Tritax Symmetry (Hinckley) Limited

HINCKLEY NATIONAL RAIL FREIGHT INTERCHANGE

The Hinckley National Rail Freight Interchange Development Consent Order

Project reference TR050007

Environmental Statement
Volume 2: Appendices

Appendix 8.1 Transport Assessment (part 1 of 20)

Document reference: 6.2.8.1B

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Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 Regulation 14

This document forms a part of the Environmental Statement for the Hinckley National Rail Freight Interchange project.

Tritax Symmetry (Hinckley) Limited (TSH) has applied to the Secretary of State for Transport for a Development Consent Order (DCO) for the Hinckley National Rail Freight Interchange (HNRFI).

To help inform the determination of the DCO application, TSH has undertaken an Environmental Impact Assessment (EIA) of its proposals. EIA is a process that aims to improve the environmental design of a development proposal, and to provide the decision maker with sufficient information about the environmental effects of the project to make a decision.

The findings of an EIA are described in a written report known as an Environmental Statement (ES). An ES provides environmental information about the scheme, including a description of the development, its predicted environmental effects and the measures proposed to ameliorate any adverse effects.

Further details about the proposed Hinckley National Rail Freight Interchange are available on the project website:

http://www.hinckleynrfi.co.uk/

The DCO application and documents relating to the examination of the proposed development can be viewed on the Planning Inspectorate's National Infrastructure Planning website:

https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/hinckley-national-rail-freight-interchange/

DOCUMENT ISSUE RECORD

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1	18/11/21	First Draft Interim Assessment	Petr Jandik	Malcolm Ash	Shirley Dumigan
2	25/11/21	First Draft Interim Assessment Amends	Petr Jandik	Malcolm Ash	Shirley Dumigan
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4	04/10/22	First Draft Transport Assessment	Joanne Kerry	Malcolm Ash	Shirley Dumigan
5	20/10/22	Second Draft Transport Assessment	Joanne Kerry	Malcolm Ash	Shirley Dumigan
6	15/03/23	DCO Submission Transport Assessment	Joanne Kerry	Malcolm Ash	Shirley Dumigan
7	07/09/23	Update to DCO Submission Transport Assessment: • Tables 7.1 to 7.4 & Figures 7-2 and 7-3 to include J55. • Table 7.4 also includes a correction to J30 comment and further notes added for clarification. (Part 17 to 20), also updated as above) APP-155 to APP-158. • Correction to Table 8-10 in line with 7-1 to 7-4 updates and Appendix 11 (Part 12b of 20), APP-150 and removal of J46 A47 Dans Lane from Table 8-10. • Appendix 8 – Furnessing Methodology updated with clarifications added (Part 9 of 20) APP-146	AJ Oakes	Malcolm Ash	Shirley Dumigan
8	05/10/2023	Update to DCO Submission Transport Assessment: • Update to paragraph 2.26. • Updates to include job ranges in paragraphs 1.4,5.1 and 10.4 • Removal of job number from paragraph 6.37	AJ Oakes	Malcolm Ash	Shirley Dumigan

		• Corrections on totals in Tables 4-6 • Additional clarification on MMQ in para 8.8 • Inclusion of J30 A5 Higham Lane in Chapter 8 • Update to paragraph 9.14 text description • Appendix 13 – Mitigation works plans, revision of plans HRF-BWB-GEN-XX-DR-TR110 and TR111 to reflect DCO Highway Works Plan 2.4G.			
9	14/11/2023	Update to DCO Submission Transport Assessment: • Inclusion of J5 and J9 in Chapter 8 • Appendix 11 (Part 12a of 20), addition of J5 and J9	AJ Oakes	Malcolm Ash	Shirley Dumigan

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1. INTRODUCTION

Introduction

1.1. BWB Consulting (BWB) has been instructed by Tritax Symmetry (Hinckley) Ltd to provide highways and transport advice and prepare a Transport Assessment (TA) report to support the DCO submission for the proposed National Rail Freight Interchange at Hinckley, Leicestershire (HNRFI).

1.2. This report is for the purposes of submission as an appendix to the Environmental Statement (ES). The TA has been written to consider the development proposals and their potential impact on the surrounding area from a traffic and transportation perspective.

Background

1.3. The Main HNRFI Site lies 3 km to the north-east of Hinckley, in a level area of mixed farmland to the north-west of Junction 2 of the M69. The railway between Leicester and Hinckley on the north-western boundary of the site is on Network Rail's strategic freight network, linking the west coast and east coast main lines and forming a primary link between Felixstowe and the Midlands and North. The indicative site layout is shown below in Figure 1-1 and a copy is included within Appendix 1 of this TA (Document Reference 6.2.8.1.1).

Figure 1-1: Illustrative Masterplan

1.4. Hinckley National Rail Freight Interchange (NRFI) is a proposed B8 (warehousing) employment development and National Rail Freight Interchange located to the north-west of M69 Junction 2, to the north-east of Hinckley. With a capacity of 850,000m2 of employment land, this development is expected to generate between 8,400 and 10,400jobs.

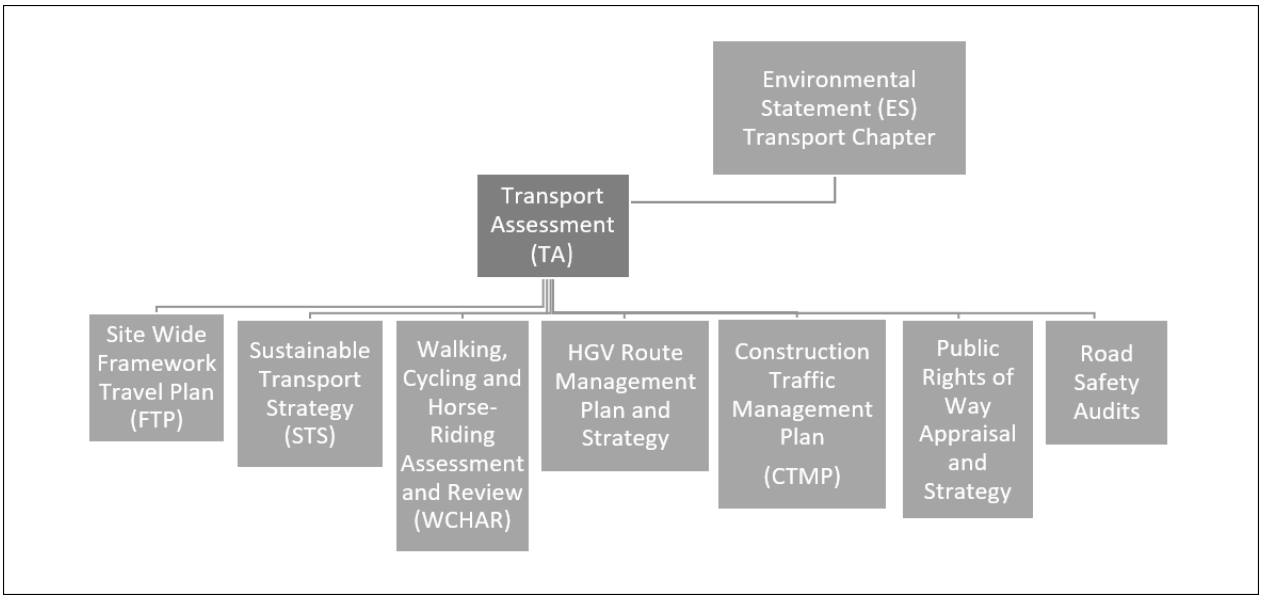
1.5. The development is deemed to be a Nationally Significant Infrastructure Project (NSIP). As such a Development Consent Order (DCO) application is to be determined by the Secretary of State, with the local authorities (planning and highways) and National Highways being important consultees to the process.

Report Structure

1.6. This Transport Assessment considers transport related issues and strategy in relation to the proposed development. It forms a part of a suite of documents for the DCO submission. It is included as an appendix to the ES.

1.7. The following diagram describes the relationship between the series of transport related documents.

Figure 1-2: Transport Related Documents



1.8. Following this introduction, the Transport Assessment is structured as follows:

- **Section 2**: Scoping – This section sets out the rigorous and iterate scoping discussions, workshops and meetings with the relevant Highway and Planning Authorities undertaken to set and agree the parameters of assessment. It also summarises the consultation process from which stakeholder and public views and concerns have been taken into consideration.
- **Section 3**: Policy Context – Summarises the key national and local planning policies relating to transport within the context of the scale and location of

the proposed development.

- **Section 4**: Existing Conditions – Describes the local highway network and the existing sustainable travel facilities;
- **Section 5**: Proposed Development – Provides details of the proposed development, access arrangements, parking provision and how the site will be serviced;
- **Section 6**: Trip Generation, Distribution and Assignment – Quantifies the estimated multi-modal trip generation of the development proposals;
- **Section 7**: Assessment Parameters – Summarises the key assumptions relating to background traffic growth, committed developments and assessment year that have been accounted for as part of the TA;
- **Section 8**: Highway Impact Assessment – Quantifies the traffic impact of the proposed development on the operation of the local highway network;
- **Section 9**: Highway Mitigation - Identifies any mitigation measures that may be required to off-set the traffic impacts of the proposal, demonstrates their impact and integrates them into the overall design; and
- **Section 10**: Summary and Conclusions – Summarises the findings of the report and offers conclusions in relation to the proposed development impact.

2. SCOPING

Introduction

2.1. The following paragraphs set out the rigorous, ongoing iterate scoping exercise, comprising of discussions, workshops and meetings with the relevant Highway and Planning Authorities undertaken to set and agree the parameters of assessment. It also summarises the consultation process from which stakeholder and public views and concerns have been taken into consideration.

The Transport Working Group (TWG)

2.2. In order to agree the technical and geographic scope of the proposed Main Hinckley NRFI development BWB established a Transport Working Group (TWG) to engage with the key stakeholders from early phases of the project. The members of the TWG are set out below:

- National Highways (NH), formerly Highways England (HE);
- AECOM (National Highways' term consultant);
- Leicestershire County Council (LCC);
- Warwickshire County Council (WCC);
- Leicester City Council (LCiC);
- Coventry City Council (CCC);
- Blaby District Council (BDC);
- Hinckley & Bosworth Borough Council (HBBC);
- Tritax Symmetry (Hinckley) Ltd (TSH)(the Client); and
- BWB Consulting (the client's Transport and Highway consultants.

2.3. The TWG meet monthly, these meetings have been ongoing from November 2020 to oversee the process and discuss and agree key elements of the Transport Assessment methodology.

2.4. The objectives of the TWG are:

- to provide a forum for consultation with the regulatory stakeholders; and
- to allow agreement, in a phased and methodical process, of the key components of the transport works that are required to support the DCO submission and ES Chapter.

2.5. Through detailed consideration and consultation, the TWG have agreed the following:

- To date trip generation, distribution, planning and infrastructure uncertainty logs have been reviewed and signed off by the key highway authorities. Base modelling was subject to further analysis by the TWG and was approved in March 2022.

- Additional analysis of throughputs at Narborough Station and Level Crossing have been taken into consideration, based on discussions with the TWG. Further detail was provided by Network Rail.

2.6. The TWG group monthly meetings provide a platform to inform the wider authorities of the modelling progress, share information and agree timescales for agreement/submissions that are key for the Transport Assessment (TA). Three sessions within the year have been used to review comments on the Base and Forecast modelling with the Leicestershire County Council Network Data Intelligence Framework Modelling team (September, October 2021 and April 2022). This enabled a clearer communication of amendments and outputs from the base and forecast model runs.

Other Consultation

2.7. There have also been a series of consultation meetings with Highway Development Management team (LCC HDM) under a representative from HBBC on a fortnightly basis.

2.8. Individual meetings with WCC/NH have been on an ad-hoc basis to discuss the assessment approach and agreements to the modelling both on the Strategic Road Network (SRN) and in Warwickshire.

2.9. Specific area-based discussions have happened with LCiC and the planning authorities in Blaby and Hinckley and Bosworth. See Table 2-2 for a summary of the consultation with the TWG and respective authorities.

2.10. A meeting was held with representatives of LCC and the Active Travel teams in August 2021 for the public and sustainable transport inputs to the strategy. This followed on from discussions with Arriva buses in 2021 and earlier engagement with Stagecoach buses in 2019 regarding services in the area and the potential ability to link the site to new and existing services. Further meetings have taken place with Arriva to discuss options specific to the X6 service alongside engagement with Vectare, the provider of demand responsive services in South Leicestershire. Both companies have fed information which has helped formulate the public transport approach for the Site.

The 2020 scoping opinion

2.11. A request for a Scoping Opinion was submitted to PINS in November 2020. The new scoping covered amendments and updates since the project was reviewed in 2019. A Scoping Opinion document was received in December 2020 from the Planning Inspectorate.

2.12. Comments provided by the consultees varied in emphasis. Both NH and LCC, as key highway authorities, form part of the TWG set up to address the technical details of the TA and ES Traffic and Transport Chapter. Therefore, their views and guidance have been ongoing through the pre-planning period.

2.13. Comments specific to Transport and Traffic were provided in the 2020 Scoping Opinion. These are included in full as an appendix. Each of the comments have been considered in the authoring of this ES Chapter and are included or qualified if excluded.

Table 2-1: Planning Inspectorate's comments from EIA Scoping Opinion in relation to Transport and Travel (December 2020)

PINS ID	Reference	PINS Comments	Action Taken
4.2.1	Hazardous Loads	The report states that any hazardous loads transported to/ from the distribution centre would be assessed and managed in line with the relevant environmental permits and associated legislation and they are not a matter for the Transport Assessment (TA) or the ES. There is no estimate of expected hazardous load movements provided. The Inspectorate considers that should hazardous loads be likely to be transported to and from the distribution centre, the impacts of these in terms of the increase in vehicle movements should be considered in the ES. The Applicant is referred to paragraph 3.3.17 of this Opinion regarding Risks of Major Accidents and Disasters	The number of hazardous loads cannot be quantified at this stage of the appraisal given that construction and operational requirements have not been confirmed. Should hazardous loads be required, the consultant has assumed in respect of traffic movements that any hazardous loads will be via HGVs and are therefore included within the overall HGV numbers modelled. Therefore, the vehicle movements have been captured within the assessment of HGV traffic generation. In respect of hazardous loads this is covered under separate legislation and the risks of Major Accidents and Disasters are appraised in Chapter 19 of this ES.
4.2.2	Guidance	Table 7.1 refers to Strategic Rail Freight Interchange Policy Guidance (November 2011). This document was withdrawn on 27 March 2018 and has been superseded by National Policy Statements for National Networks. Table 7.4 states that the ES will be carried out in accordance with Volume 11 of the DMRB. This guidance has been superseded by the new DMRB structure and coding system. The ES should apply the latest version, see LA 101 - Introduction to environmental assessment, and LA 104 - Environmental assessment and monitoring.	Noted: The correct reference has been referred to in accordance with the comment. The Consultant acknowledges the comment and notes that references to LA101 and LA104 have been updated for the purposes of this appraisal.
4.2.3	Consultation	The report states that the Transport Working Group (TWG) is meeting regularly to discuss and agree key elements of the TA methodology. The ES should document and evidence the outcomes of these discussions when describing the traffic and transport aspect methodology.	Noted, the Consultation section of the ES Transport and Traffic chapter documents and evidence the outcomes of this.
4.2.4	Rail Freight	In response to a comment in the previous 2018 Scoping Opinion, the Scoping Report stresses that rail freight movements have	Both WSP and Baker Rose, rail freight specialists, acted in support of the assessment and on behalf of the applicant to provide for

PINS ID	Reference	PINS Comments	Action Taken
		been factored into the Trip Generation, and this will be explicit in the TA and ES (para 7.23).	the information as requested. This has been utilised where appropriate in this assessment.
		Paragraph 7.44 confirms that rail freight has been forecast and that resultant Heavy Goods Vehicle (HGV) trips have been included within the strategic modelling process. However, the description of baseline conditions within the report does not mention rail freight, and the methodology refers to highway links and thresholds relating solely to changes in road vehicle flows. The ES should consider the impacts of the Proposed Development on the capacity and operation of the rail network, and the potential impacts of an increase in rail freight movements on environmental matters, for example, accidents and safety, and any potential indirect effects on passenger rail transport operations and the growth, where significant effects are likely.	This information has been shared with LCC and allowance has been factored into the PRTM 2.2 modelling. Network Rail (NR) has confirmed capacity on the line for HNRFI and that the addition of new train paths for the Proposed Development will be required to fit around the existing services within the working timetable. Network Rail has both contractual and regulatory obligations to existing users of the network in terms of the timing of their trains in the working timetable. These paths are neither guaranteed nor reserved for the Proposed Development but demonstrate the availability of paths for trains in the working timetable on this route on the rail network. Further details of rail safety are included in Chapter 19: *Accidents and Disasters*.
		The Inspectorate highlights Solihull Metropolitan Borough Council's proposal for mitigation in the form of a contribution towards wider industry initiatives (such as an east-west rail link at Nuneaton) for consideration.	See NR response above.
		The impact of freight trains on the Narborough level crossing is also highlighted (see consultation response from Sharnford Parish Council).	Further feedback from NR has been provided in terms of train paths and impacts on the local level crossing at Narborough. NR has confirmed that for the Highway AM and PM Peak Hours, there is only one additional train path available in the PM peak. This train path would be open to all operators to bid for and not safeguarded for the HNRFI. Barrier downtimes have also been added into the PRTM 2.2 base and forecast runs Each train would cause a maximum barrier downtime of 2.5 mins. During each peak hour a maximum barrier downtime would be approximately 20 mins which is well within NR's acceptable parameters.

PINS ID	Reference	PINS Comments	Action Taken
4.2.5	Assessment Years	The Scoping Report states that the following years will be assessed: base year (2014)- validated using 2018 observed flows; anticipated first year of occupation (2025); and ten years post-occupation (2036). The Inspectorate understands that the freight model does not have a 2025 assessment year, but every five years from 2021 instead. Assessment years will need to be clarified and agreed with the Transport Working Group, as well as methodologies for assessment years not coinciding with those available. Junction capacity assessments and merge/diverge assessments (where appropriate) must be carried out for the following scenarios: • Opening Year Reference Scenario (the year in which the development is expected to be opened); • Opening Year Reference plus Committed Development Scenario; and • Opening Year Development Scenario – Opening Year plus Committed Development plus the Proposed Development, which will determine whether any mitigation is required for the Strategic Road Network (SRN). The impact of the development should also be assessed for ten years after the year the application is registered or the end of the relevant Local Plan whichever is the greater.	Noted, the PRTM model contains 2014 (base year) validated using 2018 flows and 2026 assessment year. The opening year has recently been re confirmed as 2026 by the applicant. The reference scenarios are noted and have been agreed through the TWG. A future year of 2036 is planned. All scenarios have been subject to a model brief which has been ratified by the TWG prior to model commencement. This also allows for a scenario which includes the proposed access infrastructure without Proposed Development. This is to understand the changes in background traffic distribution brought about by the new infrastructure.
4.2.6	Screening Process	The report describes thresholds for determining which road links should be subject to a detailed assessment, referencing the IEMA (1993) Guidelines for the Environmental Assessment of Road Traffic. The guidance states in paragraph 3.19 that "where there are major changes in the composition of the traffic flow, say a much greater flow of HGV's, a lower threshold may be appropriate". The Scoping Report suggests a 30% increase in HGV movements as an alternative threshold.	In response, the consultant notes that 10% HGV impacts have been recorded in locations close to sensitive receptors as per IEMA suggested thresholds. This is considered a robust approach to the assessment.

PINS ID	Reference	PINS Comments	Action Taken
		Any threshold should consider the local context and be agreed within the TWG (justified and evidenced within the ES).	
4.2.7	Receptor Sensitivity	The sensitivity of receptors should also consider the needs of major road users such as Royal Mail, particularly for the analysis of delays to drivers	Noted, Royal Mail Distribution centre will be included as a sensitive receptor and any other major businesses and road users in the area such as Triumph.
4.2.8	Committed Developments	The Scoping Report states that known committed developments in the vicinity of the Site have been included in the assessment. Note the additional development recommended for inclusion by Warwickshire County Council in their consultation response.	The assessment considers new and committed developments as set out in Chapter 20: *Cumulative and Transboundary Effects* of this ES to appraise the in - combination effects. Further data has been shared with WCC in relation to links and sites mentioned in their response and these have been included in addition to those referenced above. As part of the PRTM Core Forecast Model a full review of Planning and Infrastructure logs have been undertaken for the Area of Influence with the Transport Working Group members. This log contains all allocated and consented planning applications and relevant access infrastructure and associated off-site improvement schemes. The modelling corresponds with guidance set out in DfT TAG Unit M4, 'Forecasting and Uncertainty October 2013'. This went through 8 iterations before sign-off by TWG inclusive of Warwickshire.
4.2.9	Road Safety	Given the Proposed Development will affect the SRN, the ES or the Transport Assessment must be accompanied by a Stage 1 Road Safety Audit.	Stage One Road Safety Audits will be undertaken for junctions where mitigation is proposed and is included in the Transport Assessment.

Consultation Feedback

2.14. An initial informal public consultation on the HNRFI site took place between October and December 2018. During this consultation particular concern was raised by members of the public around highway impacts of the new development and the introduction of South Facing slips to Junction 2 of the M69. Further consultee comments focus on several key areas which have been considered within the ES or TA where appropriate. These include Heavy Goods Vehicle (HGV) routing, construction traffic management, public transport provision, sustainable modes, including footways and cycleways and off-site mitigation.

2.15. Prior to submitting the scoping report in November 2020 options for mitigation were investigated by the applicant team and a further highways specific informal public consultation exercise took place between the 9th of July and the 6th of September 2019. The consultations included six public exhibitions social media coverage and website access. Overall, 460 feedback forms were received along with 40 email enquiries, 84 online forms, 8 phone calls and two letters.

2.16. The results from the 2018 feedback highlighted significant local opposition to the anticipated highway impacts of HNRFI. Over 36% of respondents cited local traffic increases as their number one priority.

2.17. In response to the 2018 consultation a review of traffic impacts suggested potential by-passes, these were presented in the informal 2019 consultation: a) to the east of Stoney Stanton and b) to the south of Sapcote. The feedback from the 2019 consultation, when the proposals were presented for both, was overwhelmingly negative. For a) 94% of respondents opposed the plan and for b) 78% of respondents rejected the plan. However, a better response was received for the A47 link road with 47% either responding positively or neutrally to the proposals.

2.18. Over 61% of respondents considered local public transport to be inadequate.

2.19. The feedback provided by the respondents helped shape the conversations with the relevant authorities in terms of appropriate highway and transport interventions needed for the 'Proposed Development'.

2.20. Table 2-2 indicates the key consultation and agreements with the TWG and separate authorities through the past twenty-four months.

Table 2-2: Consultation Log TWG and Authorities

Organisation or Group	Date of Meeting																							Key Agreements
	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	
Transport Working Group; LCC, NH, LCiC, HBBC, Blaby, WCC, CCC			19	17	21	18	18	15	20	-	15	19	16	21	18	21	20	17	17	21	19	16	21	18	Trip generation and Distribution Uncertainty Log- Planning and Infrastructure Inputs to Model Brief Base Model Initial review of HGV routing and STS
LCC HDM				21			17	14	12	9 23	21	4 18	1	6 20	11 17	1 15	12	9 23	9 23	6	4 18	1 15 29	13 27	10 24	Regular review of progress against TWG meetings
LCC NDI	29				22		2 16	16							10					21		29			Approach to addressing concerns with PRTM modelling
NH							24	14			7												15		Discussions on J2 Addressing the WCC buffer area within PRTM
WCC	14						24								17								15		Addressing the WCC buffer area within PRTM
LCiC				17		3																			Impacts on Narborough Road Public transport opportunities
LCC Growth				21																					Informative
HBBC					20		17	14	12	9	21	4 18			17	1 15	12	9 23	9 23						Regular review of progress against TWG meetings
Inception Modelling; TWG Members							5																		Base modelling inputs
LCC PROW, walking and cycling, Bus and Public Transport												25													Way forward STS Consideration of existing initiatives
Members Presentation Blaby																	5								Informative
Members Presentation HBBC																	6								Informative
Members Presentation LCC																	7								Informative
HNRFI Public Consultation Webinar																	25	2							Informative

HINCKLEY NATIONAL RAIL FREIGHT INTERCHANGE

Formal Public Consultation

2.21. Statutory consultation took place from 12 January 2022 to 8 April 2022. The Preliminary Environmental Impact Report (PEIR) and the interim Transport Assessment were presented to the public and interested parties for the consultation. Feedback was received from a wide variety of stakeholders expressing concern around the Transport elements of the project. This included the validity of the modelling carried out, impacts on the local highway network, capacity constraints within the Strategic Road Network and requirements for sustainable and public transport linkages.

2.22. A substantial number of comments were received under Section 42 and 47 of the Planning Act 2008 (PA2008)relating to transport. Details of the transport comments received under S.42 and S.47 of the PA 2008 are recorded within the Consultation Report (Document ref 5.1). Key headlines are that 1,400 general public responses (S47) were received with transport comments, of which many contained multiple points in relation to traffic transport or highways. Most comments related to general concerns over traffic increases. A breakdown of the comments is provided as follows:

- 83% traffic generation.
- 29% HGV movements.
- 27% raised concerns about the effects of traffic on the Fosse Villages.
- 20% Strategic Road Network.
- 10% referred to effects on or better of cycling and walking.
- 6% raised access and infrastructure as concerns.
- 4% were concerned about offsite highways.
- 4% discussed parking.
- 3% raised effects on public transport.

2.23. Traffic modelling and lack of agreement with LCC was cited on many of the S.42 responses where traffic was commented upon. This was fully understood prior to the release of the PEIR. The modelling inputs were agreed at the end of 2021 with the Transport Working Group including base model traffic generation and planning inputs the ES is based on outputs of the agreed model.

2.24. Commentary was received specific to sensitivity of receptors in Sapcote and Stoney Stanton. This highlighted that sensitive locations and highway conditions had not been considered enough in detail. The latest assessment has incorporated a revised level of sensitivity around the rural villages.

Statements of Common Ground

2.25. Statements of common ground has been prepared to formally set out the progress made by the Developers Consultant and the Transport Working Group to agree the scope of the TA in regard to the geographic study area and the technical assessment, data sources, methodology, strategic and local transport modelling, the resultant outputs and the

mitigation package. It details the agreements reached through the evolution of the development from concept to submission.

2.26. The following documents are not complete at this stage.

- Stage 1 Road Safety Audits and Audit Response.

2.27. The WCC Rugby Rural Area Model results show no additional impact to that already assessed in this TA, these are summarised in the document ref 6.4.8.1 HNRFI-BWB-GEN-XX-RP-TR-0031 - RRAM Modelling Summary, PINS ref AS-024[1] therefore no addendum is required.

[1] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR050007/TR050007-001166-6.4.8.1%20HNRFI-BWB-GEN-XX-RP-TR-0031%20-%20RRAM%20Modelling%20Summary.pdf

3. POLICY CONTEXT AND COMPLIANCE

Introduction

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

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

3.3. The TA has been written in accordance with the following national and local planning documents:

- National Policy Statement for National Networks (2014)[2;]
- The National Planning Policy Framework (2021)[3];
- Decarbonising Transport: A Better, Greener Britain (July 2021)[4];
- Net zero highways: our 2030/ 2040 / 2050 plan – National Highways, July 2021[5]
- Circular 02/2013[6];
- Planning Practice Guidance[7;]
- Leicestershire Local Transport Plan 2011- 2026[8];
- Leicester & Leicestershire 2050: Our Vision for growth (2018);[9]
- Midlands Connect Strategy (2017)[10;]

2 *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387222/npsnn-print.pdf*

3 *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf*

4 *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-brTAin.pdf*

5 *https://highwaysengland.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf*

6 *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/237412/dft-circular-strategic-road.pdf*

7 *https://www.gov.uk/government/collections/planning-practice-guidance*

8 *https://www.leicestershire.gov.uk/roads-and-travel/road-maintenance/local-transport-plan*

9 *https://www.llstrategicgrowthplan.org.uk/download/pdf_document/final_plan_docs/Strategic-Growth-Plan-September-2018-Final-for-governance.pdf*

10 *https://www.midlandsconnect.uk/publications/midlands-connect-strategy-march-2017/*

- Blaby District Council Local Plan Core Strategy 2013[11] and Delivery Plan (DPD) 2019[12];
- Hinckley and Bosworth Core Strategy 2009 and Site Allocations Development Management Policies[13].

National Planning Policy

National Policy Statement for National Networks (2014)

3.4. The NPSNN sets out the need for, and Government policies to deliver, development of NSIPs on the national road and rail networks in in England. It provides transport guidance to guide individual development for Nationally Significant Infrastructure Projects (NSIP) brought forward under it.

3.5. The principal aims of the NPS are to deliver:

- networks with the capacity, connectivity and resilience to support national and local economic activity and to facilitate growth and create jobs;
- networks which support and improve journey quality, reliability and safety;
- networks which support the delivery of environmental goals and the move to a low carbon economy;
- networks which join up our communities and link effectively to each other.

3.6. The NPSNN also identifies the economic and environmental benefits of rail freight Interchanges.

3.7. Paragraph 2.44 defines the aim of a strategic rail freight interchange as follows, "The aim of a strategic rail freight interchange (SRFI) is to optimise the use of rail in the freight journey by maximising rail trunk haul and minimising some elements of the secondary distribution leg by road, through co-location of other distribution and freight activities. SRFIs are a key element in reducing the cost to users of moving freight by rail and are important in facilitating the transfer of freight from road to rail, thereby reducing trip mileage of freight movements on both the national and local road networks."

3.8. The HNRFI illustrative masterplan and schedule of accommodation demonstrates that through the co-location of the Railport, Railport Returns, Lorry Park and B8 units, the Site is designed to maximise rail haul and reduce secondary road haul to meet the aim of a

11 https://www.blaby.gov.uk/planning-and-building/local-plan/local-plan-core-strategy/

12 https://www.blaby.gov.uk/planning-and-building/local-plan/local-plan-delivery-dpd/

13 https://www.hinckley-bosworth.gov.uk/download/downloads/id/487/core_strategy_adopted_document.pdf

strategic rail freight interchange.

3.9. The Government's policy to address its vision for a low carbon transport and role of SRFIs is included in paragraph 2.53: "The Government's vision for transport is for a low carbon sustainable transport system that is an engine for economic growth but is also safer and improves the quality of life in our communities. The Government therefore believes it is important to facilitate the development of the intermodal rail freight industry. The transfer of freight from road to rail has an important part to play in a low carbon economy and in helping to address climate change."

3.10. The HNRFI development will provide a positive contribution to the Government's vision for low carbon transport.

3.11. Paragraph 2.54 outlines the need for a network of SRFIs across the regions, to serve regional, sub-regional and cross regional markets to facilitate modal shift. Furthermore paragraph 2.54 states 'In all cases it is essential that these have good connectivity with both the road and rail networks."

3.12. The HNRFI meets the essential criteria for a SRFI at Paragraph 2.54 as development proposals include direct site access from the M69 junction 2 of the SRN.

3.13. Function of SRFIs is defined in paragraph 4.83 as "Rail freight interchanges are not only locations for freight access to the railway but also locations for businesses, capable now or in the future, of supporting their commercial activities by rail. Therefore, from the outset, a rail freight interchange (RFI) should be developed in a form that can accommodate both rail and non-rail activities."

3.14. The HNRFI can accommodate both rail and non-rail activities but has been designed to optimise the ability of occupiers to carry out their commercial activities by rail. Requirements on scale and design are included in paragraphs 4.88 and 4.89:

- 'Applications for a proposed SRFI should provide for a number of rail connected or rail accessible buildings for initial take up, plus rail infrastructure to allow more extensive rail connection within the site in the longer term. The initial stages of the development must provide an operational rail network connection and areas for intermodal handling and container storage. It is not essential for all buildings on the site to be rail connected from the outset, but a significant element should be'
- 'As a minimum, a SRFI should be capable of handling four trains per day and, where possible, be capable of increasing the number of trains handled. SRFIs should, where possible, have the capability to handle 775 metre trains with appropriately configured on-site infrastructure and layout. This should seek to minimise the need for on-site rail shunting and provide for a configuration which, ideally, will allow main line access for trains from either direction.'

3.15. Specific to NRFI the NPSNN states that a Transport Assessment should be included and produced according to DfT WebTAG methodology.

3.16. The government aims to meet these objectives by encouraging the development of a robust infrastructure network of Strategic Rail Freight Interchanges.

National Planning Policy Framework (NPPF)

3.17. The Government's National Planning Policy Framework (NPPF) replaced the majority of previous Planning Policy Statements (PPS) and Planning Policy Guidance Notes (PPG) documents on 27 March 2012 and was updated in July 2021. 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.

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

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

3.19. These objectives should be delivered through the preparation and implementation of plans and the application of the policies in this 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.

3.20. The NPPF states at paragraph 104 that Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

- The potential impacts of development on transport networks can be addressed;
- opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
- opportunities to promote walking, cycling and public transport use are identified and pursued;
- the environmental impacts of traffic and transport infrastructure can be identified, assessed, and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and
- patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places.

3.21. Paragraph 105 states that, "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."

3.22. In assessing sites that may be allocated for development in plans, or specific applications for development, NPPF paragraph 110 states that it should be ensured that:

- Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given 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.

3.23. Paragraph 111 of the NPPF goes on to state:

> *'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 would be severe'.*

3.24. In accordance with Paragraph 111, the purpose of this TA is to provide the evidence and through robust assessment demonstrate that the development does not result is unacceptable impact on highway safety and the residual cumulative impacts on the road network are not severe. This is adequately demonstrated through the following sections 3 to 9 and summarised in section 10.

3.25. Within the context of the NPPF, paragraph 112 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.

3.26. The development Site has evolved with regard to the hierarchy of vulnerable road users and includes separate segregated routes for pedestrians, /cyclists and equestrians and the Framework Travel Plan, Transport Assessment, Construction Transport

Management, Sustainable Transport Strategy, HGV Route Plans demonstrates that all requirements of Paragraph 112 can be adequately met.

3.27. Paragraph 113 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."

3.28. This Transport Assessment is to be submitted with a range of Highways and Transportation document, one of which is the Framework travel Plan which sets out aims, objectives and targets for the reduction of single occupancy car trips in favour of sustainable travel choices. This TA provides a thorough and robust assessment of the development traffic impacts, including a package of mitigation measures to ensure network resilience and highway safety.

Decarbonising Transport: A Better, Greener Britain

3.29. Decarbonising Transport presents the Government's roadmap to zero carbon transport.

3.30. Part 1 of the document presents the Government's path to net zero transport in the UK, the wider benefits it can deliver and the principles that underpin the approach to delivering it.

3.31. Part 2 of the document sets out details of the plan including the Government's commitments and the actions and timings to decarbonise transport in the country. Part 2b 'multi-modal decarbonisation and key enablers' includes a section dedicated to 'Delivering a zero-emission freight and logistics sector' where it recognises the role railway can play in the decarbonisation process. Introductory paragraphs state that, "The vast majority of freight is moved by vehicles on our roads. Removing these emissions requires the development and deployment of clean technologies, as well as the use of more sustainable forms of transport, many of which are already available including cargo bikes and rail." It highlights that a shift of freight from both road and aviation to rail will reduce congestion and emissions.

3.32. The Government pledges the following commitment: "We will support and encourage modal shift of freight from road to more sustainable alternatives, such as rail, cargo bike and inland waterways." This will be supported by a package of policies including: "Introducing a rail freight growth target to encourage the continued growth of this sector. The modal shift of freight from road to rail would not only lead to a reduction in GHG levels, but also reduce congestion and noise pollution."

3.33. Section of Part 2 called 'Decarbonising our railways' focuses on delivery of a net zero network by 2050. The Government's ambition is to remove all diesel-only trains (both passenger and freight) from the network by 2040, which will be supported by further electrification and use of hydrogen and battery technologies. The Government also aims to use technology to clean up diesel trains until they can be removed altogether.

3.34. The HNFRI site is being developed to specifically accommodated the transfer of freight movements from road to rail.

Net Zero Highways: our 2030/2040/2050 plan – National Highways, July 2021

3.35. National Highways) has announced its ambitious new carbon plan that will see it rapidly cut carbon from road construction, maintenance, and operations, and support the transition to zero emission vehicles.

3.36. NH plans to achieve this by putting roads at the heart of Britain's net zero future through three key commitments; achieving net zero for its own operations by 2030, delivering net zero road maintenance and construction by 2040; and supporting net zero carbon travel on our roads by 2050.

3.37. Contractors and suppliers will also be required to act, including commitments to reduce carbon year-on-year by using the latest technologies, so that by 2040 our road maintenance and construction is near zero emissions.

3.38. The Framework Travel Plan sets out indicative targets for the reduction of single occupancy vehicle trips and measures to promote the use of sustainable modes of transport. The reduction of vehicular trips will have a direct beneficial impact on the air quality surrounding the site.

Circular 02/2013

3.39. On 10 September 2013, the Department for Transport (DfT) issued new policy on how the Highways Agency (now National Highways) will engage with communities and the development industry to deliver sustainable development whilst safeguarding the primary function and purpose of the strategic road network in England.

3.40. Circular 02/2013 'The Strategic Road Network and the Delivery of Sustainable Development' replaces the policies set out in the DfT Circulars 02/2007 'Planning and the Strategic Road Network' and 01/2008 'Policy on Service Areas and other Roadside Facilities on Motorways and All-purpose Trunk Roads in England'.

3.41. The policy is intended for all parties involved in development proposals which may result in traffic or other impacts on the strategic road network. The aim of the policy is to cut unnecessary red tape and make the planning process simpler and more straightforward.

3.42. Paragraph 9 sets out the broad policy aims of the circular as it relates to development proposals, stating that "Development proposals are likely to be acceptable if they can be accommodated within the existing capacity of a section (link or junction) … or they do not increase demand for use of a section that is already operating at levels over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed".

3.43. However, with reference to decision making regarding developments, paragraph 9 goes on to state "However, development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe".

3.44. Circular 02/2013 places an emphasis on the role of sustainable travel modes and travel planning as a means of managing the impact of development on the road network, acknowledging the role that area-wide travel plan initiatives can play to 'free-up' additional capacity so that travel demand created by a new development can be

accommodated.

3.45. In assessing development impact, the circular states at paragraph 33 “only after travel plan and demand management measure have been fully explored and applied will capacity enhancement measures be considered”.

3.46. In terms of mitigation of development impact, paragraph 34 states “Where insufficient capacity exists to provide for overall forecast demand at the time of opening, the impact of the development will be mitigated to ensure that at that time, the strategic road network is able to accommodate existing and development generated traffic”.

3.47. The key emphasis of this document reflects national guidance, stressing the obligation placed on every developer to 'manage down' traffic generation from new development, and to provide evidence that proposals for measures to reduce traffic generation from the site have been considered.

3.48. The suite of Transportation Documents illustrated in the diagram following paragraph 1.7 demonstrates that strategies are in place to manage down travel demand, promote sustainable transport and mitigate capacity impacts from the development.

Planning Practice Guidance (PPG): Travel Plans, Transport Assessments and Statements

3.49. PPG sets out when Travel Plans, Transport Assessments and Statements for developments are required and was published in March 2014. 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.

3.50. Planning Practice Guidance (PPG) Travel Plans, Transport Assessments and Statements Para 007 suggests that the Transport assessment 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).

3.51. In determining whether a Travel Plan will be needed for a proposed development, PPG Travel Plans, Transport Assessments and Statements Paragraph 009 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.

Local Planning and Transport Policy

Leicestershire Local Transport Plan (2011-2026)

3.52. The Leicestershire Local Transport Plan 3 (LTP3) seeks to give some certainty to transport planning and policy in developing a strategic framework.

3.53. The LTP recognises that planning policies will be grounded in the reality that most people will wish to own and use cars, but as far as possible, new development will be planned to avoid increasing traffic pressure by ensuring that a choice of attractive alternatives is available.

Leicester & Leicestershire 2050: Our Vision for growth (2018)

3.54. The document prioritises taking advantage of proposals to improve national and regional networks. It recognises Hinckley as a key area for growth.

3.55. The vision for growth includes road and rail improvements within the surrounding area of Leicestershire. This includes key improvements to the A5, M42 / A42 which are likely to be fully built out by the early 2030s with increased capacity on the railways proposed within the same timeframes.

Midlands Connect Strategy (2017)

3.56. The Midlands Connect strategy sets out proposals for achieving the untapped economic potential of the midlands.

3.57. It also recognises an economic growth corridor between Coventry and Leicester, and a chance to facilitate agglomeration in these areas.

3.58. In addition, it also states that it supports the development of new Strategic Rail Freight Interchange (SRFI) proposals, particularly where rail and road access is good.

Blaby Development Plan (including Blaby District Local Plan (Core Strategy) 2013 and Blaby District Local Plan (Delivery) DPD 2019)

3.59. The core strategy sets out the overarching strategy and core policies to guide future development in the district up to 2029.

3.60. It recognises that 'One of the key obstacles affecting the economic success of the District is its transport network.' (Paragraph 4.18).

3.61. A key policy aim is to 'deliver the transport needs of the District and to encourage and develop the use of more sustainable forms of transport' (section 5).

3.62. Policy CS10 of the Blaby District Core Strategy regarding rail freight enhancements states:

> *'Within strategic (including national and regional) and financial constraints, Blaby District Council will support the exploration of realistic opportunities for improving rail-based movement of goods and people'.*

Hinckley and Bosworth Local Development Framework 2009 Core Strategy

3.63. