

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

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ENVIRONMENTAL STATEMENT

Volume 2 Technical Appendices

Appendix 14G

Geotechnical Statement of Intent for Highway Works

July 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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SEGRO

INFRASTRUCTURE

East Midlands Gateway 2
SEGRO

Geotechnical Statement of Intent for Works
Affecting National Highways

BWB Ref. No. 220500
GDMS No. TBC

East Midlands Gateway 2
SEGRO

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1. INTRODUCTION

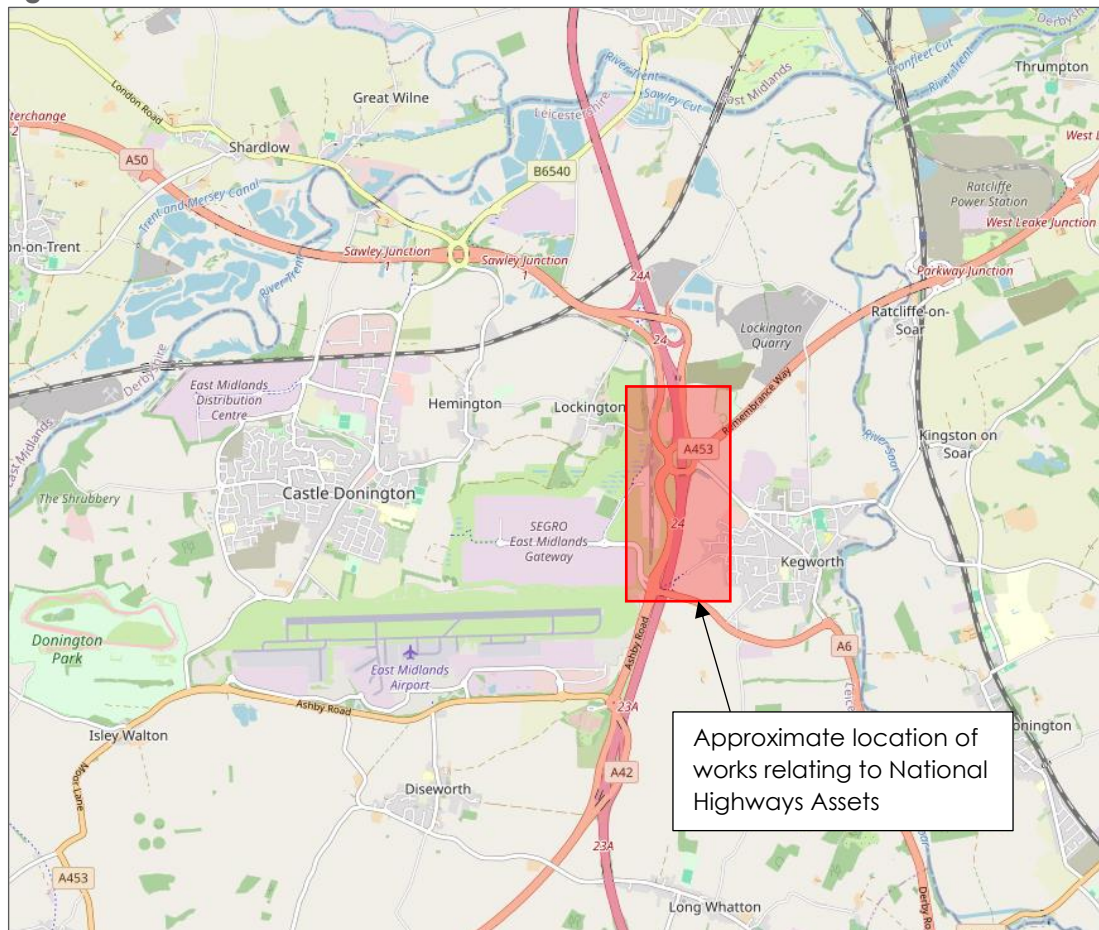
Instruction

- 1.1 BWB Consulting Ltd (BWB) has been appointed by SEGRO (the Client), to undertake a review of, and submit proposals for, highway improvement works that are necessary for the East Midlands Gateway 2 (EMG2) development, located near East Midlands Airport, Leicestershire.

