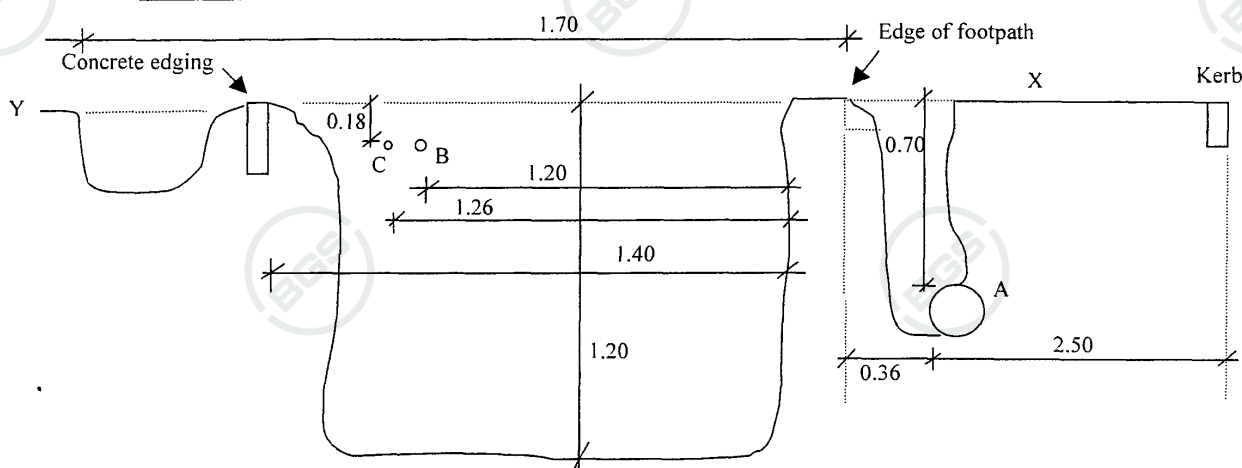
**Services Encountered:**

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)

NICHOLLS COLTON GEOTECHNICAL

LR: G05046

**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:

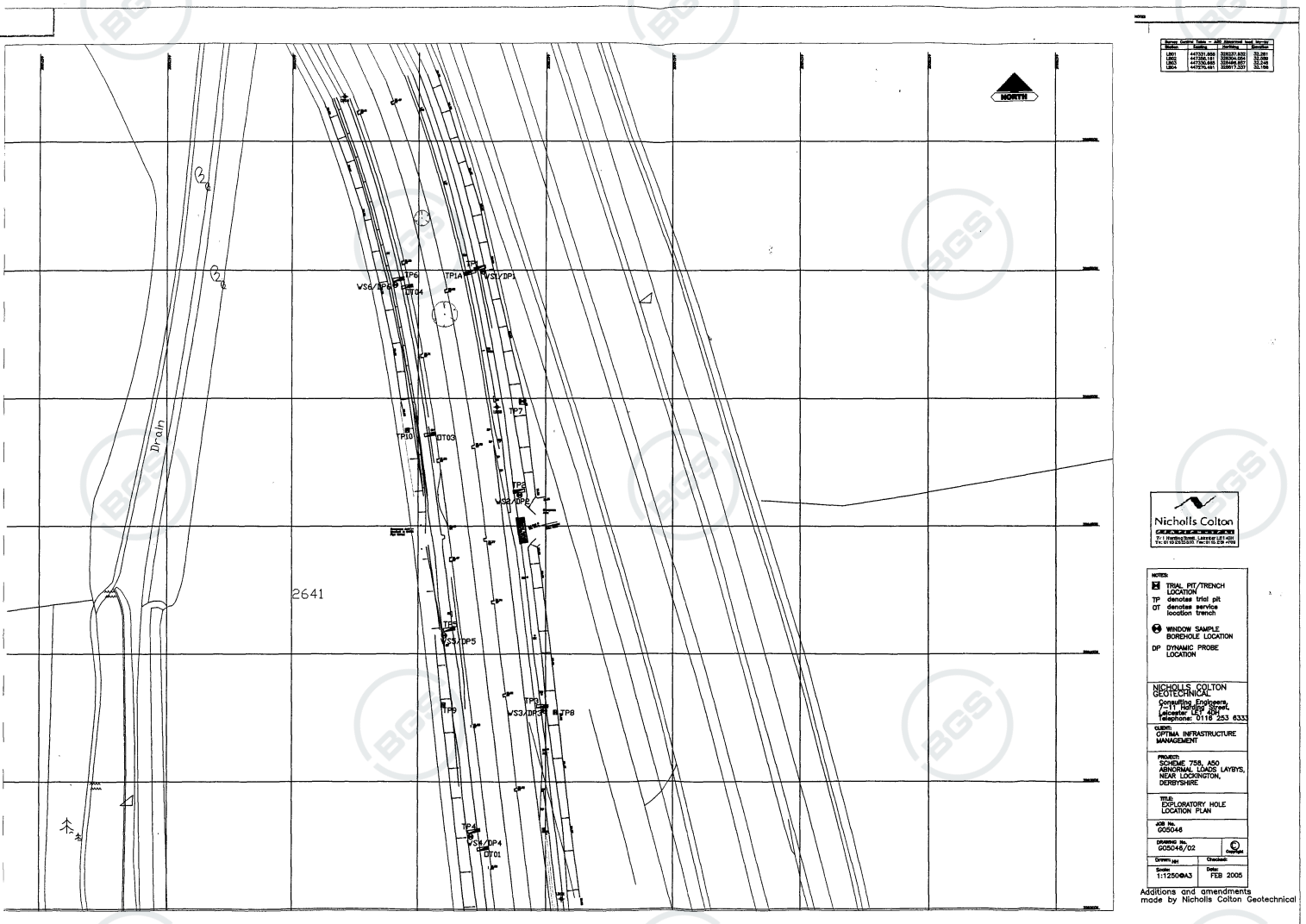
<u>Type / No.</u>	<u>Depth (m)</u>
B 1	0.08 – 0.60m (Footpath section of trial trench)
B 2	1.00m (Window sample WS3 starter pit section of trial trench)
J 3	1.00m (Window sample WS3 starter pit section of trial trench)
T 4	1.00m (Window sample WS3 starter pit section of trial trench)

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.



NICHOLLS COLTON AND PARTNERS LTD. Tel: 0116 - 2536333				<b>BOREHOLE RECORD</b> (Window Sampler)			Borehole Number <b>WS3</b>	
Site Scheme 758: A50 Abnormal Loads Laybys								
Client Optima Infrastructure Management				Boring diameter: 92 mm To 3.50m		Casing diameter:		Logged by: NB
LR:G05046				Ground Level:32.44 m		Date: 15/12/2004		Scale: 1:50
						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) <i>End of Borehole at 3.50 m</i>		
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.								





## TP4 & ASSOCIATED SERVICE TRENCH

Sheet 1 of 3

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 08/12/2004

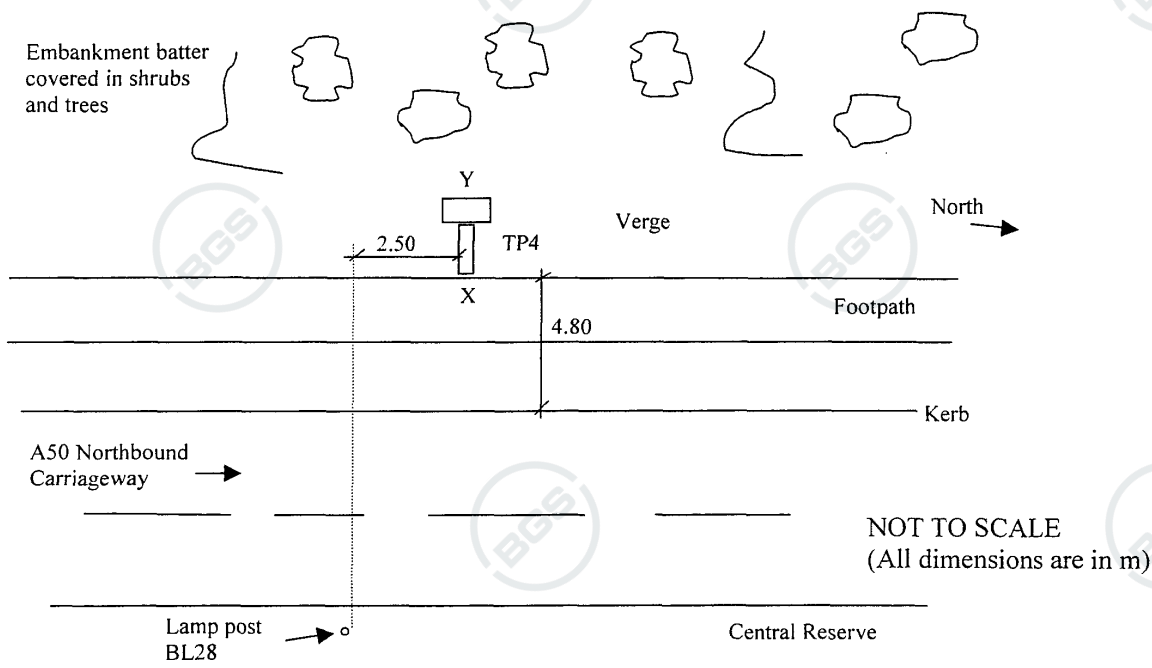
Plant/Method of  
Excavation: Hand  
Excavated

Ground Level: 31.97m AOD (adjacent to footpath), 32.09m AOD (geotechnical pit)

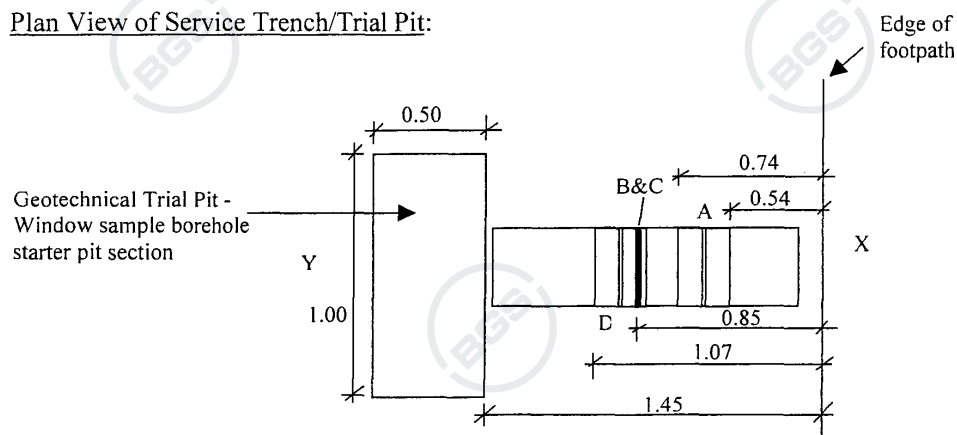
National Grid Co-ordinates: 447321E  
328330N

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:**

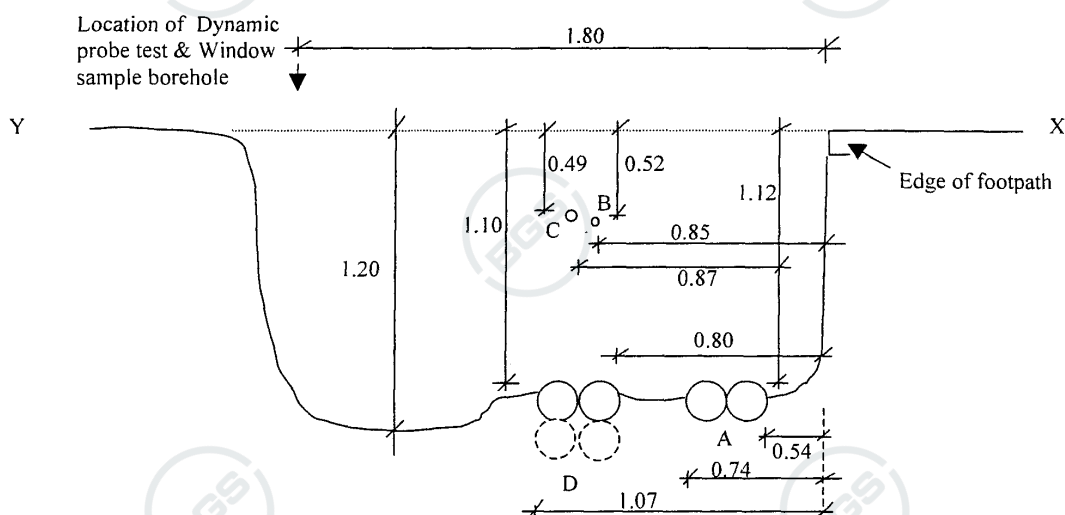
A = 2 No. approximate 100mm diameter red brown glazed ceramic ducts at 1.12m below existing ground level.

B = 7mm diameter green earth wire cable at 0.52m below existing ground level (demarcated by yellow polythene warning tape).

C = 31mm diameter black CNE cable at 0.49m below existing ground level (demarcated 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:

<u>Type / No.</u>	<u>Depth (m)</u>
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.

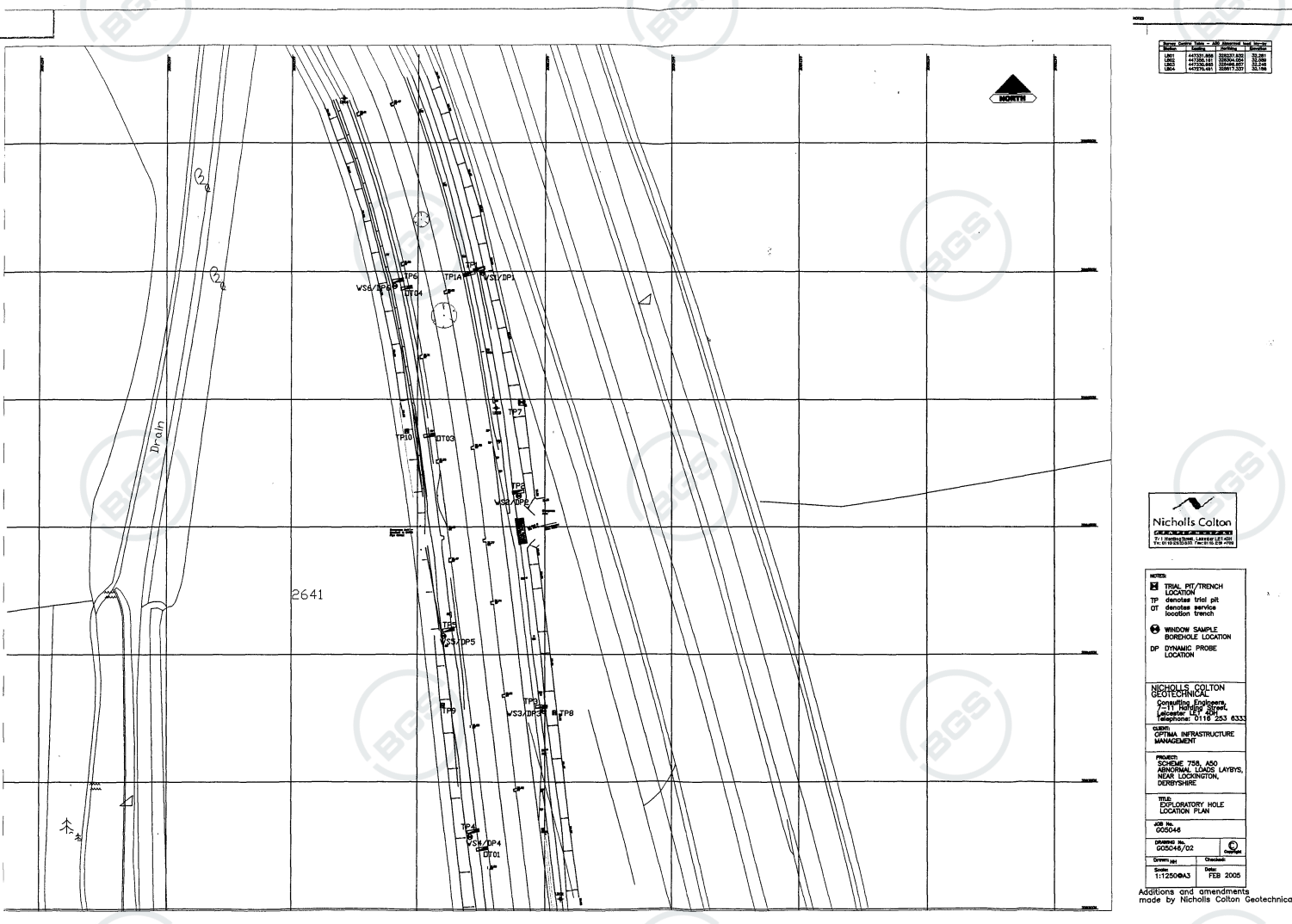
NICHOLLS COLTON GEOTECHNICAL

LR: G05046



NICHOLLS COLTON AND PARTNERS LTD. Tel: 0116 - 2536333				<b>BOREHOLE RECORD</b> (Window Sampler)			Borehole Number <b>WS4</b>	
Site Scheme 758: A50 Abnormal Loads Laybys								
Client Optima Infrastructure Management				Boring diameter: 92 mm To 3.80m		Casing diameter:		Logged by: NB
LR: G05046				Ground Level: 32.09 m		Date: 16/12/2004		Scale: 1:50
						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			
						Orange and pale grey clayey fine to coarse SAND and fine to coarse sub-angular to rounded quartz GRAVEL		
3.40-3.80	D 7			28.69	3.40			
				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.								





UTM	Zone	Easting	Northing	Height
44	U	7320	3283	100
44	U	7320	3283	100
44	U	7320	3283	100

Nicholls Colton  
Geotechnical

SYMBOLS  
TRIAL PIT/TRENCH  
LOCATION  
TP denotes trial pit  
DT denotes service  
location trench  
WINDOW SAMPLE  
BOREHOLE LOCATION  
DP DYNAMIC PROBE  
LOCATION

NICHOLLS COLTON  
GEOTECHNICAL  
Company No. 0118 253 8333  
Telephone: 0118 253 8333

CLIENT  
OPTIMA INFRASTRUCTURE  
MANAGEMENT

PROJECT  
SCHEME 755, A50  
ABNORMAL LOADS LAYERS,  
NEAR LONDON,  
DERBYSHIRE

TITLE  
EXPLORATORY HOLE  
LOCATION PLAN

JOB No.  
052046

Drawn by  
052046/02

Checked by  
11/25/04

Date  
FEB 2005

Additions and amendments  
made by Nicholls Colton Geotechnical

## 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

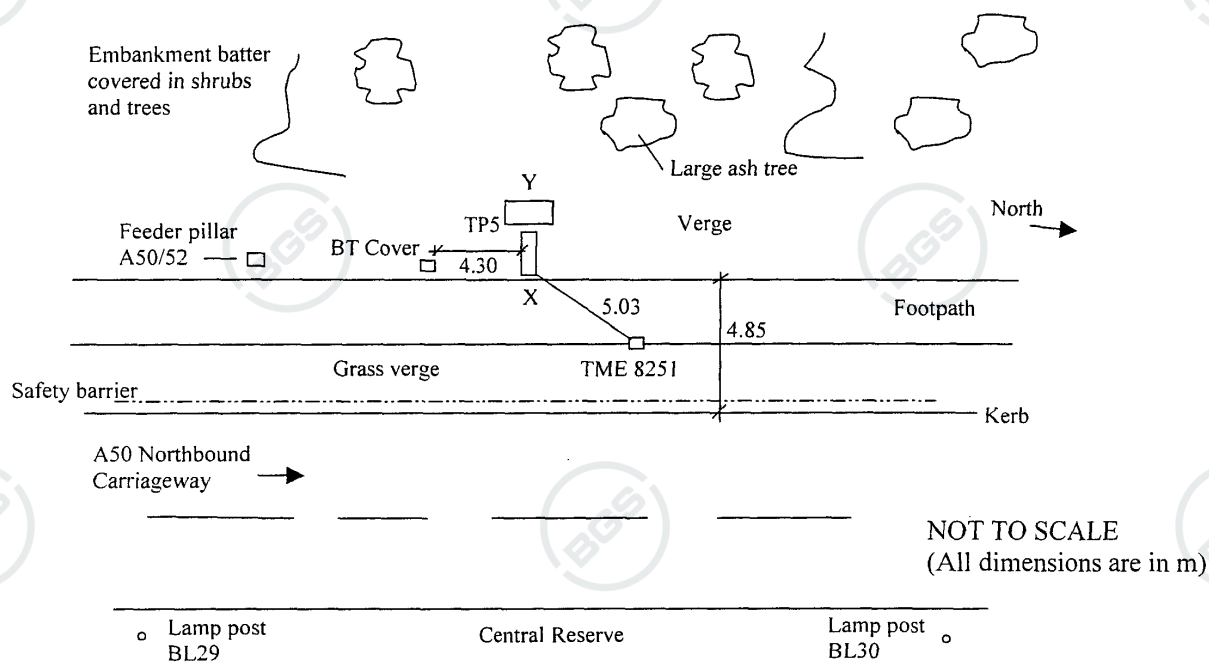
Excavated

Ground Level: 31.67m AOD (adjacent to footpath), 31.77m AOD (geotechnical pit)

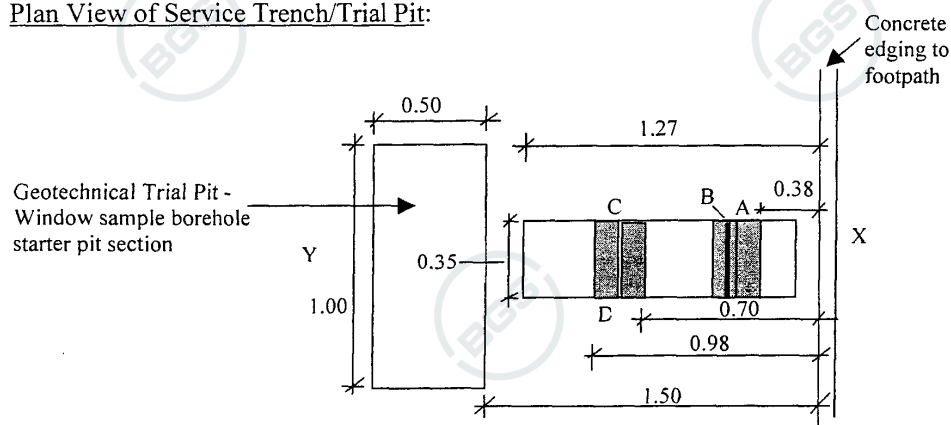
National Grid Co-ordinates: 447311E  
328409N

Services Encountered:  
Yes (see below)

Location Plan:



## Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL

LR: G05046

## TP5 & ASSOCIATED SERVICE TRENCH (continued)

Sheet 2 of 3

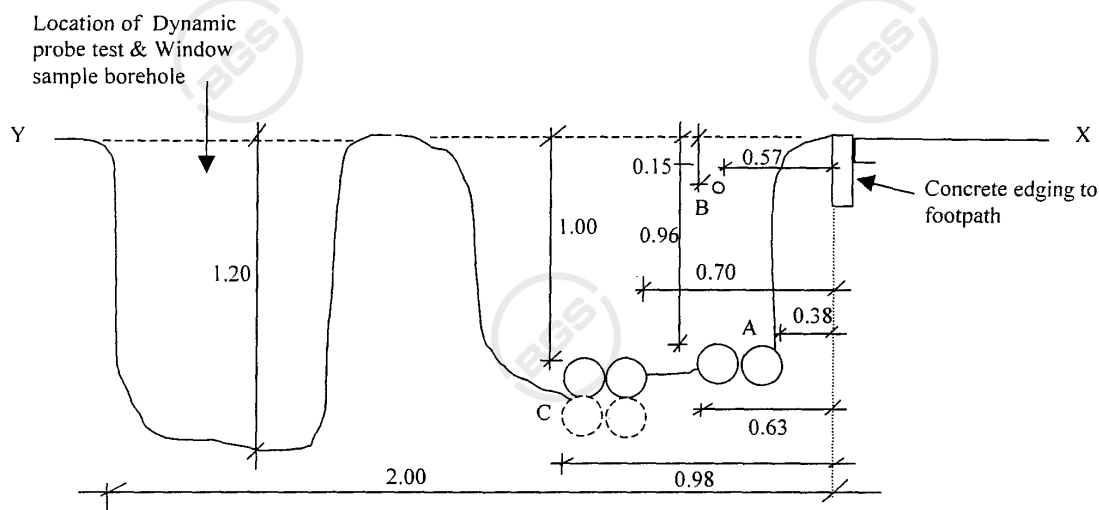
### Services Encountered:

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

NICHOLLS COLTON GEOTECHNICAL

LR: G05046

**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:

<u>Depth</u>	<u>Readings (kPa)</u>	<u>Mean Value (kPa)</u>
0.30m	140, 125 & 130	132

Samples:

<u>Type / No.</u>	<u>Depth (m)</u>
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

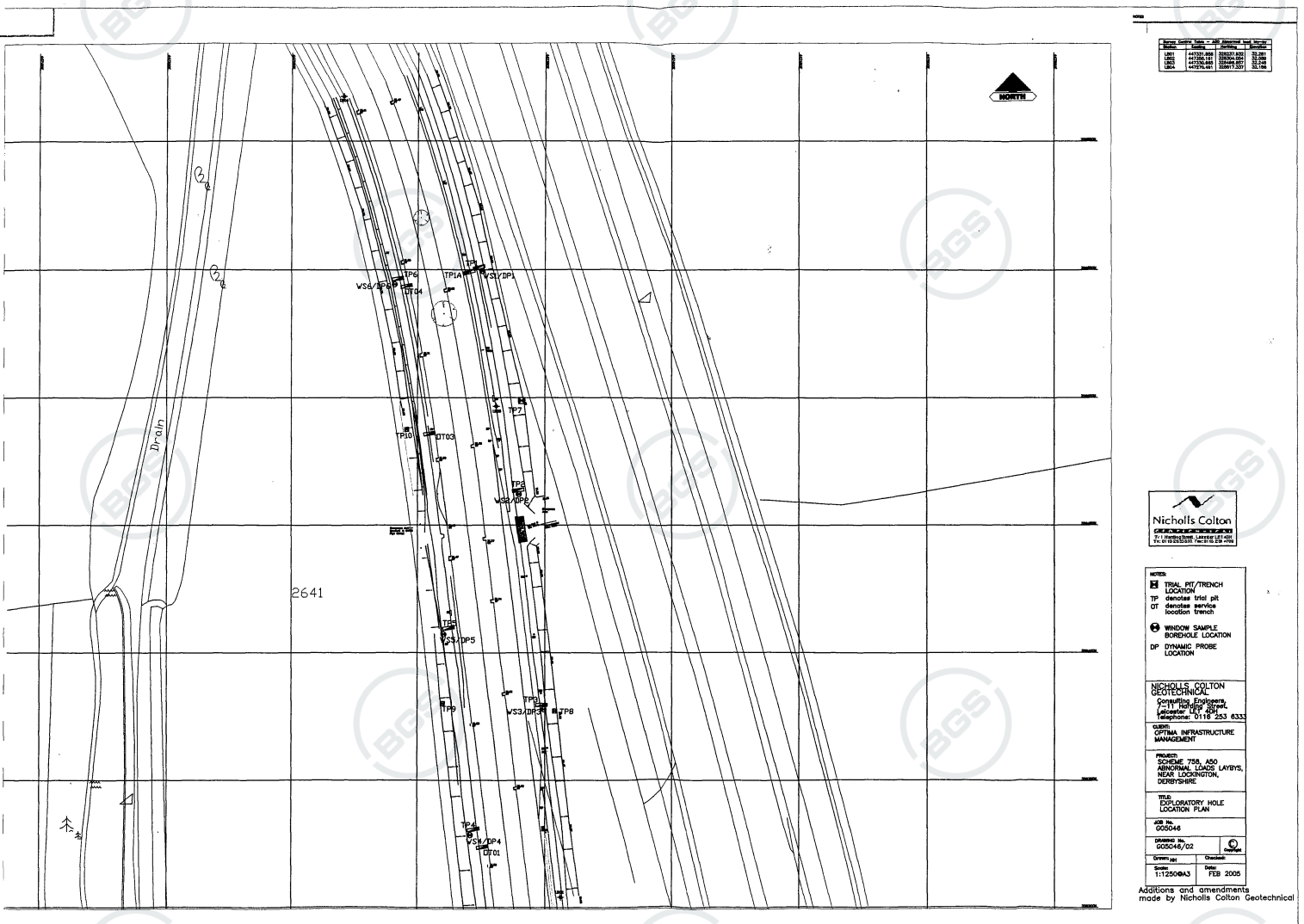
LR: G05046





NICHOLLS COLTON AND PARTNERS LTD. Tel: 0116 - 2536333				<b>BOREHOLE RECORD</b> (Window Sampler)			Borehole Number <b>WS5</b>	
Site Scheme 758: A50 Abnormal Loads Laybys								
Client Optima Infrastructure Management				Boring diameter: 92 mm To 5.00m		Casing diameter:		Logged by: NB
LR: G05046		Ground Level: 31.77 m		Date: 16/12/2004		Location: 447311E - 328409N		Scale: 1:50
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 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			
2.40-3.00	D 5			29.37	2.40	Firm red brown CLAY with occasional roots		
						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 <i>End of Borehole at 5.00 m</i>		
				26.77	5.00			

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.



