East Midlands Gateway
Phase 2 (EMG2)

Document DCO 6.6A/MCO 6.6A (Part 1)

ENVIRONMENTAL STATEMENT

Technical Appendices

Appendix 6A

Transport Assessment

October 2025

06

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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1. INTRODUCTION

Instruction

1.1 BWB Consulting Ltd (BWB) has been appointed by Segro Properties Ltd and Segro (EMG) Ltd (together the Applicant or Segro) to provide highways and transportation advice in support of a second phase of its East Midlands Gateway Logistics Park (EMG1), which is a Strategic Rail Freight Interchange located to the north of East Midlands Airport. EMG1 is a Nationally Significant Infrastructure Project (NSIP) comprising a rail freight terminal and warehousing units (Use Class B8) authorised by The East Midlands Gateway Rail Freight Interchange and Highway Order 2016 (SI 2016/17 – the EMG1 Order) and is now substantially complete.

Proposed Development

1.2 The proposed second phase to EMG1 (known as EMG2) includes the development of the EMG2 Main Site and Community Park. This has been identified by the Secretary of State as a project of national significance and is the subject of an application for a Development Consent Order (DCO) pursuant to a direction made under Section 35 of the Planning Act 2008, along with significant highway works which are an NSIP in their own right. At the same time further development and infrastructure improvements at EMG1 are proposed which are the subject of an application for a material change to the EMG1 DCO. Details of the applications are contained in Chapter 3 of the ES. The terms used in this TA are defined in the glossary appended to Chapter 1 of the ES (Appendix 1A, **Document DCO 6.1A/MCO 6.1A**). The applications comprise the following three interrelated component parts:

<u>Development Consent Order (DCO) Application</u>

- **EMG2 Works** – A new logistics and advanced manufacturing employment park on the EMG2 Main Site located to the south of East Midlands Airport and the A453, and west of the M1 motorway. This part of the Scheme falls within the 'East Midlands Airport and Gateway Industrial Cluster' (EMAGIC), which is part of the East Midlands Freeport designated by the Government in 2022. It comprises 300,000sqm of B2/B8 Use Class, plus an allowance for 200,000sqm of B8 mezzanine floorspace; together with HGV parking and a bus interchange, an upgrade to the EMG1 substation and the provision of a community park

- **Highways Works** – the A453 EMG2 access junction works (referred to as the EMG2 Access Works); significant improvements at Junction 24 of the M1 (referred to as the J24 Improvements), works to the wider highway network including the Active Travel Link, Hyam's Lane Works, L57 Footpath Upgrade, A6 Kegworth Bypass/A453 Junction Improvements and Finger Farm Roundabout Improvements; and

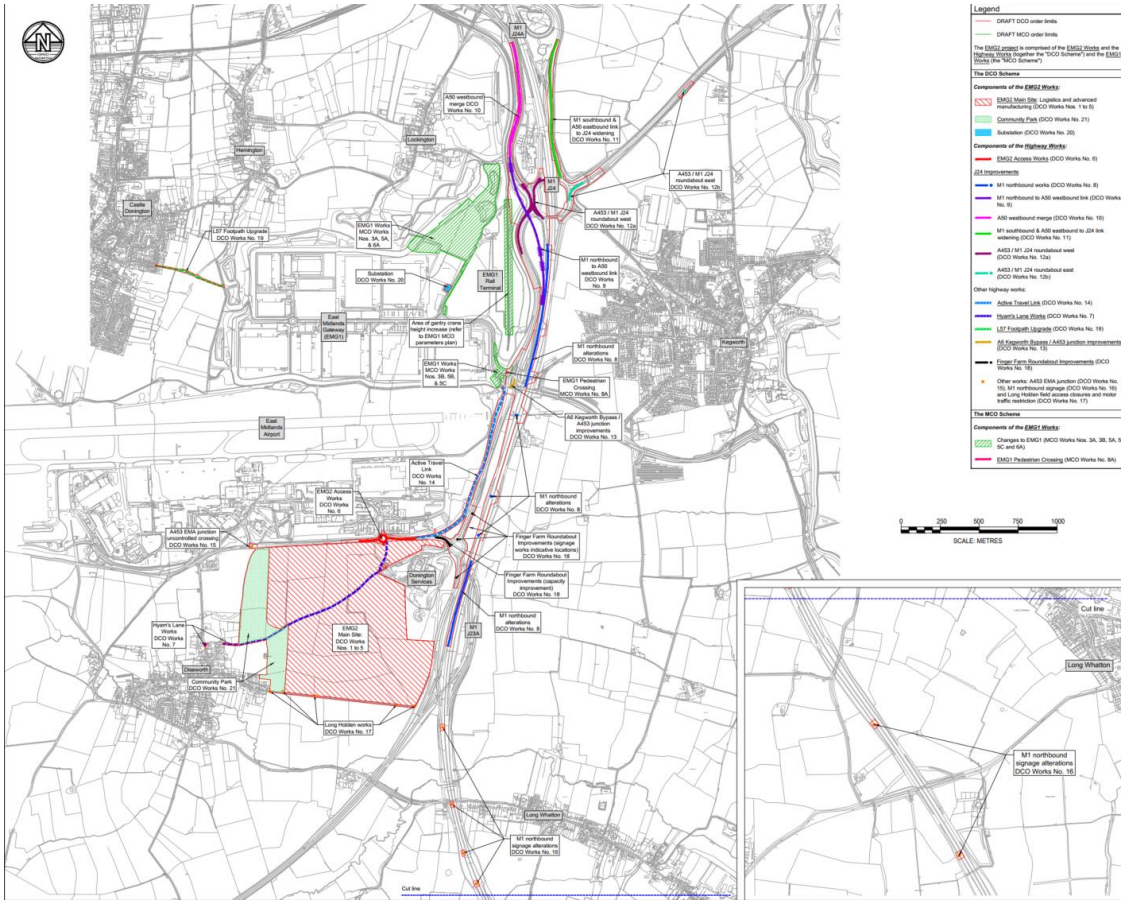
<u>Material Change Order (MCO) Application</u>

- **EMG1 Works** – Additional warehousing unit of 26,500sqm plus a mezzanine allowance for 3,500 sqm (Use Class B8) at Plot 16 of EMG1, together with works to increase the permitted height of the gantry cranes at the rail freight terminal,

improvements to the EMG1 public transport interchange, and site management building and addition of a pedestrian crossing near the entrance to EMG1.

1.3 The locations of the three parts of the development are shown at **Figure 1**, which presents the Components Plan, **Document DCO2.7/MCO2.7.** The Parameters Plan for the EMG2 Works is included in **Document DCO 2.5** and the EMG1 Works in **Document MCO 2.5**.

Figure 1. Site Location



1.4 This Transport Assessment (TA) has been prepared to support the applications for a DCO and a MCO described above.

Overview of Scoping Discussions

1.5 Since April 2022, extensive pre-application discussions have been held with the 'Transport Working Group' (TWG) consisting of the following key statutory highway authorities, consultant representations and project team:

- National Highways (NH – managing the Strategic Road Network)
- Leicestershire County Council (LCountyC – local highway authority); NB where 'LCountyC' are referenced in the TA, this relates to their Highways Development

Management team; LCountyC's Network Data and Intelligence (NDI) team also formed part of the TWG

- Nottinghamshire County Council (NCountyC)
- Leicester City Council (LCityC)
- East Midlands County Combined Authority (EMCCA)
- Nottingham City Council (NCityC) – who originally formed part of the TWG but stepped away when it was evident that there would be limited impact on their highway network
- Derbyshire County Council (DCountyC) - ditto
- Derby City Council (DCityC) – whilst never formally forming part of the TWG, DCityC have been kept abreast of key updates, including a response to the statutory consultation process
- Jacobs – National Highways representation
- Integrated Transport Planning – Travel Plan Co-ordinator for EMG1/EMG2
- AECOM – who manage the East Midlands Freeport Model (EMFM), which is a cordoned part of the larger Pan Regional Transport Model (PRTM) on behalf of LCountyC Network Data Intelligence (NDI); - this is examined in further detail in **Section 8**
- Segro – Applicant
- Delta Planning and Oxalis – Applicants Planning Consultants.

1.6 Monthly meetings have been held with the TWG since April 2022 and are planned to continue if required throughout the DCO/MCO Examinations. The assessment of transport impacts has been based on a comprehensive transport modelling exercise, for which the TWG was established to oversee. It has also provided opportunities for discussion around other aspects of the development including the sustainable transport strategy and package of mitigation required to accommodate the development.

1.7 Further details of the scoping discussions and the feedback received during the statutory consultation are outlined in **Section 3**.

1.8 NH, LCountyC, NCountyC and LCityC have been party to a number of key technical submissions via a series of transport related documents and Technical Notes. This TA summarises the various submissions agreed to date and brings the details together in one place.

1.9 The key transport related documents and Technical Notes are listed in **Table 1** along with the authoring organisation. It also includes reference to the associated formal sign off sheets and which authorities have signed and returned these, as formal agreement to the details and core assumptions (i.e. those ticked). Documents are also ticked in **Table 1** where agreements have been confirmed by LCountyC, even if a formal sign off sheet has not been signed, as set out in further detail in subsequent sections of this TA.

1.10 It should be noted that NH and NCountyC have signed a large number of documents. LCountyC have made it clear that they will not formally sign anything off at this stage of

the process. Where there is not yet formal approvals in place, it does not necessarily mean that the highway authorities are not in agreement with the principle of such documents; it just means that formal sign offs have not been sent. These documents are to be read in conjunction with this TA. Copies of each document are contained at **Appendices 1** to **18**.

Table 1. Key Supporting Transport Documents and Technical Notes

Document Name	Document Reference & Date of Issue	Author	TA App	Sign off sheet	NH	LCC	NCC
Sustainable Transport Strategy	Sustainable Transport Strategy – Version 5-0, April 2025	ITP	*	Transport Reporting 1	~	~	~
Framework Travel Plan	Framework Travel Plan – Version 5-0, April 2025	ITP	**	Transport Reporting 1	~	~	~
VISSIM Scoping Note	EMG2-BWB-GEN-XX-RP-TR-0003_S2-P3, 24 February 2023	BWB	1	1A Modelling	✓	***	✓
Furnessing and Forecasting Methodology Note	EMG2-BWB-GEN-XX-RP-TR-0004_S2-P5, 4 April 2025	BWB	2	1A Modelling	✓	~	✓
Walking, Cycling and Horse-Riding Assessment & Review Assessment Report (WCHAR)	EMG2-BWB-GEN-XX-RP-TR-0005_S2-P5, 16 May 2025	BWB	3		✓	***	***
VISSIM Local Model Validation Report	EMG2-BWB-GEN-XX-RP-TR-0006_S2-P3, 6 February 2025 ***	BWB	4	1E Modelling	✓	***	***
Base Model Validation Report	EMG2-BWB-GEN-XX-RP-TR-0007_S2-P4, 31 May 2024	BWB	5	1D Modelling	✓	✓	✓
EMFM Base Year Model Review	EMFM 2019 – East Midlands Gateway Phase 2: Base Year Model Review v1.1, 11 November 2022	AECOM	6	1A Modelling	✓	✓	✓
EMFM Base Year Model Review Addendum	EMFM 2019 – East Midlands Gateway Phase 2: Base Year Model Review Addendum (update to May 2024 TAG data book) v1.0, 19 August 2024	AECOM	7	1A Modelling	✓	✓	✓
PRTM Proforma v14 & Uncertainty Log v7	PRTM Development Testing Proforma v14, 10 October 2024 & Uncertainty Log v7 (4 July 2024)	BWB	8	1A Modelling	✓	✓	✓

EMFM Forecasting Report (Stage 1A)	EMFM 2019 – East Midlands Gateway Phase 2: Forecasting Report v1.0, 4 February 2025	AECOM	9	Stage 1G Modelling	✓		
EMG1 Rail Freight Terminal Note	EMG2-BWB-GEN-XX-RP-CH-0011_S2-P01	BWB	10	1B Modelling	✓	✓	✓
Trip Generation Core Assessment	EMG2-BWB-GEN-XX-RP-TR-0012_S2-P1, 18 October 2024	BWB	11	1B Modelling	✓	✓	✓
Construction Traffic Calculations	EMG2-BWB-GEN-XX-RP-TR-0013_S2-P3, 11 April 2025	BWB	12	1F Modelling	✓		
Covid-19 Assessment	EMG2-BWB-GEN-XX-RP-TR-0014_S2-P1, 7 January 2025	BWB	13	1C Modelling	✓		✓
Highway Safety Position Statement	EMG2-BWB-GEN-XX-RP-TR-0015_S2-P1, 14 March 2025	BWB	14	Transport Reporting 3	~		
HGV Route Plan	EMG2-BWB-GEN-XX-RP-TR-0016_S2-P3, 14 May 2025	BWB	15	Transport Reporting 2	✓		
Construction Traffic Management Plan (CTMP)	PC23-004 EMG 2	Taylor Skelton	16	Transport Reporting 5	✓		
TA & ES Assessment Methodology	EMG2-BWB-GEN-XX-RP-TR-0017_S2-P4, 28 April 2025	BWB	17		~	~	
COBALT Assessment Methodology	EMG2-BWB-GEN-XX-RP-TR-0018_S2-P1, 12 May 2025	BWB	18	Transport Reporting 4	✓		

the Sustainable Transport Strategy is included in* ***Document DCO 6.6C*

the Framework Travel Plan is included in* ***Document DCO 6.6D

**** deferred to NH's review and approval*

~ *comments have been received and taken on board in this TA*

1.14 A package of Highway Works has been identified to accommodate the additional activity from the proposed development for all modes of travel. To confirm that the proposed Highway Works are appropriate in scale and layout, the mitigation package has been tested through the EMFM, a strategic highway assignment model operated by AECOM on behalf of LCountyC. At the time the EMFM modelling work was commissioned, it had a base year of 2019, which is examined in greater detail in **Section 8**.

1.15 **Section 8** discusses the more recent 2023 version of the EMFM. However, unless explicitly stated, any references made to 'EMFM' in the TA refer to the 2019 version.

1.16 Further detailed analysis has also been undertaken using microsimulation VISSIM modelling, supported by a WCHAR.

1.17 The detailed geometric design of the highway mitigation has been advanced to a sufficient stage to confirm it is deliverable.

1.18 Feedback was also received from LCountyC on the design information by email on 2 July 2025 confirming they accept the majority of the information provided. LCountyC raised a few areas where further work is needed during the technical approval process and the need for further supporting information, such as additional swept paths, approval on departures and confirmation of Stopping Sight Distances. These comments have been taken on board within revised versions of the drawings submitted with the application.

1.19 The Applicant is targeting BREEAM Outstanding across all units of the EMG2 Main Site development together with Plot 16 at EMG1 (part of the EMG1 Works). Despite the outline nature of the applications details required to achieve certain BREEAM credits for TRA01 and TRA02 are included in this TA.

Report Structure

1.20 The remainder of this TA is structured as follows:

- **Section 2: Policy Context** – summarises the key national and local planning policies relating to transport within the context of the EMG2 Project, in particular the overarching National Planning Policy Framework and National Networks National Policy Statement.
- **Section 3: Background Information** – provides an overview of the East Midlands Freeport and surrounding planned development. It also summarises the scoping discussions held with the TWG and the comments received during the first, statutory, consultation.
- **Section 4**: **Existing Highway Conditions** – sets out details of existing land uses and occupiers of EMG1. It then describes the area that will accommodate the various components of the EMG2 Project, as well as the surrounding highway network, junction layouts and a summary of the Personal Injury Collision records.
- **Section 5**: **Existing Sustainable Travel Opportunities** – describes the existing opportunities and facilities to walk, cycle and access public transport in the vicinity of the EMG2 Project.
- **Section 6: Proposed Development** – provides details of each of the EMG2 Project components, as well as the proposed Highway Works, sustainable travel improvements and access strategy. It also provides details of parking requirements and HGV routing plans.
- **Section 7: Trip Generation** – quantifies the agreed multi-modal trip generation of the EMG2 Project for the core operational assessment and construction phase as well as summarising the forecast trip generation with the Travel Plan measures in place.
- **Section 8: EMFM SATURN Modelling Methodology** – summarises the strategic transport modelling undertaken using the EMFM, including the base model validation, forecast year scenarios and strategic modelling results.
- **Section 9: Detailed Junction Modelling Methodology** – summarises the approach taken to building the detailed transport models using VISSIM microsimulation,

Junctions 11 and LinSig software. It also presents the furnessing methodology used to derive forecast year traffic flows.

- **Section 10: Highway Impact Assessment: Core Scenario (Stage 1A Modelling)** – presents the results of the detailed junction modelling for the Stage 1A core scenario, highlighting where the development is predicted to have a severe impact and where mitigation is required.
- **Section 11: Highway Impact Assessment: Sensitivity Test (Stage 1B Modelling**) – presents the results of the detailed junction modelling for a select number of junctions that require a sensitivity test.
- **Section 12: Highway Mitigation** – presents the details of the proposed Highway Works and the results of the EMFM modelling testing the package of mitigation, summarising the benefits of the EMG2 Project.
- **Section 13: Highway Impact Assessment: Core Scenario (Stage 2A Modelling)** – presents the results of the detailed junction modelling for the Stage 2A core scenario, highlighting where the development is predicted to have a severe impact and where mitigation is required with the mitigation measures included for.
- **Section 14: Highway Impact Assessment: Sensitivity Test (Stage 2B Modelling**) – presents the results of the detailed junction modelling for a select number of junctions that require a sensitivity test with the mitigation measures included for.
- **Section 15: Construction Traffic Assessment** – presents the modelling results of the construction traffic scenario and any associated mitigation requirements.
- **Section 16: Summary and Conclusions** – summarises the findings of the report and offers conclusions in relation to the EMG2 Project impacts.

2. POLICY CONTEXT

Introduction

2.1 This section of the TA examines the context of the EMG2 Project and how this relates to the relevant transport and development planning policies and guidelines. It provides an overall spatial and planning context for the EMG2 Project.

2.2 Policies have been adopted in national guidelines such as the Transport White Paper (2011), that seek to encourage more sustainable modes other than the car and a planning system that places greater emphasis on the link between transport and land use planning policies. This is to encourage transport decisions at a local level that are compatible with environmental and community goals and best reflect local circumstances and requirements.

2.3 The following national and local planning policy documents have been reviewed:

- The National Planning Policy Framework (NPPF).
- National Networks National Policy Statement (NNNSP).
- Planning Practice Guidance (PPG).
- Department for Transport Circular 01/2022 'Strategic Road Network and the Delivery of Sustainable Development'.
- Highways England 'The Strategic Road Network Planning for the Future' (2015).
- North West Leicestershire District Council (NWLDC) Local Plan.
- NWLDC Local Plan Substantive Review.
- Leicestershire County Council Local Transport Plan 4.
- Leicestershire Highways Design Guide – Transport Assessments.

National Planning Policy

National Planning Policy Framework (MHCLG, Revised December 2024)

2.4 The National Planning Policy Framework (NPPF) replaced the majority of previous Planning Policy Statements on 27 March 2012 and was last updated in December 2024. It sets out the Government's expectations and requirements from the planning system. It provides guidance for local Councils to use when defining their own personal local and neighbourhood plans. This approach allows the planning system to be customised to reflect the needs and priorities of individual communities.

2.5 The NPPF defines the delivery of sustainable development through three roles:

- an economic objective.
- a social objective.
- an environmental objective.

2.6 These objectives should be delivered through the preparation and implementation of plans and the application of the policies in the Framework; they are not criteria against which every decision can or should be judged. Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.

2.7 Paragraph 109 of the NPPF states that:

> *"Transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach to identify transport solutions that deliver well-designed, sustainable and popular places. This should involve:*
>
> - *making transport considerations an important part of early engagement with local communities;*
> - *ensuring patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places;*
> - *understanding and addressing the potential impacts of development on transport networks;*
> - *realising opportunities from existing or proposed transport infrastructure, and changing transport technology and usage – for example in relation to the scale, location or density of development that can be accommodated;*
> - *identifying and pursuing opportunities to promote walking, cycling and public transport use; and*
> - *identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains".*

2.8 Paragraph 110 states that:

> *"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making".*

2.9 Paragraph 111 states that planning policies should:

> - *"support an appropriate mix of uses across an area, and within larger scale sites, to minimise the number and length of journeys needed for employment, shopping, leisure, education, and other activities;*
> - *be prepared with the active involvement of local highways authorities, other transport infrastructure providers and operators and neighbouring councils, so that strategies and investments for supporting sustainable transport and development patterns are aligned;*

- *identify and protect, where there is robust evidence, sites and routes which could be critical in developing infrastructure to widen transport choice and realise opportunities for large scale development;*
- *provide for high quality walking and cycling networks and supporting facilities such as cycle parking (drawing on Local Cycling and Walking Infrastructure Plans); and*
- *provide for any large-scale transport facilities that need to be located in the area, and the infrastructure and wider development required to support their operation, expansion and contribution to the wider economy".*

2.10 In assessing sites that may be allocated for development in plans, or specific applications for development, NPPF Paragraph 115 states that *"it should be ensured that:*

- *sustainable transport modes are prioritised taking account of the vision for the site, the type of development and its location;*
- *safe and suitable access to the site can be achieved for all users;*
- *the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and*
- *any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree through a vision-led approach".*

2.11 Paragraph 116 of the NPPF goes on to state that:

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network, following mitigation, would be severe, taking into account all reasonable future scenarios"

2.12 Within the context of the NPPF, Paragraph 117 sets out that: *"development should:*

- *give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- *address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- *create places that are safe, secure, and attractive – which minimise the scope for conflicts between pedestrians, cyclists, and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- *allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- *be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible, and convenient locations".*

2.13 Paragraph 118 seeks to ensure that:

> *"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed and monitored".*

National Networks National Policy Statement (March 2024)

2.14 The National Networks National Policy Statement (NPS) sets out the need for, and Government's policies to, deliver development of Nationally Significant Infrastructure Projects on the national road and rail networks for England.

2.15 The National Network faces a number of challenges in terms of maintaining network performance and meeting customer needs. This is triggered by a growing demand and greater reliance on movements using the National Network, which plays a significant role in supporting economic growth. Paragraphs 3.7 and 3.8 of NPS states:

> *"The Government's Levelling Up the United Kingdom White Paper recognises the role that transport can play in boosting productivity, by connecting people to jobs, and businesses to each other, and sets out an ambition to level up transport connectivity. It recognises the role that specific projects on national networks can play in improving connectivity between towns and cities to boost growth."*

> *"Transport infrastructure is a catalyst and key driver of growth, and it is important that the planning and development of infrastructure fully considers the role it can play in delivering sustainable growth, how it can support local and regional development plans and the growth aspirations of local authority areas. This will include exploring options to unlock sites for housing and employment growth made accessible by sustainable transport and the regenerative impact major infrastructure can play in driving renewal, increasing density, as well as creating new places and communities."*

2.16 Paragraph 3.17 relates to the Governments environmental and net zero policies and states:

> *"Any national network Nationally Significant Infrastructure Project (NSIP) should seek to improve and enhance the environment irrespective of the reasons for developing the scheme. However, there may be instances where infrastructure interventions are required to bring about improvements to environmental outcomes. Such outcomes might include contributing to net zero targets through, for example, electric vehicle charging, electrification of rail, improvements to air quality through reductions in congestion, or delivering localised environmental improvements to cultural heritage, landscape, or biodiversity."*

2.17 Paragraph 3.22 sets out the following concluding statement:

> *"The government has, therefore, concluded that at a strategic level there is a compelling need for development of the strategic road and strategic rail networks, and strategic rail freight interchanges (SRFIs) – both as individual networks and as a fully integrated system. The Examining Authority and the Secretary of State should,*

therefore, start their consideration of applications for development consent for the types of infrastructure covered by this National Policy Statement (NPS) on this basis. The Secretary of State should give substantial weight to considerations of need where these align with those set out in this NPS."

2.18 The NPS sets out a range of measures to help make the best use of capacity on the National Network. Paragraph 3.42 states:

"There are interdependencies between the efficient operation of the SRN and its impact on the local road network and vice versa. Effective operation and optimisation of both the SRN and the local road network are essential to achieve the outcomes set by the Transport Decarbonisation Plan. There are a range of measures that can be employed to make the best use of all road capacity (not just the SRN) which may impact upon demand for the SRN. These include:

- *Promoting journey choice by enabling more active travel and public transport (including buses, coaches and rail) in urban areas whilst not restricting other transport options. The creation of mobility hubs and improving integration between modes through park-and-ride services, cycle parking provision at rail stations, and the coordination of bus / rail timetables, can all contribute.*

- *Providing genuine choice in transport mode by increasing accessibility to public transport, connecting places and by improving the environment for journeys by active travel, in both urban and rural areas. The government has committed to transforming local transport systems through Bus Back Better strategy and the City Region Sustainable Transport Settlements. In addition, Bus Back Better sets out measures enabling buses to be used by all thereby enhancing levels of accessibility.*

- *Integrating with spatial planning can support walking, wheeling and cycling or public transport as the natural first choice for journeys. Where developments are located, how they are designed and how well public transport services are integrated has a huge impact on whether people's natural first choice for short journeys is on foot or by cycle, by public transport or by private car. The Strategic Road Network and the delivery of sustainable development Circular 01/2022 establishes how additional spatial considerations in transport decisions can help tackle congestion and support better journeys for all road users.*

- *Greater deployment of technology can support more effective use of the network. Such technological interventions might include greater use of digital signalling, greater provision of route information to drivers, alternative fuels, self-driving vehicles or digital connectivity.*

- *Bringing forward maintenance schemes and small-scale enhancements to ensure that the SRN is operating as effectively as possible."*

2.19 Paragraph 3.43 states:

"The Transport Decarbonisation Plan recognises the need to base local transport planning on setting the outcome communities want to achieve and provides the transport solutions to deliver those local transport outcomes (vision-led approaches including 'vision and validate,' 'decide and provide' or 'monitor and manage'). However, there are varying challenges that will be presented by certain sites based on their land use, scale and/or location. In some cases, they will not always offset the need to increase capacity. The competing demands for road space will remain or even increase with diversification in the type and number of users, the vehicle they use or where alternative sustainable modes are prioritised."

"Whilst the majority of journeys on the SRN will continue to be made by private motor vehicle and over long distances, there may be opportunities to consider how the SRN can assist in delivering sustainable transport interventions or outcomes connecting communities and enabling active travel (where road safety considerations allow). Transport corridors created by the SRN can also be used to support public transport by facilitating coach journeys and park-and-ride schemes, providing vital connections to jobs, international gateways and between our towns and cities. In addition, safe links and movements across the SRN can be incredibly valuable to support better accessibility and connectivity and enhance the local active travel and public transport offer, including in rural areas."

2.20 Paragraph 4.12 refers to Environmental Statement's and states:

"A key part of environmental assessment is the consideration of cumulative effects. The applicant should provide information on how the effects of the proposal would combine and interact with the effects of other development, where relevant. For most practical purposes this means that the applicant should consider the impact of other existing and committed developments within an appropriate geographical area and assess the additional impact of their own development…"

2.21 Paragraphs 4.57 and 4.56 consider 'Road Safety' and state:

"Highways developments provide an opportunity to make significant safety improvements and significant incident reduction benefits when they are well designed. Some developments may have safety as a key objective, but even where safety is not the main aim of a development, the opportunity should be taken to improve safety, including introducing the most modern and effective safety measures where proportionate. Consideration should also be given to wider transport objectives, including expanding active travel, and creating safe and pleasant walking, wheeling and cycling environments. In developing roads schemes the applicant should have due regard to the needs of drivers and riders and the imperative to ensure road user safety…"

"The applicant should undertake an objective assessment of the impact of the proposed development on safety including the impact of any mitigation measures. This should use the methodology outlined in the guidance from Department for Transport's Transport Analysis Guidance and from National Highways. They should also put in place arrangements for undertaking the road safety audit process and ensuring

their implementation. Road safety audits are a mandatory requirement for highway improvement schemes in the UK (including motorways). Road safety audits are intended to ensure that operational road safety experience is applied during the design and construction process so that the number and severity of collisions is as low as is reasonably practicable."

2.22 Paragraphs 5.269 to 5.89 consider 'Impacts on transport networks', including that of Strategic Rail Freight Terminals. Whilst such a facility is not proposed as part of EMG2, improvements to the existing facility at EMG1 is included for within the MCO. This considers "*the impact of construction on local networks whilst the scheme is being developed, and the impact of the scheme on wider transport networks once it is operational*", considering the following items:

i) Applicants assessment of road and rail developments, including Strategic Rail Freight Interchanges

ii) Mitigation

iii) Decision making.

2.23 Of particular relevance are the following key paragraphs which are summarised below:

- 5.271 – consultation of the relevant authorities as appropriate on the assessment of transport impacts

- 5,273 - applicants should seek to offer an integrated transport outcome, significantly considering opportunities to support other sustainable transport modes, as well as improving local connectivity and accessibility in developing infrastructure

- 5,274 - the applicant should provide evidence that as part of the project they have addressed any new or existing severance issues and/or safety concerns that act as a barrier to non-motorised users

- 5.283 - the applicant should provide evidence that the development improves the operation of the network and assists with capacity issues

- 5.286 - the Examining Authority and the Secretary of State should give due consideration to impacts on local transport networks and policies set out in existing and emerging local plans and Local Transport Plans, during both construction and operation

- 5.287 - consideration should also be given to whether the applicant has maximised opportunities to allow for journeys associated with the development to be undertaken via sustainable modes

- 5.288 - Schemes should be developed, and options considered, in the light of relevant policies and plans, both national and local, taking into account local models where appropriate

- 5.289 - Infrastructure development should recognise the importance of providing adequate lorry parking facilities, taking into account any local shortages, to reduce the risk of parking in locations that lack proper facilities or could cause a nuisance. For strategic rail freight interchanges, facilities should serve those drivers using the site in question.

Planning Practice Guidance: Travel Plans, Transport Assessments and Statements in Decision Making

2.24 Guidance on Transport Assessments was published in March 2007 but as of October 2014 it was archived and replaced with Planning Practice Guidance (PPG).

2.25 PPG sets out when Travel Plans, Transport Assessments and Statements for developments are required. PPG was produced to assist stakeholders in determining whether an assessment may be required and, if so, what the level and scope of that assessment should be. It provides guidance on the content and preparation of Transport Assessments and Transport Statements and the promotion of smarter choices via Travel Plans.

2.26 PPG suggests that Transport Assessments should be:

- *Proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;*
- *Established at the earliest practicable possible stage of a development proposal;*
- *Tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally).*

2.27 In determining whether a Travel Plan will be needed for a proposed development, PPG states that local planning authorities should take into account the following considerations:

- *The Travel Plan policies (if any) of the Local Plan;*
- *The scale of the proposed development and its potential for additional trip generation (smaller applications with limited impacts may not need a Travel Plan);*
- *Existing intensity of transport use and the availability of public transport;*
- *Proximity to nearby environmental designations or sensitive areas;*
- *Impact on other priorities/ strategies (such as promoting walking and cycling);*
- *The cumulative impacts of multiple developments within a particular area;*
- *Whether there are particular types of impacts around which to focus the Travel Plan (e.g. minimising traffic generated at peak times); and*
- *Relevant national policies.*

2.28 A Framework Travel Plan and Sustainable Transport Strategy have been produced by Integrated Transport Planning (ITP) and can be found in DCO Documents **DCO 6.6B** and **DCO6.6C** respectively.

Department for Transport Circular 01/2022

2.29 On 23 December 2023, the Department for Transport (DfT) issued new policy within Circular 01/2022 in relation to the SRN. It sets out how the Secretary of State will engage with communities and the development industry to deliver sustainable development whilst safeguarding the primary function and purpose of the SRN in England.

2.30 The Circular 01/2022 'Strategic Road Network and the Delivery of Sustainable Development' replaces the policies set out in the DfT Circular 02/2013 of the same title. The policy is intended for all parties involved in development proposals which may result in traffic or other impacts on the SRN. It should be read in conjunction with the NPPF, Manual for Streets, Local Transport Note 1/20 and all other local planning policy documents.

2.31 Paragraphs 11 and 12 focus on the principle of sustainable development and state:

"11. The company will act in a manner which conforms to the principles of sustainable development. In this context, the company's licence agreement defines sustainable development as encouraging economic growth while protecting the environment and improving safety and quality of life for current and future generations. Alongside this, the company has an important role to play in the drive towards zero emission transport through its commitment to net zero maintenance and construction emissions by 2040 and net zero road user emissions by 2050[footnote 5], and its role as a statutory consultee in the planning system.

12. New development should be facilitating a reduction in the need to travel by private car and focused on locations that are or can be made sustainable. In this regard, recent research on the location of development[footnote 6] found that walking times between new homes and a range of key amenities regularly exceeded 30 minutes, reinforcing car dependency. Developments in the right places and served by the right sustainable infrastructure[footnote 7] delivered alongside or ahead of occupancy must be a key consideration when planning for growth in all local authority areas."

2.32 Paragraph 29 relates to capacity improvements on the SRN and states:

"29. New connections and capacity enhancements to the SRN which are necessary to deliver strategic growth should be identified as part of the plan-making process, as this provides the best opportunity to consider the cumulative impacts of development (including planned growth in adjoining authorities) and to identify appropriate mechanisms for the delivery of strategic highway infrastructure. However, there cannot be any presumption that such infrastructure will be funded through a future RIS. The company will therefore work with local authorities in their strategic policy-making functions in identifying realistic alternative funding mechanisms, to include other public funding programmes and developer contribution strategies to be secured by a policy in a local plan or spatial development strategy."

2.33 Paragraph 30 relates to the logistics and distribution sector from a development locational perspective and states:

"30. The NPPF is clear that planning policies should recognise the specific locational requirements of different economic sectors, including for storage and distribution operations at a variety of scales and in suitably accessible locations. To operate efficiently, the freight and logistics sector requires land for distribution and consolidation centres at multiple stages within supply chains including the need for welfare facilities for the drivers of commercial vehicles. For instance, some hubs serve regions and tend to be located out-of-town near the SRN, while others are 'last-mile' facilities that will support more sustainable freight alternatives in urban areas. The Future of Freight Plan sets out that a joined-up approach between the planning system, local authorities and industry can safeguard and prioritise the land needed for these uses, such that all parties should work together to identify the specific requirements in their area."

2.34 Paragraphs 47 to 52 relate to 'Assessment of Development Proposals' and state:

"47. Where the company is requested to do so, it will engage with local planning authorities and development promoters at the pre-application stage on the scope of transport assessments/statements and travel plans. This process should determine the inputs and methodology relevant to establishing the potential impacts on the SRN and net zero principles that will inform the design and use of the scheme. Development promoters are strongly encouraged to engage with the company to resolve any potential issues and maximise opportunities for walking, wheeling, cycling, public transport and shared travel, as early as possible[footnote 18].

48. Where a transport assessment is required, this should start with a vision of what the development is seeking to achieve and then test a set of scenarios to determine the optimum design and transport infrastructure to realise this vision. Where such development has not been identified in an up-to-date development plan (or an emerging plan that is at an advanced stage[footnote 19]), developers should demonstrate that the development would be located in an area of high accessibility by sustainable transport modes[footnote 20] and would not create a significant constraint to the delivery of any planned improvements to the transport network or allocated sites.

49. A transport assessment for consideration by the company must also consider existing and forecast levels of traffic on the SRN, alongside any additional trips from committed developments[footnote 21] that would impact on the same sections (link or junction) as the proposed development. Assumptions underpinning projected levels of traffic should be clearly stated to avoid the default factoring up of baseline traffic. The scenario(s) to be assessed, which depending on the development and local circumstances may include sensitivity testing, should be agreed with the company; where a scenario with particularly high or low growth is proposed, this should be supported by appropriate evidence. Planned improvements to the SRN or local road network should also be considered in any assessment where there is a high degree of certainty that this will be delivered[footnote 22].

50. An opening year assessment to include trips generated by the proposed development, forecasted growth and committed development shall be carried out to establish the residual transport impacts of a proposed development. For multi-phase developments, additional assessments shall be provided based on the opening of each phase.

51. Where a transport assessment indicates that a development would have an unacceptable safety impact or the residual cumulative impacts on the SRN would be severe, the developer must identify when, in relation to the occupation of the development, transport improvements become necessary.

52. The scope and phasing of necessary transport improvements will normally be defined by the company in planning conditions that seek to manage development in line with the completion of these works. In such circumstances, modifications to the SRN must have regard to the need to future-proof the network, while its delivery may require a funding agreement between the development promoter and the company."

The Strategic Road Network – Planning for the Future (Highways England, 2015)

2.35 Highways England's (now National Highways) 'Strategic Road Network – Planning for the Future document was published in September 2015 and describes the approach National Highways take when engaging with the planning system and the issues that are considered in draft planning documents and planning applications. It contains advice on the information that National Highways like to see included in planning proposals and the support they can offer relating to the whole SRN.

2.36 The document reflects national policy requirements within the NPPF and PPG stating at Paragraph 32 "*The NPPF states that development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe*".

2.37 Paragraph 33 goes on to state:

"*Moreover, the Circular states that development proposals are likely to be wholly acceptable if: they can be accommodated within the existing capacity of a section (link or junction) of the SRN, or they do not increase demand for use of a section that is already at full capacity, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed*".

2.38 Where the Circular tests are not satisfied, additional assessment will be required to enable all parties to understand the scope and scale of the impact that the proposals are likely to have on the SRN. This assessment should:

- *Demonstrate how the proposals will reduce the need to travel, especially by car;*
- *Demonstrate how the proposals will improve accessibility by all modes of travel and influence travel behaviours;*
- *Assess the likely impact of residual trips (i.e. after measures above have been considered); and*
- *Identify appropriate and proportionate mitigation measures, and ensure that what is proposed promotes sustainable transport outcomes and avoids unnecessary works to the SRN.*

2.39 Paragraph 10 states, NH recommend that:

"engaging with us early helps to ensure that issues that may take time to analyse and resolve are identified as soon as possible. We can then work together to:

- *Consider the most appropriate locations for development;*
- *Assess the potential impact of proposed development proposals on the SRN;*
- *Progress an appropriate sustainable development (including considering how best to deliver the development, and any associated mitigation works scheme, whilst minimising the adverse impacts that it might give rise to); whilst*
- *Maintaining the efficiency and safety of the SRN."*

2.40 In terms of assessing development impacts, Paragraph 100 states:

"the overall forecast demand on the SRN and surrounding local road network should be assessed and compared to the ability of the existing network to accommodate traffic. For developments which will be brought forward in phases, this assessment should focus on the overall forecast demand of the development as a whole, not just the initial phases(s)".

2.41 Paragraph 101 goes on to state:

"Assessments should be carried out for:

- *the development and construction phase; and*
- *the opening year, assuming full build out and occupation, and*
- *either a date ten years after the date of registration of the associated planning application or the end of the Local Plan period (whichever is the greater)."*

Local Planning Policy

NWLDC Adopted Local Plan

2.42 The current development plan for the local area is the NWLDC Local Plan, which was formally adopted in 2017 and sets out the strategy for delivering homes, jobs and infrastructure across the district between 2011 and 2031. The Local Plan has been subject to a partial review which was adopted in March 2021.

2.43 The role of the Local Plan is to identify the scale of development and allocate sites to meet the development needs of NWLDC in order to achieve the districts vision for growth. Furthermore, the Local Plan seeks to identify key local issues and provide a set of policies to manage change which will be used by decision makers to determine planning applications.

2.44 Section 4 sets out the vision for the Local Plan part and states:

> *"Businesses will choose to locate and grow in this area, taking advantage of its excellent location in the centre of the country, close to major road and rail networks and a major international airport. The East Midlands Enterprise Gateway, focussed on East Midlands Airport, Donington Park and the East Midlands Gateway Rail Fright Interchange, will be recognised as a key destination in its own right. This strongly performing economy will be reflected in low unemployment and reduced instances of deprivation."*

2.45 The Local Plan sets out 15 objectives to meets its ambitions. These are:

- ***Objective 1*** *- Promote the health and wellbeing of the district's population.*
- ***Objective 2*** *- Support the delivery of new homes balanced with economic growth to provide a stock of housing that meets the needs of the community, including the need for affordable housing.*
- ***Objective 3*** *- Ensure new development is of a high quality of design and layout whilst having due regard to the need to accommodate national standards in a way that reflects local context and circumstances. 21*
- ***Objective 4*** *– Ensure regard is had to reducing the need to travel and to maintaining access to services and facilities including jobs, shops, education, sport and recreation, green space, cultural facilities, communication networks, health and social care.*
- ***Objective 5*** *- Support economic growth throughout the district and the provision of a diverse range of employment opportunities including the development of tourism and leisure.*
- ***Objective 6*** *- Enhance the vitality and viability of the districts town and local centres, with a particular focus on the regeneration of Coalville, in ways that help meet the consumer needs.*
- ***Objective 7*** *- Enhance community safety so far as practically possible and in a way which is proportionate to the scale of development proposed whenever allocating sites for development or granting planning permission.*
- ***Objective 8*** *- Prepare for, limit and adapt to climate change.*
- ***Objective 9*** *- New developments need to be designed to use water efficiently, to reduce flood risk and the demand for water within the district, whilst at the same time taking full account of flood risk and ensuring the effective use of sustainable urban drainage systems (SUDs).*
- ***Objective 10*** *- Conserve and enhance the identity, character and diversity and local distinctiveness of the district's built, natural, cultural, industrial and rural heritage and heritage assets.*
- ***Objective 11*** *- Protect and enhance the natural environment including the district's biodiversity, geodiversity and water environment areas identified for their importance.*
- ***Objective 12*** *- Conserve and enhance the quality of the district's landscape character including the National Forest and Charnwood Forest and other valued landscapes.*
- ***Objective 13*** *- Take account of the need to reduce the amount of waste produced.*

- ***Objective 14*** *- Seek to deliver the infrastructure needs of the area, including Green sustainable development.*
- ***Objective 15*** *- Take full account of the need to safeguard mineral resources including sand and gravel, igneous rock and brickclay.*

2.46 Of key importance is Policy Ec2(2) 'New Employment Sites'. This enables employment development to come forward where evidence indicates an immediate need or demand for additional employment land (B1, B2 and B8) in North West Leicestershire that cannot be met from land allocated in the Local Plan. It states that the Council will consider favourably proposals that meet such identified need in appropriate locations subject to the following key criteria:

- *The site must be accessible or capable of being made accessible by a choice of means of transport, including sustainable transport modes;*
- *The site must have good access to the strategic highway network (M1, M42/A42 and A50) and an acceptable impact on the capacity of that network, including any junctions; and*
- *The site must be shown to be not detrimental to the amenities of any nearby residential properties or the wider environment.*

2.47 Section 8 of the NLWDC Local Plan focuses on the 'Economic' ambitions. It states that NWLDC are committed to support the creation of a sustainable local economy. Paragraphs 8.5 and 8.6 state:

"The Leicester and Leicestershire Local Enterprise Partnership Strategic Economic Plan identifies five growth areas across Leicester and Leicestershire, two of which are located in the district; the East Midlands Enterprise Gateway and the Coalville Growth Corridor (see Appendix 4)."

"The East Midlands Enterprise Gateway is focussed upon a number of existing major economic activities in the north of the district (principally East Midlands Airport, East Midlands Distribution Centre and Donington Park) and potential major employment opportunities associated with the development of a Strategic Rail Freight Interchange (SRFI) west of Junction 24 of the M1 and north of East Midlands Airport (referred to as Roxhill)."

2.48 Policy IF1 sets out how new developments will include the provision of new infrastructure. It states:

"Development will be supported by, and make contributions to as appropriate, the provision of new physical, social and green infrastructure in order to mitigate its impact upon the environment and communities. Contributions may be secured by means of planning obligations and/or a Community Infrastructure Levy charge, in the event that the Council brings a Charging schedule into effect.

The type of infrastructure required to support new development includes, but is not limited to:

(a) Affordable housing; and

(b) Community Infrastructure including education, health, cultural facilities and other public services; and

(c) Transport including highways, footpaths and cycleways, public transport and associated facilities; and

(d) Green infrastructure including open space, sport and recreation, National Forest planting (either new provision or enhancement of existing sites) and provision of or improvements to sites of nature conservation value; and

(e) The provision of superfast broadband communications; and

(f) Utilities and waste; and

(g) Flood prevention and sustainable drainage.

The infrastructure secured (on or off-site) will be provided either as part of the development or through a financial contribution to the appropriate service provider and may include the long-term management and maintenance of the infrastructure.

In negotiating the provision of infrastructure the Council will have due regard to viability issues and where appropriate will require that the applicant provide viability information to the Council which will then be subject to independent verification.

The District Council will work closely with infrastructure providers to ensure inclusion of infrastructure schemes within their programmes, plans and strategies, and delivery of specific infrastructure requirements in conjunction with individual development schemes and the expected timing of development coming forward. The Council will also work with partners and other stakeholders to secure public funding towards infrastructure, where possible."

2.49 Policy IF4 relates to 'Transport Infrastructure and New Development'. It states:

"The Council, working with the highway authorities, will ensure that development takes account of the impact upon the highway network and the environment, including climate change, and incorporates safe and accessible connections to the transport network to enable travel choice, including by non-car modes, for residents, businesses and employees. In assessing proposals regard will be had to any Transport Assessment/Statement and Travel Plan prepared to support the application.

New development will be expected to maximise accessibility by sustainable modes of transport, having regard to the nature and location of the development site, and contribute towards improvement of the following where there is a demonstrable impact as a result of the proposed development:

(a) The provision of cycle links within and beyond sites so as to create a network of cycleways across the district, including linkages to key Green Infrastructure;

(b) The provision of public footpath links within and beyond sites so as to enhance the network of footpaths across the district, including linkages to key Green Infrastructure;

(c) The provision of new public transport services, or the enhancement of existing services, to serve new developments so that accessibility by non-car modes to essential services and facilities, such as shops, schools and employment, is maximised.

Where new development has a demonstrable impact upon the highway network contributions towards improvements will be sought commensurate with the impact. The following specific highway improvements are identified as priorities."

NWLDC Local Plan Substantive Review

2.50 NWLDC are currently preparing the New NWLDC Local Plan which will replace the existing Plan and provide a strategic planning direction until 2042. The Plan will address the employment and housing land requirement shortfalls identified in the current Local Plan, in addition to identifying land for future growth. At the time of writing this TA, the Council has produced a draft Local Plan which was the subject of consultation in 2024 and a further consultation in 2025. The submissions made are currently being considered.

2.51 The EMG2 Main Site and community park area are provisionally proposed to be allocated in the draft New Local Plan under Policy EMP90 for employment development.

Leicestershire County Council Local Transport Plan 4

2.52 LCountyC published its fourth Local Transport Plan (LTP4) in 2024 which sets out the vision for transport across the county up to 2050 and replaces the former LTP3. The Local Transport Plan includes a framework for how LCountyC will manage and develop the transport system within Leicestershire and the actions that will be undertaken to deliver the programme.

2.53 The LTP4 comprises three phases, the first of which covers the period up to 2030. The LTP Core Document was adopted in November 2024 and sets out the following strategic vision:

"Delivering a safe, connected and integrated transport network which is resilient and well managed to support the ambitions and health of our growing communities, safeguards the environment whilst delivering economic prosperity"

2.54 The vision will be supported by five core themes:

- Enabling Health and Wellbeing
- Protecting the Environment
- Delivering Economic Growth
- Enhancing our Transport Networks Resilience
- Embracing Innovation

2.55 The delivery of core themes will be supported by the development of Multi-Modal Area Investment Plans, Focused Strategic and the County Strategic Transport Investment

Plan, which will set out the transport solutions that are programmed for the delivery and implementation of LTP4.

2.56 Phase 2 of LTP4 will cover the period up to 2040 and is being finalised with expected completion by Spring 2026. So far, development has commenced on the Multi-Modal Area Investment Plans initially prioritising three areas; Market Harborough, Hinckley and South-East Leicestershire.

2.57 LCountyC is also developing two focused strategies as part of Phase two, the first being a Safe, Accessible and Inclusive Transport Network, then will begin work on the second Delivering a Resilient Transport Network.

2.58 In addition, LCountyC will begin work on the development of the County Strategic Transport Investment Plan. This will initially begin with a review of the strategic needs and requirements for the County focused on strategic infrastructure including the SRN and rail network.

2.59 Phase 3 of LTP4 will cover the period up to 2050 is due to be completed by Winter 2026. This will set out the monitoring and review progress to identify success of where greater focus is required. It will also set out the Council's approach to a post 2050 vision for the future and 'horizon scanning' to make sure the council is proactive and can adapt the LTP and transport solutions to accommodate travel behaviour change, innovation and changes to national policy and guidance.

Leicestershire Highways Design Guide

2.60 LCountyC issued a revised highways design guide in early 2025 to take account of the updates to the NPPF and the requirements of LTN1/20 as well as green infrastructure, drainage, highway adoption general design principle changes. The Leicestershire Highways Design Guide (LHDG) states:

"A TA will be expected to demonstrate how a development sits against paragraph 115 of National Planning Policy Framework (NPPF) and give the Local Highway Authority (LHA) sufficient information to consider whether the development should be advised for approval given the tests for advising refusal set out in paragraph 116 of NPPF."

2.61 The LHDG also sets out the expectations from a TA, following the guidelines within the Planning Policy Guidance. The key headings are listed below and should aim to demonstrate that a development is clearly acceptable against the tests for refusal set out in NPPF Paragraph 116.

- Full description of development
- Level of parking in accordance with LHDG minimum standards
- Servicing provision
- Site location and baseline transport and highway conditions
- Proposed sustainable accessibility improvements
- Safe and suitable access for all users
- Predicted multi-modal trip generation

- Vehicle trip breakdown
- Off-site detailed junction modelling
- Mitigation proposals
- Personal Injury Collision analysis
- Highway impact of site construction works

2.62 This TA takes into consideration the TA scope listed in the LHDG ana also includes additional information where necessary, such as strategic transport modelling using the EMFM.

3. BACKGROUND INFORMATION

Introduction

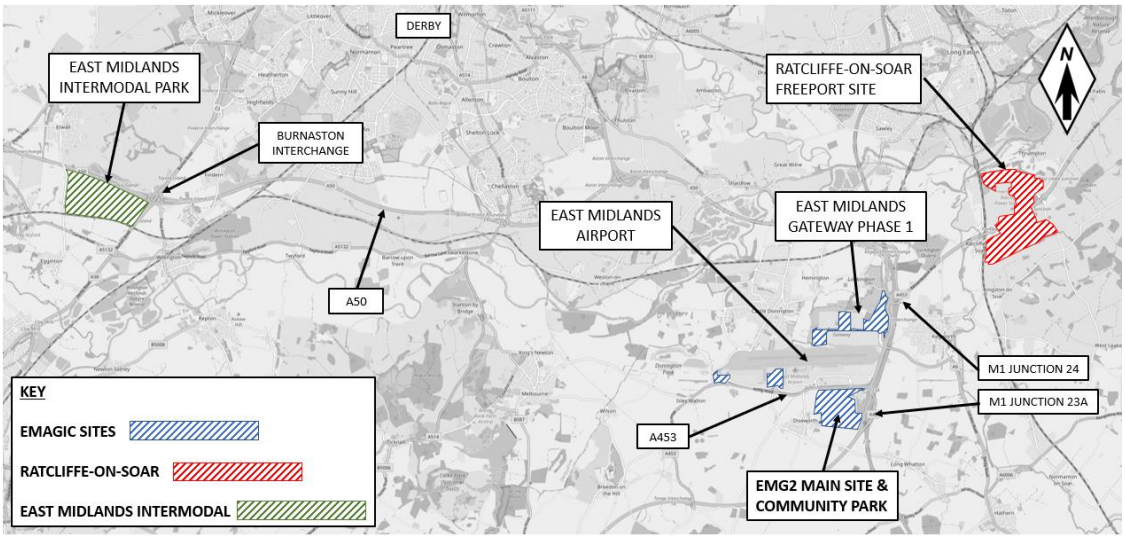
3.1 The following section provides background information on the East Midlands Freeport designation. It then goes on to set out the response to the scoping opinion issued by the Planning Inspectorate. Scoping comments were also received from the TWG during the first statutory consultation process, but these are not repeated in this TA because matters have progressed since then.

East Midlands Freeport Sites & Draft Local Plan Allocations

3.2 On 1 March 2022, the Government announced the designation of the East Midlands Freeport. Freeports are special areas within the UK's borders where different economic regulations apply. Freeports in England are centred around one or more air, rail, or seaport, but can extend up to 45km beyond the port. With Freeport status comes a comprehensive package of measures, comprising tax reliefs, customs, business rates retention, planning, regeneration, innovation and trade and investment support and incentives. East Midlands will be the only inland Freeport in England and will create a globally connected, world-leading advanced manufacturing and logistics hub at the heart of the UK.

3.3 The spatial extent of the East Midlands Freeport covers three complementary locations, including the EMAGIC sites, Uniper's Ratcliffe on Soar site and the East Midlands Intermodal Park (EMIP) near A50 Junction 4. The locations of the East Midlands Freeport sites are shown at **Figure 2** highlighting that EMG1 and the EMG2 Main Site fall within the EMAGIC cluster of sites.

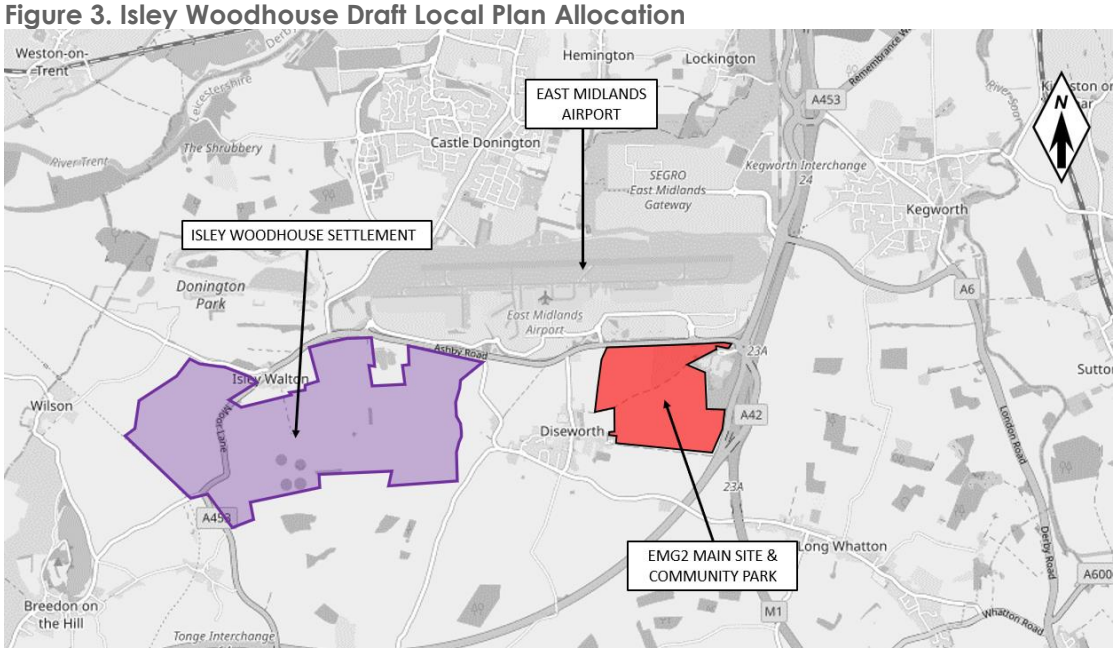
Figure 2. East Midlands Freeport Sites



3.4 NWLDC is also promoting a new settlement through its New Local Plan referred to as 'IW1 – Isley Woodhouse', located to the west of the EMG2 Main Site between Diseworth and Isley Walton. It is being promoted for a residential led mixed use development of

up to 4,740 homes and other ancillary employment, retail and education uses. The Isley Woodhouse settlement location is shown at **Figure 3**.

Figure 3. Isley Woodhouse Draft Local Plan Allocation



3.5 The Ratcliffe on Soar Power Station re-development proposals have received planning permission via a Local Development Order (LDO) for employment development. This in effect allows the site to be redeveloped up to a point where it generates the same level of traffic as was the case when the Power Station was operating at full capacity. A further approval under the LDO is required for anything in addition.

3.6 Furthermore, it is understood that a planning application for development on Isley Woodhouse was submitted to NWLDC in May 2025. At the request of the highway authorities these sites are taken into account in this TA, particularly from a transport modelling perspective. Notwithstanding the fact that the East Midlands Intermodal Park site, near A50 Junction 4 to the southwest of Derby has not progressed, it has also been considered in the transport modelling work.

East Midlands Growth Point

3.7 There is significant planned growth in the vicinity of EMG1 and East Midlands Airport including EMG2, the other East Midlands Freeport sites, Isley Woodhouse settlement and other local plan allocations which are cumulatively referred to as the 'East Midlands Growth Point'. A separate TWG has been set up with the various stakeholders, highway authorities and consultants to consider these sites. The purpose of having a separate combined TWG is to unlock capacity on the SRN to ensure that all developments are able to come forward without having any unacceptable impacts on the network.

3.8 The East Midlands Growth Point includes the following five sites, one of which comprises the EMG2 Main Site and Community Park.

- **East Midlands Gateway Phase 2 (EMG2)** – North West Leicestershire, south of A453 and East Midlands Airport (EMG2 Works) and Plot 16 at EMG1 (EMG1 Works) – EMG2

forms part of the Governments EMAGIC Freeport designation and allocated under Policy EMP90 of the draft Local Plan.

- **Isley Woodhouse** – North West Leicestershire, west of Diseworth Village – draft Local Plan allocation (Policy IW1)
- **Ratcliffe on Soar Power Station (Uniper)** – Rushcliffe, north of A453 Remembrance Way – approved under a Local Development Order (LDO) subject to conditions
- **Land West of Castle Donington** – North West Leicestershire, Castle Donington – draft Local Plan allocation (Policy CD10)
- **Land north of Derby Road, Kegworth & Land north of Remembrance Way, Kegworth** (known locally as Coaker Land) – North West Leicestershire, north/south of A453, east of M1J24 – draft Local Plan allocation (Policy EMP73).

3.9 Isley Woodhouse, Land West of Castle Donington and Coaker Land sites are proposed to be draft allocations in the new NWLDC Local Plan.

3.10 The Highway Works presented in this TA to accommodate the EMG2 Project is consistent with and can form part of a wider strategic scheme currently being considered by the East Midlands Growth Point project which will enable the delivery of wider development sites. However, whilst the mitigation strategy can form a key part of the overarching strategy, it has been developed and assessed without any reliance on any of the other developments listed above or their associated mitigation.

Scoping Discussions

3.11 Scoping discussions with the TWG for the EMG2 Project began in April 2022 where an initial meeting was held to introduce the Scheme and understand any initial points of detail that should be included in the TA. Monthly TWG meetings have then continued, and since October 2024 regular separate meetings focussing on transport modelling have been held with representatives from NH, LCountyC and NCountyC, alongside their relevant transport consultants. These meetings are planned to continue throughout the DCO/MCO Examination, if required. Minutes from all TWG and modelling meetings have been produced and circulated to all attendees with a summary of key actions.

3.12 All meeting minutes up to at least July 2025 have been agreed with NH and NCountyC and all meeting minutes up to the end of 2024 have also been agreed with LCountyC. After the end of 2024, LCountyC stopped reviewing minutes and subsequently confirmed via email on 3 June 2025 that they "*will not be commenting or formally agreeing the TWG or modelling minutes as indicated in the actions below. These can reasonably remain your recorded record of the collaborative meetings undertaken*". **Appendix 19** includes copies of all TWG meeting minutes, whilst **Appendix 20** includes copies of all modelling meeting minutes.

3.13 BWB has produced a series of core documents and Technical Notes summarising key submissions and pieces of information, which are listed at **Table 1**, together with the appendix reference. The purpose of these Technical Notes was to agree key details with the TWG ahead of the DCO/MCO applications being submitted to understand the position of all highway authorities. The Technical Notes are referenced throughout the remainder of this TA.

PINS Scoping Opinion

3.14 An application for a Scoping Opinion was issued to the Planning Inspectorate in August 2024. A Scoping Opinion was received from the Planning Inspectorate, on behalf of the Secretary of State, on 24 September 2024, a copy of which is included as **Document DCO6.1D/MCO 6.1D**.

3.15 Section 3.3 covers 'Traffic and Transport' and a summary of the Planning Inspectorate's comments, along with the action taken in this TA to address them, is provided in **Table 2**.

Table 2. Planning Inspectorate's Scoping Comments and Actions

ID	Reference	PINS Comments	Action Taken
3.3.1	Hazardous/ abnormal loads	The Scoping Report proposes to scope out hazardous / abnormal loads. No details are provided regarding the type of load which will arrive or depart the rail freight terminal. In this absence the ES should include an assessment of this matter	The number of hazardous/abnormal loads cannot be quantified at this stage given construction and operational requirements have not been confirmed. Any hazardous loads would be transported via HGVs and so have been accounted for in the overall HGV numbers assessed as part of the transport modelling work. Whilst the delivery of abnormal loads would normally be planned outside normal working hours, it is possible that some deliveries of major plant and equipment may require special delivery requirements during normal operating hours. In all instances, such deliveries will be planned with appropriate highway authorities and police and executed in compliance with those requirements as per the requirements of the CTMP a copy of which is contained with the Construction Environmental Management Plan (CEMP - **Document DCO 6.3A**)
3.3.2	Methodology	The ES should include details of the methodology and guidance that has been	The methodology undertaken in this TA follows national requirements in

ID	Reference	PINS Comments	Action Taken
		followed in undertaking the Transport Assessment. The ES should consider impacts of the development on capacity and operation of the rail network, including the potential impact of increased rail freight movements on environmental matters, for example accidents and safety and indirect effects on passenger rail transport operations and growth.	Circular 01/2022, the Department for Transports TAG M4, NNNSP and LCountyC guidance documents. There will be no changes to the number of trains permitted to use the EMG1 rail freight terminal as part of the EMG2 DCO or MCO.
3.3.3	Transport Working Group	A record of the meetings and outcomes of the TWG should be appended to the ES, alongside technical notes, reports and drawings.	All minutes from the TWG and modelling meetings are included **Appendix 19** and **20** respectively – references for the associated Technical Notes, reports and drawings are set out in the relevant sections of this TA.
3.3.4	CTMP	The CTMP should be appended and set out proposals for monitoring HGV movements to and from the development.	The CTMP includes a commitment to monitoring construction traffic numbers and ensuring they fall within the maximum limit specified in the CTMP and HGV Route Plan at **Appendices 16** and **15** respectively. Both documents have been agreed with NH.
3.3.5	Traffic Modelling	Traffic modelling should be appended taking account of all proposed floorspace and land uses. The scope of the modelling should be discussed and agreed.	All details regarding traffic modelling using EMFM, VISSIM, LinSig and Junctions 11 are provided in this TA, with the relevant outputs appended. The modelling follows a methodology and scope that has been agreed with the TWG.
3.3.6	Heavy Goods Vehicle (HGV) Movements	Details of the anticipated number of HGVs should be provided during both construction and operational phases.	The number of HGVs forecast to be generated during the construction and operational stages of development are provided in **Section 7** of this

ID	Reference	PINS Comments	Action Taken
			TA and have been agreed with the TWG, aside from LCountyC from a construction numbers perspective at this stage of the process.
3.3.7	SRN Mitigation	The scope of mitigation works on the SRN should be discussed and where possible agreed with the relevant bodies.	Full details of the highway mitigation on the SRN have been discussed and shared with the TWG. The general arrangements have been designed and tested.
3.3.8	A50 Transport Corridor	The potential effects of the development on the A50 corridor should be included.	The Area of Influence and study area for the TA extends to A50 Junction 1. This junction has been tested for capacity to understand the impacts of EMG2, details of which are provided in **Section 10**. No other part of the A50 corridor to the west falls within the Area of Influence. This means that past A50 Junction 1, impacts from the EMG2 Project will be minimal and require no further consideration. This position has been agreed with NH.

Strategy for this Transport Assessment

3.16 The remainder of this TA takes into account the detailed scoping discussions and responses received from key parties during the statutory consultation. It builds on the documents submitted to the TWG to date, which cover key submissions and aim to provide a full understanding of the highway impacts of the proposed development and the package of mitigation to accommodate all highway users.

4. EXISTING HIGHWAY CONDITIONS

Site Details

4.1 The EMG2 Project is located in NWLDC's jurisdiction on land close to East Midlands Airport. It includes the EMG2 Main Site and Community Park situated south of the airport together with land required for associated Highway Works to the east and north of East Midlands Airport along the A453 and M1 corridors. It also includes land to the north of East Midlands Airport in EMG1 to accommodate the EMG1 Works. The boundary of these areas is identified on the Location Plans (Order Limits) (**Documents 2.1 and MCO 2.1**).

4.2 The component parts of the EMG2 Project are described in further detail below to help set the scene with regards to the extent of the existing conditions considered in this section of the TA.

EMG2 Works

4.3 The EMG2 Main Site and Community Park comprises land immediately south of East Midlands Airport and to the east of the village of Diseworth. This falls within the EMAGIC Freeport designation. It has an area of approximately 250 acres, comprising arable farmland and is located approximately 15 kilometres to the northwest of Loughborough, 25 kilometres to the southeast of Derby and 25 kilometres to the southwest of Nottingham. The EMG2 Works also include the upgrade to a substation located within EMG1 but which is required for the EMG2 Main Site.

4.4 The EMG2 Main Site and Community Park are bound to the north by the A453 Ashby Road, which connects with the SRN via Junction 23A of the M1 (known as Finger Farm roundabout) to the east of the EMG2 Main Site. Moto Donington services is located immediately adjacent to the northeast corner of the EMG2 Main Site. The EMG2 Main Site is bisected by Hyam's Lane which is a Public Highway that extends from Diseworth Village in the southwest to the western boundary of the Donington Park services in the northeast.

Highway Works

4.5 The principal areas of land required for the Highways Works, as presented in the 'Overview of Works on the Strategic and Local Road Network' drawing included in **Appendix 21** are as follows:

- Along a section of the M1 motorway northbound between J23A and J24, alongside the northbound off-slip to J24 and the A50 where it connects with J24. This section of the M1 comprises a dual, four lane carriageway with hard shoulders and a central reservation and adjoining areas of landscaping.

- Along the A50 / M1 southbound link to J24. This section currently provides two lanes of traffic within the weaving section to J24.

- Along the A50 westbound link from J24. This has two lanes of traffic and father north joins with the link from the M1 southbound from J24A to then form the A50 dual three lane carriageway.

4.6 Other areas of land affected by the Highway Works are within existing public highway around the access to the EMG2 Main Site on the A453 (referred to as the EMG2 Access Works) and the existing access to EMG1 on the A453 (referred to as the A6 Kegworth Bypass/A453 Junction Improvements).

4.7 The A453 between EMG1 and EMG2 is proposed to provide a new cycleway on its western side, referred to as the Active Travel Link, some of which is located in land to the west of the A453.

EMG1 Works

4.8 The EMG2 Project includes land within parts of the existing EMG1 site located to the north of East Midlands Airport upon which the EMG1 Works are proposed. Specifically, it includes:

- Operational land within the Rail Freight Terminal where higher gantry cranes are proposed than those already permitted (but yet to be constructed) under the EMG1 DCO (this is examined in greater detail in **Section 6**).

- An area of open land adjoining the Rail Freight Terminal which was utilised during the construction of EMG1 for temporary surface water storage ponds whilst drainage works were completed. These became redundant once the drainage works were completed and have been removed. This area of land extends to 6.08ha and is currently unused. It is referred to as Plot 16.

- Operational land and small areas of landscaping within and adjacent to the existing public transport interchange and site management building at the EMG1 site access.

East Midlands Gateway Phase 1

4.9 SEGRO's EMG1 logistics park is located to the north of East Midlands Airport with direct access to the SRN via the A453, A50 and M1 at Junction 24. It currently comprises a 700-acre logistics park. The development incorporates a strategic rail freight interchange which includes a rail freight terminal, capable of handling up to 16 freight trains per day, container storage and HGV parking. **Figure 4** shows the layout of EMG1.

Figure 4. East Midlands Gateway 1 Layout

4.10 Since EMG1 began operating, there has been on-going monitoring and refinement of the Travel Plan by ITP, the appointed Travel Plan Co-ordinator. Annual surveys have been undertaken between 2021 and 2024 as part of each Occupier Travel Plan to record the number of employees travelling by different modes of transport. The findings from the surveys are presented in **Table 3**.

Table 3. EMG1 Employee Travel Survey Findings (2021 to 2024)

Mode	10-year Travel Plan Target	Employee Travel Survey Mode Share			
		2021	2022	2023	2024
Drive alone	68%	43%	42%	51%	56%
Car share	17%	26%	38%	25%	22%
Public transport	10%	28%	14%	18%	16%
Active Travel	5%	0%	3%	2%	1%
Other	n/a	3%	3%	4%	5%

4.11 The data shows that the percentage of staff driving alone is currently at 56%, which is a significant improvement on the original 10-year target of 68%. Given the success of the Travel Plan and Sustainable Transport Strategy at EMG1, ITP are adopting a similar approach to the EMG2 Works. Full details are set out in the Sustainable Transport Strategy and Framework Travel Plan documents in documents **DCO 6.6B** and **DCO 6.6C** respectively. This is also considered in further detail in **Section 7**.

Local Highway Network

4.12 The EMG2 Main Site is currently served by a number of field accesses from Hyam's Lane and Long Holden. Hyam's Lane is an adopted public highway with adjacent Public Footpath (footpath L45) maintained by LCountyC for the 1.3 kilometres section from Diseworth to the point where it meets the western boundary of Moto Donington Services (**Appendix 22** includes a copy of the highway boundary information). The footpath extends through the EMG2 Main Site and connects with the A453 close to Finger Farm roundabout. This is presented in the relevant Parameters Plan (**Document DCO2.5**).

4.13 The EMG2 Main Site is also served by another field access from the A453/Hunter Road roundabout. This field access comprises a dropped kerb with a gate setback from the roundabout.

4.14 The A453 extends in an east to west direction past the northern side of the EMG2 Main Site. It comprises a single carriageway road, with one lane in each direction and is subject to a 50mph speed limit. The carriageway measures approximately 7 metres wide and features double red line (red route) markings along the entire EMG2 Main Site frontage and further afield. A shared footway/cycleway exists along the northern side of the carriageway that extends from the East Midlands Airport access to Finger Farm roundabout and then north along the western side of the A453 up to the A453/A6 Kegworth Road bypass signal controlled junction providing connections into EMG1 and to Ashby Road which extends into Kegworth Village. Much of the section alongside the western side of the A453 is of a poor standard and users are required to cross the A453 at an uncontrolled crossing just north of the Finger Farm roundabout.

4.15 The A453 forms the western and northern arms of Finger Farm roundabout, which provides access to/from the M1 in both the northbound and southbound directions, as well as to/ from the A42 towards Birmingham. At a distance approximately 2 kilometres north of the Finger Farm roundabout, the A453 forms the southwestern and northeastern arms of M1 Junction 24, comprising a large signal controlled grade separated roundabout, providing all movements onto the M1, the A50 towards Derby and the A453 towards Nottingham and local access to Kegworth along the former A6.

4.16 Two Automatic Traffic Count (ATC) surveys were commissioned on the A453 at the EMG2 Main Site frontage for 7-days between 26 November 2022 and 2 December 2022 (inclusive). The ATC surveys recorded vehicle speeds during this time. **Figure 5** shows the locations of the ATC surveys, whilst **Table 4** summarises the results for both survey locations.

Figure 5. Automatic Traffic Count Survey Locations

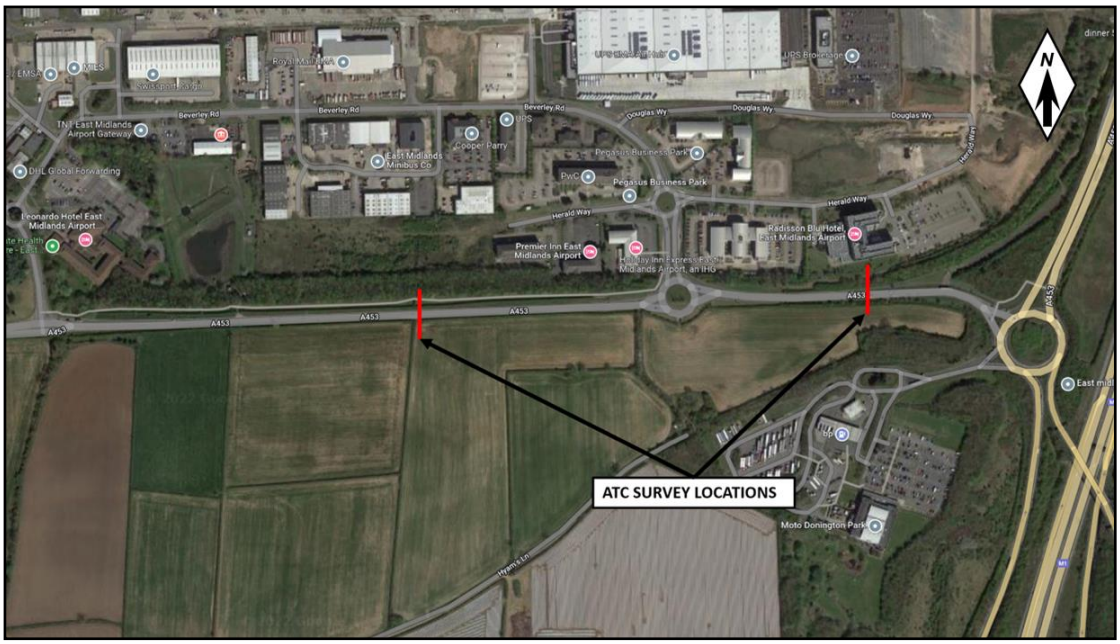


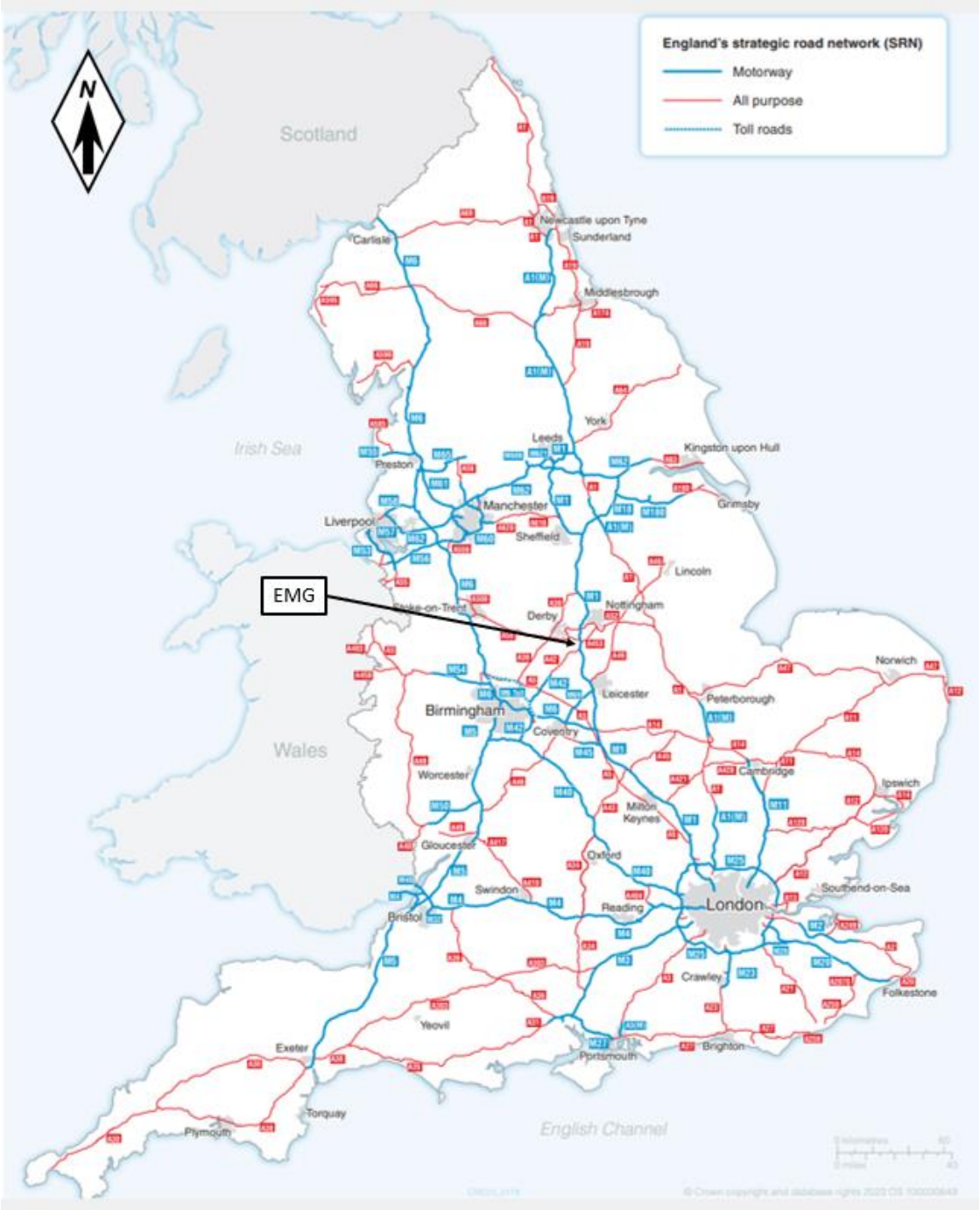
Table 4. Summary of Vehicle Speed Results (A453)

		Eastbound	Westbound
Eastern Survey	Average	36.5	37.2
	85th percentile	43.8	43.4
Western Survey	Average	43.7	46.5
	85th percentile	51.1	54.0

Strategic Road Network

4.17 The EMG2 Main Site is conveniently positioned for access to various parts of the SRN as shown at **Figure 6**. The central location of EMG within the UK and its proximity to M1 Junction 23A and Junction 24 provides excellent connections with the rest of the country via the M1, A453, A50 and A42.

Figure 6. Strategic Road Network



M1 Motorway

4.18 The M1 Motorway is a strategic route for local, regional and international traffic and plays an important role in connecting major settlements within the north and south of the UK. In 2019, the section of the motorway between Junctions 23A and 25 was upgraded as part of the Smart Motorways Programme to provide four lanes in either direction by converting the hard shoulders into running lanes between J24 and J25 with technology and signage works on the already four-lane section between J23A and J25.

A453 between M1 Junction 23A and J24

4.19 The A453 to the southwest of M1 Junction 24 extends north to south and parallel to the M1 Motorway, forming a signal-controlled junction with the EMG1 access roundabout before continuing south to Finger Farm roundabout at M1 Junction 23A, providing access to the M1 southbound and A42. Along this section, the A453 comprises a dual carriageway with two lanes in either direction and provides an alternative route choice for drivers travelling towards the A6, A50 and A453 eastbound, as well as providing a shorter route to the A453 westbound towards the EMG2 Main Site.

A50

4.20 The A50 is a dual carriageway extending to the northwest from M1 Junction 24. Traffic travelling southbound on the M1 can also join the A50 at Junction 24A slightly further north. The A50 continues west from M1 Junction 24 as a dual carriageway west towards Derby, whilst also providing access to the A38 in both directions at A50 Junction 4.

A42

4.21 The A42 extends to the southwest from M1 Junction 23A, joining with the M42 approximately 23 kilometres to the southwest before continuing towards Birmingham. In the vicinity of M1 Junction 23A, the A42 comprises a dual carriageway providing two lanes in either direction.

Local Junctions

4.22 During scoping discussions with the TWG, a number of junctions have been discussed as having the potential to be impacted by the EMG2 Project. This includes the 17 junctions shown at **Figure 7**. The following section provides brief details of each junction. Reference to Junction 1 is missing because it was originally intended that two main access points might be provided to the EMG2 Main Site. This has been limited to one now, which retains the reference of Junction 2.

Figure 7. Location of Key Local Junctions

Junction 2 – A453/Hunter Road Roundabout

4.23 The A453/Hunter Road junction comprises a 3-arm roundabout providing a field access into the eastern part of the EMG2 Main Site on its southern side. It has an Inscribed Circular Diameter (ICD) of 55 metres and is priority controlled with the two arms on the A453 featuring flared approaches with two lanes at the give-way line, whilst Hunter Road features two approach lanes, separating left and right turning movements. Priority-controlled pedestrian and cycle crossings are provided across the A453 (west) and Hunter Road arms, staggering the movements at the central islands. Hunter Road serves various commercial units located within the East Midlands Airport.

Junction 3 – Finger Farm Roundabout

4.24 At a distance approximately 430 metres to the east of the A453/Hunter Road roundabout, the A453 forms a large 4-arm roundabout with the A453 (north), A42 and Donington Park Service access road, known as M1 Junction 23A and referred to as Finger Farm. The roundabout has an ICD of approximately 95 metres with and is priority controlled. All four arms provide flared entries with three lanes at the give way line and pedestrian/cycle crossings are provided across both the A453 arms which connect to an off-road footway/cycleway that continues towards EMG1 and the Moto Donington Services. There is a consented scheme, referred to 'East Midlands Point' which proposes a new arm on the northeastern side of the junction to serve a small employment development. This has been included for in the assessment work.

Junction 4 – A453/A6 Kegworth Road Bypass Signal Controlled Gyratory

4.25 The A453/A6 Kegworth Bypass is a large signal-controlled roundabout that provides access into EMG1. The A453 (south) arm provides two ahead lanes towards M1 Junction 24 and a single right turn lane to the A6 Kegworth Bypass that operate under the same green signal, along with a separately signalled left turn lane into EMG1. The A453 (north) arm provides three lanes, whilst the EMG1 arm (Wilder's Way) provides two lanes turning let towards M1 Junction 24 (single lane with short flare) and two lanes for movements ahead onto the circulatory (again comprising a single lane with short flare). The A6 Kegworth Bypass provides a single lane widening into a short left/ahead flare at the stop line. Signal-controlled pedestrian crossings are provided across the A453 (south) to accommodate movements towards EMG1 and also across the A6 Kegworth Bypass to connect pedestrians and cyclists to Ashby Road which links to Kegworth.

Junction 5 – Junction 24 of the M1

4.26 Junction 24 of the M1 is a large grade separated signal-controlled roundabout, which provides all movements to and from the motorway, whilst also providing connections to the A453, A50 and A6. The A453, which links the motorway with Nottingham via Clifton, joins from the northeast, with the A453 link towards the EMG2 Man Site joining from the southwest, which connects with Junction 23A of the M1 and the A42. Derby Road, which links the motorway with Loughborough via Kegworth joins the roundabout from the southeast, whilst the A50, which links the motorway with Derby joins from the northwest. The A453 arm from the southwest features a segregated left turn towards the A50. A shared footway/cycleway extends east to west across the northern part of the junction, with signal controlled pedestrian crossings provided on the M1 northbound on-slip and M1 southbound off-slip arms, which connect to the A453 and into Kegworth, with a link to Nottingham, even if it is perhaps somewhat convoluted.

Junction 6 – A453/East Midlands Airport Signal Controlled Junction

4.27 At a distance 830 metres to the west of the A453/Hunter Road roundabout, the A453 features a signal controlled junction with the East Midlands Airport access. The A453 provides two ahead lanes in either direction, with the eastern arm featuring a separately signalled right turn lane into the airport. The A453 (west) arm features a short left turn give-way lane into the airport. The East Midlands Airport arm features two lanes which are separately signalled, providing left and right turn movements onto the A453. The footway/cycleway that exists along the A453 (east of the junction) extends into the airport along the eastern side of the carriageway.

Junction 7 – A453/Grimes Gate Priority Controlled Junction

4.28 The A453 forms a priority controlled T-junction with Grimes Gate approximately 380 metres west of the northwest corner of the EMG2 Main Site. The A453 forms the major arms and provides a single ahead lane in each direction along with a left turn slip lane. Grimes Gate forms the minor arm and provides a single lane approach, flaring into two lanes at the give way line (separating left and right turning movements). A priority controlled pedestrian crossing exists across Grimes Gate, which staggers movements with pedestrian refuge islands. Grimes Gate provides access into Diseworth.

Junction 8 – A453/The Green Priority Controlled Junction

4.29 The A453 forms a priority controlled T-junction with The Green approximately 770 metres west of the A453/Grimes Gate junction. The A453 forms the major arms and The Green forms the minor arm of the junction. All three arms feature single lane approaches. The Green extends south and past the western and southern boundaries of Diseworth and further afield provides access into Long Whatton.

Junction 9 – A453/East Midlands Airport Roundabout

4.30 The A453 forms a 3-arm roundabout with an unnamed road serving the western part of East Midlands Airport located approximately 1.2 kilometres west of the A453/The Green junction. The A453 forms the eastern and western arms and provide single lane approaches, flaring into two lanes at the give way line (the A453 western arm although comprises a dual carriageway). The unnamed road into East Midlands Airport provides a single lane entry at the roundabout.

Junction 10 – A453 Walton Hill Signal Controlled Junction

4.31 The A453 forms a signal controlled junction with the A453 Walton Hill approximately 320 metres west of the A453/East Midlands Airport roundabout. The A453 features single lane approaches, with short left and right turn flares providing a route towards Castle Donington. The right turn lane form the A453 (east) is separately signalled to the ahead movement, whilst the left turn lane from the A453 (west) is priority controlled, although features signals at a pedestrian crossing. The road from Castle Donington features two lanes that provide separately signalled movements to the east and west on the A453.

Junction 11 – A42 Junction 14 on-slip/A453/Top Brand/Gelscoe Lane Roundabout

4.32 The southern end of the A453 forms a four-arm priority controlled roundabout with the westbound on-slip to the A42 (exit only) at Junction 14 along with Gelscoe Lane and Top Brand. The three entry lanes all provide single lane approaches with short flares and two lanes at the give way lines. The roundabout provide access to the A42 westbound.

Junction 12 – M1 Junction 23

4.33 Junction 23 of the M1 is a large grade separated signal controlled roundabout providing all movements to and from the motorway and forms part of the SRN. The M1 slip roads form the northern and southern arms, whilst the A512 forms the eastern and western arms and provide connections towards Loughborough and Ashby-de-la-Zouch respectively. All four arms provide three lanes at the stop line onto the roundabout circulatory. A signal controlled crossing exists across the M1 northbound on-slip and M1 southbound off-slip arms providing a pedestrian/cycle link between the A512 east and wester arms.

Junction 13 – A50 Junction 1

4.34 Junction 1 of the A50 is a large grade separated signal controlled roundabout providing all movements to and from the dual carriageway and forms part of the SRN. It can be accessed via Trent Lane through Castle Donington to the south or from Junction 24A of

the M1 to the east. To the west, the A50 continues towards Derby, whilst the arms to the north provide access to villages within Derbyshire and Nottinghamshire. The entry arms from the A50 operate under traffic signals, whilst the arms to the north and south are priority controlled.

4.35 There is an approved mitigation scheme at A50 Junction 1 associated with the 'Land South of A50 Junction 1, Castle Donington' committed development, which involves signalising the Trent Lane and Tamworth Road entry arms and opposing circulatory. These committed improvements are taken into account in the traffic modelling work presented in later sections of this TA. Details of the signalisation scheme are shown on the approved drawings at **Appendix 23**.

Junction 14 – M1 Junction 25

4.36 Junction 25 of the M1 is a large grade separated roundabout providing all movements to and from the motorway and forms part of the SRN. It provides two arms to/from the A52, which to the east extend towards Nottingham and to the west extend towards Derby. The M1 entry and A52 arms operate from traffic signals, whilst the other two smaller arms (Bostocks Lane north and south) are priority controlled.

Junction 15 – Station Road/Broad Rushes Roundabout

4.37 The Station Road/Broad Rushes roundabout is located within the northern part of Castle Donington. The Station Road (N) arm provides access to A50 Junction 1, whilst the Broad Rushes arm provide access to the bypass around the western side of Castle Donington. The Station Road (S) arm provides access into Castle Donington via the High Street. All three arms are priority controlled and provide flared entries with two lanes at the give way line. Pedestrian and cycle crossings feature on the Station Road (N) and Broad Rushes arms.

Junction 16 – A453/Kegworth Road Roundabouts

4.38 The A453/Kegworth Road roundabouts provide access to the Ratcliffe on Soar Power Station. The southernmost roundabout provides access to/from the A453 in the westbound direction, whilst the northernmost roundabout provides access to the A453 in the eastbound direction. Access to/from the A453 in all directions is via slip roads and the roundabouts are priority controlled.

Junction 17 – A453/Barton Lane/West Leake dumbbell Roundabouts

4.39 The A453/Barton Lane/West Leake is a grade separated dumbbell roundabout, with the A453 extending over the connection in between the two roundabouts. The northern roundabout provides a secondary access into the Ratcliffe on Soar Power Station and to/from the A453 eastbound, whilst the southern roundabout provides access to/from the A453 westbound. The roundabouts are both priority controlled.

Traffic Flows

4.40 It was agreed with the TWG (aside from LCountyC after November 2024) that PRTM 2019 will be used at this stage of the process to test the impacts of the proposed

development, because NH had not signed off the updated PRTM 2023 model at the time of commission (this is considered in further detail in **Section 8**). Whilst the links in EMFM are well validated in the area around EMG2, the model is not validated at junction turning count level and therefore observed turning counts have been commissioned. Manual classified turning count surveys were commissioned in November 2022 and May 2023 at the following 16 junctions. The difference in dates was due to additional junctions being added to the study area at that time. The surveys were undertaken between 0700 to 1000 hours and 1600 to 1900 hours and included a recording of queue lengths at 5-minute intervals. These are included in the Furnessing and Forecasting Methodology Note, document EMG2-BWB-GEN-XX-RP-TR-0004_S2-P5, included in **Appendix 2**, agreed with NH and NCountyC.

November 2022 Surveys

- Junction 2: A453/Hunter Road roundabout
- Junction 3: Finger Farm roundabout
- Junction 4: EMGP1 gyratory
- Junction 5: M1 Junction 24
- Junction 6: A453/Grimes Gate priority junction
- Junction 7: A453/The Green priority junction
- Junction 8: A453/East Midlands Airport signal junction
- Junction 9: A453/East Midlands Airport roundabout
- Junction 10: A453/Walton Hill signal junction
- Junction 12 – M1 Junction 23

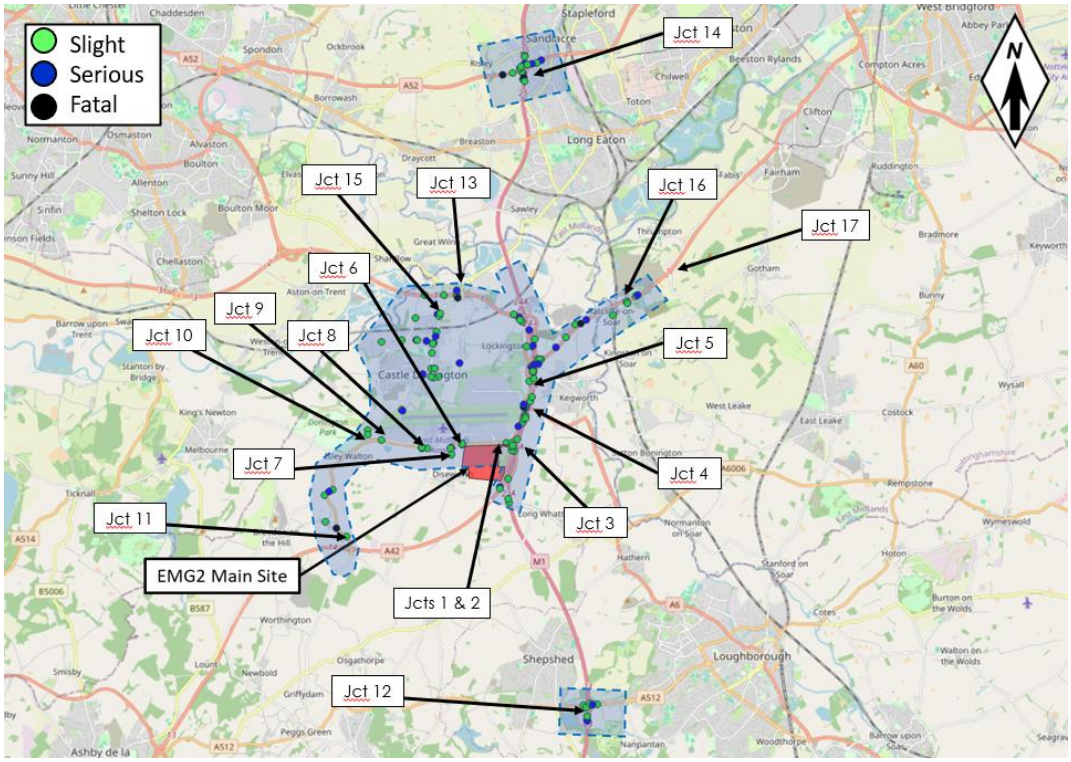
May 2023 Surveys

- Junction 11: A42 Junction 14 on-slip/A453/Top Brand/Gelscoe Lane Roundabout
- Junction 13: A50 Junction 1
- Junction 14: M1 Junction 25
- Junction 15: Station Road/Broad Rushes Roundabout
- Junction 16: A453/Kegworth Road Roundabouts
- Junction 17: A453/Barton Lane/West Leake dumbbell Roundabouts

Personal Injury Collision Data

4.41 An assessment of Personal Injury Collision (PIC) records has been undertaken across the highway network that would be impacted by the EMG2 Project. PIC records were purchased from LCountyC, NCountyC and NH for the relevant parts of the highway network for the six-year period between 1 January 2019 and 23 October 2024. The study area included the following 17 junctions and associated link as presented in **Figure 8** below.

Figure 8. Personal Injury Collison Review Study area



- Junctions 1 & 2: EMG2 Main Site frontage and A453/Hunter Road Roundabout
- Junction 3: Finger Farm Roundabout
- Junction 4: A453/EMG1 access junction
- Junction 5: M1 Junction 24
- Junction 6: A453/East Midlands Airport Signal Junction
- Junction 7: A453/Grimes Gate Priority Junction
- Junction 8: A453/The Green Priority Junction
- Junction 9: A453/East Midlands Airport Roundabout
- Junction 10: A453/Walton Hill Signal Junction (Leicestershire)
- Junction 11: A42 Junction 14 on-slip/Top Brand/Gelscoe Lane Roundabout
- Junction 12: M1 Junction 23
- Junction 13: A50 Junction 1
- Junction 14: M1 Junction 25
- Junction 15: Station Road/Broad Rushes Roundabout
- Junction 16: A453/Kegworth Road dumbbell Roundabouts
- Junction 17: A453/Barton Lane/West Leake dumbbell Roundabouts

4.42 A total of 175 PICs were recorded across the study area, of which 125 were classified as slight, 42 as serious and 8 as fatal. The PIC records have been reviewed in detail within the Highway Safety Position Statement Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0015 Revision P1 (**Appendix 14**). The assessment identified the following three locations where a cluster of PICs has formed highlighting a potential safety problem:

- **EMG1 access junction** – a cluster of PICs have been recorded due to turning movements from the A6 to EMG1 colliding with drivers travelling southbound on the A453. One of the PICs was fatal.

- **M1 Junction 24** – a cluster of PICs have been recorded on the M1 northbound off-slip on approach to the roundabout.

- **A453/The Green** – a cluster of PICs have been recorded due to right turning movements from the A453 west into The Green. This appears to be due to the location of the junction within a dip in the carriageway and potential lack of signage or warnings. However, in looking at historic Google Street View records, the tourist sign to the 'Queen's Head' highlighting a left turn into The Green from the east was obstructed by overgrown vegetation until 2023 and since then there have been no PICs occurring through westbound travelling vehicles. There appear to have been improvements to the warning signs for eastbound vehicles between 2017 and 2020, which appears to have slowed the rate of collisions.

4.43 The remaining areas in the study area did not identify any specific locations or trends or indicate specific existing safety issues. The three locations identified above are considered in further detail within this TA and within the proposed highway mitigation to ensure that there would be benefits of the scheme from a highway safety perspective.

5. EXISTING SUSTAINABLE TRAVEL OPPORTUNITIES

Introduction

5.1 The following section considers the existing facilities in proximity to EMG2 Project and reviews the existing opportunities to walk, cycle and access public transport from EMG2 and EMG1 to understand the current sustainable travel credentials.

5.2 **Appendix 3** includes the WCHAR assessment report which has been produced in accordance with the requirements of DMRB GG 142 to inform the design of the Scheme and proposed Highway Works, as part of EMG2 Works. The purpose of this report is to provide a specific assessment of the existing facilities and provision for pedestrians, cyclists and equestrians that will help inform decision making throughout the design process.

Local Amenities

5.3 The Applicant is targeting BREEAM Outstanding across the EMG2 Project. BREEAM TRA01 requires details of the number and type of existing accessible amenities within 500 metres of the EMG2 Main Site. Table 7.1 of the BREEAM UK New Construction Technical Manual (BRE Global Ltd, 2018) sets out a list of amenities that should be considered. These are shown in **Table 5** along with the walking distance from a central part of the EMG2 Main Site (only access to outside space is available within 500 metres of Plot 16 at EMG1).

Table 5. Key Local Amenities (BREEAM)

Amenity Type	Amenity	Approximate Walking Distance (metres)	Approximate Walking Time (minutes)
Appropriate Food Outlet	Greggs / Costa Coffee – Moto Donington Services	500	6
Access to Cash	BP petrol station – Moto Donington Services	500	6
Access to an outdoor space	EMG2 Community Park	200	2
Access to a recreation or leisure facility for fitness	-	-	-
Publicly Available Postal Facility	-	-	-
Over the counter services associated with a pharmacy	-	-	-
Public sector GP surgery or general Medical Centre	-	-	-

5.4 There are only three key facilities listed in the BREEAM documentation within 500 metres of the EMG2 Main Site. This is not unusual for large scale development of this nature and its locational needs, particularly with regard to accessibility to key nodes of the SRN.

Active Travel

5.5 The Guidelines for Providing for Journeys on Foot (GPJF) document describes acceptable walking distances for pedestrians without mobility impairment. GPJF suggests that the maximum walking distance for town centres is approximately 800m, commuting/schools is approximately 2km and for other facilities is approximately 1.2km.

5.6 GPJF states that an average walking speed of approximately 1.4m/s (5km/hr) can be assumed. The walking distance thresholds for commuting and other facilities set out in the GPJF document (within table 3.2) are summarised below in **Table 6**.

Table 6. GPJF Acceptable Walking Distances Guidance Table

Journey Purpose	Suggested Acceptable Walking Distance (Metres)		
	Town Centres	Commuting/School/ Sight-Seeing	Elsewhere
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

5.7 Similarly, Local Transport Note (LTN 1/20) states that there are limits to the distances generally considered acceptable for cycling. The mean average length for cycling is 4km (2.4 miles), although journeys of up to three times this distance are not uncommon for regular commuters. It is widely considered that cycling has the potential to substitute for short car trips, particularly those under 5km and form part of a longer multi modal journey by public transport. Cycling is therefore an important journey to work mode that has the potential to substitute for short car journeys.

5.8 **Figure 9** identifies a 2km walking distance and 5km cycle distance from the centre of the EMG2 Main Site, whilst **Figure 10** shows the same distance isochrones from Plot 16 at EMG1.

Figure 9. Active Travel Isochrones from EMG2 Main Site

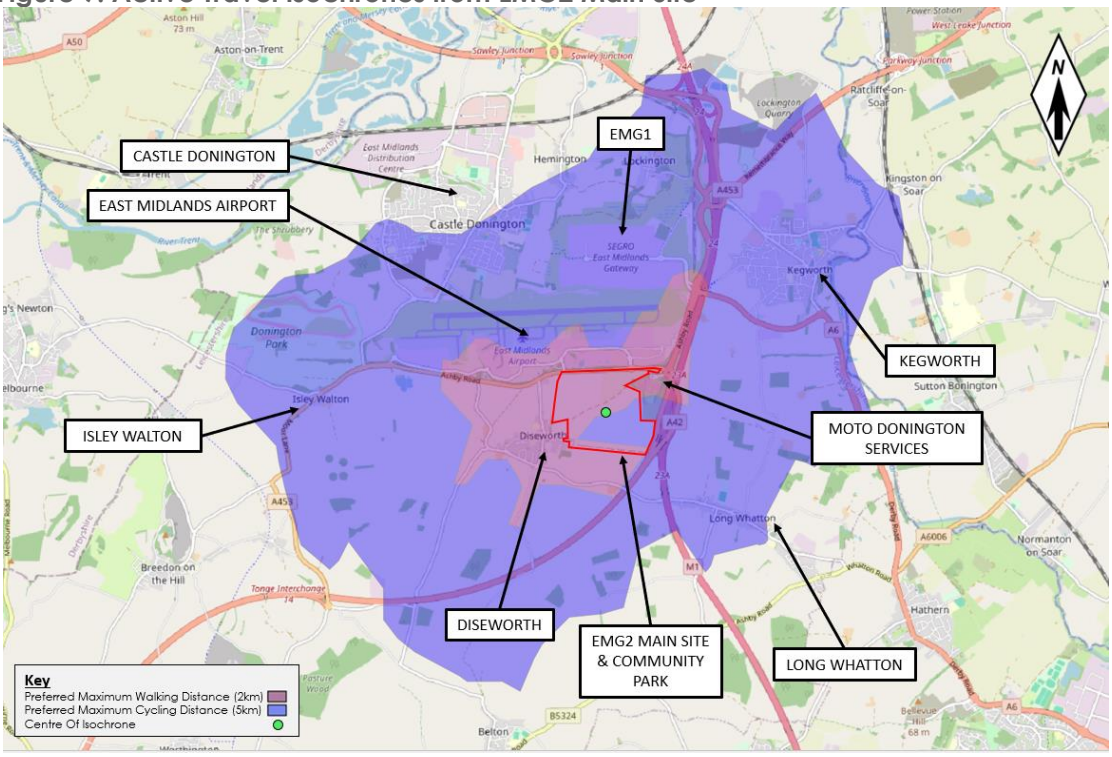
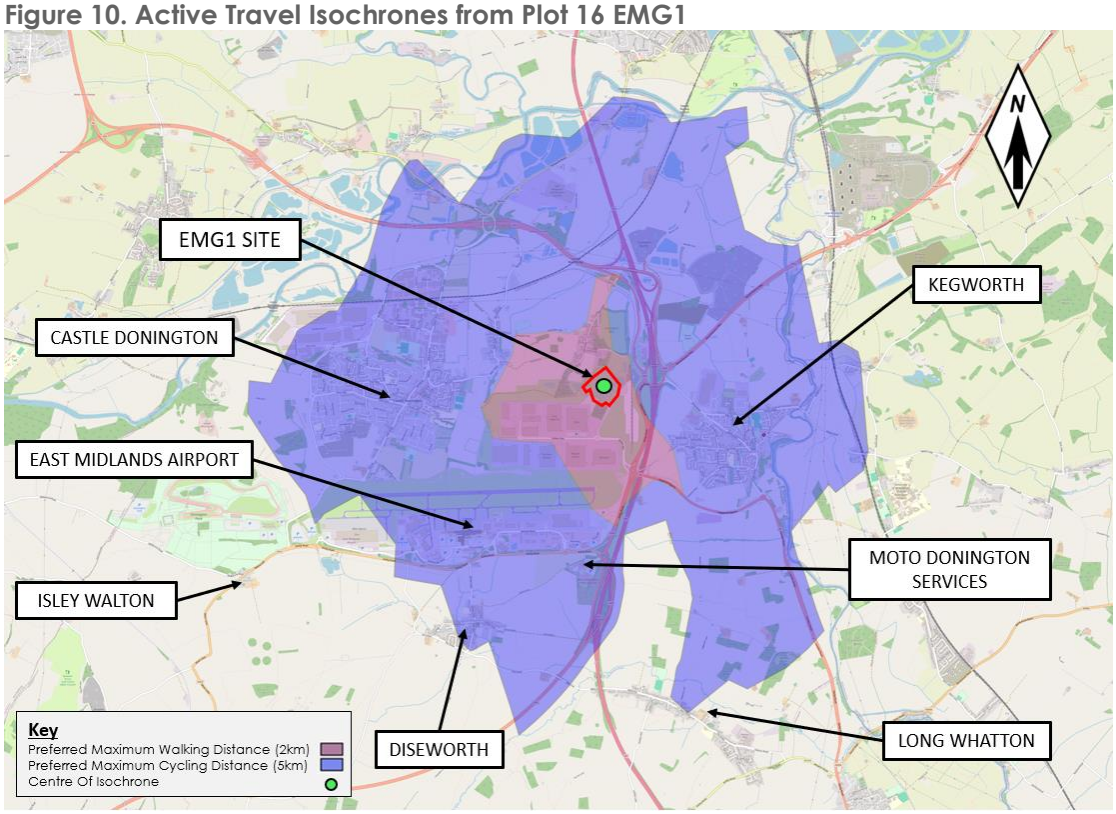


Figure 10. Active Travel Isochrones from Plot 16 EMG1



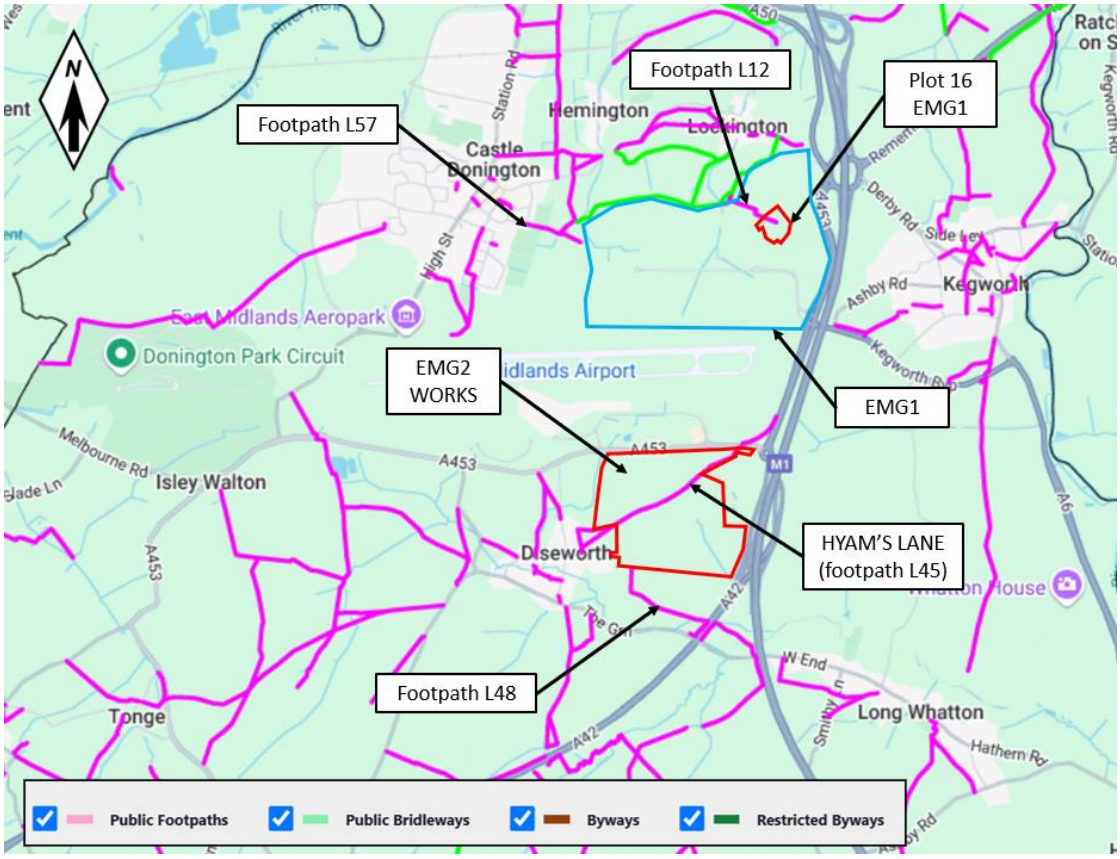
5.9 **Figure 9** shows that the 2 kilometres walking isochrone from the EMG2 Main Site includes East Midlands Airport, EMG1, the village of Diseworth and the Moto Donington Services. The 5 kilometres cycle isochrone extends to the villages of Kegworth, Castle Donington and Long Whatton.

5.10 **Figure 10** shows that the 2 kilometres walking isochrone from Plot 16 EMG1 includes the remainder of EMG1 and the western part of Kegworth. The 5 kilometres cycle isochrone includes all of Castle Donington, Kegworth, East Midlands Airport, Moto Donington Services and parts of Diseworth. It can therefore be concluded that subject to infrastructure being in place, that active travel trips from the surrounding villages can be expected as a reasonable mode of travel.

5.11 With regard to infrastructure, the A453 across the EMG2 Main Site frontage provides a shared footway/cycleway along its northern edge, which extends into East Midlands Airport via the Pegasus Business Park estate roads. It continues east along the A453 to Finger Farm roundabout. From this point, the footway/cycleway connects with a dropped kerb crossing on the A453 connecting with a poor quality footway/cycleway along the eastern edge of the A453 up to EMG1 roundabout. At this point, signal controlled crossings exist to connect pedestrians and cyclists into EMG1 or to Ashby Road which provides on off-road footway/cycleway link into Kegworth.

5.12 **Figure 11** shows the locations of all Public Rights of Way (PRoW) in the vicinity of the EMG2 Main Site and EMG1 including the alignment of Hyam's Lane which bisects the former.