Site Location

- 1.2 The Ordnance Survey grid reference at the approximate centre of the scheme is 447539(E), 327637 (N). The approximate location of the proposed works relating to NH assets is shown on **Figure 1.1**.

Figure 1.1: Site Location Plan.



Scheme Overview

- Name of Project: East Midlands Gateway 2
- Overseeing Organisation: National Highways (NH)
- Overseeing Organisation Ref. No: GDMS No. TBC
- Principal Contractor: TBC.

- 1.3 A Development Consent Order (DCO) will authorise the Applicant to construct and operate a Strategic Rail Freight Interchange (SRFI), which is a "nationally significant infrastructure project", as defined in the Planning Act 2008. The DCO is anticipated to take place in the third quarter of 2026.
- 1.4 The East Midlands Gateway 2 site is proposed on land to the southwest of the M1 Junction 24, as shown on **Drawing** EMG2-BWB-GEN-XX-SK-CH-SK023. The proposals include significant improvements to M1 J24.
- 1.5 The junction upgrade and associated works consist of the following:
- 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.
 - Alterations to the existing M1 northbound exit slip road.
 - Widening of the A50 to the north of the new merge from the link road.
 - Construction of a lane drop on the A50 westbound.
 - Widening of the currently single-lane section at the end of the A50 eastbound carriageway (actually running southwards at this point) from one to two lanes.
 - Widening of the subsequent section of the end of the A50 eastbound carriageway - between where it is joined by the J24a M1 southbound exit slip-road and the J24 roundabout - from two to three lanes.
 - Widening of the A453 southbound to provide two right turning lanes into the existing EMG1 development site.
 - Construction of new gantries.
 - Demolition of old / alterations of gantries and gantry-mounted signs and signals.
 - Demolition of the Ashby Road M1 overbridge.
 - Alterations to the screening bunding between M1 junction 24 and the EMG1 rail terminal including noise attenuation measures.
 - Installation of traffic signs.
- 1.6 There will also be some works on the local authority owned section A453 to the south of East Midlands Airport, including a new roundabout at the proposed EMG2 entrance.
- 1.7 This report comprises a Statement of Intent (SOI) in accordance with National Highways' Design Manual for Roads and Bridges, CD622 'Managing Geotechnical Risk' and relates to the proposed road improvement works falling within National Highways' (NH) area of authority.

1.8 Drawings referenced in this report are listed below.

Table 1.1: Scheme Drawings.

Drawing no.	Title
EMG2-BWB-GEN-XX-SK-CH-SK023	Components Of The Proposed Development

2. OBJECTIVES

2.1 This Statement of Intent aims to fulfil the requirements of National Highways' Design Manual for Roads and Bridges, Volume 4, Section 1: CD622 'Managing Geotechnical Risk'.

2.2 The objectives of this report are to:

- Explain the extent of the proposed works;
- Identify the preliminary geotechnical risks associated with the delivery of the project;
- Provide proposals and programme for additional studies and investigations that will be required to move the project forward in accordance with CD 622; and
- Provide an estimated programme for further reporting and physical investigations associated with the project.

3. EXISTING INFORMATION

3.1 The following existing sources of information are available and will be discussed in a future Preliminary Sources Study Report PSSR:

- Geological mapping by the British Geological Survey (the online Geology of Britain viewer; 1:50,000 map no. E141 Loughborough, Solid & Drift; and 1:10,000 Series Sheets SK42SE and SK42NE, Solid & Drift);
- Hydrogeology mapping by the British Geological Survey (the online Geology of Britain viewer and 1:625,000 map, Triassic rocks (undifferentiated));
- Historical borehole records available through the BGS online 'Geology of Britain viewer', including investigations associated with the M1 construction and upgrade to smart motorway;
- GDMS data including drainage, earthwork type and condition, etc.;
- Existing highway geotechnical reports available through GDMS;
- Service / utilities records and drawings;
- Envirocheck searches and historical mapping;
- Coal Authority mapping;
- UXO online maps;
- Planning portals from local councils;
- Local council mineral strategies.

3.2 Additional records may be available through National Highways England Area 7 (Derbyshire, Leicestershire, Lincolnshire, Nottinghamshire, Northamptonshire, Rutland).

3.3 The National Highways Department Representative will be contacted to request the following (where not available through GDMS or other Highway databases):

- Geotechnical inspection, condition, and maintenance records;
- Details of recorded earthworks defects including extent and location; and
- Structural inspection and condition records for existing structures.

4. GEOTECHNICAL RISK

- 4.1 The key geotechnical risks that are envisaged for the project are detailed in the Preliminary Geotechnical Risk Register contained in **Appendix 1**.
- 4.2 In summary, the main potential geotechnical risks identified at this stage are as follows:
- Foundations for the new structure where the proposed link road crosses the existing A453 approach to the Kegworth Interchange, in close proximity to the roundabout itself and the existing A50 which are presumed to remain live during the works expect for very limited traffic management closures;
 - Cut and/or fill operations - slope instability / variable ground conditions associated with upgrading and constructing embankments associated with the junction alterations; including working parallel to the live M1.
 - Potential for unforeseen ground conditions, for instance localised areas of soft and/or compressible superficial deposits (Alluvium and Glaciofluvial Deposits) at new earthworks and road alignment locations leading to differential or excessive settlements;
 - Potential for high water table / artesian conditions in the superficial Alluvial or Glaciofluvial Deposits;
 - Inadequate consideration of construction sequencing;
 - Inadequate temporary works; and
 - Underground and/or overhead services.
- 4.3 It is proposed that the Scheme is classified as Geotechnical Category 2, as defined in CD622 and BS EN 1997-1 Eurocode 7, as no exceptional risks or abnormal load conditions are anticipated.

5. PROPOSED STUDIES AND INVESTIGATIONS

- 5.1 Following acceptance of this Statement of Intent (Sol), it is proposed that BWB produces a Preliminary Sources Study Report (PSSR) where available information for the site area will be reviewed with a focus on the new roads, earthworks and structures associated with the highway works required.
- 5.2 It is considered that an intrusive investigation with a geotechnical focus will be required to inform design of key embankments, new road alignments and associated structures. The specific requirements of the investigation will be determined by the PSSR and presented in the Ground Investigation Scope Report (GISR). The proposed investigation may be phased, with some being progressed more rapidly to give confidence in high-level planning decisions ahead of DCO. „ The purpose of the investigation is to assess:
- Ground and groundwater conditions beneath the proposed new road/earthworks footprint;
 - Geotechnical engineering parameter values for design;
 - Suitability of site-won soils for re-use as engineered fill; and
 - Chemical concentrations in soil and groundwater to inform geo-environmental risk assessments.
- 5.3 BWB's current appointment extends to the conclusion of detailed design, and the following reports are proposed in accordance with CD622 requirements:
- Preliminary Source Study Report (PSSR);
 - Ground Investigation Scoping Report (GISR);
 - Ground Investigation Report (GIR); and
 - Geotechnical Design Report (GDR).
- 5.4 It is anticipated that ground investigation works on National Highways assets will follow the GISR and be reported in the subsequent GIR and incorporated into the detailed design.
- 5.5 After completion of the design and construction works, subsequent elements of the CD622 process will have to be procured, as follows:
- Geotechnical Feedback Report (GFR) and associated geotechnical site inspections.
- 5.6 Segro is aware of the role and duty of a scheme Designer's Geotechnical Adviser' (DGA) as set out in CD622 and will not contractually restrict the DGA from performing his or her duties.
- 5.7 Any geotechnical construction works will be overseen either by the existing BWB Consulting DGA, or by an organisation capable of and instructed to undertake the role of DGA.