## 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

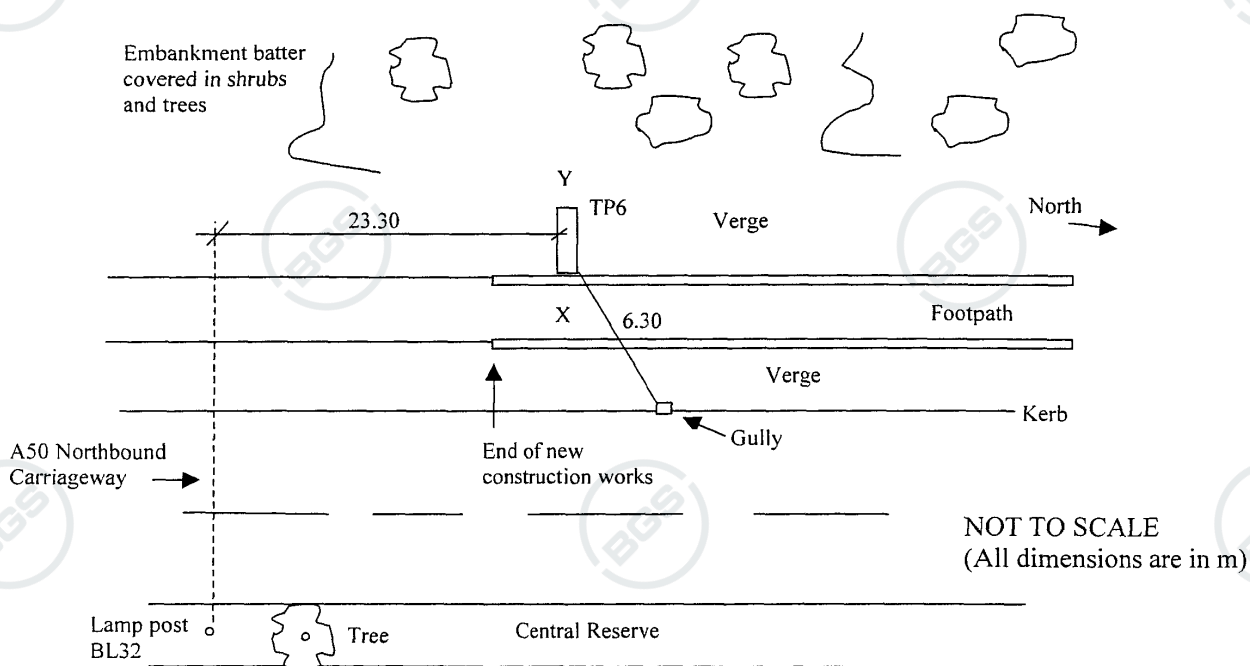
Excavated

Ground Level: 32.03m AOD (adjacent to footpath), 32.23m AOD (geotechnical pit)

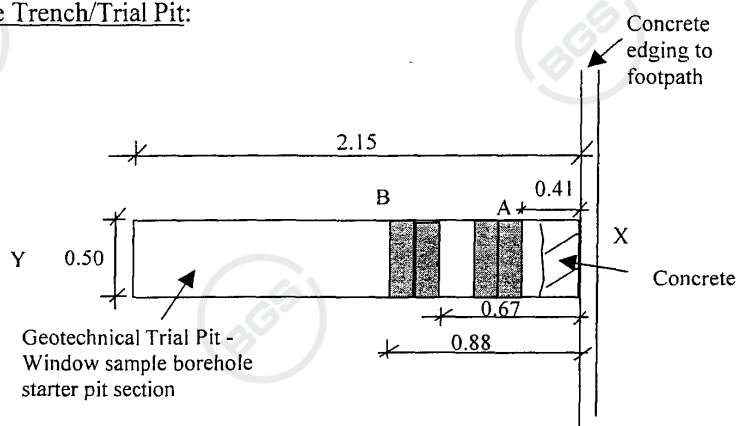
National Grid Co-ordinates: 447291E  
328546N

Services Encountered:  
Yes (see below)

Location Plan:



Plan View of Service Trench/Trial Pit:



NICHOLLS COLTON GEOTECHNICAL

LR: G05046

**TP6 & ASSOCIATED SERVICE TRENCH (continued)**

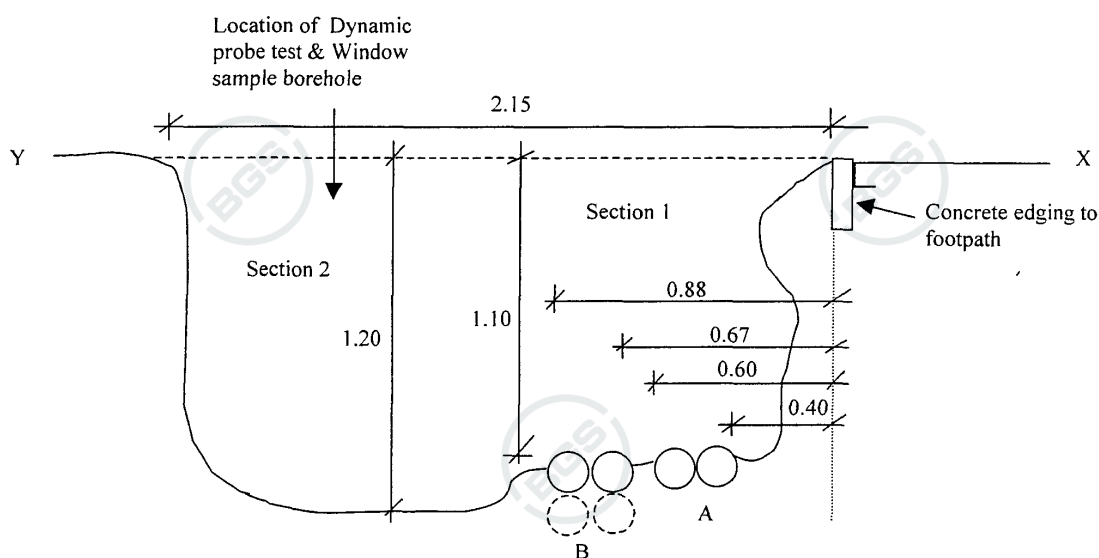
**Sheet 2 of 3**

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)

NICHOLLS COLTON GEOTECHNICAL

LR: G05046



**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:

<u>Type / No.</u>	<u>Depth (m)</u>
D 1	0.10m
D 2	0.30m
B 3	0.50m
B 4	1.00m

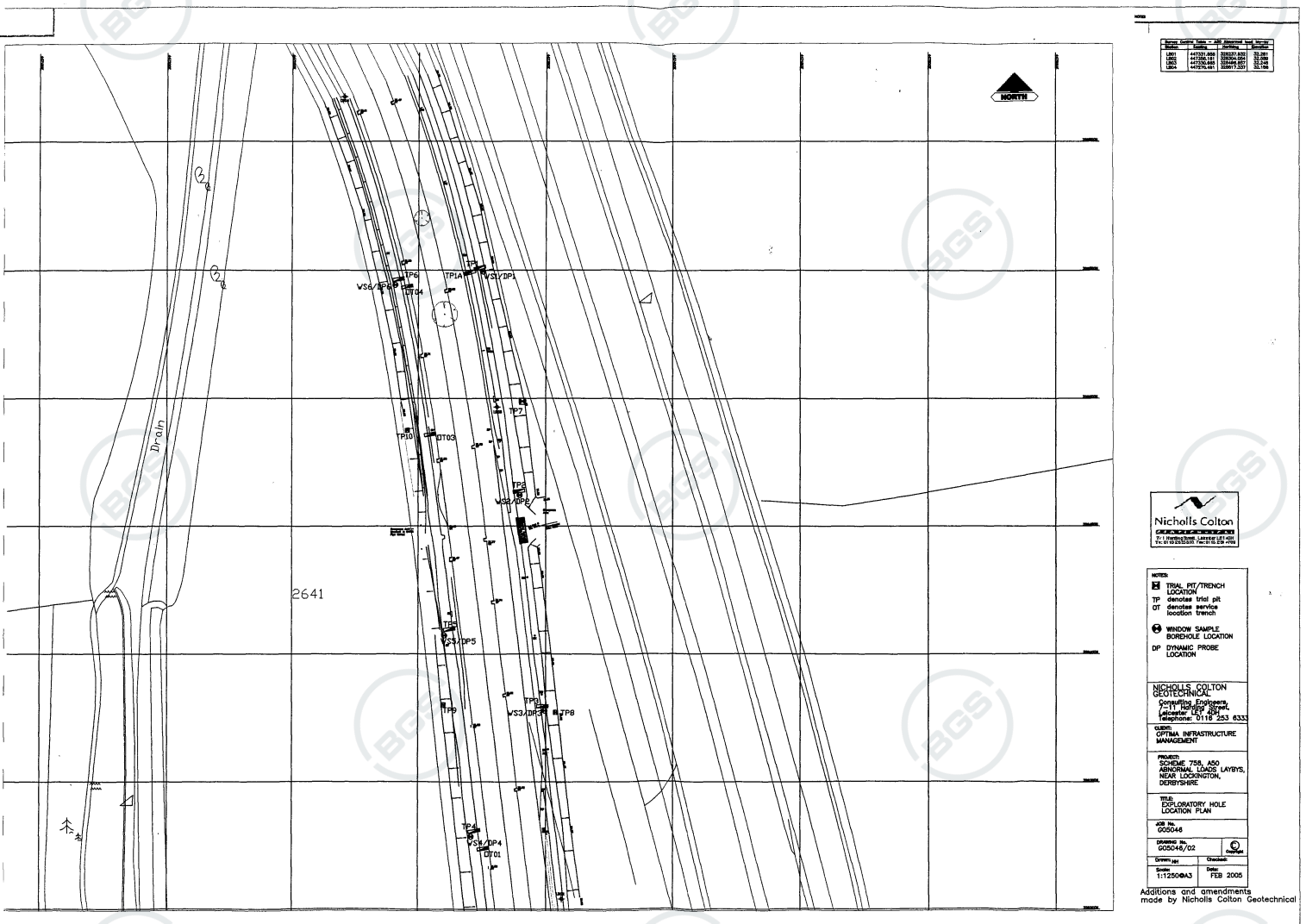
Remarks:

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.

NICHOLLS COLTON GEOTECHNICAL

LR: G05046

NICHOLLS COLTON AND PARTNERS LTD. Tel: 0116 - 2536333				<b>BOREHOLE RECORD</b> (Window Sampler)				Borehole Number <b>WS6</b>	
Site Scheme 758: A50 Abnormal Loads Laybys									
Client Optima Infrastructure Management				Boring diameter: 92 mm To 5.00m		Casing diameter:		Logged by: NB	
LR: G05046				Ground Level: 32.23 m		Date: 16/12/2004		Location: 447291E - 328546N	
Scale: 1:50				Sheet 1 of 1					
Samples & Tests			Water	Level (m)	Depth (m)	Description	Legend	Install- ation	
Depth (m)	Type	SPT N							
1.20-1.40	D 1			31.03	1.20	MADE GROUND - hand dug, see trial pit TP6 for soil descriptions and sample details			
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	MADE GROUND - stiff red brown locally grey sandy slightly gravelly clay (gravel is medium to coarse sub-angular to rounded quartz)			
2.30-2.40	D 4			29.93	2.30	MADE GROUND - red brown grey and black slightly ashy clayey fine to medium sand and fine to coarse sub-angular to rounded quartz gravel			
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				
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			
						Red brown orange and pale grey slightly clayey fine to medium SAND and fine to coarse sub-angular to rounded quartz GRAVEL			
4.85-5.00	D 10			27.38 27.23	4.85 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									
<b>Remarks and Water Observations</b> 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.									



## TRIAL PIT TP7

Sheet 1 of 2

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 10/12/2004

Plant/Method of

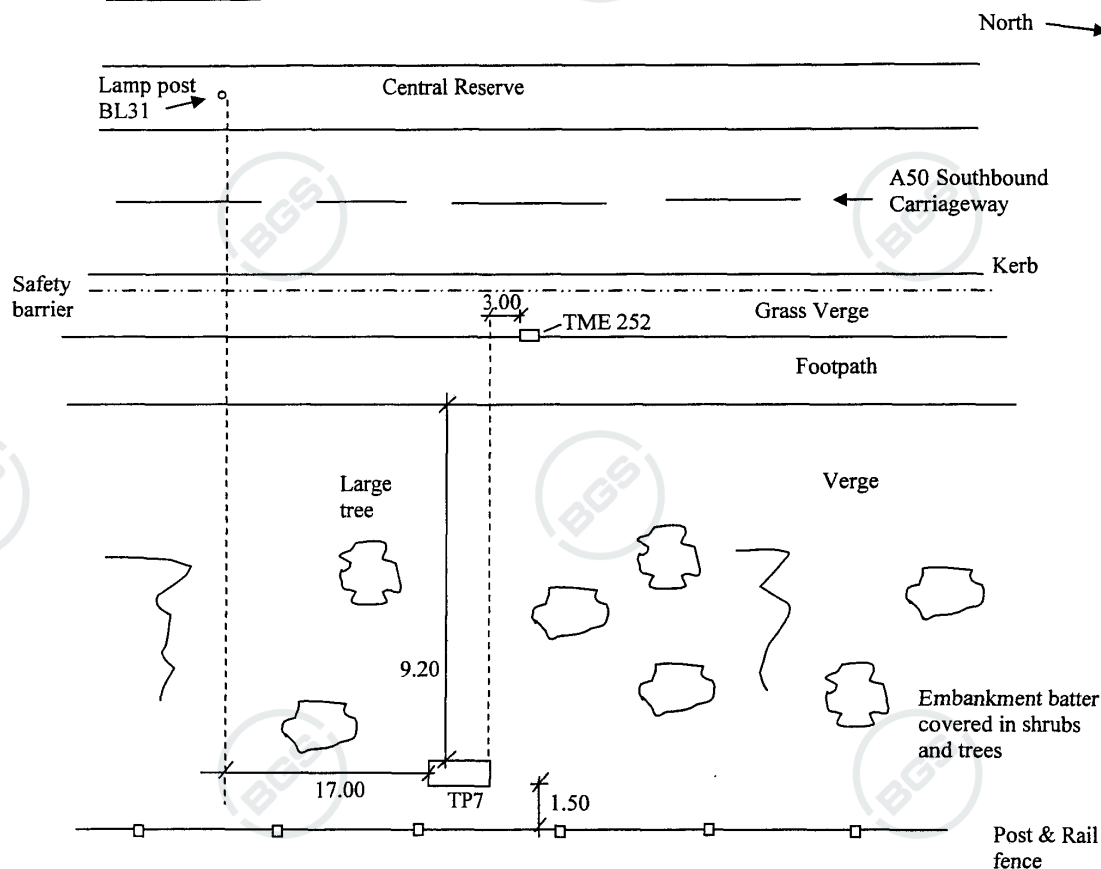
Excavation: Hand  
Excavated

Ground Level: 30.88m AOD

National Grid Co-ordinates: 447341E  
328499N

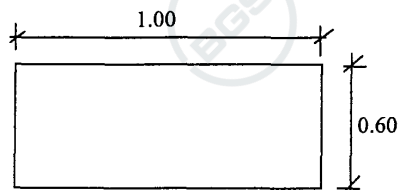
Services Encountered:  
None

Location Plan:



NOT TO SCALE  
(All dimensions are in m)

Plan View of Trial Pit:



NICHOLLS COLTON GEOTECHNICAL

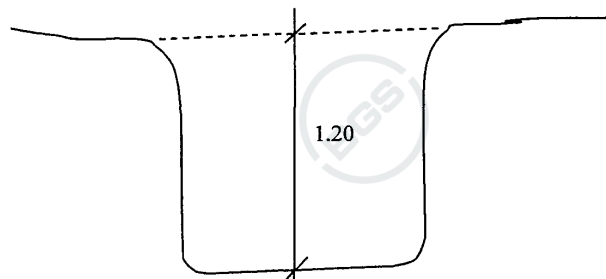
LR: G05046



**TRIAL PIT TP7** (Continued)

**Sheet 2 of 2**

Section View of Trial Pit:



Descriptions:

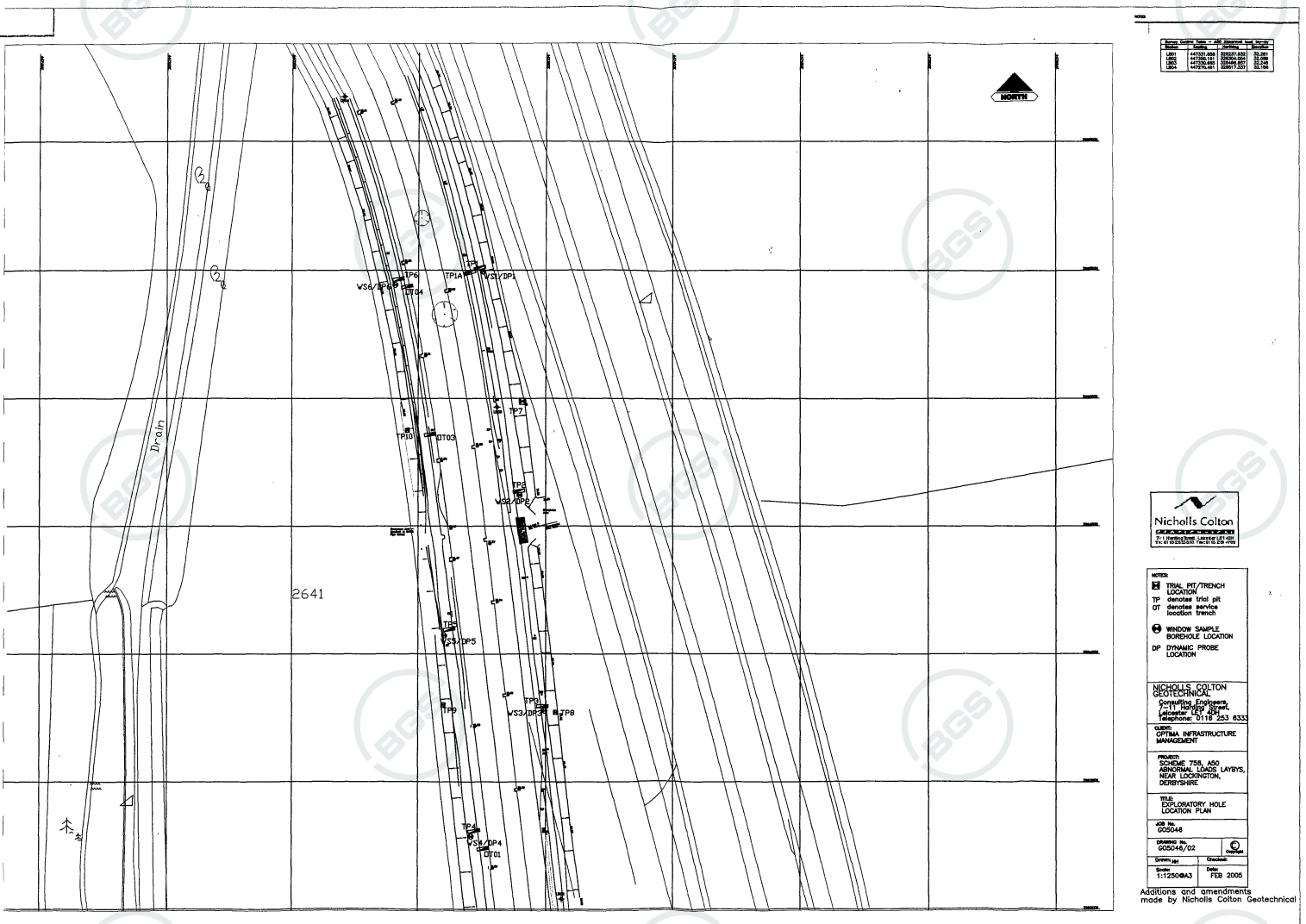
Depth (m)	Description
0.00 – 0.25	MADE GROUND – vegetation over topsoil with many roots and occasional wood and glass fragments
0.25 – 0.70	PROBABLE MADE GROUND – brown silty gravelly fine to medium sand with occasional roots (gravel is fine to coarse sub-angular to rounded quartz)
0.70 – 1.20	Orange and red brown slightly clayey very sandy fine to medium sub-angular to rounded quartz GRAVEL

Samples:

<u>Type / No.</u>	<u>Depth (m)</u>
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.



## 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

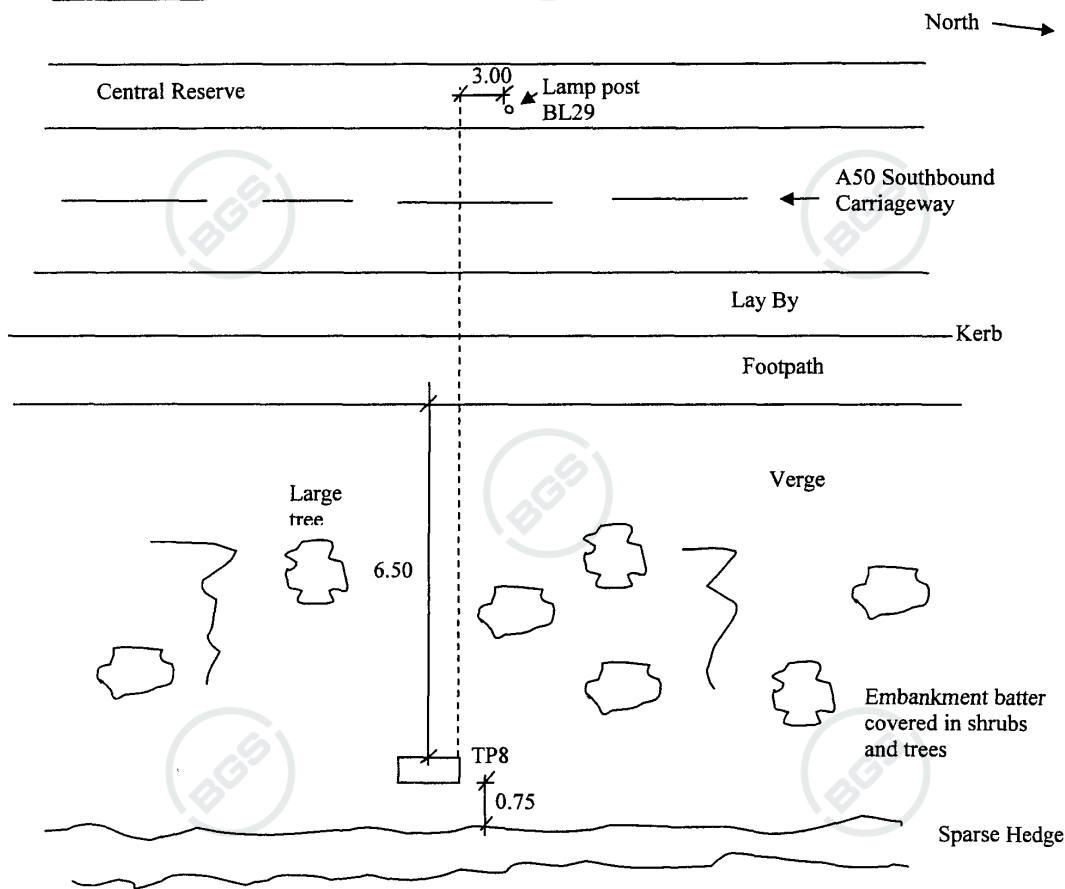
Ground Level: 30.50m AOD

National Grid Co-ordinates: 447354E  
328377N

Services Encountered:

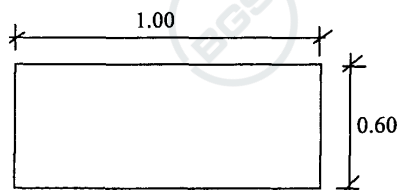
None

Location Plan:



NOT TO SCALE  
(All dimensions are in m)

Plan View of Trial Pit:



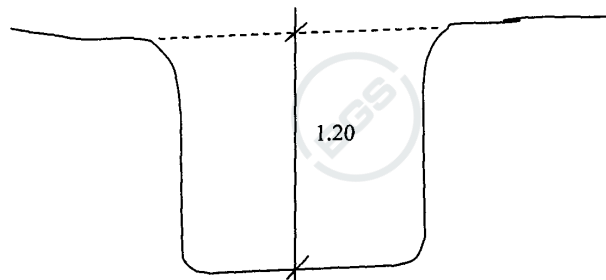
NICHOLLS COLTON GEOTECHNICAL

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:

<u>Depth</u>	<u>Readings (kPa)</u>	<u>Mean Value (kPa)</u>
0.50m	76, 70 & 70	72

Samples:

<u>Type / No.</u>	<u>Depth (m)</u>
D 1	0.20m
B 2	0.50m
B 3	0.75-1.00m
D 4	1.20m

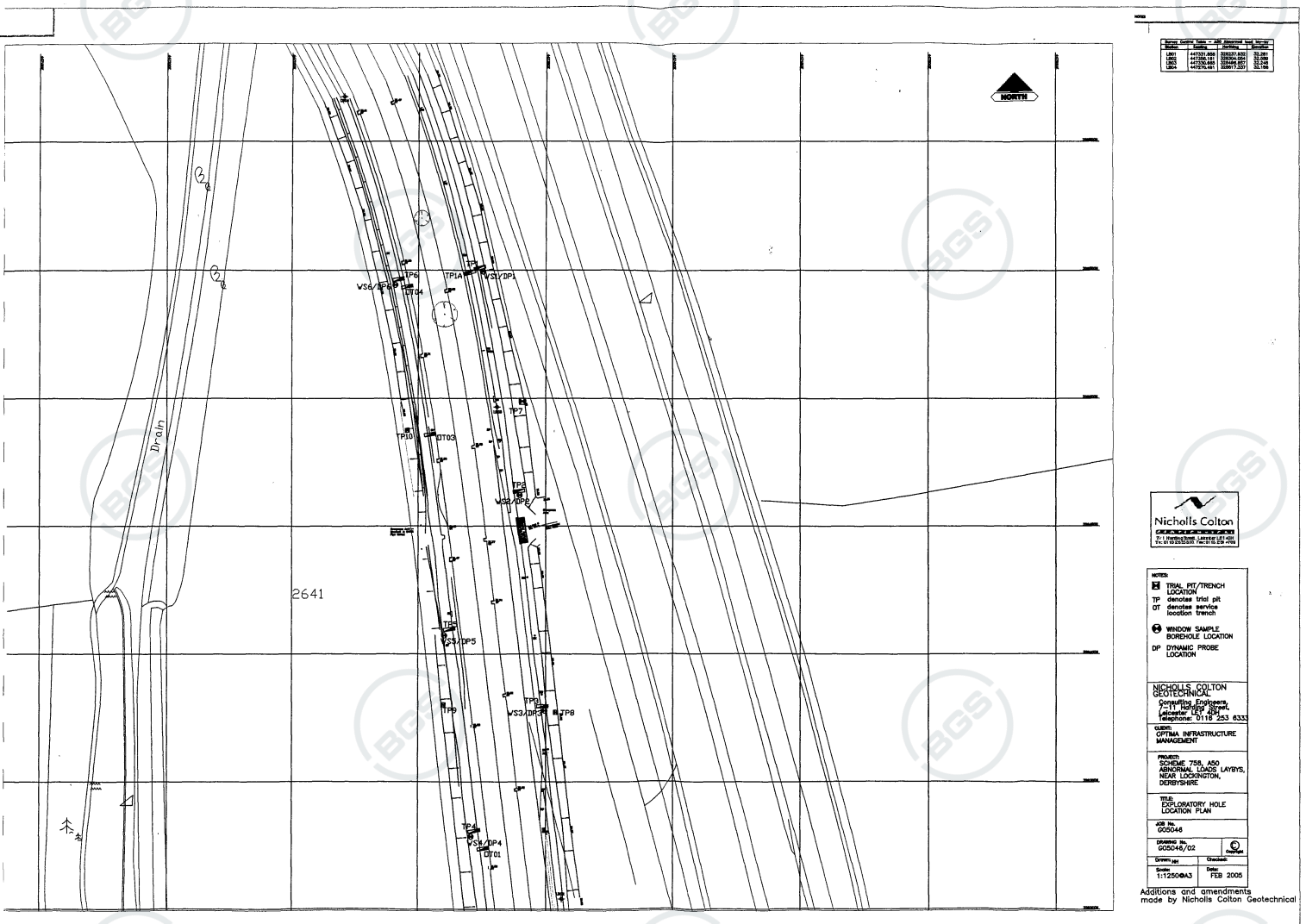
Remarks:

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





## TRIAL PIT TP9

Sheet 1 of 2

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 09/12/2004

Plant/Method of

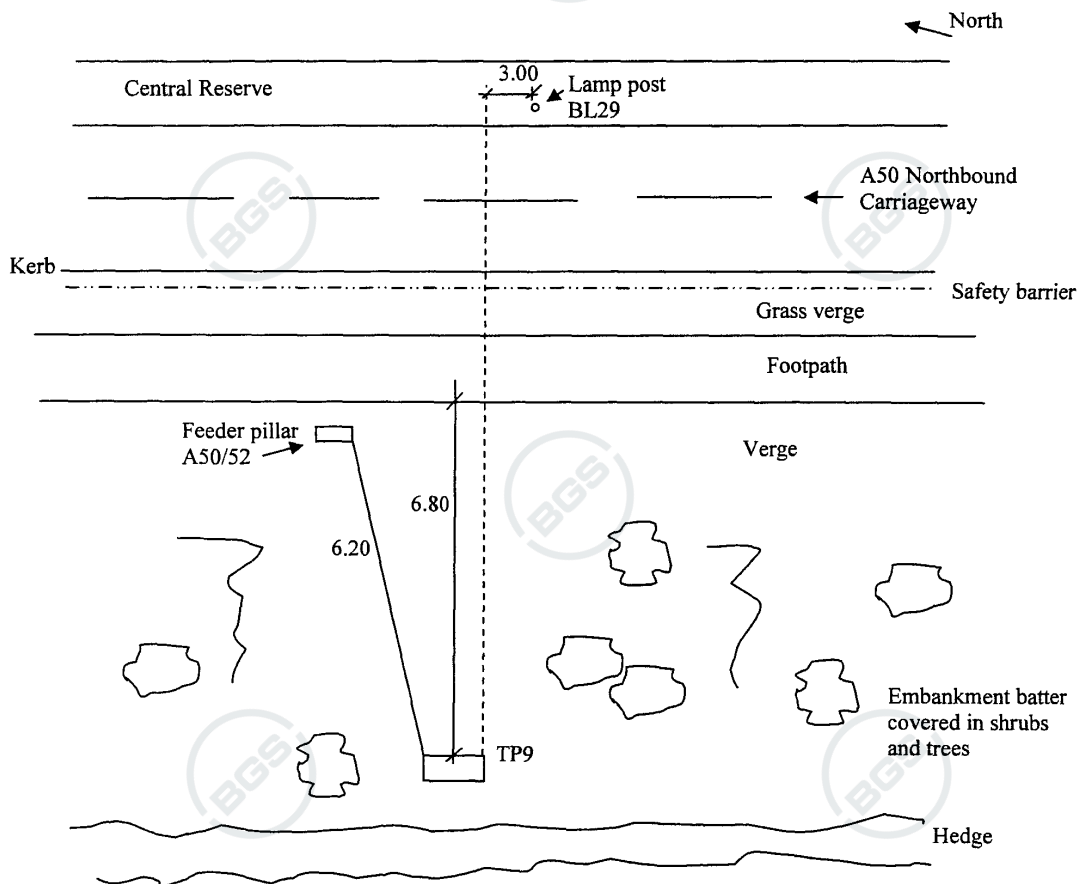
Excavation: Hand  
Excavated

Ground Level: 30.52m AOD

National Grid Co-ordinates: 447310E  
328380N

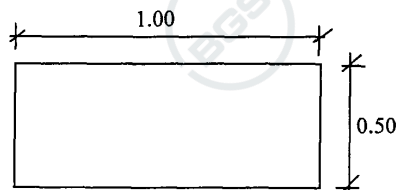
Services Encountered:  
None

Location Plan:



NOT TO SCALE  
(All dimensions are in m)

Plan View of Trial Pit:



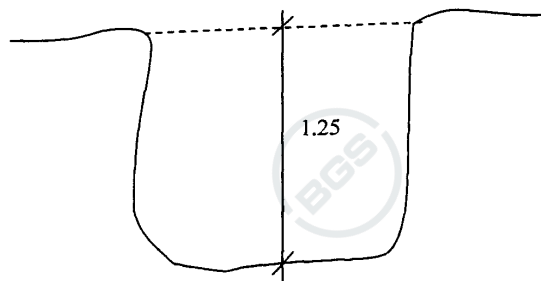
NICHOLLS COLTON GEOTECHNICAL

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:

<u>Depth</u>	<u>Readings (kPa)</u>	<u>Mean Value (kPa)</u>
0.45m	80, 66 & 86	77

Samples:

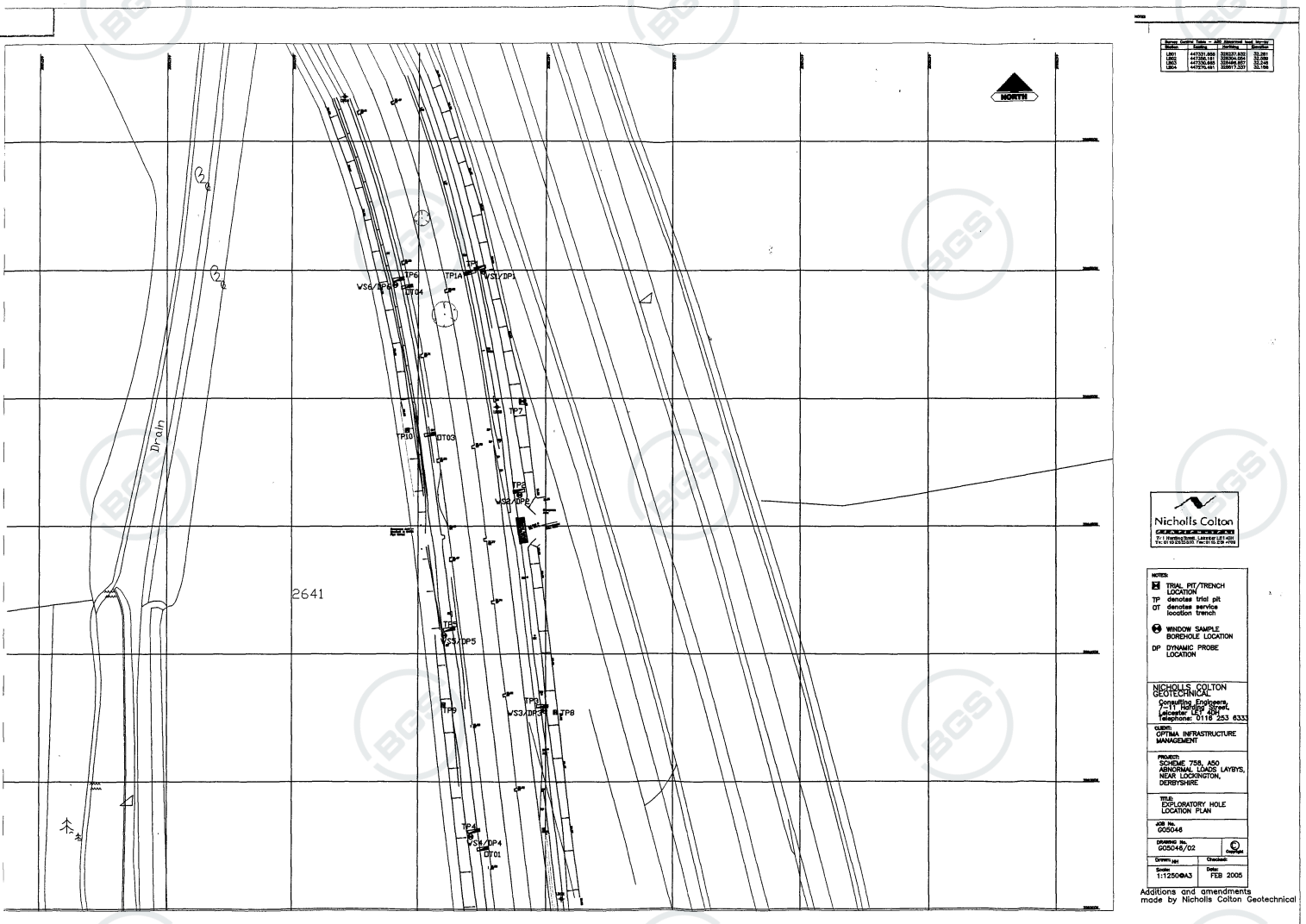
<u>Type / No.</u>	<u>Depth (m)</u>
J 1	0.10m
T 2	0.10m
D 3	0.40m
D 4	0.70m
B 5	0.80-0.90m
B 6	1.00-1.20m
D 7	1.25m