Figure 11. Public Rights of Way



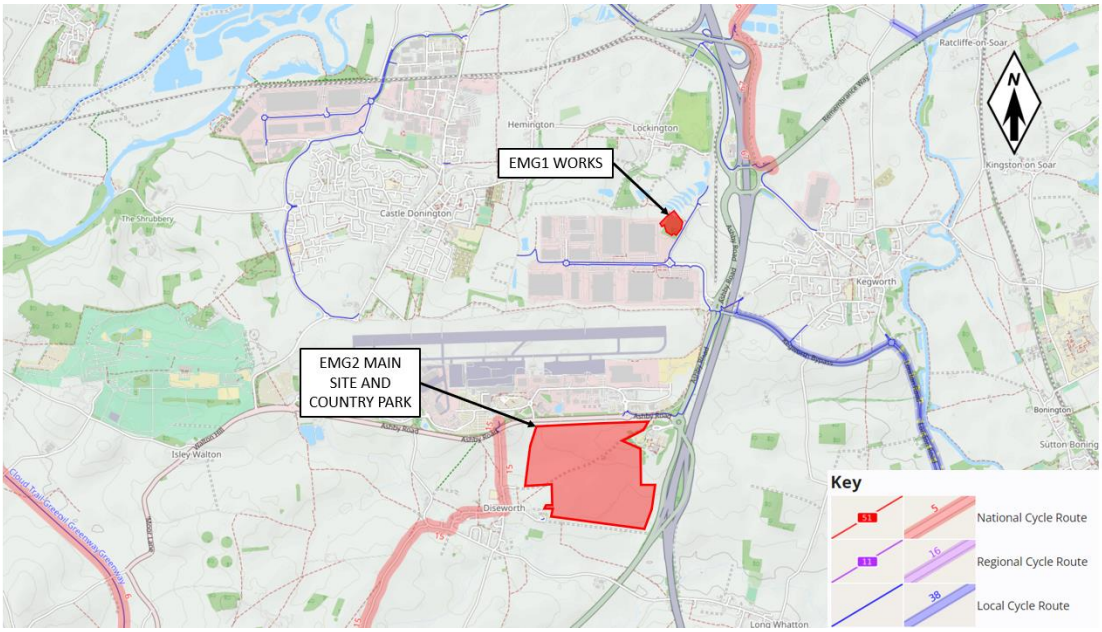
5.13 Hyam's Lane bisects the EMG2 Main Site from northeast to southwest and comprises an unclassified single track road with an unbound gravel surface. A PRoW referred to as Footpath L45/L46 follows the route of Hyam's Lane and provides connectivity between Diseworth Village and Moto Donington Services.

5.14 The area surrounding the EMG2 Main Site and EMG1 Works benefits from an existing network of PRoW, particularly footpaths and bridleways, offering the potential for alternative walking and cycling links. This includes Footpath L48 which extends to the southeast of Diseworth and across the A42 towards Long Whatton.

5.15 Footpath L12 passes through EMG1 by Plot 16 connecting with a public bridleway L11 and Footpath L57 that extends into Castle Donington.

5.16 In terms of cycle infrastructure, **Figure 12** shows the cycle routes in the immediate vicinity of the EMG2 Main Site and EMG1.

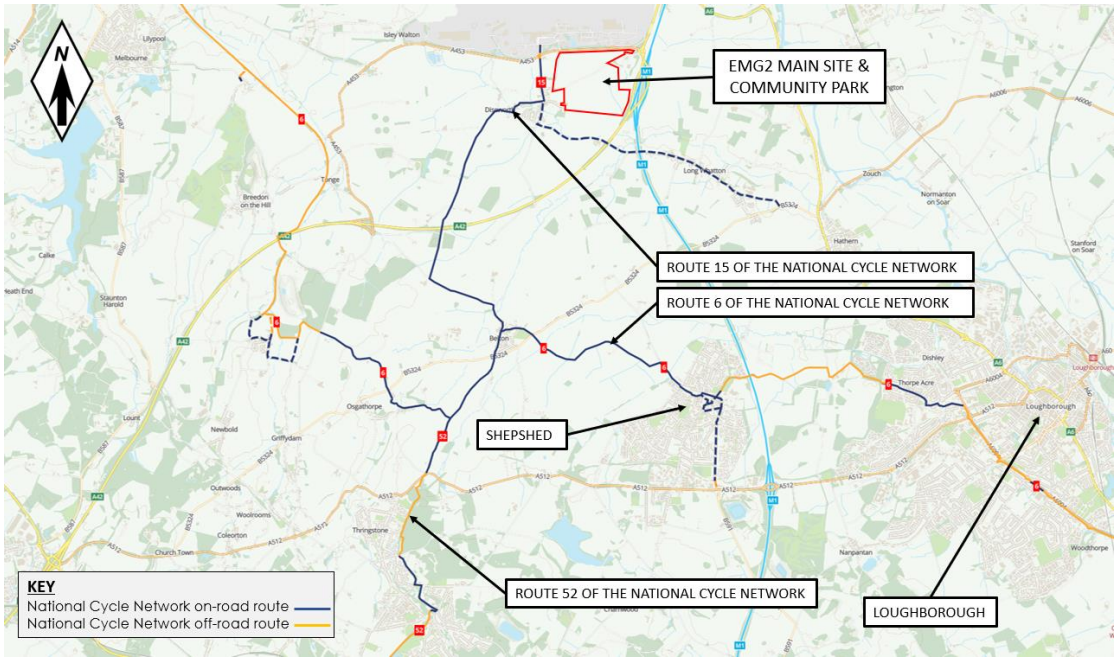
Figure 12. Local Cycle Routes



5.17 The details show the location of the existing cycle route along the A453 between the EMG2 Main Site frontage and EMG1. This connects with existing cycle facilities that leads into Kegworth along the former route of the A6, which comprises off-road footway/cycleway infrastructure.

5.18 Route 15 of the National Cycle Network extends through the village of Diseworth connecting with the A453 from Grimes Gate to East Midlands Airport. The section through Diseworth comprises an on-road route. Route 15 connects with a secondary route that extends along The Green from Diseworth into Long Whatton to the east. **Figure 13** shows the National Cycle Network further afield of the EMG2 Main Site.

Figure 13. National Cycle Routes



5.19 The details show that Route 15 of the National Cycle Network continues south through Diseworth over the A42 towards Belton village before connecting to Route 6 of the National Cycle Network that extends east towards Shepshed and Loughborough or west to smaller villages such as Osgathorpe. Furthermore, Route 15 connects to Route 52 of the National Cycle Network that extends to the south towards Thringstone.

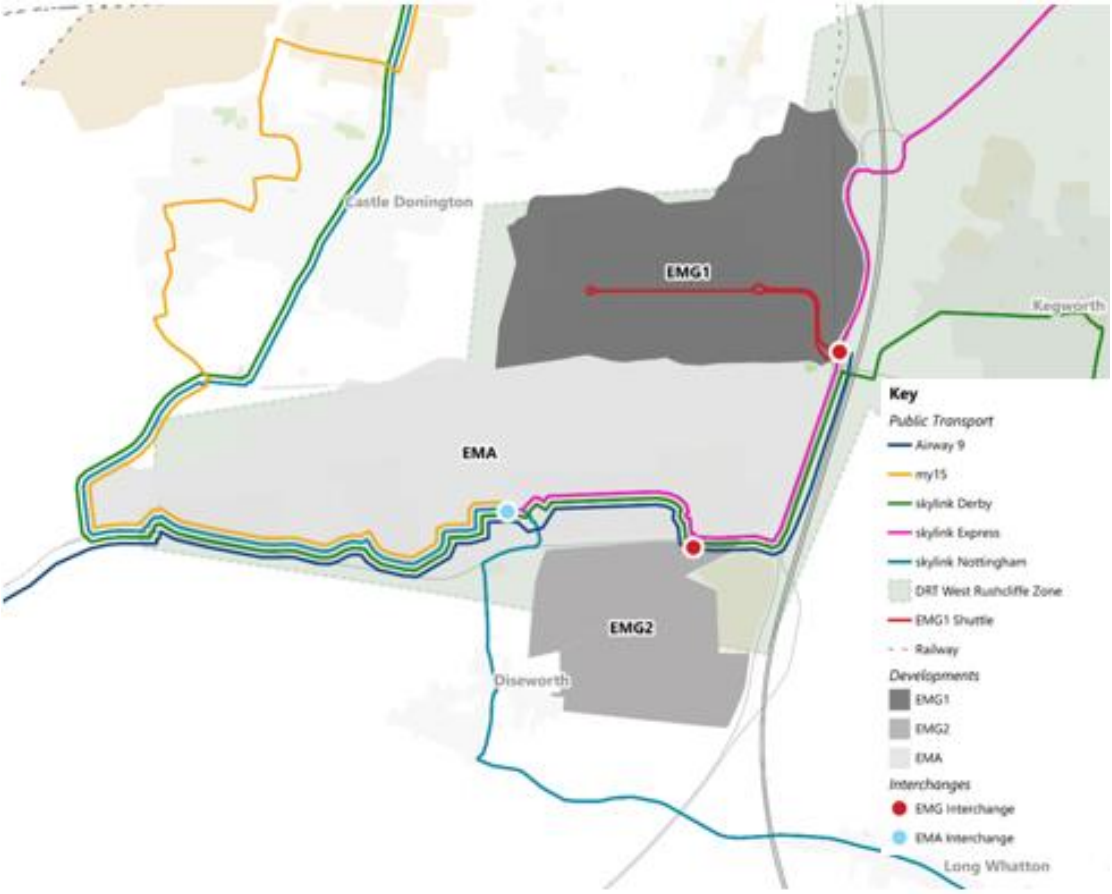
5.20 The proposals have been subject to a WCHAR in accordance with DMRB GG 142. The Assessment Report is provided at **Appendix 3** and the Review Report is provided at **Appendix 24.** Opportunities have been reviewed against the scheme proposals and have been addressed. Where necessary, changes to the scheme have been incorporated within the drawings accompanying the DCO/MCO submission.

Bus Services

5.21 **Figure 14** shows the locations of the local bus stops in the vicinity of the EMG2 Main Site within the East Midlands Airport area and Diseworth. The closest bus stops are located near Pegasus Business Park on Hunter Road approximately 100 metres north of the A453/Hunter Road roundabout and comprise a shelter with timetable information and bus lay-by. These stops are served by Route Numbers 9, Skylink (Derby), Skylink (Nottingham) and Skylink (Airport).

5.22 There are further bus stops within the western part of East Midlands Airport approximately 850 metres from a central part of the EMG2 Main Site which are served by an additional route (My15).

Figure 14. Local Bus Routes



5.23 The above bus services travel to various settlements in the vicinity of the EMG2 Main Site, including Nottingham, Ilkeston, Stapleford, Long Eaton, Leicester, Loughborough, Coalville, Ashby de la Zouch, Swadlincote, Burton-upon-Trent and Derby. The destinations covered by each of the local bus services is shown at **Figure 15,** whilst **Tables 7** and **8** summarise the timetable information for Monday to Saturday and Sundays respectively.

Figure 15. Destinations Served by Local Bus Routes

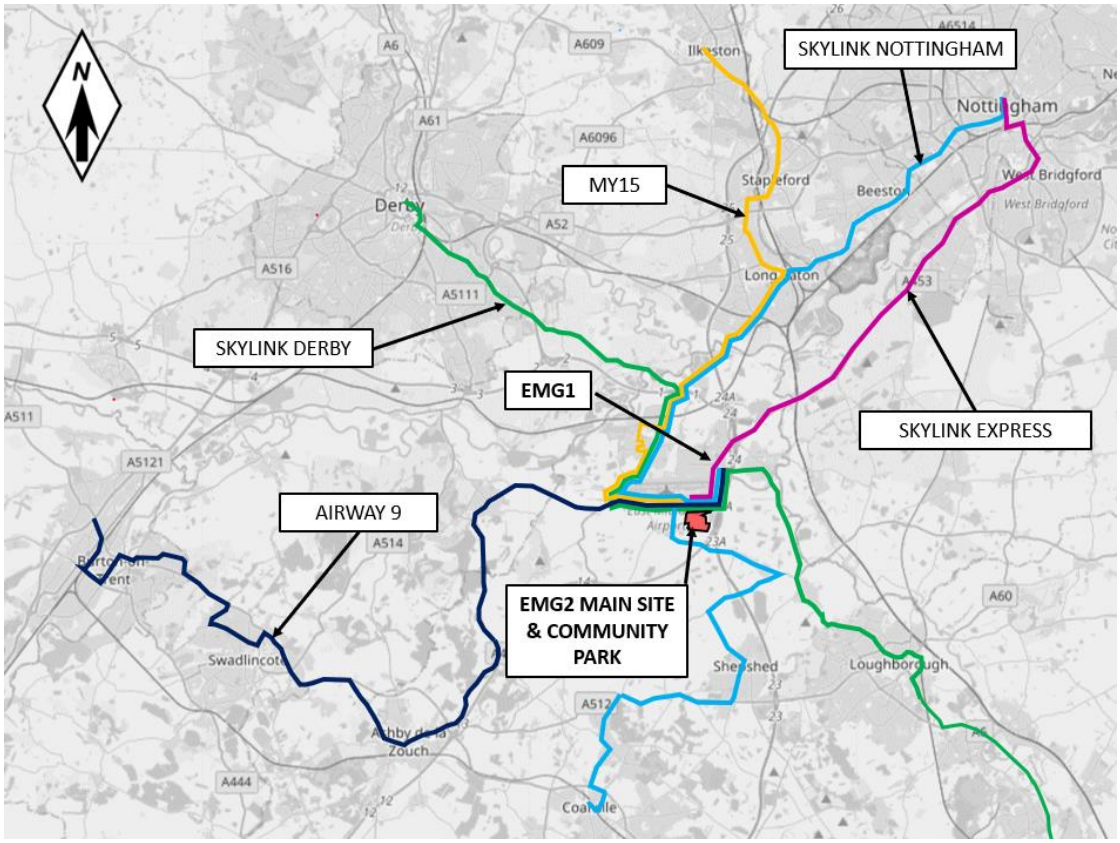


Table 7. Bus Timetable Information (Monday to Saturday)

Service	Route	Peak Time Frequency
Skylink Derby	Leicester – Loughborough – Kegworth – EMG1 – EMA – Castle Donington - Derby	15 minutes
Skylink Express	Nottingham – Clifton – EMG1 (non-stop)	30 minutes
Skylink Nottingham	Nottingham – Long Eaton – Castle Donington – EMA – EMG1	20 minutes
Airway 9	Horninglow – Burton – Ashby – Melbourne – EMA – EMG1	60 minutes
My15	Ilkeston – Stapleford – Old Sawley – Castle Donington - EMA	30 minutes

Table 8. Bus Timetable Information (Sundays)

Service	Route	Frequency
Skylink Derby	Leicester – Loughborough – Kegworth – EMG1 – EMA – Castle Donington - Derby	30 minutes
Skylink Express	Nottingham – Clifton – EMG1 (non-stop)	30 minutes
Skylink Nottingham	Nottingham – Long Eaton – Castle Donington – EMA – EMG1	30 minutes
Airway 9	Horninglow – Burton – Ashby – Melbourne – EMA – EMG1	60 minutes
My15	Ilkeston – Stapleford – Old Sawley – Castle Donington - EMA	60 minutes

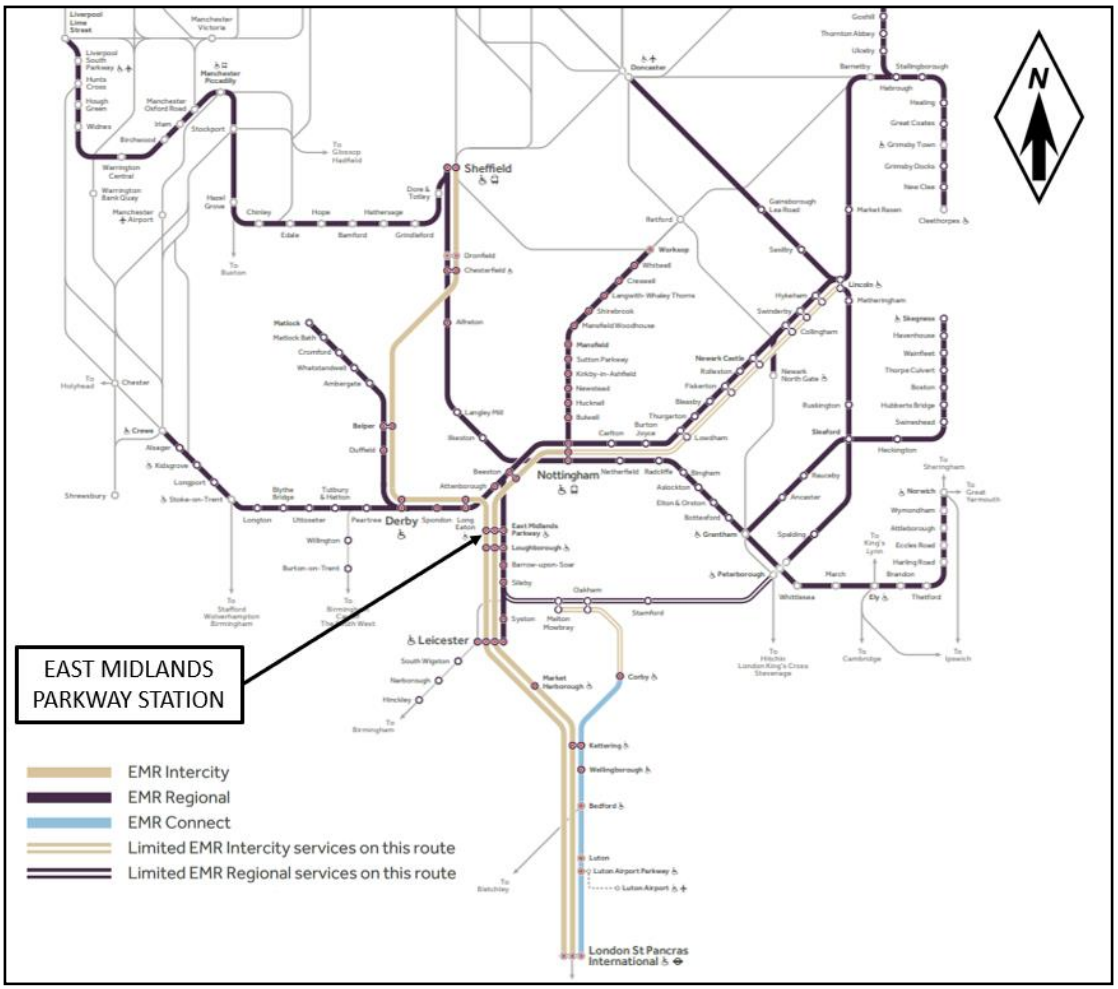
Rail Services

5.24 The East Midlands Parkway Railway Station is located approximately 5.5 kilometres to the northeast of the EMG2 Main Site adjacent to the Ratcliffe on Soar Power Station. It lies on the East Midlands Railway line, which links London St Pancras with the East Midlands (Nottingham, Leicester, Lincoln and Derby) and Sheffield in South Yorkshire.

5.25 East Midlands Parkway Railway Station provides a number of customer facilities including waiting rooms, full time staff support with a service desk/ticket office, toilets, café and refreshment facilities and sheltered cycle parking for 20 bicycles. There is also a large car park with 885 parking spaces that is open 24 hours per day, 7 days a week that operates on a pay and display basis, although longer term season passes are available.

5.26 East Midlands Parkway is served by three train lines, the East Midlands Railway Intercity, which travels between London St Pancras and Sheffield (via Leicester) or London St Pancras and Nottingham (with limited services continuing to Lincoln) plus the East Midlands Railway Connect which travels between Leicester and Sheffield/Lincoln/Worksop (with limited services continuing to Liverpool Lime Street and Norwich). Generally, the above services operate at a combined frequency of one train every 10 minutes within any direction. This includes two trains per hour between Nottingham and London St Pancras. **Figure 16** shows the route map of services operated by the East Midlands Railway line.

Figure 16. Train Services from East Midlands Parkway Station



Accessibility Index Calculator

5.27 The review of existing public transport accessibility includes a calculation of the public transport Accessibility Index (AI) using the BREEAM V6 TRA01/02 Accessibility Index Calculator.

5.28 The AI is an indicator of the accessibility and density of the public transport network. It is influenced by the proximity and diversity of the public transport network and the frequency of services at the accessible nodes. The greater the number of compliant nodes, services and their proximity to the building, the higher the AI. The values represent a distance from a central position of the EMG2 Main Site.

- Distance (m) from the main building entrance to each compliant node.
- Public transport types serving the compliant node e.g. bus and rail.
- Average number of services stopping per hour at each node during the operational hours of the building for a typical day.

5.29 There are five bus stops in the vicinity of the EMG2 Main Site near Pegasus Business Park and within 500m from a central position of it. As a result, the AI for the EMG2 Main Site is 4.41. A copy of the BREEAM calculator is included at **Appendix 25**.

Summary

5.30 In summary, there are a number of existing opportunities to walk, cycle and access public transport services in the vicinity of the EMG2 Main Site and EMG1. The proposed Highway Works and public transport strategy, detailed later in this TA, seek to build and enhance these existing opportunities to provide future employees with a range of travel options to limit reliance on private car travel.

6. PROPOSED DEVELOPMENT

Introduction

6.1 The EMG2 Project comprises a second phase to Segro's EMG1 logistics park and Rail Freight Interchange and comprises the following three components as set out in **Table 9**:

Table 9. Development Proposals Summary

Component	Details	Works Nos.
DCO Application		
EMG2 Works	Logistics and advanced manufacturing development, HGV parking and bus interchange located on the EMG2 Main Site south of East Midlands Airport and the A453, and west of the M1 motorway, comprising 300,000sqm ground floor area of B2/B8 use (assessed as 60,000sqm B2 and 240,000sqm B8 as set out in Section 7 of the TA), plus an allowance for 200,000sqm of B8 mezzanine floorspace	DCO Works Nos. 1 to 5 as described in the draft DCO (**Document DCO 3.1**).
	Together with an upgrade to the EMG1 substation and provision of a community park.	DCO Works Nos. 20 and 21 as described in the draft DCO **(Document DCO 3.1**).
Highway Works	Works to the highway network: the A453 EMG2 access junction works (referred to as the EMG2 Access Works); significant improvements at Junction 24 of the M1 (referred to as the J24 Improvements), works to the wider highway network including the Active Travel Link, Hyam's Lane Works, L57 Footpath Upgrade, A6 Kegworth Bypass/A453 Junction Improvements and Finger Farm Roundabout Improvements.	DCO Works Nos. 6 to 19 as described in the draft **DCO (Document DCO 3.1**).
MCO Application		
EMG1 Works	Additional warehousing development on Plot 16 (26,500sqm plus a mezzanine allowance of 3,500sqm) together with works to increase the permitted height of the cranes at the EMG1 rail-freight terminal, improvements to the public transport interchange, site management building and the EMG1 Pedestrian Crossing.	MCO Works Nos. 3A, 3B, 5A, 5B, 5C, 6A and 8A in the draft MCO (**Document MCO 3.1**).

EMG2 Main Site (DCO)

6.2 The relevant Parameters Plan (**Document DCO 2.5**) shows that Zones 1 to 6a include the maximum area for the warehousing and distribution use at 300,000sqm ground floorspace, plus the potential for a further 200,000sqm of mezzanine floorspace. The land use class applied for is primarily B8 with up to 20% of the floorspace being for B2 use together with ancillary office space.

6.3 Office floorspace is expected to comprise around 6% of the total development floorspace, which is standard for Segro schemes, and is therefore ancillary to the predominant B2/B8 use. All units would be accessible from the EMG2 Main Site via the site access from the A453/Hunter Road roundabout.

6.4 Zone 6b on the Parameters Plan comprises the bus interchange at the EMG2 Main Site, which would accommodate existing public bus services that are proposed to be diverted, plus the dedicated electric shuttle bus service. The location of the bus interchange would ensure electric shuttle buses can travel to all units within the EMG2 Main Site without the need for travelling back onto the A453 and was amended during the consultation process.

6.5 Zone 7 comprises a 1.94ha space in the northwest corner of the EMG2 Main Site which would be used for HGV parking for early arrivals and visits to the EMG2 Main Site.

Highway Works (DCO)

6.6 A package of Highway Works is proposed including EMG2 Main Site access, substantial improvements around M1 Junction 24, as well as more minor works on the local highway network and active travel improvements.

6.7 An overview of the proposed Highway Works is shown on the drawing at **Appendix 21** and they are shown in detail on the Highways Plans (**Documents DCO 2.8A to D**) and the Components of the Proposed Development Plan (**Document DCO 2.7**).

6.8 **Appendix 26** provides the Geometric Design Strategy Record for the local highway network, and **Appendix 27** provides the Geometric Design Strategy Record for the Strategic Road Network. **Appendix 28** provides details of the directional signage changes that form part of the highway works. Within the drawings references to 'NB', 'EB', 'SB' and 'WB' relate to the direction of the flow of traffic i.e. 'eastbound direction' for EB.

6.9 It should be noted that Road Safety Audits are yet to be completed. Briefs were issued to the TWG on 15 July 2025 but are still awaiting sign off. Hence these will be completed as soon as practically possible.

6.10 The proposed Highways Works are described further as follows:

- A453/EMG2 Main Site access junction – providing access to the EMG2 Main Site via a new arm from the A453/Hunter Road roundabout (DCO Works No. 6).
- M1 Junction 24 improvements comprising:
  - Construction of a new free-flow link road from the M1 northbound to provide a direct link to the A50 westbound, which will cross over the A453, and will include the A50 westbound merge alterations (DCO Works Nos. 9 and 10);
  - Widening of the A50 eastbound link at J24 and other related works and traffic management measures in this location (DCO Works No. 11);
  - Alteration of the west side of the J24 roundabout to provide three lanes from the M1 northbound to A453 northbound through the junction, two lanes from

the A453 northbound to the M1 northbound through the junction and removal of the segregated left-turn lane from the A453 northbound to the A50 westbound post feedback from NH (DCO Works No. 12a);

- Signing and lining amendments on the east side of the J24 roundabout and the A453 southbound approach (DCO Works No. 12b);
- Provision of new M1 northbound exit to the A50 and associated improvements to gantries signage, signals and road markings on the M1 (DCO Works No. 8); and
- Changes to the signage on the M1 northbound before J23A to sign the A50 via the new M1 J24 link road rather than via J23A as at present (DCO Works No. 16).

- A6 Kegworth Bypass/A453 Junction Improvements providing widening at the EMG1 roundabout to increase junction capacity to accommodate traffic generation from the EMG2 Main Site (DCO Works No. 13).
- Works to the A453/A42/Finger Farm roundabout (DCO Works No 18).

6.11 There will be multiple pedestrian and cycle access points into the EMG2 Main Site and Community Park to ensure future staff have access to a number of active modes of travel. The following Active Travel Works are proposed as part of the development, which the WCHAR Preliminary Design Stage Assessment and Review Reports, included in **Appendices 3** and **24** have helped inform:

- A new shared use footway/cycleway along the length of the EMG2 Main Site estate road providing pedestrian and cyclist access to all units and ensuring they are separated from vehicle and HGV traffic (part of DCO Works No. 2).
- The existing PRoW L45 which bisects the EMG2 Main Site will become integrated into Hyam's Lane. Hyam's Lane will be resurfaced and upgraded to allow cyclist access (**DCO Works No. 7**).
- A new Toucan crossing point will be installed on the A453 to the east of the Hunter Road roundabout for pedestrians and cyclists to safely cross the A453 to/from EMG2 Main Site and connecting to the Active Travel Link, unlocking connections to EMG1, Kegworth and beyond (part of **DCO Works No. 6**). The crossing has been included for in the EMFM modelling and is examined in further detail below.
- A new shared use cycle track from Hyam's Lane to the proposed A453 Toucan crossing (part of **DCO Works No. 2**).
- An Active Travel Link providing a dedicated cycle track alongside the A453 between EMG1 and the EMG2 Main Site (**DCO Works No. 14**). This will provide a new dedicated shared use cycle track north of the new Toucan crossing alongside the A453 to connect the EMG2 Main Site with EMG1 for pedestrians and cyclists as well as improving cycling in the wider area between Kegworth and East Midlands Airport.
- The route along Hyam's Lane, to the Toucan Crossing and then to the EMG1 access junction will form of an extension to the National Cycle Route 15 providing connectivity towards Kegworth and EMG1 to the northeast and Diseworth to the southwest.

- The Hyam's Lane Works will also provide signage at the junction of Hyam's Lane and Grimes Gate and resurfacing works along Hyam's Lane to enhance cycle access.
- At the A453/East Midlands Airport junction an uncontrolled crossing providing pedestrian crossing improvements across the A453 to between the airport and proposed EMG2 Community Park.
- The upgrade of public footpath L57 which connects Diseworth Lane to the west of EMG1 and Castle Donington for improved connectivity for cyclists. Payment was made to LCountyC under the Section106 agreement for EMG1 for the upgrade works to be carried out by LCountyC however these works have never been implemented.
- A new footpath from the western end of Hyam's Lane and PRoW L45/L46 northwards through the proposed Community Park connecting to the A453 Ashby Road by the Airport access via the western edge of the EMG2 Main Site.
- A new bridleway from the western end of Hyam's Lane and PRoW L45 southwards through the proposed Community Park connecting to Long Holden and PRoW L48. Connecting these two PRoWs will create a valuable new publicly accessible route all the way from PRoW L48 to the airport and will create a loop for use by equestrians.
- A new footpath from the eastern end of Hyams' Lane and PRoW L45 southwards connecting to Long Holden via the eastern edge of the EMG2 Main Site creating a publicly accessible circular route around the southern part of the EMG2 Main Site.
- Restricting access to Long Holden by changing its status from an all purpose highway to a bridleway which more accurately reflects its character and will allow access to be controlled.

6.12 The location of the new Toucan crossing on the A453 to the east of the Hunter Road roundabout is on the desire line between the EMG2 Main Site and EMG1/Kegworth and on a section of the A453 where vehicle speeds are slower because drivers have negotiated the roundabouts at either side. The ATC speed survey results at **Table 4** confirm that average vehicle speeds on this section were between 36.5mph and 37.2mph and 85th percentile seeds were between 43.4mph and 43.8mph.

6.13 **Table 10** includes an extract from LTN1/20 showing the suitability of various crossing types based on roads carrying different traffic flows and speeds. It confirms that signal controlled crossings are suitable for most people on roads with speeds between 40mph and 50mph with any volume of traffic flows. As a result, a standalone Toucan crossing is considered the most appropriate crossing type for this location.

Table 10. Crossing Design Suitability (extract from Table 10-2 of LTN 1/20)

Speed Limit	Total traffic flow to be crossed (pcu)	Maximum number of lanes to be crossed in one movement	Uncontrolled	Cycle Priority	Parallel	Signal	Grade separated
≥ 60mph	Any	Any					
40 mph and 50 mph	> 10000	Any					
	6000 to 10000	2 or more					
	0-6000	2					
	0-10000	1					
≤ 30mph	> 8000	> 2					
	> 8000	2					
	4000-8000	2					
	0-4000	2					
	0-4000	1					

Provision suitable for most people

Provision not suitable for all people and will exclude some potential users and/or have safety concerns

Provision suitable for few people and will exclude most potential users and/or have safety concerns

Notes:
1. If the actual 85th percentile speed is more than 10% above the speed limit the next highest speed limit should be applied
2. The recommended provision assumes that the peak hour motor traffic flow is no more than 10% of the 24 hour flow

6.14 The proposed crossing at the A453/East Midlands Airport junction would be uncontrolled with pedestrians walking with traffic. Whilst LTN1/20 suggests a signal controlled crossing would be suitable for most people, pedestrians would be able to cross using the existing islands, which would be connected with dropped kerbs and tactile paving, allowing for crossing movements in front of vehicles when traffic is being held on a red signal. This arrangement is considered suitable because it forms a minor part of the scheme seeking to improve connections between people working at the airport and the proposed Community Park, so usage of the crossing is expected to be low and not warrant full signal controlled crossings.

EMG1 Works (MCO)

6.15 The EMG1 works as shown on the relevant Parameters Plan (**Document MCO 2.5**) and the Highways Plan (**Document MCO 2.8**), comprise the following elements:

- Provision of a maximum of 26,500sqm additional warehousing unit on Plot 16 which lies adjacent to the rail freight terminal, with an additional 3,500sqm of internal mezzanine floorspace.
- An increase to the maximum permitted height of gantry cranes at the rail freight terminal by 4m, to 24m overall. At present the terminal uses mobile reach stacker cranes but the EMG1 DCO permitted installation of gantry cranes up to 20m. Therefore, approval is sought to install gantry cranes up to 24m which would provide additional operational efficiency to the terminal. **Appendix 10** includes the EMG1 Rail Freight Technical Note – document reference EMG2-BWB-GEN-XX-RP-CH-0011 Revision P1 - explaining how the changes to the gantry crane height would have no impact on trip generation, which has been agreed with the TWG. The details in this Technical Note have been formally agreed with NH and NCountyC in

the Stage 1B sign off sheet (**Appendix 29**) and with LCountyC by email on 11 December 2024 (**Appendix 30**).

- An expansion of the EMG1 Management Suite by the EMG1 site entrance to cater for the additional demand of management facilities.
- Enhancement to the Public Transport Interchange by way of installation of EV charging infrastructure for buses and provision of a drop-off layby adjacent to the transport hub.
- Providing a signalised pedestrian crossing over the exit from EMG1 (MCO Works No. 8A).

Public Transport Improvements

6.16 The EMG2 Project includes delivering a purpose built bus interchange within the northeast part of the EMG2 Main Site close to Pegasus Business Park and served from the A453/Hunter Road roundabout. The location of the bus interchange has emerged following discussions between ITP and local bus operators (Trent Barton) and the TWG. The location of the bus interchange within the EMG2 Main Site would now remove the need for buses to exit back onto the A453 and all units would be served internally directly from the bus interchange via the electric shuttle buses. The location of the bus interchange allows for the interception of existing bus services travelling along the A453 and via Pegasus Business Park.

6.17 The bus interchange will include dedicated bays for commercial bus services to call at as well as the dedicated on-site electric shuttle buses that will call at the interchange and transfer staff and visitors to the units within the EMG2 Main Site, replicating the success of the system implemented at EMG1. Provision will be made at the interchange for EV bus charging points to facilitate the electric shuttle bus service. The bus interchange will also include a range of other facilities such as undercover waiting areas, toilets and real time bus information. All bus stops will be provided with raised kerbs to aid level boarding for those with mobility impairment.

6.18 The on-site electric shuttle buses will transfer people from the interchange to all units within the EMG2 Main Site. A number of bus stop will be provided along the main industrial access road through the EMG2 Main Site close to the entrances to each unit. Each stop will comprise a flagpole, shelter and timetable information. In addition, staff and visitors will have the option of travelling to/from the bus interchange using the free electric bicycles.

6.19 The BREEAM AI has been updated to include the improvements with the provision of a new bus interchange accommodating a total of six buses (including the internal electric shuttle buses) and reduced walking distance compared to the existing bus stop at Pegasus Business Park. A copy of the BREEAM calculator for the EMG2 Works is included at **Appendix 31** and shows that the EMG2 Main Site would have an AI of 6.21, which is an improvement to the existing score of 4.41, as detailed in Section 5.

Proposed HGV Park

6.20 A parking area for HGVs is proposed which will cater for HGV visits to the EMG2 Main Site and will allow early HGV arrivals to wait before they serve the relevant building within the EMG2 Main Site.

EMG2 Main Site Vehicular Access

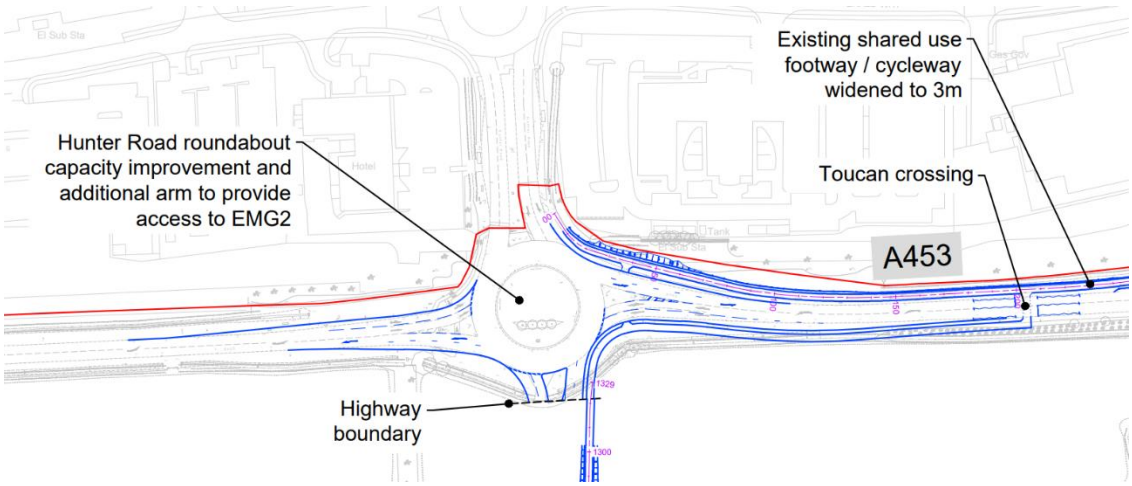
6.21 The relevant Parameters Plan (**Document DCO 2.5**) shows how the EMG2 Main Site will be served by a single point of access from the A453/Hunter Road roundabout. This would be via a fourth arm at the southern side of the roundabout replacing the existing field access. This access would serve 100% of development on EMG2 Main Site, as well as the new bus interchange and HGV park. The access strategy has evolved over time, where initially two points of access were proposed. Details of the access strategy and its evolution over time are provided in Pages 19 to 22 of the Design Access Document (**Doc DCO 5.3/MCO 5.3**).

6.22 The access arm into EMG2 Main Site will comprise a dual carriageway with two lanes for vehicles entering and exiting it. The section of dual carriageway then narrows to a 10.5m wide single carriageway continuing south to a new internal roundabout, from which point the remainder of the new industrial road would comprise a single carriageway road of 10.5 metres in width.

6.23 The dualling and 10.5m wide single carriageway will help overcome any potential concerns from an emergency access perspective. Emergency vehicles will also have the ability to access the EMG2 Main Site via Hyams Lane, which would measure a minimum of 3.7 metres wide between the EMG2 main site road and Diseworth to allow such use (but not general vehicle traffic).

6.24 The EMG2 Main Site access works also include extending the A453 westbound entry flare to 75 metres and also extending the length of the two lane exit in the westbound direction. The general arrangement of the proposed EMG2 Main Site access can be found at **Document DCO 2.8A**, whilst an extract is shown at **Figure 17**.

Figure 17. Proposed Site Access to EMG2 Main Site



6.25 The drawings included in **Appendix 26** include for swept path analysis of 16.5 metres and 18.55 metres long HGVs entering and departing the EMG2 Main Site via the proposed A453/Hunter Road roundabout in all directions. It demonstrates how turning movements in all directions would be achievable without conflicting drivers in adjacent lanes. Further swept path assessments will be undertaken as part of approval of details under the EMG2 DCO requirements.

6.26 Development on Plot 16 which forms part of the EMG1 Works would be served by the existing access along Wilder's Way and the existing industrial road that leads to the EMG1 rail freight terminal.

Operations

6.27 It is anticipated that the proposed development would predominantly operate across three shift patterns, similar to EMG1 (although this will not be known until end occupiers are identified). These shift patters are likely to be as follows and across 7 days a week:

- 06:00 – 14:00 hours
- 14:00 – 22:00 hours
- 22:00 – 06:00 hours

6.28 As each of the units would provide ancillary office space, it is envisaged that there would be an additional shift pattern of 0900 to 1730 hours.

Parking Provision

6.29 Final layouts of each plot, including the number of parking spaces, will be finalised as each plot comes forward in detail. However, at this early stage the number of parking spaces across the development has been considered.

6.30 LCountyC's adopted parking standards are outlined in the LHDG. This contains the Council's normal maximum parking requirements for non-residential land uses. The parking standards for employment land uses vary depending on the location of the site in question, which in this instance is 'out of any town'. **Table 11** shows LCountyC's standards for both B2 and B8 land uses.

Table 11. Leicestershire County Council Parking Standards

Vehicle Parking Type	B8 Use Class	B2 Use Class
Cars	One space for every 150sqm	One space for every 55sqm
Disabled	Six bays plus 2% of total parking spaces (when total over 200 spaces	
HGV	One lorry space for every 400sqm	
Motorcycles	One space, plus an additional space for every 10 car parking spaces	
Bicycle	One long stay space per 500sqm (staff) plus one short stay space per 1,000sqm (visitors)	
Electric vehicles	Follow guidelines in the latest Building Regulations, which states all new non-residential buildings with more than 10 parking spaces must have a minimum of one charge point and cable routes for one in five (20%) of the total number of spaces	

6.31 In terms of the dimensions of parking spaces, the LHDG sets out the following:

- Minimum car parking size is 2.4 x 5.5m with an additional 0.5m if bounded by a wall, fence, hedge, line of trees or other similar obstructions on 1 side, 1m if bounded on both sides.
- Motorcycle parking spaces should be 2.5 x 1.5m with a 1m space between each bike.
- Cycle parking should be secure and under cover and Sheffield stands are preferred. They can accommodate two cycles provided that the stands are placed 1m apart and at least 0.5m from any wall.

6.32 During the statutory consultation, residents raised concern with existing on-street parking taking place in Diseworth associated with people travelling to East Midlands Airport. This issue is therefore separate to the EMG2 Project; however, a compliant amount of parking will be provided across all units at EMG2, which should ensure that all parking is accommodated within the site and not within any of the nearby villages.

6.33 The EMG2 Main Site will remain privately owned by SEGRO who will put measures in place to prevent non site related vehicles, such as those associated with East Midlands Airport, from parking within the EMG2 Main Site.

6.34 Disabled parking will be provided at 10% of the total car parking spaces. Car sharing is being actively promoted within the Framework Travel Plan assisted by 5% of spaces being designated to those who car share. This is to also meet the credits required from a BREEAM perspective.

6.35 Whilst LCountyC does not currently adopt any electric vehicle charging standards, Segro has a policy to provide 20% of parking space at all their sites with electric vehicle

charging equipment. This exceeds the minimum requirements within the latest Building Regulations guidance which requires 10% of all spaces.

HGV Routeing

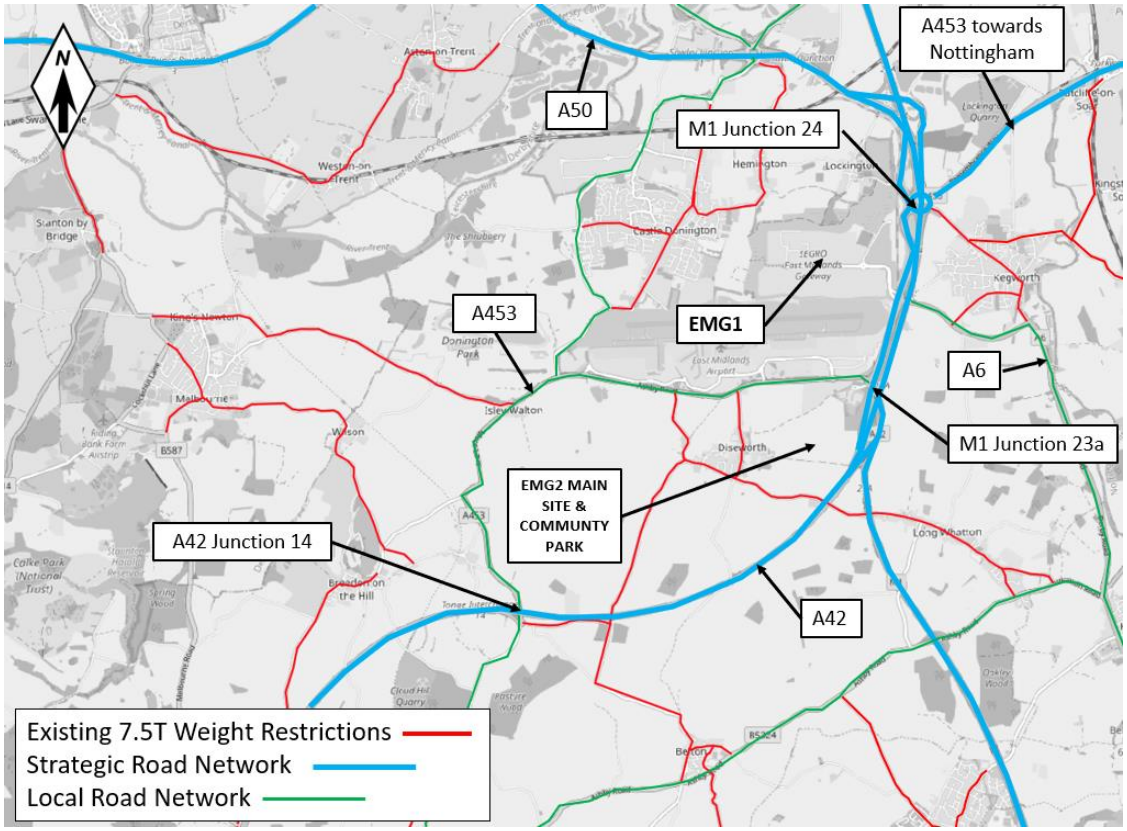
6.36 HGV routeing associated with the EMG1 Works will be covered via the formal routeing strategy agreed, and successfully implemented, for EMG1.

6.37 The EMG2 Main Site is located near the SRN in close proximity to M1 Junctions 23A and J24 with good access to the M1, A453, A50, A6 and A42. Nevertheless, there are local sensitivities regarding the potential increase in HGV movements on the local road network surrounding EMG2. The HGV Routeing Plan Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0016 Revision P3 (**Appendix 15**) therefore presents the HGV Routeing Plan for the EMG2 Works for the avoidance of doubt, whilst the following section provides a summary of the key details.

6.38 The following local roads leading into villages surrounding the site feature 7.5T weight restrictions, which are also shown on **Figure 18**:

- Hill Top & High Street, Castle Donington
- Grimes Gate & The Green, Diseworth leading to Long Whatton
- Derby Road, Kegworth
- Melbourne Road, Melbourne
- Kegworth Road, Ratcliffe on Soar.

Figure 18. Existing Weight Restrictions



6.39 The existing weight restrictions mean that HGVs associated with the EMG2 Project will be required to travel via the SRN and major local roads. The permitted routes for HGVs are therefore listed below and reflect those shown in blue and green in **Figure 18**.

<u>To the north</u>

- A453 (E), M1 northbound
- A453 (E), A453 eastbound towards Nottingham

<u>To the east</u>

- A453 (E), A6

<u>To the south</u>

- A453 (E), M1 southbound
- A453 (E), A42
- A453 (W), A42 via Junction 14 (albeit EMFM does not assign HGVs in this direction)

<u>To the west</u>

- A453 (E), A50 westbound

- A453 (W), Castle Donington western bypass, A50 westbound via Junction 1 (albeit EMFM does not assign HGVs in this direction)

6.40 All occupiers will need to comply with the existing weight restrictions which will ensure that HGVs travel using the permitted routes.

6.41 In the event that parts of the SRN are temporarily closed, HGVs would have alternative route choices to reach the EMG2 Main Site and EMG1. This is largely supported by the A453 that extends parallel to the M1 motorway between Junction 23A and J24 alongside other strategic connections with the A50, A6 and A42. Full details of the diversion routes are included in the HGV Routeing Plan Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0016 Revision P3 - at **Appendix 15**, which has been agreed with NH and will ensure that even when parts of the SRN are closed. HGVs would still be able to avoid the local road network to reach the EMG2 Main Site and EMG1.

6.42 During a time when road closures are in place, or a PIC has occurred on part of the SRN, then NH adopt protocols to manage closures and keep disruption and delays to a minimum. These protocols include:

- Dedicated events and incident liaison officers
- Dedicated route managers
- Route cards for temporary directional signage to be put out on the network
- VMS signage for long distance and strategic routes advance warning drivers
- Notifications to key significant important stakeholders such as East Midlands Airport.

6.43 NH is subject to a Key Performance Indicator which requires 86% of lane compromising incidents to be cleared within 60 minutes of the incident occurring.

6.44 For the logistics operators at the EMG2 Main Site, management staff will review the transport position across the wider network allowing drivers to adjust their route strategies to avoid congested areas accordingly (whilst continuing to follow all existing weight restrictions).

6.45 With the existing weight restrictions in place, the EMG2 DCO does not include any specific management measures to control the movement of HGVs. This is the same at EMG1 where no management measures were required as part of the DCO to control the movements of HGVs.

6.46 Notwithstanding this, SEGRO has a management company at EMG1 who can be contacted should there be issues with HGVs contravening the existing weight restrictions and the management company will also cover the EMG2 Main Site. Since EMG1 has started operating, SEGRO are aware of only two complaints of HGVs travelling along non-permitted routes, one of which was valid whilst the other was not. Therefore, there are no significant issues at present with HGVs associated with EMG1, which is expected to also be the case for the EMG2 Main Site. Issues with HGV movements are no longer raised at EMG1 meetings with the local Parish Councils.

Construction

6.47 A CTMP for the DCO Scheme has been produced and appended to the CEMP in **Document DCO6.3A/MCO 6.3A**. It covers the full extent of the DCO Order Limits for the initial stage of development including:

- EMG2 Main Site roads and earthworks
- M1 corridor gantry and signage works
- M1 Junction 24 mitigation package
- Finger Farm signage works and upgrade
- A453 south minor highway works.

6.48 The construction stage will require a separate CTMP for each phase of construction, detailed within a phase specific Construction and Environmental Management Plan. The current CTMP sets out the proposed works that will be implemented to mitigate the potential effects of traffic during the construction stage of the EMG2 Project as far as possible. It also provides guidance for the Principal Contractor (once appointed) and all subcontractors regarding access routes to the EMG2 Main Site and EMG1 Works, maintenance requirements for the existing public highway and restrictions for staff to follow.

6.49 The CTMP commits to arranging a Construction Traffic Management Working Group to discuss, plan, and manage, upcoming traffic management on the road network. The group will include NH, LCountyC, local bus operators, East Midlands Airport, Moto Donington Services, emergency services, as well as the Principal Contractor.

6.50 A range of management measures are set out in the CTMP which will be adopted during the construction phase to limit impacts on the SRN and local road network. The CTMP is included at **Appendix 16** and has been formally agreed with NH within the 'Transport Reporting 5' sign off sheet (**Appendix 32**). Formal agreement remains outstanding from LCountyC and NCountyC.

7. TRIP GENERATION

Introduction

7.1 The following section summarises the agreed traffic generation forecasts for the EMG2 Project during both the operational and construction phases. These values have been tested in EMFM, which is examined in greater detail in **Section 8**, and the detailed junction models to understand the impacts of the EMG2 Project and associated mitigation requirements, set out in subsequent sections.

Operational Phase

Traffic Generation

7.2 Full details explaining the process of agreeing the trip rates and traffic generation calculations for the operational phase, are provided in the Trip Generation Core Assessment Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0012 Revision P1 (**Appendix 11**). This Technical Note has been formally agreed with NH and NCountyC in the Stage 1A modelling sign off sheet (**Appendix 33**), with LCountyC confirming they accept the trip generation figures by email on 11 December 2024 (**Appendix 30**).

7.3 It was agreed with the TWG on 27 July 2022 that the original trip rates adopted for the EMG1 DCO in 2014 should be retained for the purposes of this TA. These were based on surveys undertaken at Swan Valley in 2007. **Table 12** shows the agreed trip rates, whilst **Table 13** calculates the traffic generation for the 430,000sqm of development across Plot 16 of EMG1 and EMG2 Main Site reflecting the agreed split of B2/B8 use. Whilst the EMG2 Project now includes 530,000sqm of industrial floorspace, the inclusion of an additional 100,000sqm of mezzanine (200,000sqm total) came after agreement on the trip rates/traffic generation and is explained later in this section but has no impact on the traffic generation calculations. Trip rates for the traditional morning peak period of 0800 to 0900 hours have been adopted, but trip rates for the evening shoulder peak period of 1600 to 1700 hours have been used for the B8 development, as requested by the TWG, because they are higher and provide further robustness, which mirrors the approach undertaken for the EMG1 DCO (EMFM assesses 1700 to 1800 hours as the evening peak hour).

Table 12. Proposed Development Trip Rates

	AM Peak (08:00 – 09:00)			PM Peak (1600- 1700 for B8 and 17:00 – 18:00 for B2)		
	Arrivals	Departures	Two-way	Arrivals	Departures	Two-way
B8 Trip Rates (retained from EMG1 Transport Assessment)						
Total	0.140	0.036	0.176	0.065	0.155	0.220
HGVs	0.019	0.023	0.041	0.025	0.015	0.040
B2 Trip Rates (taken from TRICS)						
Total	0.392	0.071	0.463	0.049	0.369	0.417
HGVs	0.016	0.014	0.030	0.003	0.006	0.009

Table 13. Proposed Development Traffic Generation

	AM Peak (08:00 – 09:00)			PM Peak (1600- 1700 for B8 and 17:00 – 18:00 for B2)		
	Arrivals	Departures	Two-way	Arrivals	Departures	Two-way
340,000sqm B8 development at EMG2 (including for 100,000sqm of mezzanine space)						
Total	476	122	598	221	527	748
HGVs	65	78	143	85	51	136
30,000sqm B8 development at Plot 16 of EMG1						
Total	42	11	53	20	47	67
HGVs	6	7	13	8	5	13
60,000sqm B2 development at EMG2						
Total	235	43	278	30	222	252
HGVs	10	8	18	2	4	6
Total 430,000sqm development						
Total	753	176	929	270	795	1,065
HGVs	81	93	174	95	60	155

7.4 The EMG2 Works is predicted to generate 929 trips in the morning peak hour and 1,065 trips in the evening peak hour, of which 53 in the morning and 67 in the evening would be generated by Plot 16 of EMG1.

7.5 Since EMG1 has been operating, annual surveys have been undertaken to monitor the volume of traffic being generated across all units. The latest surveys were undertaken in September 2024 when EMG1 was close to being at full occupation with the results presented in an 'EMG1 Vehicle Trip Rate Comparison Report' dated 7 February 2025 (**Appendix 34**). **Table 14** summarises the B8 trip rates at EMG1 from the 2024 surveys, including for mezzanines.

Table 14. EMG1 Surveyed B8 Trip Rates (2024)

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
	Arrivals	Departures	Two-way	Arrivals	Departures	Two-way
Total	0.071	0.022	0.092	0.026	0.062	0.089
HGVs	0.015	0.012	0.028	0.015	0.015	0.029

7.6 By adopting the 2024 EMG1 surveyed B8 trip rates and applying them to the total proposed development B8 floorspace of 370,000sqm (inclusive of 30,000sqm development at Plot 16 EMG1), **Table 15** calculates the volume of traffic that could be generated and the difference when compared to the agreed traffic generation in **Table 14**. The traffic generation for the 60,000sqm of B2 floorspace proposed at EMG2 remains unchanged.

Table 15. Forecast Traffic Generation based on 2024 EMG1 Recorded Trip Rates

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
	Arrivals	**Departures**	**Two-way***	**Arrivals**	**Departures**	**Two-way***
EMG2 B8 Traffic Generation (370,000sqm)						
Total	263	81	344	96	229	325
HGVs	56	44	100	56	56	112
EMG2 B2 Traffic Generation (60,000sqm)						
Total	235	43	278	30	222	252
HGVs	10	8	18	2	4	6
Total EMG2 Traffic Generation (430,000sqm)						
Total	498	124	622	126	451	577
HGVs	66	52	118	58	60	118
Difference versus Agreed Traffic Generation – Vehicle Trips						
Total	**-255**	**-52**	**-307**	**-144**	**-344**	**-488**
HGVs	**-215**	**-41**	**-56**	**-37**	**0**	**-37**
Difference versus Agreed Traffic Generation – Percentage						
Total	**-33.9%**	**-29.5%**	**-33.0%**	**-53.3%**	**-43.3%**	**-45.8%**
HGVs	**-265.4%**	**-44.1%**	**-32.2%**	**-38.9%**	**0.0%**	**-23.9%**

*any errors in the calculation of two-way trips are due to rounding

7.7 By adopting the surveyed B8 trip rates at EMG1, the forecast traffic generation from the EMG2 Works (plus Plot 16) based on the 430,000sqm is 622 trips in the morning peak hour and 577 trips in the evening peak hour. This is a significant reduction of 307 trips (-33.0%) in the morning and 488 trips (-45.8%) in the evening compared to what is being assessed in this TA; such a reduction has not been modelled in EMFM. Therefore, the trip rates being adopted, assessed, and used to determine the proposed Highway Works, should be viewed as highly robust; they in effect provide a 'worse than worst-case' based on information obtained post agreeing the use of the original EMG1 forecast trip rates in July 2022 as set out in **Table 14** above.