6. SPECIALIST CONSULTATION

6.1 It is not anticipated that specialist consultation will be required.

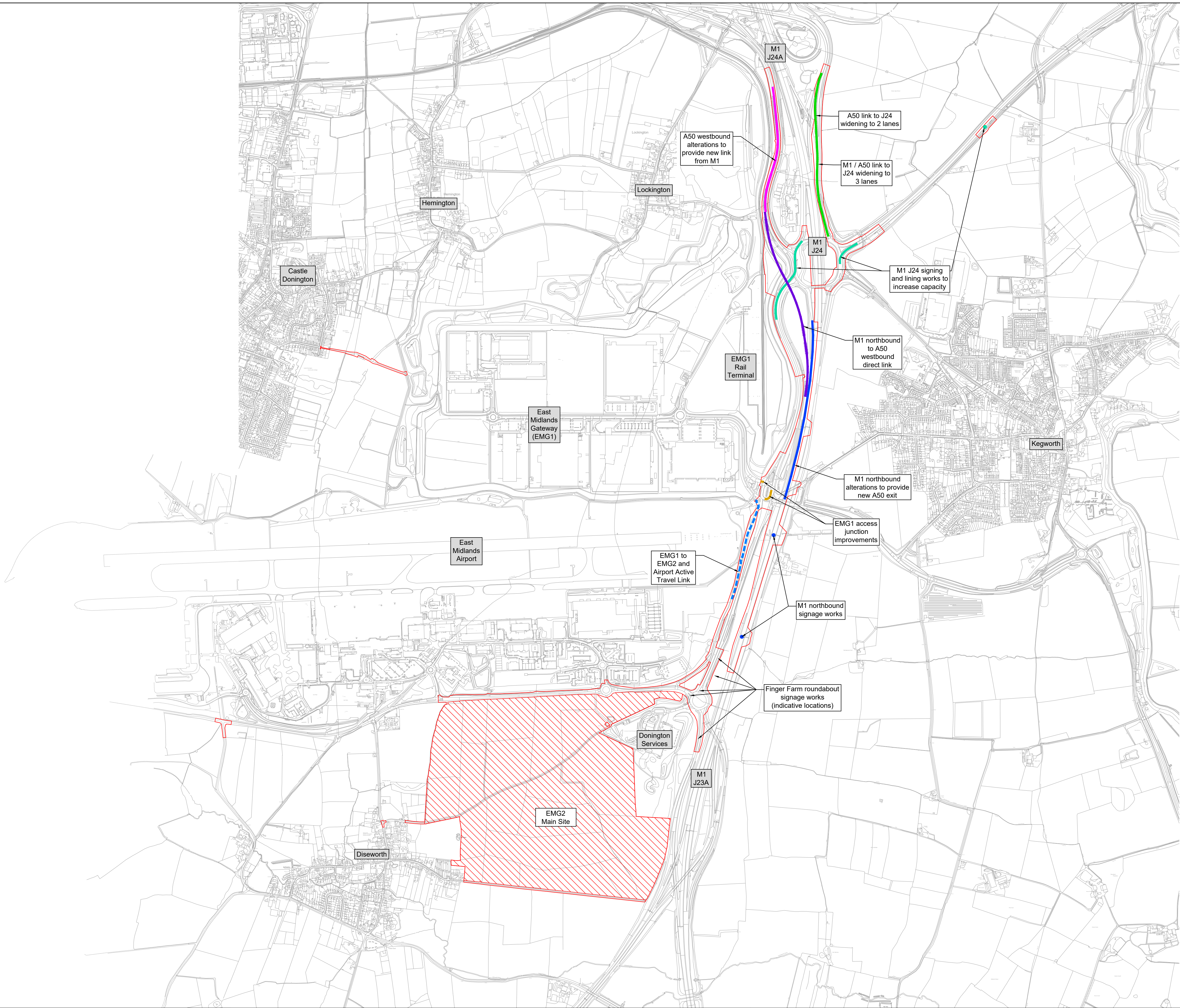
7. PROGRAMME

7.1 A preliminary indication of the anticipated timeline is presented in **Table 7.1** below.

Table 7.1: Preliminary Program.

Statement of Intent (SOI)	March 2025
Preliminary Source Study Report (PSSR)	May 2025
Ground Investigation Scoping Report (GISR)	May 2025 (issued as Annex to PSSR, subject to permissions confirmed by National Highways)
Proposed Ground Investigation Site Works on National Highways and Third Party Land (including mobilisation and associated permissions)	Autumn 2026
Ground Investigation Report (GIR)	Winter 2026
Detailed design period	Autumn 2026 to June 2027 (Note design work affecting Local Authority assets outside National Highways boundary to commence Sept 2025)
Geotechnical Design Report (including Earthworks Specification)	January 2027 to June 2027
Construction Period	Autumn 2027 to April 2029
Geotechnical Feedback Report (GFR)	Late 2029

DRAWINGS



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

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ISSUES & REVISIONS					
Rev	Date	Details of issue / revision	Drw	Rev	
P01	04.03.25	Issued for information	SRH	SRH	



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Client					
Drawn:	S. Hilditch	Reviewed:	S.Hilditch		
BWB Ref:	220500	Date:	04.03.25	Scale@A1:	1:10,000

Project Title	
EAST MIDLANDS GATEWAY 2 (EMG2)	
Drawing Status	
FOR INFORMATION	

Drawing Title			
OVERVIEW OF WORKS ON THE STRATEGIC ROAD NETWORK			
Project - Originator - Zone - Level - Type - Role - Number			
EMG2-BWB-GEN-XX-SK-CH-SK037			
Status	S2	Rev	P01

APPENDICES

APPENDIX 1: Geotechnical Risk Register

Risk Classification and Required Action

Likelihood		Severity				
		1	2	3	4	5
		Minor	Moderate	Serious	Major	Catastrophic
1	Extremely unlikely	1	2	3	4	5
2	Unlikely	2	4	6	8	10
3	Likely	3	6	9	12	15
4	Extremely likely	4	8	12	16	20
5	Almost certain	5	10	15	20	25

Risk Classification	
Low (1-8)	Ensure assumed control measures are maintained and reviewed as necessary.
Medium (9-19)	Additional control measures are needed to reduce the risk rating to a level that is equivalent to a test of “reasonably required” for.
High (20-25)	Activity not permitted. Hazard to be avoided or risk to be reduced to tolerable level.

The risk classification is the product of the likelihood and the severity

Potential Severity of Harm Occurring		
1	Minor	Minor damage or loss - (no human injury)
2	Moderate	Moderate damage or loss - (slight injury or illness)
3	Serious	Substantial damage or loss - (Serious injury or illness)
4	Major	Major damage or loss - (Fatal injury)
5	Catastrophic	Catastrophic loss or damage - (Multiple fatalities)

The purpose of the register is to provide an assessment of the risk to the project posed by common ground related problems and identify suitable mitigation measures to control the risk to an acceptable level. The risk register will be developed and refined as the geotechnical design and assessment progresses such that the register will allow the management of the geotechnical risks.

The list of hazards identified in this Geotechnical Risk Register is non-exhaustive and has been selected on specific critical hazards that are relevant to this scheme having regard to health and safety, environmental, works program and cost considerations. The degree of risk is determined by combining the likelihood of the hazard occurring and the severity of its Impact: Risk = Likelihood x Severity that the hazard and associated mitigation will cause if it occurs. The scale against which the likelihood and severity are measured, and the resulting degree of risk determined, are presented below. The register is a live document that will be updated as the project develops to reflect additional data and experience.

No	Hazard	Consequence	Risk Owner	Likelihood	Severity	Risk	Mitigation	Likelihood	Severity	Risk
1	Ground conditions on site vary from those considered in the design.	Foundation depth may be over cautious and difficult to install or under-cautious leading to potential instability.	Designer	3	3	9	Undertake PSSR to determine scope of ground investigation required.	1	3	4
2	Working near live highway / footway / cycleway	Potential danger to traffic, pedestrians or cyclists	Contractor	2	4	8	Adopt a safe system of work.	1	4	4
3	Underground services / utilities	Damage to utilities could pose a potential danger to operatives. Inconvenience to utility customers. Delays to programme and reputational damage.	Contractor	3	4	12	Service plans to be consulted and services to be drawn on location-specific plans and section drawings. Services to be traced on site. Standard good site practice to be adopted.	1	4	4
5	Cross Carriageway Duct: Potential for settlement or heave under highway pavements due to trenchless crossing installations.	Safety of road users, cost and inconvenience of repair.	Designer	2	3	6	Design and settlement prediction by established methods. Survey monitoring to be undertaken before, during and after installation of trenchless crossings.	1	3	3
6	Cross Carriageway Duct: Loss of ground due to erosion or flush escape during formation of crossing.	Removing material with potential for surface settlements.	Contractor	3	3	9	Contractor to monitor pressures and flush return to identify any losses with potential to modify mix or grout up if encountered.	2	2	4

No	Hazard	Consequence	Risk Owner	Likelihood	Severity	Risk	Mitigation	Likelihood	Severity	Risk
7	Cross Carriageway Duct: Potential for variation in ground conditions.	Deviation of trenchless crossing during installation, abandonment of crossing, program, cost, potential adverse effects on highway profile.	Contractor	2	3	6	Adequate ground investigation to be completed. Drilling contractor to be aware of ground conditions and to use appropriate plant and methodology.	1	3	3
8	Unexpected ground conditions, soft ground / local ground variation	Could lead to settlement, slope failure or other problems with the new infrastructure, structures, earthworks or utilities. Additional cost Delays to construction	Designer, Contractor	3	3	9	Existing ground investigation to be reviewed and more undertaken to determine the ground conditions.	2	3	6
9	Quality of fill for new earthworks	Could lead to slope instability or other problems. Additional cost Delays to construction	Designer, Contractor	4	3	12	Fill is to be site-won from the development area where possible. Existing ground investigation to be reviewed and more undertaken. Assessment required to include suitability for re-use as fill. If ground conditions in areas of cut are expected to be soft and waterlogged, modification of this material may be required to make it suitable for re use as fill.	2	3	6
10	Variable existing fill	Variability of existing M1 embankment fill (1960s) leading to localised variation in slope stability and settlement relating to new buildouts or cuttings.	Designer, Contractor	2	2	4	Geotechnical focussed ground investigation to assess conditions at locations of key proposals. Design to consider potential variation in existing fill. Contractor to identify unexpected ground conditions if encountered on site.	1	2	2

No	Hazard	Consequence	Risk Owner	Likelihood	Severity	Risk	Mitigation	Likelihood	Severity	Risk
11	Groundwater impacting geotechnical performance of new works over the anticipated design life of 120 years	Potential for fluctuating / increasing groundwater levels due to climate change or other variables to impact on long term performance of structures / earthworks.	Designer, Contractor	2	3	6	Geotechnical design to include sensitivity analysis on groundwater levels/conditions. Contractor to consider drainage performance during construction sequencing.	1	3	3
12	Existing motorway infrastructure (gantries/signs etc)	Potential for buried obstructions, delays, cost implications.	Designer, Contractor	5	3	15	Structures to be demolished as part of proposed works.	1	3	3
13	Flood Risk	Potential for surface water and groundwater flooding in cuttings and at the toe of new and existing embankments.	Designer, Contractor, Asset Owner	4	3	12	Design to consider risk from flooding and localised mitigation measures to improve or maintain resilience of the asset.	2	3	6
14	Temporary Works or Retaining walls	Collapse of parts of the proposed works or existing infrastructure if not done correctly.	Contractor	3	4	12	To be considered further at design and construction stages. Temporary Works designs and implementation to be undertaken by suitably qualified engineers / contractor	1	4	4

No	Hazard	Consequence	Risk Owner	Likelihood	Severity	Risk	Mitigation	Likelihood	Severity	Risk
15	Overbridge M1 to A50 over A453	Excessive settlement/failure of piles if affected by construction works with costly mitigation and disruption and risk to life at extreme.	Designer, Contractor, Asset Owner	3	4	12	Suitable investigation and design to ensure risks are managed. Contractor to consider and manage temporary works to minimise risk.	1	4	4