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





## TRIAL PIT TP10

Sheet 1 of 2

Contract Title: Scheme 758: A50 Abnormal Loads Laybys

Date of Excavation: 09/12/2004

Plant/Method of

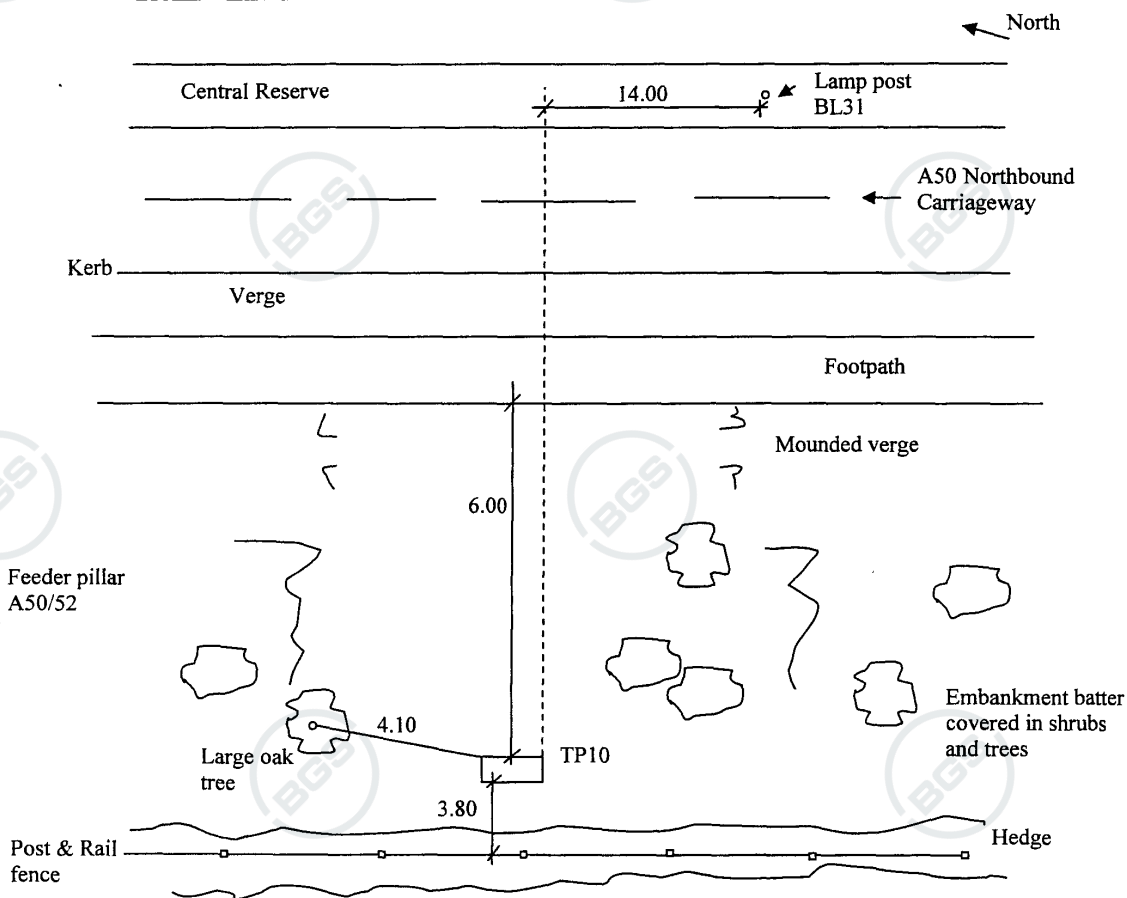
Excavation: Hand  
Excavated

Ground Level: 30.59m AOD

National Grid Co-ordinates: 447296E  
328487N

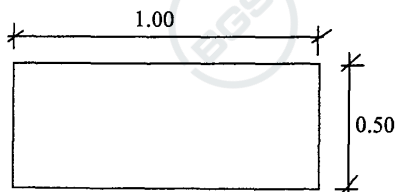
Services Encountered:  
None

Location Plan:



NOT TO SCALE  
(All dimensions are in m)

Plan View of Trial Pit:



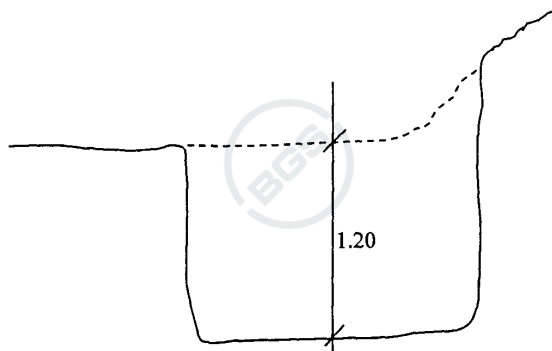
NICHOLLS COLTON GEOTECHNICAL

LR: G05046

**TRIAL PIT TP10** (Continued)

**Sheet 2 of 2**

Section View of Trial Pit:



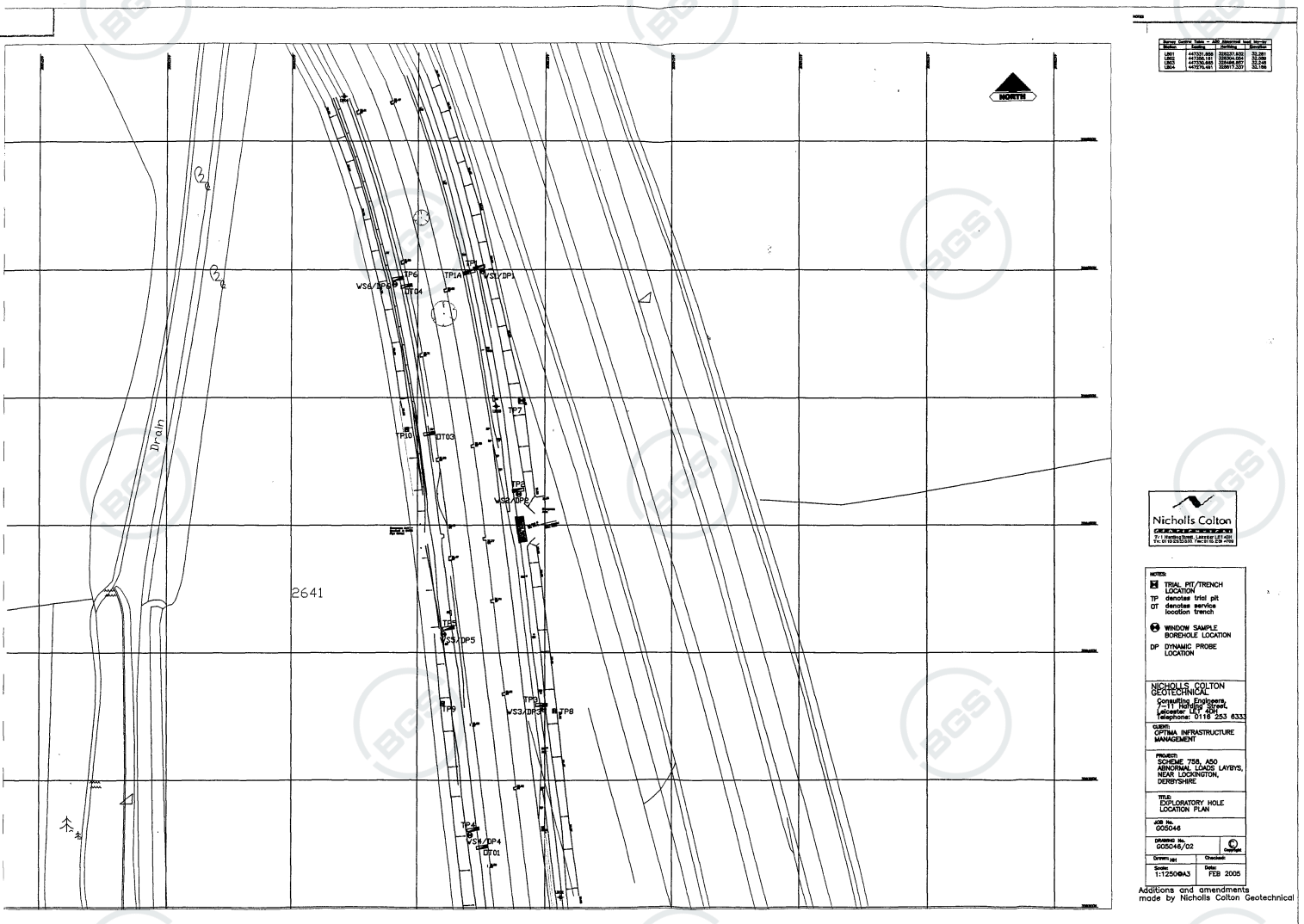
Descriptions:

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

<u>Type / No.</u>	<u>Depth (m)</u>
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.



## 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

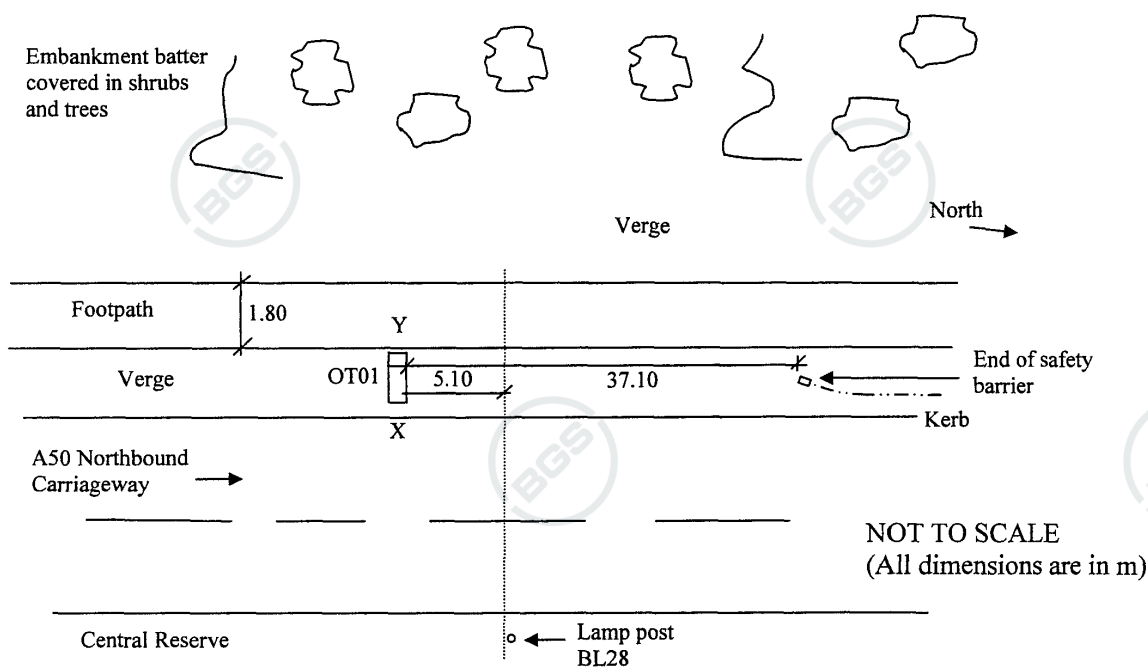
Excavation: Hand  
Excavated

Ground Level: 32.05m AOD

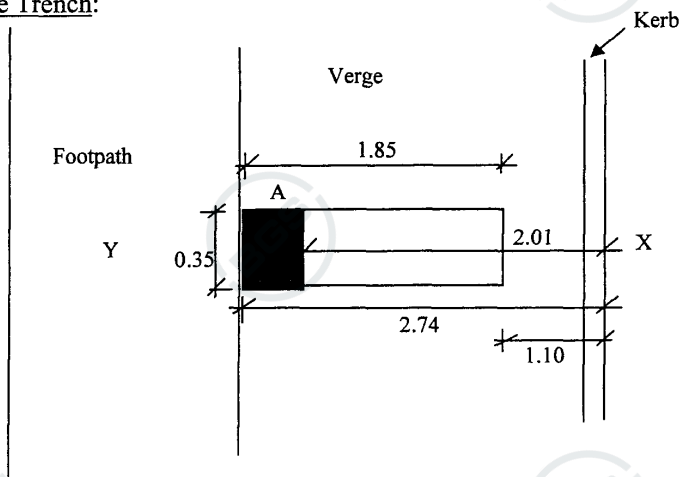
National Grid Co-ordinates: 447325E  
328324N

Services Encountered:  
Yes (see below)

Location Plan:



Plan View of Service Trench:



NICHOLLS COLTON GEOTECHNICAL

LR: G05046



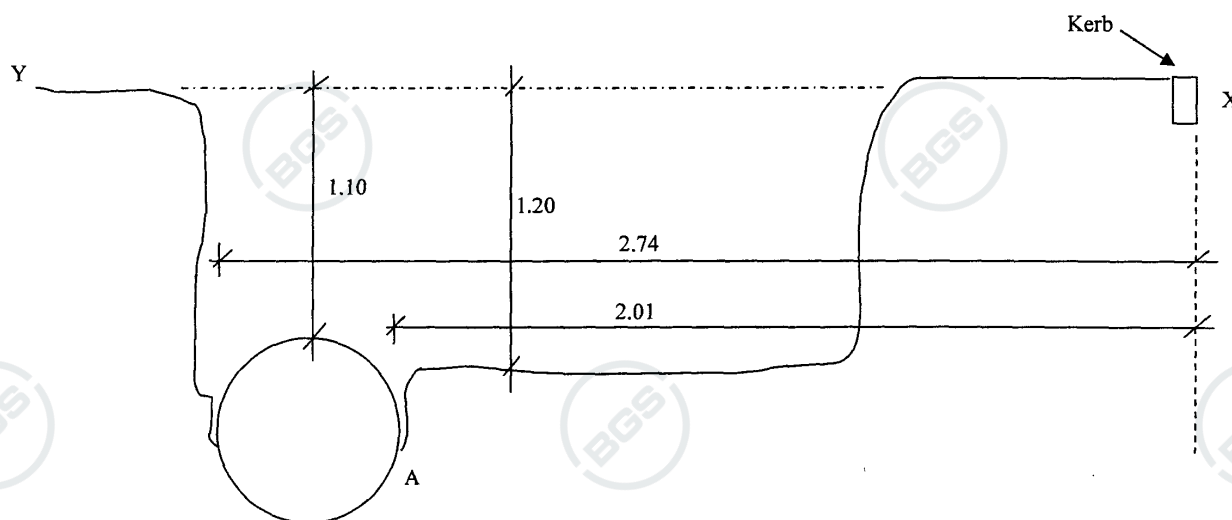
SERVICE LOCATION TRENCH OT01 (continued)

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

SERVICE LOCATION TRENCH OT01 (continued)

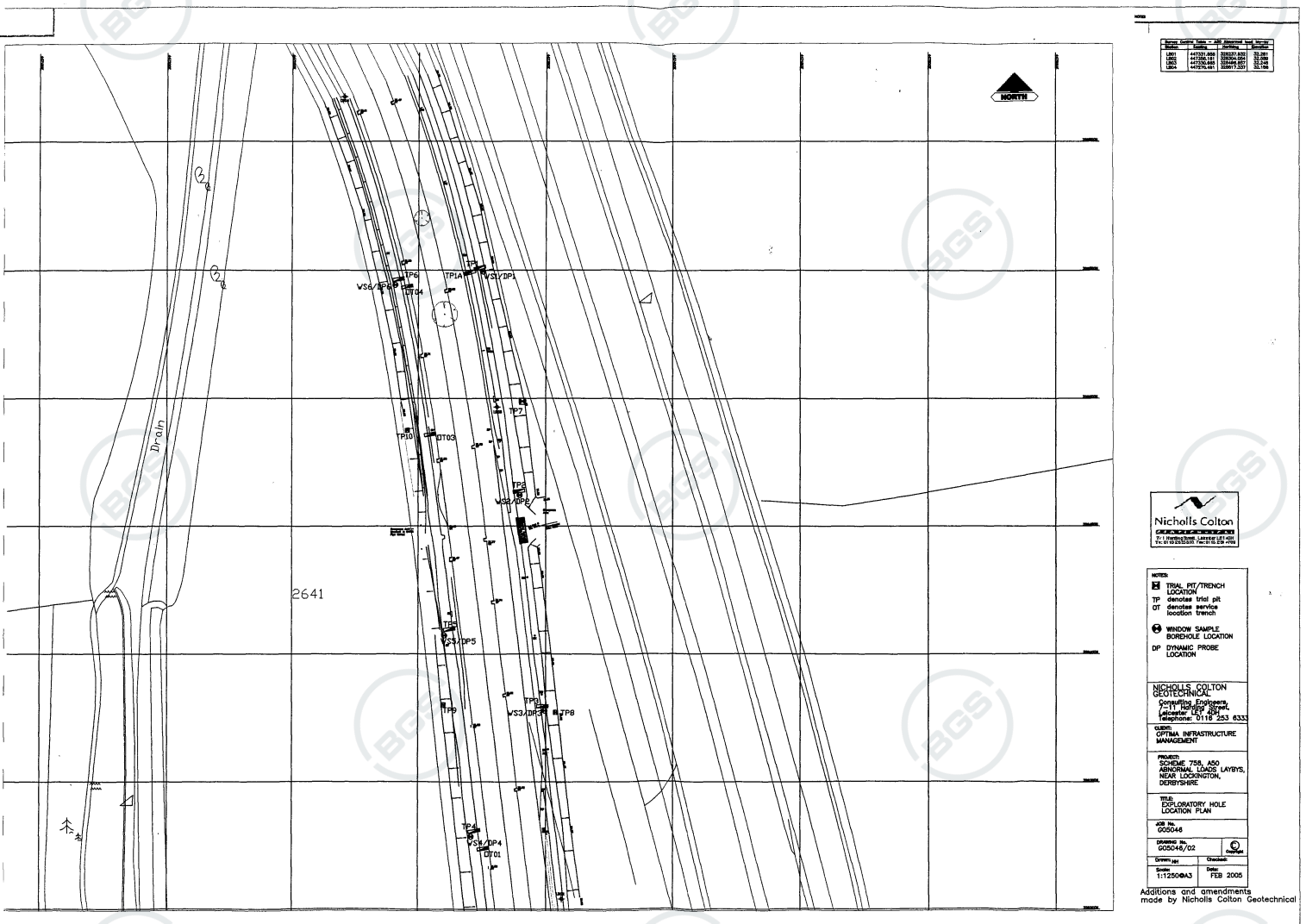
Sheet 3 of 3

Samples:

<u>Type / No.</u>	<u>Depth (m)</u>
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.



# 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

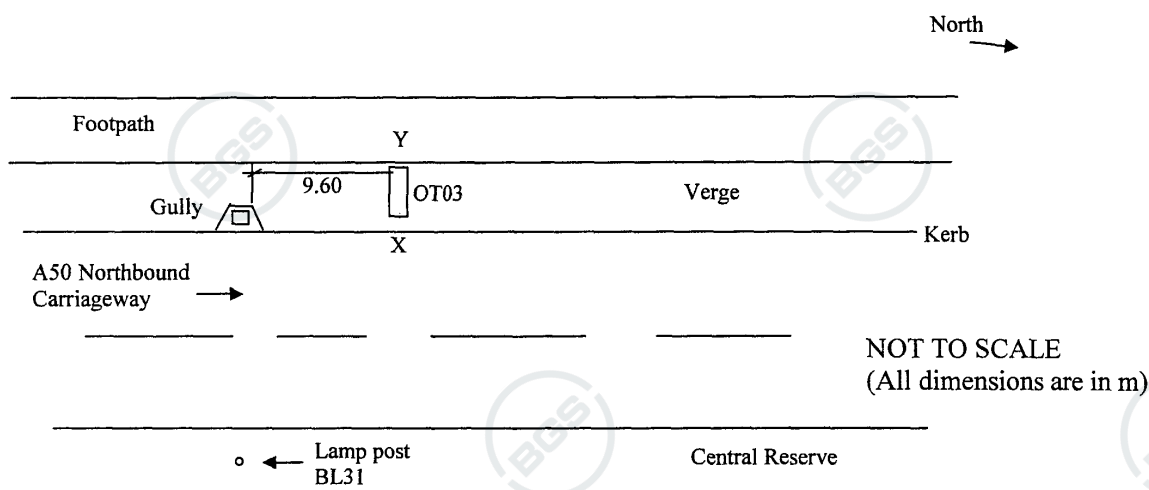
Excavated

Ground Level: 31.68m AOD

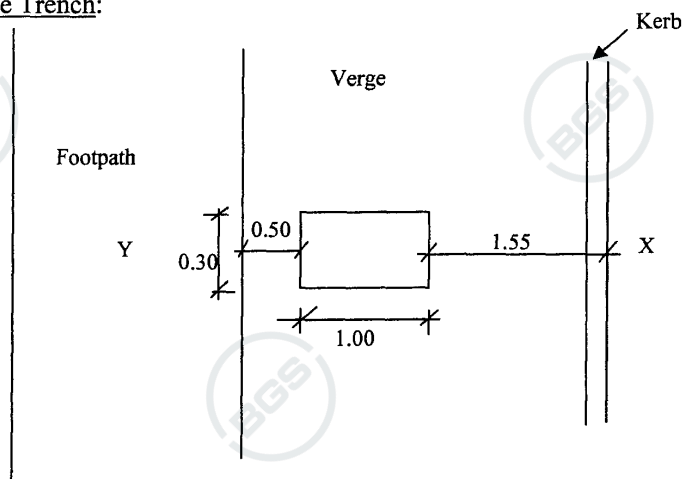
National Grid Co-ordinates: 447306E  
328481N

Services Encountered:  
None

Location Plan:



## Plan View of Service Trench:

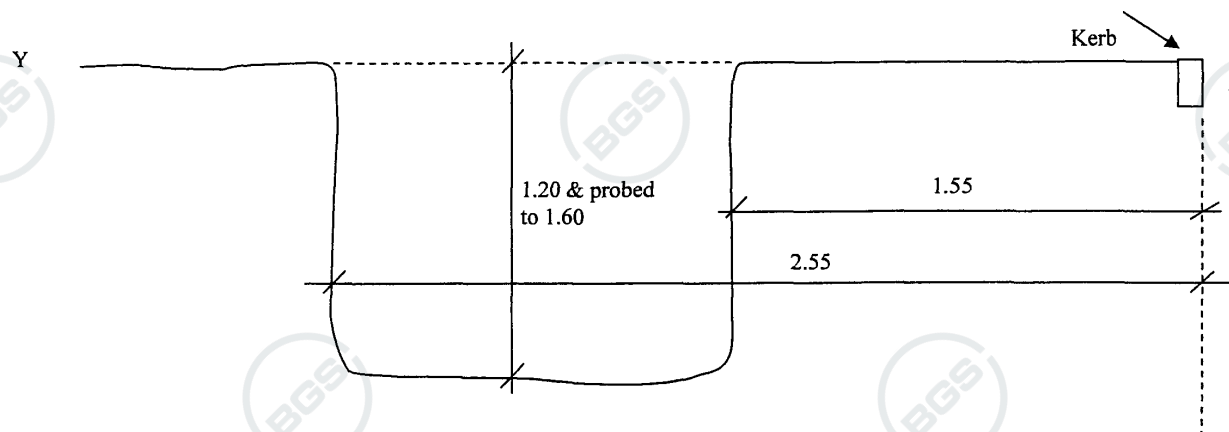




SERVICE LOCATION TRENCH OT03 (continued)

Sheet 2 of 2

Section View of Service Trench:



Descriptions:

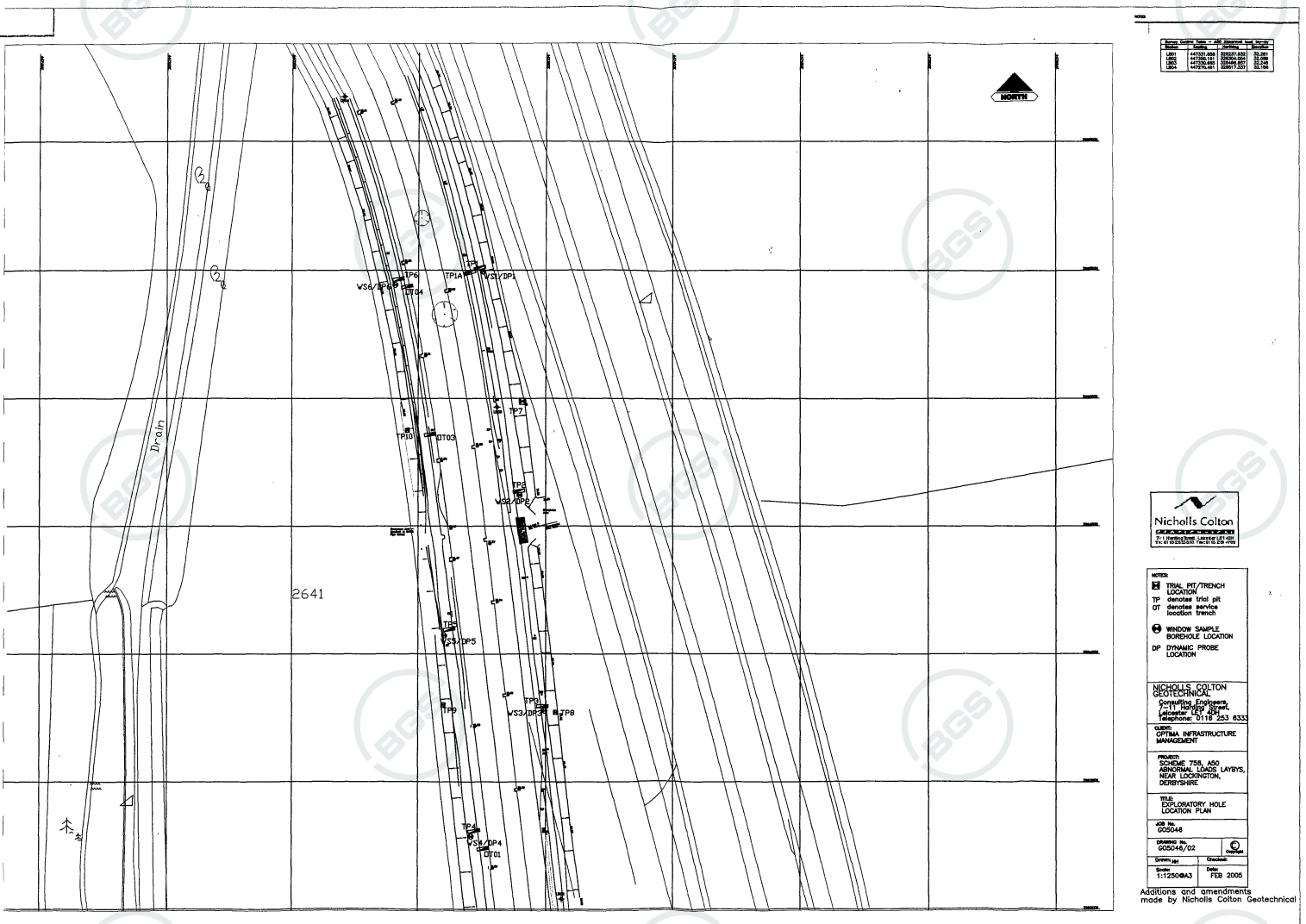
Depth (m)	Description
0.00 – 1.20	MADE GROUND – grey and brown clayey fine to medium sand and fine to coarse sub-angular to rounded quartz gravel with occasional paving slab and concrete fragments

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.



## 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

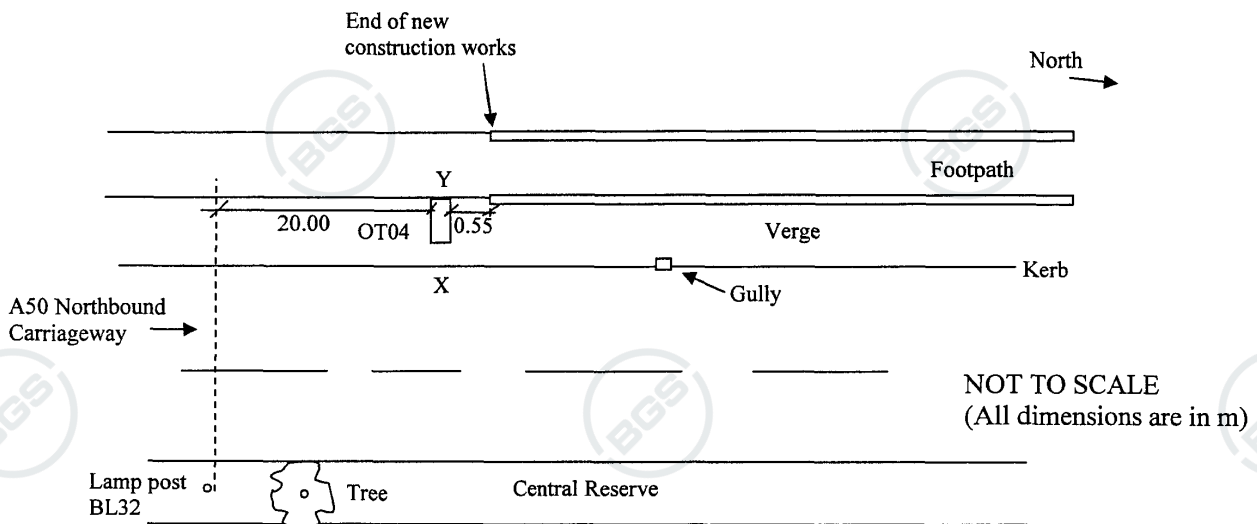
Excavation: Hand  
Excavated

Ground Level: 32.00m AOD

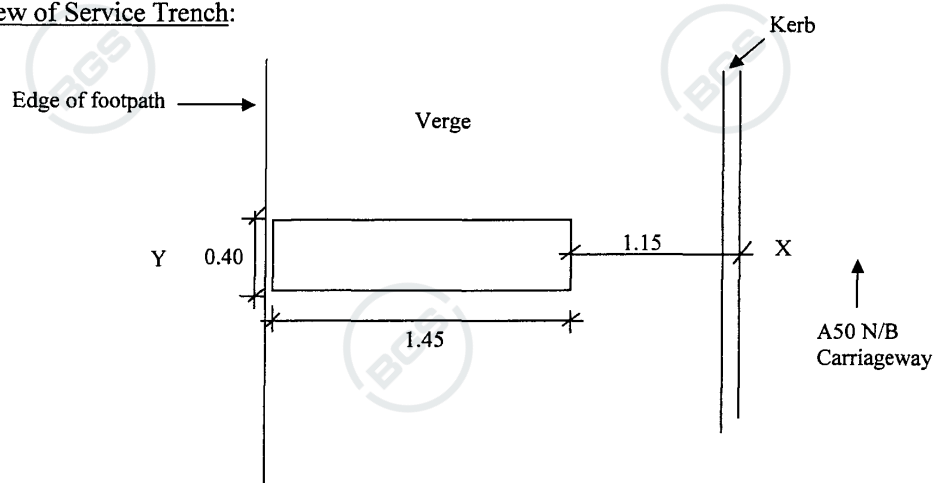
National Grid Co-ordinates: 447295E  
328543N

Services Encountered:  
None

Location Plan:



### Plan View of Service Trench:



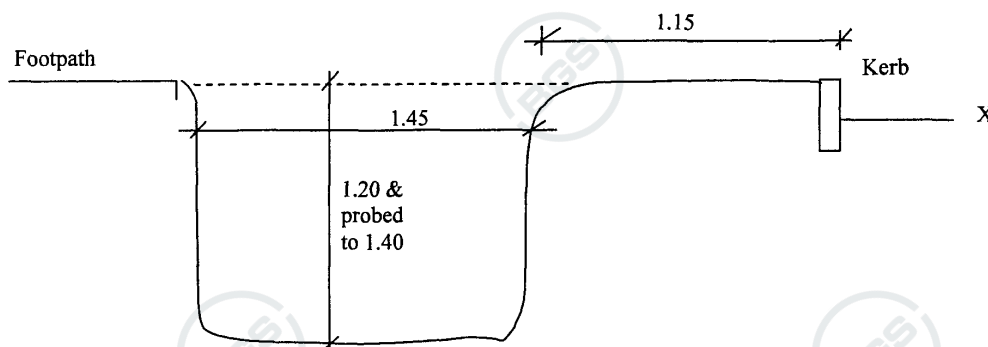
NICHOLLS COLTON GEOTECHNICAL

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

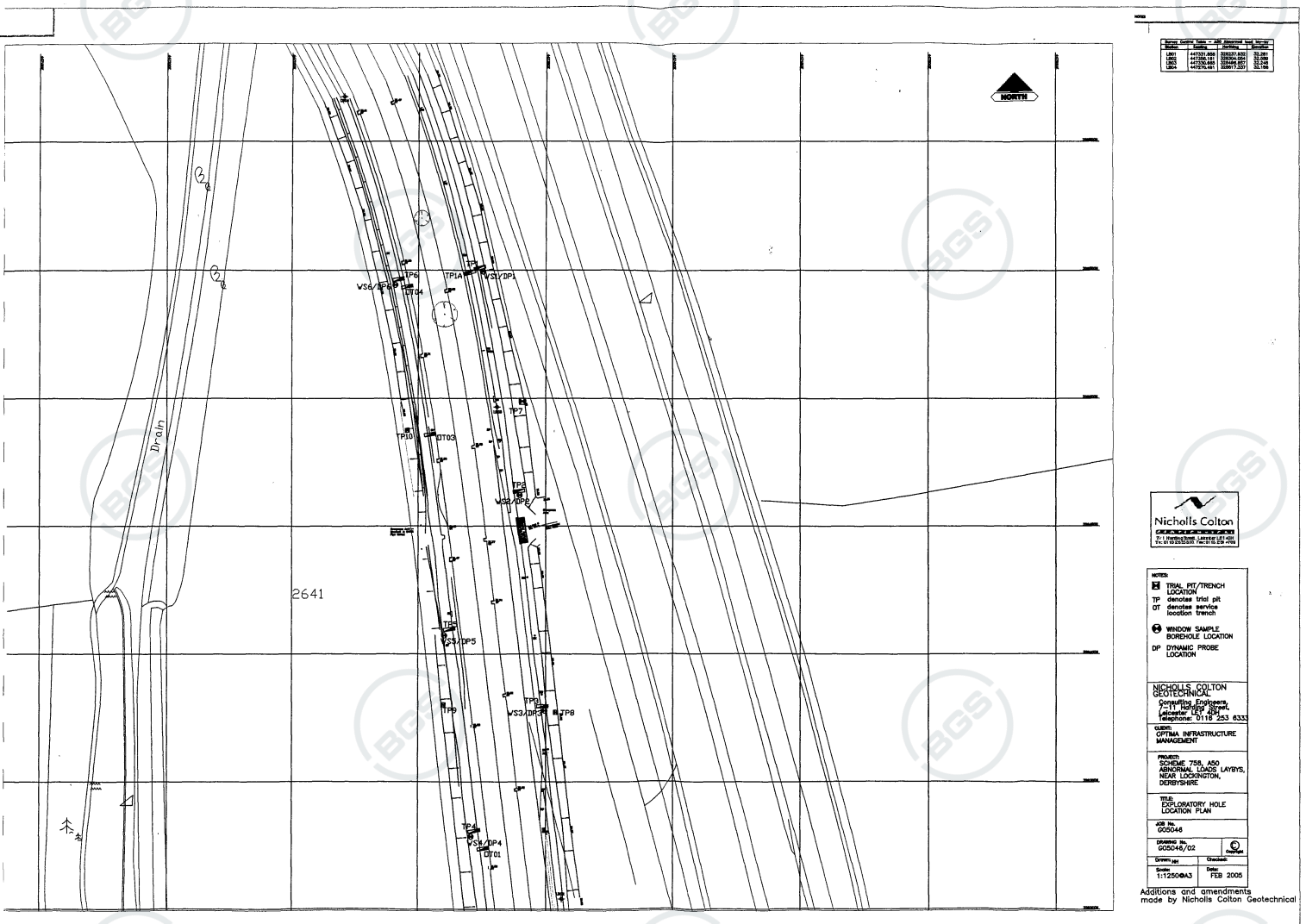
Remarks:

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







## BOREHOLE RECORD - Window Sampling

Project		A453 WIDENING, MI JUNCTION 24 - A52		Engineer		LAING O'ROURKE		Borehole		WS01A-06				
		NOTTINGHAM						Project No		PC062588				
Client		WHITE YOUNG GREEN		National Grid		447935.75 E		Ground Level		34.87 m OD				
				Coordinates		327888.38 N								
Sampling			Properties			Strata			Scale 1:50					
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %		Description	Depth	Legend	Level m OD					
						Dark brown slightly gravelly sand with some organic material. Gravel is angular fine to medium quartzite. [MADE GROUND - GRANULAR]	G.L.		34.87					
0.50	D					Stiff red brown sandy gravelly clay. Gravel is angular fine to coarse mudstone. [MADE GROUND - COHESIVE]	0.40		34.47					
1.20- 1.30	D					Very hard solidified grey ash (PFA). [MADE GROUND - GRANULAR]	0.80		34.07					
						End of Borehole	1.30		33.57					
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 Checked by Figure												TZ DRB 1 of 1 06/12/2008		
geotechnics														





A453 NOTTINGHAM SITE INVESTIGATION New on the 10/05/2006			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID REDUCED LEVELS RELATE TO ORDNANCE DATUM			
DESCRIPTION	EASTING	NORTHING	REDUCED LEVEL
BH01	447930.50	327880.00	32.00
BH02	447930.50	327880.00	32.00
BH03	447930.50	327880.00	32.00
BH04	447930.50	327880.00	32.00
BH05	447930.50	327880.00	32.00
BH06	447930.50	327880.00	32.00
BH07	447930.50	327880.00	32.00
BH08	447930.50	327880.00	32.00
BH09	447930.50	327880.00	32.00
BH10	447930.50	327880.00	32.00
TP01	447930.50	327880.00	32.00
TP02	447930.50	327880.00	32.00
TP03	447930.50	327880.00	32.00
TP04	447930.50	327880.00	32.00
TP05	447930.50	327880.00	32.00
WS01	447930.50	327880.00	32.00
WS02	447930.50	327880.00	32.00
WS03	447930.50	327880.00	32.00
WS04	447930.50	327880.00	32.00
WS05	447930.50	327880.00	32.00
WS06	447930.50	327880.00	32.00
WS07	447930.50	327880.00	32.00

Head Office  
The Geotechnical Centre,  
203 Torrington Avenue,  
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Coventry CV4 9AP

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Fax: 024 7649 4643  
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www.geotechnics.co.uk

Engineer:  
Laing O'Rourke

Client:  
Laing O'Rourke

Project:  
A453 MI-Nottingham

Drawing Title:  
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

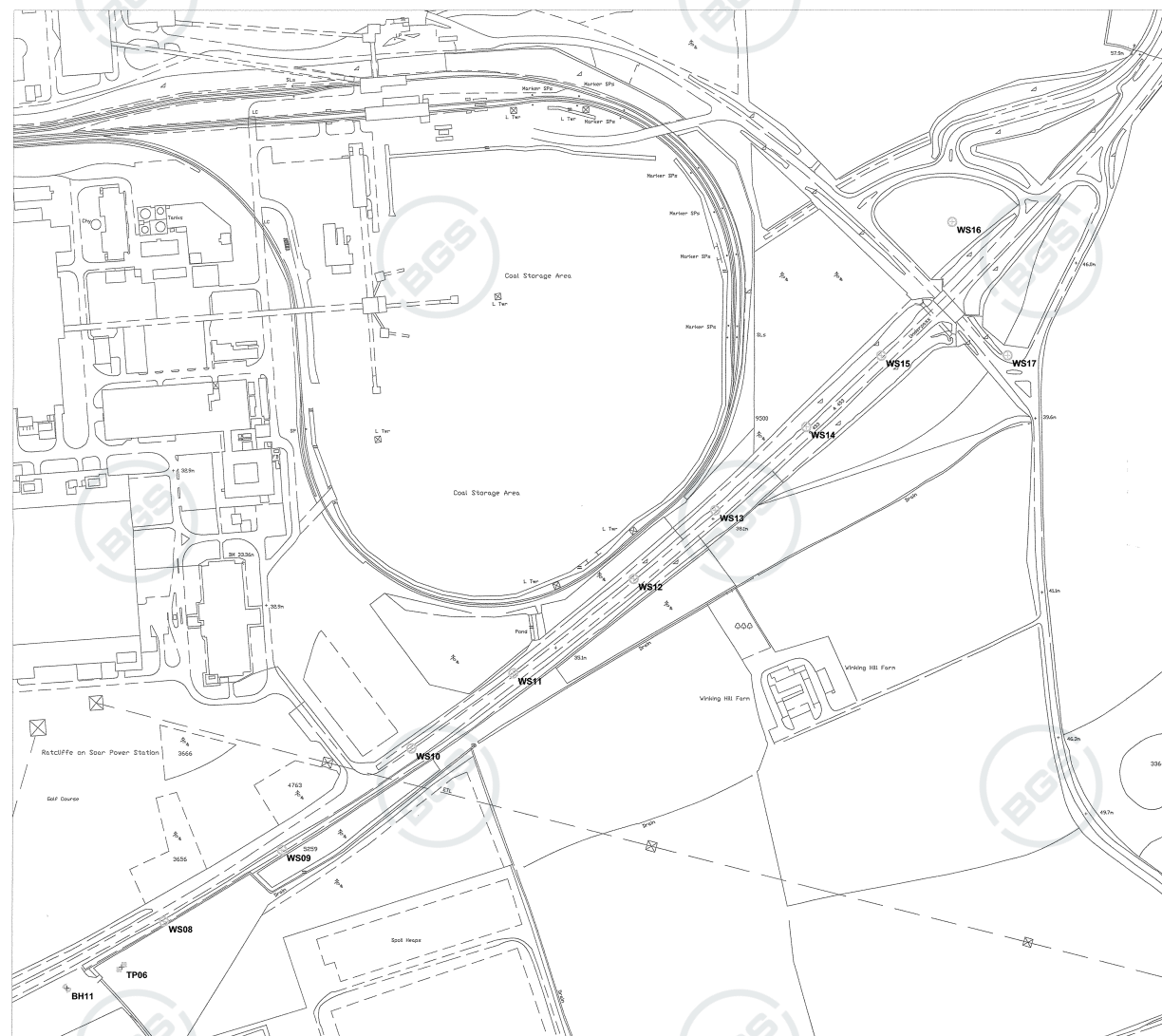
Scale: 1:2500@A2

Date:  
November 2006

Project No:  
PC062588

File Name:  
Geo-PC062588-001(2)





A453 NOTTINGHAM SITE INVESTIGATION Two 20m test pits FORBES			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATIVE TO NATIONAL GRID BESIDE LEVELS RELATIVE TO OBM/ADN 1948			
DESCRIPTION	EASTING	NORTHING	REL. LEVEL
BS01	451551.27	327932.50	33.46
BS02	451552.37	327936.50	33.50
BS03	451553.37	327940.50	33.54
BS04	451554.37	327944.50	33.58
BS05	451555.37	327948.50	33.62
BS06	451556.37	327952.50	33.66
BS07	451557.37	327956.50	33.70
BS08	451558.37	327960.50	33.74
BS09	451559.37	327964.50	33.78
BS10	451560.37	327968.50	33.82
BS11	451561.37	327972.50	33.86
BS12	451562.37	327976.50	33.90
BS13	451563.37	327980.50	33.94
BS14	451564.37	327984.50	33.98
BS15	451565.37	327988.50	34.02
BS16	451566.37	327992.50	34.06
BS17	451567.37	327996.50	34.10
BS18	451568.37	327999.50	34.13
BS19	451569.37	328002.50	34.16
BS20	451570.37	328005.50	34.19
BS21	451571.37	328008.50	34.22
BS22	451572.37	328011.50	34.25
BS23	451573.37	328014.50	34.28
BS24	451574.37	328017.50	34.31
BS25	451575.37	328020.50	34.34
BS26	451576.37	328023.50	34.37
BS27	451577.37	328026.50	34.40
BS28	451578.37	328029.50	34.43
BS29	451579.37	328032.50	34.46
BS30	451580.37	328035.50	34.49
BS31	451581.37	328038.50	34.52
BS32	451582.37	328041.50	34.55
BS33	451583.37	328044.50	34.58
BS34	451584.37	328047.50	34.61
BS35	451585.37	328050.50	34.64
BS36	451586.37	328053.50	34.67
BS37	451587.37	328056.50	34.70
BS38	451588.37	328059.50	34.73
BS39	451589.37	328062.50	34.76
BS40	451590.37	328065.50	34.79
BS41	451591.37	328068.50	34.82
BS42	451592.37	328071.50	34.85
BS43	451593.37	328074.50	34.88
BS44	451594.37	328077.50	34.91
BS45	451595.37	328080.50	34.94
BS46	451596.37	328083.50	34.97
BS47	451597.37	328086.50	35.00
BS48	451598.37	328089.50	35.03
BS49	451599.37	328092.50	35.06
BS50	451600.37	328095.50	35.09
BS51	451601.37	328098.50	35.12
BS52	451602.37	328101.50	35.15
BS53	451603.37	328104.50	35.18
BS54	451604.37	328107.50	35.21
BS55	451605.37	328110.50	35.24
BS56	451606.37	328113.50	35.27
BS57	451607.37	328116.50	35.30
BS58	451608.37	328119.50	35.33
BS59	451609.37	328122.50	35.36
BS60	451610.37	328125.50	35.39
BS61	451611.37	328128.50	35.42
BS62	451612.37	328131.50	35.45
BS63	451613.37	328134.50	35.48
BS64	451614.37	328137.50	35.51
BS65	451615.37	328140.50	35.54
BS66	451616.37	328143.50	35.57
BS67	451617.37	328146.50	35.60
BS68	451618.37	328149.50	35.63
BS69	451619.37	328152.50	35.66
BS70	451620.37	328155.50	35.69
BS71	451621.37	328158.50	35.72
BS72	451622.37	328161.50	35.75
BS73	451623.37	328164.50	35.78
BS74	451624.37	328167.50	35.81
BS75	451625.37	328170.50	35.84
BS76	451626.37	328173.50	35.87
BS77	451627.37	328176.50	35.90
BS78	451628.37	328179.50	35.93
BS79	451629.37	328182.50	35.96
BS80	451630.37	328185.50	35.99
BS81	451631.37	328188.50	36.02
BS82	451632.37	328191.50	36.05
BS83	451633.37	328194.50	36.08
BS84	451634.37	328197.50	36.11
BS85	451635.37	328200.50	36.14
BS86	451636.37	328203.50	36.17
BS87	451637.37	328206.50	36.20
BS88	451638.37	328209.50	36.23
BS89	451639.37	328212.50	36.26
BS90	451640.37	328215.50	36.29
BS91	451641.37	328218.50	36.32
BS92	451642.37	328221.50	36.35
BS93	451643.37	328224.50	36.38
BS94	451644.37	328227.50	36.41
BS95	451645.37	328230.50	36.44
BS96	451646.37	328233.50	36.47
BS97	451647.37	328236.50	36.50
BS98	451648.37	328239.50	36.53
BS99	451649.37	328242.50	36.56
BS100	451650.37	328245.50	36.59

**geotechnics**

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Email: [mail@geotechnics.co.uk](mailto:mail@geotechnics.co.uk)  
[www.geotechnics.co.uk](http://www.geotechnics.co.uk)

Engineer:  
Laing O'Rourke

Client:  
Laing O'Rourke

Project:  
A453 MI-Nottingham

Drawing Title:  
EXPLORATORY HOLE LOCATION PLAN


Taken from a drawing supplied by the client

Scale: 1:2500@A2 Date:  
November 2006

Project No: File Name:  
PC062588 Geo-PC062588-001(3)



A453 NOTTINGHAM SITE INVESTIGATION Hole 20.30 to 10.00m			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID REDUCED LEVELS RELATE TO ORDNANCE DATUM			
DESCRIPTION	EASTING	NORTHING	RED. LEVEL
BH01	447932.50	327880.00	31.50
BH02	447935.00	327880.00	31.50
BH03	447935.00	327880.00	31.50
BH04	447935.00	327880.00	31.50
BH05	447935.00	327880.00	31.50
BH06	447935.00	327880.00	31.50
BH07	447935.00	327880.00	31.50
BH08	447935.00	327880.00	31.50
BH09	447935.00	327880.00	31.50
BH10	447935.00	327880.00	31.50
BH11	447935.00	327880.00	31.50
BH12	447935.00	327880.00	31.50
BH13	447935.00	327880.00	31.50
BH14	447935.00	327880.00	31.50
BH15	447935.00	327880.00	31.50
BH16	447935.00	327880.00	31.50
BH17	447935.00	327880.00	31.50
BH18	447935.00	327880.00	31.50
BH19	447935.00	327880.00	31.50
BH20	447935.00	327880.00	31.50
BH21	447935.00	327880.00	31.50
BH22	447935.00	327880.00	31.50
BH23	447935.00	327880.00	31.50
BH24	447935.00	327880.00	31.50
BH25	447935.00	327880.00	31.50
BH26	447935.00	327880.00	31.50
BH27	447935.00	327880.00	31.50
BH28	447935.00	327880.00	31.50
BH29	447935.00	327880.00	31.50
BH30	447935.00	327880.00	31.50
BH31	447935.00	327880.00	31.50
BH32	447935.00	327880.00	31.50
BH33	447935.00	327880.00	31.50
BH34	447935.00	327880.00	31.50
BH35	447935.00	327880.00	31.50
BH36	447935.00	327880.00	31.50
BH37	447935.00	327880.00	31.50
BH38	447935.00	327880.00	31.50
BH39	447935.00	327880.00	31.50
BH40	447935.00	327880.00	31.50
BH41	447935.00	327880.00	31.50
BH42	447935.00	327880.00	31.50
BH43	447935.00	327880.00	31.50
BH44	447935.00	327880.00	31.50
BH45	447935.00	327880.00	31.50
BH46	447935.00	327880.00	31.50
BH47	447935.00	327880.00	31.50
BH48	447935.00	327880.00	31.50
BH49	447935.00	327880.00	31.50
BH50	447935.00	327880.00	31.50
BH51	447935.00	327880.00	31.50
BH52	447935.00	327880.00	31.50
BH53	447935.00	327880.00	31.50
BH54	447935.00	327880.00	31.50
BH55	447935.00	327880.00	31.50
BH56	447935.00	327880.00	31.50
BH57	447935.00	327880.00	31.50
BH58	447935.00	327880.00	31.50
BH59	447935.00	327880.00	31.50
BH60	447935.00	327880.00	31.50
BH61	447935.00	327880.00	31.50
BH62	447935.00	327880.00	31.50
BH63	447935.00	327880.00	31.50
BH64	447935.00	327880.00	31.50
BH65	447935.00	327880.00	31.50
BH66	447935.00	327880.00	31.50
BH67	447935.00	327880.00	31.50
BH68	447935.00	327880.00	31.50
BH69	447935.00	327880.00	31.50
BH70	447935.00	327880.00	31.50
BH71	447935.00	327880.00	31.50
BH72	447935.00	327880.00	31.50
BH73	447935.00	327880.00	31.50
BH74	447935.00	327880.00	31.50
BH75	447935.00	327880.00	31.50
BH76	447935.00	327880.00	31.50
BH77	447935.00	327880.00	31.50
BH78	447935.00	327880.00	31.50
BH79	447935.00	327880.00	31.50
BH80	447935.00	327880.00	31.50
BH81	447935.00	327880.00	31.50
BH82	447935.00	327880.00	31.50
BH83	447935.00	327880.00	31.50
BH84	447935.00	327880.00	31.50
BH85	447935.00	327880.00	31.50
BH86	447935.00	327880.00	31.50
BH87	447935.00	327880.00	31.50
BH88	447935.00	327880.00	31.50
BH89	447935.00	327880.00	31.50
BH90	447935.00	327880.00	31.50
BH91	447935.00	327880.00	31.50
BH92	447935.00	327880.00	31.50
BH93	447935.00	327880.00	31.50
BH94	447935.00	327880.00	31.50
BH95	447935.00	327880.00	31.50
BH96	447935.00	327880.00	31.50
BH97	447935.00	327880.00	31.50
BH98	447935.00	327880.00	31.50
BH99	447935.00	327880.00	31.50
BH00	447935.00	327880.00	31.50



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**Engineer:**  
Laing O'Rourke

**Client:**  
Laing O'Rourke

**Project:**  
A453 MI-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)



A453 NOTTINGHAM SITE INVESTIGATION Year 2006 for the Programme			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATIVE TO NATIONAL GRID REDUCED LEVELS RELATIVE TO ORDNANCE DATUM			
DESCRIPTION	EASTING	NORTHING	REDUCED LEVEL
TP10 CL 1 CL	447930.00	327880.00	0.00
TP10 CL 2 CL	447930.00	327880.00	0.00
TP10 CL 3 CL	447930.00	327880.00	0.00
TP10 CL 4 CL	447930.00	327880.00	0.00
TP10 CL 5 CL	447930.00	327880.00	0.00
TP10 CL 6 CL	447930.00	327880.00	0.00
TP10 CL 7 CL	447930.00	327880.00	0.00
TP10 CL 8 CL	447930.00	327880.00	0.00
TP10 CL 9 CL	447930.00	327880.00	0.00
TP10 CL 10 CL	447930.00	327880.00	0.00
TP10 CL 11 CL	447930.00	327880.00	0.00
TP10 CL 12 CL	447930.00	327880.00	0.00
TP10 CL 13 CL	447930.00	327880.00	0.00
TP10 CL 14 CL	447930.00	327880.00	0.00
TP10 CL 15 CL	447930.00	327880.00	0.00
TP10 CL 16 CL	447930.00	327880.00	0.00
TP10 CL 17 CL	447930.00	327880.00	0.00
TP10 CL 18 CL	447930.00	327880.00	0.00
TP10 CL 19 CL	447930.00	327880.00	0.00
TP10 CL 20 CL	447930.00	327880.00	0.00
TP10 CL 21 CL	447930.00	327880.00	0.00
TP10 CL 22 CL	447930.00	327880.00	0.00
TP10 CL 23 CL	447930.00	327880.00	0.00
TP10 CL 24 CL	447930.00	327880.00	0.00
TP10 CL 25 CL	447930.00	327880.00	0.00
TP10 CL 26 CL	447930.00	327880.00	0.00
TP10 CL 27 CL	447930.00	327880.00	0.00
TP10 CL 28 CL	447930.00	327880.00	0.00
TP10 CL 29 CL	447930.00	327880.00	0.00
TP10 CL 30 CL	447930.00	327880.00	0.00
TP10 CL 31 CL	447930.00	327880.00	0.00
TP10 CL 32 CL	447930.00	327880.00	0.00
TP10 CL 33 CL	447930.00	327880.00	0.00
TP10 CL 34 CL	447930.00	327880.00	0.00
TP10 CL 35 CL	447930.00	327880.00	0.00
TP10 CL 36 CL	447930.00	327880.00	0.00
TP10 CL 37 CL	447930.00	327880.00	0.00
TP10 CL 38 CL	447930.00	327880.00	0.00
TP10 CL 39 CL	447930.00	327880.00	0.00
TP10 CL 40 CL	447930.00	327880.00	0.00
TP10 CL 41 CL	447930.00	327880.00	0.00
TP10 CL 42 CL	447930.00	327880.00	0.00
TP10 CL 43 CL	447930.00	327880.00	0.00
TP10 CL 44 CL	447930.00	327880.00	0.00
TP10 CL 45 CL	447930.00	327880.00	0.00
TP10 CL 46 CL	447930.00	327880.00	0.00
TP10 CL 47 CL	447930.00	327880.00	0.00
TP10 CL 48 CL	447930.00	327880.00	0.00
TP10 CL 49 CL	447930.00	327880.00	0.00
TP10 CL 50 CL	447930.00	327880.00	0.00
TP10 CL 51 CL	447930.00	327880.00	0.00
TP10 CL 52 CL	447930.00	327880.00	0.00
TP10 CL 53 CL	447930.00	327880.00	0.00
TP10 CL 54 CL	447930.00	327880.00	0.00
TP10 CL 55 CL	447930.00	327880.00	0.00
TP10 CL 56 CL	447930.00	327880.00	0.00
TP10 CL 57 CL	447930.00	327880.00	0.00
TP10 CL 58 CL	447930.00	327880.00	0.00
TP10 CL 59 CL	447930.00	327880.00	0.00
TP10 CL 60 CL	447930.00	327880.00	0.00
TP10 CL 61 CL	447930.00	327880.00	0.00
TP10 CL 62 CL	447930.00	327880.00	0.00
TP10 CL 63 CL	447930.00	327880.00	0.00
TP10 CL 64 CL	447930.00	327880.00	0.00
TP10 CL 65 CL	447930.00	327880.00	0.00
TP10 CL 66 CL	447930.00	327880.00	0.00
TP10 CL 67 CL	447930.00	327880.00	0.00
TP10 CL 68 CL	447930.00	327880.00	0.00
TP10 CL 69 CL	447930.00	327880.00	0.00
TP10 CL 70 CL	447930.00	327880.00	0.00
TP10 CL 71 CL	447930.00	327880.00	0.00
TP10 CL 72 CL	447930.00	327880.00	0.00
TP10 CL 73 CL	447930.00	327880.00	0.00
TP10 CL 74 CL	447930.00	327880.00	0.00
TP10 CL 75 CL	447930.00	327880.00	0.00
TP10 CL 76 CL	447930.00	327880.00	0.00
TP10 CL 77 CL	447930.00	327880.00	0.00
TP10 CL 78 CL	447930.00	327880.00	0.00
TP10 CL 79 CL	447930.00	327880.00	0.00
TP10 CL 80 CL	447930.00	327880.00	0.00
TP10 CL 81 CL	447930.00	327880.00	0.00
TP10 CL 82 CL	447930.00	327880.00	0.00
TP10 CL 83 CL	447930.00	327880.00	0.00
TP10 CL 84 CL	447930.00	327880.00	0.00
TP10 CL 85 CL	447930.00	327880.00	0.00
TP10 CL 86 CL	447930.00	327880.00	0.00
TP10 CL 87 CL	447930.00	327880.00	0.00
TP10 CL 88 CL	447930.00	327880.00	0.00
TP10 CL 89 CL	447930.00	327880.00	0.00
TP10 CL 90 CL	447930.00	327880.00	0.00
TP10 CL 91 CL	447930.00	327880.00	0.00
TP10 CL 92 CL	447930.00	327880.00	0.00
TP10 CL 93 CL	447930.00	327880.00	0.00
TP10 CL 94 CL	447930.00	327880.00	0.00
TP10 CL 95 CL	447930.00	327880.00	0.00
TP10 CL 96 CL	447930.00	327880.00	0.00
TP10 CL 97 CL	447930.00	327880.00	0.00
TP10 CL 98 CL	447930.00	327880.00	0.00
TP10 CL 99 CL	447930.00	327880.00	0.00
TP10 CL 100 CL	447930.00	327880.00	0.00

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Engineer:  
Laing O'Rourke

Client:  
Laing O'Rourke

Project:  
A453 MI-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)



A453 NOTTINGHAM SITE INVESTIGATION Trial pit and test locations			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATIVE TO NATIONAL GRID REDUCED LEVELS RELATIVE TO ORDNANCE DATUM			
DESCRIPTION	EASTING	NORTHING	RED. LEVEL
TP01	447930.00	327880.00	50.00
TP02	447930.00	327880.00	50.00
TP03	447930.00	327880.00	50.00
TP04	447930.00	327880.00	50.00
TP05	447930.00	327880.00	50.00
TP06	447930.00	327880.00	50.00
TP07	447930.00	327880.00	50.00
TP08	447930.00	327880.00	50.00
TP09	447930.00	327880.00	50.00
TP10	447930.00	327880.00	50.00
TP11	447930.00	327880.00	50.00
TP12	447930.00	327880.00	50.00
TP13	447930.00	327880.00	50.00
TP14	447930.00	327880.00	50.00
TP15	447930.00	327880.00	50.00
TP16	447930.00	327880.00	50.00
TP17	447930.00	327880.00	50.00
TP18	447930.00	327880.00	50.00
TP19	447930.00	327880.00	50.00
TP20	447930.00	327880.00	50.00
TP21	447930.00	327880.00	50.00
TP22	447930.00	327880.00	50.00
TP23	447930.00	327880.00	50.00
TP24	447930.00	327880.00	50.00
TP25	447930.00	327880.00	50.00
TP26	447930.00	327880.00	50.00
TP27	447930.00	327880.00	50.00
TP28	447930.00	327880.00	50.00
TP29	447930.00	327880.00	50.00
TP30	447930.00	327880.00	50.00
TP31	447930.00	327880.00	50.00
TP32	447930.00	327880.00	50.00
TP33	447930.00	327880.00	50.00
TP34	447930.00	327880.00	50.00
TP35	447930.00	327880.00	50.00
TP36	447930.00	327880.00	50.00
TP37	447930.00	327880.00	50.00
TP38	447930.00	327880.00	50.00
TP39	447930.00	327880.00	50.00
TP40	447930.00	327880.00	50.00
TP41	447930.00	327880.00	50.00
TP42	447930.00	327880.00	50.00
TP43	447930.00	327880.00	50.00
TP44	447930.00	327880.00	50.00
TP45	447930.00	327880.00	50.00
TP46	447930.00	327880.00	50.00
TP47	447930.00	327880.00	50.00
TP48	447930.00	327880.00	50.00
TP49	447930.00	327880.00	50.00
TP50	447930.00	327880.00	50.00
TP51	447930.00	327880.00	50.00
TP52	447930.00	327880.00	50.00
TP53	447930.00	327880.00	50.00
TP54	447930.00	327880.00	50.00
TP55	447930.00	327880.00	50.00
TP56	447930.00	327880.00	50.00
TP57	447930.00	327880.00	50.00
TP58	447930.00	327880.00	50.00
TP59	447930.00	327880.00	50.00
TP60	447930.00	327880.00	50.00
TP61	447930.00	327880.00	50.00
TP62	447930.00	327880.00	50.00
TP63	447930.00	327880.00	50.00
TP64	447930.00	327880.00	50.00
TP65	447930.00	327880.00	50.00
TP66	447930.00	327880.00	50.00
TP67	447930.00	327880.00	50.00
TP68	447930.00	327880.00	50.00
TP69	447930.00	327880.00	50.00
TP70	447930.00	327880.00	50.00
TP71	447930.00	327880.00	50.00
TP72	447930.00	327880.00	50.00
TP73	447930.00	327880.00	50.00
TP74	447930.00	327880.00	50.00
TP75	447930.00	327880.00	50.00
TP76	447930.00	327880.00	50.00
TP77	447930.00	327880.00	50.00
TP78	447930.00	327880.00	50.00
TP79	447930.00	327880.00	50.00
TP80	447930.00	327880.00	50.00
TP81	447930.00	327880.00	50.00
TP82	447930.00	327880.00	50.00
TP83	447930.00	327880.00	50.00
TP84	447930.00	327880.00	50.00
TP85	447930.00	327880.00	50.00
TP86	447930.00	327880.00	50.00
TP87	447930.00	327880.00	50.00
TP88	447930.00	327880.00	50.00
TP89	447930.00	327880.00	50.00
TP90	447930.00	327880.00	50.00
TP91	447930.00	327880.00	50.00
TP92	447930.00	327880.00	50.00
TP93	447930.00	327880.00	50.00
TP94	447930.00	327880.00	50.00
TP95	447930.00	327880.00	50.00
TP96	447930.00	327880.00	50.00
TP97	447930.00	327880.00	50.00
TP98	447930.00	327880.00	50.00
TP99	447930.00	327880.00	50.00
TP100	447930.00	327880.00	50.00



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The Hill, Crawley CV4 9AP, www.geotechnics.co.uk

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: File Name:  
PC062588 Geo-PC062588-001(6)





A453 NOTTINGHAM SITE INVESTIGATION THE A453 M1 JUNCTION			
OCTOBER 2006			
EXPLORATORY HOLE COORDINATES RELATE TO NATIONAL GRID REDUCED LEVELS RELATE TO ORDNANCE DATUM			
DESCRIPTION	CL	EASTING	NORTHING
BS01	CL	447930.00	327880.00
BS02	CL	447930.00	327880.00
BS03	CL	447930.00	327880.00
BS04	CL	447930.00	327880.00
BS05	CL	447930.00	327880.00
BS06	CL	447930.00	327880.00
BS07	CL	447930.00	327880.00
BS08	CL	447930.00	327880.00
BS09	CL	447930.00	327880.00
BS10	CL	447930.00	327880.00
BS11	CL	447930.00	327880.00
BS12	CL	447930.00	327880.00
BS13	CL	447930.00	327880.00
BS14	CL	447930.00	327880.00
BS15	CL	447930.00	327880.00
BS16	CL	447930.00	327880.00
BS17	CL	447930.00	327880.00
BS18	CL	447930.00	327880.00
BS19	CL	447930.00	327880.00
BS20	CL	447930.00	327880.00
BS21	CL	447930.00	327880.00
BS22	CL	447930.00	327880.00
BS23	CL	447930.00	327880.00
BS24	CL	447930.00	327880.00
BS25	CL	447930.00	327880.00
BS26	CL	447930.00	327880.00
BS27	CL	447930.00	327880.00
BS28	CL	447930.00	327880.00
BS29	CL	447930.00	327880.00
BS30	CL	447930.00	327880.00
BS31	CL	447930.00	327880.00
BS32	CL	447930.00	327880.00
BS33	CL	447930.00	327880.00
BS34	CL	447930.00	327880.00
BS35	CL	447930.00	327880.00
BS36	CL	447930.00	327880.00
BS37	CL	447930.00	327880.00
BS38	CL	447930.00	327880.00
BS39	CL	447930.00	327880.00
BS40	CL	447930.00	327880.00
BS41	CL	447930.00	327880.00
BS42	CL	447930.00	327880.00
BS43	CL	447930.00	327880.00
BS44	CL	447930.00	327880.00
BS45	CL	447930.00	327880.00
BS46	CL	447930.00	327880.00
BS47	CL	447930.00	327880.00
BS48	CL	447930.00	327880.00
BS49	CL	447930.00	327880.00
BS50	CL	447930.00	327880.00
BS51	CL	447930.00	327880.00
BS52	CL	447930.00	327880.00
BS53	CL	447930.00	327880.00
BS54	CL	447930.00	327880.00
BS55	CL	447930.00	327880.00
BS56	CL	447930.00	327880.00
BS57	CL	447930.00	327880.00
BS58	CL	447930.00	327880.00
BS59	CL	447930.00	327880.00
BS60	CL	447930.00	327880.00
BS61	CL	447930.00	327880.00
BS62	CL	447930.00	327880.00
BS63	CL	447930.00	327880.00
BS64	CL	447930.00	327880.00
BS65	CL	447930.00	327880.00
BS66	CL	447930.00	327880.00
BS67	CL	447930.00	327880.00
BS68	CL	447930.00	327880.00
BS69	CL	447930.00	327880.00
BS70	CL	447930.00	327880.00
BS71	CL	447930.00	327880.00
BS72	CL	447930.00	327880.00
BS73	CL	447930.00	327880.00
BS74	CL	447930.00	327880.00
BS75	CL	447930.00	327880.00
BS76	CL	447930.00	327880.00
BS77	CL	447930.00	327880.00
BS78	CL	447930.00	327880.00
BS79	CL	447930.00	327880.00
BS80	CL	447930.00	327880.00
BS81	CL	447930.00	327880.00
BS82	CL	447930.00	327880.00
BS83	CL	447930.00	327880.00
BS84	CL	447930.00	327880.00
BS85	CL	447930.00	327880.00
BS86	CL	447930.00	327880.00
BS87	CL	447930.00	327880.00
BS88	CL	447930.00	327880.00
BS89	CL	447930.00	327880.00
BS90	CL	447930.00	327880.00
BS91	CL	447930.00	327880.00
BS92	CL	447930.00	327880.00
BS93	CL	447930.00	327880.00
BS94	CL	447930.00	327880.00
BS95	CL	447930.00	327880.00
BS96	CL	447930.00	327880.00
BS97	CL	447930.00	327880.00
BS98	CL	447930.00	327880.00
BS99	CL	447930.00	327880.00
BS00	CL	447930.00	327880.00