7.8 The above was set out in an email to the TWG on 5 March 2025, included in **Appendix 35**. This set out that, building on the above, when considering 200,000sqm GFA of additional mezzanine floor space at the EMG2 Main Site versus the 100,000sqm GFA originally proposed, and the recorded EMG1 2024 trip rates, the proposed development would generate 33% less B8 trips versus that assessed in this TA in **Table 13** in the morning peak hour and 48% less trips in the PM peak hour.

7.9 NH accepted the principle of the increase in mezzanine floorspace to 200,000sqm GFA in an email dated 1 May 2025 which is included in **Appendix 36**. This was on the proviso that:

i) it is used for the intended vertical stacking/storage purpose as stated. with a provision within the DCO stipulating that the additional 100,000 sqm floor space for

storage/racking must be used for its intended purpose in perpetuity, ancillary to B8 ground floor space; and

ii) sustainable transport objectives achieved for EMG1 to be applied to EMG2, to be included for within the Sustainable Transport Strategy.

7.10 As a result, a suitably worded requirement has been included within the DCO (**Document DCO3.1** to deal with i), and the Sustainable Transport Strategy confirms that the modal split achieved for EMG1 has been applied to the EMG2 Main Site. The Sustainable Transport Strategy is included in **Document DCO 6.6B** and this is considered in further detail later on in this section.

HGVs between EMG2 to EMG1 Rail Freight Terminal

7.11 The core traffic generation in **Table 13** shows that there is predicted to be a total of 174 HGVs in the morning peak hour and 155 HGVs in the evening peak hour generated by the development. This is the total number of HGVs including any potential hazardous or abnormal loads.

7.12 The predicted EMG2 Main Site traffic generation has been assigned to the highway network in accordance with the in-built gravity model in EMFM and therefore does not assign any HGVs between EMG2 Main Site and the EMG1 Rail Freight Interchange. The Trip Generation Core Assessment Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0012 Revision P1 (**Appendix 11**) calculates the number of HGVs that could travel between the EMG2 Main Site and EMG1 based on the methodology adopted as part of the EMG1 DCO and approved by the TWG. It calculates 40 HGVs in the morning peak hour (18 arrivals, 22 departures) and 44 HGVs in the evening peak hour (28 arrivals, 16 departures) as having the potential to visit the EMG1 rail freight terminal from EMG2 Main Site. These HGVs have been assigned further afield on the external highway network but would incur a slightly different turning movement at the EMG1 roundabout as shown at **Figures 19** and **20.**

Figure 19. HGV Assignment between EMG2 and EMG1 Rail Freight Terminal (Morning peak hour)

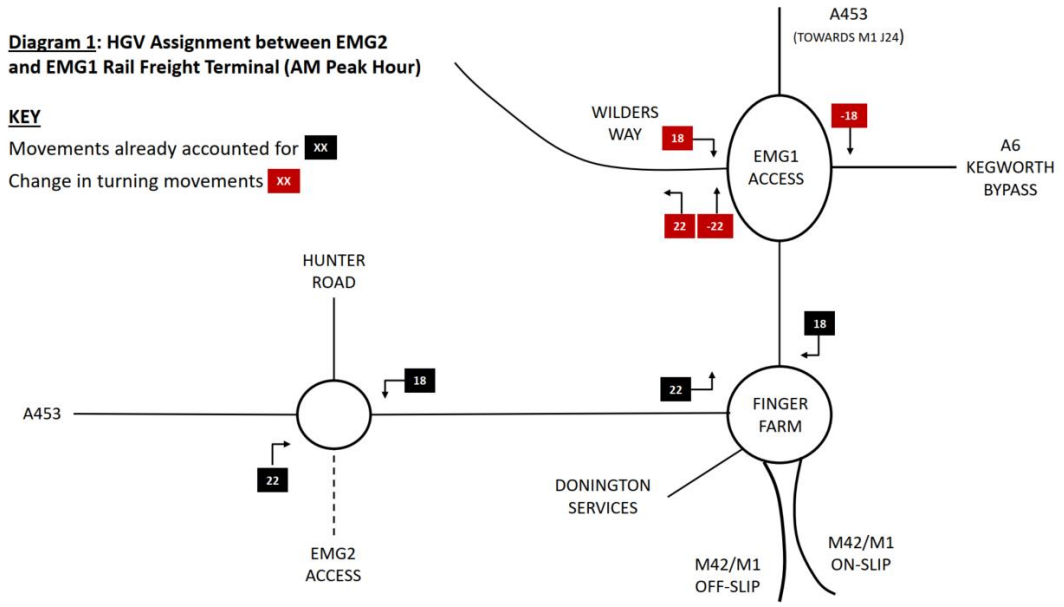
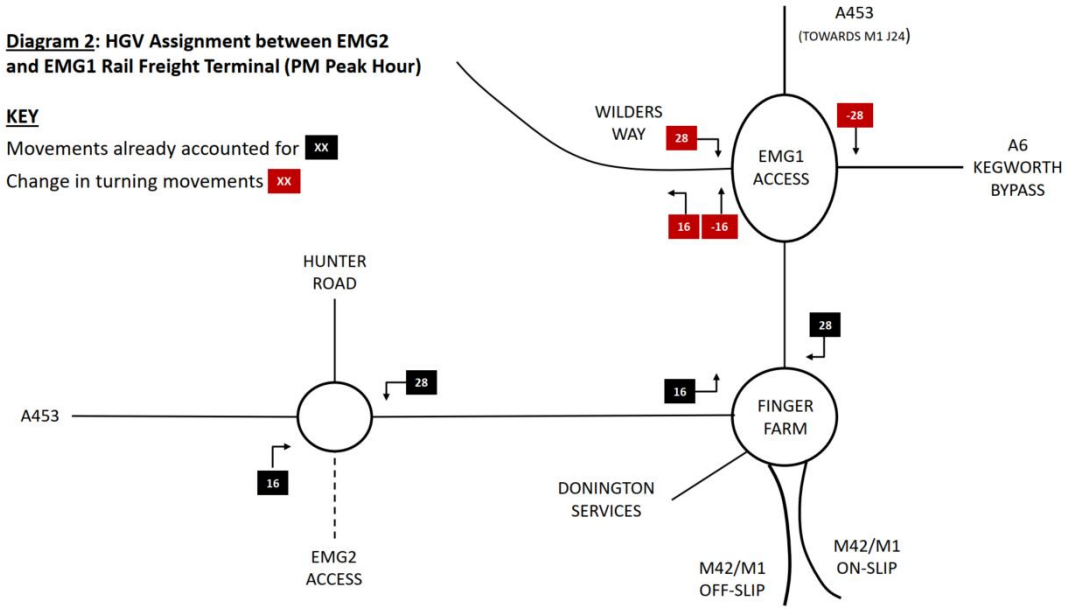


Figure 20. HGV Assignment between EMG2 and EMG1 Rail Freight Terminal (Evening peak hour)



7.13 It was agreed with the TWG that these re-assigned HGVs do not need formally testing in EMFM, but for a sensitivity test to be undertaken in VISSIM that manually re-assigns said HGV trips to understand the impacts at the EMG1 access roundabout. the Trip Generation Core Assessment Technical Note – document Technical Note EMG2-BWB-GEN-XX-RP-TR-0012 Revision P1 (**Appendix 11**) has been formally agreed with NH and NCountyC in the Stage 1B Modelling sign off sheet (**Appendix 29**), with LCountyC confirming they accept the HGV numbers and VISSIM modelling approach by email on 11 December 2024 (**Appendix 30**). This is examined in further detail in Section 13.

Modal Split/Person Trip Generation

7.14 It was originally agreed with the TWG that the modal split information from the 2014 TA supporting the EMG1 DCO should be retained as the baseline position to forecast the person trip generation for the proposed development, which informed the agreement to use the original forecast EMG1 trip rates to determine traffic generation. This was because it excludes any benefits from the travel planning measures already in place at EMG1. The original EMG1 modal split information is shown at **Table 16.**

Table 16. Modal Split and Person Trip Generation

Mode of Travel	% Modal Split
Car (single occupancy)	80%
Car share	11%
Public Transport	5%
Active Travel	3%
Other	2%

7.15 The above calculations show that of all trips from the EMG2 Project, 80% would be expected to comprise single occupancy car trips, 12% car sharing trips, 5% by public transport and 3% on foot/by bicycle.

7.16 Using the above modal split and the peak hour light vehicle trip generation in **Table 16**, **Tables 17, 18,** and **19** calculate the person trip generation for the EMG2 Main Site, EMG1 Plot 16 and total development based on the original EMG1 modal split.

Table 17. EMG2 Main Site Person Trip Generation

Mode of Travel	AM Peak (08:00 – 09:00)	PM Peak (16:00 – 17:00)
Car (single occupancy)	715	858
Car share	98	118
Public Transport	45	54
Active Travel	27	32
Other	9	11
Total	**894**	**1,073**

Table 18. EMG1 Plot 16 Works Person Trip Generation

Mode of Travel	AM Peak (08:00 – 09:00)	PM Peak (16:00 – 17:00)
Car (single occupancy)	40	54
Car share	6	7
Public Transport	3	3
Active Travel	1	1
Other	1	1
Total	**50**	**68**

Table 19. Total Person Trip Generation

Mode of Travel	AM Peak (08:00 – 09:00)	PM Peak (16:00 – 17:00)
Car (single occupancy)	755	912
Car share	104	125
Public Transport	48	57
Active Travel	28	33
Other	10	12
Total	**944**	**1,140**

7.17 Based on the modal split set out in **Table 16** The proposed development in its entirety would expect to generate 125 car share trips, 57 public transport trips and 33 active travel trips during the busier evening peak hour, based on the original EMG1 modal split information.

7.18 The increase in active travel trips is therefore expected to be relatively low based on this methodology, which aligns with the monitoring surveys and Travel Plan strategy at EMG1, which focuses more on car sharing and public transport. Whilst employees have opportunities to travel by walking and cycling, with significant improvements being proposed as part of the EMG2 Project, the additional activity should be satisfactorily accommodated on the network, particularly with the proposed improvements to active travel links, PRoWs and public transport infrastructure, summarised in **Section 6**.

7.19 The impact of the additional vehicular trip generated is assessed in **Section 10**.

Framework Travel Plan Targets

7.20 Taking the above a step further, the Framework Travel Plan for the EMG2 Main Site aims to reduce single occupancy car trips from 80% to 56% across a 10 year period by displacing them into other modes. This will be done by implementing a range of measures and incentives to encourage staff to travel by sustainable modes. Full details of the Travel Plan targets and measures can be found at **Document DCO 6.6C**, whilst in extract of the EMG2 Travel Plan targets are provided in **Table 20**.

Table 20. Travel Plan Targets

Mode	Year 1 Target Opening Target	Year 3 Interim Target	Year 6 Interim Target	Year 10 Target End Target
Drive alone (SOV)	68%	64%	58%	**56%**
Car Share	15%	17%	21%	**22%**
Public Transport	12%	14%	15%	**16%**
Walking & Cycling	1%	1%	2%	**2%**
Other	4%	4%	4%	**4%**

7.21 The targeted modal shift in single occupancy car drivers from 80% to 56% will have benefits in reducing the number of drivers to the EMG2 Main Site. **Table 21** calculates the targeted person trip generation at the 10-year target period based on the modal shift proposed at **Table 20**, along with the change in number of movements by each mode compared to that set out in **Table 19**.

Table 21. Targeted 10-Year Person Trip Generation

Mode of Travel	AM Peak (08:00 – 09:00)	PM Peak (16:00 – 17:00)
Car (single occupancy)	529 (-216)	638 (-274)
Car share	208 (+114)	251 (+126)
Public Transport	151 (+103)	182 (+125)
Active Travel	19 (-9)	23 (-10)
Other	38 (+28)	46 (+34)
Total	**944**	**1,140**

7.22 The Travel Plan targets would result in a reduction of 216 car driver trips in the morning peak hour and 274 car driver trips in the evening peak hour when compared to that set out in **Table 19**. This would be achieved by displacing these journeys into other modes.

7.23 This would result in an uplift in trips generated by public transport, totalling 151 in the morning peak hour and 182 in the evening peak hour. Any such uplift should still be satisfactorily accommodated on the network for the reasons set out in paragraph 7.18 above, noting that this is targeted 10 years after opening.

7.24 Through scoping discussions with stakeholders, it has been identified that the Skylink Express service, for example, may need capacity increases for peak hour services due to increased passengers travelling to the EMG2 Main Site, EMG1 and East Midlands Airport. Details of the funding approach are provided in the Sustainable Travel Strategy included in **Document DCO 6.6B** and could involve securing funds under the DCO or allocating funds to an EMG2 Bus Fund and drawing down from it earlier in the Travel Plan delivery process, with spend to be determined through the EMG2 Sustainable Transport Working Group.

7.25 Plot 16, included within the EMG1 works, will be covered by an occupier specific Travel Plan governed by the EMG1 DCO and will not be tied to the EMG2 DCO Framework Travel Plan or Sustainable Transport Strategy.

Construction Phase

Traffic Generation

7.26 Full details explaining the methodology of calculating the traffic generation during the construction phase are provided in the Construction Traffic Calculations Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0013 Revision P3 (**Appendix 12**). This document has been formally agreed with NH within the 'Stage 1F Modelling' sign off sheet (**Appendix 37**). Formal agreement with LCountyC and NCountyC remains outstanding but they have been party to the discussions around the calculations.

7.27 The total peak hour construction vehicle movements are shown in **Table 22** and include construction traffic associated with works on EMG2 Main Site, EMG1 Works and Highway Works. The calculations adopt a number of robust assumptions and assume that all construction components start in Year 1, whereas in reality components will be staggered. For example, enabling works/earthworks are required before buildings can be constructed.

Table 22. Total Construction Vehicle Traffic Generation

	Morning Peak Hour			Evening Peak Hour		
	Arrive	Depart	Two-way	Arrive	Depart	Two-way
HGV	17	17	34	3	3	6
LGV	3	3	6	1	1	2
Car	19	4	23	5	29	34
Vans	38	8	45	9	56	65
Total	**77**	**32**	**108**	**18**	**89**	**107**

7.28 The construction phase of the development is expected to generate up to 108 vehicle trips in the morning peak hour and 107 vehicle trips in the evening peak hour. These values have been tested in EMFM as part of an assessment of construction traffic flows, which is examined in greater detail in **Section 15**.

8. EAST MIDLANDS FREEPORT MODEL – SATURN MODELLING METHODOLOGY

Introduction

8.1 This section summarises the strategic transport modelling work and analyses the results of the forecast year scenarios.

East Midlands Freeport Model

8.2 As set out in the introduction, the EMFM was developed by AECOM for LCountyC as a cordon of the larger PRTM specifically to assess developments in the vicinity of East Midlands Airport. It has a base year of 2019 and is a highway assignment model for the typical morning and evening peak hour periods. The highway simulation network of the EMFM has been extended northward and model zones have been disaggregated for zones outside Leicestershire to provide greater detail in the East Midlands Freeport area. The EMFM uses the latest May 2024 TAG Databook to estimate trip making and growth in the future.

Local Model Validation Report

8.3 The first stage of the EMFM modelling involved a review of the base year model. This originally took place in November 2022, where detailed discussions were held with the TWG to agree the uncertainty log information and planning data assumptions, which are examined in detail in this section, to feed into the base model. An agreement on the committed development sites and infrastructure schemes to be included was originally reached during the TWG meeting on 9 March 2023, with minutes included at **Appendix 19** and include for the Land South of A50 Junction 1, Castle Donington development that was overturned at Appeal (19/01496/OUTM).

8.4 A Base Year Model Review report was issued by AECOM in November 2022. The Base Year model considered the zone system and network structure in the vicinity of EMG2 and the network coding along the A453 and several key junctions in the local area. It also considered the performance of the base model against observed counts and journey time data collated as part of the EMFM update. A copy of the Base Year Model Review is included at **Appendix 6**, which concluded that:

1. The coded highway network near the proposed development is satisfactory and representative of the 2019 road configurations.
2. The base year model performs well against observed counts and journey time data and meets TAG acceptability guidelines in terms of screen line and cordon performance, link flow performance and journey time validation performance.
3. The link flow performance resulted in a pass rate of 94.2% in the morning peak hour and 92.2% in the evening peak hour, which exceeds that 85% TAG criteria guidelines.
4. The journey time validation performance resulted in a pass rate of 89.1% in the morning peak hour and 90.6% in the evening peak hour and hence performs well.

5. In summary, the EMFM was considered to contain sufficient detail for a strategic assessment of the proposed development.

8.5 The base year model was re-run in August 2024 following an agreement by the TWG on the updated planning data assumptions within the uncertainty log. AECOM produced a Base Model Review Addendum which confirmed that there were no material changes from the conclusions of the original report and that the EMFM continues to be suitable for the strategic assessment of the EMG2 Project.

8.6 A copy of the Base Model Review Addendum is included at **Appendix 7**. The Addendum has been formally agreed with NH and NCountyC in the Stage 1A Modelling sign off sheet (**Appendix 33**), with LCountyC confirming they are content with the details by email on 11 December 2024 (**Appendix 30**).

Development Trip Distribution

8.7 As part of the original EMFM modelling, development trips were distributed using the following three methodologies:

1. an in built gravity model.
2. EMG1 parent zone
3. Pegasus Park parent zone.

8.8 LCountyC raised concern with using the Pegasus Park parent zone approach due to differences in the development mix within that zone and hence this option was disregarded. AECOM subsequently distributed the development traffic using the in built gravity model and EMG1 parent zone approaches and provided outputs in January 2023.

8.9 The information was circulated to the TWG in January 2023 which showed similarities in the two approaches. It was concluded that, because the gravity model is more familiar to the TWG, that it should be used in the forecasting year scenarios, as agreed by the TWG. However, concerns were raised with development distribution along roads leading to local villages including Diseworth, Castle Donington and Kegworth and the TWG requested that this be considered in the TA.

Forecast Years & Assessment Criteria

8.10 It has been agreed with the TWG that a forecast base year of 2022 be adopted (aligning with the year traffic surveys were undertaken) and forecast years of 2028 and 2038, reflecting the year of opening and post 10 years. The 2038 forecast year was agreed with the TWG within PRTM Proforma version 14 as being more appropriate, in accordance with Circular 01/2022 requirements as it exceeds the current end of Local Plan period of 2031. PRTM proforma v14 was formally agreed with NH and NCountyC within the Stage 1A Modelling sign off sheet (**Appendix 33**), whilst LCountyC confirmed it was acceptable by email on 11 December 2024 (**Appendix 30**).

8.11 The forecast year modelling has been undertaken in four stages, referred to as 'Stage 1A/2A modelling' and 'Stage 1B/2B modelling'. The stages adopt slightly different

planning data assumptions in the uncertainty logs and baseline traffic, as summarised below.

- **Stage 1A modelling** (Proforma v14, Uncertainty Log v7, included at **Appendix 8**) = 2028/2038 forecast years with and without EMG2, including, consented and committed sites as well as draft Local Plan allocation sites, East Midlands Intermodal Park (EMIP) and full redevelopment of the Ratcliffe on Soar Power Station site, part of which is authorised by a Local Development Order (LDO).
- **Stage 1B modelling** (Proforma v14a, Uncertainty Log v7a, included at **Appendix 38**) = 2028/2038 forecast years with and without EMG2, including consented and committed sites but excluding the draft Local Plan allocation sites, EMIP and Ratcliffe on Soar Power Station site redevelopment proposals beyond which is currently able to proceed under the LDO.
- **Stage 2A modelling** = as per Stage 1A but with the inclusion of the proposed Highway Works, details of which are presented in Section 12.
- **Stage 2B modelling** = as per Stage 1B but with the inclusion of the proposed Highway Works, details of which are presented in Section 12.

8.12 The difference between Stage 1A/2A and 1B/2B is the inclusion (1A/2A) or exclusion (1B/2B) of the EMIP site, Ratcliffe on Soar Power Station site redevelopment proposals over and above that permitted in the LDO, and the draft Local Plan allocation sites in the baseline, which represent the following projects:

- Isley Woodhouse (W1)
- Land North and South of Park Lane, Castle Donington (CD10)
- Land West of Hilltop Farm, Castle Donington (EMP89)
- Land North of J11/M42 (EMP82)
- Land North of Remembrance Way, Kegworth (EMP73)
- Land North of Derby Road, Kegworth (EMP73)

8.13 The TA and ES Assessment Methodology Technical Note – document EMG2-BWB-GEN-XX-RP-TR-0017 Revision P4 (**Appendix 17**) sets out the basis for the two stage approach to modelling and the policy context for it, which can be summarised as follows:

- Stage 1A/2A modelling complies with the Highway Authorities interpretation of the TAG M4 Guidance.
- Stage 1B/2B modelling complies with the guidance in Circular 01/2022 and Institute of Environmental Management and Assessment (IEMA) 2024.

8.14 The Stage 1A/2A modelling provides a highly robust assessment as it includes traffic from the draft Local Plan allocations within the baseline but not any associated highway mitigation because it is unknown at this stage of the process. This is with the exception of the proposed re-alignment of the A453 around the Isley Woodhouse draft allocation, which is included in the Uncertainty Log v7 because it forms part of the access strategy for that development.

8.15 The planning data assumptions and highway schemes included in the Uncertainty Log v7 (Stage 1A) and v7a (Stage 1B) were discussed and agreed with the TWG, based on information provided by the relevant Local Planning Authorities to LCountyC's NDI team. The committed and consented schemes and draft Local Plan allocations have been profiled out within the uncertainty logs in accordance with the Local Planning Authority's understanding of when they are likely to be built out.

8.16 As required by the TWG, the core scenario for this TA adopts the outputs from the Stage 1A modelling, inclusive of draft Local Plan allocation sites, EMIP and the Ratcliffe on Soar Power Station site in the baseline. A sensitivity test is undertaken using Stage 1B modelling, excluding draft Local Plan allocation sites, EMIP and the Ratcliffe on Soar Power Station site. This TA therefore tests the following scenarios, with the 'with development' ones assessing both the 'core' and 'sensitivity' tests:

- 2022 forecast base year 'without development'
- 2028 forecast opening year 'without development'
- 2028 forecast opening year 'with development'
- 2038 forecast future year 'without development'
- 2038 forecast future year 'with development'
- 2028 forecast future year with development with mitigation.
- 2038 forecast future year with development with mitigation.

8.17 Planned development growth is accounted for within the 'without development' scenarios as per the agreed Uncertainty Log v7. The Uncertainty Log v7 was formally agreed, alongside PRTM Proforma v14, with NH and NCountyC within the Stage 1A Modelling sign off sheet (**Appendix 33**), whilst LCountyC confirmed it was acceptable by email on 11 December 2024 (**Appendix 30**).

8.18 The 'with development' scenarios include the development on both EMG2 Main Site and Plot 16 of EMG1. A scenario has not been undertaken that considers EMG1 traffic in isolation, which is being applied for separately via an MCO. However, section 6.9 of Chapter 6 of the ES (**Document MCO 6.6A**) considers the impacts of the EMG1 MCO in isolation confirming there would be no substantial or significant environmental impacts. As set out in **Table 13,** Plot 16 is expected to generate 53 two-way trips in the morning peak hour and 67 two-way trips in the evening peak hour, which equates to circa one per minute on average, and between 5.7% and 6.3% of the total EMG2 Project traffic. This would have a negligible impact on the network and would not trigger the requirement for strategic transport modelling on its own merit or result in a severe impact on the operation of the local highway network including EMG1 site access gyratory.

Committed Developments & Highway Infrastructure Schemes

8.19 The Uncertainty Log v7 (**Appendix 8**) includes a comprehensive list of committed developments, in addition to the draft Local Plan allocations. The overall list is extensive and includes a vast number of developments across the East Midlands. **Table 23** lists the larger committed housing developments, whilst **Table 24** includes the larger committed employment developments included in the uncertainty log in Northwest Leicestershire,

Rushcliffe, Broxtowe and South Derbyshire. The list below is not exhaustive; for example, Garendon Park in Charnwood is also included for in the actual detail included in the uncertainty log.

Table 23. Large Committed Housing Developments included in EMFM Base Model

District	Site Description	Quantum
North West Leicestershire	Money Hill North of Nottingham Road	2,050 dwellings
	Land off Grange Road (South East Coalville)	3,500 dwellings
	Land at Measham, Waterside	450 dwellings
	Land north of Standard Hill and West of Highfield Street, Coalville	400 dwellings
Rushcliffe	South of Clifton SUE	3,000 dwellings
	East of Gamston/North of Tollerton	4,000 dwellings
	Melton Road, Edwalton	1,700 dwellings
	Land north of Bingham	1,050 dwellings
Broxtowe	HS2 Innovation	3,693 dwellings
	Chetynd Barracks	1,500 dwellings
	Eastwood	1,250 dwellings
South Derbyshire	Wragley Way SUE	1,850 dwellings
	Boulton Moor SUE	1,255 dwellings
	Land west of Mickleover	1,306 dwellings
	Rykneld Road SUE	900 dwellings

Table 24. Large Committed Employment Developments included in EMFM Base Model

District	Site Description	Quantum
North West Leicestershire	Mercia Park	350,000sqm
	Beveridge Lane, Ellistown	199,018sqm
	EMG1 Strategic Rail Freight Interchange	2,220 jobs
	EMDC	122,610sqm
	DHL East Midlands Airport	83,445sqm
	Money Hill	15.91ha
Rushcliffe	Fairham Pastures, Clifton	100,000sqm
	East of Gamston/North of Tollerton	12ha
	Land north of Bingham	14.16ha
Broxtowe	HS2 Innovation Campus	170,402sqm
	Beeston – Boots	100,000sqm

8.22 In addition to committed developments, the uncertainty log includes a number of committed highway improvement schemes. The majority of these were already coded in EMFM but during discussions with the TWG, three additional schemes on the A52 near Nottingham were asked to be included in the base model by NCountyC and NH (A52/A60 Nottingham Knight roundabout, A52/A606 Wheatcroft Island and A52/A5011 Gamston roundabout).

8.23 NCountyC were able to provide general arrangement drawings of the improvement schemes but signal timing information was unavailable. Following on-going conversations with NH seeking to obtain the signal timing information, BWB adopted a different methodology to calculate the green times, full details of which are included in an email dated 23 August 2024 (**Appendix 39**). A summary of the approach is provided below.

1. As EMFM data provides entry/exit flows for each arm but not turning counts, a furnessing exercise was undertaken to determine turning proportions, using an agreed methodology.
2. Each junction was split into individual streams, typically including an approach arm and the opposing lanes on the circulatory.
3. Traffic was assigned to each lane using the turning proportions determined through the furnessing exercise. Where multiple lanes allow for the same direction of travel, flows were split equally across each lane.
4. A percentage of the maximum lane flow for each arm in the same stream was calculated. For example, if the heaviest flow is 100 vehicles on an entry arm lane

and 150 vehicles on a circulatory lane, then the percentage split would be 40% (entry arm) and 60% (circulatory).

5. A base cycle time of 60 seconds was adopted for streams with two stages and streams with more than two stages adopted a cycle time of 90 seconds.
6. Intergreens were calculated based on geometries using the supplied drawings.
7. The total green times were calculated by subtracting the intergreen time from the total cycle time.
8. The remaining green time was then allocated to each stage stream in line with the percentage split calculated at point 4.

8.24 By adopting the above methodology, green times for each stream for the three junctions were determined. These provided a reasonable estimation of green times in the absence of any further information, which AECOM took on board in the EMFM modelling. This approach was discussed with the TWG at the August and September 2024 meetings, as set out in the corresponding meeting minutes at **Appendix 19**. The signal timing information was provided to AECOM on 27 August 2024, copying in all members of the TWG.

Covid-19 Assessment

8.25 The version of EMFM available at the time the assessment work was undertaken had a base year of 2019, which pre-dates the Covid-19 pandemic. An assessment has therefore been undertaken (with input from AECOM) to review traffic data across the road network in the vicinity of the EMG2 Project to understand whether traffic flows have changed from 2019 to 2023 and whether adjustments to the base model flows in EMFM is required to account for changes since the pandemic. Full details of the assessment, including a plan showing the locations of the traffic counters, are included in Covid Assessment Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0014 Revision P1 at **Appendix 13**, agreed with NH and NCountyC, but not LCountyC, because this was around the time when they suggested EMFM 2023 was available for use, which would deal with any Covid-19 related matters. However, at that time EMFM 2023 had not been approved for use by NH.

8.26 The 2019 to 2023 flow comparison undertaken by both AECOM and BWB are presented in **Tables 25** and **26** respectively and compare weekday flows at six key links in the vicinity of EMG between 2019 and 2023. NB PCU's refer to Passenger Car Units.

Table 25. AECOM Analysis (April, May & June 2019 vs 2023 PCU flows)

Time Periods	2019 Flow	2023 Flow	Change (no.) (2023-2019)	Change (%) ((2023-2019)/2019)
AM peak hour (08:00-09:00)	29,107	28,429	-679	-2.3%
PM peak hour (17:00-18:00)	30,422	29,272	-1,150	-3.8%
Daily 24-hours (00:00-24:00)	448,565	442,725	-5,839	-1.3%

Table 26. BWB Analysis (March & October 2019 vs 2023 total flows)

Time Periods	2019 Flow	2023 Flow	Change (no.) (2023-2019)	Change (%) ((2023-2019)/2019)
AM peak hour (08:00-09:00)	18,877	18,691	-186	-1.0%
PM peak hour (17:00-18:00)	20,511	19,175	-1,336	-6.5%
Daily 24-hours (00:00-24:00)	333,639	326,897	-6,742	-2.0%

8.27 The data shows that 2023 traffic recorded across the six links was lower than what was recorded in 2019. The data shows the following range in traffic flows:

- Morning peak hour = -1.0% to -2.3% reduction in traffic
- Evening peak hour = -3.8% to -6.5% reduction in traffic
- Daily 24-hour = -1.3% to -2.0% reduction in traffic

8.28 The Covid Assessment Technical Note therefore concluded that the base flows in EMFM (2019) are robust and a sensitivity test adjusting the base flows is not required as it would reduce traffic flows to those in the current EMFM model.

8.29 The conclusions have been formally agreed with NH and NCountyC in the Stage 1C Modelling sign off sheet (**Appendix 40**). Whilst LCountyC do not dispute the numbers, they have requested a 2023 assessment within EMFM, which the Applicant has committed to as a sensitivity test. This is in progress following confirmation from NH on 19 May 2025 that they have approved the use of the 2023 version of EMFM. Following the NH approval, AECOM were tasked by the TWG with identifying an approach for the sensitivity test which they did on 16 July 2025. NH agreed the approach to be used on the 17 July 2025. The Applicant has commissioned AECOM to carry out a comparison of the baseline flows in PRTM 2019 and 2023 to provide an initial indication as to whether traffic flows have reduced.

8.30 The details in the Covid Assessment Technical Note should also help address the concerns raised by Wings Communities Ltd (Protect Diseworth) on the impacts of Covid-19 during the statutory consultation by demonstrating how the base flows in the transport modelling work are robust.

Stage 1 Forecasting Reports

Stage 1A Modelling

8.31 AECOM issued the EMFM Forecasting Report for the Stage 1A modelling scenarios in February 2025 covering the 2022, 2028 and 2038 forecast year with and without development i.e. the core scenarios. A copy of the Forecasting Report is included in **Appendix 41.** NH issued a Technical Note on 21 February 2025 (**Appendix 42**) setting out a number of issues for BWB to consider in this TA. These were categorised into the following criteria and level of significance:

- **Observations** – points for consideration on an issue that would not significantly affect the model.
- **Comments** – the main function is to highlight such issues for attention in subsequent project stages
- **Substantive Issues** – which require corrective action. The audit will suggest the detailed action required to address the issue, although there should be freedom for the development team to use alternative approaches in order to achieve the required level of analysis.

8.32 BWB responded to the NH Technical Note on 16 April 2025 with a log as to how the substantive issues in particular will be addressed in this TA. The approach was formally agreed with NH on 16 May 2025 (**Appendix 43**) and has been taken into consideration in later sections of this TA.

8.33 An extract of the development trip generation adopted in EMFM at the EMG2 Main Site and EMG1 Works (i.e. Plot 16) are shown in **Table 27** and mirror the trip generation set out in **Section 7**.

Table 27. Development Trip Generation – Operational Traffic (EMFM Model)

	Light Vehicle Trips (in veh)			HGV Trips (in veh)			All (in veh)		
	Departing (Out)	Arriving (In)	Total	Departing (Out)	Arriving (In)	Total	Departing (Out)	Arriving (In)	Total
East Midlands Gateway Phase 2 Development - Employment B2 (60,000sqm)									
AM Peak hour (08:00 to 09:00)	34	226	**260**	8	10	**18**	43	235	**278**
PM Peak hour (17:00 to 18:00)	218	28	**246**	4	2	**6**	222	30	**252**
East Midlands Gateway Phase 2 Development - Employment B8 (340,000sqm)									
AM Peak hour (08:00 to 09:00)	44	411	**455**	78	65	**143**	122	476	**598**
PM Peak hour (17:00 to 18:00)	476	136	**612**	51	85	**136**	527	221	**748**
East Midlands Gateway Phase 2 Development Total									
AM Peak hour (08:00 to 09:00)	78	637	**715**	86	75	**161**	165	711	**876**
PM Peak hour (17:00 to 18:00)	694	164	**858**	55	87	**142**	748	250	**998**
East Midlands Gateway Phase 1 (Plot 16) Development Total									
AM Peak hour (08:00 to 09:00)	4	36	**40**	7	6	**13**	11	42	**53**
PM Peak hour (17:00 to 18:00)	42	12	**54**	5	8	**13**	47	20	**67**

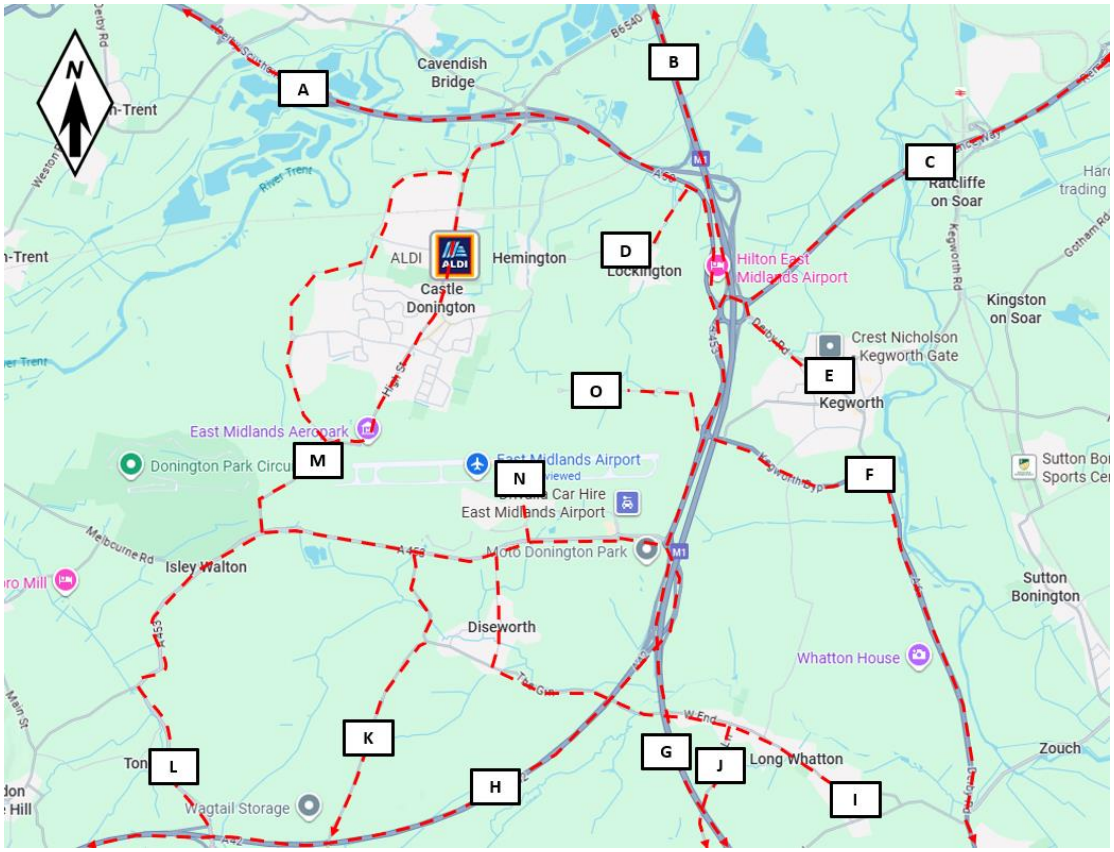
8.34 The distribution of development trips (cars and HGVs separately) has been extracted from EMFM. The outputs show that HGVs are assigning via the SRN (M1, A50 and A42) and therefore reflecting the existing weight restrictions in place. Car traffic is predicted to assign more granularly across the both the SRN and local road network, depending on the origin and destination points.

8.35 **Table 28** summarises the distribution pattern for cars and HGVs from EMFM, as an average of both arrivals and departures from the development (both EMG2 Main Site and Plot 16 EMG1) during both 2028 and 2038 forecast years. Whilst an average has been taken, the distribution patterns are relatively similar in all scenarios. **Figure 20A** shows the locations of the routes.

Table 28. Development Distribution Pattern from EMFM

Route No.	Route	Average Distribution (car)		Average Distribution (HGV)	
		AM	PM	AM	PM
A	A50	6%	9%	16%	21%
B	M1 (N)	6%	6%	15%	13%
C	A453 (E) towards Nottingham	6%	8%	12%	11%
D	Hilton Hotel Lane	1%	1%	0%	0%
E	Derby Road	2%	2%	0%	0%
F	A6 Kegworth Bypass	11%	7%	4%	3%
G	M1 (S)	27%	30%	25%	24%
H	A42	6%	8%	26%	26%
I	Grimes gate, The Green east through Long Whatton	1%	2%	0%	0%
J	Grimes Gate, The Green, Smithy Lane	3%	2%	0%	0%
K	The Green, unnamed road towards A42	9%	7%	0%	0%
L	A453 (W) towards A42	5%	4%	0%	0%
M	Walton Hill	9%	6%	0%	0%
N	East Midlands Airport	7%	7%	1%	1%
O	EMG1	2%	1%	1%	0%

Figure 20A. Development Trip Distribution Routes



8.36 The outputs showed that development trips were being assigned along the more strategic routes and not significantly impacted by congestion and re-assignment through more local roads. There was 13% of car traffic in the morning peak hour and 12% in the evening peak hour routing along Grimes Gate or The Green near Diseworth. However, the EMFM plots showed that these related to drivers originating from villages to the south of the EMG2 Main Site, who would naturally choose those routes as they are most direct, rather than it being an issue of rat-running. Plots showing the distribution of development trips are shown in **Figures 21** and **22**.

Figure 21. Development HGV Flow Increases

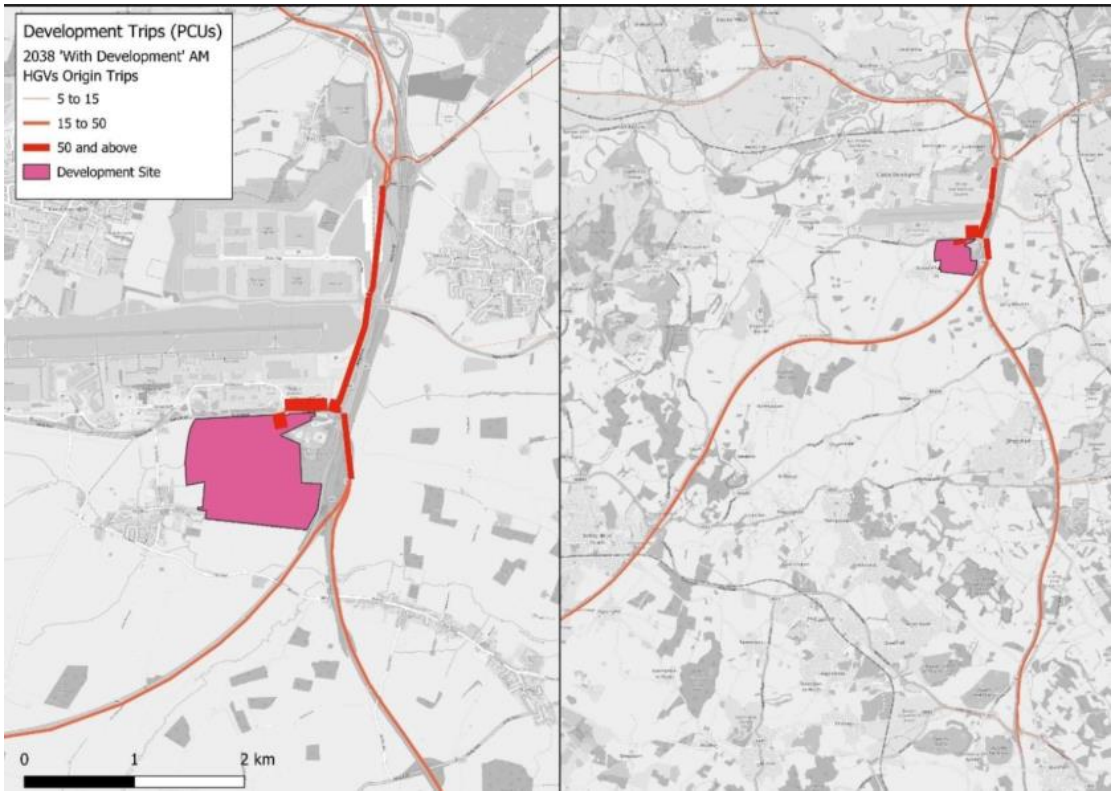
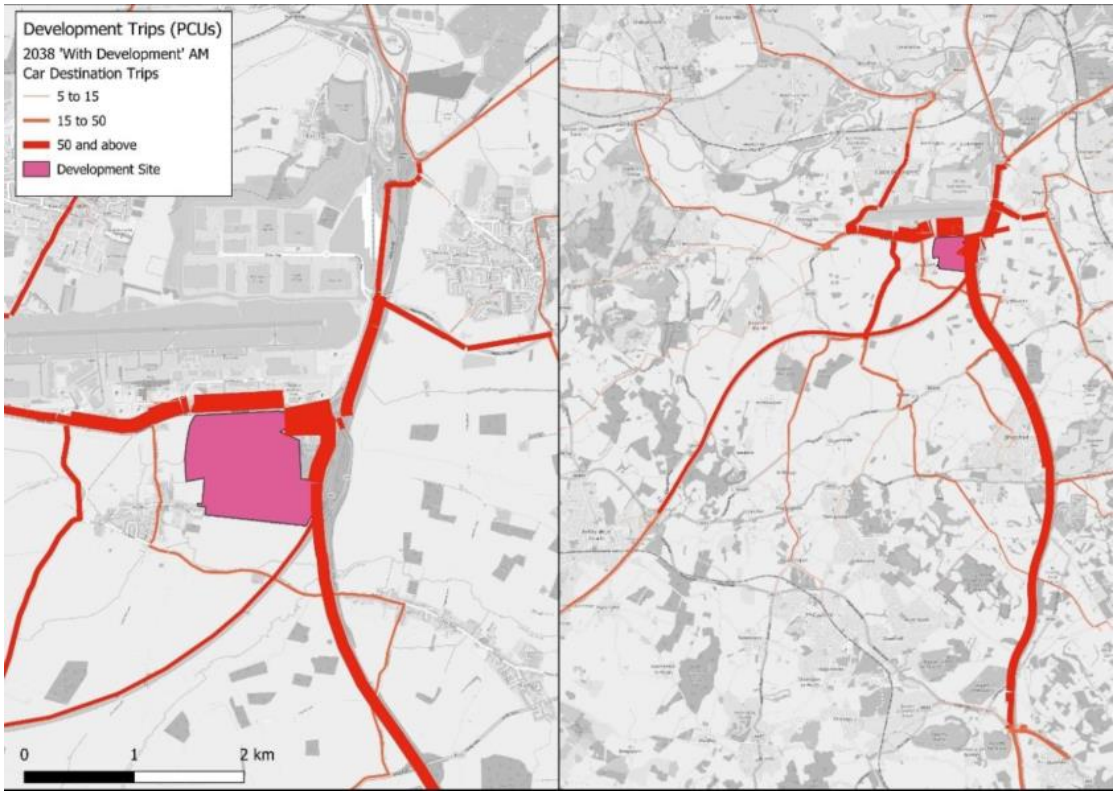


Figure 22. Development Car Flow Increases



8.37 There were discussions during the March 2023 and February 2025 TWG meetings (**Appendix 19**) in relation to traffic impacts along Castle Donington High Street. The EMFM outputs show that there is predicted to be car traffic increases through Castle Donington, which are predicted to route via the High Street rather than the bypass. It is understood that the High Street is a more attractive route in EMFM based on journey time, however from the public exhibition events in February and March 2025, local residents view was that traffic travelling between the A50 and A453 would use the bypass, as whilst it is slightly longer, it is quicker and incurs less delay and therefore it appears this is not accurately represented in EMFM. Should this be a concern to LCountyC, then additional signage on the approach to the roundabout at the southern end of the bypass can be introduced to direct traffic via the bypass rather than the High Street.

8.38 The EMFM modelling suggests that there will be limited impacts of cars travelling through nearby villages including Diseworth, Long Whatton and Kegworth. However, these are relatively small and largely comprise trips originating from those villages, rather than an issue of rat-running. Notwithstanding this, details of the change in traffic through the villages are considered as part of the proposed Highway Works presented in **Section 13** with confirmation of the actual flow increases.

8.39 During the statutory consultation, DCityC requested for the impacts along the A50 corridor to be considered. AECOM has provided development trip distribution plots for this part of the network, which are included at **Appendix 44**, along with plans showing where on the A50 network the flows have been taken from. **Table 29** summarises the development traffic flows, separating light vehicles, HGVs (PCU) and total vehicles (PCU). It should be noted that 'EB' refers to the eastbound direction, whilst 'WB' refers to the westbound direction.

Table 29. Development Trip Distribution along A50 Corridor

EMGP2 Development-related Trips	Light Vehicles				HGVs (in PCUs. Divide by 2 to convert to vehicles)				Total (PCUs)			
	2028		2038		2028		2038		2028		2038	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
A50 EB	8	57	7	54	31	19	30	18	39	76	37	72
A50 WB	33	13	28	12	23	29	23	29	56	42	51	41
2-way	41	70	35	66	54	48	53	47	95	118	88	113

8.40 The data shows that the development would generate up to 118 additional PCUs along the A50 corridor, of which 48 would comprise HGV PCUs, during the 2028 evening peak hour (equating to 94 vehicles). The additional volume of traffic is therefore small compared to baseline traffic on the A50, which is the reason junctions to the west of A50 Junction 1 fall outside the Area of Interest (AoI).

8.41 EMFM assigned 7% of development car trips to/from East Midlands Airport. This is a standard approach in EMFM because the airport is a zone in the model which attracts traffic. However, it was agreed with the TWG that this figure is unrealistic and for this 7% to be re-distributed across the seven highest routes. The final agreed distribution pattern presented to the TWG by email on 3 March 2025 is presented in **Table 30**, which NH

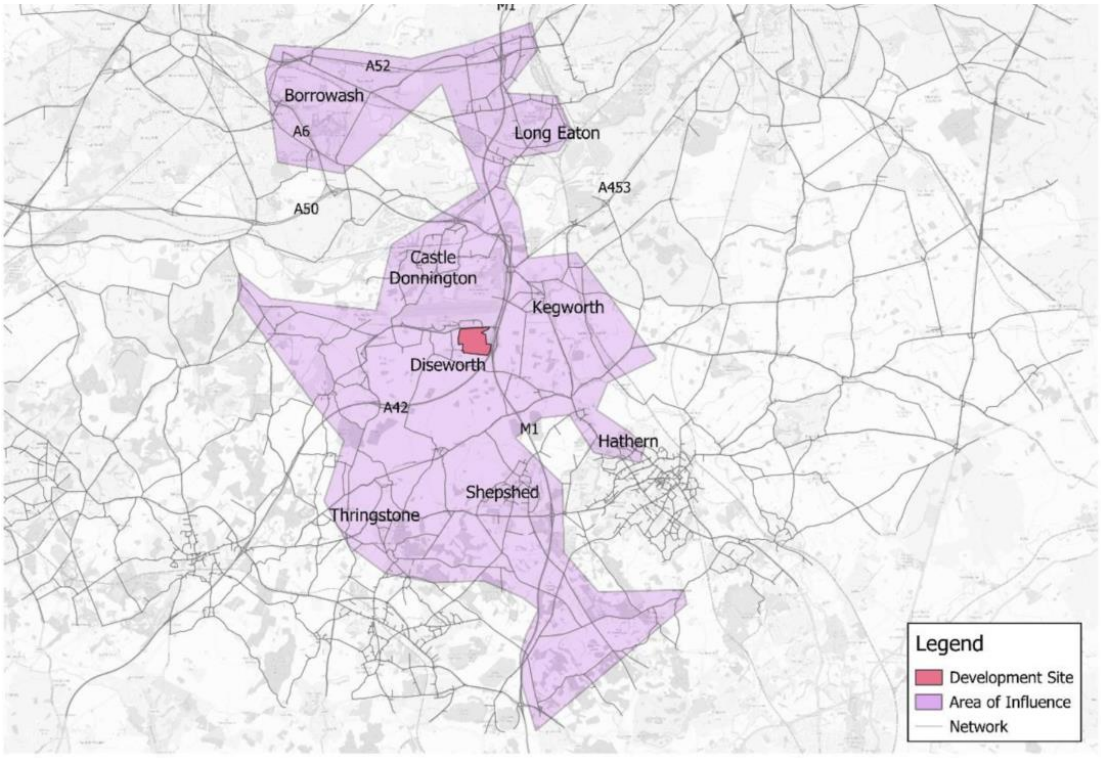
confirmed is acceptable by email on 25 March 2025. The routes are shown at **Figure 20A**. This matter was also discussed with the TWG at the March 2025 meeting, with the minutes included at **Appendix 19**.

Table 30. Amended Development Distribution Pattern

Route No.	Route	Average Distribution (car)		Average Distribution (HGV)	
		AM	PM	AM	PM
A	A50	7%	10%	16%	21%
B	M1 (N)	7%	7%	15%	13%
C	A453 (E) towards Nottingham	7%	9%	12%	11%
D	Hilton Hotel Lane	1%	1%	0%	0%
E	Derby Road	2%	2%	0%	0%
F	A6 Kegworth Bypass	12%	8%	4%	3%
G	M1 (S)	28%	31%	25%	24%
H	A42	6%	9%	26%	26%
I	Grimes gate, The Green east through Long Whatton	1%	2%	0%	0%
J	Grimes Gate, The Green, Smithy Lane	3%	2%	0%	0%
K	The Green, unnamed road towards A42	10%	8%	0%	0%
L	A453 (W) towards A42	5%	4%	0%	0%
M	Walton Hill	10%	6%	0%	0%
N	East Midlands Airport	0%	0%	1%	1%
O	EMG1	2%	1%	1%	0%

8.42 EMFM identified an Area of Influence derived by links forecast to experience a change in flow of +/-5% and +/- 30 PCU's between 2028 and 2038 'with development' and 'without development' scenarios. An extract of the AoI is included at **Figure 23.**

Figure 23. EMFM Stage 1A Modelling Area of Influence



8.43 The AoI extends to the following parts of the network:

- A453 including Finger Farm roundabout
- M1 Junction 25
- A42 Junction 14
- A52 Brian Clough Way between M1 Junction 25 and Raynesway Interchange
- A6 Alvaston Bypass between Raynesway Park Interchange and Thulston Roundabout
- Local roads in and around Borrowash, Long Eaton, Castle Donington, Kegworth, Diseworth, Hathern, Thringston and Shepshed.

8.44 The AoI does not extend as far as the LCityC or NCityC regions and so impacts on that part of the network will be negligible. The AoI does extend to the eastern side of DCityC near Borrowash, which are considered as part of determining the study area, which is detailed later in the TA.

8.45 EMFM provided node volume-capacity (V/C) ratios showing locations where forecast flows are approaching or exceeding capacity. V/C ratios exceeding 85% indicate where the network is under stress and a possibility of a reduction in speeds and increase in delays. The V/C ratio plots highlight the worst-case node at junctions and show that there are expected to be capacity issues between the EMG2 Main Site access on the A453 and M1 Junction 24, as well as the A453/Walton Hill signal-controlled junction to the west. **Figures 24** and **25** show the V/C ratios for the 2038 without development (left

part of circle) and 2038 with development scenario (right part of circle) during the morning and evening peak hours. V/C ratios for the 2028 opening year are presented in the Forecasting Report at **Appendix 41** and show similarities in predicted junction performances.