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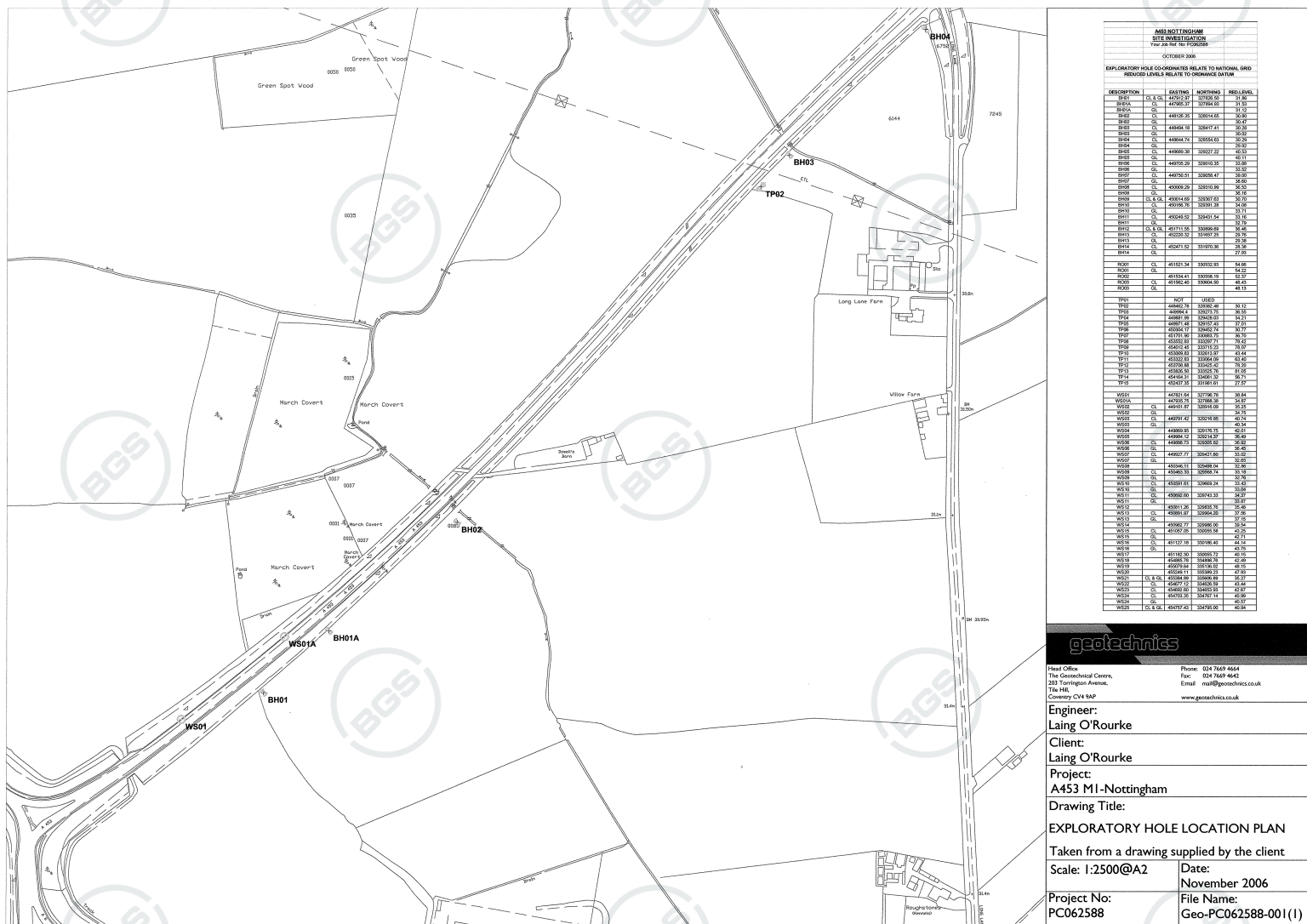
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Engineer: Laing O'Rourke  
Client: Laing O'Rourke  
Project: A453 M1-Nottingham  
Drawing Title: EXPLORATORY HOLE LOCATION PLAN  
Taken from a drawing supplied by the client  
Scale: 1:2500@A2 Date: November 2006  
Project No: PC062588 File Name: Geo-PC062588-001(7)



## BOREHOLE RECORD - Window Sampling

Project		A453 WIDENING, MI JUNCTION 24 - A52 NOTTINGHAM		Engineer		LAING O'ROURKE		Borehole Project No		WS01-06 PC062588				
Client		WHITE YOUNG GREEN		National Grid Coordinates		447821.64 E 327796.78 N		Ground Level		38.84 m OD				
Sampling			Properties			Strata			Scale 1:50					
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description				Depth	Legend	Level m OD			
0.50	D				Dark brown slightly gravelly slightly clayey sand with some organic material. [MADE GROUND - GRANULAR]				G.L.		38.84			
					Red brown gravelly sandy clay. Gravel is angular to rounded fine to coarse flint, mudstone and quartzite. [MADE GROUND - COHESIVE]				0.40		38.44			
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.				0.80		38.04			
					End of Borehole				1.60		37.24			
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.
1.60	0.10	Windowless Sampler	PS	1.60			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 1.60m due to no progress. Window Sample Borehole backfilled with cement-bentonite grout on completion.														
Logged by Checked by Figure												TZ DRB 1 of 1 06/12/2006		
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A453 NOTTINGHAM SITE INVESTIGATION New on the 10/10/2006			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATE TO NATIONAL GRID REDUCED LEVELS RELATE TO ORDNANCE DATUM			
DESCRIPTION	EASTING	NORTHING	REDUCED LEVEL
BH01	447820.00	327790.00	32.78
BH02	447820.00	327790.00	32.78
BH03	447820.00	327790.00	32.78
BH04	447820.00	327790.00	32.78
BH05	447820.00	327790.00	32.78
BH06	447820.00	327790.00	32.78
BH07	447820.00	327790.00	32.78
BH08	447820.00	327790.00	32.78
BH09	447820.00	327790.00	32.78
BH10	447820.00	327790.00	32.78
TP01	447820.00	327790.00	32.78
TP02	447820.00	327790.00	32.78
TP03	447820.00	327790.00	32.78
TP04	447820.00	327790.00	32.78
TP05	447820.00	327790.00	32.78
WS01	447820.00	327790.00	32.78
WS02	447820.00	327790.00	32.78
WS03	447820.00	327790.00	32.78
WS04	447820.00	327790.00	32.78
WS05	447820.00	327790.00	32.78
WS06	447820.00	327790.00	32.78
WS07	447820.00	327790.00	32.78

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Engineer:  
Laing O'Rourke

Client:  
Laing O'Rourke

Project:  
A453 MI-Nottingham

Drawing Title:  
EXPLORATORY HOLE LOCATION PLAN

Taken from a drawing supplied by the client

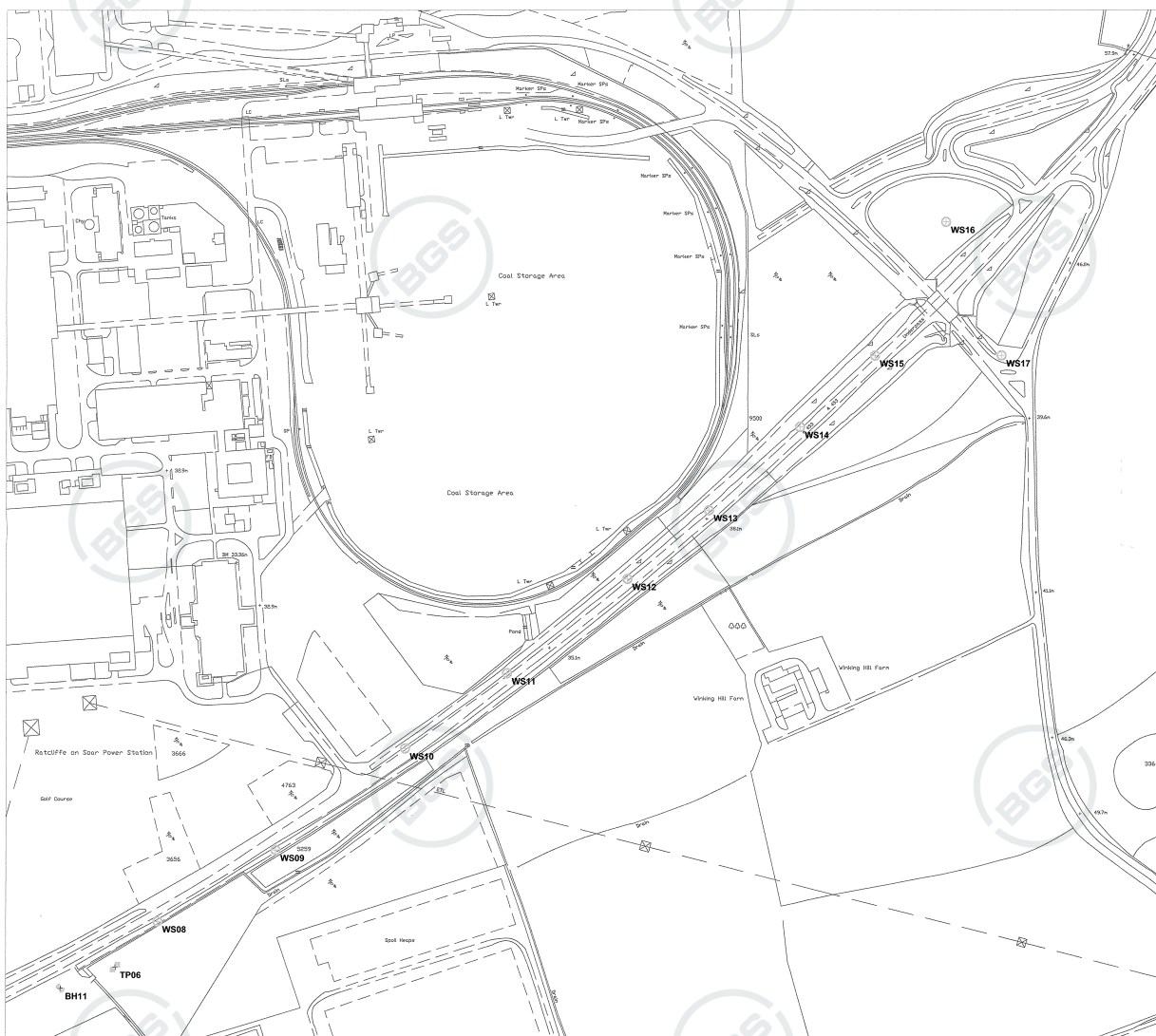
Scale: 1:2500@A2

Date:  
November 2006

Project No:  
PC062588

File Name:  
Geo-PC062588-001(2)





A453 NOTTINGHAM SITE INVESTIGATION Two 20m test pits FORBES			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATIVE TO NATIONAL GRID BESIDE LEVELS RELATIVE TO OBM/ADN 1948			
DESCRIPTION	EASTING	NORTHING	REL. LEVEL
BS01	447820.00	327790.00	32.00
BS02	447820.00	327790.00	32.00
BS03	447820.00	327790.00	32.00
BS04	447820.00	327790.00	32.00
BS05	447820.00	327790.00	32.00
BS06	447820.00	327790.00	32.00
BS07	447820.00	327790.00	32.00
BS08	447820.00	327790.00	32.00
BS09	447820.00	327790.00	32.00
BS10	447820.00	327790.00	32.00
BS11	447820.00	327790.00	32.00
BS12	447820.00	327790.00	32.00
BS13	447820.00	327790.00	32.00
BS14	447820.00	327790.00	32.00
BS15	447820.00	327790.00	32.00
BS16	447820.00	327790.00	32.00
BS17	447820.00	327790.00	32.00
BS18	447820.00	327790.00	32.00
BS19	447820.00	327790.00	32.00
BS20	447820.00	327790.00	32.00
BS21	447820.00	327790.00	32.00
BS22	447820.00	327790.00	32.00
BS23	447820.00	327790.00	32.00
BS24	447820.00	327790.00	32.00
BS25	447820.00	327790.00	32.00
BS26	447820.00	327790.00	32.00
BS27	447820.00	327790.00	32.00
BS28	447820.00	327790.00	32.00
BS29	447820.00	327790.00	32.00
BS30	447820.00	327790.00	32.00
BS31	447820.00	327790.00	32.00
BS32	447820.00	327790.00	32.00
BS33	447820.00	327790.00	32.00
BS34	447820.00	327790.00	32.00
BS35	447820.00	327790.00	32.00
BS36	447820.00	327790.00	32.00
BS37	447820.00	327790.00	32.00
BS38	447820.00	327790.00	32.00
BS39	447820.00	327790.00	32.00
BS40	447820.00	327790.00	32.00
BS41	447820.00	327790.00	32.00
BS42	447820.00	327790.00	32.00
BS43	447820.00	327790.00	32.00
BS44	447820.00	327790.00	32.00
BS45	447820.00	327790.00	32.00
BS46	447820.00	327790.00	32.00
BS47	447820.00	327790.00	32.00
BS48	447820.00	327790.00	32.00
BS49	447820.00	327790.00	32.00
BS50	447820.00	327790.00	32.00
BS51	447820.00	327790.00	32.00
BS52	447820.00	327790.00	32.00
BS53	447820.00	327790.00	32.00
BS54	447820.00	327790.00	32.00
BS55	447820.00	327790.00	32.00
BS56	447820.00	327790.00	32.00
BS57	447820.00	327790.00	32.00
BS58	447820.00	327790.00	32.00
BS59	447820.00	327790.00	32.00
BS60	447820.00	327790.00	32.00
BS61	447820.00	327790.00	32.00
BS62	447820.00	327790.00	32.00
BS63	447820.00	327790.00	32.00
BS64	447820.00	327790.00	32.00
BS65	447820.00	327790.00	32.00
BS66	447820.00	327790.00	32.00
BS67	447820.00	327790.00	32.00
BS68	447820.00	327790.00	32.00
BS69	447820.00	327790.00	32.00
BS70	447820.00	327790.00	32.00
BS71	447820.00	327790.00	32.00
BS72	447820.00	327790.00	32.00
BS73	447820.00	327790.00	32.00
BS74	447820.00	327790.00	32.00
BS75	447820.00	327790.00	32.00
BS76	447820.00	327790.00	32.00
BS77	447820.00	327790.00	32.00
BS78	447820.00	327790.00	32.00
BS79	447820.00	327790.00	32.00
BS80	447820.00	327790.00	32.00
BS81	447820.00	327790.00	32.00
BS82	447820.00	327790.00	32.00
BS83	447820.00	327790.00	32.00
BS84	447820.00	327790.00	32.00
BS85	447820.00	327790.00	32.00
BS86	447820.00	327790.00	32.00
BS87	447820.00	327790.00	32.00
BS88	447820.00	327790.00	32.00
BS89	447820.00	327790.00	32.00
BS90	447820.00	327790.00	32.00
BS91	447820.00	327790.00	32.00
BS92	447820.00	327790.00	32.00
BS93	447820.00	327790.00	32.00
BS94	447820.00	327790.00	32.00
BS95	447820.00	327790.00	32.00
BS96	447820.00	327790.00	32.00
BS97	447820.00	327790.00	32.00
BS98	447820.00	327790.00	32.00
BS99	447820.00	327790.00	32.00
BS100	447820.00	327790.00	32.00

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**Engineer:**  
Laing O'Rourke

**Client:**  
Laing O'Rourke

**Project:**  
A453 MI-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)



A453 NOTTINGHAM SITE INVESTIGATION Hole 20.30 to 10.00m			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATIVE TO NATIONAL GRID REDUCED LEVELS RELATE TO ORDNANCE DATUM			
DESCRIPTION	EASTING	NORTHING	REDUCED LEVEL
BH01	447820.24	327790.20	31.50
BH02	447820.24	327790.20	31.50
BH03	447820.24	327790.20	31.50
BH04	447820.24	327790.20	31.50
BH05	447820.24	327790.20	31.50
BH06	447820.24	327790.20	31.50
BH07	447820.24	327790.20	31.50
BH08	447820.24	327790.20	31.50
BH09	447820.24	327790.20	31.50
BH10	447820.24	327790.20	31.50
BH11	447820.24	327790.20	31.50
BH12	447820.24	327790.20	31.50
BH13	447820.24	327790.20	31.50
BH14	447820.24	327790.20	31.50
BH15	447820.24	327790.20	31.50
BH16	447820.24	327790.20	31.50
BH17	447820.24	327790.20	31.50
BH18	447820.24	327790.20	31.50
BH19	447820.24	327790.20	31.50
BH20	447820.24	327790.20	31.50
BH21	447820.24	327790.20	31.50
BH22	447820.24	327790.20	31.50
BH23	447820.24	327790.20	31.50
BH24	447820.24	327790.20	31.50
BH25	447820.24	327790.20	31.50
BH26	447820.24	327790.20	31.50
BH27	447820.24	327790.20	31.50
BH28	447820.24	327790.20	31.50
BH29	447820.24	327790.20	31.50
BH30	447820.24	327790.20	31.50
BH31	447820.24	327790.20	31.50
BH32	447820.24	327790.20	31.50
BH33	447820.24	327790.20	31.50
BH34	447820.24	327790.20	31.50
BH35	447820.24	327790.20	31.50
BH36	447820.24	327790.20	31.50
BH37	447820.24	327790.20	31.50
BH38	447820.24	327790.20	31.50
BH39	447820.24	327790.20	31.50
BH40	447820.24	327790.20	31.50
BH41	447820.24	327790.20	31.50
BH42	447820.24	327790.20	31.50
BH43	447820.24	327790.20	31.50
BH44	447820.24	327790.20	31.50
BH45	447820.24	327790.20	31.50
BH46	447820.24	327790.20	31.50
BH47	447820.24	327790.20	31.50
BH48	447820.24	327790.20	31.50
BH49	447820.24	327790.20	31.50
BH50	447820.24	327790.20	31.50
BH51	447820.24	327790.20	31.50
BH52	447820.24	327790.20	31.50
BH53	447820.24	327790.20	31.50
BH54	447820.24	327790.20	31.50
BH55	447820.24	327790.20	31.50
BH56	447820.24	327790.20	31.50
BH57	447820.24	327790.20	31.50
BH58	447820.24	327790.20	31.50
BH59	447820.24	327790.20	31.50
BH60	447820.24	327790.20	31.50
BH61	447820.24	327790.20	31.50
BH62	447820.24	327790.20	31.50
BH63	447820.24	327790.20	31.50
BH64	447820.24	327790.20	31.50
BH65	447820.24	327790.20	31.50
BH66	447820.24	327790.20	31.50
BH67	447820.24	327790.20	31.50
BH68	447820.24	327790.20	31.50
BH69	447820.24	327790.20	31.50
BH70	447820.24	327790.20	31.50
BH71	447820.24	327790.20	31.50
BH72	447820.24	327790.20	31.50
BH73	447820.24	327790.20	31.50
BH74	447820.24	327790.20	31.50
BH75	447820.24	327790.20	31.50
BH76	447820.24	327790.20	31.50
BH77	447820.24	327790.20	31.50
BH78	447820.24	327790.20	31.50
BH79	447820.24	327790.20	31.50
BH80	447820.24	327790.20	31.50
BH81	447820.24	327790.20	31.50
BH82	447820.24	327790.20	31.50
BH83	447820.24	327790.20	31.50
BH84	447820.24	327790.20	31.50
BH85	447820.24	327790.20	31.50
BH86	447820.24	327790.20	31.50
BH87	447820.24	327790.20	31.50
BH88	447820.24	327790.20	31.50
BH89	447820.24	327790.20	31.50
BH90	447820.24	327790.20	31.50
BH91	447820.24	327790.20	31.50
BH92	447820.24	327790.20	31.50
BH93	447820.24	327790.20	31.50
BH94	447820.24	327790.20	31.50
BH95	447820.24	327790.20	31.50
BH96	447820.24	327790.20	31.50
BH97	447820.24	327790.20	31.50
BH98	447820.24	327790.20	31.50
BH99	447820.24	327790.20	31.50
BH00	447820.24	327790.20	31.50

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**Engineer:**  
Laing O'Rourke

**Client:**  
Laing O'Rourke

**Project:**  
A453 MI-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)



A453 NOTTINGHAM SITE INVESTIGATION Year 2006 for the Programme			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATIVE TO NATIONAL GRID			
REDUCED LEVELS RELATIVE TO ORDNANCE DATUM			
DESCRIPTION	EASTING	NORTHING	REDUCED LEVEL
TP10 CL 1 CL	447820.00	327790.00	43.80
TP10 CL 2 CL	447820.00	327790.00	43.80
TP10 CL 3 CL	447820.00	327790.00	43.80
TP10 CL 4 CL	447820.00	327790.00	43.80
TP10 CL 5 CL	447820.00	327790.00	43.80
TP10 CL 6 CL	447820.00	327790.00	43.80
TP10 CL 7 CL	447820.00	327790.00	43.80
TP10 CL 8 CL	447820.00	327790.00	43.80
TP10 CL 9 CL	447820.00	327790.00	43.80
TP10 CL 10 CL	447820.00	327790.00	43.80
TP10 CL 11 CL	447820.00	327790.00	43.80
TP10 CL 12 CL	447820.00	327790.00	43.80
TP10 CL 13 CL	447820.00	327790.00	43.80
TP10 CL 14 CL	447820.00	327790.00	43.80
TP10 CL 15 CL	447820.00	327790.00	43.80
TP10 CL 16 CL	447820.00	327790.00	43.80
TP10 CL 17 CL	447820.00	327790.00	43.80
TP10 CL 18 CL	447820.00	327790.00	43.80
TP10 CL 19 CL	447820.00	327790.00	43.80
TP10 CL 20 CL	447820.00	327790.00	43.80
TP10 CL 21 CL	447820.00	327790.00	43.80
TP10 CL 22 CL	447820.00	327790.00	43.80
TP10 CL 23 CL	447820.00	327790.00	43.80
TP10 CL 24 CL	447820.00	327790.00	43.80
TP10 CL 25 CL	447820.00	327790.00	43.80
TP10 CL 26 CL	447820.00	327790.00	43.80
TP10 CL 27 CL	447820.00	327790.00	43.80
TP10 CL 28 CL	447820.00	327790.00	43.80
TP10 CL 29 CL	447820.00	327790.00	43.80
TP10 CL 30 CL	447820.00	327790.00	43.80
TP10 CL 31 CL	447820.00	327790.00	43.80
TP10 CL 32 CL	447820.00	327790.00	43.80
TP10 CL 33 CL	447820.00	327790.00	43.80
TP10 CL 34 CL	447820.00	327790.00	43.80
TP10 CL 35 CL	447820.00	327790.00	43.80
TP10 CL 36 CL	447820.00	327790.00	43.80
TP10 CL 37 CL	447820.00	327790.00	43.80
TP10 CL 38 CL	447820.00	327790.00	43.80
TP10 CL 39 CL	447820.00	327790.00	43.80
TP10 CL 40 CL	447820.00	327790.00	43.80
TP10 CL 41 CL	447820.00	327790.00	43.80
TP10 CL 42 CL	447820.00	327790.00	43.80
TP10 CL 43 CL	447820.00	327790.00	43.80
TP10 CL 44 CL	447820.00	327790.00	43.80
TP10 CL 45 CL	447820.00	327790.00	43.80
TP10 CL 46 CL	447820.00	327790.00	43.80
TP10 CL 47 CL	447820.00	327790.00	43.80
TP10 CL 48 CL	447820.00	327790.00	43.80
TP10 CL 49 CL	447820.00	327790.00	43.80
TP10 CL 50 CL	447820.00	327790.00	43.80
TP10 CL 51 CL	447820.00	327790.00	43.80
TP10 CL 52 CL	447820.00	327790.00	43.80
TP10 CL 53 CL	447820.00	327790.00	43.80
TP10 CL 54 CL	447820.00	327790.00	43.80
TP10 CL 55 CL	447820.00	327790.00	43.80
TP10 CL 56 CL	447820.00	327790.00	43.80
TP10 CL 57 CL	447820.00	327790.00	43.80
TP10 CL 58 CL	447820.00	327790.00	43.80
TP10 CL 59 CL	447820.00	327790.00	43.80
TP10 CL 60 CL	447820.00	327790.00	43.80
TP10 CL 61 CL	447820.00	327790.00	43.80
TP10 CL 62 CL	447820.00	327790.00	43.80
TP10 CL 63 CL	447820.00	327790.00	43.80
TP10 CL 64 CL	447820.00	327790.00	43.80
TP10 CL 65 CL	447820.00	327790.00	43.80
TP10 CL 66 CL	447820.00	327790.00	43.80
TP10 CL 67 CL	447820.00	327790.00	43.80
TP10 CL 68 CL	447820.00	327790.00	43.80
TP10 CL 69 CL	447820.00	327790.00	43.80
TP10 CL 70 CL	447820.00	327790.00	43.80
TP10 CL 71 CL	447820.00	327790.00	43.80
TP10 CL 72 CL	447820.00	327790.00	43.80
TP10 CL 73 CL	447820.00	327790.00	43.80
TP10 CL 74 CL	447820.00	327790.00	43.80
TP10 CL 75 CL	447820.00	327790.00	43.80
TP10 CL 76 CL	447820.00	327790.00	43.80
TP10 CL 77 CL	447820.00	327790.00	43.80
TP10 CL 78 CL	447820.00	327790.00	43.80
TP10 CL 79 CL	447820.00	327790.00	43.80
TP10 CL 80 CL	447820.00	327790.00	43.80
TP10 CL 81 CL	447820.00	327790.00	43.80
TP10 CL 82 CL	447820.00	327790.00	43.80
TP10 CL 83 CL	447820.00	327790.00	43.80
TP10 CL 84 CL	447820.00	327790.00	43.80
TP10 CL 85 CL	447820.00	327790.00	43.80
TP10 CL 86 CL	447820.00	327790.00	43.80
TP10 CL 87 CL	447820.00	327790.00	43.80
TP10 CL 88 CL	447820.00	327790.00	43.80
TP10 CL 89 CL	447820.00	327790.00	43.80
TP10 CL 90 CL	447820.00	327790.00	43.80
TP10 CL 91 CL	447820.00	327790.00	43.80
TP10 CL 92 CL	447820.00	327790.00	43.80
TP10 CL 93 CL	447820.00	327790.00	43.80
TP10 CL 94 CL	447820.00	327790.00	43.80
TP10 CL 95 CL	447820.00	327790.00	43.80
TP10 CL 96 CL	447820.00	327790.00	43.80
TP10 CL 97 CL	447820.00	327790.00	43.80
TP10 CL 98 CL	447820.00	327790.00	43.80
TP10 CL 99 CL	447820.00	327790.00	43.80
TP10 CL 100 CL	447820.00	327790.00	43.80

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Engineer:  
Laing O'Rourke

Client:  
Laing O'Rourke

Project:  
A453 MI-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)



A453 NOTTINGHAM SITE INVESTIGATION Exploratory Hole Locations			
OCTOBER 2006			
EXPLORATORY HOLE CO-ORDINATES RELATIVE TO NATIONAL GRID REDUCED LEVELS RELATIVE TO ORDNANCE DATUM			
DESCRIPTION	EASTING	NORTHING	RED. LEVEL
W001	447820.00	327790.00	52.00
W002	447820.00	327790.00	52.00
W003	447820.00	327790.00	52.00
W004	447820.00	327790.00	52.00
W005	447820.00	327790.00	52.00
W006	447820.00	327790.00	52.00
W007	447820.00	327790.00	52.00
W008	447820.00	327790.00	52.00
W009	447820.00	327790.00	52.00
W010	447820.00	327790.00	52.00
W011	447820.00	327790.00	52.00
W012	447820.00	327790.00	52.00
W013	447820.00	327790.00	52.00
W014	447820.00	327790.00	52.00
W015	447820.00	327790.00	52.00
W016	447820.00	327790.00	52.00
W017	447820.00	327790.00	52.00
W018	447820.00	327790.00	52.00
W019	447820.00	327790.00	52.00
W020	447820.00	327790.00	52.00
W021	447820.00	327790.00	52.00
W022	447820.00	327790.00	52.00
W023	447820.00	327790.00	52.00
W024	447820.00	327790.00	52.00
W025	447820.00	327790.00	52.00
W026	447820.00	327790.00	52.00
W027	447820.00	327790.00	52.00
W028	447820.00	327790.00	52.00
W029	447820.00	327790.00	52.00
W030	447820.00	327790.00	52.00
W031	447820.00	327790.00	52.00
W032	447820.00	327790.00	52.00
W033	447820.00	327790.00	52.00
W034	447820.00	327790.00	52.00
W035	447820.00	327790.00	52.00
W036	447820.00	327790.00	52.00
W037	447820.00	327790.00	52.00
W038	447820.00	327790.00	52.00
W039	447820.00	327790.00	52.00
W040	447820.00	327790.00	52.00
W041	447820.00	327790.00	52.00
W042	447820.00	327790.00	52.00
W043	447820.00	327790.00	52.00
W044	447820.00	327790.00	52.00
W045	447820.00	327790.00	52.00
W046	447820.00	327790.00	52.00
W047	447820.00	327790.00	52.00
W048	447820.00	327790.00	52.00
W049	447820.00	327790.00	52.00
W050	447820.00	327790.00	52.00
W051	447820.00	327790.00	52.00
W052	447820.00	327790.00	52.00
W053	447820.00	327790.00	52.00
W054	447820.00	327790.00	52.00
W055	447820.00	327790.00	52.00
W056	447820.00	327790.00	52.00
W057	447820.00	327790.00	52.00
W058	447820.00	327790.00	52.00
W059	447820.00	327790.00	52.00
W060	447820.00	327790.00	52.00
W061	447820.00	327790.00	52.00
W062	447820.00	327790.00	52.00
W063	447820.00	327790.00	52.00
W064	447820.00	327790.00	52.00
W065	447820.00	327790.00	52.00
W066	447820.00	327790.00	52.00
W067	447820.00	327790.00	52.00
W068	447820.00	327790.00	52.00
W069	447820.00	327790.00	52.00
W070	447820.00	327790.00	52.00
W071	447820.00	327790.00	52.00
W072	447820.00	327790.00	52.00
W073	447820.00	327790.00	52.00
W074	447820.00	327790.00	52.00
W075	447820.00	327790.00	52.00
W076	447820.00	327790.00	52.00
W077	447820.00	327790.00	52.00
W078	447820.00	327790.00	52.00
W079	447820.00	327790.00	52.00
W080	447820.00	327790.00	52.00
W081	447820.00	327790.00	52.00
W082	447820.00	327790.00	52.00
W083	447820.00	327790.00	52.00
W084	447820.00	327790.00	52.00
W085	447820.00	327790.00	52.00
W086	447820.00	327790.00	52.00
W087	447820.00	327790.00	52.00
W088	447820.00	327790.00	52.00
W089	447820.00	327790.00	52.00
W090	447820.00	327790.00	52.00
W091	447820.00	327790.00	52.00
W092	447820.00	327790.00	52.00
W093	447820.00	327790.00	52.00
W094	447820.00	327790.00	52.00
W095	447820.00	327790.00	52.00
W096	447820.00	327790.00	52.00
W097	447820.00	327790.00	52.00
W098	447820.00	327790.00	52.00
W099	447820.00	327790.00	52.00
W100	447820.00	327790.00	52.00

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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

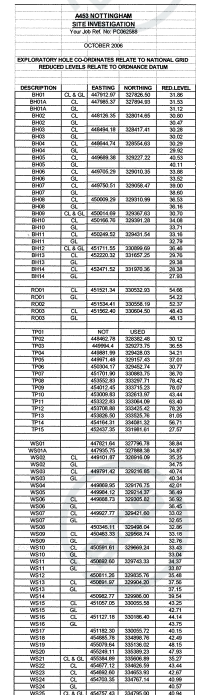
Date:  
**November 2006**

Project No:  
**PC062588**












File Name:  
**Geo-PC062588-001(6)**

Contact BGS: [ngdc@bgs.ac.uk](mailto:ngdc@bgs.ac.uk)

















<p> <b>Engineer:</b>          Laing O'Rourke       </p> <p> <b>Client:</b>          Laing O'Rourke       </p> <p> <b>Project:</b>          A453 M1-Nottingham       </p> <p> <b>Drawing Title:</b>          EXPLORATORY HOLE LOCATION PLAN       </p> <p>         Taken from a drawing supplied by the client       </p> <p> <b>Scale:</b> 1:2500@A2       </p> <p> <b>Project No:</b>          PC062588       </p>	<p> <b>Date:</b>          November 2006       </p> <p> <b>File Name:</b>          Geo-PC062588-001(7)       </p>
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<div><div>British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL</div></div>						Site M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2		Borehole Number CP1078		
Boring Method Cable Percussion		Casing Diameter 150mm cased to 2.50m		Ground Level (mOD) 76.00		Client Highways Agency		Job Number WAL060099		
		Location 447243 E 325878 N		Dates 25/10/2006		Engineer Arup		Sheet 1/1		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.20	B1			Water strike(1) at 0.00m.	75.80	(0.20)	TOPSOIL.		√1	
0.50	B2				75.50	(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.			
							Stiff friable red brown occasionally grey green SILT, locally silt/clay.			
1.50-1.95	U3	2.50	1.20	100 blows		(2.00)				
2.00	D4									
2.50-2.61	SPT 10'/75					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	2.50	1.60			(0.50)				
2.50-3.00	B6									
3.00	D7					25/10/2006:1.60m	73.00	3.00		
3.00-3.02	SPT 25'/10			25/10/2006: 25/25 25/10/2006:			Complete at 3.02m			
Remarks										
								Scale (approx) 1:50	Logged By MW	
								Figure No.		



W101


 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL							<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2		<b>Borehole Number</b> <b>CP1085</b>	
<b>Boring Method</b> Cable Percussion		<b>Casing Diameter</b> 200mm cased to 7.50m		<b>Ground Level (mOD)</b> 44.10		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099		
		<b>Location</b> 447337 E 327319 N		<b>Dates</b> 29/08/2006		<b>Engineer</b> Arup		<b>Sheet</b> 1/2		
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>	
0.20	B1			Driller noted 'borehole wet at 5.60m'(1) at 0.00m.	43.90	(0.20) 0.20	Sandy TOPSOIL.		✓1	
0.70	B2				43.40	(0.50) 0.70	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.			
1.50-1.95	U3			80 blows	42.60	(0.80) 1.50	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.			
2.00	D4					(0.70)	Grey fine silty SAND.			
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			
2.50-2.95	SPT N=15	2.50	DRY	3,3/4,3,4,4		(1.30)	At 2.50m; clayey and locally mottled black. rounded fine to coarse gravel of quartz.			
2.50	D6									
2.50-3.00	B7									
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	SPT N=11	4.50	DRY	2,3/3,2,3,3		(2.60)				
4.50	D10									
4.50-5.00	B11									
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	SPT N=20	6.50	5.70	3,3/4,4,5,7		(0.90)				
6.50-7.00	B13									
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	SPT N=59	7.50	7.10	10,11/14,14,15,16						
9.00	D18									
9.00-9.50	B19									
<b>Remarks</b>							<b>Scale (approx)</b> 1:50	<b>Logged By</b> RMS	<b>Figure No.</b>	




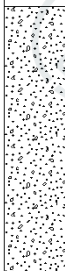

 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL						<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2		<b>Borehole Number</b> <b>CP1085</b>	
<b>Boring Method</b> Cable Percussion		<b>Casing Diameter</b> 200mm cased to 7.50m		<b>Ground Level (mOD)</b> 44.10		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447337 E 327319 N		<b>Dates</b> 29/08/2006		<b>Engineer</b> Arup		<b>Sheet</b> 2/2	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>
10.50-10.70 10.50 10.50-11.00	SPT 35/50 D20 B21	7.50	7.90	25,30/35	33.40	(3.70) 10.70	Red brown CLAY (as previous sheet)		
11.10	D22			29/08/2006:8.40m	33.00	(0.40) 11.10	Very weak MUDSTONE recovered as red brown mottled grey clayey fine to coarse angular sand and gravel sized fragments.		
11.10-11.17	SPT 25'/40 35/30	7.50	8.40	29/08/2006: 25/35 29/08/2006:			At 11.10m; becoming red brown and grey coarse angular gravel of friable mudstone. Complete at 11.17m		
<b>Remarks</b>							<b>Scale (approx)</b> 1:50	<b>Logged By</b> RMS	<b>Figure No.</b>

















 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL							<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2		<b>Borehole Number</b> <b>CP1086</b>
<b>Boring Method</b> Cable Percussion		<b>Casing Diameter</b> 150mm cased to 12.00m		<b>Ground Level (mOD)</b> 42.15		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447582 E 327754 N		<b>Dates</b> 26/01/2007- 29/01/2007		<b>Engineer</b> Arup		<b>Sheet</b> 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20-0.45	B1			Water strike(1) at 0.00m.		(0.45)	Dark brown sandy TOPSOIL. Driller notes hardcore over brown clayey sand.		✓1
0.45-1.20	B2				41.70	0.45	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								
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		(7.20)	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 7.70-8.15 7.70-8.15 7.70-8.20	D16 SPT N=27 D17 B18	1.50	DRY	4,4/5,7,7,8	34.50	7.65	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.		
<b>Remarks</b>							<b>Scale (approx)</b> 1:50		<b>Logged By</b> RMS
							<b>Figure No.</b>		




 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL						<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2		<b>Borehole Number</b> <b>CP1086</b>	
<b>Boring Method</b> Cable Percussion		<b>Casing Diameter</b> 150mm cased to 12.00m		<b>Ground Level (mOD)</b> 42.15		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447582 E 327754 N		<b>Dates</b> 26/01/2007- 29/01/2007		<b>Engineer</b> Arup		<b>Sheet</b> 2/2	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>
10.70-11.15 10.70-11.20	SPT(C) N=42 B21	10.70	ADDED	26/01/2007: 29/01/2007: 6,7/9,9,11,13		(4.35)	SAND (as previous sheet)		
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 29/01/2007: 29/01/2007:9.10m	29.35	12.80	Complete at 12.94m		
<b>Remarks</b>							<b>Scale (approx)</b> 1:50	<b>Logged By</b> RMS	<b>Figure No.</b>




 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL							<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2		<b>Borehole Number</b> <b>CP1088</b>
<b>Boring Method</b> Cable Percussion		<b>Casing Diameter</b> 150mm cased to 10.50m		<b>Ground Level (mOD)</b> 38.65		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447226 E 327722 N		<b>Dates</b> 17/10/2006		<b>Engineer</b> Arup		<b>Sheet</b> 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 0.30-1.20	B1 B2				38.35	(0.30) 0.30	Grey brown slightly silty occasionally gravelly sandy TOPSOIL. Gravel is subangular to subrounded fine to medium of quartz and sandstone.		
1.20-1.65 1.20-1.65	SPT(C) N=18 B3		DRY	2,3/4,4,5,5			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.		
							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.		
							Firm to stiff brown slightly sandy SILT/CLAY with occasional fine angular to subangular gravel of sandstone and weathered siltstone.		
5.20-5.65 5.70	U8 D9			Water strike(1) at 5.20m. 80 blows					∇ <sub>1</sub>
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.		
8.20-8.65 8.20-8.70 8.20-8.65	D14 B15 SPT N=17	7.50	7.40	Water strike(2) at 8.20m. 2,3/4,4,4,5					∇ <sub>2</sub>
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					
<b>Remarks</b>							<b>Scale (approx)</b> 1:50	<b>Logged By</b> MW	
							<b>Figure No.</b>		




 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL						<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2		<b>Borehole Number</b> <b>CP1088</b>	
<b>Boring Method</b> Cable Percussion		<b>Casing Diameter</b> 150mm cased to 10.50m		<b>Ground Level (mOD)</b> 38.65		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447226 E 327722 N		<b>Dates</b> 17/10/2006		<b>Engineer</b> Arup		<b>Sheet</b> 2/2	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>
10.50	D18				28.15	(6.20) 10.50	SILT/CLAY (as previous sheet) 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.		
12.00	D21					(2.90)	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.		
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	24.15	(1.10) 14.50			
14.50-14.54	SPT 25'/10 50/30	10.50	7.40	17/10/2006: 7.40m 17/10/2006: 25/50 17/10/2006:			Complete at 14.54m		
<b>Remarks</b>							<b>Scale (approx)</b> 1:50	<b>Logged By</b> MW	<b>Figure No.</b>







 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL						<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI-CONTRACT 2		<b>Borehole Number</b> RC1079		
<b>Machine:</b> <b>Flush :</b> <b>Core Dia: mm</b> <b>Method :</b>		<b>Casing Diameter</b> 140mm cased to 1.95m		<b>Ground Level (mOD)</b> 80.00		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099		
		<b>Location</b> 447240 E 326105 N		<b>Dates</b> 25/10/2006		<b>Engineer</b> Arup		<b>Sheet</b> 1/2		
<b>Depth (m)</b>	<b>TCR</b>	<b>SCR</b>	<b>RQD</b>	<b>FI</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>
0.00			0	0	Groundwater was not apparent during boring(1) at 0.00m.			Inspection Pit.		▽1
			0	0			(1.20)			
1.20	53	0	0	0		78.80	1.20	Open Hole.		
							(0.80)			
2.00			0	0		78.00	2.00	No recovery.		
							(0.70)			
2.90						77.30	2.70	Recovered non-intact as moderately strong light grey brown subangular cobbles of SILTSTONE.	xxxxxx	
	100	0	0	0		77.10	(0.20)		xxxxxx	
3.50-3.95					4,8/8,9,16,21 SPT N=54		2.90	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							(1.60)			
4.40					P1					
4.50	63	13	0	0		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			0	0	6,10/10,21,19,27 SPT N=77					
5.00					P2					
5.60										
5.50	95	61	9	0						
6.50-6.95					6,7/9,14,18,26 SPT N=67					
6.50								Between 6.80m and 6.95m; moderately strong siltstone.		
	87	43	15	0			(5.20)			
7.60					P3					
8.00-8.45			0	0	5,6/9,12,26,31 SPT N=78					
8.00										
8.40								Between 8.40m and 9.00m; weak to moderately strong siltstone.		
8.90	83	74	31	0	P4					
9.50-9.95			0	0	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										
9.70						70.30	9.70	Generally weak variably very weak to moderately weak red brown locally mottled grey green calcareous MUDSTONE		
<b>Remarks</b>								<b>Scale (approx)</b>	<b>Logged By</b>	
								1:50	TL	
								<b>Figure No.</b>		



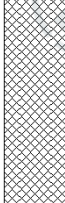




 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL							<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2		<b>Borehole Number</b> <b>RC1079</b>	
<b>Machine:</b> <b>Flush :</b> <b>Core Dia: mm</b> <b>Method :</b>		<b>Casing Diameter</b> 140mm cased to 1.95m		<b>Ground Level (mOD)</b> 80.00		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099		
		<b>Location</b> 447240 E 326105 N		<b>Dates</b> 25/10/2006		<b>Engineer</b> Arup		<b>Sheet</b> 2/2		
<b>Depth (m)</b>	<b>TCR</b>	<b>SCR</b>	<b>RQD</b>	<b>FI</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>
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					9.11/11.15, 13.16 SPT N=55			Between 11.00m and 11.20m; no recovery, possibly due to SPT.		
12.00	91	85	51	0	P6					
12.50 12.50-12.70					12.13/50 SPT 50/46		(5.80)			
	67	31	15	0						
13.80					P7					
14.00 14.00-14.19 14.20			0	0	9.16/50 SPT 50/37			Between 14.20m and 15.00m; fractures are generally subhorizontal to subvertical, very closely spaced, undulating to irregular.		
14.60	<b>Sample / Tests</b> P8		<b>Casing Depth (m)</b>	<b>Water Depth (m)</b>						
						25/10/2006:13.97m	64.50	15.50		
						25/10/2006:		Complete at 15.50m		
<b>Remarks</b>								<b>Scale (approx)</b> 1:50	<b>Logged By</b> TL	
								<b>Figure No.</b>		



 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL					<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2			<b>Trial Pit Number</b> <b>TP1080</b>	
<b>Excavation Method</b> Trial Pit		<b>Dimensions</b>		<b>Ground Level (mOD)</b> 79.55		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447129 E 326038 N		<b>Dates</b> 18/10/2006		<b>Engineer</b> Arup		<b>Sheet</b> 1/1	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>		<b>Legend</b>	<b>Water</b>
0.50	B1		Groundwater was not apparent during excavation(1) at 0.00m.	79.35	(0.20) 0.20	Brown clayey TOPSOIL with many rootlets. (Stratum I)			V1
0.95	B2				(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)			
						At 1.05m; steel 300mm diameter pipe At 1.10m; ceramic drainage pipe, 3.00m from edge of tarmac.			
			18/10/2006: 18/10/2006:	78.35	1.20	Complete at 1.20m			
<b>Plan</b>					<b>Remarks</b>				
					<b>Scale (approx)</b> 1:50				
					<b>Logged By</b> RMS				
					<b>Figure No.</b>				








 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL					<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2			<b>Trial Pit Number</b> <b>TP1082</b>	
<b>Excavation Method</b> Trial Pit		<b>Dimensions</b>		<b>Ground Level (mOD)</b> 82.40		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447203 E 326311 N		<b>Dates</b> 18/10/2006		<b>Engineer</b> Arup		<b>Sheet</b> 1/1	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>	
0.50	B1		Groundwater was not apparent during excavation(1) at 0.00m.	82.20	(0.20) 0.20	Brown clayey TOPSOIL. (Stratum I)		V1	
					(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	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: 18/10/2006:	80.00	2.40	At 2.25m: steel pipe 150mm diameter parallel to road.			
						Complete at 2.40m			
<b>Plan</b>					<b>Remarks</b>				
					<b>Scale (approx)</b> 1:50				
					<b>Logged By</b> RMS		<b>Figure No.</b>		


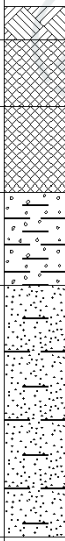


British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL						Site M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI - CONTRACT 2		Trial Pit Number <b>TP1083</b>	
Excavation Method Trial Pit		Dimensions		Ground Level (mOD) 41.60		Client Highways Agency		Job Number WAL060099	
		Location 447258 E 327586 N		Dates 23/10/2006		Engineer Arup		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.50	B1		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)		V1	
				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				(2.30)	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								
4.00	B5		23/10/2006: 23/10/2006:	37.60	4.00	Complete at 4.00m			
<b>Plan</b>						<b>Remarks</b>			
						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.,			
						<b>Scale (approx)</b>		<b>Logged By</b>	
						1:50		RMS	
								<b>Figure No.</b>	




 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL					<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI- CONTRACT 2			<b>Trial Pit Number</b> <b>TP1084</b>	
<b>Excavation Method</b> Trial Pit		<b>Dimensions</b>		<b>Ground Level (mOD)</b> 51.30		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447369 E 326976 N		<b>Dates</b> 23/10/2006		<b>Engineer</b> Arup		<b>Sheet</b> 1/1	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>	
0.50	B1		Groundwater was not apparent during excavation(1) at 0.00m.	51.05	(0.25) 0.25	Dark brown slightly sandy clayey TOPSOIL with occasional subrounded to rounded fine to coarse gravel of quartz. (Stratum I)		√1	
1.50	B2			50.30	(0.75) 1.00	MADE GROUND: Firm to stiff red brown sandy clay with occasional fine to coarse subrounded to rounded gravel of At 0.70m; 150mm diameter terracotta pipe, broken and infilled. Pit extended 1m east. quartz and sandstone. (Stratum II)			
2.60	B3			48.70	(1.60) 2.60	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			
			23/10/2006:	48.30	(0.40) 3.00	Moderately weak green grey fine SANDSTONE. (Stratum IV)			
			23/10/2006:			Complete at 3.00m			
<b>Plan</b>					<b>Remarks</b>				
					<b>Scale (approx)</b> 1:50				
					<b>Logged By</b> RMS		<b>Figure No.</b>		




 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL					<b>Site</b> M1 WIDENING JUNCTION 21 TO 30 PRELIMINARY GI-CONTRACT 2			<b>Trial Pit Number</b> TP1089	
<b>Excavation Method</b> Trial Pit		<b>Dimensions</b>		<b>Ground Level (mOD)</b> 37.50		<b>Client</b> Highways Agency		<b>Job Number</b> WAL060099	
		<b>Location</b> 447247 E 327868 N		<b>Dates</b> 04/12/2006		<b>Engineer</b> Arup		<b>Sheet</b> 1/1	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>		<b>Legend</b>	<b>Water</b>
0.10	D1		Groundwater was not apparent during excavation(1) at 0.00m.	37.25	(0.25) 0.25	Brown clayey TOPSOIL with many rootlets. (Stratum I).			V1
0.50	B2			36.75	(0.50) 0.75	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			
1.00	B3			36.10	(0.65) 1.40	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			
1.50	B4			35.40	(0.70) 2.10	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			
2.30	B5					Brown grey clayey SAND with occasional rounded coarse From 2.20m; yellow brown and not clayey, gravelly quartz. Sand is fine to coarse and fine grained igneous lithologies. (Stratum V). Possible			
2.80	D6								
3.30	B7					At 3.30m; gravelly			
3.80	D8								
			04/12/2006: 04/12/2006:	33.50	4.00	Complete at 4.00m			
<b>Plan</b>						<b>Remarks</b>			
						<b>Scale (approx)</b> 1:50			
						<b>Logged By</b> RMS		<b>Figure No.</b>	




 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL					<b>Site</b> Nottinghamshire/ Derbyshire COA NMCS2 Upgrade		<b>Number</b> <b>D119K</b>		
<b>Excavation Method</b> Drive-in Window Sampler		<b>Dimensions</b>		<b>Ground Level (mOD)</b> 36.78		<b>Client</b> Highways Agency		<b>Job Number</b> F11451	
		<b>Location</b> 447460.97 E 327885.63 N		<b>Dates</b> 06/09/1999		<b>Engineer</b> WSP Environmental Ltd		<b>Sheet</b> 1/1	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>		<b>Legend</b>	<b>Water</b>
0.20-0.45	D01		0 blows	36.58	(0.20) 0.20	TOPSOIL.			
					(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.			
					(0.70)				
1.80-2.00	D03		0 blows	34.98	1.80	Very stiff, reddish brown and greenish grey slightly sandy CLAY. (Mercia Mudstone - Grade IVa/IVb)			
			06/09/1999:0.00m	34.78	(0.20) 2.00	Complete at 2.00m			
			06/09/1999:						
<b>Remarks</b> 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.						<b>Scale (approx)</b> 1:50		<b>Logged By</b> NBR	
						<b>Figure No.</b>			






 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL					<b>Site</b> Nottinghamshire/ Derbyshire COA NMCS2 Upgrade		<b>Number</b> D120L		
<b>Excavation Method</b> Drive-in Window Sampler		<b>Dimensions</b>		<b>Ground Level (mOD)</b> 37.14		<b>Client</b> Highways Agency		<b>Job Number</b> F11451	
		<b>Location</b> 447556.57 E 327905.86 N		<b>Dates</b> 13/09/1999		<b>Engineer</b> WSP Environmental Ltd		<b>Sheet</b> 1/1	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>	<b>Legend</b>	<b>Water</b>	
0.20-0.60	D01		0 blows	36.94	(0.20) 0.20	TOPSOIL with occasional coarse subangular limestone fragments.			
0.60-1.50	D02		0 blows	36.54	(0.40) 0.60	MADE GROUND: Reddish brown clay with a little fine to medium mudstone and Magnesian limestone gravel.			
					(0.90)	MADE GROUND: Reddish brown sandy clay with a little fine to medium subangular quartz gravel.			
1.50-3.20	D03		0 blows	35.64	1.50	MADE GROUND: Reddish brown mottled grey clay with a little greenish grey fine to coarse subangular sandstone gravel.			
			13/09/1999: 0.00m						
			13/09/1999: 0.00m		(1.70)				
				33.94	3.20	Complete at 3.20m			
<b>Remarks</b> 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.						<b>Scale (approx)</b> 1:50	<b>Logged By</b> NBR		
						<b>Figure No.</b>			



 <b>British Geological Survey</b> <small>NATURAL ENVIRONMENT RESEARCH COUNCIL</small>					<b>Site</b> Nottinghamshire/ Derbyshire COA NMCS2 Upgrade		<b>Number</b> <b>D1A</b>		
<b>Excavation Method</b> Drive-in Window Sampler		<b>Dimensions</b>		<b>Ground Level (mOD)</b> 33.87		<b>Client</b> Highways Agency		<b>Job Number</b> F11451	
		<b>Location</b> 447493.18 E 327893.83 N		<b>Dates</b> 13/09/1999		<b>Engineer</b> WSP Environmental Ltd		<b>Sheet</b> 1/1	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>		<b>Legend</b>	<b>Water</b>
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	Reddish brown clayey coarse SAND with some subrounded fine to coarse quartz gravel.			
0.80-3.10	D02		0 blows		(2.30)				
				30.77	3.10	Complete at 3.10m			
<b>Remarks</b> 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						<b>Scale (approx)</b> 1:50		<b>Logged By</b> NBR	
						<b>Figure No.</b>			



 <b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL					<b>Site</b> Nottinghamshire/ Derbyshire COA NMCS2 Upgrade		<b>Number</b> <b>D1B</b>		
<b>Excavation Method</b> Drive-in Window Sampler		<b>Dimensions</b>		<b>Ground Level (mOD)</b> 34.60		<b>Client</b> Highways Agency		<b>Job Number</b> F11451	
		<b>Location</b> 447531.12 E 327899.87 N		<b>Dates</b> 15/09/1999		<b>Engineer</b> WSP Environmental Ltd		<b>Sheet</b> 1/1	
<b>Depth (m)</b>	<b>Sample / Tests</b>	<b>Water Depth (m)</b>	<b>Field Records</b>	<b>Level (mOD)</b>	<b>Depth (m) (Thickness)</b>	<b>Description</b>		<b>Legend</b>	<b>Water</b>
0.10-0.90	D01		0 blows	34.50	0.10	TOPSOIL with a little fine to coarse subrounded quartz gravel.			
			15/09/1999:0.00m		(0.80)	MADE GROUND: Brown fine sand and fine to coarse, subangular to subrounded gravel sized fragments of quartz and sandstone.			
0.90-2.70	D02		0 blows	33.70	0.90	Soft reddish brown very sandy CLAY with a little medium subrounded quartz gravel.			
					(1.80)				
				31.90	2.70	---from 2.50m pale brown			
2.70-3.00	D03		0 blows	31.60	(0.30)	Soft reddish brown slightly sandy CLAY.			
					3.00	Complete at 3.00m			
<b>Remarks</b> 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.						<b>Scale (approx)</b> 1:50		<b>Logged By</b> NBR	
						<b>Figure No.</b>			

## **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

## DOCUMENT CONTROL SHEET

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**Client:** ROXHILL KEGWORTH LTD

**Project:** EAST MIDLANDS GATEWAY STRATEGIC RAIL FREIGHT INTERCHANGE

**Title:** GEOTECHNICAL DESIGN REPORT FOR M1 OVERBRIDGE

**Date:** JULY 2017

### Document Production Record

Status:	S4	Name	Signature
Revision:	P4		
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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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<b>ANNEX A</b>	<b>SPECIFICATION APPENDICES &amp; DRAWINGS</b>
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<b>ANNEX D</b>	<b>GEOTECHNICAL RISK REGISTER</b>

## 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 is 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 O/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.

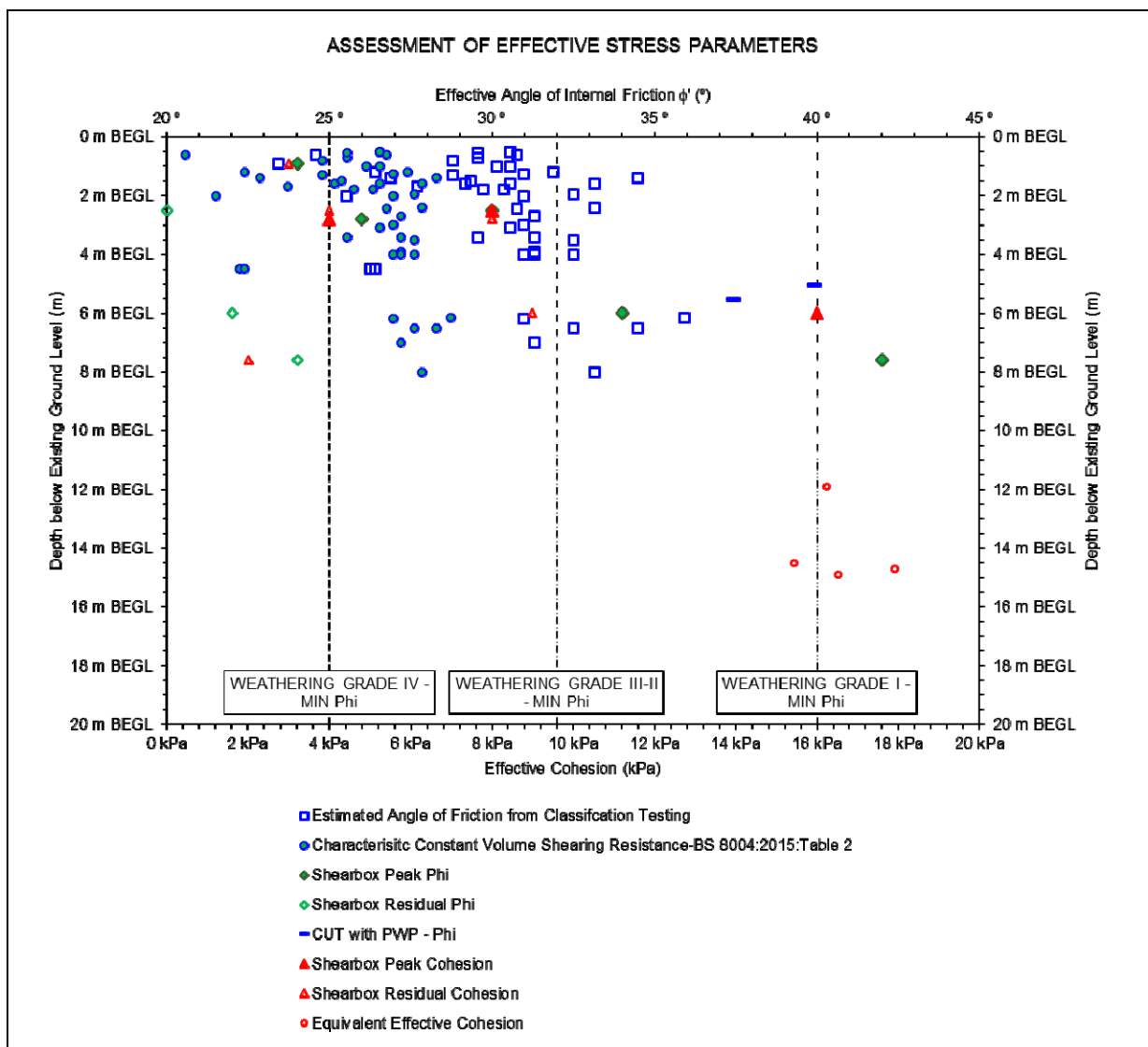
## 2.1.2 Soil Parameters

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 ( $\phi'$ ), including peak ( $p_k$ ), critical ( $c_r$ ) and residual values ( $r_{es}$ ). 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  $\phi'$  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
	$\gamma_b$ kN/m <sup>3</sup>	$S_u$ kN/m <sup>2</sup>	$c'$ kN/m <sup>2</sup>	$\phi'$ °	$E_{oed}$ MPa	$E_s$ MPa
Topsoil / Subsoil <sup>2</sup>	16.50	35	0	25	2.5	3.5
Firm to stiff red brown CLAY MMG IVB <sup>1</sup>	19.50	65	2 ( $< 20$ ) <sup>3</sup>	25 (25 – 32) <sup>3</sup>	12.5	30
Stiff red brown CLAY MMG IVA <sup>1</sup>	20.50	90	4 ( $< 20$ ) <sup>3</sup>	32 (25 – 32) <sup>3</sup>	15.0	37
Mercia Mudstone MMG III <sup>1</sup>	22.00	Fig 2.2 & Fig 2.3	10 ( $< 20$ ) <sup>3</sup>	32 (32 – 42) <sup>3</sup>	Table 2.3	Table 2.3
Mercia Mudstone MMG II <sup>1</sup>	22.50	Fig 2.2 & Fig 2.3	16 ( $> 25$ ) <sup>3</sup>	42 ( $> 40$ ) <sup>3</sup>	Table 2.3	Table 2.3
Intact Mudstone MMG I <sup>1</sup>	23.00	Fig 2.2 & Fig 2.3	25 ( $> 25$ ) <sup>3</sup>	42 ( $> 40$ ) <sup>3</sup>	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
	$\gamma_b$ kN/m <sup>3</sup>	$S_u$ kN/m <sup>2</sup>	$c'$ kN/m <sup>2</sup>	$\phi'$ °	$E_{oed}$ MPa	$E_s$ MPa
Class 2 Cohesive General Fill (2A & 2C)	19.50	50 <sup>2</sup>	2	25	8.5	20
Class 6F/9E Capping	21.00	-	-	35	30	75
Class 6N Selected Fill to Structures	23.00	-	-	$\phi'_{pk} \leq 44^\circ$ $\phi'_{crit} \leq 38^\circ$	100	150
Class 7A Selected cohesive fill to Structures	20.50	100	2	25	20	45

Notes: <sup>1</sup> 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.

<sup>2</sup> Minimum value for undrained shear strength specified to be 50 kN/m<sup>2</sup>.

<sup>3</sup> 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/m<sup>2</sup>. 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  $\phi'_{crit}$  value = 38° and  $\phi'_{max}$  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  $\phi'_{crit}$  value and  $\phi'_{max}$  plane strain values do not exceed those used in the design.'

These values combine to give a max design value of  $0.4 \times 38 + 0.6 \times 44 = 41.6$ , i.e. as the 41.5° adopted in the geostructural analysis design process.

The process has been replicated in order to determine the minimum parameters for shear resistance  $\phi'_{crit}$  value of 31.5° and  $\phi'_{max}$  plane strain = 37.5°. This will return a lower bound design value of 35°.

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 ( $S_u > 300 \text{ kN/m}^2$ ) and an extremely weak rock ( $\text{UCS} < 1000 \text{ kN/m}^2$  and where  $S_u = \text{UCS}/2$ ). 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

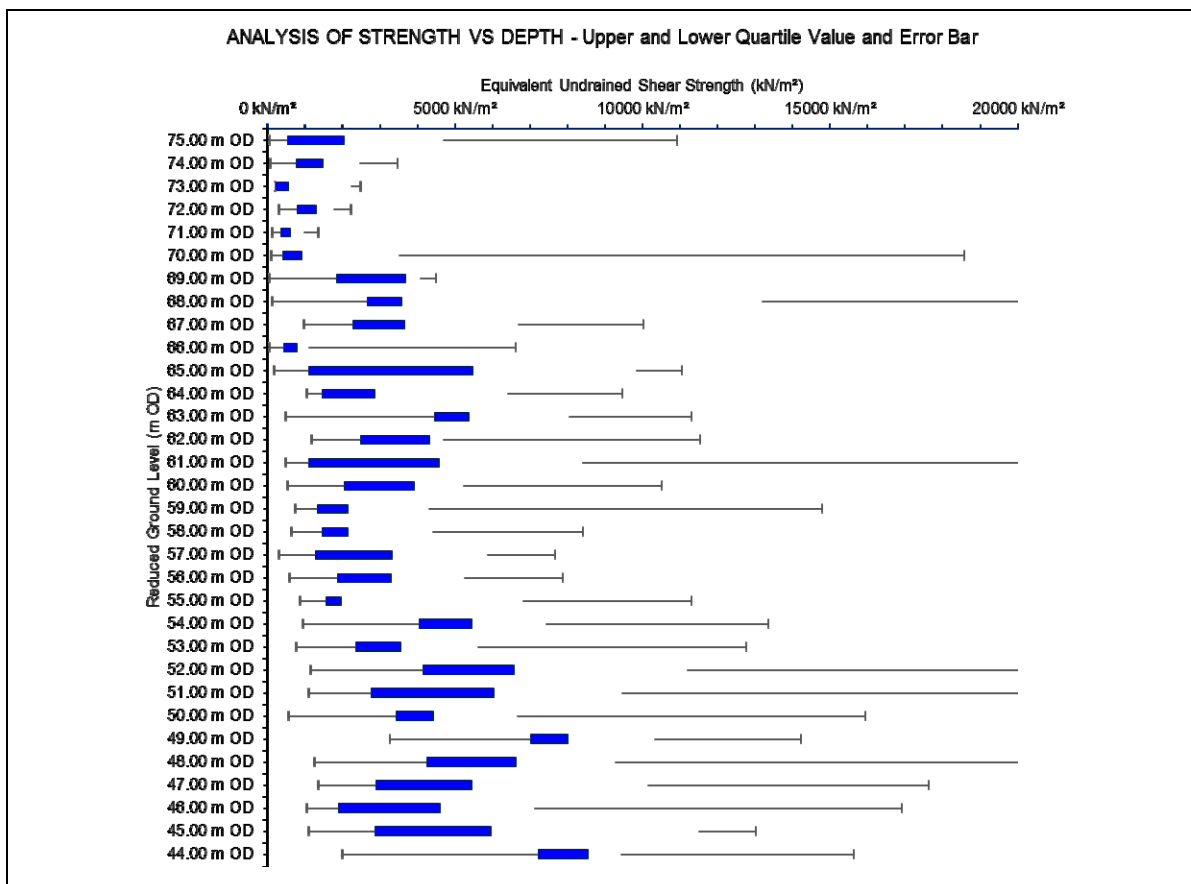
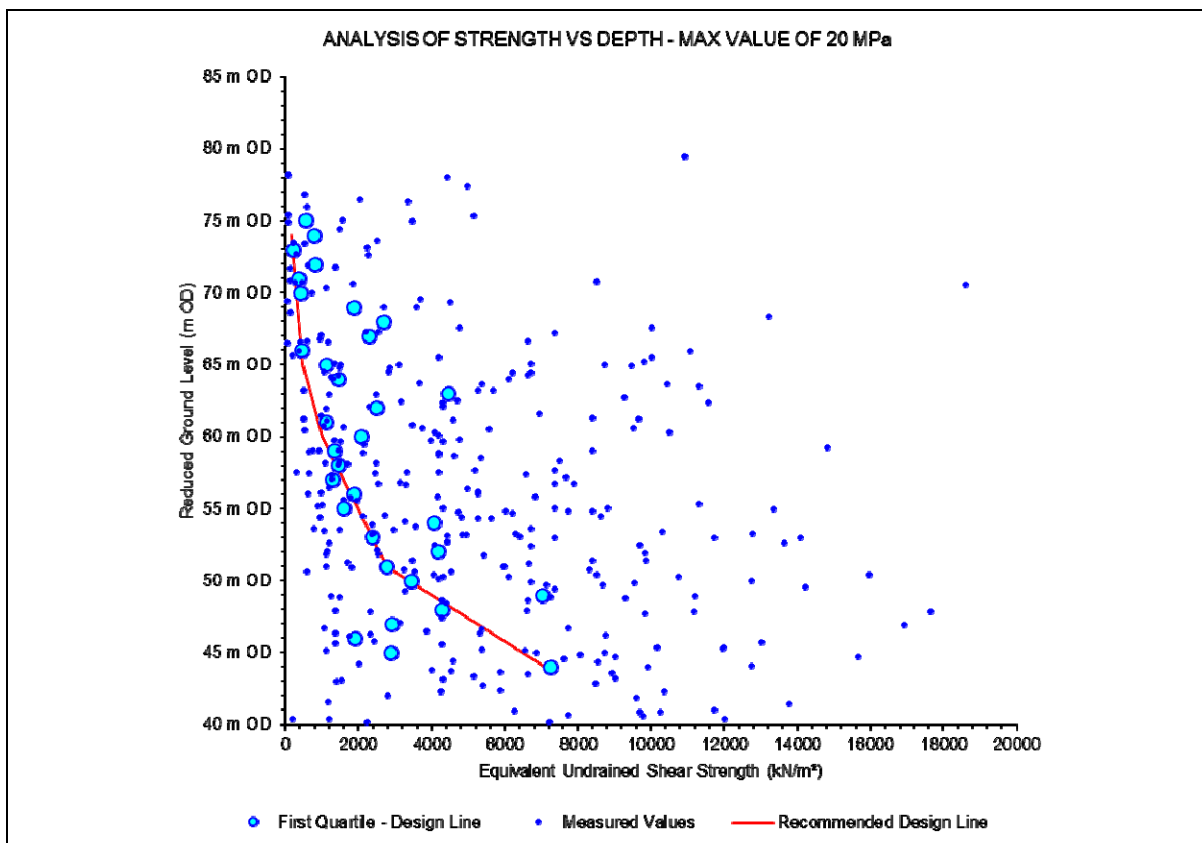


Figure 2.3: Analysis of Strength vs Depth - Design Line



For clarity, the horizontal scale has been limited to 20,000 kN/m<sup>2</sup> (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 <sub>u</sub> = ( A x Level m OD) + B		Oedometric Modulus E <sub>oed</sub>	Elastic Modulus E <sub>s</sub>
			A	B		
74.00 m OD	65.00 m OD	150 kN/m <sup>2</sup>	-33.333	2616.667	(S <sub>u</sub> kN/m <sup>2</sup> x 0.166) MN/m <sup>2</sup>	(S <sub>u</sub> kN/m <sup>2</sup> x 0.400) MN/m <sup>2</sup>
65.00 m OD	60.00 m OD	450 kN/m <sup>2</sup>	-110.000	7600.000	(S <sub>u</sub> kN/m <sup>2</sup> x 0.166) MN/m <sup>2</sup>	(S <sub>u</sub> kN/m <sup>2</sup> x 0.400) MN/m <sup>2</sup>
60.00 m OD	51.00 m OD	1,000 kN/m <sup>2</sup>	-194.444	12666.667	(S <sub>u</sub> kN/m <sup>2</sup> x 0.166) MN/m <sup>2</sup>	(S <sub>u</sub> kN/m <sup>2</sup> x 0.400) MN/m <sup>2</sup>
51.00 m OD	44.00 m OD	2,750 kN/m <sup>2</sup>	-621.429	34442.857	(S <sub>u</sub> kN/m <sup>2</sup> x 0.166) MN/m <sup>2</sup>	(S <sub>u</sub> kN/m <sup>2</sup> x 0.400) MN/m <sup>2</sup>

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.

$$S_u = (-33.333 \times 66.5) + 2616.667 = 400 \text{ kN/m}^2$$

Taking this derived value for shear strength, then the corresponding Oedometric Modulus ( $E_{oed}$ ) would be.

$$E_{oed} = 400 \text{ kN/m}^2 \times 0.166 = 66.4 \text{ MN/m}^2$$

The same process can be used to estimate a derived value for the Elastic Modulus ( $E_s$ ).

$$E_s = 400 \text{ kN/m}^2 \times 0.400 = 160.0 \text{ MN/m}^2$$

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/m<sup>2</sup> to 400

kN/m<sup>2</sup>. This would be an equivalent Unconfined Compressive Strength of 780 kN/m<sup>2</sup> to 800 kN/m<sup>2</sup>. 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 $\Gamma$	
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 $\Gamma$	
Stage 1 – Pre-existing Condition	Circular	24.8 % <sup>2</sup>	4.03	Acceptable
	Non-circular	23.8 % <sup>2</sup>	4.20	Acceptable
Stage 2 – Excavation of Foundations	Circular	27.9 % <sup>2</sup>	3.58	Acceptable Excavation exposed for minimum period
	Non-circular	27.9 % <sup>2</sup>	3.58	
Stage 3 – Excavation including site plant	Circular	26.1 % <sup>2</sup>	3.83	Acceptable Excavation exposed for minimum period
	Non-circular	23.2 % <sup>2</sup>	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 % <sup>1</sup>	4.15	Bench cut at time of fill placement
	Non-circular	22.6 % <sup>1</sup>	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 % <sup>2</sup>	4.48	Acceptable
	Non-circular	21.5 % <sup>1</sup>	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 % <sup>2</sup>	3.29	Acceptable

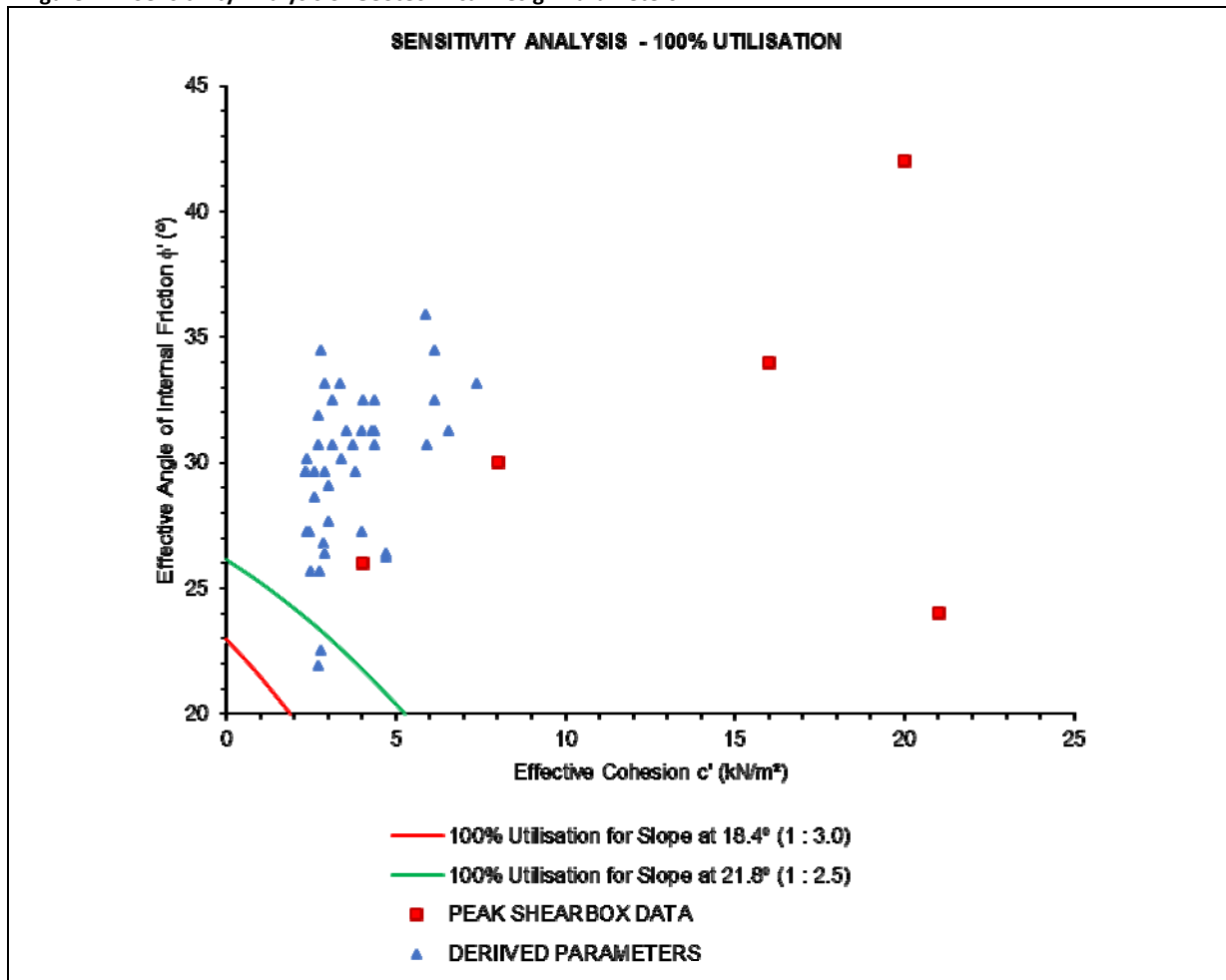
Construction Stage	Slip Surface	Slope Stability Result		Comments
		Maximum Utilisation	Minimum Over Design Ratio $\Gamma$	
Backfill to Abutment	Non-circular	35.0 % <sup>2</sup>	2.86	Acceptable
Stage 13 – Application of Highway UDL 20 kPa	Circular	30.4 % <sup>2</sup>	3.29	Acceptable
	Non-circular	35.0 % <sup>2</sup>	2.86	Acceptable

Notes: <sup>1</sup> Indicates highest degree of utilisation derived using DA 1/1

<sup>2</sup> 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



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 (21.8°), 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/m<sup>2</sup> has been used in conjunction with effective angles of friction between 20 and 28°. Two slope profiles have been used in this assessment, the first with a final landform profile of 1:3 (18.4°) and the second of 1:2.5 (21.8°). 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 (18.4°) for a combination of  $c'$  and  $\phi'$ ; and
- a solid green line represents 100% utilisation for a slope of 1:2.5 (21.8°) for combination of  $c'$  and  $\phi'$ .

As the value for effective cohesion ( $c'$ ) increases, the minimum value for effective friction ( $\phi'$ ) 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  $\phi'$  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  $\phi'$  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 ( $\Gamma$ ), a value in excess of 1. Following a traditional, pre EC 7 approach, then a  $\Gamma$  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 ( $\phi'$ ) of at least 26° (25.8°) is required, where there is no benefit from effective cohesion, for slopes of up to 1:2.5 (21.8°). When considering a shallower slope of 1:3 (18.4°), the minimum friction angle for the material will reduce to 23° (22.6°), where the effective cohesion is 0 kN/m<sup>2</sup>.

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  $\phi'$  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**

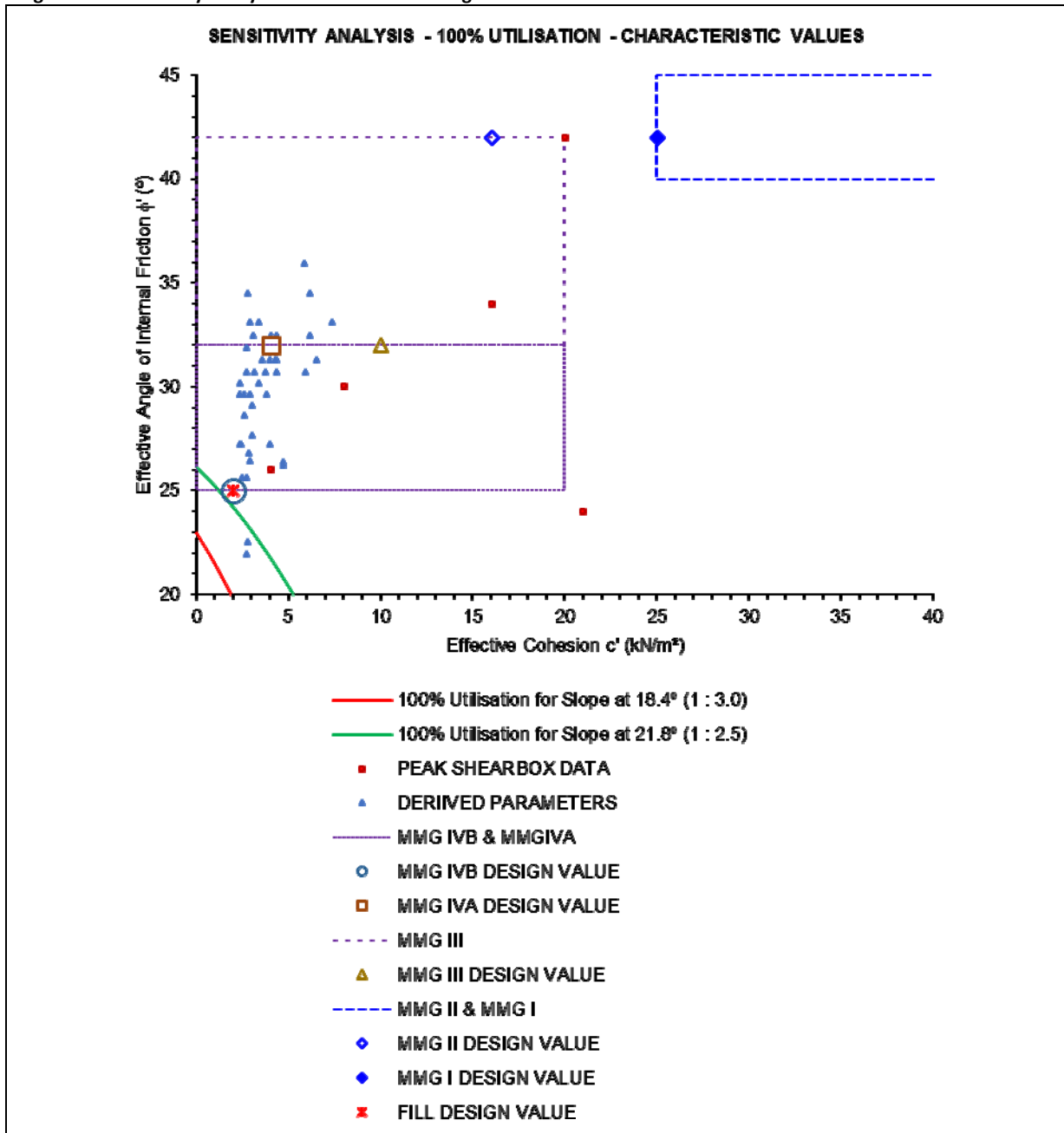


Figure 2.5 presents a series of zones covering the range of published values for the various weathering grades, as presented in brackets in Table 2.1. It should be noted that the selected characteristic values for the MMG II material is actually plotted outside of the published zone for the same weathering grade, due to the selection of a lower, more conservative value for effective cohesion.



For a minimum angle of friction of 25°, 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 (20.9°).

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 26°, 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 25° 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% ( $\Gamma = 1.29$ ) to 80.3% ( $\Gamma = 1.25$ ).

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% ( $\Gamma = 1.13$ ) to 95.25% ( $\Gamma = 1.05$ ).

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 21.8° 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 26°, there is no long-term reliance upon effective cohesion, for slopes of up to 1:2.5 (21.8°). Testing undertaken on recompacted samples of the proposed fill have returned values for effective cohesion in excess of 4 kN/m<sup>2</sup> with a maximum value of 80 kN/m<sup>2</sup>.

## **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' Mpa	k MN/m <sup>3</sup>	E Mpa	CBR %
Firm to stiff red brown CLAY MMG IVB <sup>1</sup>	12.5	32	43	4
Stiff red brown CLAY MMG IVA <sup>1</sup>	15.0	37	49	5
Class 2 <sup>2</sup> (Site won MMG IV <sup>1</sup> 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 <sup>3</sup>	10

Notes: <sup>1</sup> 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.

<sup>2</sup> The CBR and modulus of subgrade reaction values are based upon DMRB IAN 73/06 Rev 1 Table 5.1.

<sup>3</sup> 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  $0.01\text{m}^2/\text{MN}$  with a corresponding constrained modulus of M of  $100\text{MN/m}^2$ . Based on BS 6031:2009: Clause 7.6.3.2, the prediction of self-weight settlement can be estimate from:

Total self-weight settlement =  $[ 0.5 \times (\gamma_b \times H^2) ] / D$ , where:

$\gamma_b$  is the unit weight of the fill, taken as  $23.0\text{KN/m}^3$  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 (21.8°). 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 45° 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/m<sup>2</sup>. Derived correlated Oedometric Modulus values at the level of the foundation are in the order of 72 MN/m<sup>2</sup>. 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/m <sup>2</sup> with a target 70 kN/m <sup>2</sup>
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/m <sup>2</sup> and a target of 100 kN/m <sup>2</sup>
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/m <sup>2</sup> and a target of 70 kN/m <sup>2</sup>
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/m<sup>2</sup>.

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/m<sup>2</sup>.

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/m<sup>2</sup>. 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/m<sup>2</sup>.

### **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
Overturing Moment $M_{ovr}$ kNm/m	2,648	2,474	-123.9	-296	997	824	1,079	906
Satisfactory – Overturing	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-M10B-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 Geotechnical 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 500m<sup>3</sup>, 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 than 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 requirements defined for instrumentation and monitoring associated with the proposed construction of the M1 Overbridge.

**Hydrock Consultants Limited**

## **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.
	<b>INTRODUCTION</b>
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
	<b>PRELIMINARIES</b>
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
	<b>EARTHWORKS</b>
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

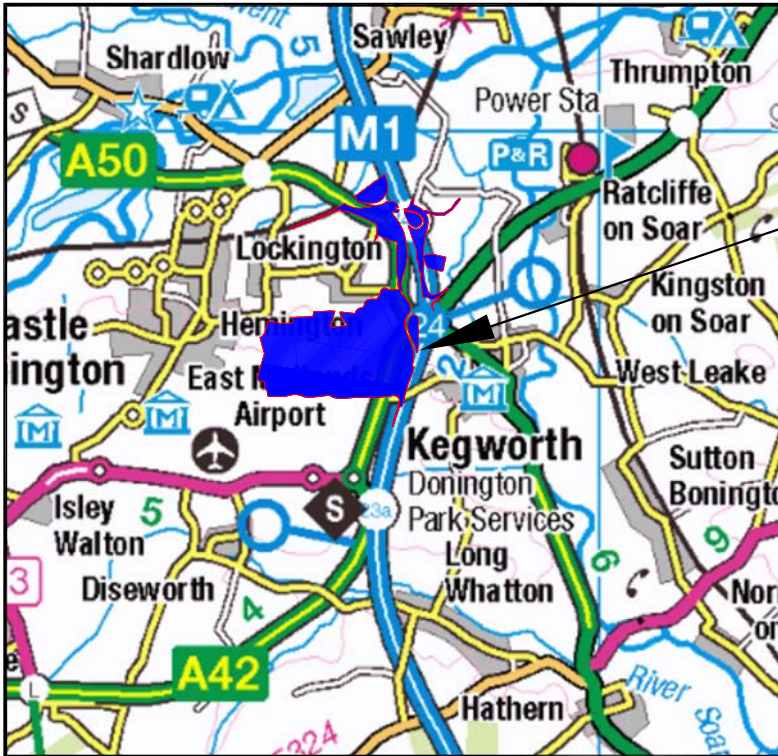
## APPENDIX 0/4: LIST OF DRAWINGS INCLUDED IN THE CONTRACT

List A of Employer's Drawing is included below:

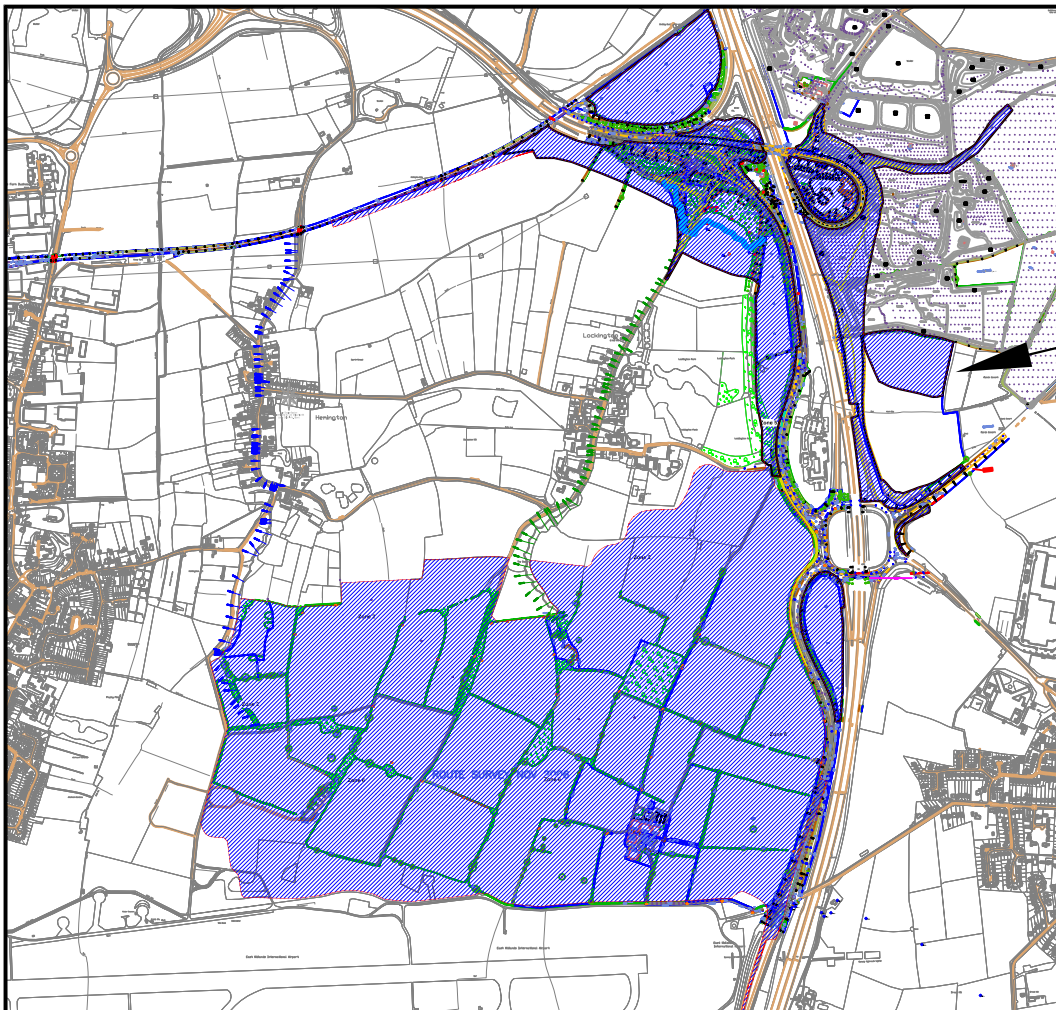
Drawing No.	Drawing Title
14792/D001	Site Location Plan
EMG-HYD-C4-M1OB-DR-GE-0636	M1 Overbridge Recorded Geology and Site Investigation Plan
EMG-HYD-HGT-ZZ-DR-GE-0641	Hydrock Report Coverage
EMG-HYD-C4-M1OB-DR-GE-0654	M1 Overbridge – General Earthworks Construction Sequence
<b>BWB</b>	
EMG-BWB-GEN-XX-SK-D-SK173 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
<b>Cass Hayward</b>	
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





THE SITE

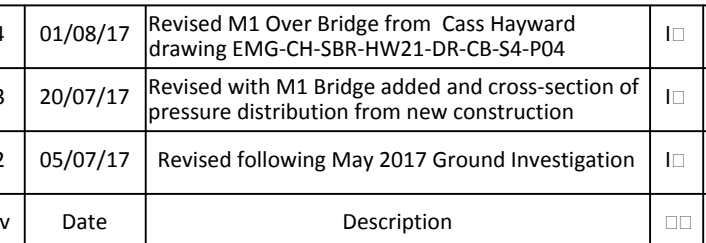
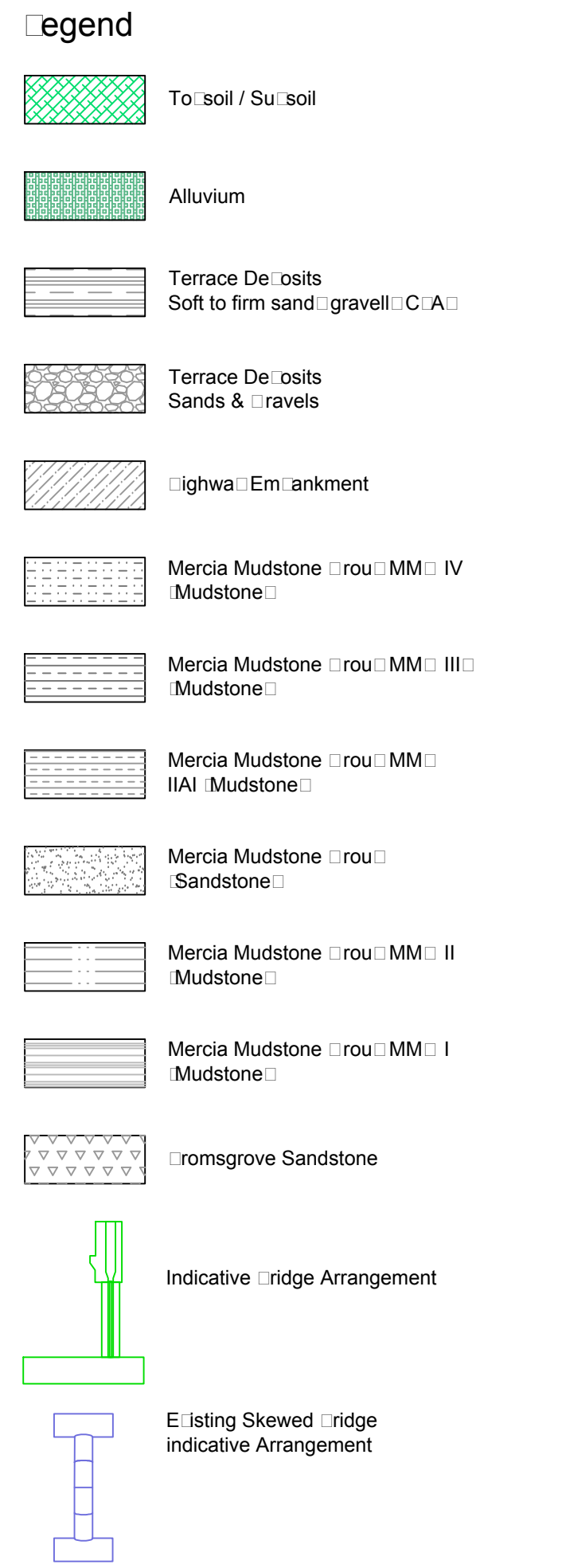
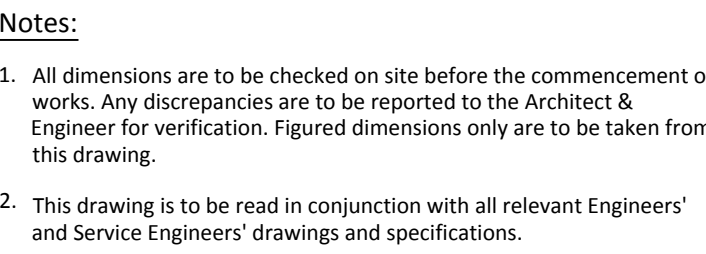


THE SITE

Scale = 1:25,000

Rev	Date	Description	By	Can
Architect:				
<div> <div>Hydrock Consultants Ltd</div> <div> <b>Hydrock</b> </div> <div>                     3 Hawthorn Park                      Hedderley Road                      Stratton, Northampton                      NN6 3LQ                      T +44 (0)1604 842888                      northampton@hydrock.com  <a href="http://www.hydrock.com">www.hydrock.com</a> </div> </div>				
Client:				
<div> <div>ROXHILL</div> </div>				
Project Title:				
<div> <div>EAST MIDLANDS GATEWAY</div> <div>STRATEGIC RAIL FREIGHT INTERCHANGE</div> </div>				
Drawing Title:				
Site Location Plan				
Drawing Status:				
FINAL				
Hydrock Job No:				
C14792				
Drawn	Checked	Scale @ A4	Date	Issue Date
SD	KD	See Drawing	31/05/16	31/05/16
Drawing Number:				Revision:
C14792/D001				-





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ROXHILL KEGWORTH LTD

Project Title:

EAST MIDLANDS GATEWAY  
STRATEGIC RAIL FREIGHT  
INTERCHANGE

Drawing Title:

M1 Overbridge  
Geological Ground Profile

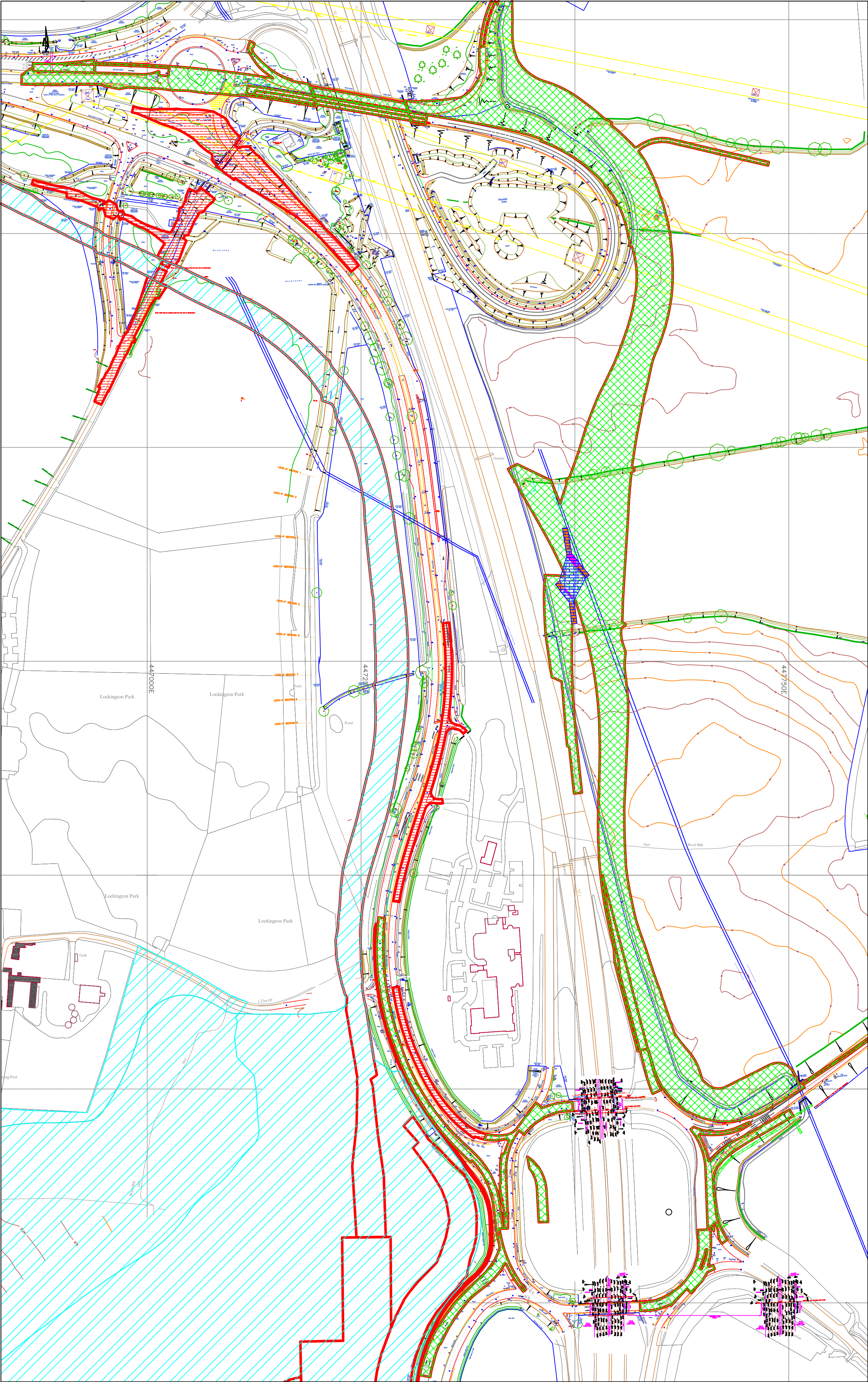
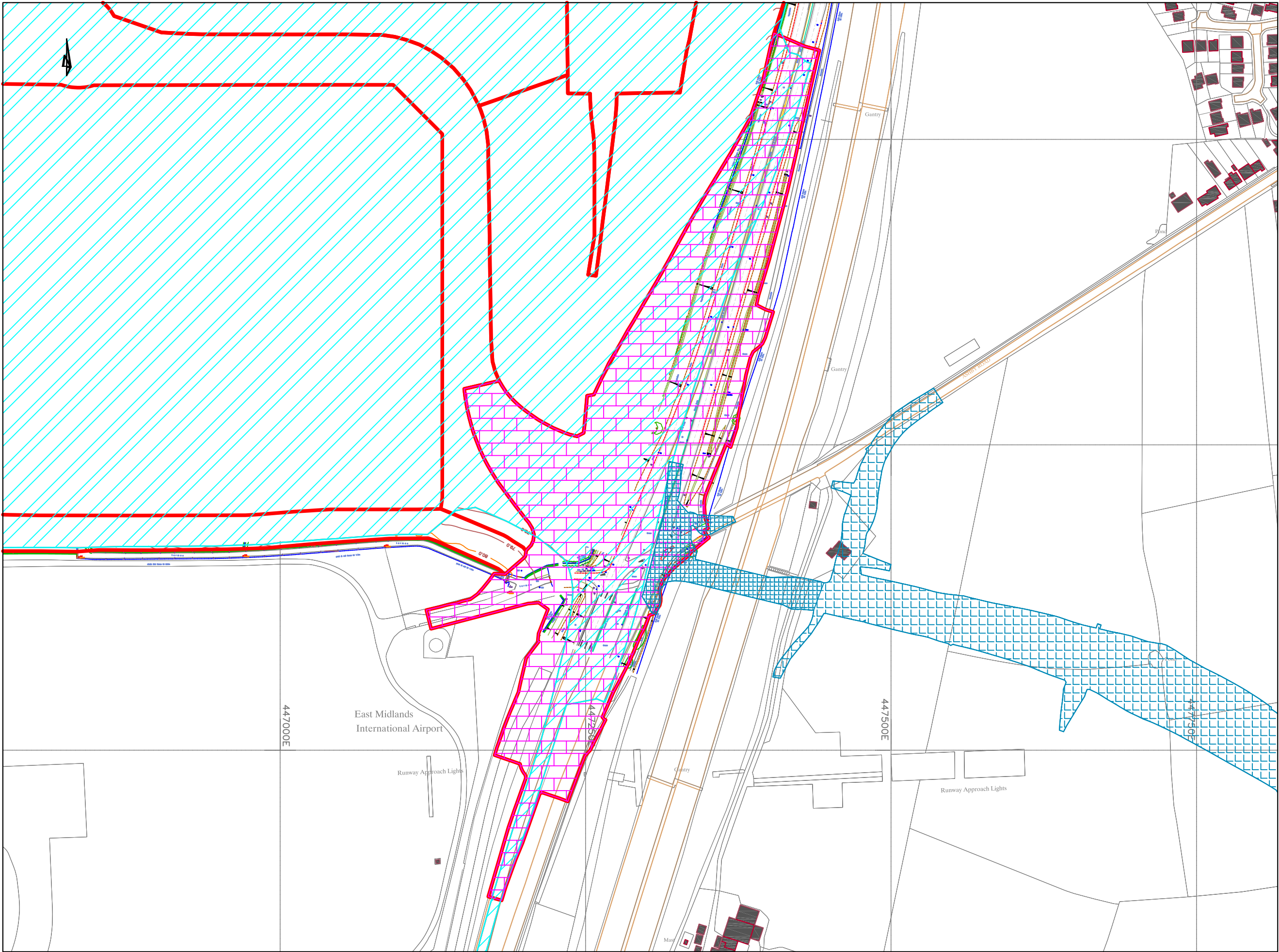
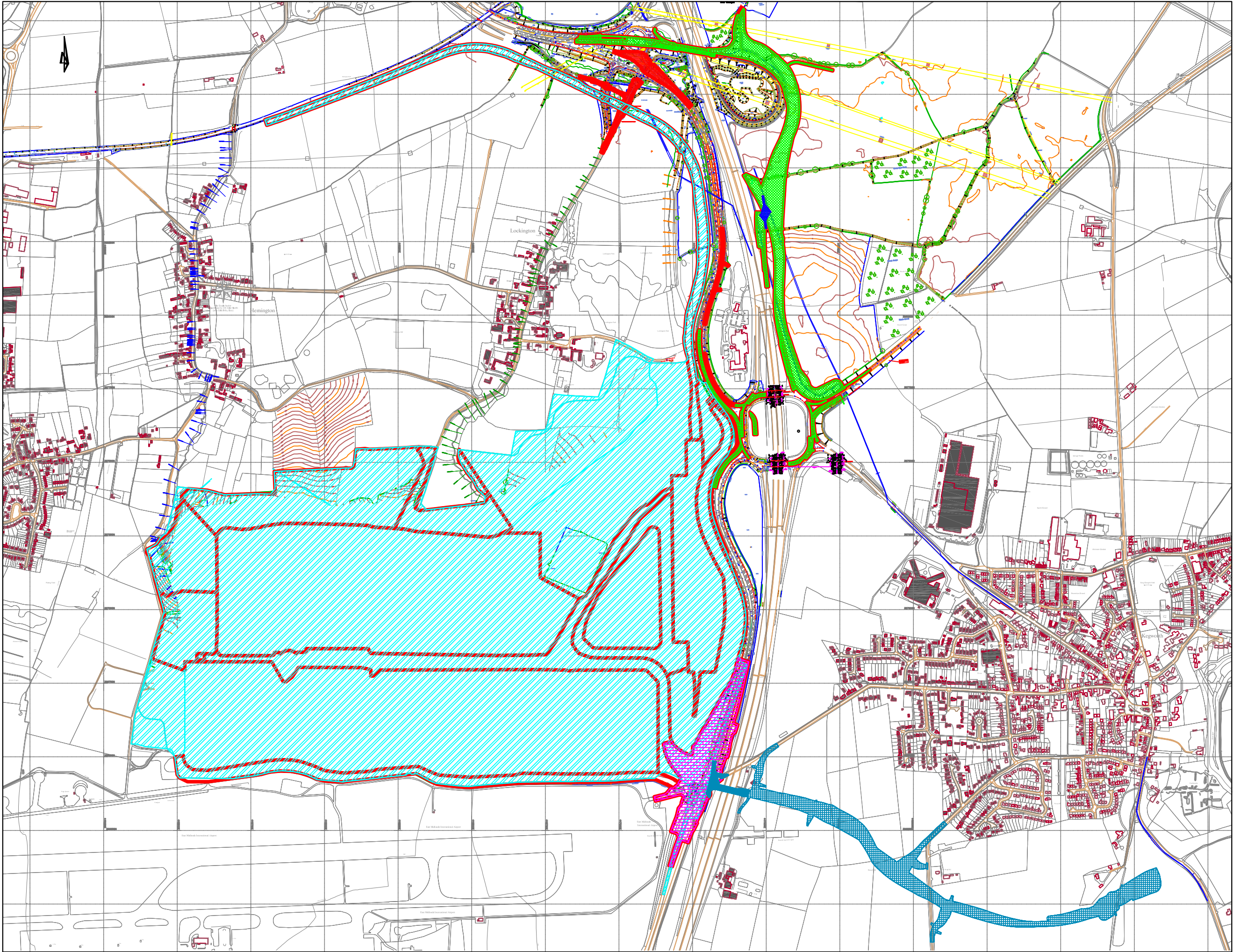
Drawing Status:	Revision:
S4	P4

Hydro Job No: C/14792

Drawn	Checked	Scale @ A1	Date	Issue Date
IG	LW	Not to Scale	16/01/17	16/01/17

Drawing Number:  
EMG-HYD-C4-M10B-DR-GE-0636





- 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.

**Legend**

**Geotechnical Interpretive Reports**

- EMG-HYD-HGT-XXX-RP-GE-0005  
Hydrock Report R/14792/005  
GJR Rail Terminal and A453 New Site Access
- EMG-HYD-HGT-SM2-RP-GE-0001 & 0002  
Hydrock Report R/14792/001 & 002  
GJR Lockington Quarry & Bridge 1
- EMG-HYD-HGT-SM2-RP-GE-0001 & 0002  
Hydrock Report R/14792/001 & 002  
GJR Lockington Quarry & Bridge 1
- EMG-HYD-HGT-SM2-RP-GE-0008Hydrock  
Report R/14792/008  
M1 Junction 24 & 24A Improvements
- EMG-HYD-HGT-XXX-RP-GE-0003  
Hydrock Report R/14792/003  
GJR East Midlands Gateway
- EMG-HYD-HGT-XXX-RP-GE-0003  
Hydrock Report R/14792/003  
GJR East Midlands Gateway
- EMG-HYD-HGT-C4-RP-GE-013  
Hydrock Report R/14792/013  
GJR M1 Overbridge and Kegworth Bypass

**Geotechnical Design Reports**

- EMG-HYD-HGT-SM1-RP-GE-0008  
Hydrock Report R/14792/008  
GJR A453 New Site Access
- EMG-HYD-HGT-SM2-RP-GE-0009  
Hydrock Report R/14792/009  
GJR Bridge 1
- EMG-HYD-HGT-SM2-RP-GE-0010  
Hydrock Report R/14792/010  
GJR Junction 24, 24A & A50
- EMG-HYD-HGT-XXX-RP-GE-0011  
Hydrock Report R/14792/011  
GJR Main Site Earthworks
- EMG-HYD-HGT-SM3-RP-GE-0012  
Hydrock Report R/14792/012  
GJR Lockington Local Access
- EMG-HYD-HGT-XXX-RP-GE-0014  
Hydrock Report R/14792/014  
GJR M1 Overbridge
- EMG-HYD-HGT-SM3-RP-GE-0015  
Hydrock Report R/14792/015  
GJR A6 Kegworth Bypass

P2	28/03/17	Up-dated to include M1 Overbridge and Kegworth Bypass	IG	CV
Rev	Date	Description	By	Ckd

Architect :

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Client :

**ROXHILL KEGWORTH LTD**

Project Title:  
**EAST MIDLANDS GATEWAY  
STRATEGIC RAIL FREIGHT  
INTERCHANGE**

Drawing Title:  
**Hydrock Geotechnical  
Interpretive and Geotechnical  
Design Report Coverage**

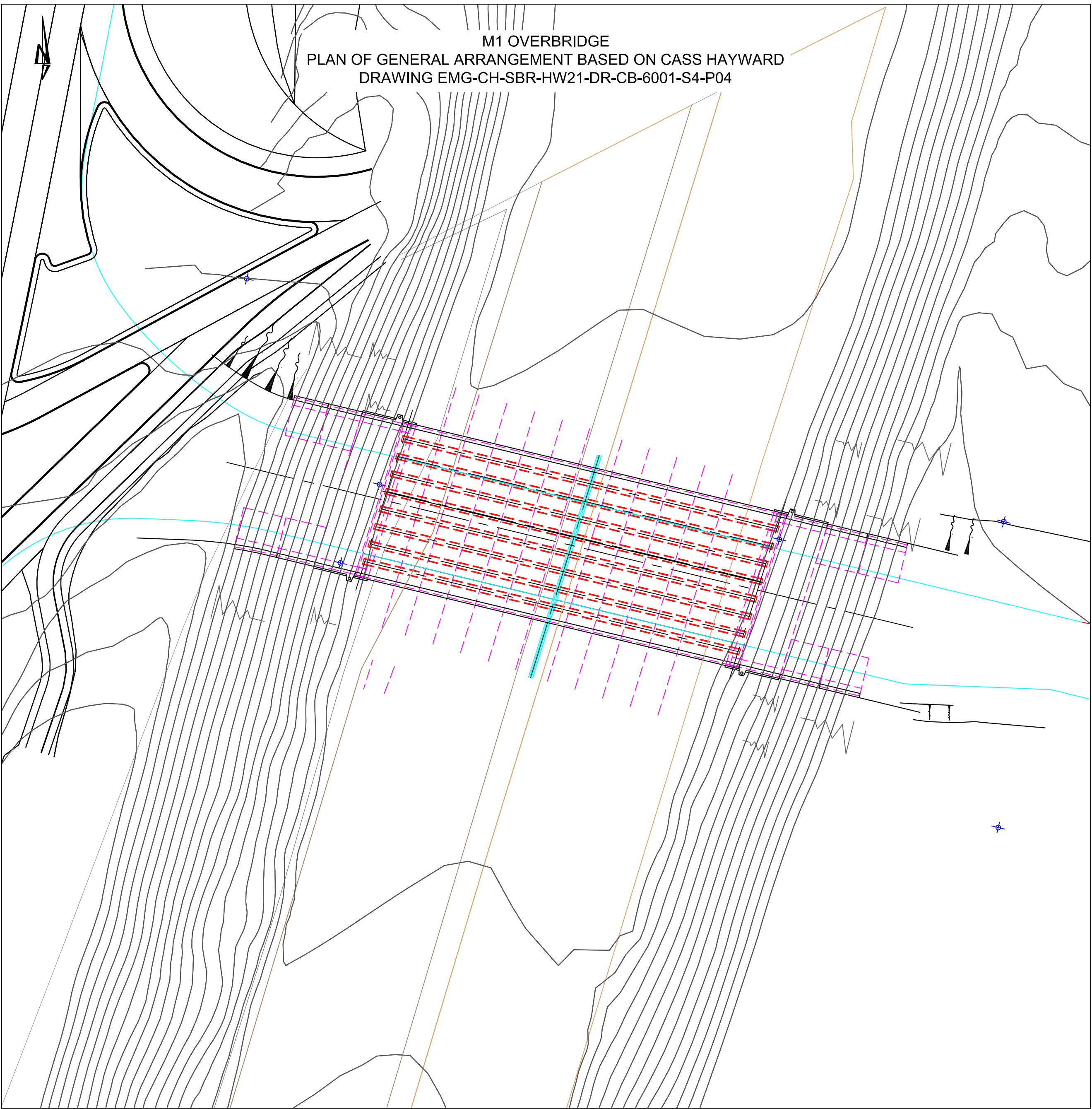
Drawing Status:	Revision:
<b>S2</b>	<b>P2</b>

Hydrock Job No: **C/14792**

Drawn	Checked	Scale @ A1	Date	Issue Date
IG	CV	Not to scale	19/02/17	03/03/17

Drawing Number:  
**EMG-HYD-HGT-ZZ-DR-GE-0641**



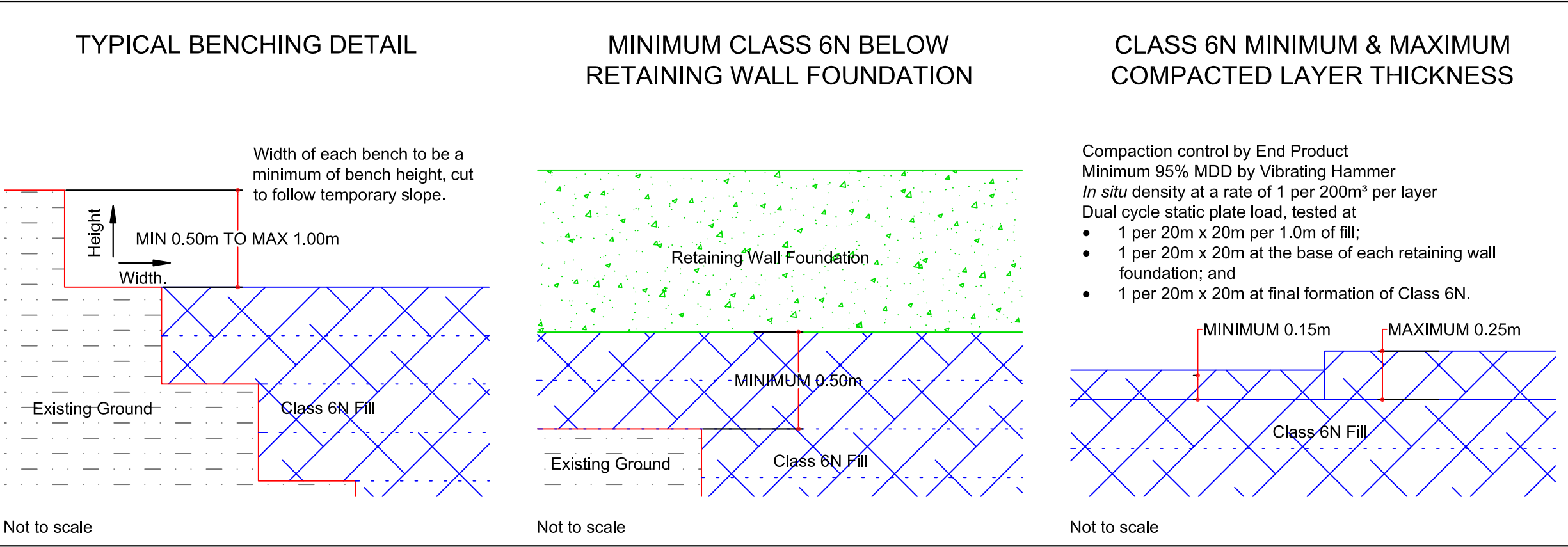


APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR  
Table 1/5.1 - Earthworks testing requirements

CLAUSE	WORKS, GOODS OR MATERIAL	TEST	FREQUENCY By Volume from Source	COMPLIANCE
Series 600	Earthworks			
601, 621 to 627, 640	Acceptable Limits			
	Class	General Description		
1	General granular fill	MC, Grading & UC (U) TPS Subgrade Sube OAKMCD (U) (O) (H) (M) (U) CBR at OMC (U)	1 per 500m³ 1 per 500m³ minimum 5 1 per 500m³ 1 per 500m³	SRW Table 62 Appendix 61 Decided Decided 5%
2	General cohesive fill	MC, PL Grading (U) OAKMCD Purble Density & HV (U) TPS Subgrade Sube Undisturbed Triaxial (U)	1 per 500m³ 1 per 1,000m³ 1 per 500m³ minimum 5 1 per 1,000m³	SRW Table 62 Appendix 61 Decided Decided
4	Fill to Landscape Areas	MC (U) Hand shear vane Grading (U)	1 per 500m³ 1 per 500m³ 1 per 1,000m³	Appendix 61 45 kN/m² Appendix 61
6	Selected granular fill	Grading, UC, MC (U) OAKMCD (U) (O) (H) (M) (U) CBR at OMC (U) Los Angeles (U) Organic Matter (U) SD, S, TPS, OS (U) Bulking Content (U) Disturbed shear parameters	1 per 500m³ 1 per 1,000m³ minimum 3 per source 1 per 1,000m³ 1 per 1,000m³ Source approval, as delivered to site 1 per 1,000m³ 1 per 1,000m³ 1 per 1,000m³ Source Approval and 1 per bridge abutment as delivered to site	SRW Table 62 Appendix 61 Decided Decided ≥ 15% for GF ≥ 15% for WA ≤ 10% for GF ≤ 10% for WA ≤ 2% Decided, to Inform Concrete Class Class 6/3 only Appendix 61 Decided

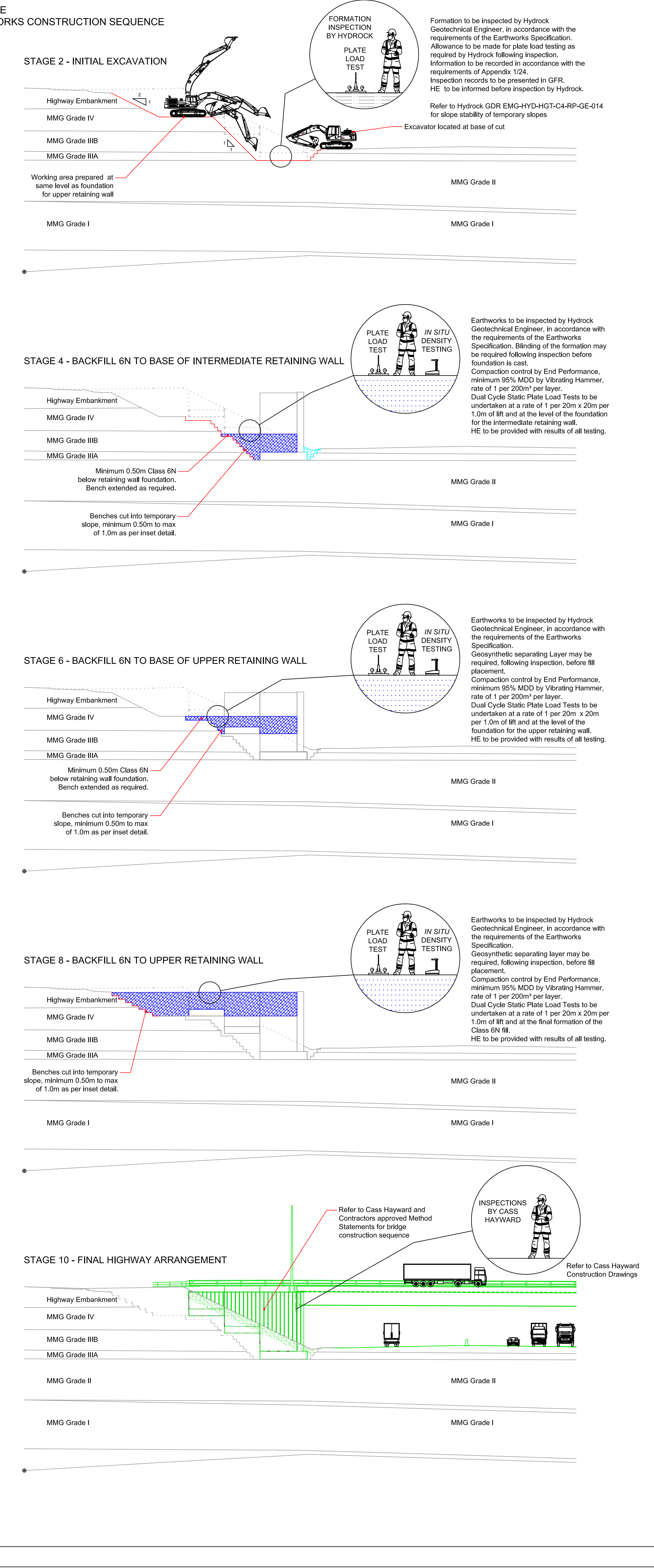
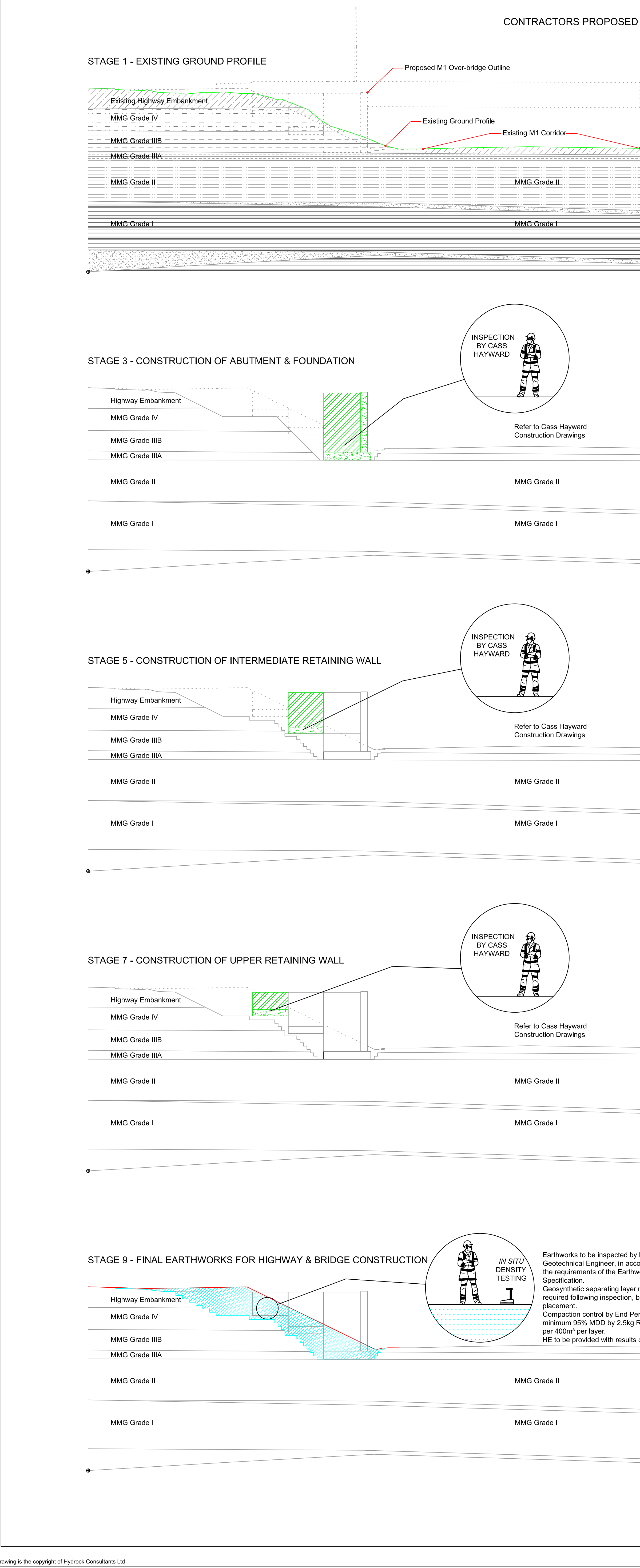
APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR  
Table 1/5.1 - Earthworks testing requirements

CLAUSE	WORKS, GOODS OR MATERIAL	TEST	FREQUENCY By Volume from Source	COMPLIANCE
Series 600	Earthworks			
601, 621 to 627, 640	Acceptable Limits			
	Class	General Description		
7	Selected cohesive fill	MC, PL Grading (U) OAKMCD Purble Density & HV (U) SD, S, TPS, OS & Organic Matter (U) Disturbed shear parameters (U)	1 per 500m³ 1 per 1,000m³ minimum 3 per source 1 per 500m³ minimum 5 per source Source Approval	SRW Table 62 Appendix 61 Decided Decided 4% ± 20°
9	Standard material	Pulverisation Beaking rate, (CBR) (repeated) MCV (U)	1 per 625m³ 1 per day 1 per 250m³ max 5 per day	20% VA, MDT BS 1904 15% To permit comparison, in per cent max design MDT
612	Compaction of Fills	Method Compaction Field Dry Density (U) In situ CBR granular fill only In situ HV-C cohesive fill only Compaction Mtd Dual Cycle Plate Load Test Field Dry Density (U) In situ CBR granular fill only In situ HV-C cohesive fill only Compaction Mtd Dual Cycle Plate Load Test	1 per 400m³ per layer 1 per 400m³ per layer 1 per 400m³ per layer 1 per method, per source. To be witnessed by Hydropack 1 per 20m x 20m per 1m of fill and at final earthworks formation 1 per 200m³ per layer 1 per 20m x 20m per 1m of fill, loss of foundations and at final formation. 1 per method, per source. To be witnessed by Hydropack 1 per 200m³ per layer 1 per method, per source. To be witnessed by Hydropack 1 per 20m x 20m per 1m of fill, loss of foundations and at final formation.	95% MDD Appendix 61 95% MDD Appendix 61 Equivalent CBR Appendix 61 95% MDD Appendix 61 ≤ 5% air voids Appendix 61 To confirm method In suitable Equivalent CBR Appendix 61 To confirm method In suitable Equivalent CBR Appendix 61

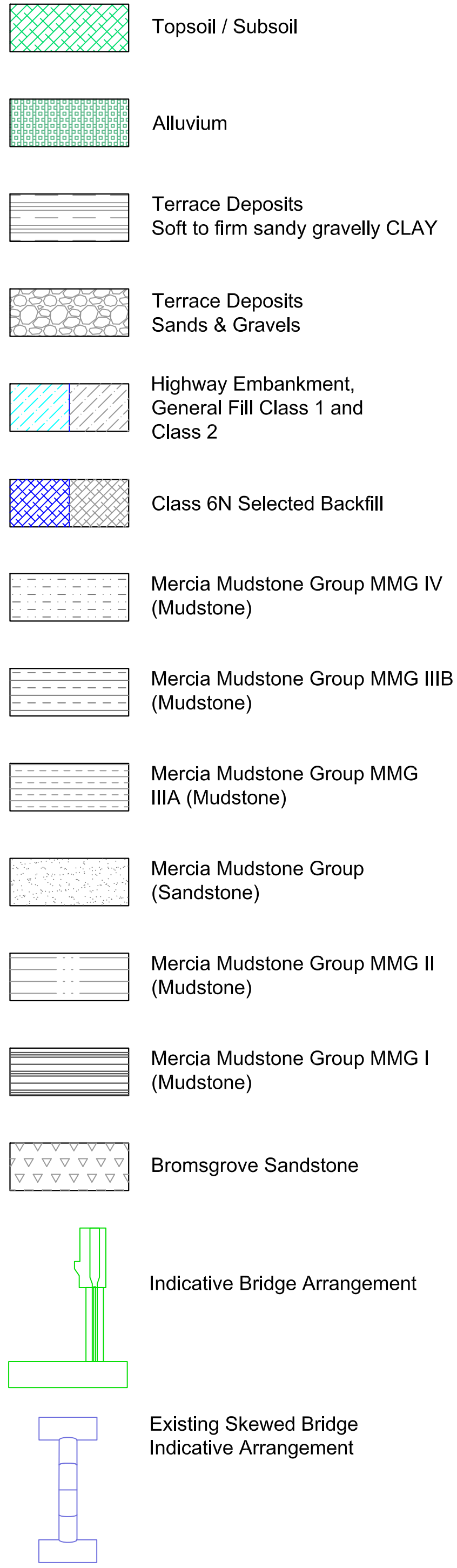


Notes:

- 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.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- As defined in Appendix 1/24, the Contractor is responsible for providing a information to Hydropack, including an up to date review of the works completed. It is recognised by Hydropack that tests may have been carried out in the preceding week for which no results have been provided. However the report reference and test 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 required by Contractor); and
  - the results of the testing, compliance with the Specification and any comments relating to the test.
- 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 recordings of test constructions or foundations), placement and compaction methodology and plant used;
  - qualified 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 features or operation relevant to the earthworks including any instrumentation and the location of final areas and control levels; and
  - all correspondence with Statutory Authorities
- 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 Hydropack as to the exact requirements to be met.
- 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.
- 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.
- 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.
- The design of all temporary works is the responsibility of the Contractor.
- The general sequence set out on this drawing is to be undertaken for the Western and the Eastern Embankment.
- 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.
- 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.
- 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



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 bending and geosynthetic material.	IG	CV
Rev	Date	Description	By	Chd

Architect:

Client:

ROXHILL KEGWORTH LTD

Project Title:

EAST MIDLANDS GATEWAY - STRATEGIC RAIL FREIGHT INTERCHANGE

Clients :

ROXHILL KEGWORTH LTD

Project Title:  
EAST MIDLANDS GATEWAY -  
STRATEGIC RAIL FREIGHT  
INTERCHANGE

Drawing Title:  
M1 Overbridge - General  
Earthworks Construction  
Sequence

Drawing Status:  
S4

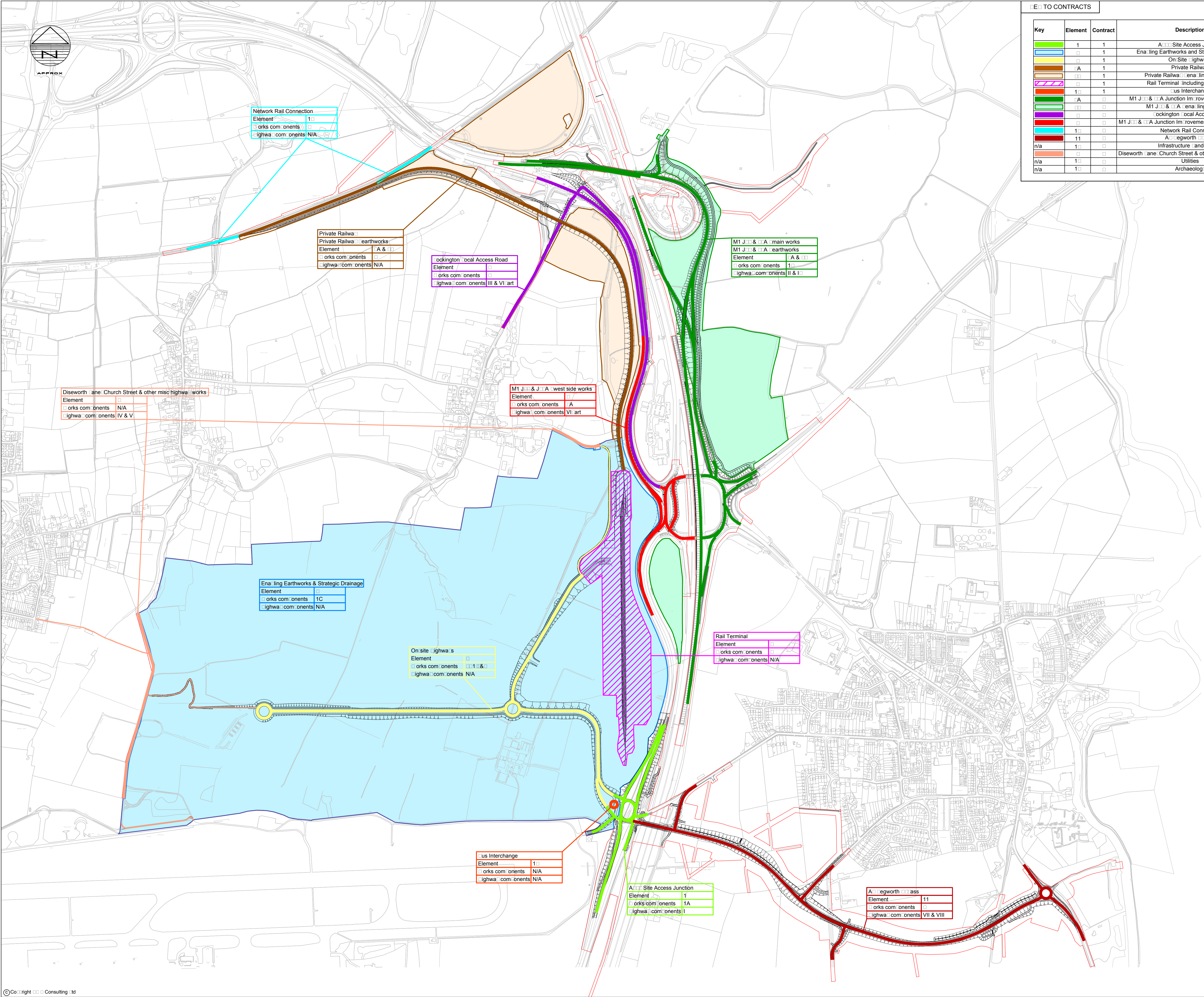
Revision:  
P3

Hydropack Job No:  
C/14792

Drawn	Checked	Scale @ A3	Date	Issue Date
IG	CV	Not to scale	01/08/17	02/08/17

Drawing Number:  
EMG-HYD-C4-M1OB-DR-GE-0654





ELEMENTS TO CONTRACTS						
Key	Element	Contract	Description	Principal Adopting Authority	Work Components NT/7/11/S/10/11	Highway Components NT/7/11/1/11/11/11
	1	1	A11 Site Access Junction	Highways England	1A	I
		1	Enabling Earthworks and Strategic Drainage	n/a	1C	n/a
		1	On Site Highways	n/a	11/11/11/11/11/11	n/a
	A	1	Private Railways	n/a		n/a
		1	Private Railways enabling earthworks	n/a		n/a
		1	Rail Terminal including tracks etc.	n/a		n/a
	1	1	Bus Interchange	n/a	n/a	n/a
	A		M1 J10 & J11A Junction Improvement main works	Highways England	1	II & I
			M1 J10 & J11A enabling earthworks	Highways England	1	Various
			Lockington Local Access Road	Leicestershire CC		III & VI (part)
			M1 J10 & J11A Junction Improvement J11 west side works	Highways England	A	VI (part)
	1		Network Rail Connection	Network Rail		n/a
	11		A11 Egworth Class	Leicestershire CC		VII & VIII
n/a	1		Infrastructure landscaping	n/a	n/a	n/a
			Diseworth Lane Church Street and other misc highway works	Leicestershire CC	n/a	IV & V
n/a	1		Utilities	n/a	n/a	n/a
n/a	1		Archaeology	n/a	n/a	n/a

NOTES

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/VERIFIED ON SITE. IF IN DOUBT AS FOLLOWS:

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS' ENGINIERS AND SPECIALISTS' DRAWINGS AND SPECIFICATIONS.

ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE.

ALL DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

P0	11/11/11	TAKE AMENDED	SR	SR
P0	11/11/11	TAKE AMENDED	SR	SR
P0	11/11/11	TAKE AMENDED	SR	SR
P0	11/11/11	NUMERICAL AMENDED	SR	SR
P0	11/11/11	ADDED	SR	SR
P1	11/11/11	PRELIMINARY ISSUE	SR	SR
Rev	Date	Details of issue / revision	Drw	Rev

ISSUES & REVISIONS

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Client

**ROXHILL**

Project Title

**EAST MIDLANDS  
GATEWAY STRATEGIC  
RAIL FREIGHT  
INTERCHANGE**

Drawing Title

**CONTRACT ASSEMBLY**

Scale	1:1000	Drawn	S. Wilditch
Size	A1	Reviewed	S. Wilditch

Drawing Status

**PRELIMINARY**

Drawing No.	Revision
<b>NTH/209/SK173</b>	<b>P6</b>