Figure 24. Stage 1A Modelling Volume-Capacity Ratios (morning peak hour)

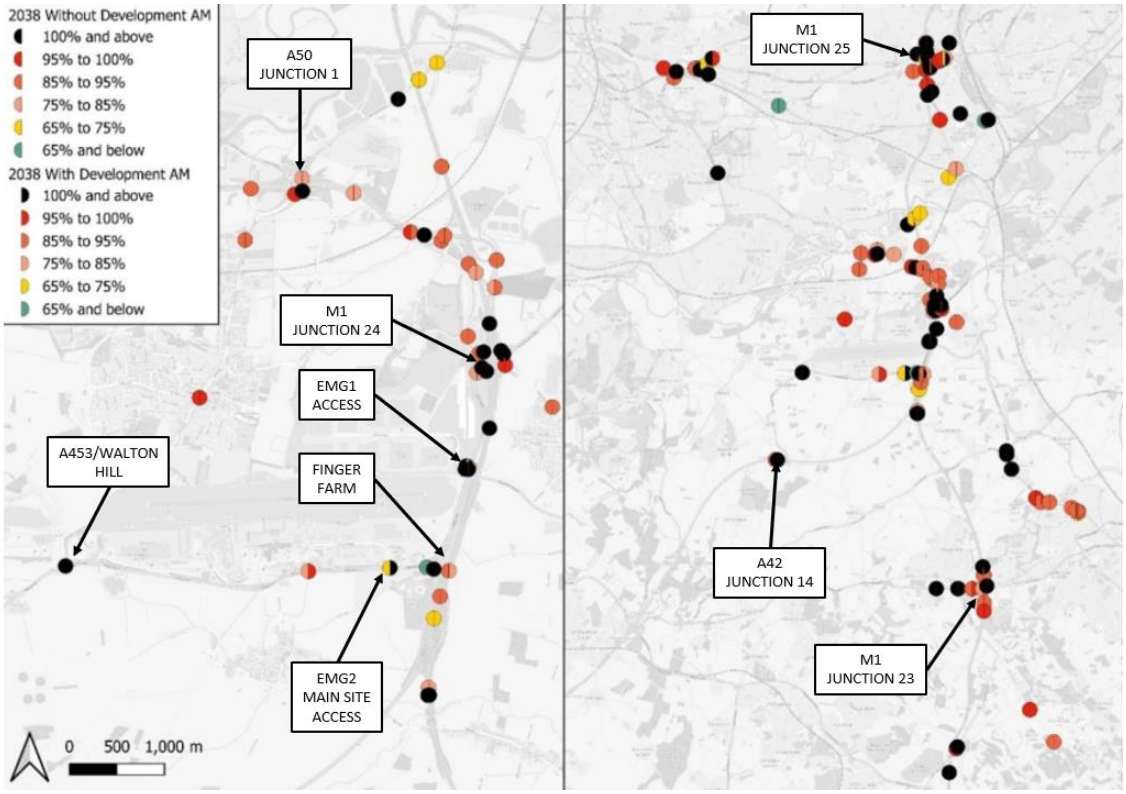
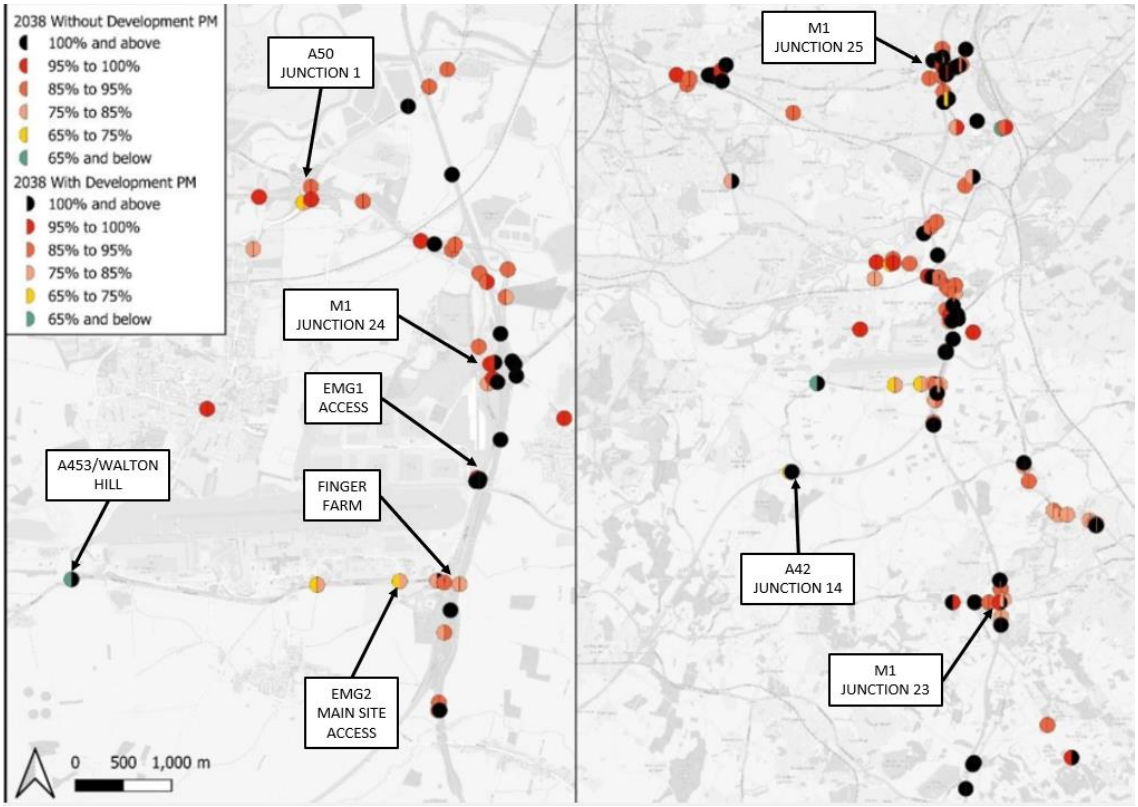


Figure 25. Stage 1A Modelling Volume-Capacity Ratios (evening peak hour)



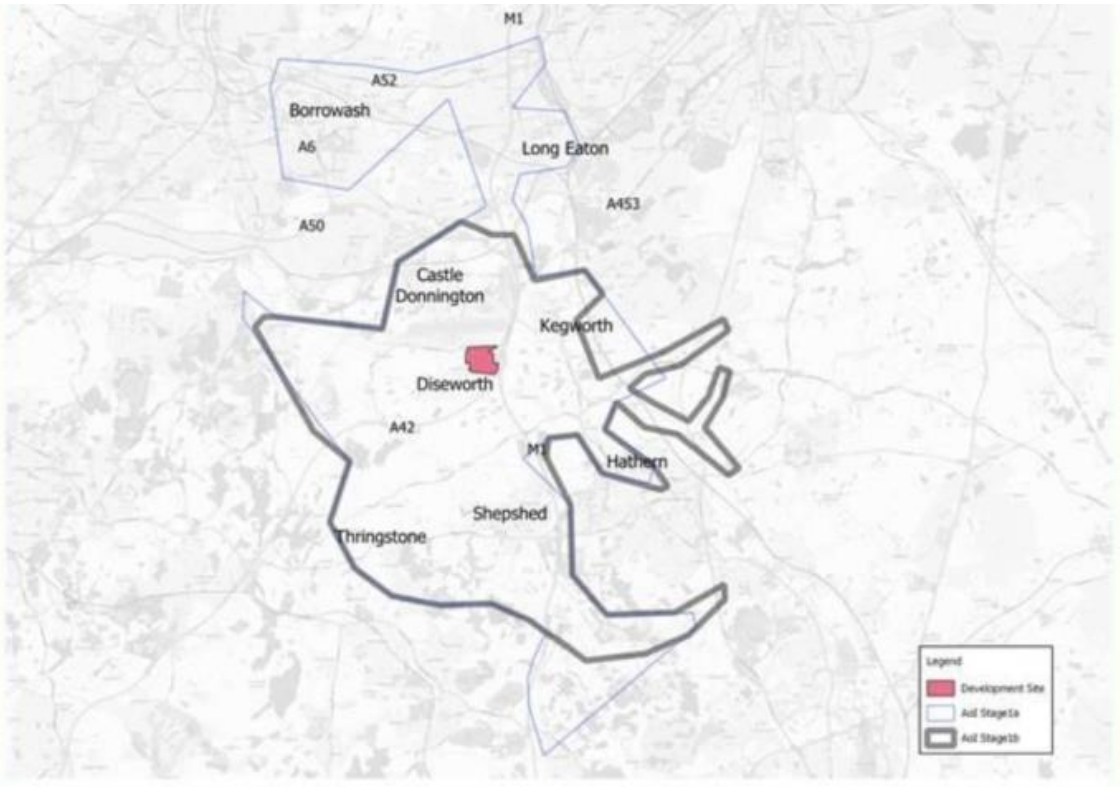
8.46 The outputs from EMFM were used to determine the study area for the detailed junction modelling.

Stage 1B Modelling

8.47 AECOM issued the EMFM Forecasting Report Addendum covering the Stage 1B modelling in March 2025. A copy of the Forecasting Report Addendum is included in **Appendix 45.**

8.48 The results of the Stage 1B modelling were similar to Stage 1A in terms of flow changes, predicted V/C ratios and forecast delays, with issues continuing to be identified at Finger Farm, EMG1 access, M1 Junction 24 and the A453/Walton Hill junctions in particular. The AoI was slightly smaller compared to Stage 1A and did not extend as far north around areas of Borrowash and Long Eaton. A comparison of the AoI is shown in **Figure 26**.

Figure 26. Comparison of Area of Influence between Stage 1A and 1B modelling



8.49 The Stage 1B modelling outputs are being used as a sensitivity test to the core Stage 1A modelling outputs.

Study Area

8.50 The EMFM model was used to identify junctions that may operate at or over capacity in the future and which require further detailed assessment using the appropriate industry standard modelling software. A list of 27 junctions was identified within the Stage 1A AoI as being in close proximity to the EMG2 Main Site and EMG1 Works or forecast to exceed capacity and for the potential to be impacted by the EMG2 Project based on the Stage 1A EMFM modelling.

8.51 The list of 27 junctions was reviewed in further detail considering the worst-case V/C ratios and change in traffic as a result of the development traffic using the Stage 1A modelling outputs. This then determined whether further detailed assessment was required. **Table 31** summarises the assessment undertaken, which resulted in 16 of the 27 junctions needing further detailed assessment, either because they are expected to exceed capacity or experience a significant change in traffic from the EMG2 Project. The remaining 11 junctions were removed from the study area on the basis that they would either operate well within capacity and/or the change in traffic from the EMG2 Project would be low. This information was shared with the TWG by email on 3 March 2025.

Table 31. Transport Assessment Study Area

No.	Junction	2038 VoC (%)				Traffic Flows (Total Vehicles)						Included within the Study Area?	Comments	Proposed Modelling Programme
		AM		PM		AM			PM					
		Without Dev	With Dev	Without Dev	With Dev	Without Dev	With Dev	Difference	Without Dev	With Dev	Difference			
1	A453 Site Access Roundabout, Leics	-	-	-	-	-	-	-	-	-	-	✗	Removed from scheme	
2	A453 / Hunter Road Roundabout, Leics	73.77%	101.36%	65.77%	84.83%	2458	3057	599	1993	3186	1193	✓		VISSIM
3	Finger Farm Roundabout, Leics	101.36%	104.95%	84.91%	85.77%	4646	4854	208	4212	4620	408	✓		VISSIM
4	A453 / EMGP1 Signal Junction, Leics	103.07%	102.54%	101.92%	101.96%	4779	4875	96	4977	5260	283	✓		VISSIM
5	M1 J24, Leics (SRN)	117.82%	119.79%	108.09%	108.78%	11823	11842	19	12215	12639	424	✓		VISSIM
6	A453 / East Midlands Airport Signal Junction, Leics	82.81%	95.98%	68.72%	75.25%	1878	1823	-55	1898	2099	201	✓		LINSIG
7	A453 / Grimes Gate, Leics	54.86%	68.40%	41.77%	57.34%	1485	1657	172	1325	1496	171	✓	Junction expected to operate with VoC of less than 85% but to be modelled given its proximit	JUNCTIONS 10
8	A453 / The Green, Leics	38.43%	55.43%	32.60%	40.55%	1904	2102	198	1833	2003	170	✓	Junction expected to operate with VoC of less than 85% but to be modelled given its proximit	JUNCTIONS 10
9	A453 / East Midlands Airport Roundabout, Leics	73.51%	77.07%	55.18%	60.30%	2112	2049	-62	2199	2452	253	✓	Junction expected to operate with VoC of less than 85% but to be modelled given its proximit	JUNCTIONS 10
10	A453 / Walton Hill, Leics	106.27%	109.76%	59.62%	100.17%	3198	3194	-4	3367	3478	111	✓		LINSIG
11	A42 J14 Eastbound off slip, Leics (SRN)	28.32%	27.22%	34.28%	36.66%	1208	1367	159	1203	1256	53	✗	Well within capacity	-
12	A42 J14 Roundabout with Top Brand / Gelscoe Lane, Leics (SRN)	37.15%	47.35%	17.47%	40.39%	1157	1343	186	1198	1386	188	✓		JUNCTIONS 10
13	M1 J23, Leics (SRN)	102.28%	102.35%	76.06%	75.51%	6040	6104	63	6211	6355	145	✓		LINSIG
14	A50 Junction 1, Leics (SRN)	101.62%	101.35%	99.45%	98.69%	5191	5285	94	5107	5196	89	✓		LINSIG
15	A50 Junction 2, Derbys (SRN)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	✗	Junction outside of AoI	-
16	M1 J25, Notts (SRN)	120.54%	106.15%	114.04%	113.39%	7222	7276	54	7655	7763	108	✓		LINSIG
17	Beacon Road / Shepshed Road Priority Crossroads, Woodhouse Eaves,	97.27%	96.52%	92.67%	93.29%	2668	2693	25	3039	3099	60	✗	Change in traffic flows minimal, hence has been removed from study area	-
18	A6 Derby Road / Wheaton Road / Zouch Road Signal Junction, Hathern,	107.50%	109.07%	78.91%	83.79%	2695	2725	30	3015	3126	111	✗	Change in traffic flows minimal, hence has been removed from study area	-
19	Station Road / Broad Rushes Roundabout, Castle Donington, Leics	87.35%	88.80%	81.86%	83.43%	2629	2716	87	2359	2440	81	✓		JUNCTIONS 10
20	High Street / Park Lane / Delven Lane Signal Junction, Castle Donington	96.84%	96.73%	98.01%	98.18%	1063	1116	53	939	955	16	✗	Overall reduction in traffic, hence has been removed from study area	-
21	A453 / Kegworth Road Slip Roads, Ratcliffe on Soar, Notts	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	✓	Junction outside of AoI, but requested by NH	JUNCTIONS 10
22	A453 / Barton Lane / West Leake Lane Slip Roads, Ratcliffe on Soar, Not	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	✓	Junction outside of AoI, but requested by NH	JUNCTIONS 10
23	B691 / Whitewick Road Signal Junction, Copt Oak, Leics	#N/A	#N/A	#N/A	#N/A	2089	2109	20	1692	1727	35	✗		-
24	A6/London Road, Kegworth	42.94%	44.21%	44.06%	66.38%	1639	1687	48	1920	2008	88	✗	Well within capacity and mitigation strategy expected to reduce traffic flows further	-
25	The Green/Lady Gate, Diseworth	15.30%	17.65%	17.55%	17.94%	600	726	126	634	717	83	✗	Well within capacity and mitigation strategy expected to reduce traffic flows further	-
26	Tamworth Road/Fields Farm Road roundabout, Long Eaton	81.81%	82.64%	84.70%	102.23%	2316	2311	-5	2436	2438	2	✗	Change in traffic flows minimal	-
27	Nottingham Road/Draycott Road, Borrowash	62.17%	51.85%	87.58%	91.57%	1738	1704	-34	1525	1539	14	✗	Change in traffic flows minimal	-

8.52 The 16 junctions in the study area, which were set out in **Section 4**, are listed below with the locations shown on **Figure 27** (NB Junction 1 was removed because it was originally intended that two main access points might be provided to the EMG2 Main Site which is no longer the case, as detailed within Pages 19 to 22 of the Design Approach Document – **Doc DCO 5.3 / MCO 5.3**).

- Junction 2: A453/Hunter Road Roundabout (Leicestershire)
- Junction 3: Finger Farm Roundabout (National Highways)
- Junction 4: A453/EMGP1 Signal Gyratory (National Highways)
- Junction 5: M1 Junction 24 (National Highways)
- Junction 6: A453/East Midlands Airport Signal Junction (Leicestershire)
- Junction 7: A453/Grimes Gate Priority Junction (Leicestershire)
- Junction 8: A453/The Green Priority Junction (Leicestershire)
- Junction 9: A453/East Midlands Airport Roundabout (Leicestershire)
- Junction 10: A453/Walton Hill Signal Junction (Leicestershire)
- Junction 11: A42 Junction 14 on-slip/Top Brand/Gelscoe Lane Roundabout (National Highways)
- Junction 12: M1 Junction 23 (National Highways)
- Junction 13: A50 Junction 1 (National Highways)
- Junction 14: M1 Junction 25 (National Highways)
- Junction 15: Station Road/Broad Rushes Roundabout (Leicestershire)
- Junction 16: A453/Kegworth Road dumbbell Roundabouts (Nottinghamshire)
- Junction 17: A453/Barton Lane/West Leake dumbbell Roundabouts (Nottinghamshire)

Figure 27. Location of Junctions in Study Area

9. DETAILED JUNCTION MODELLING METHODOLOGY

Introduction

9.1 The EMFM modelling undertaken by AECOM provided a general overview of the network performance but requires further standalone and microsimulation junction modelling to test junctions in detail.

9.2 Detailed junction models have been created for the 16 junctions in the study area. The following section summarises the modelling programmes used and the model validation process that has been undertaken with the TWG.

9.3 **Table 1** references the VISSIM Local Model Validation Report (LMVR) Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0006_VISSIM_LMVR-S2-P03 (**Appendix 4**) which was signed off by NH, with NCountyC and LCountyC deferring to NH's review and approval. In the immediate lead up to the non statutory consultation process, NH raised an issue with HGV matrices which required an update for the evening peak hour. Whilst this resulted in HGV flows reducing, regardless of this, the base VISSIM model needed revalidating as a result. This is set out in an updated version of the VISSIM LMVR Technical Note - document reference EMG2-BWB-GEN-XX-RP-TR-0006_VISSIM_LMVR-S2-P04, included in **Appendix 46**.

Baseline Traffic Surveys

9.4 A wide range of traffic surveys have been collected to provide a detailed base for the assessment work. These include:

- Manual classified turning counts
- Queue length surveys
- TomTom journey time data.

9.5 Traffic flows for the M1 and A42 mainlines were obtained from the Webtris database for the same day as the surveys (where possible).

9.6 Manual classified turning count surveys were commissioned at all off-site junctions between the hours of 0700-1000 in the morning and 1600 to 1900 hours in the evening. This was to identify the network peak hour across the three-hour period for robustness.

9.7 Vehicle classification was broken down into the following types:

- Pedal cycle
- Motorcycle
- Car
- LGV – delivery vans excluding vehicles with twin rear tyres
- OGV1 – goods vehicles with two axles with twin tyres, three axle (rigid), tractors, ambulanced or road rollers

- OGV2 – goods vehicles with three axles (articulated), four axles or more (rigid or articulated
- Bus

9.8 Queue lengths recorded the maximum queue (number of vehicles) per lane at 5-minute intervals.

9.9 TomTom journey time survey was obtained at 15-minute intervals across the VISSIM network area for neutral days within November 2023 during the peak hours. Full details are provided in the VISSIM LMVR Technical Note – document reference EMG2-BWB-GEN-XX-RP-TR-0006_VISSIM_LMVR-S2-P04 (**Appendix 46**) whilst a list of the 20 journey time routes is provided below.

- Route 1 – A50 to M1 South
- Route 2 – M1 North to M1 South
- Route 3 – A453 Remembrance Way to A42
- Route 4 – Kegworth Bypass to A42
- Route 5 - M1 North to A42
- Route 6 – M1 North to Derby Road
- Route 7 – A453 Remembrance Way to A453 EMA
- Route 8 – M1 North to A453 Remembrance Way
- Route 9 – Kegworth Bypass to M1 South
- Route 10 – M1 South to Kegworth Bypass
- Route 11 – Derby Road to M1 North
- Route 12 – M1 South to A50
- Route 13 – M1 South to M1 North
- Route 14 – A42 to A453 Remembrance Way via A453
- Route 15 - A42 to Kegworth Bypass
- Route 16 – A453 EMA to A453 Remembrance Way
- Route 17 – A42 to A50 via A453
- Route 18 – A42 to A453 Remembrance Way via M1
- Route 19 – M1 South to A453 Remembrance Way via M1
- Route 20 – M1 South to Derby Road via M1

Local Junction Modelling

9.10 Industry standard modelling software within Junctions 11 (PICADY and ARCADY) and LinSig has been used to test the capacity of most junctions across the study area. This includes the following list.

- Junction 6: A453/East Midlands Airport Signal Junction
- Junction 7: A453/Grimes Gate Priority Junction
- Junction 8: A453/The Green Priority Junction
- Junction 9: A453/East Midlands Airport Roundabout
- Junction 10: A453/Walton Hill Signal Junction (Leicestershire)
- Junction 11: A42 Junction 14 on-slip/Top Brand/Gelscoe Lane Roundabout
- Junction 12: M1 Junction 23
- Junction 13: A50 Junction 1
- Junction 14: M1 Junction 25
- Junction 15: Station Road/Broad Rushes Roundabout
- Junction 16: A453/Kegworth Road dumbbell Roundabouts
- Junction 17: A453/Barton Lane/West Leake dumbbell Roundabouts

9.11 Prior to testing the forecast year traffic flows, each model underwent a validation process to demonstrate it reflected observed conditions and survey results. At this time, the priority junctions were built in Junctions 10 (but have subsequently been updated to Junctions 11, albeit without any changes to the geometric inputs and hence results). The details were presented within the Modelling Validation Technical Note EMG2-BWB-GEN-XX-RP-TR-0007 Revision P4, included at **Appendix 5**.

9.12 In terms of the Junctions 11 models, the validation process sought to demonstrate how modelled versus observed queues on each arm are within 2 PCU's, which was deemed to represent a good level of validation. For the LinSig models, the validation process followed the requirements of the Transport for London modelling guidelines (as this is the only published guidelines for validating LinSig models and is adopted for projects outside of London) and sought to demonstrate how modelled Degree of Saturations are within 5% of observed values from Degree of Saturation surveys.

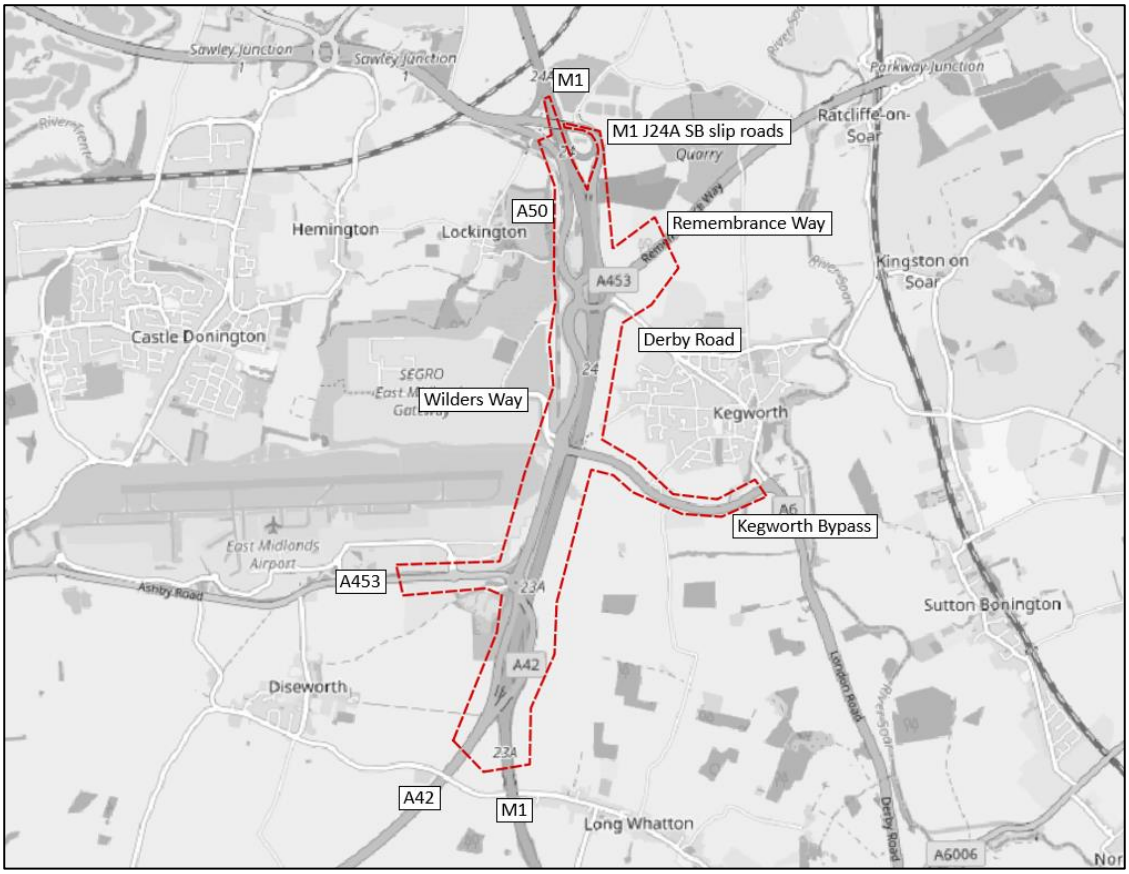
9.13 The Modelling Validation Note Technical Note confirmed that all the Junctions 11 and LinSig models validated within the thresholds and are considered suitable to take forward to test the future forecast traffic flows. This was agreed with NH within a Technical Note dated 5 June 2024 (**Appendix 47**) who reviewed all 12 junctions, including those on the local road network and have formally sign the 'Stage 1D Modelling' sheet covering this document (**Appendix 48**). NCountyC confirmed that they agree with the validation of Junction 16 and 17, which are located on the A453 Remembrance Way within their administrative area, by email on 11 June 2024. LCountyC reviewed the models and provided feedback by email on 15 August 2025 raising only one comment on the Station Road/Broad Rushes roundabout Junctions 11 model, which has been taken on board in the TA. Therefore, the base Junctions 11 and LinSig models have been agreed by all parties.

VISSIM Modelling

9.14 It was agreed with the TWG that the following five junctions are tested using microsimulation VISSIM modelling because of their proximity to the SRN. The VISSIM model extent is shown at **Figure 28**.

- Junction 1: A453/ EMG2 Main Site Access Roundabout
- Junction 2: A453/Hunter Road Roundabout
- Junction 3: Finger Farm Roundabout
- Junction 4: A453/EMGP1 Signal Gyratory
- Junction 5: M1 Junction 24

Figure 28. VISSIM Model Extent



9.15 A VISSIM network model of base year 2012 was available but outdated and therefore it was agreed with the TWG that this model be cordoned and re-validated to a base year of 2022. The strategy for updating the base VISSIM model was outlined in a VISSIM Scoping Note - document reference EMG2-BWB-GEN-XX-RP-TR-0003 Revision P3 (**Appendix 1**), which has been formally approved by NH within the Stage 1A Modelling sign off sheet (**Appendix 33**). LCountyC and NCountyC agreed to defer to NH on this element.

9.16 The November 2022 manual classified turning count surveys, alongside Webtris data on the M1 and A42 mainlines were used to validate the base VISSIM model. An origin-destination (OD) matrix was used to understand traffic movements through the VISSIM network, derived through a LinSig model.

9.17 The VISSIM LMVR Technical Note was issued to the TWG in consultation with NH consultants. The report concluded that the model calibrates well against observed and modelled turning movements during both peak hours at 15-minute intervals in line with DfT guidelines and as a result satisfied the standard criteria. The base model was subsequently agreed with NH within the Stage 1A Modelling sign off sheet (**Appendix 33**) with LCountyC and NCountyC agreeing to defer to NH on this element. As set out in paragraph 9.3, the base model has since been updated.

Deriving Future Forecast Traffic Flows

9.18 EMFM is validated at link flow level but not turning movement level and therefore a furnessing process has been carried out to derive future forecast traffic flows to be input into the Junctions 11, LinSig and VISSIM models.

9.19 BWB prepared a Modelling Furnessing Approach Technical Note – document EMG2-BWB-GEN-XX-RP-TR-0004 Revision P5 (**Appendix 2**) which was agreed by NH and NCountyC. LCountyC provided comments by email on 1 August 2025 which raised no concern with the methodology adopted. This included for all baseline survey information and set out the methodology for deriving the future forecast traffic flows, which in summary involved the following process:

- Column adjustment: calculate turning counts across columns using survey data proportions in combination with the target link flow out of each arm.
- Sum row: calculate the sum of each arm row total.
- Row adjustment: calculate turning counts across rows using survey data proportions in combination with the target link flow into each arm.
- Sum column: calculate the sum of each column.
- Round all values in the matrix to the closest integer.
- Update sums for column and row total.
- Repeat the above 'x' number of iterations until the flows converge.

9.20 The macro has been built to run the furnessing 20 times for each matrix, however it should be noted that every time the macro is executed, it runs an additional 20 times. The furnessing spreadsheet therefore has been run for at least 20 iterations. The furnessing methodology has been double constrained, i.e. both origin and destination and the traffic flow matrices are furnessed until link flows are within a GEH of 5 (which is the Geoffrey E. Havers formula typically used in transport planning/traffic engineering to compare the accuracy of traffic models). This has been calculated by taking the absolute difference between the calculated target link flow and furnessed link flow. Should these be higher than a GEH of 5, the macro is executed until convergence is achieved. The furnessing process has been undertaken for the assessment years 2028 and 2038.

9.21 Due to high volumes of traffic that travel on the motorways and major A-roads there is the potential for these numbers to affect the furnessing outputs. As the furnessing process is based on turning proportions, the large motorway flows could cause the furnessing to assign traffic that would use the junctions to the motorway mainline movements instead.

9.22 Therefore, the M1 and A42 mainline flows were removed and furnessed seperately to avoid any re-assignment and subsequently added back into the matrix after the furnessing process was complete.

9.23 EMFM, as a strategic highway model, re-routes traffic in response to congestion. To ensure the true impact of the development is modelled and fully mitigated, the development traffic was originally extracted from the EMFM model, and assigned manually to exclude the effects of any rerouting. The modelling therefore presents a highly robust assessment of the full impact of the proposed development trips.

9.24 Copies of the furnessing spreadsheets were sent to the TWG on 4 April 2025. Comments were received from NH on 23 April 2025 and 18 June 2025, which have been taken on board, as well as conversations in subsequent meetings. An updated version of the Modelling Furnessing Approach Technical Note – document EMG2-BWB-GEN-XX-RP-TR-0004 Revision P7 (**Appendix 49**) has been produced, This is set out in further detail in **Section 12**, but is where all traffic flows used to inform the subsequent capacity assessment work can be found, given that GIS outputs from EMFM cannot be appended to the TA.

10. HIGHWAY IMPACT ASSESSMENTS: CORE SCENARIO (STAGE 1A MODELLING)

Introduction

10.1 The following section presents the results of the detailed junction modelling assessments for the Stage 1A forecast year core scenarios using VISSIM, Junctions 11 and LinSig software at all 16 junctions. This includes draft Local Plan allocations, EMIP and the Power Station in the baseline but without any mitigation which is likely to accompany that development, because it is unknown at this stage. The following results consider the impacts of the EMG2 Works (including Plot 16) on top of the forecast baseline position that includes traffic from the draft Local Plan allocations, EMIP and Ratcliffe on Soar.

10.2 For many junctions, certains arms are referred to as North (N), East (E), South (S) or West (W). In these instances, this relates to the side of the junction the arm is located at, rather than the direction of travelling traffic. For example, A453(E) refers to the eastern arm on the A453. This is the case for all transport modelling sections within the remainder of the TA.

Measurement of Capacity

10.3 The primary measurement of capacity at priority controlled junctions in Junctions 11 is the Ratio of Flow to Capacity (RFC), which is a value calculated for each arm of the junction. Typically, a value of 0.85 or less on all arms is seen to be an acceptable criterion for new junction design, whilst existing junctions within the highway network may typically operate with some or all arms having a RFC value of, or close to 1.0. This essentially means that the specific arm (or arms) is saturated, resulting in the potential for continuous queueing on approach to the give way line during the peak time segments.

10.4 The primary measurements of capacity at signal controlled junctions in LinSig are Degree of Saturation (DoS) and Practical Reserve Capacity (PRC). DoS gives a ratio of the vehicle arrival rate to the relative saturation flow rate, where a value over 100% indicates that demand is greater than capacity, whilst a value of 90% or less is considered to provide an acceptable design criterion. PRC provides a measure of the capacity of the junction as a whole, with a positive value indicating spare capacity available.

10.5 The primary measurement of capacity in VISSIM is to conduct a journey time analysis between the without development and with development scenarios along with a comparson of predicted queues and a series of network perormanec indicator such as average delays, average speeds, number of vehicle entering the network and latent demand. Judgement is then required as to where significant impacts are expected to occur and hence where mitigation needs to be focussed.

Measurement of Impacts

10.6 The impacts of the Highway Works which are an NSIP in their own right and the ability of those works to accommodate the impact of the EMG2 Project will be assessed against the policy contained within Paragraph 5.283 of the NPS, which states:

> *"The applicant should provide evidence that the development improves the operation of the network and assists with capacity issues"*

10.7 In addition the impacts of the EMG2 Project will be assessed against the policy contained within Paragraph 116 of the NPPF, which states:

> "*development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network, following mitigation, would be severe, taking into account all reasonable future scenarios*"

10.8 The forecast year traffic flows input into the junction models have been taken directly from the furnessing spreadsheet, which have been agreed with the TWG.

Junctions 2 to 5 (VISSIM Network)

Introduction

10.9 BWB have produced a VISSIM Forecast Modelling report (BWB document EMG2-BWB-GEN-XX-RP-TR-0019_VISSIM Modelling Forecast Report-S2_P2) which sets out the forecast VISSIM modelling results in detail, a copy of which is included with **Appendix 50**.

10.10 The following details within this TA provide a summary of the Network Performance results to give an overview of the impacts of the development on the VISSIM network. It should be noted development traffic from the EMG2 Works (plus Plot 16) was assigned manually on top of 2028/2038 furnessed without development flows using the distribution pattern at **Table 30**, as worst-case to avoid any impacts of background re-assignment. This provides an assessment of the true impacts of the development traffic.

Network Performance

10.11 **Table 32** sets out the high level network performance comparison on all scenarios for 2028, as the year of opening of the development, which is NH's key assessment year as per Circular 01/2022. This compares 'without development' (WoD) and 'with development' (WD) scenarios.

Table 32: 2028 VISSIM Network Performance Comparison – Stage 1A

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	147	37.3	20,483	207
	WD	156	36.1	21,573	104
	WD - WoD	9	-1.2	1,090	-103
PM	WoD	74	46.5	21,307	4
	WD	112	41.1	21,964	215
	WD - WoD	38	-5.5	657	212

10.12 When comparing the results of the with development scenario against the without development scenario, the average delay increases in both peak hours, more significantly in the evening peak hour with a delay increase of 38 seconds. The average speed decreases in both peak hours as a result of additional congestion.

10.13 **Table 33** sets out the network performance comparison on all scenarios for 2038.

Table 33: 2038 VISSIM Network Performance Comparison – Stage 1A

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	239	30.3	21,375	810
	WD	281	27.5	21,875	991
	WD - WoD	42	-2.8	500	182
PM	WoD	139	38.9	22,196	485
	WD	175	35.1	22,546	1,207
	WD - WoD	36	-3.8	350	722

10.14 Similarly to the 2028 assessment, the 2038 results show that the average delays increase. The number of vehicles that enter the model and latent demand also increase, with the average speed decreasing overall.

10.15 In summary, the results show that, as expected, the EMG2 development is having an impact on the network performance across the VISSIM network area. Therefore, a comprehensive mitigation strategy using the Stage 2A modelling results has been proposed to address the impacts of the EMG2 development, details of which are presented in subsequent sections. The purpose of the mitigation is to demonstrate how the impacts of the EMG2 development would be mitigated and that there would be overall benefits to the operation of the Strategic Road Network around M1 Junction 24.

Junction 6 – A453/East Midlands Airport Signal Junction

10.16 The agreed base LinSig model for the A453/East Midlands Airport signal junction has been tested for capacity using the Stage 1A forecast year flows. **Appendix 51** contains the LinSig output data, whilst **Table 34** summarises the results.

Table 34. A453/East Midlands Airport LinSig Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – EMA Access	6.2	35	61.5	6.2	22.2	45.2
Arm 2 – A453 (E)	7.8	6.0	60.9	4.5	6.6	35.7
Arm 3 – A453 (W)	10.1	16.7	61.6	6.5	19.4	45.5
	PRC over all lanes = 46.1%			PRC over all lanes = 97.9%		
2038 forecast year 'without development'						
Arm 1 – EMA Access	12.6	32.9	70.9	8.2	25.4	56.6
Arm 2 – A453 (E)	10.5	10.9	70.4	5.4	7.8	38.5
Arm 3 – A453 (W)	15.5	22.3	71.4	10.3	21.1	61.4
	PRC over all lanes = 26%			PRC over all lanes = 46.5%		
2028 forecast year 'with development'						
Arm 1 – EMA Access	7.4	44.5	72.0	5.1	19.3	41.3
Arm 2 – A453 (E)	8.4	10.5	74.7	7.6	10.3	47.0
Arm 3 – A453 (W)	16.9	17.2	9.9	6.4	21.5	46.2
	PRC over all lanes = 20.4%			PRC over all lanes = 91.7%		
2038 forecast year 'with development'						
Arm 1 – EMA Access	15.1	59.0	86.9	7.8	19.8	63.0
Arm 2 – A453 (E)	11.4	20.5	86.1	10.1	13.1	56.4
Arm 3 – A453 (W)	13.6	25.2	87.3	9.1	26.7	61.9
	PRC over all lanes = 3%			PRC over all lanes = 43%		

10.17 The results show that the junction is predicted to operate within capacity during all scenarios in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows without the need for any mitigating improvements.

Junction 7 – A453/Grimes Gate Priority Junction

10.18 The agreed base Junctions 11 model for the A453/Grimes Gate priority junction has been tested for capacity using the Stage 1A forecast year flows. **Appendix 52** includes the Junctions 11 output data, whilst **Table 35** summarises the modelling results.

Table 35.A453/Grimes Gate Junctions 11 Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Stream B-C – Grimes Gate	0.0	6.51	0.02	0.0	6.75	0.02
Stream B-A – Grimes Gate	0.3	10.36	0.24	0.1	8.63	0.08
Stream C-AB – A453 (W)	0.0	3.89	0.02	0.0	4.75	0.04
2038 forecast year 'without development'						
Stream B-C – Grimes Gate	0.0	7.27	0.03	0.0	7.36	0.03
Stream B-A – Grimes Gate	0.5	12.77	0.33	0.2	11.35	0.17
Stream C-AB – A453 (W)	0.0	3.88	0.02	0.1	4.29	0.06
2028 forecast year 'with development'						
Stream B-C – Grimes Gate	0.0	6.74	0.01	0.0	7.34	0.03
Stream B-A – Grimes Gate	0.6	13.05	0.36	0.1	9.72	0.10
Stream C-AB – A453 (W)	0.0	3.45	0.03	0.0	5.00	0.05
2038 forecast year 'with development'						
Stream B-C – Grimes Gate	0.0	7.79	0.03	0.0	8.44	0.04
Stream B-A – Grimes Gate	0.9	16.82	0.47	0.2	13.42	0.17
Stream C-AB – A453 (W)	0.1	3.48	0.04	0.1	4.82	0.06

10.19 The results show that the junction is predicted to operate well within capacity during all scenarios in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows without the need for any mitigating improvements.

Junction 8 – A453/The Green Priority Junction

10.20 The agreed base Junctions 11 model for the A453/The Green priority junction has been tested for capacity using the Stage 1A forecast year flows. **Appendix 53** includes the Junctions 11 output data, whilst **Table 36** summarises the modelling results.

Table 36. A453/The Green Junctions 11 Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Steam B-AC – The Green	5.9	49.47	0.88	1.0	14.84	0.50
Stream C-AB – A453 (W)	0.7	4.88	0.25	0.5	5.92	0.25
2038 forecast year 'without development'						
Steam B-AC – The Green	6.1	56.79	0.88	5.3	60.80	0.87
Stream C-AB – A453 (W)	1.2	5.92	0.38	7.9	26.89	0.85
2028 forecast year 'with development'						
Steam B-AC – The Green	122.9	800.13	1.39	1.1	17.92	0.53
Stream C-AB – A453 (W)	0.6	4.58	0.24	0.6	6.78	0.30
2038 forecast year 'with development'						
Steam B-AC – The Green	172.0	1153.41	1.54	28.8	321.69	1.26
Stream C-AB – A453 (W)	1.2	5.76	0.39	53.0	204.22	1.11

10.21 The results show that the junction would operate within capacity at the 2028 forecast year with or without development, but capacity problems will occur on The Green arm at the 2038 forecast year, again with or without development. In the 2038 evening peak hour, the with development scenario will also trigger impacts on the A453 (W) arm.

10.22 Whilst the Junctions 11 modelling suggests that mitigation may be required, the junction is predicted to operate within capacity in EMFM and therefore it is likely that EMFM assigned more traffic along this route compared to what would occur in reality. From the first statutory consultation, feedback was received from local residents who asked that capacity improvements not be proposed at junctions leading towards Diseworth so as not to encourage higher traffic flows in the vicinity of the village. This aligns with the principle of the mitigation strategy seeking to promote further use of the Strategic Road Network rather than local roads, further details of which are presented in Section 12.

10.23 The PIC analysis identified a safety problem at this junction, albeit the rate of PICs has reduced in more recent years following more signage being installed. However, it is evident that further assessment is required to ensure there are no severe impacts both from a capacity and safety perspective at this junction. The proposed Highway Works seek to increase capacity at Finger Farm and the A453 corridor, with the aim of making this a more attractive route and discouraging traffic travelling towards the EMG2 Main Site and East Midlands Airport to route via The Green. Therefore, further assessment of this junction is presented in subsequent sections.

Junction 9 – A453/East Midlands Airport Roundabout

10.24 The agreed base Junctions 11 model for the A453/East Midlands Airport roundabout has been tested for capacity using the Stage 1A forecast year flows. **Appendix 54** includes the Junctions 11 output data, whilst **Table 37** summarises the results.

Table 37. A453/East Midlands Airport Roundabout Junctions 11 Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – Walton Hill	0.2	4.69	0.12	0.7	5.0	0.35
Arm 2 – A453 (E)	1.0	5.41	0.34	1.3	6.27	0.35
Arm 3 – A453 (W)	8.0	32.18	0.89	1.5	10.47	0.51
2038 forecast year 'without development'						
Arm 1 – Walton Hill	0.4	4.85	0.16	1.1	6.34	0.44
Arm 2 – A453 (E)	1.1	5.47	0.35	1.6	6.23	0.42
Arm 3 – A453 (W)	56.3	166.82	1.11	6.3	24.5	0.84
2028 forecast year 'with development'						
Arm 1 – Walton Hill	0.3	4.77	0.13	0.6	4.9	0.35
Arm 2 – A453 (E)	1.0	5.54	0.31	1.4	5.97	0.4
Arm 3 – A453 (W)	25.9	84.01	0.99	1.2	8.31	0.45
2038 forecast year 'with development'						
Arm 1 – Walton Hill	0.4	4.84	0.17	1.0	6.5	0.46
Arm 2 – A453 (E)	0.8	5.28	0.33	1.6	6.6	0.45
Arm 3 – A453 (W)	74.3	229.49	1.15	6.1	23.86	0.84

10.25 The results show that the junction would operate over capacity in all scenarios during the morning peak hour on the A453 (W) arm, albeit the changes in traffic flows associated with the proposed development will result in a negligible impact. The junction would operate within capacity in all scenarios during the evening peak hour.

10.26 Without prejudice to the above, this junction forms part of the site access strategy to the Isley Woodhouse settlement and is expected to undergo significant improvements to accommodate this development and other planned schemes. The issue with capacity is a result of the background traffic from Isley Woodhouse being included in EMFM modelling but none of the physical infrastructure (i.e. mitigation) which will inevitably be required to accommodate that development.

10.27 To understand this further, the A453/East Midlands Airport roundabout will also be tested using the Stage 1B forecast flows, as a sensitivity test, which excludes the traffic generated by the draft Local Plan allocations, including Isley Woodhouse (in compliance with Circular 01/22 and IEMA guidance). This information is presented in **Section 11**.

Junction 10 – A453/Walton Hill Signal Junction

10.28 The agreed base Junctions 11 model for the A453/Walton Hill signal-controlled junction has been tested for capacity using the Stage 1A forecast year flows. **Appendix 55** includes the LinSig output data, whilst **Table 38** summarises the modelling results.

Table 38. A453/Walton Hill Signal LinSig Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – Local Road (N)	10.4	19.3	71.3	9.5	19.9	68.3
Arm 2 – A453 (E)	8.1	24.0	61.0	9.7	23.8	66.6
Arm 3 – Walton Hill	8.5	27.9	69.5	5.0	31.1	5.0
	PRC over all lanes = 26.2%			PRC over all lanes = 31.8%		
2038 forecast year 'without development'						
Arm 1 – Local Road (N)	17.4	35.9	92.6	93.8	229.5	111.7
Arm 2 – A453 (E)	14.1	45.2	90.6	69.7	249.9	112.5
Arm 3 – Walton Hill	16.9	33.5	90.9	73.3	238.4	112.2
	PRC over all lanes = -2.9%			PRC over all lanes = -25.0%		
2028 forecast year 'with development'						
Arm 1 – Local Road (N)	12.2	19.9	76.3	9.7	19.8	68.7
Arm 2 – A453 (E)	7.5	22.3	55.3	10.0	23.9	97.5
Arm 3 – Walton Hill	9.7	32.1	77.2	4.8	34.3	67.7
	PRC over all lanes = 16.6%			PRC over all lanes = 31.0%		
2038 forecast year 'with development'						
Arm 1 – Local Road (N)	15.4	33.6	90.0	126.8	317.9	117.8
Arm 2 – A453 (E)	13.2	40.7	88.0	93.8	315.7	117.5
Arm 3 – Walton Hill	16.3	30.5	89.2	72.8	243.1	112.5
	PRC over all lanes = 0.0%			PRC over all lanes = -30.9%		

10.29 The results show that the junction is expected to operate within capacity during all 2028 scenarios. The junction would operate over capacity at the 2038 future year, with or without the development, although there would be a slight beneficial impact in the morning peak hour and a negligible change in the evening peak hour from the development.

10.30 Similar to the above, it is envisaged that the main impact on capacity is being caused by traffic from the Isley Woodhouse traffic, given this development is located directly south (and evidenced by way of limited impacts from the proposed development). This shows that whilst capacity issues will likely occur, the proposed development has a negligible impact on the operation of the junction. Therefore, it can be concluded that there is no severe impact and no further assessment or mitigation is required at this location. However, further assessment of this junction will be undertaken using the Stage 1B flows to understand this position in more detail when excluding traffic from the draft Local Plan allocations, including Isley Woodhouse.

Junction 11 – A42 Junction 14 on-slip/Top Brand/Gelscoe Lane Roundabout

10.31 The agreed base Junctions 11 model for the A42 Junction 14 on-slip/Top Brand/Gelscoe Lane roundabout has been tested for capacity using the Stage 1A forecast year flows. **Appendix 56** includes the Junctions 11 output data, whilst **Table 39** summarises the results.

Table 39. A42 Junction 14 on-slip/Top Brand/Gelscoe Lane Junctions 11 Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – A453 (N)	0.8	6.6	0.37	1	7.31	0.35
Arm 2 – Gelscoe Lane	0.2	4.46	0.08	0.2	4.63	0.15
Arm 3 – Top Brand	0.5	6.35	0.23	0.2	4.75	0.08
2038 forecast year 'without development'						
Arm 1 – A453 (N)	1	6.37	0.4	1.3	7.45	0.35
Arm 2 – Gelscoe Lane	0.4	4.95	0.16	0.4	5.02	0.19
Arm 3 – Top Brand	1.2	7.75	0.4	0.3	5.06	0.22
2028 forecast year 'with development'						
Arm 1 – A453 (N)	1.8	9.31	0.55	1.2	7.74	0.35
Arm 2 – Gelscoe Lane	0.2	4.67	0.08	0.4	5.02	0.21
Arm 3 – Top Brand	0.6	6.18	0.25	0.2	4.37	0.09
2038 forecast year 'with development'						
Arm 1 – A453 (N)	1.8	8.76	0.57	1.5	7.68	0.39
Arm 2 – Gelscoe Lane	0.3	5.06	0.15	1	6.7	0.36
Arm 3 – Top Brand	1	7.81	0.38	0.5	5.42	0.23

10.32 The results show that the junction is predicted to operate well within capacity during all scenarios and in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows without the need for any mitigating improvements.

Junction 12 – M1 Junction 23

10.33 The agreed base LinSig model for M1 Junction 23 has been tested for capacity using the Stage 1A forecast year flows. **Appendix 57** includes the LinSig output data, whilst **Table 40** summarises the results.

Table 40. M1 Junction 23 LinSig Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – M1 SB slip	10.8	29.8	83.7	7.2	33.9	75.7
Arm 2 – A512 (E)	10.3	26.4	72.8	12.1	19.1	77.0
Arm 3 – M1 NB slip	5.8	50.4	75.8	4.9	42.2	67.7
Arm 4 – A512 (W)	9.6	21.0	77.7	7.0	17.1	63.8
	PRC over all lanes = 7.3%			PRC over all lanes = 16.9%		
2038 forecast year 'without development'						
Arm 1 – M1 SB slip	60.4	203.6	109.5	8.9	39.5	89.2
Arm 2 – A512 (E)	49.3	151.8	105.9	17.1	24.6	89.1
Arm 3 – M1 NB slip	18.1	158	103.2	10.4	75.7	93.0
Arm 4 – A512 (W)	94.4	203.4	109.9	21.9	39.9	95.8
	PRC over all lanes = -24.7%			PRC over all lanes = -6.4%		
2028 forecast year 'with development'						
Arm 1 – M1 SB slip	11.0	30.2	84.0	7.2	30.1	71.1
Arm 2 – A512 (E)	11.7	29.0	78.2	11.5	20.1	75.5
Arm 3 – M1 NB slip	5.6	49.0	74.2	4.7	43.5	66.8
Arm 4 – A512 (W)	10.9	23.5	82.1	6.5	16.6	60.5
	PRC over all lanes = 5.9%			PRC over all lanes = 19.2%		
2038 forecast year 'with development'						
Arm 1 – M1 SB slip	72.0	243.2	112.1	10.0	44.2	85.8
Arm 2 – A512 (E)	42.1	121.8	103.8	18.3	26.6	90.7
Arm 3 – M1 NB slip	28.2	267.7	111.9	11.2	84.8	94.6
Arm 4 – A512 (W)	80.9	163.6	107.3	20.4	36.7	94.8
	PRC over all lanes = -24.6%			PRC over all lanes = -5.3%		

10.34 The results show that M1 Junction 23 would operate within capacity at the 2028 forecast year of opening in all scenarios and both peak hours, which is the Circular 01/2022 compliant assessment year. Whilst the junction would exceed capacity at the 2038 forecast year, the development would have no impact on capacity and there would be a slight betterment in overall PRC in both peak hours, which is a result of traffic re-assigning at the junction. Therefore, it can be concluded that there would be no severe impacts at this junction from the development and no mitigation is required.

10.35 In response to the Highway Safety Position Statement at **Appendix 14**, NH requested consideration is given to refreshing lane markings and clarifying signage on the circulatory of the junction. However, as the modelling shows the junction would perform better with the development in place, it is considered that no mitigation is required at M1 Junction 23 from both a capacity and safety perspective and therefore the proposals do not consider lane markings or signage further.

10.36 Notwithstanding this, given the strategic nature of the junction, this is assessed once more in subsequent sections, including for the wider mitigation, to see if this conclusion remains valid.

Junction 13 – A50 Junction 1

10.37 The agreed base LinSig model for A50 Junction 1 has been tested for capacity using the Stage 1A forecast year flows, which includes the committed improvement scheme associated with Land South of A50 Junction 1, Castle Donington development that signalises the Trent Lane and Tamworth Road arms. **Appendix 58** includes the LinSig output data, whilst **Table 41** summarises the results.

Table 41. A50 Junction 1 LinSig Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – B5010	2.0	10.1	63.9	1.4	9.8	52.8
Arm 2 – B6540	9.5	20.4	99.4	8.4	17.5	89.2
Arm 3 – A50 slip road (E)	18.4	78.0	99.1	9.0	27.2	84.0
Arm 4 – Ryecroft Road	0.3	8.7	18.2	0.3	7.8	16.1
Arm 5 – Trent Lane	6.9	19.0	73.8	11.7	33.7	88.5
Arm 6 – A50 slip road (W)	9.3	18.4	94.7	6.0	15.4	90.5
	PRC over all lanes = -10.4%			PRC over all lanes = -6.3%		
2038 forecast year 'without development'						
Arm 1 – B5010	2.3	14.3	72.4	2.1	11.2	54.3
Arm 2 – B6540	7.5	14.6	78.8	13.9	29.6	93.5
Arm 3 – A50 slip road (E)	8.9	24.2	82.7	6.4	20.1	71.3
Arm 4 – Ryecroft Road	0.4	8.8	21.2	0.5	8.9	24.7
Arm 5 – Trent Lane	50.7	167.9	107.7	55.7	153.2	106.9
Arm 6 – A50 slip road (W)	32.7	93.9	106.3	5.8	14.6	70.2
	PRC over all lanes = -20.2%			PRC over all lanes = -18.8%		
2028 forecast year 'with development'						
Arm 1 – B5010	2.2	12.7	71.3	0.9	5.8	38.6
Arm 2 – B6540	9.0	19.4	96.2	8.5	21.6	92.6
Arm 3 – A50 slip road (E)	22.9	100.1	101.5	8.6	32.0	85.5
Arm 4 – Ryecroft Road	0.3	9.5	21.7	0.2	6.7	14.6
Arm 5 – Trent Lane	4.8	18.2	71.4	9.0	25.7	83.0
Arm 6 – A50 slip road (W)	20.0	49.4	102.3	5.6	15.0	68.1
	PRC over all lanes = -18.9%			PRC over all lanes = -2.9%		
2038 forecast year 'with development'						
Arm 1 – B5010	2.3	14.5	72.9	2.2	11.3	55.7
Arm 2 – B6540	17.0	39.3	101.7	14.0	29.7	93.5
Arm 3 – A50 slip road (E)	12.8	45.4	93.5	6.1	19.5	69.6
Arm 4 – Ryecroft Road	0.4	9.4	23.6	0.7	9.4	31.5
Arm 5 – Trent Lane	51.7	166.1	107.5	72.1	196.8	109.9
Arm 6 – A50 slip road (W)	42.9	125.5	109.0	5.9	14.6	71.2
	PRC over all lanes = -21.1%			PRC over all lanes = -22.2%		

10.38 The results show that A50 Junction 1 is forecast to exceed capacity in all scenarios, with or without the development. However, the overall change in PRC and associated

queues and delays would be negligible as a result of the proposed development, with the greatest queue increase expected on the A50 slip road (W) arm (eastbound off slip) in 2028 which would experience an increase from 9.3 PCUs to 20.0 PCUs (total of circa 115 metres). This arm has a total length of approximately 420 metres, so this queue would continue to be well within the stacking space of the slip road and not interfere with the A50 mainline. This is also the case for the A50 slip road (E) arm (westbound off-slip) which would experience a worst-case queue of 42.9 PCUs (an increase from 32.7 PCUs at the without development scenario), which equates to approximately 246 metres and well within the stacking space of the slip road. There would be a beneficial impact on PRC in 2028 during the evening peak hour.

10.39 Therefore, whilst there would be capacity problems from a PRC perspective, the queues would not cause issues with the A50 mainline and the overall change from the proposed development would not be severe. Consequently, no mitigation is required at this junction, but this is assessed once more in subsequent sections under different modelling scenarios to ensure this position remains.

10.40 NH confirmed in its response to the Highway Safety Position Statement (**Appendix 14**) that there are no existing safety problems at this location.

Junction 14 – M1 Junction 25

10.41 The agreed base LinSig model for M1 Junction 25 has been tested for capacity using the Stage 1A forecast year flows. **Appendix 59** includes the LinSig output data, whilst **Table 42** summarises the results.

Table 42 M1 Junction 25 LinSig Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – M1 slip (N)	34.6	113.0	102.4	89.9	359.8	119.8
Arm 2 – A52 (E)	117.1	577.8	138.3	87.7	383.3	122.1
Arm 3 – Bostocks Lane (S)	48.7	327.0	116.3	42.8	330.8	117.2
Arm 4 – M1 slip (S)	165.9	616.1	144.9	13.4	35.6	87.5
Arm 5 – A52 (W)	88.7	537.1	135.2	5.5	25.2	58.3
Arm 6 – Bostocks Lane (N)	124.5	604.8	143.5	27.1	106.6	100.3
	PRC over all lanes = -61.0%			PRC over all lanes = -35.6%		
2038 forecast year 'without development'						
Arm 1 – M1 slip (N)	41.1	144.0	104.6	115.7	389.9	122.4
Arm 2 – A52 (E)	81.0	454.4	126.8	86.9	433.0	125.8
Arm 3 – Bostocks Lane (S)	14.3	108.2	98.7	55.7	418.6	124.5
Arm 4 – M1 slip (S)	247.0	636.3	146.6	22.3	49.6	97.1
Arm 5 – A52 (W)	98.6	618.8	144.1	4.9	22.7	51.1
Arm 6 – Bostocks Lane (N)	130.4	642.5	147.8	11.6	73.8	95.4
	PRC over all lanes = -64.7%			PRC over all lanes = -39.8%		
2028 forecast year 'with development'						
Arm 1 – M1 slip (N)	52.4	227.7	109.5	15.2	37.6	89.1
Arm 2 – A52 (E)	13.3	25.5	75.2	49.8	212.2	109.0
Arm 3 – Bostocks Lane (S)	75.3	649.3	146.0	32.7	279.2	112.9
Arm 4 – M1 slip (S)	178.0	638.6	146.8	14.5	34.1	91.8
Arm 5 – A52 (W)	95.4	608.0	143.4	5.4	24.7	55.8
Arm 6 – Bostocks Lane (N)	125.3	637.4	147.8	13.7	90.1	98.0
	PRC over all lanes = -64.5%			PRC over all lanes = -25.5%		
2038 forecast year 'with development'						
Arm 1 – M1 slip (N)	13.3	33.4	86.1	116.0	392.4	122.6
Arm 2 – A52 (E)	15.0	52.5	90.3	82.0	412.1	124.1
Arm 3 – Bostocks Lane (S)	68.8	557.6	136.6	53.8	409.7	123.7
Arm 4 – M1 slip (S)	320.1	863.8	178.9	25.9	59.1	98.7
Arm 5 – A52 (W)	10.0	27.3	76.4	4.9	22.8	51.3
Arm 6 – Bostocks Lane (N)	164.4	859.3	176.8	13.0	86.1	97.3
	PRC over all lanes = -98.8%			PRC over all lanes = -37.9%		

10.42 The results show that the junction would exceed capacity in all scenarios, with or without the development. In the 2028 opening year, the overall PRC would reduce slightly from -61.0% to -64.5% in the morning hour but experience a betterment from -35.6% to -25.5% in the evening peak hour. On balance, it is therefore considered that there would be no severe impacts from the development.

10.43 There would be a larger impact on PRC at the 2038 forecast year during the morning peak hour which is predicted to change from -64.7% to -98.8%. However, the proposed development would result in an overall increase of 56 PCUs in the morning peak hour (7,688 increasing to 7,744) and 42 PCUs in the evening peak hour (7,218 increasing to 7,260) as an overall net change. This equates to a less than 0.7% increase in total turning movements. Therefore, whilst certain arms are showing stress, the impacts from the development are negligible and significant capacity problems would occur without the development, which is why the negative PRC values have exponentially increased regardless of the limited change in traffic flows overall.

10.44 In response to the Highway Safety Position Statement at **Appendix 14**, NH requested consideration is given to refreshing lane markings and clarifying signage on the circulatory of the junction. However, as the modelling confirms that the development would have a less than 1% impact on total traffic movements through the junction, this is an existing issue that will not be significantly exacerbated. Therefore, it is considered that no mitigation is required at M1 Junction 25 from both a capacity and safety perspective and therefore the proposals do not consider lane markings or signage any further.

10.45 Overall, it can be concluded that there is no severe impact at this location and no mitigation should be required. However, this is assessed once more in subsequent sections, including for the wider mitigation to see if this conclusion remains valid.

Junction 15 – Station Road/Broad Rushes Roundabout

10.46 The agreed base Junctions 11 model the Station Road/Broad Rushes roundabout has been tested for capacity using the Stage 1A forecast year flows. **Appendix 60** includes the Junctions 11 output data, whilst **Table 43** summarises the results.

Table 43. Station Road/Broad Rushes Roundabout Junctions 11 Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – Station Road (N)	7.3	16.63	0.83	3.4	9.07	0.68
Arm 2 – Station Road (S)	0.9	9.61	0.46	10.2	46.20	0.91
Arm 3 – Broad Rushes	2.8	13.90	0.70	6.0	24.11	0.82
2038 forecast year 'without development'						
Arm 1 – Station Road (N)	8.4	19.85	0.87	4.7	12.23	0.77
Arm 2 – Station Road (S)	4.0	24.45	0.80	33.5	135.43	1.07
Arm 3 – Broad Rushes	39.0	132.26	1.07	13.0	58.10	0.95
2028 forecast year 'with development'						
Arm 1 – Station Road (N)	7.4	18.38	0.85	2.7	7.84	0.63
Arm 2 – Station Road (S)	1.2	9.97	0.49	8.0	39.01	0.90
Arm 3 – Broad Rushes	3.5	15.82	0.75	3.3	16.11	0.73
2038 forecast year 'with development'						
Arm 1 – Station Road (N)	9.7	21.15	0.87	5.2	12.72	0.81
Arm 2 – Station Road (S)	7.6	42.26	0.87	40.9	157.53	1.07
Arm 3 – Broad Rushes	51.7	171.50	1.08	14.7	62.36	0.95

10.47 The results show that the junction would exceed the 85% threshold in the 2028 opening year but operate within 100% during both the without and with development scenarios. The Broad Rushes and Station Road (S) arms would exceed 100% at the 2038 future year scenario, with or without development. However, the development would have a 0.01 impact on RFC on the Broad Rushes arm in the morning peak hour and no impact on the RFC if the Station Road (S) arm in the evening peak hour.

10.48 Queues on these arms in the respective peak hours are expected to be significant with or without the development, although the change would not be significant and need to be treated with caution under congested conditions in any case. Therefore, it is considered that whilst capacity issues are likely to be experienced, the impact of the proposed development will not be severe and therefore no mitigation is considered necessary. However, the junction will be re-assessed with the Stage 2 mitigation scenario flows in subsequent sections to ensure this conclusion remains.

Junction 16 – A453/Kegworth Road Roundabout

10.49 The A453/Kegworth Road roundabout (the first roundabout providing movements to/from the A453 westbound) fell outside the AoI from the EMFM modelling, but has been tested for capacity nonetheless. The agreed base Junctions 11 model for A453/Kegworth Road roundabout has been tested for capacity using the Stage 1A forecast year flows. **Appendix 61** includes the Junctions 11 output data and a plan showing the junction location, whilst **Table 44** summarises the results.

Table 44. A453/Kegworth Road Roundabout Junctions 11 Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – A453 Off-slip	0.2	2.69	0.13	0.2	2.94	0.18
Arm 2 – Local Road	0.2	2.6	0.13	0.2	2.79	0.19
Arm 3 – Kegworth Road	0.2	3.3	0.15	0.2	3.19	0.16
2038 forecast year 'without development'						
Arm 1 – A453 Off-slip	0.3	3.3	0.2	0.4	3.83	0.3
Arm 2 – Local Road	0.6	3.5	0.35	1.3	5.32	0.55
Arm 3 – Kegworth Road	0.6	4.86	0.37	0.7	5.89	0.42
2028 forecast year 'with development'						
Arm 1 – A453 Off-slip	0.2	2.69	0.13	0.2	2.9	0.18
Arm 2 – Local Road	0.1	2.58	0.12	0.2	2.81	0.19
Arm 3 – Kegworth Road	0.2	3.41	0.17	0.1	2.85	0.05
2038 forecast year 'with development'						
Arm 1 – A453 Off-slip	0.3	3.34	0.21	0.4	3.12	0.26
Arm 2 – Local Road	0.6	3.53	0.35	1.7	6.2	0.62
Arm 3 – Kegworth Road	0.6	4.89	0.37	0	3.77	0.04

10.50 The results show that the junction is predicted to operate well within capacity during all scenarios in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows without the need for any mitigating improvements.

Junction 17 – A453/Trent Lane/West Leake dumbbell Roundabout

10.51 The A453/Trent Lane/West Leake roundabouts fell outside the AoI from the EMFM modelling, but have been tested for capacity, nonetheless. The agreed base Junctions 11 model for the A453/Trent Lane/West Leake roundabout has been tested for capacity using the Stage 1A forecast year flows. **Appendix 62** includes the Junctions 11 output data, whilst **Table 45** summarises the results.

Table 45. A453/Trent Lane/West Leake dumbbell Roundabout Junctions 11 Summary Results – Stage 1A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
J1- Arm 1 – Dumbbell Link	0.5	4.15	0.3	0.3	3.29	0.23
J1- Arm 2 – A453 SWB Off-Slip	0	0	0	0	2.65	0.02
J1- Arm 3 – West Leake Lane	0.7	6.03	0.39	0.5	4.35	0.33
J2- Arm 1 – Barton Lane	0.1	4.32	0.07	0	2.99	0.02
J2- Arm 2 – A453 NEB Off-Slip	0.5	4.05	0.3	0.1	2.75	0.06
J2- Arm 3 – Dumbbell Link	0.3	3.09	0.22	0.2	2.25	0.17
2038 forecast year 'without development'						
J1- Arm 1 – Dumbbell Link	1	5.42	0.48	1	5.42	0.48
J1- Arm 2 – A453 SWB Off-Slip	0	3.19	0.01	0	3.19	0.01
J1- Arm 3 – West Leake Lane	1.1	6.22	0.5	1.1	6.22	0.5
J2- Arm 1 – Barton Lane	0.1	4.29	0.07	0.1	4.29	0.07
J2- Arm 2 – A453 NEB Off-Slip	0.1	3.07	0.08	0.1	3.07	0.08
J2- Arm 3 – Dumbbell Link	0.6	3.19	0.33	0.6	3.19	0.33
2028 forecast year 'with development'						
J1- Arm 1 – Dumbbell Link	0.5	4.03	0.3	0.3	3.29	0.23
J1- Arm 2 – A453 SWB Off-Slip	0	2.89	0.04	0	2.65	0.02
J1- Arm 3 – West Leake Lane	0.7	4.98	0.38	0.5	4.34	0.33
J2- Arm 1 – Barton Lane	0.1	3.68	0.06	0	3	0.02
J2- Arm 2 – A453 NEB Off-Slip	0.1	3.01	0.06	0.1	2.75	0.06
J2- Arm 3 – Dumbbell Link	0.3	2.61	0.2	0.2	2.25	0.17
2038 forecast year 'with development'						
J1- Arm 1 – Dumbbell Link	0.5	3.67	0.31	0.5	3.67	0.31
J1- Arm 2 – A453 SWB Off-Slip	0	2.75	0.01	0	2.75	0.01
J1- Arm 3 – West Leake Lane	0.8	5.18	0.44	0.8	5.18	0.44
J2- Arm 1 – Barton Lane	0	3.14	0.02	0	3.14	0.02
J2- Arm 2 – A453 NEB Off-Slip	0.1	2.72	0.05	0.1	2.72	0.05

10.52 The results show that the junction is predicted to operate well within capacity during all scenarios and in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows without the need for any mitigating improvements.

11. HIGHWAY IMPACT ASSESSMENTS: SENSITIVITY TEST (STAGE 1B MODELLING)

Introduction

11.1 Section 10 of the TA summarised the junction modelling results of the Stage 1A forecast year scenarios. This identified potential issues at the following junctions, including those forecast to operate over capacity regardless of the development proposals:

- **Junctions 2 to 5: VISSIM network** – junctions expected to exceed capacity with the performance worsening as a result of the proposed development.
- **Junction 8: A453/The Green** – junction predicted to operate within capacity in EMFM but exceed capacity in Junctions 11 as a result of the proposed development.
- **Junction 9: A453/East Midlands Airport roundabout** – junction expected to exceed capacity with or without development but capacity issues are largely being driven by the Isley Woodhouse settlement and the junction will undergo improvements as part of the access strategy to the Isley Woodhouse settlement.
- **Junction 10: A453/Walton Hill signal junction** – this junction is expected to exceed capacity with or without development but capacity issues are largely being driven by the Isley Woodhouse settlement and the junction is expected to undergo improvements as part of the A453 realignment and access strategy associated with the Isley Woodhouse settlement.
- **Junction 12: M1 Junction 23** – junction is expected to exceed capacity with or without development but no severe impact. This junction will be re-assessed to ensure this conclusion remains with the proposed highway mitigation.
- **Junction 13: A50 Junction 1** – junction is expected to exceed capacity with or without development but no severe impact. This junction will be re-assessed to ensure this conclusion remains with the proposed highway mitigation.
- **Junction 14: M1 Junction 25** – junction is expected to exceed capacity with or without development but no severe impact. This junction will be re-assessed to ensure this conclusion remains with the proposed highway mitigation.
- **Junction 15**: **Station Road/Broad Rushes roundabout** – this junction is expected to exceed capacity with or without development but no severe impact. This junction will be re-assessed to ensure this conclusion remains with the proposed highway mitigation.

11.2 The following section tests the above junctions under the Stage 1B forecast year scenarios, as a sensitivity test to understand their future performance at 2028/2038 with and without the proposed development when excluding the draft Local Plan allocation sites, EMIP and part of the Ratcliffe on Soar Power Station development in the baseline traffic.

Junctions 1 to 5 (VISSIM Network)

11.3 The Stage 1A forecast year modelling identified capacity issues across the VISSIM network area. This section of the network is therefore expected to experience

congestion and delay, which is predicted to be worsened by the proposed development.

11.4 The VISSIM model has been tested using the Stage 1B forecast year flows. The VISSIM Forecast Modelling report (BWB document EMG2-BWB-GEN-XX-RP-TR-0019_VISSIM Modelling Forecast Report-S2_P2 - **Appendix 50**) includes the output data, whilst **Table 46** sets out the high level network performance comparison on all scenarios for 2028, as the year of opening of the development, which is NH's key assessment year in line with Circular 01/2022. this compares 'without development' (WoD) and 'with development' (WD) scenarios.

Table 46: 2028 VISSIM Network Performance Comparison – Stage 1B

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	89	43.6	21,143	1
	WD	124	39.4	21,748	43
	WD - WoD	35	-4.2	605	42
PM	WoD	94	44.1	20,994	116
	WD	121	40.0	21,678	355
	WD - WoD	28	-4.1	684	238

11.5 When comparing the results of the with development scenario against the without development scenario, the average delay increases in both peak hours with average speeds reducing, with the junction performance showing similarities in both peak hours.

11.6 **Table 47** below sets out the network performance comparison on all scenarios for 2038.

Table 47: 2038 VISSIM Network Performance Comparison – Stage 1B

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	133	36.9	21,707	134
	WD	155	36.5	22,815	56
	WD - WoD	23	-0.5	1,108	-78
PM	WoD	139	38.8	21,944	570
	WD	166	35.7	22,570	981
	WD - WoD	27	-3.1	626	411

11.7 Similarly to the 2028 assessment, the 2038 results show that the average delay increase, the amount of vehicles that enter the model increases and Latent Demand increases. Average speeds therefore reduce as a result in both peak hours.

11.8 In summary, the results show that, as expected, the EMG2 development is also having an impact on the network performance across the VISSIM network area under the Stage 1B sensitivity test scenario. Therefore, similar to the conclusions in Section 10, a comprehensive mitigation strategy has been determined using the Stage 2A modelling outputs, as the core scenario for this Transport Assessment which will also be tested using the Stage 2B modelling results to ensure it mitigates the impacts of the EMG2 development in both scenarios. This is detailed in subsequent sections.

Junction 8 – A453/The Green Priority Junction

11.9 The Stage 1A modelling identified capacity problems at this junction, most notably on The Green but also for right turners into The Green from the A453. Capacity issues were not identified in EMFM and therefore it is likely that the strategic model is over assigning traffic along this route.

11.10 The Junctions 11 model has been re-tested using Stage 1B forecast flows. **Appendix 63** includes the output data, whilst **Table 48** summarises the results.

Table 48. A453/The Green Junctions 11 Summary Results – Stage 1B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Steam B-AC – The Green	2.8	26.93	0.75	1.0	14.03	0.49
Stream C-AB – A453 (W)	0.4	4.69	0.17	0.7	6.23	0.31
2038 forecast year 'without development'						
Steam B-AC – The Green	68.0	440.14	1.24	3.4	37.63	0.79
Stream C-AB – A453 (W)	0.0	5.28	0.02	0.7	6.79	0.30
2028 forecast year 'with development'						
Steam B-AC – The Green	78.5	529.37	1.28	1.2	18.04	0.55
Stream C-AB – A453 (W)	0.5	4.35	0.19	0.9	7.21	0.36
2038 forecast year 'with development'						
Steam B-AC – The Green	384.1	2451.51	1.89	7.6	82.63	0.92
Stream C-AB – A453 (W)	0.1	4.65	0.04	0.8	8.51	0.36

11.11 The results show that similar to Stage 1A results, the junction would continue to operate over capacity with the Stage 1B flows with or without development. The capacity issues would occur on The Green. This is because the junction is forecast to operate within capacity in EMFM causing a larger volume of traffic to route via this junction. In reality, a greater proportion of traffic would route via the A42 and Finger Farm roundabout reducing impacts at this location. Therefore, the conclusions presented in **Section 10** remain and this is considered in further detail in **Sections 13 and 14**.

Junction 9 – A453/East Midlands Airport Roundabout

11.12 The Stage 1A forecast year modelling identified capacity issues on the A453 (W) arm of the roundabout during the morning peak hour. The Junctions 11 model has been tested using the Stage 1B forecast year flows to understand the performance of the junction when excluding draft Local Plan allocations from the background traffic. **Appendix 64** includes the Junctions 11 output data, whilst **Table 49** summarises the results.

Table 49. A453/East Midlands Airport Roundabout Junctions 11 Summary Results – Stage 1B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – Walton Hill	0.2	4.66	0.11	0.9	4.76	0.33
Arm 2 – A453 (E)	1.2	5.38	0.35	1.0	5.38	0.32
Arm 3 – A453 (W)	4.4	17.74	0.78	1.5	9.06	0.52
2038 forecast year 'without development'						
Arm 1 – Walton Hill	0.2	4.23	0.11	0.9	4.83	0.35
Arm 2 – A453 (E)	1.8	6.19	0.43	1.6	6.63	0.46
Arm 3 – A453 (W)	3	12.75	0.66	1.3	8.49	0.46
2028 forecast year 'with development'						
Arm 1 – Walton Hill	0.3	4.8	0.11	0.7	4.75	0.33
Arm 2 – A453 (E)	0.8	5.14	0.31	1.1	5.53	0.35
Arm 3 – A453 (W)	8.9	33.07	0.87	1.9	9.69	0.51
2038 forecast year 'with development'						
Arm 1 – Walton Hill	0.3	4.15	0.12	0.8	5.01	0.37
Arm 2 – A453 (E)	1.4	5.77	0.39	2	7.23	0.5
Arm 3 – A453 (W)	3.2	15.15	0.73	1.0	8.12	0.4

11.13 The results show that the junction would operate comfortably within capacity during all scenarios in both peak hours. As per the conclusions in **Section 10**, this confirms that the capacity issues are being driven by traffic from the Isley Woodhouse settlement and when removing this traffic the junction has ample spare capacity. Therefore, given this junction forms part of the access strategy to the Isley Woodhouse development improvements are expected to be delivered as part of that scheme. The EMG2 Project would not have any severe impacts and no mitigation is deemed required.

Junction 10 – A453/Walton Hill Signal Junction

11.14 The Stage 1A forecast year modelling identified capacity issues on all arms of the roundabout during the evening peak hour. The LinSig model has been tested using the Stage 1B forecast year flows to understand the performance of the junction when excluding draft Local Plan allocations from the background traffic. **Appendix 65** includes the LinSig output data, whilst **Table 50** summarises the results.

Table 50. A453/Walton Hill LinSig Summary Results – Stage 1B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – Local Road (N)	8.9	17.7	68.1	9.3	17.6	67.8
Arm 2 – A453 (E)	8.8	27.7	68.3	9.9	25.8	67.8
Arm 3 – Walton Hill	7.7	26.2	66.2	4.3	31.8	62.4
	PRC over all lanes = 31.7%			PRC over all lanes = 32.7%		
2038 forecast year 'without development'						
Arm 1 – Local Road (N)	10.0	19.1	72.6	10.9	20.6	74.2
Arm 2 – A453 (E)	10.2	26.0	71.7	11.3	25.5	73.2
Arm 3 – Walton Hill	7.6	30.2	72.4	4.3	35.4	66.0
	PRC over all lanes = 23.9%			PRC over all lanes = 21.3%		
2028 forecast year 'with development'						
Arm 1 – Local Road (N)	10.5	19.1	72.0	9.5	18.0	68.7
Arm 2 – A453 (E)	7.0	22.4	54.0	10.3	25.3	68.6
Arm 3 – Walton Hill	8.6	29.3	71.6	4.4	35.1	67.5
	PRC over all lanes = 25.0%			PRC over all lanes = 31.0%		
2038 forecast year 'with development'						
Arm 1 – Local Road (N)	9.5	18.4	70.5	11.2	21.0	73.7
Arm 2 – A453 (E)	9.7	26.9	70.6	11.7	25.8	73.6
Arm 3 – Walton Hill	7.9	28.7	71.4	4.7	40.6	73.8
	PRC over all lanes = 26.0%			PRC over all lanes = 20.6%		

11.15 The results show that the junction is predicted to operate comfortably within capacity in all scenarios during both peak hours, with spare capacity across all three arms. Therefore, the capacity issues are being driven by traffic from the Isley Woodhouse development which is located directly to the south of the junction. Therefore, it is envisaged that improvements will be required as part of the Isley Woodhouse development and there would be no severe impacts from the EMG2 Project. Therefore, no mitigation is deemed required.

Junction 12 – M1 Junction 23

11.16 The Stage 1A forecast year modelling identified capacity issues at the junction during the morning peak hour at the 2038 future year. However, capacity problems would occur with or without development and it was concluded that the overall change in conditions was non severe.

11.17 The LinSig model has been re-tested using the Stage 1B forecast year flows to understand the performance of the junction when excluding draft Local Plan allocations from the background traffic. **Appendix 66** includes the LinSig output data, whilst **Table 51** summarises the results.

Table 51. M1 Junction 23 LinSig Summary Results – Stage 1B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – M1 SB slip	9.8	30.1	80.2	6.4	29.6	69.6
Arm 2 – A512 (E)	9.9	24.4	69.7	10.6	18.2	71.6
Arm 3 – M1 NB slip	6.2	47.8	75.5	4.6	40.7	65.5
Arm 4 – A512 (W)	9.6	20.9	77.3	5.9	16.1	56.3
	PRC over all lanes = 8.2%			PRC over all lanes = 25.7%		
2038 forecast year 'without development'						
Arm 1 – M1 SB slip	59.8	218.1	110.5	8.5	39.2	84.6
Arm 2 – A512 (E)	25.4	58.5	97.8	15.0	21.6	85.4
Arm 3 – M1 NB slip	9.3	56.5	87.2	12.4	97.4	96.5
Arm 4 – A512 (W)	91.8	192.4	109.2	24.2	43.4	96.6
	PRC over all lanes = -22.8%			PRC over all lanes = -7.3%		
2028 forecast year 'with development'						
Arm 1 – M1 SB slip	10.3	31.2	81.8	7.3	30.3	70.1
Arm 2 – A512 (E)	11.0	26.3	74.6	11.6	20.2	75.7
Arm 3 – M1 NB slip	6.0	46.8	74.1	4.9	44.8	68.1
Arm 4 – A512 (W)	10.6	23.2	81.4	6.8	16.8	61.7
	PRC over all lanes = 7.0%			PRC over all lanes = 18.8%		
2038 forecast year 'with development'						
Arm 1 – M1 SB slip	50.1	173.8	107.4	11.9	46.0	96.8
Arm 2 – A512 (E)	33.7	88.2	101.2	25.4	42.1	96.7
Arm 3 – M1 NB slip	25.7	256.6	110.2	19.7	170.6	104.2
Arm 4 – A512 (W)	95.6	195.7	109.5	78.6	162.0	107.2
	PRC over all lanes = -22.4%			PRC over all lanes = -19.2%		

11.18 The results show that the junction would operate within capacity at the 2028 forecast year of opening with the EMG2 Works in place, which is the Circular 01/2022 compliant assessment year. Therefore, when excluding traffic from the draft Local Plan allocations there would be capacity within the junction to accommodate the proposed development.

11.19 Whilst the junction would operate over capacity at the 2038 future year, there would be a slight improvement with the development in the morning peak hour, with the PRC improving from -22.8% to -22.4%. There would however be a worsening of performance in the evening peak hour, with the PRC reducing from -7.3% to -19.2%. This is therefore considered in further detail in **Sections 13** and **14**.

Junction 13 – A50 Junction 1

11.20 The Stage 1A forecast year modelling identified capacity issues at the junction during both peak hours and at both the 2028 and 2038 future years. However, capacity problems would occur with or without development and it was concluded that the overall change in conditions would be non severe and not result in queues extending back to the A50 mainline.

11.21 The LinSig model has been re-tested using the Stage 1B forecast year flows to understand the performance of the junction when excluding draft Local Plan allocations from the background traffic. **Appendix 67** includes the LinSig output data, whilst **Table 52** summarises the results.

Table 52. A50 Junction 1 LinSig Summary Results – Stage 1B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – B5010	1.4	7.4	54.4	1.4	10.4	51.2
Arm 2 – B6540	7.4	17.6	63.5	7.0	16.2	80.0
Arm 3 – A50 slip road (E)	12.7	49.8	94.1	7.1	22.2	76.9
Arm 4 – Ryecroft Road	0.2	8.4	15.8	0.3	7.4	16.1
Arm 5 – Trent Lane	6.2	18.5	71.1	10.1	26.9	88.0
Arm 6 – A50 slip road (W)	7.7	18.2	86.0	6.5	17.2	77.3
	PRC over all lanes = -4.5%			PRC over all lanes = 2.2%		
2038 forecast year 'without development'						
Arm 1 – B5010	1.4	8.3	55.5	1.5	11.4	53.5
Arm 2 – B6540	9.0	16.6	91.3	11.9	21.6	98.9
Arm 3 – A50 slip road (E)	7.7	23.0	78.9	7.2	20.0	74.2
Arm 4 – Ryecroft Road	0.2	8.0	14.6	0.6	9.3	28.3
Arm 5 – Trent Lane	6.7	19.7	74.0	24.0	71.7	100.1
Arm 6 – A50 slip road (W)	7.8	18.5	86.0	6.0	17.0	72.8
	PRC over all lanes =-3.5 %			PRC over all lanes = -11.2%		
2028 forecast year 'with development'						
Arm 1 – B5010	1.6	8.2	58.9	1.1	8.1	45.1
Arm 2 – B6540	7.7	18.0	87.7	7.4	16.3	83.6
Arm 3 – A50 slip road (E)	13.4	53.6	95.0	7.4	22.4	76.8
Arm 4 – Ryecroft Road	0.2	8.8	16.4	0.3	7.3	15.8
Arm 5 – Trent Lane	5.8	17.8	67.5	10.1	26.7	87.8
Arm 6 – A50 slip road (W)	8.7	19.6	92.5	6.4	17.0	75.6
	PRC over all lanes = -5.6%			PRC over all lanes = 2.5%		
2038 forecast year 'with development'						
Arm 1 – B5010	1.6	9.3	58.6	2.2	12.1	56.7
Arm 2 – B6540	10.0	19.3	66.1	15.6	29.8	100.5
Arm 3 – A50 slip road (E)	8.8	26.2	85.0	8.6	23.5	81.1
Arm 4 – Ryecroft Road	0.3	8.3	15.5	1.0	12.2	43.4
Arm 5 – Trent Lane	6.6	17.8	71.7	50.2	145.7	106.2
Arm 6 – A50 slip road (W)	7.7	16.9	84.5	6.1	15.5	71.3
	PRC over all lanes = -9.4%			PRC over all lanes = -18.0%		

11.22 The results show that the junction would continue to operate over capacity in all scenarios during both peak hours, although better compared to the Stage 1A assessment in Section 10. At the 2028 year of opening, the junction PRC would only reduce from -4.5% to -5.6% in the morning peak hour and from -2.2% to -2.5% in the

evening peak hour, which is the Circular 01/2022 compliant scenario. This is considered a negligible impact.

11.23 Furthermore, similar to the conclusions of the Stage 1A assessment, the forecast queue lengths during both the 2028 and 2038 assessment years would continue to be accommodated on the slip roads within extending back and impacting the A50 mainline. Consequently, the proposed development would not have a severe impact and no mitigation is deemed required.

Junction 14 – M1 Junction 25

11.24 The Stage 1A forecast year modelling identified capacity issues at the junction during both peak hours and at both the 2028 and 2038 future years. However, capacity problems would occur with or without development and it was concluded that the overall change in conditions would be non-severe given there would be a less than a 0.7% net increase in traffic between the without and with development scenarios.

11.25 The LinSig model has been re-tested using the Stage 1B forecast year flows to understand the performance of the junction when excluding draft Local Plan allocations from the background traffic. **Appendix 68** includes the LinSig output data, whilst **Table 53** summarises the results.

Table 53. M1 Junction 25 LinSig Summary Results – Stage 1B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – M1 slip (N)	108.7	432.5	130.7	75.8	318.8	117.5
Arm 2 – A52 (E)	15.5	33.7	84.3	65.2	279.0	114.1
Arm 3 – Bostocks Lane (S)	85.9	635.8	144.5	41.0	272.5	112.8
Arm 4 – M1 slip (S)	71.2	248.3	114.4	12.3	30.4	87.9
Arm 5 – A52 (W)	5.9	12.2	48.1	5.3	25.8	56.0
Arm 6 – Bostocks Lane (N)	133.8	699.2	154.3	9.4	51.7	91.0
	PRC over all lanes = -71.5%			PRC over all lanes = -30.5%		
2038 forecast year 'without development'						
Arm 1 – M1 slip (N)	153.2	681.8	148.8	243.2	689.2	155.3
Arm 2 – A52 (E)	109.0	660.8	146.9	170.2	745.0	158.1
Arm 3 – Bostocks Lane (S)	12.8	62.4	93.5	160.3	718.1	156.0
Arm 4 – M1 slip (S)	229.7	667.0	149.5	115.5	658.1	148.8
Arm 5 – A52 (W)	8.0	27.6	71.3	75.1	646.5	147.0
Arm 6 – Bostocks Lane (N)	137.3	691.5	153.3	2.9	16.8	62.1
	PRC over all lanes = -70.3%			PRC over all lanes = -75.6%		
2028 forecast year 'with development'						
Arm 1 – M1 slip (N)	19.1	49.7	94.3	74.4	338.9	117.5
Arm 2 – A52 (E)	86.6	401.1	122.7	64.6	276.8	113.9
Arm 3 – Bostocks Lane (S)	67.1	475.1	128.7	40.4	277.4	113.1
Arm 4 – M1 slip (S)	140.0	473.9	138.6	13.6	33.2	90.3
Arm 5 – A52 (W)	86.2	561.4	138.0	5.0	25.5	54.7
Arm 6 – Bostocks Lane (N)	111.6	547.8	137.7	10.0	55.2	91.9
	PRC over all lanes = -54.0%			PRC over all lanes = -30.5%		
2038 forecast year 'with development'						
Arm 1 – M1 slip (N)	53.4	194.2	108.1	261.5	732.4	156.4
Arm 2 – A52 (E)	10.5	28.7	70.5	177.3	793.3	164.6
Arm 3 – Bostocks Lane (S)	73.3	549.8	136.0	161.4	753.7	160.6
Arm 4 – M1 slip (S)	30.7	53.4	98.9	17.7	47.6	95.3
Arm 5 – A52 (W)	5.2	11.5	44.0	7.4	26.5	67.4
Arm 6 – Bostocks Lane (N)	137.0	541.1	96.6	7.7	60.4	89.9
	PRC over all lanes = -52.2%			PRC over all lanes = -82.9%		

11.26 The results show that the junction would continue to operate over capacity in all scenarios with or without the development. At the 2028 year of opening, there would be a betterment in junction PRC which would improve from -71.5% to -54.0% in the morning peak hour and show no change in the evening peak hour at -30.5% with and without development. Therefore, the development would have no impact on the

Circular 01/2022 compliant forecast year of opening. Hence, no mitigation is deemed required.

Junction 15 – Station Road/Broad Rushes Roundabout

11.27 The Stage 1A forecast year modelling showed that the junction would exceed capacity but it was concluded that the development would not have a severe impact. The Junctions 11 model has been re-tested using the Stage 1B forecast year flows to understand the performance of the junction when excluding draft Local Plan allocations from the background traffic. **Appendix 69** includes the LinSig output data, whilst **Table 54** summarises the results.

Table 54. Station Road/Broad Rushes Roundabout Junctions 11 Summary Results – Stage 1B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – Station Road (N)	7.0	14.71	0.81	3.3	9.29	0.69
Arm 2 – Station Road (S)	0.9	9.71	0.46	6.3	33.50	0.86
Arm 3 – Broad Rushes	2.9	14.58	0.69	2.9	15.58	0.71
2038 forecast year 'without development'						
Arm 1 – Station Road (N)	5.1	12.22	0.75	2.9	8.13	0.65
Arm 2 – Station Road (S)	1.7	12.32	0.56	6.9	35.60	0.87
Arm 3 – Broad Rushes	3.0	14.15	0.71	3.3	18.88	0.76
2028 forecast year 'with development'						
Arm 1 – Station Road (N)	7.8	17.77	0.83	3.5	8.73	0.69
Arm 2 – Station Road (S)	1.0	9.75	0.46	5.2	29.59	0.86
Arm 3 – Broad Rushes	3.0	16.25	0.71	2.9	15.20	0.71
2038 forecast year 'with development'						
Arm 1 – Station Road (N)	6.6	14.40	0.80	3.7	9.72	0.70
Arm 2 – Station Road (S)	1.8	13.19	0.59	14.0	64.50	0.95
Arm 3 – Broad Rushes	3.1	16.23	0.73	10.0	47.31	0.94

11.28 The results show that the junction would operate within capacity in all scenarios during both peak hours. Therefore, there is ample capacity to accommodate traffic from the proposed development and it is only when additional background traffic from the draft Local Plan allocations and Isley Woodhouse settlement is included are capacity issues triggered. Therefore, no mitigation is deemed required.

12. HIGHWAY MITIGATION

Introduction

12.1 The Stage 1A and 1B modelling showed that there would be significant impacts triggered by the proposed development at the following locations:

- Finger Farm roundabout (Junction 3)
- M1 Junction 24 (Junction 5)
- A453/The Green (Junction 7)

12.2 Physical Highway Works have therefore been proposed to address the impacts of the proposed development at the above first two junctions, with the aim of increasing capacity on the SRN and limiting additional impacts through the more sensitive parts of the network, particularly near Diseworth, Long Whatton, Castle Donington and Kegworth. **Sections 13** and **14** consider whether any further mitigation is required at the any other junctions considered within the study area for the TA, included the A453/The Green junction listed above.

Proposed Highway Works

12.3 **Section 6** of the TA summarises the proposed Highway Works, which include significant improvements to M1 Junction 24 and other improvements at the A453/A6 Kegworth Bypass roundabout and Finger Farm roundabout. Full details of the layout of the proposed highway works can be found at **Documents DCO 2.8A, 2.8B, 2.8C** and **2.8D**.

12.4 It should be noted that following the Stage 2 modelling being undertaken, changes were made to the southwest corner of M1 Junction 24, including the removal of the segregated left turn lane from the A453 northbound to A50 westbound. This formed part of the iterative process in finalising the proposed Highway Works (including consultation with NH on the scheme geometry) and was considered in line with the VISSIM modelling presented later in this Section.

12.5 These changes in the southwest corner of M1 Junction 24 were therefore not included in the EMFM modelling but are not expected to fundamentally change the modelling results and would only result in additional capacity benefits. They will however be tested in PRTM 2023 as a sensitivity test now the model has been approved by NH. **Figure 29** shows an extract of the changes made at the southwest corner of M1 Junction 24.

Figure 29. M1 Junction 24 Highway Mitigation changes

12.6 The following section summarises the proposed Highway Works and presents the results of the strategic highway modelling under Stages 2A and 2B as well as revised detailed modelling to show the benefits of the Highway Works.

Stage 2A EMFM Modelling

12.7 AECOM issued the EMFM Forecasting Report Addendum for the Stage 2A modelling in June 2025 covering the 2028 and 2038 forecast years with development, with mitigation scenario. A copy of the Forecasting Report Addendum and detailed extracts of various figures are included in **Appendix 70.**

12.8 The Forecasting Report Addendum compares key performance results between the Stage 1A without development and Stage 2A with development scenarios to understand the overall impacts of the EMG2 Project inclusive of the proposed Highway Works, albeit excluding any reduction in traffic as a result of the proposed Active Travel Works and Travel Planning measures, to provide a worst-case assessment.

12.9 The proposed Highway Works described above were coded into EMFM. To 'unlock' the full benefits of the proposed mitigation, signal timings at the following two junctions were optimised in EMFM:

- The signal head to the southwest of the Wilder's Way/A453/Kegworth bypass roundabout that controls the A453 northound traffic and the circulatory traffic.
- The signal head to the northeast of M1 Junction 24 that controls the M1 southbound and circulatory traffic.

12.10 The optimisation of the signals was undertaken such that demand and delay were better balanced to reflect the additional road capacity and were based on outputs from the detailed VISSIM modelling i.e. by understanding the minimum/maximum green times.

12.11 The optimisation of these two junctions was performed over five iterations by reviewing the outputs and adjusting the green times each iteration.

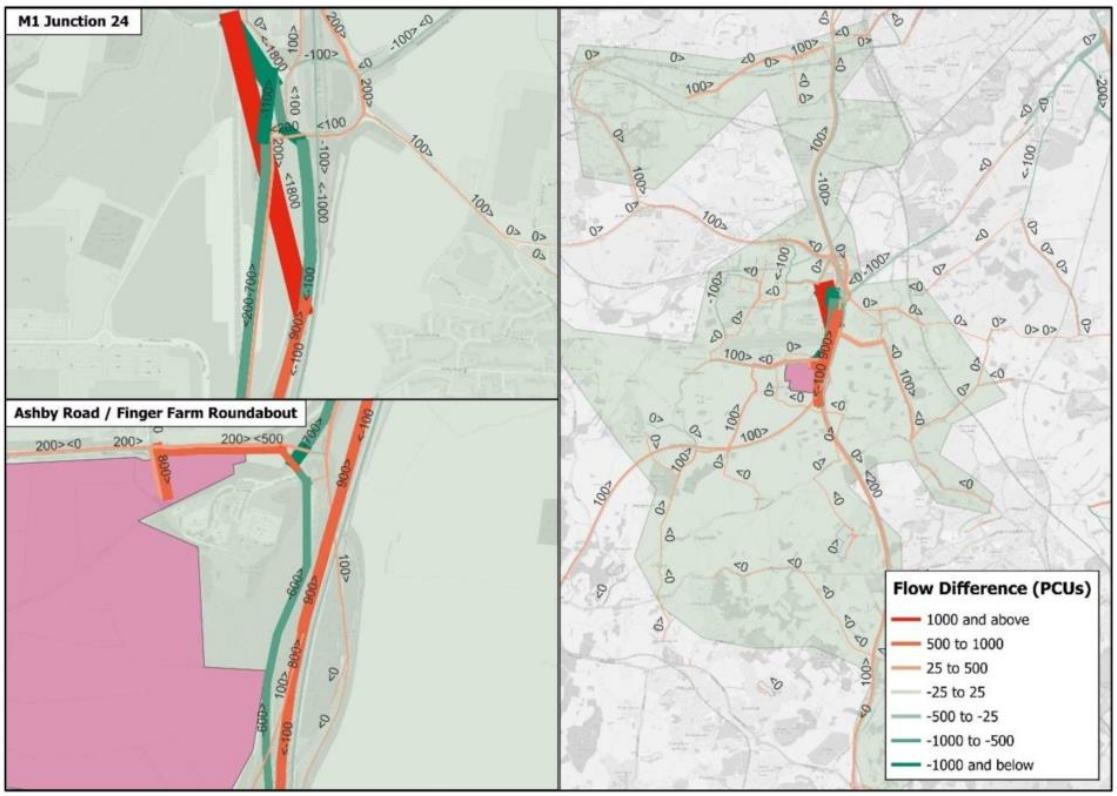
12.12 A sixth iteration was assessed in EMFM that included optimising the Hilton Hotel Lane signalised junction with M1 Junction 24. The signals were optimised based on both

forecast traffic demand volumes and outputs from the detailed VISSIM modelling. The EMFM Forecasting Report Addendum states that *"the forecast outputs from this sixth iteration were considered localised and have not been documented in this report however outputs have been provided to inform the VISSIM modelling"*. The flow differences as a result of this final iteration in EMFM are also included in **Appendix 70.**

12.13 The development trip generation for Plot 16 at EMG1 and EMG2 Main Site remained identical to the Stage 1 modelling and as per the values presented in **Table 13** of the TA. The EMFM Forecasting Report states that *"as expected, the forecast trip distribution for Stage 2a (with mitigation) is very similar to Stage 1a (without mitigation) as reported in the Forecasting Report. How development traffic routes through the network is also very similar"*.

12.14 The EMFM Forecasting Report Addendum provides a number of network performance results including forecast flow changes between the Stage 1A without development and the Stage 2A with development, with mitigation scenarios. An extract from the 2038 morning peak hour is sown at **Figure 30**, although the results are similar in both peak hours.

Figure 30. Stage 2A Modelling EMFM Forecast Flow Changes in Morning Peak Hour



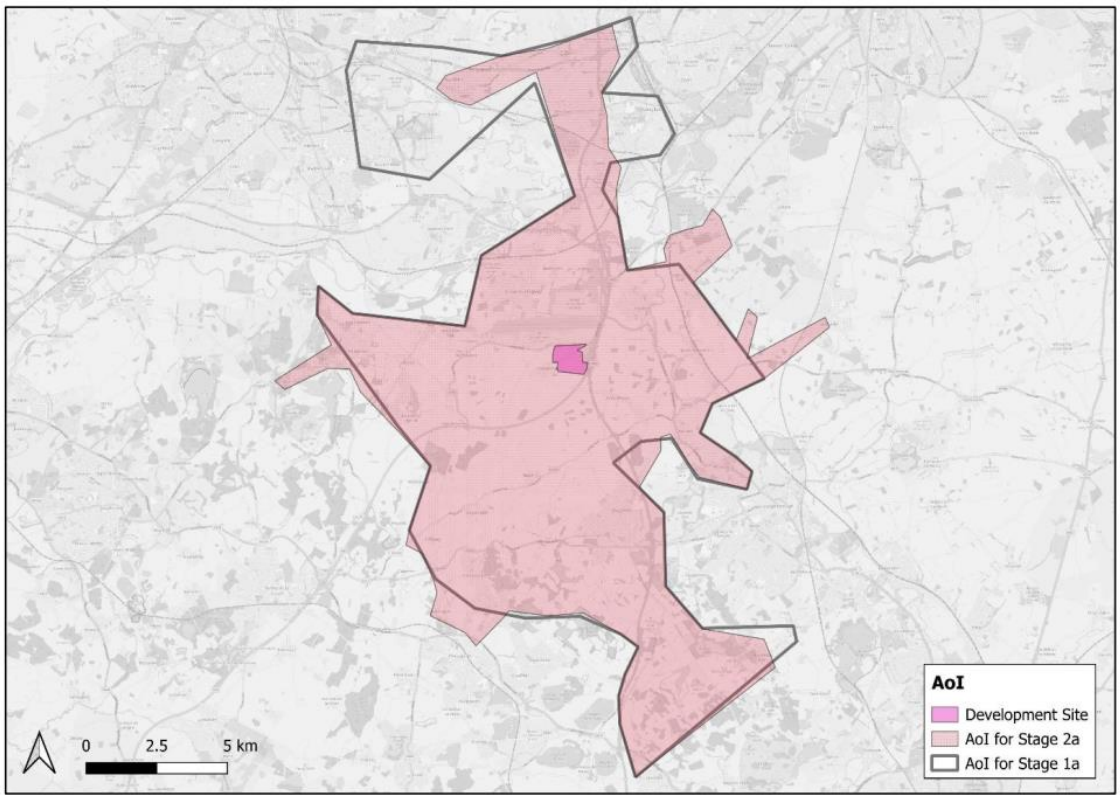
12.15 In summary, the results show the following forecast flow changes:

- The largest flow increases are forecast along the new M1 northbound to A50 link road, which is accommodating diverted traffic from the A453, Finger Farm and M1 Junction 24 and effectively operating as planned.

- There is an increase of up to 400 PCUs on the M1 southbound off-slip to Junction 24, which is a result of capacity increases on this arm.
- There is forecast to be an increase in traffic on the A6 Kegworth Bypass as a result of less traffic and lower delays at the EMG1 access roundabout, which is being diverted along the new link road.
- There is forecast to be a reduction in northbound traffic on the A453 at Finger Farm, whilst southbound A453 traffic is predicted to increase, as expected, because of development traffic to the EMG2 Main Site.

12.16 The EMFM Forecast Report Addendum provides a revised AoI and compares this against the Stage 1A AoI. An extract of the AoI is shown in **Figure 31** which shows that it is largely similar, albeit it does not extend as far into Derbyshire and the A50 corridor in particular.

Figure 31. Stage 2A Modelling EMFM Area of Influence



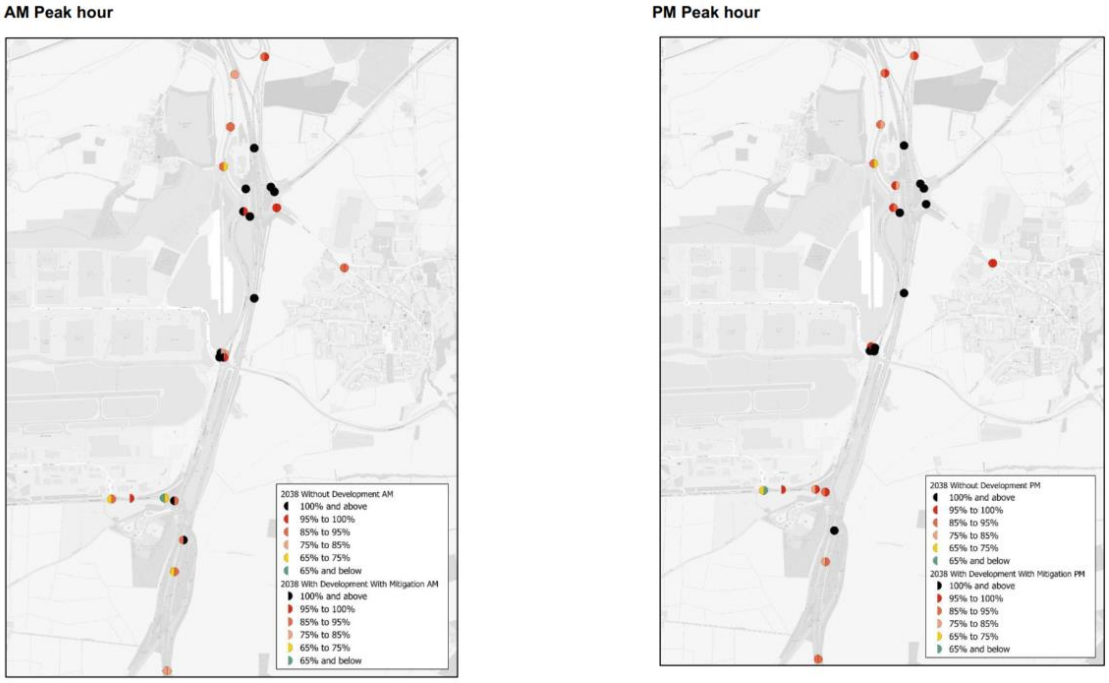
12.17 The EMFM modelling also generates results showing forecast delay changes and shows the following changes:

- There will be a natural delay on the A50 where vehicles join from the new link road because there is no junction there at present.
- Delays are predicted to decrease on all circulatory lanes of M1 Junction 24 for all forecast year scenarios in both peak hours. There are also predicted to be reduced delays on the M1 southbound off-slip.
- Delays are predicted to decrease at the EMG1 access roundabout in all scenarios.

- Delays are predicted to remain unchanged at Finger Farm roundabout in all scenarios, except for the eastbound approach which is expected to see a decrease in delays during the 2038 morning peak hour.
- The EMFM modelling suggests there could be delays on the A453 to the east of the EMG2 Main Site as a result of the new Toucan crossing, albeit these would be 'transiant' in nature. That is because, as set out in paragraph 3.6.11 of the forecasting report, it is "*demand dependant and this demand dependency cannot be accurately reflected in the EMFM*". This has therfore been considered in further detail as part of the VISSIM modelling in the next section.

12.18 The EMFM Forecasting Report Addendum provided node V/C ratios showing locations where forecast flows are approaching or exceeding capacity. The left part of the circle shows the Stage 1A without development V/C ratio, whilst the right part of the circle shows the Stage 2A with development, with mitigation V/C ratio. The values presented reflect the worst-case node. **Figure 32** shows the results for the 2038 forecast year for both the AM and PM peak periods.

Figure 32. Stage 2A Modelling Volume-Capacity Ratios



12.19 The EMFM Forecasting Report Addendum provides the following summary:

- The V/C ratios at M1 Junction 24 decrease slightly overall.
- In the morning peak hour, the M1 northbound off-slip and A453 Remembrance Way nodes at M1 Junction 24 that are forecast to have higher V/C ratios, which is a result of additional capacity being created on the gyratory and traffic travelling towards the EMG2 Main Site.
- The V/C ratios at the EMG1 access roundabout are predicted to generally decrease in both forecast years.
- The V/C ratios are predicted to decrease at Finger Farm roundabout in the morning peak hour in both forecast years. There are predicted to be increases in

the V/C ratios in the PM peak hour due to higher volumes of traffic forecast on the A453 to the west of Finger Farm.

12.20 **Tables 55** and **56** summarise the vehicle kilometres and junction delay (VehHrs) across both the SRN and non SRN in EMFM comparing the outputs from Stage 1a and 2a modelling. It should be noted that they are based on iteration 5 of the modelling, which excludes the optimisation of the Hilton Hotel Lane node at M1 Junction 24.

Table 55. EMFM Modelling Network Statistics for Strategic Road Network

Scenario	Year/Peak	AoI Vehkm (km)	Junction Delay VehHrs
Stage 1a Without Development	2038 AM	271,128	1,485
Stage 1a With Development	2038 AM	271,242	1,569
Stage 2a (Mitigation Measures (no optimisation))	2038 AM	273,032	1,538
Stage 2a (Mitigation Measures Iteration 5)	2038 AM	273,203	1,506
Stage 1a Without Development	2038 PM	290,953	1,295
Stage 1a With Development	2038 PM	294,263	1,372
Stage 2a (Mitigation Measures (no optimisation))	2038 PM	296,272	1,404
Stage 2a (Mitigation Measures Iteration 5)	2038 PM	295,418	1,345
Stage 1a Without Development	2038 AM + PM	562,081	2,780
Stage 1a With Development	2038 AM + PM	565,506	2,941
Stage 2a (Mitigation Measures (no optimisation))	2038 AM + PM	569,303	2,941
Stage 2a (Mitigation Measures Iteration 5)	2038 AM + PM	568,621	2,850
Stage 1a With Development **Minus** Stage 1a Without Development **(AM)**		115	84
Stage 2a With Development **Minus** Stage 1a Without Development **(AM)**		2,076	21
Stage 1a With Development **Minus** Stage 1a Without Development **(PM)**		3,310	77
Stage 2a With Development **Minus** Stage 1a Without Development **(PM)**		5,319	109
		% compared to 1a 'Without Development'	
Stage 1a Without Development	2038 AM + PM	0.0%	0.0%
Stage 1a With Development	2038 AM + PM	0.6%	5.8%
Stage 2a (Mitigation Measures (no optimisation))	2038 AM + PM	1.3%	5.8%
Stage 2a (Mitigation Measures Iteration 5)	2038 AM + PM	1.2%	3.9%

Table 56. EMFM Modelling Network Statistics for non Strategic Road Network

Scenario	Year/Peak	AoI Vehkm (km)	Junction Delay Vehhr
Stage 1a Without Development	2038 AM	466,669	4,699
Stage 1a With Development	2038 AM	471,838	4,928
Stage 2a (Mitigation Measures (no optimisation))	2038 AM	468,677	4,846
Stage 2a (Mitigation Measures Iteration 5)	2038 AM	468,754	4,721
Stage 1a Without Development	2038 PM	493,185	5,129
Stage 1a With Development	2038 PM	500,628	5,312
Stage 2a (Mitigation Measures (no optimisation))	2038 PM	499,340	5,340
Stage 2a (Mitigation Measures Iteration 5)	2038 PM	499,411	5,269
Stage 1a Without Development	2038 AM + PM	959,854	9,828
Stage 1a With Development	2038 AM + PM	972,466	10,240
Stage 2a (Mitigation Measures (no optimisation))	2038 AM + PM	968,017	10,186
Stage 2a (Mitigation Measures Iteration 5)	2038 AM + PM	968,165	9,990
Stage 1a With Development **Minus** Stage 1a Without Development **(AM)**		5,169	229
Stage 2a With Development **Minus** Stage 1a Without Development **(AM)**		2,085	22
Stage 1a With Development **Minus** Stage 1a Without Development **(PM)**		7,443	183
Stage 2a With Development **Minus** Stage 1a Without Development **(PM)**		6,155	211
		% compared to 1a 'Without Development'	
Stage 1a Without Development	2038 AM + PM	0.0%	0.0%
Stage 1a With Development	2038 AM + PM	1.3%	4.2%
Stage 2a (Mitigation Measures (no optimisation))	2038 AM + PM	0.9%	3.6%
Stage 2a (Mitigation Measures Iteration 5)	2038 AM + PM	0.9%	1.6%

12.21 The results show that the number of kilometres driven on the SRN increases as a direct result of the proposed highway mitigation, increasing by 1,960 kilometres from 271,242 kilometres in the Stage 1A with development scenario to 273,202 kilometres in the Stage

2A scenario during the morning peak hour. There is also a similar increase in the evening peak hour.

12.22 With regards to the number of kilometres driven on the local road network, these would decrease as a direct result of the proposed Highway Works when compared to the Stage 1A scenario, decreasing by 3,084 kilometres from 471,838 kilometres in the Stage 1A with development scenario to 468,754 kilometres in the Stage 2A scenario during the morning peak hour. There is also a similar decrease in the evening peak hour.

12.23 This shows that, as intended, the proposed Highway Works are attracting more traffic to the SRN, which would otherwise use the local road network.

12.24 Whilst junction delay and average speeds increase when undertaking the same comparisons on the SRN, AECOM confirmed that not only are they high level and indicative, that also if vehicle kilometres increase, the total delay is going to increase, even if average delay per vehicle remains the same. This is examined in further detail in the subsequent sections with regards to the more detailed VISSIM modelling.

12.25 Building on the above, and the revised AoI in particular, **Table 31** within **Section 8** of the TA identified a study area of 16 junctions (from an initial list of 27 junctions) by comparing V/C ratios and the change in traffic flows using outputs from the Stage 1A EMFM modelling. These 16 junctions have been assessed and mitigated where there are forecast to be impacts triggered by the proposed development.

12.26 The Stage 2A modelling outputs from EMFM, inclusive of the proposed Highway Works, have been used to revisit the same exercise and compare the V/C ratios and changes in traffic flows at the same 16 junctions to understand whether any of the previous conclusions change. **Appendix 71** includes an updated spreadsheet confirming that there would be an overall reduction in traffic flows compared to the Stage 1A without development scenario at the following 10 junctions as a result of the proposed Highway Works:

- Junction 3 – Finger Farm roundabout
- Junction 4 – A453/EMG1 roundabout
- Junction 5 – M1 Junction 24
- Junction 6 – A453/East Midlands Airport signal junction (morning peak only)
- Junction 9 – A453/East Midlands Airport roundabout (morning peak only)
- Junction 10 – A453/Walton Hill signal junction (morning peak only)
- Junction 12 – M1 Junction 23
- Junction 13 – A50 Junction 1
- Junction 14 – M1 Junction 25
- Junction 15 – Station Road/Broad Rushes roundabout.

12.27 The other six junctions, listed below for completeness, are predicted to operate within capacity, with V/C ratios of less than 90% based on the Stage 2A EMFM results:

- Junction 2 – A453/Hunter Road roundabout (worst-case V/C of 86% on any given arm)
- Junction 7 – A453/Grimes Gate priority junction (worst-case V/C of 69% on any given arm)
- Junction 8 – A453/The Green priority junction (worst-case V/C of 48% on any given arm albeit noting subsequent commentary in **Section 13**)
- Junction 11 – A42 Junction 14/Top Brand/Gelscoe Lane junction (worst-case V/C of 40% on any given arm)
- Junction 16 – A453/Kegworth Road dumbbell roundabouts (junction falls outside the AoI)
- Junction 17 – A453/Barton Lane/West Leake Lane dumbbell roundabouts (junction falls outside the AoI)

12.28 The Stage 2A EMFM modelling therefore demonstrates how the proposed Highway Works would have significant improvements overall at all 16 junctions included in the original study area. This is either by reducing traffic flows when compared to the Stage 1A without development scenario or by ensuring they would continue to operate within capacity.

12.29 The spreadsheet at **Appendix 71** also shows how there would be no significant impacts at the remaining 11 junctions that were originally considered but disregarded from the study area. This means there are no changes to the previous conclusions or any requirement for additional modelling.

12.30 The Stage 2A EMFM Forecasting Report showed high V/C ratios i.e. over 95% at the following five additional junctions not considered to date:

i) Nottingham Road/Willowcroft Road, Spondon, Derby

ii) Derby Road/Nottingham Road Gyratory, Derby (city centre)

iii) High Street/Park Lane, Castle Donington

iv) A6 Derby Road/Whatton Road, Loughborough

v) Derby Road/Bishop Meadow Road, Loughborough.

12.31 A separate table is also included at **Appendix 71** showing the change in V/C ratios between the Stage 1A without development and Stage 2A scenarios. It confirms how V/C ratios would either improve or are expected to experience a negligible increase, hence not triggering the need for any further detailed assessment at the five junctions listed above.

12.32 Overall, it can be concluded that the proposed Highway Works would result in beneficial impacts across all junctions in the vicinity of the site. Should the study area have been determined using the Stage 2A EMFM outputs, as suggested by LCountyC and discussed at previous TWG meetings, then it would have reduced versus that

considered in this TA. Nevertheless, this provides a robust assessment, and detailed capacity assessments for all 16 junctions included in the original study area in **Section 13** should provide comfort and evidence highlighting the impacts across a larger study area.

12.33 The EMFM outputs have been reviewed to understand the increase in traffic flows through local villages from the Stage 2A modelling outputs. The morning and evening peak hour two-way flow increases are presented below.

- Diseworth (Grimes Gate) = 19 morning peak hour, 41 evening peak hour
- Castle Donington (High Street) = 139 morning peak hour, 9 evening peak hour
- Kegworth (Derby Road) = 31 morning peak hour, 9 evening peak hour
- Kegworth (Nottingham Road) = 6 morning peak hour, 38 evening peak hour
- Long Whatton (Main Street) = -51 morning peak hour, 56 evening peak hour

12.34 The data shows that traffic increases through villages in the vicinity of the site would be low, which is a result of the significant Highway Works proposed that draws traffic to the SRN. A percentage of these trips would originate from nearby villages associated with residents working at the site, rather than an issue of rat-running. The largest increase would be along Castle Donington High Street in the morning peak hour, but it is likely that EMFM is overestimating traffic using the High Street and underestimating increases on the bypass because of how these links are coded in EMFM. Nevertheless, there should be no significant impacts and no further assessment of traffic increases through local villages has been undertaken over and above that within Chapter 6 of the ES.

Stage 2B EMFM Modelling

12.35 AECOM issued the EMFM Forecasting Report Addendum covering the Stage 2B modelling in July 2025. A copy of the Forecasting Report Addendum is included in **Appendix 72.**

12.36 The Stage 2B Addendum considers the benefits of the proposed Highway Works without traffic from the Ratcliffe on Soar redevelopment, EMIP and draft Local Plan allocations. The conclusions remain unchanged from the Stage 2A EMFM forecasting report and demonstrate that the proposed Highway Works would bring significant operational benefits to the network, particularly the A453 corridor between Finger Farm and M1 Junction 24.

COBALT Assessment

12.37 **Appendix 73** includes for the COBALT Assessment (EMG2-BWB-GEN-XX-RP-TR-0020 Revision P2), undertaken in accordance with the COBALT Methodology Note prepared in May 2025 (Technical Note EMG2-BWB-GEN-XX-RP-TR-0018 Revision P1) included in **Appendix 18**, to which comments were received from NH.

12.38 In summary, the COBALT assessment concludes that, overall, the EMG2 Project, including the proposed Highway Works, provide a benefit to the local and Strategic Road Networks in terms of road safety. When reviewing the impacts in more detail, it is forecast that initially there would be a negligible impact as a result of the EMG2 Project on the links assessed, but this would improve in the future year of 2038 with a number of the links seeing beneficial impacts.

12.39 Similarly, at the junctions assessed, the EMG2 Project would initially result in negligible and beneficial impacts, with the exception of the A453/Hunter Road site access roundabout and M1 Junction 24, albeit the rate of collisions at M1 Junction 24 would only increase by 0.1 per year, hence no noticeable change. The rate and severity of collisions is however expected to improve in the future year of 2038, across all the junctions assessed showing as having a beneficial impact with the proposed Highway Works included for.

12.40 Section 4 of the TA highlighted three locations on the surrounding network where there could be existing safety problems. The following provides a summary of the COBALT assessment at these three junctions:

- **A453/A6 Kegworth Bypass roundabout** – The COBALT assessment shows how there would be a beneficial impact on highway safety at both 2028 and 2038. This is due to traffic flows decreasing because a larger proportion of traffic is transferred to the M1 and new free flow link to the A50 westbound. Furthermore, the issue between conflicting movements between the A6 westbound and A453 southbound has been resolved through the introduction of an additional circulatory lane which allows traffic on the roundabout to clear before traffic from the A6 is released. NH response to the Highway Safety Position Statement (**Appendix 14**) issued on 30 June 2025 requested that road markings and signage should be reviewed. As part of the mitigation and detailed design at this junction, which involves delivering a new lane for right turning movements into EMG1 from the A453 southbound, the road markings will be reviewed.

- **M1 Junction 24** – The COBALT assessment shows there would be a marginal increase of 0.1 collisions per year across the entire junction in 2028, with a beneficial impact occurring at 2038. Whilst this is positive, the safety issue was identified on the M1 northbound off-slip and the new free flow link reduces traffic flows on this arm thereby reducing queueing. This should improve highway safety by limiting the risk of rear end shunt collisions. Furthermore, the changes to the A50 westbound weaving section should address the safety concerns raised during the first public consultation. In an email dated 5 August 2025 relating to the WCHAR Assessment, NH acknowledged the significant improvements being proposed at M1 Junction 24 and how this area of the junction will be altered. Therefore, NH are of the view that these PIC clusters will be addressed through the RSA.

- **A453/The Green** – The COBALT assessment shows how there would be a negligible impact on the rate of collisions in 2028 and a beneficial impact in 2038. This is due to capacity improvements being created at Finger Farm allowing a larger proportion of traffic to route via the A42 and M1 Junction 23A.

12.41 Whilst the COBALT assessment does not predict any significant worsening of safety issues at Finger Farm, as part of the Highway Works being delivered on the A453 westbound exit arm, the existing lane markings across the junction will be reviewed, which should address the comments raised by NH on 30 June 2025 in response to the Highway Safety Position Statement (**Appendix 14**).

12.42 In summary, the COBALT assessment and proposed Highway Works show how the EMG2 Project would have beneficial impacts on highway safety at the above three locations and assist in addressing any existing safety issues.

Revised Furnessing methodology

12.43 **Section 9** set out the furnessing approach used to derive future forecast traffic flows. As set out an updated version of the Modelling Furnessing Approach Technical Note – document EMG2-BWB-GEN-XX-RP-TR-0004 Revision P7 (**Appendix 49**), has been produced setting out a minor amendment/extension to the methodlogy agreed with NH and NCountyC to date, which is detailed at Section 7 of the note.

12.44 That is because, upon receiving the Stage 2 EMFM outputs, and furnessing the traffic flows using the agreed Option 4 methodology, with it being based on the survey turning proportions, it was not encapsulating the rerouting of traffic due to the mitigation strategy and provided unrealistic O-D Matrices.

12.45 As a result, an alternative methodology has been applied to the Stage 2 furnessing determined in collaboration with NH, which retains the Stage 2A furnessed flows and applies the difference between EMFM forecast flows for Stage 1A and Stage 2A. This therefore accounts for the re-routing while maintaining consistency in the matrix build from Stage 1A. This is set out in Section 7 of the Modelling Furnessing Approach Technical Note document EMG2-BWB-GEN-XX-RP-TR-0004 Revision P7 (**Appendix 49**) and has been agreed with NH.

12.46 The subsequent Stage 2A and 2B VISSIM modelling using these forecast demand flows is presented in **Sections 13** and **14.**

13. HIGHWAY IMPACT ASSESSMENTS: CORE SCENARIO (STAGE 2A MODELLING)

Introduction

13.1 The following section presents the results of the detailed junction modelling assessments for the core Stage 2A forecast year scenarios using VISSIM, Junctions 11 and LinSig software at all 16 junctions when taking into consideration the mitigation strategy. As required by the Highway Authorities this includes draft Local Plan allocations, EMIP and part of the Ratcliffe on Soar Power Station development in the baseline but without any mitigation which is likely to accompany those developments, because it is unknown at this stage.

13.2 Similar to the Stage 1A and 1B assessments, the 'with development' scenarios continue to manually assign the EMG2 development traffic on top of furnessed without development flows for robustness and to test the true impacts of the devleopment to avoid any background traffic re-assignment. The summary tables retain the Stage 1A modelling results presented in **Section 10** for comparison and ease of reference

Junctions 2 to 5 (VISSIM Network)

Introduction

13.3 BWB have produced a VISSIM Forecast Modelling report (BWB document EMG2-BWB-GEN-XX-RP-TR-0019_VISSIM Modelling Forecast Report-S2_P2) which sets out the forecast VISSIM modelling results in detail, a copy of which is included with **Appendix 50**.

13.4 In addition, the Geometric Design Stategy Record for the works on the SRN, **Appendix 27**, provides an assessment of the followng aspects in accordance with DMRB CD 122:

- M1 J24 northbound diverge layout;
- M1 J24A northbound diverge layout (proposed diverge to the A50);
- M1 J23A to 24 northbound weaving;
- M1 northbound to A50 westbound link cross-section; and
- A50 westbound merge where the link from the M1 northbound joins the link from the J24 signalised roundabout.

13.5 The following details within this TA provide a summary of the Network Performance results to give an overview of the impacts of the development with the proposed mitigation on the VISSIM network.

Network Performance

13.6 **Table 57** sets out the high level network performance comparison on all scenarios for 2028, as the year of opening of the development, which is NH's key assessment year in line with Circular 01/2022. this compares 'without development' (WoD), 'with development' (WD), and 'with development with mitigation' (WDMit) scenarios.

Table 57: 2028 Network Performance Comparison – Stage 2A

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	147	37.3	20,483	207
	WD	156	36.1	21,573	104
	WD - WoD	9	-1.2	1,090	-103
	WDMit	93	43.0	22,053	2
	WDMit - WoD	-54	5.7	1,570	-205
PM	WoD	74	46.5	21,307	4
	WD	112	41.1	21,964	215
	WD - WoD	38	-5.5	657	212
	WDMit	118	40.9	21,804	79
	WDMit - WoD	44	-5.6	497	75

13.7 When comparing the results of the 'with development' scenario including for mitigation against the 'without development' scenario, the average delay reduces significantly in the morning peak hour (54 seconds), and the average speed and vehicles arriving increases significantly (+5.7mph and 1,570 vehicles respectively). The latent demand reduces considerably as a result (-205 vehicles). In the evening peak hour, the average delay increases slightly by 44 seconds, but from a very low base (the evening peak operates far better overall than the morning peak hour, which has always been the key peak hour of the two assessed). The average speed decreases slightly by 5.6mph, albeit from a high base (46.5mph). The number of vehicles arriving in the network increases by 497 vehicles, and the latent demand increases by 75, which is a positive overall in that the Strategic Road Network is able to accommodate a higher number of vehicles. The VISSIM Forecast Modelling report (BWB document EMG2-BWB-GEN-XX-RP-TR-0019_VISSIM Modelling Forecast Report-S2_P2) presents the journey time results and shows that there would be reductions in journey times along a number of routes in both the morning and evneing peak hours.

13.8 **Table 58** below sets out the network performance comparison on all scenarios for 2038.

Table 58: 2038 Network Performance Comparison – Stage 2A

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	239	30.3	21,375	810
	WD	281	27.5	21,875	991
	WD - WoD	42	-2.8	500	182
	WDMit	184	34.2	22,776	548
	WDMit - WoD	-55	3.9	1,401	-262
PM	WoD	139	38.9	22,196	485
	WD	175	35.1	22,546	1,207
	WD - WoD	36	-3.8	350	722
	WDMit	144	38.1	22,948	556
	WDMit - WoD	5	-0.8	752	71

13.9 Similarly to the 2028 assessment, the 2038 results show that the average delay reduces, considerably still in the morning peak hour (55 seconds), which results in higher average

speeds and an additional 1,401 vehicles arriving through the network area. In the evening peak hour, there is a marginal increase in delay of 5 seconds with average speeds reducing slightly by -0.8mph. Whilst this is a small change, they are from a very low base and the junction performance overall would be much better compared to the morning peak hour, which is the key time period. In addition, the VISSIM Forecast Modelling report (BWB document EMG2-BWB-GEN-XX-RP-TR-0019_VISSIM Modelling Forecast Report-S2_P2) shows how journey times would reduce along a number of the routes in both peak hours.

13.10 As set out in the Trip Generation Core Assessment Technical Note at **Appendix 11**, and paragraphs 7.11 to 7.13 above, it was agreed that a sensitivity test is undertaken that manually re-assigns HGVs between EMG2 and the EMG1 rail freight terminal when including for the mitigation. Therefore, the Stage 2A modelled flows were adjusted so that 40 HGVs in the morning peak hour (18 arrivals, 22 departures) and 44 HGVs in the evening peak hour (28 arrivals, 16 departures) were assigned between EMG2 Main Site and EMG1.

13.11 The modelling results of the sensitivity test are summarised in **Table 59**.

Table 59: 2038 Network Performance Comparison – Stage 2A Sensitivity Test

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	239	30.3	21,375	810
	WD Sensitivity	176	34.0	22,746	533
	WD Seni - WoD	-63	3.7	1,371	-277
PM	WoD	139	38.9	22,196	485
	WD Sensitivity	143	38.2	22,939	558
	WD Sensi - WoD	4	-0.7	743	73

13.12 The results show that the performance of the VISSIM modelling would be slightly better than the Stage 2A core assessment above. Therefore, the slight adjustment to HGV flows at the A453/A6 Kegworth Road roundabout would have no material impacts on the operation of the network and there are no changes to the conclusion of the Stage 2A modelling results.

13.13 In summary, the results show that, the comprehensive mitigation strategy included for the highway network within the VISSIM model, extending from the EMG2 Main Site access to M1 Junction 24, would, overall, provide significant benefit. In summary:

i) A453/Hunter Road/EMG2 Main Site access roundabout – traffic would be able to safely enter and exit the EMG2 site in any given scenario and hence it would operate within capacity; vehicles would struggle to exit Hunter Road without the mitigation measures included for; hence the proposals provide betterment on said arm.

ii) Toucan crossing on the A453 – this operates within capacity when called, without any negative blocking back to either roundabout east or west.

iii) Finger Farm – the gyratory works well once the in mitigation is in place, as there are far less vehicles wanting to use the A453 when comparing to the base scenarios once the new M1 to A50 link road is included for.

iv) A453/A6 Kegworth Bypass roundabout – while there is not an inherit capacity issue at the A453/A6 Kegworth Bypass roundabout, the addition of a second right turn lane from the A453 southbound into EMG1 in effect future proofs the junction by increasing storage capacity within it and should also help alleviate the potential collision issue raised, as and the extra lane will help prevent vehicles from trying to manoeuvre around any queuing vehicles to enter the preceding two lane section into EMG1.

v) M1 Junction 24 diverge slip roads - in the base scenarios there is severe queuing forecast on both the M1 diverge slip road approaches, with vehicles queuing back onto the mainline to M1 Junction 23A to the south in the morning peak hour in particular, With the proposed Highway Works included for, there is still queuing back onto the M1 mainline, but this is vastly improved, especially on the northbound approach, where the queue does not prejudice the operation of the proposed M1 northbound to A50 westbound link road and allows vehicles to access it. It is also worth reminding that the Stage 2A assessment work includes for all of the Ratcliffe on Soar Power Station redevelopment, EMIP and draft Local Plan allocation traffic in the baseline but not any mitigation, because it is unknown at this stage of the process. Either way, the improved operation will help improve the PIC record observed on the M1 northbound diverge slip road.

vi) M1 Junction 24 circulatory links – the inclusion of the additional lane on the western side of the junction increases capacity as it allows more vehicles to access the junction and manoeuvre through it quicker. This in turn allows the MOVA at the junction to assign more green time to the busier arms (M1 southbound/A50, A453 Remembrance Way, and M1 northbound approaches), allowing for additional vehicles to enter the model. For the avoidance of doubt, the proposed Highway Works do not go as far as resolving all capacity issues at M1 Junction 24, especially on the A453 Remembrance Way arm and M1 southbound and A50 approach, but neither does it prejudice its operation either, over and above the congestion anticipated if the Ratcliffe on Soar Power Station is fully redeveloped in Stage 2A but without any further mitigation included for at this stage of the process (because it is not currently known).

vii) New M1 to A50 link road – whilst this introduces another conflict point, as result the removal of the current two to one merge on the exit from M1 Junction 24 to provide two full lanes, and the merge with the separated left turn lane, it reduces the number of conflict points overall. This in turn helps the A50 heading west from M1Junction 24, including for the new link road merge, to operate safely and within capacity.

Junction 6 – A453/East Midlands Airport Signal Junction

13.14 The agreed base LinSig model for the A453/East Midlands Airport signal junction has been tested for capacity using the Stage 2A forecast year flows. **Appendix 51** contains the LinSig output data, whilst **Table 60** summarises the results.

Table 60. A453/East Midlands Airport LinSig Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – EMA Access	6.2	35	61.5	6.2	22.2	45.2
Arm 2 – A453 (E)	7.8	6.0	60.9	4.5	6.6	35.7
Arm 3 – A453 (W)	10.1	16.7	61.6	6.5	19.4	45.5
	PRC over all lanes = 46.1%			PRC over all lanes = 97.9%		
2038 forecast year 'without development'						
Arm 1 – EMA Access	12.6	32.9	70.9	8.2	25.4	56.6
Arm 2 – A453 (E)	10.5	10.9	70.4	5.4	7.8	38.5
Arm 3 – A453 (W)	15.5	22.3	71.4	10.3	21.1	61.4
	PRC over all lanes = 26%			PRC over all lanes = 46.5%		
2028 forecast year 'with development'						
Arm 1 – EMA Access	7.4	44.5	72.0	5.1	19.3	41.3
Arm 2 – A453 (E)	8.4	10.5	74.7	7.6	10.3	47.0
Arm 3 – A453 (W)	16.9	17.2	9.9	6.4	21.5	46.2
	PRC over all lanes = 20.4%			PRC over all lanes = 91.7%		
2038 forecast year 'with development'						
Arm 1 – EMA Access	15.1	59.0	86.9	7.8	19.8	63.0
Arm 2 – A453 (E)	11.4	20.5	86.1	10.1	13.1	56.4
Arm 3 – A453 (W)	13.6	25.2	87.3	9.1	26.7	61.9
	PRC over all lanes = 3%			PRC over all lanes = 43%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – EMA Access	6.0	41.3	66.9	5.2	19.8	47.9
Arm 2 – A453 (E)	7.9	7.9	69.4	7.8	10.9	47.8
Arm 3 – A453 (W)	14.4	16.5	70.1	6.5	21.6	46.9
	PRC over all lanes = 28.3%			PRC over all lanes = 87.9%		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – EMA Access	10.5	44.9	77.6	7.7	20.4	62.2
Arm 2 – A453 (E)	9.4	13.6	80.2	10.7	13.4	58.6
Arm 3 – A453 (W)	22.5	21.5	79.9	9.3	25.9	61.3
	PRC over all lanes = 12.2%			PRC over all lanes = 44.8%		

13.15 The results show that the junction is predicted to continue to operate within capacity during all scenarios in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows without the need for any mitigating improvements.

Junction 7 – A453/Grimes Gate Priority Junction

13.16 The agreed base Junctions 11 model for the A453/Grimes Gate priority junction has been tested for capacity using the Stage 2A forecast year flows. **Appendix 52** includes the Junctions 11 output data, whilst **Table 61** summarises the modelling results.

Table 61.A453/Grimes Gate Junctions 11 Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Stream B-C – Grimes Gate	0.0	6.51	0.02	0.0	6.75	0.02
Stream B-A – Grimes Gate	0.3	10.36	0.24	0.1	8.63	0.08
Stream C-AB – A453 (W)	0.0	3.89	0.02	0.0	4.75	0.04
2038 forecast year 'without development'						
Stream B-C – Grimes Gate	0.0	7.27	0.03	0.0	7.36	0.03
Stream B-A – Grimes Gate	0.5	12.77	0.33	0.2	11.35	0.17
Stream C-AB – A453 (W)	0.0	3.88	0.02	0.1	4.29	0.06
2028 forecast year 'with development'						
Stream B-C – Grimes Gate	0.0	6.74	0.01	0.0	7.34	0.03
Stream B-A – Grimes Gate	0.6	13.05	0.36	0.1	9.72	0.10
Stream C-AB – A453 (W)	0.0	3.45	0.03	0.0	5.00	0.05
2038 forecast year 'with development'						
Stream B-C – Grimes Gate	0.0	7.79	0.03	0.0	8.44	0.04
Stream B-A – Grimes Gate	0.9	16.82	0.47	0.2	13.42	0.17
Stream C-AB – A453 (W)	0.1	3.48	0.04	0.1	4.82	0.06
2028 forecast year 'with development' 'with Mitigation'						
Stream B-C – Grimes Gate	0.0	6.75	0.01	0.0	7.51	0.03
Stream B-A – Grimes Gate	0.5	12.52	0.34	0.1	10.08	0.10
Stream C-AB – A453 (W)	0.0	3.57	0.03	0.1	4.96	0.05
2038 forecast year 'with development' 'with Mitigation'						
Stream B-C – Grimes Gate	0.0	7.55	0.02	0.0	8.54	0.04
Stream B-A – Grimes Gate	0.8	15.93	0.44	0.2	13.58	0.16
Stream C-AB – A453 (W)	0.0	3.40	0.02	0.1	4.85	0.06

13.17 The results show that the junction is predicted to continue to operate well within capacity during all scenarios in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows without the need for any mitigating improvements.

Junction 8 – A453/The Green Priority Junction

13.18 The agreed base Junctions 11 model for the A453/The Green priority junction has been tested for capacity using the Stage 2A forecast year flows. **Appendix 53** includes the Junctions 11 output data, whilst **Table 62** summarises the modelling results.

Table 62. A453/The Green Junctions 11 Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Steam B-AC – The Green	5.9	49.47	0.88	1.0	14.84	0.50
Stream C-AB – A453 (W)	0.7	4.88	0.25	0.5	5.92	0.25
2038 forecast year 'without development'						
Steam B-AC – The Green	6.1	56.79	0.88	5.3	60.80	0.87
Stream C-AB – A453 (W)	1.2	5.92	0.38	7.9	26.89	0.85
2028 forecast year 'with development'						
Steam B-AC – The Green	122.9	800.13	1.39	1.1	17.92	0.53
Stream C-AB – A453 (W)	0.6	4.58	0.24	0.6	6.78	0.30
2038 forecast year 'with development'						
Steam B-AC – The Green	172.0	1153.41	1.54	28.8	321.69	1.26
Stream C-AB – A453 (W)	1.2	5.76	0.39	53.0	204.22	1.11
2028 forecast year 'with development' 'with Mitigation'						
Steam B-AC – The Green	40.2	243.49	1.13	1.2	20.55	0.56
Stream C-AB – A453 (W)	0.7	4.53	0.24	1.1	8.27	0.42
2038 forecast year 'with development' 'with Mitigation'						
Steam B-AC – The Green	72.9	505.43	1.28	25.2	276.97	1.18
Stream C-AB – A453 (W)	0.7	4.37	0.22	31.0	129.44	1.03

13.19 The results show that the junction would operate within capacity at the 2028 forecast year without development, but capacity issues start to be noted on The Green arm in the 2038 forecast year in the morning peak hour, with or without development, where the RFC starts to exceed 0.85, albeit only just. In the 2038 evening peak hour, the development also triggers impacts on the both The Green and A453 (W) arms.

13.20 With the mitigation included for, focused on the Strategic Road Network, the impacts at the junction reduce, which adds to the conclusion in **Section 12** that it helps reduce traffic overall on the local highway network. However, The Green is still forecast to operate over capacity in both the morning and evening peak hours, with the A453 (W) and The Green arms still forecast to operate over capacity in the latter. However, there would be a significant improvement in queuing on The Green, reducing from 123 PCUs to 40 PCUs in the morning peak hour in 2028 and 172 PCUs to 73 PCUs in 2038.

13.21 Whilst the Junctions 11 modelling suggests that the junction would operate over capacity, the junction is predicted to operate within capacity in EMFM. Whilst speed curves have been included for in the EMFM modelling, for example, it is understood that further geometric parameters, such as the crest to the east of the junction on the A453, cannot be accurately reflected at such a high level of strategic modelling.

13.22 The PIC analysis identified a safety problem at this junction, albeit the rate of PICs has reduced in more recent years following more signage being installed. The proposed highway mitigation seeks to increase capacity at Finger Farm and the A453 corridor, with the aim of making this a more attractive route and discouraging traffic travelling towards the EMG2 Main Site and East Midlands Airport to route via The Green.

13.23 In reality it is therefore envisaged that more strategic traffic looking to route via the A453/The Green junction in EMFM will instead take advantage of the increased capacity on the Strategic Road Network, and Finger Farm in particular, to access the site and Hunter Road to the north to and from the east rather than west. Some more local traffic may use Grimes Gate instead of The Green still.

13.24 Either way, from the first statutory consultation, feedback was received from local residents who asked that capacity improvements not be proposed at junctions leading towards Diseworth so as not to encourage higher traffic flows in the vicinity of the village. This aligns with the principle of the mitigation strategy seeking to promote further use of the Strategic Road Network rather than local roads in the vicinity of the site.

13.25 Hence no mitigation is proposed at the A453/The Green junction, albeit this will also be tested using the Stage 2B forecast flows, which excludes the traffic generated by the draft Local Plan allocations. This information is presented in **Section 14**.

Junction 9 – A453/East Midlands Airport Roundabout

13.26 The Stage 1 modelling results showed that the junction would exceed capacity in Stage 1A but operate well within capacity in Stage 1B. This confirms that the capacity problems are being driven by the Isley Woodhouse development.

13.27 Nevertheless, the agreed base Junctions 11 model for the A453/East Midlands Airport roundabout has been tested for capacity using the Stage 2A forecast year flows. **Appendix 54** includes the Junctions 11 output data, whilst **Table 63** summarises the results.

Table 63. A453/East Midlands Airport Roundabout Junctions 11 Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – Walton Hill	0.2	4.69	0.12	0.7	5.0	0.35
Arm 2 – A453 (E)	1.0	5.41	0.34	1.3	6.27	0.35
Arm 3 – A453 (W)	8.0	32.18	0.89	1.5	10.47	0.51
2038 forecast year 'without development'						
Arm 1 – Walton Hill	0.4	4.85	0.16	1.1	6.34	0.44
Arm 2 – A453 (E)	1.1	5.47	0.35	1.6	6.23	0.42
Arm 3 – A453 (W)	56.3	166.82	1.11	6.3	24.5	0.84
2028 forecast year 'with development'						
Arm 1 – Walton Hill	0.3	4.77	0.13	0.6	4.9	0.35
Arm 2 – A453 (E)	1.0	5.54	0.31	1.4	5.97	0.4
Arm 3 – A453 (W)	25.9	84.01	0.99	1.2	8.31	0.45
2038 forecast year 'with development'						
Arm 1 – Walton Hill	0.4	4.84	0.17	1.0	6.5	0.46
Arm 2 – A453 (E)	0.8	5.28	0.33	1.6	6.6	0.45
Arm 3 – A453 (W)	74.3	229.49	1.15	6.1	23.86	0.84
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – Walton Hill	0.2	4.82	0.12	1.2	5.05	0.35
Arm 2 – A453 (E)	1.0	5.44	0.33	1.4	6.02	0.39
Arm 3 – A453 (W)	16.7	57.19	0.95	1.1	9.46	0.52
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – Walton Hill	0.3	4.79	0.15	1.0	6.34	0.44
Arm 2 – A453 (E)	0.9	5.18	0.33	1.4	6.43	0.43
Arm 3 – A453 (W)	69.9	196.36	1.12	4.7	19.71	0.79

13.28 The results show that the junction would continue to operate over capacity in all scenarios during the morning peak hour on the A453 (W) arm, albeit the changes in traffic flows associated with the proposed development, including for mitigation, will result in a negligible impact. The junction would operate within capacity in all scenarios during the evening peak hour.

13.29 As set out in **Sections 10** and **11**, this junction forms part of the site access strategy to the Isley Woodhouse settlement and is expected to undergo significant improvements to accommodate this development and other planned schemes. The issue with capacity is a result of the background traffic from Isley Woodhouse in particular being included in EMFM modelling but none of the physical infrastructure (i.e. mitigation) which will inevitably be required to accommodate that development.

13.30 To understand this further and build on the conclusions of the Stage 1B modelling in Section 11, the A453/East Midlands Airport roundabout will also be tested using the Stage 2B forecast flows, which excludes the traffic generated by the draft Local Plan allocations. This information is presented in **Section 14**.

Junction 10 – A453/Walton Hill Signal Junction

13.31 The Stage 1 modelling results showed that the junction would exceed capacity in Stage 1A but operate well within capacity in Stage 1B. This confirms that the capacity problems are being driven by the Isley Woodhouse development.

13.32 Nevertheless, the agreed base LinSig model for the A453/Walton Hill signal-controlled junction has been tested for capacity using the Stage 2A forecast year flows. **Appendix 55** includes the LinSig output data, whilst **Table 64** summarises the modelling results.

Table 64. A453/Walton Hill Signal LinSig Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – Local Road (N)	10.4	19.3	71.3	9.5	19.9	68.3
Arm 2 – A453 (E)	8.1	24.0	61.0	9.7	23.8	66.6
Arm 3 – Walton Hill	8.5	27.9	69.5	5.0	31.1	5.0
	PRC over all lanes = 26.2%			PRC over all lanes = 31.8%		
2038 forecast year 'without development'						
Arm 1 – Local Road (N)	17.4	35.9	92.6	93.8	229.5	111.7
Arm 2 – A453 (E)	14.1	45.2	90.6	69.7	249.9	112.5
Arm 3 – Walton Hill	16.9	33.5	90.9	73.3	238.4	112.2
	PRC over all lanes = -2.9%			PRC over all lanes = -25.0%		
2028 forecast year 'with development'						
Arm 1 – Local Road (N)	12.2	19.9	76.3	9.7	19.8	68.7
Arm 2 – A453 (E)	7.5	22.3	55.3	10.0	23.9	97.5
Arm 3 – Walton Hill	9.7	32.1	77.2	4.8	34.3	67.7
	PRC over all lanes = 16.6%			PRC over all lanes = 31.0%		
2038 forecast year 'with development'						
Arm 1 – Local Road (N)	15.4	33.6	90.0	126.8	317.9	117.8
Arm 2 – A453 (E)	13.2	40.7	88.0	93.8	315.7	117.5
Arm 3 – Walton Hill	16.3	30.5	89.2	72.8	243.1	112.5
	PRC over all lanes = 0.0%			PRC over all lanes = -30.9%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – Local Road (N)	11.6	20.5	74.9	10.3	18.9	72.2
Arm 2 – A453 (E)	7.3	21.4	54.2	11.1	25.7	71.9
Arm 3 – Walton Hill	9..8	31.0	75.7	4.4	36.7	67.5
	PRC over all lanes = 18.9%			PRC over all lanes = 24.7%		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – Local Road (N)	15.9	36.7	91.0	109.9	281.1	115.1
Arm 2 – A453 (E)	13.3	46.7	90.8	69.3	233.6	111.4
Arm 3 – Walton Hill	18.2	32.0	917	64.6	212.7	110.4
	PRC over all lanes = -1.9%			PRC over all lanes = -27.9%		

13.33 The results show that the junction is expected to continue to operate within capacity during all 2028 scenarios. In 2038, the junction would operate over capacity at the 2038 future year, with or without the development.

13.34 As set out in **Sections 10** and **11**, the main impact on capacity is the introduction of Isley Woodhouse traffic. The results show that there would be a slight betterment in capacity at the 2038 with development scenario in the morning peak hour, albeit a slight worsening in the evening peak hour. This shows that whilst capacity issues will likely occur, the proposed development has a negligible impact on the operation of the junction overall. Therefore, it can be concluded that there is no severe impact and no further assessment or mitigation is required at this location based on the Stage 2A modelling.

13.35 However, for completeness, the A453/Walton Hill signal junction will also be tested using the Stage 2B forecast flows, which excludes the traffic generated by the draft Local Plan allocations, to check the conclusions of the Stage 1B modelling remain. This information is presented in **Section 14**.

Junction 11 – A42 Junction 14 on-slip/Top Brand/Gelscoe Lane Roundabout

13.36 The agreed base Junctions 11 model for the A42 Junction 14 on-slip/Top Brand/Gelscoe Lane roundabout has been tested for capacity using the Stage 2A forecast year flows. **Appendix 56** includes the Junctions 11 output data, whilst **Table 65** summarises the results.

Table 65. A42 Junction 14 on-slip/Top Brand/Gelscoe Lane Junctions 11 Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – A453 (N)	0.8	6.6	0.37	1	7.31	0.35
Arm 2 – Gelscoe Lane	0.2	4.46	0.08	0.2	4.63	0.15
Arm 3 – Top Brand	0.5	6.35	0.23	0.2	4.75	0.08
2038 forecast year 'without development'						
Arm 1 – A453 (N)	1	6.37	0.4	1.3	7.45	0.35
Arm 2 – Gelscoe Lane	0.4	4.95	0.16	0.4	5.02	0.19
Arm 3 – Top Brand	1.2	7.75	0.4	0.3	5.06	0.22
2028 forecast year 'with development'						
Arm 1 – A453 (N)	1.8	9.31	0.55	1.2	7.74	0.35
Arm 2 – Gelscoe Lane	0.2	4.67	0.08	0.4	5.02	0.21
Arm 3 – Top Brand	0.6	6.18	0.25	0.2	4.37	0.09
2038 forecast year 'with development'						
Arm 1 – A453 (N)	1.8	8.76	0.57	1.5	7.68	0.39
Arm 2 – Gelscoe Lane	0.3	5.06	0.15	1	6.7	0.36
Arm 3 – Top Brand	1	7.81	0.38	0.5	5.42	0.23
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – A453 (N)	0.9	5.91	0.32	0.7	6.84	0.31
Arm 2 – Gelscoe Lane	0.2	4.70	0.10	0.4	5.13	0.18
Arm 3 – Top Brand	0.7	7.35	0.36	0.2	4.77	0.12
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – A453 (N)	0.9	6.07	0.37	1.3	6.74	0.36
Arm 2 – Gelscoe Lane	0.3	4.95	0.17	0.9	5.88	0.33
Arm 3 – Top Brand	1.5	9.83	0.51	0.6	6.11	0.28

13.37 The results show that the junction is predicted to operate well within capacity during all scenarios and in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows without the need for any mitigating improvements. No further assessment is required as a result.

Junction 12 – M1 Junction 23

13.38 The agreed base LinSig model for M1 Junction 23 has been tested for capacity using the Stage 2A forecast year flows. **Appendix 57** includes the LinSig output data, whilst **Table 66** summarises the results.

Table 66. M1 Junction 23 LinSig Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – M1 SB slip	10.8	29.8	83.7	7.2	33.9	75.7
Arm 2 – A512 (E)	10.3	26.4	72.8	12.1	19.1	77.0
Arm 3 – M1 NB slip	5.8	50.4	75.8	4.9	42.2	67.7
Arm 4 – A512 (W)	9.6	21.0	77.7	7.0	17.1	63.8
	PRC over all lanes = 7.3%			PRC over all lanes = 16.9%		
2038 forecast year 'without development'						
Arm 1 – M1 SB slip	60.4	203.6	109.5	8.9	39.5	89.2
Arm 2 – A512 (E)	49.3	151.8	105.9	17.1	24.6	89.1
Arm 3 – M1 NB slip	18.1	158	103.2	10.4	75.7	93.0
Arm 4 – A512 (W)	94.4	203.4	109.9	21.9	39.9	95.8
	PRC over all lanes = -24.7%			PRC over all lanes = -6.4%		
2028 forecast year 'with development'						
Arm 1 – M1 SB slip	11.0	30.2	84.0	7.2	30.1	71.1
Arm 2 – A512 (E)	11.7	29.0	78.2	11.5	20.1	75.5
Arm 3 – M1 NB slip	5.6	49.0	74.2	4.7	43.5	66.8
Arm 4 – A512 (W)	10.9	23.5	82.1	6.5	16.6	60.5
	PRC over all lanes = 5.9%			PRC over all lanes = 19.2%		
2038 forecast year 'with development'						
Arm 1 – M1 SB slip	72.0	243.2	112.1	10.0	44.2	85.8
Arm 2 – A512 (E)	42.1	121.8	103.8	18.3	26.6	90.7
Arm 3 – M1 NB slip	28.2	267.7	111.9	11.2	84.8	94.6
Arm 4 – A512 (W)	80.9	163.6	107.3	20.4	36.7	94.8
	PRC over all lanes = -24.6%			PRC over all lanes = -5.3%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – M1 SB slip	10.7	39.1	82.5	6.8	30.5	72.5
Arm 2 – A512 (E)	11.0	26.3	74.6	10.9	18.6	72.9
Arm 3 – M1 NB slip	5.6	49.0	74.2	4.4	39.7	56.4
Arm 4 – A512 (W)	11.3	24.2	83.5	6.3	16.5	59.2
	PRC over all lanes = 7.8			PRC over all lanes = 23.4		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – M1 SB slip	59.7	195.7	108.8	9.0	39.4	90.0
Arm 2 – A512 (E)	50.4	155.8	106.2	17.8	25.7	90.0
Arm 3 – M1 NB slip	23.9	229	108.8	9.7	70.3	91.7
Arm 4 – A512 (W)	107.6	225.7	111.5	19.0	35.0	94.1
	PRC over all lanes = -23.9			PRC over all lanes = -4.6		

13.39 The results show that M1 Junction 23 would operate within capacity at the 2028 forecast year in all scenarios, which is the Circular 01/2022 compliant assessment year, with or without development. Whilst the junction would exceed capacity at the 2038 forecast year, the development would have no impact on capacity and there would be a slight betterment in overall PRC with mitigation included for, which is a result of traffic re-assignment at this junction. Therefore, it can be concluded that there would be no

severe impacts at this junction from the development and no further assessment or mitigation is required as a result, based on the Stage 2A modelling.

13.40 However, for completeness, because of its strategic nature, M1 Junction 23 will also be tested using the Stage 2B forecast flows, which excludes the traffic generated by the draft Local Plan allocations. This information is presented in **Section 14**.

Junction 13 – A50 Junction 1

13.41 The Stage 1A and 1B modelling results showed that the junction would exceed capacity with or without development, but there would be a negligible impact from the proposed development.

13.42 The agreed base LinSig model for A50 Junction 1 has been tested for capacity using the Stage 2A forecast year flows, which includes the committed improvement scheme associated with Land South of A50 Junction 1, Castle Donington development that signalises the Trent Lane and Tamworth Road arms. **Appendix 58** includes the LinSig output data, whilst **Table 67** summarises the results.

Table 67. A50 Junction 1 LinSig Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – B5010	2.0	10.1	63.9	1.4	9.8	52.8
Arm 2 – B6540	9.5	20.4	99.4	8.4	17.5	89.2
Arm 3 – A50 slip road (E)	18.4	78.0	99.1	9.0	27.2	84.0
Arm 4 – Ryecroft Road	0.3	8.7	18.2	0.3	7.8	16.1
Arm 5 – Trent Lane	6.9	19.0	73.8	11.7	33.7	88.5
Arm 6 – A50 slip road (W)	9.3	18.4	94.7	6.0	15.4	90.5
	PRC over all lanes = -10.4%			PRC over all lanes = -6.3%		
2038 forecast year 'without development'						
Arm 1 – B5010	2.3	14.3	72.4	2.1	11.2	54.3
Arm 2 – B6540	7.5	14.6	78.8	13.9	29.6	93.5
Arm 3 – A50 slip road (E)	8.9	24.2	82.7	6.4	20.1	71.3
Arm 4 – Ryecroft Road	0.4	8.8	21.2	0.5	8.9	24.7
Arm 5 – Trent Lane	50.7	167.9	107.7	55.7	153.2	106.9
Arm 6 – A50 slip road (W)	32.7	93.9	106.3	5.8	14.6	70.2
	PRC over all lanes = -20.2%			PRC over all lanes = -18.8%		
2028 forecast year 'with development'						
Arm 1 – B5010	2.2	12.7	71.3	0.9	5.8	38.6
Arm 2 – B6540	9.0	19.4	96.2	8.5	21.6	92.6
Arm 3 – A50 slip road (E)	22.9	100.1	101.5	8.6	32.0	85.5
Arm 4 – Ryecroft Road	0.3	9.5	21.7	0.2	6.7	14.6
Arm 5 – Trent Lane	4.8	18.2	71.4	9.0	25.7	83.0
Arm 6 – A50 slip road (W)	20.0	49.4	102.3	5.6	15.0	68.1
	PRC over all lanes = -18.9%			PRC over all lanes = -2.9%		
2038 forecast year 'with development'						
Arm 1 – B5010	2.3	14.5	72.9	2.2	11.3	55.7
Arm 2 – B6540	17.0	39.3	101.7	14.0	29.7	93.5
Arm 3 – A50 slip road (E)	12.8	45.4	93.5	6.1	19.5	69.6
Arm 4 – Ryecroft Road	0.4	9.4	23.6	0.7	9.4	31.5
Arm 5 – Trent Lane	51.7	166.1	107.5	72.1	196.8	109.9
Arm 6 – A50 slip road (W)	42.9	125.5	109.0	5.9	14.6	71.2
	PRC over all lanes = -21.1%			PRC over all lanes = -22.2%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – B5010	1.9	9.6	62.2	0.9	6.6	39.4
Arm 2 – B6540	8.5	19.1	91.7	8.4	18.7	92.8
Arm 3 – A50 slip road (E)	14.6	58.8	96.1	7.1	24.0	77.5
Arm 4 – Ryecroft Road	0.2	8.3	15.6	0.3	7.0	18.0
Arm 5 – Trent Lane	6.9	20.4	74.8	11.5	28.0	90.0
Arm 6 – A50 slip road (W)	8.7	19.2	93.5	6.1	15.4	70.9
	PRC over all lanes = -6.8			PRC over all lanes = -4.7		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – B5010	2.2	14.0	70.1	1.9	10.4	49.3

Arm 2 – B6540	11.6	25.5	100.2	14.7	30.7	100.1
Arm 3 – A50 slip road (E)	10.1	38.1	89.8	5.7	18.6	66.3
Arm 4 – Ryecroft Road	0.3	8.3	18.9	1.6	13.1	54.5
Arm 5 – Trent Lane	10.6	25.0	88.0	74.5	206.3	110.6
Arm 6 – A50 slip road (W)	7.9	16.5	86.5	5.4	14.4	66.9
	PRC over all lanes = -11.3			PRC over all lanes = -22.9		

13.43 The results show that A50 Junction 1 is forecast to exceed capacity in all scenarios, with or without the development. However, the overall change in PRC and associated queues and delays will reduce overall as a result of the proposed development, including for the mitigation, with a reduction in queuing on the A50 slip road (W) arm (eastbound off slip) for example.

13.44 Whilst there would be a slight worsening of the performance in the evening peak hour (-22.9% PRC with development and mitigation in 2038 v 18.8% without them in 2038) there would be betterment in the morning peak hour (-11.3% v -20.2%). Therefore, it can be concluded that there would be no severe impacts at this junction from the development and no further assessment or mitigation is required as a result based on the Stage 2A modelling.

13.45 However, for completeness, because of its strategic nature, the A50 junction 1 roundabout will also be tested using the Stage 2B forecast flows, which excludes the traffic generated by the draft Local Plan allocations. This information is presented in **Section 14**.

Junction 14 – M1 Junction 25

13.46 The agreed base LinSig model for M1 Junction 25 has been tested for capacity using the Stage 2A forecast year flows. **Appendix 59** includes the LinSig output data, whilst **Table 68** summarises the results.

Table 68 M1 Junction 25 LinSig Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – M1 slip (N)	34.6	113.0	102.4	89.9	359.8	119.8
Arm 2 – A52 (E)	117.1	577.8	138.3	87.7	383.3	122.1
Arm 3 – Bostocks Lane (S)	48.7	327.0	116.3	42.8	330.8	117.2
Arm 4 – M1 slip (S)	165.9	616.1	144.9	13.4	35.6	87.5
Arm 5 – A52 (W)	88.7	537.1	135.2	5.5	25.2	58.3
Arm 6 – Bostocks Lane (N)	124.5	604.8	143.5	27.1	106.6	100.3
	PRC over all lanes = -61.0%			PRC over all lanes = -35.6%		
2038 forecast year 'without development'						
Arm 1 – M1 slip (N)	41.1	144.0	104.6	115.7	389.9	122.4
Arm 2 – A52 (E)	81.0	454.4	126.8	86.9	433.0	125.8
Arm 3 – Bostocks Lane (S)	14.3	108.2	98.7	55.7	418.6	124.5
Arm 4 – M1 slip (S)	247.0	636.3	146.6	22.3	49.6	97.1
Arm 5 – A52 (W)	98.6	618.8	144.1	4.9	22.7	51.1
Arm 6 – Bostocks Lane (N)	130.4	642.5	147.8	11.6	73.8	95.4
	PRC over all lanes = -64.7%			PRC over all lanes = -39.8%		
2028 forecast year 'with development'						
Arm 1 – M1 slip (N)	52.4	227.7	109.5	15.2	37.6	89.1
Arm 2 – A52 (E)	13.3	25.5	75.2	49.8	212.2	109.0
Arm 3 – Bostocks Lane (S)	75.3	649.3	146.0	32.7	279.2	112.9
Arm 4 – M1 slip (S)	178.0	638.6	146.8	14.5	34.1	91.8
Arm 5 – A52 (W)	95.4	608.0	143.4	5.4	24.7	55.8
Arm 6 – Bostocks Lane (N)	125.3	637.4	147.8	13.7	90.1	98.0
	PRC over all lanes = -64.5%			PRC over all lanes = -25.5%		
2038 forecast year 'with development'						
Arm 1 – M1 slip (N)	13.3	33.4	86.1	116.0	392.4	122.6
Arm 2 – A52 (E)	15.0	52.5	90.3	82.0	412.1	124.1
Arm 3 – Bostocks Lane (S)	68.8	557.6	136.6	53.8	409.7	123.7
Arm 4 – M1 slip (S)	320.1	863.8	178.9	25.9	59.1	98.7
Arm 5 – A52 (W)	10.0	27.3	76.4	4.9	22.8	51.3
Arm 6 – Bostocks Lane (N)	164.4	859.3	176.8	13.0	86.1	97.3
	PRC over all lanes = -98.8%			PRC over all lanes = -37.9%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – M1 slip (N)	12.9	29.7	83.9	51.2	204.3	108.6
Arm 2 – A52 (E)	35.0	137.2	103.6	70.4	313.6	116.6
Arm 3 – Bostocks Lane (S)	62.9	516.4	132.4	38.7	309.6	115.3
Arm 4 – M1 slip (S)	178.8	654.8	149.5	15.0	32.9	91.9

Arm 5 – A52 (W)	95.4	605.7	143.3	5.4	23.4	54.5
Arm 6 – Bostocks Lane (N)	133.2	651.5	149.5	13.3	88.4	97.7
	PRC over all lanes = -66.2%			PRC over all lanes = -29.6%		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – M1 slip (N)	53.3	203.5	108.6	115.8	394.8	122.8
Arm 2 – A52 (E)	91.3	551.7	135.4	84.7	423.8	125.1
Arm 3 – Bostocks Lane (S)	10.8	71.6	92.9	54.2	415.2	124.1
Arm 4 – M1 slip (S)	267	707.6	156.4	27.2	59.5	98.8
Arm 5 – A52 (W)	71.0	424.9	125.0	4.7	21.2	47.9
Arm 6 – Bostocks Lane (N)	142.2	708.1	155.4	12.8	85.2	97.1
	PRC over all lanes = -73.7%			PRC over all lanes = -39.0%		

13.47 The results show that the junction would exceed capacity in all scenarios, with or without the development. In the 2028 opening year, the overall PRC would reduce from -61.0% to -66.2% with the development and mitigation in place in the morning hour but see a betterment from -35.6% to -29.6% in the evening peak hour.

13.48 There would be a larger impact on PRC at the 2038 forecast year during the morning peak hour which is predicted to change from -64.7% to -73.7% with the same comparison. However, the proposed development would result in an overall increase of 35 PCUs in the morning peak hour (7,688 increasing to 7,721) and 70 PCUs in the evening peak hour (7,218 increasing to 7,288) when considering development traffic any associated reassignment. This equates to a less than 1% increase in total turning movements. Therefore, whilst certain arms are showing stress, the impacts from the development are negligible and significant capacity problems would occur without the development, which is why the negative PRC values have increased still regardless of the limited change in traffic flows overall.

13.49 Overall, it can be concluded that there is no severe impact at this location and no further assessment or mitigation should be required as a result based on the Stage 2A modelling.

13.50 However, for completeness, because of its strategic nature, M1 Junction 25 will also be tested using the Stage 2B forecast flows, which excludes the traffic generated by the draft Local Plan allocations. This information is presented in **Section 14**.

Junction 15 – Station Road/Broad Rushes Roundabout

13.51 The Stage 1 modelling results showed that the junction would exceed capacity in Stage 1A but operate within capacity in Stage 1B. This shows that the capacity problems are being driven by the Isley Woodhouse development and other draft Local Plan allocations.

13.52 The agreed base Junctions 11 model the Station Road/Broad Rushes roundabout has been tested for capacity using the Stage 2A forecast year flows. **Appendix 60** includes the Junctions 11 output data, whilst **Table 69** summarises the results.

Table 69. Station Road/Broad Rushes Roundabout Junctions 11 Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – Station Road (N)	7.3	16.63	0.83	3.4	9.07	0.68
Arm 2 – Station Road (S)	0.9	9.61	0.46	10.2	46.20	0.91
Arm 3 – Broad Rushes	2.8	13.90	0.70	6.0	24.11	0.82
2038 forecast year 'without development'						
Arm 1 – Station Road (N)	8.4	19.85	0.87	4.7	12.23	0.77
Arm 2 – Station Road (S)	4.0	24.45	0.80	33.5	135.43	1.07
Arm 3 – Broad Rushes	39.0	132.26	1.07	13.0	58.10	0.95
2028 forecast year 'with development'						
Arm 1 – Station Road (N)	7.4	18.38	0.85	2.7	7.84	0.63
Arm 2 – Station Road (S)	1.2	9.97	0.49	8.0	39.01	0.90
Arm 3 – Broad Rushes	3.5	15.82	0.75	3.3	16.11	0.73
2038 forecast year 'with development'						
Arm 1 – Station Road (N)	9.7	21.15	0.87	5.2	12.72	0.81
Arm 2 – Station Road (S)	7.6	42.26	0.87	40.9	157.53	1.07
Arm 3 – Broad Rushes	51.7	171.50	1.08	14.7	62.36	0.95
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – Station Road (N)	7.9	18.72	0.83	1.3	5.90	0.45
Arm 2 – Station Road (S)	0.2	6.69	0.11	0.3	5.31	0.13
Arm 3 – Broad Rushes	3.5	14.55	0.75	4.1	18.60	0.82
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – Station Road (N)	5.8	14.99	0.81	3.0	8.25	0.65
Arm 2 – Station Road (S)	0.9	10.50	0.44	0.5	7.25	0.33
Arm 3 – Broad Rushes	5.4	24.81	0.81	8.6	34.84	0.90

13.53 The results show that the proposed development, including for mitigation, will allow the junction to operate within capacity during both peak hours. There would be an overall betterment in junction performance in both 2028 and 2038. Hence no further assessment or mitigation should be required as a result based on the Stage 2A modelling.

13.54 However, for completeness, the junction has also been tested using the Stage 2B forecast flows, which excludes the traffic generated by the draft Local Plan allocations. This information is presented in **Section 14**.

Junction 16 – A453/Kegworth Road Roundabout

13.55 The A453/Kegworth Road roundabout fell outside the AoI from the EMFM modelling, but has been tested for capacity, nonetheless. The agreed base Junctions 11 model for the A453/Kegworth Road roundabout has been tested for capacity using the Stage 2A forecast year flows. **Appendix 61** includes the Junctions 11 output data and a plan showing the location of the junction, whilst **Table 70** summarises the results.

Table 70. A453/Kegworth Road Roundabout Junctions 11 Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – A453 Off-slip	0.2	2.69	0.13	0.2	2.94	0.18
Arm 2 – Local Road	0.2	2.6	0.13	0.2	2.79	0.19
Arm 3 – Kegworth Road	0.2	3.3	0.15	0.2	3.19	0.16
2038 forecast year 'without development'						
Arm 1 – A453 Off-slip	0.3	3.3	0.2	0.4	3.83	0.3
Arm 2 – Local Road	0.6	3.5	0.35	1.3	5.32	0.55
Arm 3 – Kegworth Road	0.6	4.86	0.37	0.7	5.89	0.42
2028 forecast year 'with development'						
Arm 1 – A453 Off-slip	0.2	2.69	0.13	0.2	2.9	0.18
Arm 2 – Local Road	0.1	2.58	0.12	0.2	2.81	0.19
Arm 3 – Kegworth Road	0.2	3.41	0.17	0.1	2.85	0.05
2038 forecast year 'with development'						
Arm 1 – A453 Off-slip	0.3	3.34	0.21	0.4	3.12	0.26
Arm 2 – Local Road	0.6	3.53	0.35	1.7	6.2	0.62
Arm 3 – Kegworth Road	0.6	4.89	0.37	0	3.77	0.04
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – A453 Off-slip	0.2	2.68	0.13	0.2	2.89	0.18
Arm 2 – Local Road	0.2	2.62	0.13	0.2	2.81	0.19
Arm 3 – Kegworth Road	0.2	3.24	0.13	0.0	2.82	0.04
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – A453 Off-slip	0.3	3.23	0.20	0.4	3.09	0.25
Arm 2 – Local Road	0.6	3.53	0.35	1.3	5.31	0.55
Arm 3 – Kegworth Road	0.5	4.49	0.31	0.0	3.53	0.03

13.56 The results show that the junction is predicted to operate well within capacity during all scenarios in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic flows Hence no further assessment or mitigation should be required.

Junction 17 – A453/Trent Lane/West Leake dumbbell Roundabout

13.57 The A453/Trent Lane/West Leake roundabouts fell outside the AoI from the EMFM modelling, but have been tested for capacity, nonetheless. The agreed base Junctions 11 model for the A453/Trent Lane/West Leake roundabout has been tested for capacity using the Stage 2A forecast year flows. **Appendix 62** includes the Junctions 11 output data, whilst **Table 71** summarises the results.

Table 71. A453/Trent Lane/West Leake dumbbell Roundabout Junctions 11 Summary Results – Stage 2A

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
J1- Arm 1 – Dumbbell Link	0.5	4.15	0.3	0.3	3.29	0.23
J1- Arm 2 – A453 SWB Off-Slip	0	0	0	0	2.65	0.02
J1- Arm 3 – West Leake Lane	0.7	6.03	0.39	0.5	4.35	0.33
J2- Arm 1 – Barton Lane	0.1	4.32	0.07	0	2.99	0.02
J2- Arm 2 – A453 NEB Off-Slip	0.5	4.05	0.3	0.1	2.75	0.06
J2- Arm 3 – Dumbbell Link	0.3	3.09	0.22	0.2	2.25	0.17
2038 forecast year 'without development'						
J1- Arm 1 – Dumbbell Link	1	5.42	0.48	1	5.42	0.48
J1- Arm 2 – A453 SWB Off-Slip	0	3.19	0.01	0	3.19	0.01
J1- Arm 3 – West Leake Lane	1.1	6.22	0.5	1.1	6.22	0.5
J2- Arm 1 – Barton Lane	0.1	4.29	0.07	0.1	4.29	0.07
J2- Arm 2 – A453 NEB Off-Slip	0.1	3.07	0.08	0.1	3.07	0.08
J2- Arm 3 – Dumbbell Link	0.6	3.19	0.33	0.6	3.19	0.33
2028 forecast year 'with development'						
J1- Arm 1 – Dumbbell Link	0.5	4.03	0.3	0.3	3.29	0.23
J1- Arm 2 – A453 SWB Off-Slip	0	2.89	0.04	0	2.65	0.02
J1- Arm 3 – West Leake Lane	0.7	4.98	0.38	0.5	4.34	0.33
J2- Arm 1 – Barton Lane	0.1	3.68	0.06	0	3	0.02
J2- Arm 2 – A453 NEB Off-Slip	0.1	3.01	0.06	0.1	2.75	0.06
J2- Arm 3 – Dumbbell Link	0.3	2.61	0.2	0.2	2.25	0.17
2038 forecast year 'with development'						
J1- Arm 1 – Dumbbell Link	0.5	3.67	0.31	0.5	3.67	0.31
J1- Arm 2 – A453 SWB Off-Slip	0	2.75	0.01	0	2.75	0.01
J1- Arm 3 – West Leake Lane	0.8	5.18	0.44	0.8	5.18	0.44
J2- Arm 1 – Barton Lane	0	3.14	0.02	0	3.14	0.02
J2- Arm 2 – A453 NEB Off-Slip	0.1	2.72	0.05	0.1	2.72	0.05
J2- Arm 3 – Dumbbell Link	0.3	2.4	0.22	0.3	2.4	0.22
2028 forecast year 'with development' 'with Mitigation'						
J1- Arm 1 – Dumbbell Link	1.1	5.57	0.47	2.8	9.46	0.74

J1- Arm 2 – A453 SWB Off-Slip	1.4	7.21	0.59	0.1	4.16	0.12
J1- Arm 3 – West Leake Lane	0.8	11.89	0.42	0.4	5.51	0.28
J2- Arm 1 – Barton Lane	1.0	5.44	0.46	4.6	14.45	0.82
J2- Arm 2 – A453 NEB Off-Slip	2.0	7.91	0.61	0.1	2.82	0.10
J2- Arm 3 – Dumbbell Link	0.2	3.38	0.14	0.4	2.69	0.25
2038 forecast year 'with development' 'with Mitigation'						
J1- Arm 1 – Dumbbell Link	0.2	3.20	0.12	0.1	2.84	0.11
J1- Arm 2 – A453 SWB Off-Slip	0.7	3.99	0.39	0.2	2.76	0.13
J1- Arm 3 – West Leake Lane	1.2	6.75	0.51	0.8	5.23	0.43
J2- Arm 1 – Barton Lane	0.1	3.76	0.10	0.4	4.02	0.28
J2- Arm 2 – A453 NEB Off-Slip	0.5	4.08	0.30	0.3	3.32	0.22
J2- Arm 3 – Dumbbell Link	0.8	4.06	0.41	0.3	2.66	0.21

13.58 The results show that the junction is predicted to operate well within capacity during all scenarios and in both peak hours. Therefore, it can be concluded that the existing junction layout will remain suitable to accommodate the forecast year traffic. Hence no further assessment or mitigation should be required.

14. HIGHWAY IMPACT ASSESSMENTS: SENSITIVITY TEST (STAGE 2B MODELLING)

Introduction

14.1 The following section presents the results of the detailed junction modelling assessments for the Stage 2B forecast year scenarios using VISSIM, Junctions 11 and LinSig software at the same junctions tested in Section 11 using the Stage 1B modelling outputs. This takes into account the propsoed Highway Works and excludes traffic from the Ratcliffe on Soar redevelopment, EMIP and draft Local Plan allocation sites.

14.2 The summary tables retain the Stage 1B modelling results presented in **Section 11** for comparison and ease of reference. Similar to other scenarios, traffic from the proposed development has been added manually on top of without development flows for robustness.

Junctions 2 to 5 (VISSIM Network)

Introduction

14.3 The modelling results for the Stage 2A scenario demonstrated how the proposed highway mitigation would result in significant benefits to the operation of the Strategic Road Network in the VISSIM model overall.

14.4 Full VISSIM modelling resutls are presented in the VISSIM Forecast Modelling report (BWB document EMG2-BWB-GEN-XX-RP-TR-0019_VISSIM Modelling Forecast Report-S2_P2) at **Appendix 50**. The following details within this TA provide a summary of the Network Performance results to provide an overview of the impacts of the development with the proposed mitigation on the VISSIM network (Stage 2B).

Network Performance

14.5 **Table 72** below sets out the high level network performance comparison on all scenarios for 2028, as the year of opening of the development, which is NH's key assessment year in line with Circular 01/2022. this compares 'without development' (WoD), 'with development' (WD), and 'with development with mitigation' (WDMit) scenarios.

Table 72: 2028 Network Performance Comparison – Stage 2B

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	89	43.6	21,143	1
	WD	124	39.4	21,748	43
	WD - WoD	35	-4.2	605	42
	WDMit	84	43.9	22,109	4
	WDMit - WoD	-5	0.3	966	3
PM	WoD	94	44.1	20,994	116
	WD	121	40.0	21,678	355
	WD - WoD	28	-4.1	684	238
	WDMit	95	43.7	22,138	70
	WDMit - WoD	1	-0.4	1,144	-47

14.6 The results show that there would be a reduction in delays during both the morning peak hour resulting in slightly higher average speeds and an increase in the number of vehicles arriving to the network. In the evening peak hour, there is a marginal increase in delay of 1 second and a slight reduction in average speed of -0.4mph. Whilst this is a small change, there would still be an increase of 1,144 vehicles arriving to the network and latent demand reduces. Overall, there would be benefits on the capacity of the network at 2028 and an improvement to journey times along a number of the routes.

14.7 **Table 73** sets out the network performance comparison on all scenarios for 2038.

Table 73: 2038 Network Performance Comparison – Stage 2B

Peak	Scenario	Delay (seconds)	Speed (mph)	Vehicles Arriving	Latent Demand
AM	WoD	133	36.9	21,707	134
	WD	155	36.5	22,815	56
	WD - WoD	23	-0.5	1,108	-78
	WDMit	113	40.9	22,976	11
	WDMit - WoD	-20	4.0	1,269	-123
PM	WoD	139	38.8	21,944	570
	WD	166	35.7	22,570	981
	WD - WoD	26	-3.1	626	411
	WDMit	129	39.5	23,080	381
	WDMit - WoD	-10	0.7	1,136	-189

14.8 The 2038 results show that the average delay reduces considerably in both peak hours (20 seconds in the morning and 10 seconds in the evening). This results in higher average speeds and an increase of over 1,000 vehicles entering the model in both peak hours. Therefore, the proposed Highway Works would significantly improve capacity of the junction and mitigate the impacts of the EMG2 development and meets the requirements of both Paragraph 5.283 of the NPS and Paragraph 116 of the NPPF.

Junction 8 – A453/The Green Priority Junction

14.9 The modelling results for Stages 1A, 1B and 2A confirmed that the A453/The Green junction would exceed capacity. However, it is concluded that this is because EMFM shows the junction operating well within capacity and consequently assigning a greater volume of traffic through it compared to what would occur in reality.

14.10 The agreed base Junctions 11 model has been tested for capacity using the Stage 2B forecast year flows. **Appendix 63** includes the Junctions 11 output data, whilst **Table 74** summarises the modelling results.

Table 74. A453/The Green Junctions 11 Summary Results – Stage 2B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Steam B-AC – The Green	2.8	26.93	0.75	1.0	14.03	0.49
Stream C-AB – A453 (W)	0.4	4.69	0.17	0.7	6.23	0.31
2038 forecast year 'without development'						
Steam B-AC – The Green	68.0	440.14	1.24	3.4	37.63	0.79
Stream C-AB – A453 (W)	0.0	5.28	0.02	0.7	6.79	0.30
2028 forecast year 'with development'						
Steam B-AC – The Green	78.5	529.37	1.28	1.2	18.04	0.55
Stream C-AB – A453 (W)	0.5	4.35	0.19	0.9	7.21	0.36
2038 forecast year 'with development'						
Steam B-AC – The Green	384.1	2451.51	1.89	7.6	82.63	0.92
Stream C-AB – A453 (W)	0.1	4.65	0.04	0.8	8.51	0.36
2028 forecast year 'with development' 'with Mitigation'						
Steam B-AC – The Green	15.7	113.15	1.00	1.3	20.72	0.57
Stream C-AB – A453 (W)	0.5	4.51	0.19	0.9	7.60	0.37
2038 forecast year 'with development' 'with Mitigation'						
Steam B-AC – The Green	262.9	1728.78	1.70	7.7	88.41	0.93
Stream C-AB – A453 (W)	0.0	5.01	0.02	1.1	9.16	0.42

14.11 The results show that the junction would operate within capacity during all scenarios in the evening peak hour but exceed capacity in the morning peak hour at both the 2028 and 2038 future years, with or without the development. Capacity issues on The Green arm are forecast to be worse in the morning peak in Stage 2B versus Stage 2A because less traffic is forecast to be travelling on the A453 in the former because it does not include for the traffic generated by the draft Local Plan sites and Isley Woodhouse in particular. Because EMFM suggests that this junction works within capacity more traffic is attracted along The Green as a result.

14.12 However, for the reasons presented in previous sections, in reality the impacts will be less because EMFM is overestimating how much traffic will use the junction. Furthermore, when considering that the proposed highway works include capacity improvements at Finger Farm, driver journey times will be much less when routing via the A42 and Finger Farm. Therefore, no mitigation is proposed.

Junction 9 – A453/East Midlands Airport Roundabout

14.13 The previous modelling results show that the A453/East Midlands Airport roundabout is expected to exceed capacity in Stages 1A and 2A but operate within capacity in Stage 1B. This is because traffic from the Isley Woodhouse settlement is having a large impact on the operation of the junction but forms part of the access strategy to that site and is therefore expected to be improved.

14.14 The agreed base Junctions 11 model has been tested for capacity using the Stage 2B forecast year flows. **Appendix 64** includes the Junctions 11 output data, whilst **Table 75** summarises the modelling results.

Table 75. A453/East Midlands Airport Roundabout Junctions 11 Summary Results – Stage 2B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – Walton Hill	0.2	4.66	0.11	0.9	4.76	0.33
Arm 2 – A453 (E)	1.2	5.38	0.35	1.0	5.38	0.32
Arm 3 – A453 (W)	4.4	17.74	0.78	1.5	9.06	0.52
2038 forecast year 'without development'						
Arm 1 – Walton Hill	0.2	4.23	0.11	0.9	4.83	0.35
Arm 2 – A453 (E)	1.8	6.19	0.43	1.6	6.63	0.46
Arm 3 – A453 (W)	3	12.75	0.66	1.3	8.49	0.46
2028 forecast year 'with development'						
Arm 1 – Walton Hill	0.3	4.8	0.11	0.7	4.75	0.33
Arm 2 – A453 (E)	0.8	5.14	0.31	1.1	5.53	0.35
Arm 3 – A453 (W)	8.9	33.07	0.87	1.9	9.69	0.51
2038 forecast year 'with development'						
Arm 1 – Walton Hill	0.3	4.15	0.12	0.8	5.01	0.37
Arm 2 – A453 (E)	1.4	5.77	0.39	2	7.23	0.5
Arm 3 – A453 (W)	3.2	15.15	0.73	1.0	8.12	0.4
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – Walton Hill	0.2	5.40	0.12	0.6	4.74	0.33
Arm 2 – A453 (E)	1.0	5.10	0.32	1.3	5.62	0.37
Arm 3 – A453 (W)	5.7	22.54	0.83	1.3	8.89	0.46
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – Walton Hill	0.2	4.30	0.11	0.9	4.82	0.37
Arm 2 – A453 (E)	1.3	5.75	0.41	1.8	7.29	0.51
Arm 3 – A453 (W)	3.1	14.85	0.69	1.3	8.71	0.44

14.15 Similar to the Stage 1B modelling, the results show that the junction would operate within capacity in all scenarios at Stage 2B. Therefore, the same conclusions remain in that capacity issues are being driven by the Isley Woodhouse development. The impacts of the proposed development are negligible and no mitigation is required.

Junction 10 – A453/Walton Hill Signal Junction

14.16 The previous modelling results show that the A453/Walton Hill signal junction is expected to exceed capacity in Stages 1A and 2A but operate within capacity in Stage 1B. This is because traffic from the Isley Woodhouse settlement is having a large impact on the operation of the junction, which forms part of the A453 that is being realigned as part of the access strategy and so improved.

14.17 The agreed base LinSig model has been tested for capacity using the Stage 2B forecast year flows. **Appendix 65** includes the LinSig output data, whilst **Table 76** summarises the modelling results.

Table 76. A453/Walton Hill Signal LinSig Summary Results – Stage 2B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – Local Road (N)	8.9	17.7	68.1	9.3	17.6	67.8
Arm 2 – A453 (E)	8.8	27.7	68.3	9.9	25.8	67.8
Arm 3 – Walton Hill	7.7	26.2	66.2	4.3	31.8	62.4
	PRC over all lanes = 31.7%			PRC over all lanes = 32.7%		
2038 forecast year 'without development'						
Arm 1 – Local Road (N)	10.0	19.1	72.6	10.9	20.6	74.2
Arm 2 – A453 (E)	10.2	26.0	71.7	11.3	25.5	73.2
Arm 3 – Walton Hill	7.6	30.2	72.4	4.3	35.4	66.0
	PRC over all lanes = 23.9%			PRC over all lanes = 21.3%		
2028 forecast year 'with development'						
Arm 1 – Local Road (N)	10.5	19.1	72.0	9.5	18.0	68.7
Arm 2 – A453 (E)	7.0	22.4	54.0	10.3	25.3	68.6
Arm 3 – Walton Hill	8.6	29.3	71.6	4.4	35.1	67.5
	PRC over all lanes = 25.0%			PRC over all lanes = 31.0%		
2038 forecast year 'with development'						
Arm 1 – Local Road (N)	9.5	18.4	70.5	11.2	21.0	73.7
Arm 2 – A453 (E)	9.7	26.9	70.6	11.7	25.8	73.6
Arm 3 – Walton Hill	7.9	28.7	71.4	4.7	40.6	73.8
	PRC over all lanes = 26.0%			PRC over all lanes = 20.6%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – Local Road (N)	9.7	18.2	68.5	9.7	18.5	69.1
Arm 2 – A453 (E)	7.9	28.3	66.8	10.3	24.9	68.6
Arm 3 – Walton Hill	8.5	25.7	67.4	4.4	35.2	67.0
	PRC over all lanes = 31.4%			PRC over all lanes = 30.3%		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – Local Road (N)	9.6	19.4	71.3	11.3	21.2	75.0
Arm 2 – A453 (E)	9.6	25.8	70.0	11.8	25.7	74.8
Arm 3 – Walton Hill	7.9	28.0	69.8	4.4	36.7	67.0
	PRC over all lanes = 23.3%			PRC over all lanes = 19.9%		

14.18 The results show that the junction would operate within capacity in all scenarios, thereby confirming the conclusions of the Stage 1B modelling. The development would therefore not have a severe impact and no mitigation is required.

Junction 12 – M1 Junction 23

14.19 The previous modelling results showed the junction would operate within capacity in all scenarios at the 2028 year of opening but then exceed capacity at the 2038 future year with or without development. However, the impacts of the development would not be severe.

14.20 The agreed base LinSig model has been tested for capacity using the Stage 2B forecast year flows. **Appendix 66** includes the LinSig output data, whilst **Table 77** summarises the modelling results.

Table 77. M1 Junction 23 LinSig Summary Results – Stage 2B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – M1 SB slip	9.8	30.1	80.2	6.4	29.6	69.6
Arm 2 – A512 (E)	9.9	24.4	69.7	10.6	18.2	71.6
Arm 3 – M1 NB slip	6.2	47.8	75.5	4.6	40.7	65.5
Arm 4 – A512 (W)	9.6	20.9	77.3	5.9	16.1	56.3
	PRC over all lanes = 8.2%			PRC over all lanes = 25.7%		
2038 forecast year 'without development'						
Arm 1 – M1 SB slip	59.8	218.1	110.5	8.5	39.2	84.6
Arm 2 – A512 (E)	25.4	58.5	97.8	15.0	21.6	85.4
Arm 3 – M1 NB slip	9.3	56.5	87.2	12.4	97.4	96.5
Arm 4 – A512 (W)	91.8	192.4	109.2	24.2	43.4	96.6
	PRC over all lanes = -22.8%			PRC over all lanes = -7.3%		
2028 forecast year 'with development'						
Arm 1 – M1 SB slip	10.3	31.2	81.8	7.3	30.3	70.1
Arm 2 – A512 (E)	11.0	26.3	74.6	11.6	20.2	75.7
Arm 3 – M1 NB slip	6.0	46.8	74.1	4.9	44.8	68.1
Arm 4 – A512 (W)	10.6	23.2	81.4	6.8	16.8	61.7
	PRC over all lanes = 7.0%			PRC over all lanes = 18.8%		
2038 forecast year 'with development'						
Arm 1 – M1 SB slip	50.1	173.8	107.4	11.9	46.0	96.8
Arm 2 – A512 (E)	33.7	88.2	101.2	25.4	42.1	96.7
Arm 3 – M1 NB slip	25.7	256.6	110.2	19.7	170.6	104.2
Arm 4 – A512 (W)	95.6	195.7	109.5	78.6	162.0	107.2
	PRC over all lanes = -22.4%			PRC over all lanes = -19.2%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – M1 SB slip	10.0	31.9	83.1	6.6	30.3	70.5
Arm 2 – A512 (E)	10.7	24.4	72.2	10.8	18.6	72.8
Arm 3 – M1 NB slip	6.0	46.6	74.1	4.6	41.6	66.1

Arm 4 – A512 (W)	11.1	24.0	83.0	6.3	16.4	59.0
	PRC over all lanes = 8.1%			PRC over all lanes = 23.6%		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – M1 SB slip	38.4	31.8	104.2	8.7	40.1	85.1
Arm 2 – A512 (E)	24.5	56.1	97.4	15.7	22.4	86.5
Arm 3 – M1 NB slip	15.7	138.4	100.8	9.2	62.6	89.0
Arm 4 – A512 (W)	90.3	179.8	108.5	24.2	45.5	96.8
	PRC over all lanes = -20.8%			PRC over all lanes = -7.6%		

14.21 Similar to previous results, the junction is expected to operate within capacity in all scenarios at the 2028 year of opening, which is the Circular 01/2022 compliant assessment year. At the 2038 future year, the capacity of the junction is expected to improve the PRC increasing from -22.8% to -20.8% in the morning peak hour and see a negligible impact from -7.3% to -7.6% in the evening peak hour. Therefore, no mitigation is required.

Junction 13 – A50 Junction 1

14.22 The previous modelling results showed that the junction would exceed capacity in all scenarios but the development would not have a severe impact. When including the proposed highway mitigation within Stage 2A the results show there would be a betterment in junction performance in all scenarios except the 2038 future year in the evening peak hour.

14.23 The agreed base LinSig model has been tested for capacity using the Stage 2B forecast year flows. **Appendix 67** includes the LinSig output data, whilst **Table 78** summarises the modelling results.

Table 78. A50 Junction 1 LinSig Summary Results – Stage 2B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – B5010	1.4	7.4	54.4	1.4	10.4	51.2
Arm 2 – B6540	7.4	17.6	63.5	7.0	16.2	80.0
Arm 3 – A50 slip road (E)	12.7	49.8	94.1	7.1	22.2	76.9
Arm 4 – Ryecroft Road	0.2	8.4	15.8	0.3	7.4	16.1
Arm 5 – Trent Lane	6.2	18.5	71.1	10.1	26.9	88.0
Arm 6 – A50 slip road (W)	7.7	18.2	86.0	6.5	17.2	77.3
	PRC over all lanes = -4.5%			PRC over all lanes = 2.2%		
2038 forecast year 'without development'						
Arm 1 – B5010	1.4	8.3	55.5	1.5	11.4	53.5
Arm 2 – B6540	9.0	16.6	91.3	11.9	21.6	98.9
Arm 3 – A50 slip road (E)	7.7	23.0	78.9	7.2	20.0	74.2
Arm 4 – Ryecroft Road	0.2	8.0	14.6	0.6	9.3	28.3
Arm 5 – Trent Lane	6.7	19.7	74.0	24.0	71.7	100.1
Arm 6 – A50 slip road (W)	7.8	18.5	86.0	6.0	17.0	72.8
	PRC over all lanes =-3.5 %			PRC over all lanes = -11.2%		

2028 forecast year 'with development'						
Arm 1 – B5010	1.6	8.2	58.9	1.1	8.1	45.1
Arm 2 – B6540	7.7	18.0	87.7	7.4	16.3	83.6
Arm 3 – A50 slip road (E)	13.4	53.6	95.0	7.4	22.4	76.8
Arm 4 – Ryecroft Road	0.2	8.8	16.4	0.3	7.3	15.8
Arm 5 – Trent Lane	5.8	17.8	67.5	10.1	26.7	87.8
Arm 6 – A50 slip road (W)	8.7	19.6	92.5	6.4	17.0	75.6
	PRC over all lanes = -5.6%			PRC over all lanes = 2.5%		
2038 forecast year 'with development'						
Arm 1 – B5010	1.6	9.3	58.6	2.2	12.1	56.7
Arm 2 – B6540	10.0	19.3	66.1	15.6	29.8	100.5
Arm 3 – A50 slip road (E)	8.8	26.2	85.0	8.6	23.5	81.1
Arm 4 – Ryecroft Road	0.3	8.3	15.5	1.0	12.2	43.4
Arm 5 – Trent Lane	6.6	17.8	71.7	50.2	145.7	106.2
Arm 6 – A50 slip road (W)	7.7	16.9	84.5	6.1	15.5	71.3
	PRC over all lanes = -9.4%			PRC over all lanes = -18.0%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – B5010	1.4	7.6	51.9	1.5	10.5	53.2
Arm 2 – B6540	7.4	15.9	84.6	7.5	18.9	78.9
Arm 3 – A50 slip road (E)	7.7	25.4	80.6	7.4	24.9	78.9
Arm 4 – Ryecroft Road	0.2	8.0	14.6	0.3	6.9	15.2
Arm 5 – Trent Lane	5.7	20.3	67.4	14.2	62.3	96.3
Arm 6 – A50 slip road (W)	7.2	17.9	82.1	7.0	19.7	82.4
	PRC over all lanes = 6.4%			PRC over all lanes = -11.8%		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – B5010	1.4	8.3	53.4	1.4	10.9	51.3
Arm 2 – B6540	9.1	16.3	67.6	11.6	23.4	98.9
Arm 3 – A50 slip road (E)	5.9	17.3	67.1	6.9	21.3	74.5
Arm 4 – Ryecroft Road	0.2	7.6	13.0	1.0	10.3	41.9
Arm 5 – Trent Lane	6.9	20.1	75.2	22.7	68.0	99.7
Arm 6 – A50 slip road (W)	7.4	18.3	82.9	5.9	17.0	71.0
	PRC over all lanes = -2.2%			PRC over all lanes = -10.7%		

14.24 The results show that the junction would exceed capacity in all scenarios with or without development. However, with the proposed Highway Works included for, the junction would experience improved capacity at the 2028 forecast year of opening in the morning peak hour, with PRC's increasing from -4.5% (Stage 1B) to 6.4% (Stage 2B). There would however be some deterioration in the evening peak hour with the PRC reducing from 2.2% (1B) to -11.8% (2B). Notwithstanding this, the maximum queue lengths on the A50 would be 7.4 and 7.0 pcus at Stage 2B which would remain well within the length of the slip roads. Furthermore, by 2038 there would be benefits on the capacity of the junction in both peak hours. Therefore, no mitigation is required.

Junction 14 – M1 Junction 25

14.25 The previous modelling results showed that the junction would exceed capacity in all scenarios however the impacts of the development would not be severe and when

including for the mitigation at Stage 2A there would be an overall betterment of no change to the junction PRC at the 2028 year of opening.

14.26 The agreed base LinSig model has been tested for capacity using the Stage 2B forecast year flows. **Appendix 68** includes the LinSig output data, whilst **Table 79** summarises the modelling results.

Table 79 M1 Junction 25 LinSig Summary Results – Stage 2B

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	DoS (%)	Q (pcu)	Delay (secs)	DoS (%)
2028 forecast year 'without development'						
Arm 1 – M1 slip (N)	108.7	432.5	130.7	75.8	318.8	117.5
Arm 2 – A52 (E)	15.5	33.7	84.3	65.2	279.0	114.1
Arm 3 – Bostocks Lane (S)	85.9	635.8	144.5	41.0	272.5	112.8
Arm 4 – M1 slip (S)	71.2	248.3	114.4	12.3	30.4	87.9
Arm 5 – A52 (W)	5.9	12.2	48.1	5.3	25.8	56.0
Arm 6 – Bostocks Lane (N)	133.8	699.2	154.3	9.4	51.7	91.0
	PRC over all lanes = -71.5%			PRC over all lanes = -30.5%		
2038 forecast year 'without development'						
Arm 1 – M1 slip (N)	153.2	681.8	148.8	243.2	689.2	155.3
Arm 2 – A52 (E)	109.0	660.8	146.9	170.2	745.0	158.1
Arm 3 – Bostocks Lane (S)	12.8	62.4	93.5	160.3	718.1	156.0
Arm 4 – M1 slip (S)	229.7	667.0	149.5	115.5	658.1	148.8
Arm 5 – A52 (W)	8.0	27.6	71.3	75.1	646.5	147.0
Arm 6 – Bostocks Lane (N)	137.3	691.5	153.3	2.9	16.8	62.1
	PRC over all lanes = -70.3%			PRC over all lanes = -75.6%		
2028 forecast year 'with development'						
Arm 1 – M1 slip (N)	19.1	49.7	94.3	74.4	338.9	117.5
Arm 2 – A52 (E)	86.6	401.1	122.7	64.6	276.8	113.9
Arm 3 – Bostocks Lane (S)	67.1	475.1	128.7	40.4	277.4	113.1
Arm 4 – M1 slip (S)	140.0	473.9	138.6	13.6	33.2	90.3
Arm 5 – A52 (W)	86.2	561.4	138.0	5.0	25.5	54.7
Arm 6 – Bostocks Lane (N)	111.6	547.8	137.7	10.0	55.2	91.9
	PRC over all lanes = -54.0%			PRC over all lanes = -30.5%		
2038 forecast year 'with development'						
Arm 1 – M1 slip (N)	53.4	194.2	108.1	261.5	732.4	156.4
Arm 2 – A52 (E)	10.5	28.7	70.5	177.3	793.3	164.6
Arm 3 – Bostocks Lane (S)	73.3	549.8	136.0	161.4	753.7	160.6
Arm 4 – M1 slip (S)	30.7	53.4	98.9	17.7	47.6	95.3
Arm 5 – A52 (W)	5.2	11.5	44.0	7.4	26.5	67.4
Arm 6 – Bostocks Lane (N)	137.0	541.1	96.6	7.7	60.4	89.9

	PRC over all lanes = -52.2%			PRC over all lanes = -82.9%		
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – M1 slip (N)	28.6	92.2	100.5	68.9	297.5	115.0
Arm 2 – A52 (E)	14.7	28.7	79.9	65.7	281.1	114.2
Arm 3 – Bostocks Lane (S)	97.2	818.4	167.7	45.3	316.1	116.2
Arm 4 – M1 slip (S)	8.5	19.7	74.7	14.0	34.3	91.1
Arm 5 – A52 (W)	8.0	20.7	64.2	5.4	26.1	57.5
Arm 6 – Bostocks Lane (N)	148.8	791.1	167.5	11.1	66.3	94.4
	PRC over all lanes = -86.3%			PRC over all lanes = -29.1%		
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – M1 slip (N)	12.3	30.7	83.7	130.2	444.1	126.8
Arm 2 – A52 (E)	12.0	38.9	81.5	83.9	401.7	123.4
Arm 3 – Bostocks Lane (S)	74.4	505.5	132.1	56.2	418.3	124.4
Arm 4 – M1 slip (S)	296.7	782.0	165.6	29.3	65.0	99.5
Arm 5 – A52 (W)	9.2	30.1	76.8	5.1	21.6	50.5
Arm 6 – Bostocks Lane (N)	152.8	780.7	164.9	30.4	164.0	104.8
	PRC over all lanes = -84.0%			PRC over all lanes = -40.9%		

14.27 The results show that there would be an improvement in capacity during both the 2028 and 2038 assessment years in the evening peak hour as a result of the EMG2 Project. There would be some further deterioration in the morning peak hour, with the PRC reducing from -71.5% to -86.3% at the 2028 year of opening. However, queues on the M1 and A52 arms would fall well within the capacity of the slip roads and the worst-case queue on Bostocks Lane would see a negligible increase from 133.8 PCUs to 148.8 PCUs, which would not materially affect the operation of this arm. There would also be an improvement in the operation of the junction in the evening peak hour. Therefore, no mitigation is required.

Junction 15 – Station Road/Broad Rushes Roundabout

14.28 The previous modelling results show that the Station Road/Broad Rushes roundabout is expected to operate within capacity in Stage 2A, when including for the proposed mitigation.

14.29 The agreed base Junctions 11 model has been tested for capacity using the Stage 2B forecast year flows. **Appendix 69** includes the Junctions 11 output data, whilst **Table 80** summarises the modelling results.

Table 80. Station Road/Broad Rushes Roundabout Junctions 11 Summary Results

Arms	Weekday AM Peak			Weekday PM Peak		
	Q (pcu)	Delay (secs)	RFC	Q (pcu)	Delay (secs)	RFC
2028 forecast year 'without development'						
Arm 1 – Station Road (N)	7.0	14.71	0.81	3.3	9.29	0.69
Arm 2 – Station Road (S)	0.9	9.71	0.46	6.3	33.50	0.86
Arm 3 – Broad Rushes	2.9	14.58	0.69	2.9	15.58	0.71
2038 forecast year 'without development'						
Arm 1 – Station Road (N)	5.1	12.22	0.75	2.9	8.13	0.65
Arm 2 – Station Road (S)	1.7	12.32	0.56	6.9	35.60	0.87
Arm 3 – Broad Rushes	3.0	14.15	0.71	3.3	18.88	0.76
2028 forecast year 'with development'						
Arm 1 – Station Road (N)	7.8	17.77	0.83	3.5	8.73	0.69
Arm 2 – Station Road (S)	1.0	9.75	0.46	5.2	29.59	0.85
Arm 3 – Broad Rushes	3.0	16.25	0.71	2.9	15.20	0.72
2038 forecast year 'with development'						
Arm 1 – Station Road (N)	6.6	14.40	0.80	3.7	9.72	0.70
Arm 2 – Station Road (S)	1.8	13.19	0.59	14.0	64.50	0.95
Arm 3 – Broad Rushes	3.1	16.23	0.73	10.0	47.31	0.94
2028 forecast year 'with development' 'with Mitigation'						
Arm 1 – Station Road (N)	5.0	12.70	0.76	3.0	8.56	0.66
Arm 2 – Station Road (S)	1.8	11.57	0.54	5.6	30.47	0.86
Arm 3 – Broad Rushes	2.3	12.72	0.64	4.8	25.17	0.83
2038 forecast year 'with development' 'with Mitigation'						
Arm 1 – Station Road (N)	0.3	4.66	0.11	0.9	5.70	0.34
Arm 2 – Station Road (S)	1.8	7.86	0.55	5.9	24.17	0.85
Arm 3 – Broad Rushes	1.5	6.80	0.46	0.5	4.76	0.28

14.30 The results show that the junction would operate within capacity in all scenarios, thereby confirming the conclusions of the Stage 1B modelling. The development would therefore not have a severe impact and no further mitigation is required.

15. CONSTRUCTION TRAFFIC ASSESSMENT

15.1 AECOM issued the EMFM Forecasting Report for the construction traffic scenario in July 2025, a copy of which is included in **Appendix 74**. This report considers the impacts of the construction traffic forecasts at a 2028 future year on top of the Stage 1A without development flows i.e. including traffic from the Ratcliffe on Soar redevelopment, EMIP and draft Local Plan allocations in the baseline, in line with the planning data assumptions at Proforma v14 and uncertainty log v7 (**Appendix 8**).

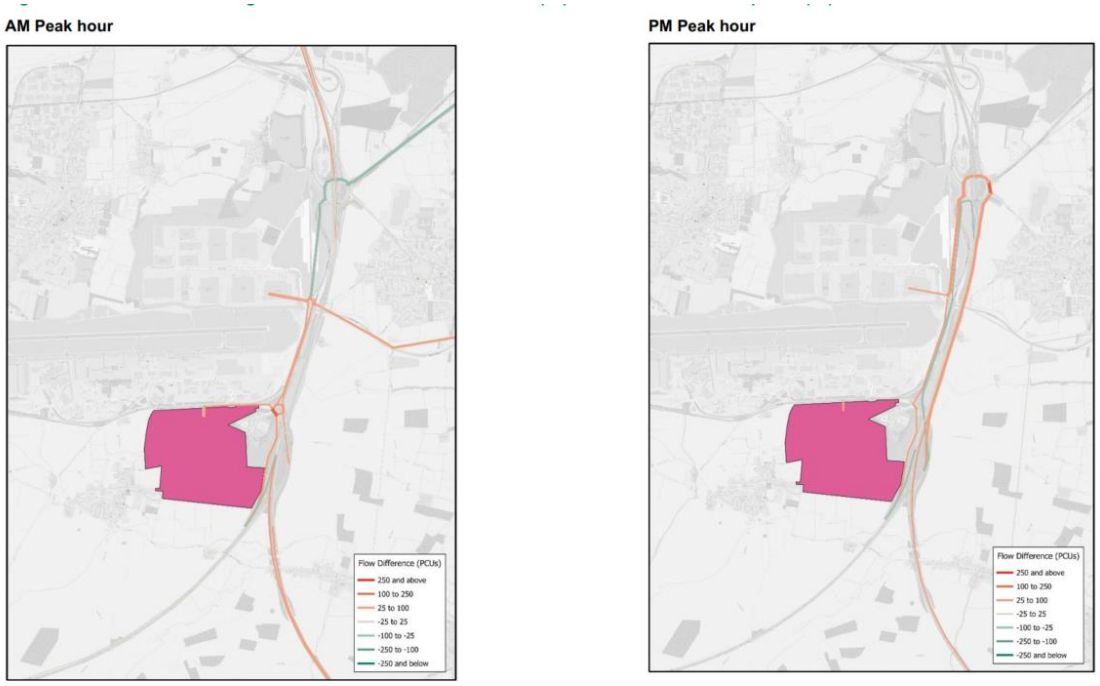
15.2 The traffic flow forecasts during the construction phase were presented to the TWG in Technical Note EMG2-BWB-GEN-XX-RP-TR-0013 Revision P3 (**Appendix 12**). These were extracted by AECOM and input into EMFM as per the extract shown in **Table 81**, with all traffic from 'EMGP2' loaded from the EMG2 Main Site zone and all 'EMGP1' and 'External Highway Works' traffic loaded from the EMG1 zone.

Table 81: Development Trip Generation – Construction Traffic (EMFM Model)

	Car and Van (in vehicles)			Light Vehicle (in vehicles)			HGV (in vehicles)			Total (in vehicles)		
	Departing (Out)	Arriving (In)	Total	Departing (Out)	Arriving (In)	Total	Departing (Out)	Arriving (In)	Total	Departing (Out)	Arriving (In)	Total
EMGP1												
AM Peak hour (08:00 to 09:00)	3	13	**16**	1	1	**2**	4	4	**8**	8	18	**26**
PM Peak hour (17:00 to 18:00)	19	3	**22**	0	0	**0**	1	1	**2**	20	4	**24**
EMGP2												
AM Peak hour (08:00 to 09:00)	7	34	**40**	2	2	**4**	7	7	**14**	16	43	**58**
PM Peak hour (17:00 to 18:00)	51	9	**60**	0	0	**0**	1	1	**2**	52	10	**62**
External Highway Works												
AM Peak hour (08:00 to 09:00)	3	10	**13**	1	1	**2**	5	5	**10**	9	16	**25**
PM Peak hour (17:00 to 18:00)	15	3	**18**	0	0	**0**	1	1	**2**	16	4	**20**
Total Construction Traffic												
AM Peak hour (08:00 to 09:00)	12	57	**68**	3	3	**6**	17	17	**34**	32	77	**108**
PM Peak hour (17:00 to 18:00)	85	14	**99**	1	1	**2**	3	3	**6**	89	18	**107**

15.3 The construction traffic was distributed across the network using the gravity model in EMFM. To reflect the longer distance nature of HGV construction traffic, the trip distribution for HGVs was adjusted such that shorter distance trips of less than 8 kilometres were manually excluded. All HGV assignment avoided routes with existing weight restrictions. Plots showing the forecast flow changes during both peak hours are provided in **Figure 33**.

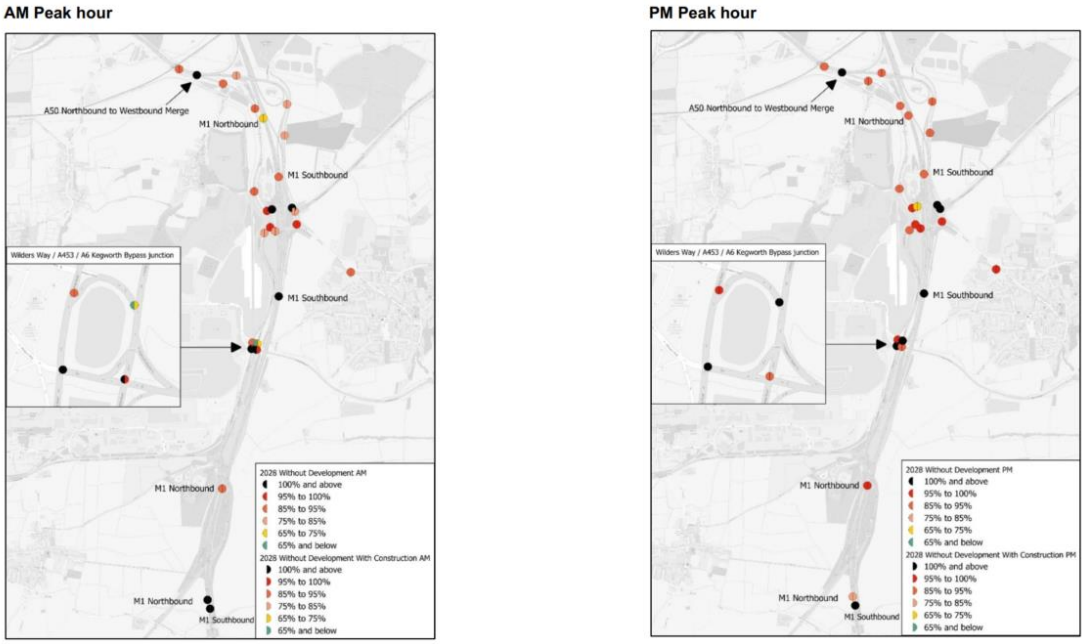
Figure 33. EMFM Forecast Flow Changes (Construction Traffic)



15.4 The plots show that there are increases predicted on the M1 in both peak periods and some evidence of traffic being displaced on the A453 near M1 Junction 24, although this is very few trips. The EMFM forecasting report states that "*the impact of construction traffic on the local road network is forecast to be minimal*".

15.5 The EMFM Forecasting Report provides V/C ratios showing the performance of the worst-case node comparison 'without development' (left half of circle) against 'with construction traffic' (right half of circle). An extract of the V/C ratios for both peak hours is provided at **Figure 34**.

Figure 34. Construction Traffic Modelling Volume-Capacity Ratios



15.6 The EMFM Forecasting Report concludes that the forecast maximum node V/C ratios show little impacts from the construction traffic in both peak hours. Whilst there would be a slight increase at the A453/Wilder's Way/A6 Kegworth Bypass junction in the morning peak hour, this is still expected to operate within capacity (75% V/C ratio). There would be no significant worsening of capacity at any location in the vicinity of the site.

15.7 Overall, it can be concluded that the construction traffic flows forecast to be generated will have a negligible impact on the existing highway network. As a result, no temporary highway mitigation is required, however compliance is required to the measures set out in the CTMP, a copy of which is included at **Appendix 16**.

16. SUMMARY AND CONCLUSIONS

16.1 BWB Consulting Ltd (BWB) has been instructed by Segro to provide highways and transportation advice and prepare a Transport Assessment in support of a second phase of its East Midlands Gateway Logistics Park (EMG1), which is a Strategic Rail Freight Interchange located to the north of East Midlands Airport. It also forms part of the Government's East Midlands Freeport designation.

16.2 The proposed second phase to EMG1 (known as EMG2) includes the development of the EMG2 Main Site which has been identified by the Secretary of State as a project of national significance and is the subject of an application for a Development Consent Order (DCO), along with significant highway works some of which are a Nationally Significant Infrastructure Project in their own right. Further development and infrastructure improvements at EMG1 are also proposed which are the subject of a Material Change Order (MCO) to the EMG1 DCO.

16.3 This Transport Assessment has been produced following collaboration with a Transport Working Group (TWG) formed in April 2022. The TWG includes representatives from National Highways (NH), Leicestershire County Council (LCountyC) and Nottinghamshire County Council (NCountyC), alongside other highway authorities, consultant representatives and project team. The purpose of the TWG is to oversee the comprehensive transport modelling work as well as allowing discussions on other aspects of the development including the sustainable transport strategy and package of mitigation required to accommodate EMG2 Project.

16.4 A series of transport related documents and Technical Notes have been produced seeking to agree key details with the TWG ahead of the DCO/MCO applications being submitted. A large number of agreements have been made with NH and NCountyC in particular. LCountyC have been party to the discussions and technical information and have agreed with certain details but from January 2025 confirmed they will not formally sign off any documents at this stage of the process.

16.5 The EMG2 Project includes the EMG2 Works which is the built development on the EMG2 Main Site comprising 300,000sqm B2/B8 ground floorspace (assessed as 60,000sqm B2 and 240,000sqm B8) plus a mezzanine allowance of 200,000sqm. The EMG2 Works also include the provision of a new Community Park. The EMG2 Project also includes works on EMG1 comprising additional B8 warehousing development on Plot 16 of 26,500sqm ground floorspace plus a mezzanine allowance 3,500sqm. The EMG1 Works also seek permission to increase the permitted height of the cranes at the EMG1 rail freight terminal and improvements to the public transport interchange, site management building and EMG1 pedestrian crossing (the MCO scheme). Segro is seeking BREEAM 'Excellent' across all warehousing units.

16.6 A Sustainable Transport Strategy has been developed which involves significant on-site and off-site infrastructure improvements to the surrounding active travel routes. This includes the delivery of a new shared footway/cycleway along the A453 between EMG2 and EMG1, along with works to the Hyam's Lane public footpath that bisects the EMG2 Main Site to provide a dedicated cycle link that will form part of an extension to the existing National Cycle Route 15. There are also significant other improvements to crossing facilities on the A453, Public Rights of Way improvements and provision of a

purpose-built bus interchange accommodating both existing public bus services and a dedicated electric shuttle service.

16.7 The EMG2 Main Site will be served via a fourth arm from the existing A453/Hunter Road roundabout. There will also be an emergency access route via Hyam's Lane. The EMG1 Works at Plot 16 will be served by the existing EMG1 access via Wilder's Way. All access points have been designed in accordance with adopted design standards within the Leicestershire Highway Design Guide and the Design Manual for Roads and Bridges and achieve the required geometry, visibility and have been tested by way of swept path analysis and junction capacity assessments.

16.8 The EMG2 Works is forecast to generate 929 vehicle trips in the morning peak hour (including 174 HGVs) and 1,065 vehicle trips in the evening peak hour (including 155 HGVs) having adopted a robust methodology to determine such flows originally earlier in the DCO process. The Framework Travel Plan seeks to reduce total vehicle trips by 24%, however all transport modelling excluded the benefits of the Framework Travel Plan to ensure a robust assessment. Furthermore, recent survey data at EMG1 shows that actual trip rates being generated are 33.0% less in the morning peak hour and 45.8% less in the evening peak hour compared to what has been assessed in the transport modelling. hence a worse-case assessment has been adopted in the TA.

16.9 Strategic transport modelling has been undertaken using LCountyC's 2019 East Midlands Freeport Model (EMFM), which is a cordoned part of the larger Pan Regional Transport Model. This underwent a rigorous base model validation exercise before testing the forecast year scenarios. The forecast year modelling was undertaken in four stages, referred to as 'Stage 1A/2A modelling' and 'Stage 1B/2B modelling' which adopt different planning data assumptions in the uncertainty logs and baseline traffic. The key difference is the inclusion (1A/2A) and exclusion (1B/2B) of the Ratcliffe on Soar Power Station redevelopment over and above that permitted in the LDO and draft Local Plan allocations. The two stages are summarised below:

- **Stage 1A modelling** (Proforma v14, Uncertainty Log v7, included at **Appendix 8**) = 2028/2038 forecast years with and without EMG2, including, consented and committed sites as well as draft Local Plan allocation sites, EMIP and full redevelopment of the Ratcliffe on Soar Power Station site, part of which is authorised by a Local Development Order (LDO).

- **Stage 1B modelling** (Proforma v14a, Uncertainty Log v7a, included at **Appendix 38**) = 2028/2038 forecast years with and without EMG2, including consented and committed sites but excluding the draft Local Plan allocation sites, EMIP and Ratcliffe on Soar Power Station site redevelopment proposals beyond which is currently able to proceed under the LDO.

- **Stage 2A modelling** = as per Stage 1A but with the inclusion of the proposed Highway Works, details of which are presented in Section 12.

- **Stage 2B modelling** = as per Stage 1B but with the inclusion of the proposed Highway Works, details of which are presented in Section 12.

16.10 As required by the Highway Authorities the Transport Assessment adopted the Stage 1A/2A modelling outputs as the core scenario as worst-case assessment in terms of

traffic impacts. The Stage 1B/2B modelling outputs were adopted as a sensitivity test at a select number of junctions where further analysis was required. A 2028 forecast year of opening and 2038 forecast future year were adopted for the transport modelling.

16.11 The EMFM modelling also tested the forecast traffic flows during the construction stages of the development. This showed that there would be no significant impacts on any part of the network. Consequently, the detailed junction modelling and highway mitigation focussed on the operational impacts of the development.

16.12 To identify impacts from the EMG2 Works, strategic transport modelling using EMFM was undertaken followed by further detailed analysis of key junctions using VISSIM micro-simulation and industry standard LinSig and Junction 11 software. The VISSIM model network included the A453 between the A453/Hunter Road roundabout (EMG2 Main Site access) and M1 Junction 24, including Finger Farm roundabout (M1 Junction 23A) and the A453/A6/EMG1 access junction.

16.13 The transport modelling showed that the EMG2 Works would, without mitigation, have capacity impacts across the VISSIM model network area, particularly at M1 Junction 24 which is expected to experience high levels of congestion and delay. Whilst there are predicted to be capacity issues at other junctions further afield, the impacts of the EMG2 Works were more limited.

16.14 To mitigate the impacts of the additional traffic from the EMG2 Works, a comprehensive package of Highway Works is proposed comprising the following:

- M1 Junction 24 improvements comprising:
  - Construction of a new free-flow link road from the M1 northbound at J24 to provide a direct link to the A50 westbound, which will cross over the A453, and will include the A50 westbound merge alterations;
  - Widening of the A50 eastbound link at J24 and other related works and traffic management measures in this location;
  - Alteration of the western side of the J24 roundabout to provide three lanes from the M1 northbound to A453 northbound through the junction, two lanes from the A453 northbound to the M1 northbound through the junction and removal of the segregated left-turn lane from the A453 northbound to the A50 westbound post feedback from NH;
  - Signing and lining amendments on the east side of the J24 roundabout and the A453 southbound approach;
  - Provision of new M1 northbound exit to the A50 and associated improvements to gantries signage, signals and road markings on the M1; and
  - Changes to the signage on the M1 northbound before J23A to sign the A50 via the new M1 J24 link road rather than via J23A as at present.
- A6 Kegworth Bypass/A453 Junction Improvements providing widening at the EMG1 roundabout to increase junction capacity.

- Finger Farm improvements including widening of the A453 westbound exit to extend the distance of two lanes.

16.15 The proposed Highway Works were tested in EMFM which showed that the Strategic Road Network would be able to accommodate an additional 2,067 vehicles during the peak hour periods in 2028 and 2,153 vehicles during the peak hour periods in 2038. This reduces traffic on a large number of local roads, as well as the A453 corridor between Finger Farm roundabout and M1 Junction 24. The Highway Works are expected to reduce delays on the M1 Junction 24 circulatory and EMG1 roundabout. Overall, there would be significant benefits to the operation of the Strategic Road Network in the vicinity of the site, as well as benefits on large parts of the local road network.

16.16 The VISSIM micro-simulation modelling demonstrates that, in summary, with the comprehensive mitigation strategy included for, the highway network within the VISSIM model, extending from the EMG2 site access to M1 Junction 24, would, overall, provide significant benefit. The standalone off-site junction capacity assessments confirmed that no further mitigation is required.

16.17 A detailed analysis of the Personal Injury Collision (PIC) records was undertaken across a comprehensive study area surrounding the site. The PIC analysis identified potential safety issues at the following three locations:

- **A453/A6/EMG1 access junction** – a cluster of PICs have been recorded due to turning movements from the A6 to EMG1 colliding with drivers travelling southbound on the A453. One of the PICs was fatal.

- **M1 Junction 24** – a cluster of PICs have been recorded on the M1 northbound off-slip on approach to the roundabout.

- **A453/The Green** – a cluster of PICs have been recorded due to right turning movements from the A453 west into The Green. This appears to be due to the location of the junction within a dip in the carriageway and potential lack of signage or warnings. However, in looking at historic Google Street View records, the tourist sign to the 'Queen's Head' highlighting a left turn into The Green from the east was obstructed by overgrown vegetation until 2023 and since then there have been no PICs occurring through westbound travelling vehicles. There appear to have been improvements to the warning signs for eastbound vehicles between 2017 and 2020, which appears to have slowed the rate of collisions.

16.18 In addition to addressing the capacity impacts of the EMG2 Works, the proposed Highway Works seek to improve safety across the network and at the above three locations in particular. The proposed Highway Works would reduce traffic flows and queueing on the M1 northbound off-slip to Junction 24 and at the A453/A6 Kegworth Bypass roundabout. There should also be no significant worsening on the operation of the A453/The Green junction in reality, even if there is a disconnect between what the standalone Junctions 11 modelling of the junction is showing versus that in EMFM.

16.19 SEGRO has confirmed that they accept a requirement for the proposed Highway Works to be in place prior to occupation of any building on the EMG2 Main Site. This will ensure

that there will be no impacts on the surrounding highway network, noting that the development will be built out in phases in line with demand.

16.20 The impact of construction traffic has been undertaken using EMFM which concluded that such traffic flows will have a negligible impact on the existing highway network. The measures and procedures outlined in the Construction Environmental Management Plan (and supporting Construction Traffic Management Plan) will further ensure that impacts during the construction phase are limited.

16.21 In summary, it is concluded that the EMG2 Project (inclusive of the proposed Highway Works), provide comprehensive highway mitigation, active travel works, public transport improvements and Public Rights of Way works, would comply with the National Policy Statement for National Networks and the National Planning Policy Framework. In particular there would be benefits to the operation and capacity of the existing highway network surrounding the site and improvements to highway safety at locations with existing issues, all of which would be further improved when considering the positive effects of the Framework Travel Plan and associated reduction in traffic. Therefore, the EMG2 Project is considered to comply with current national and local policy requirements and design standards.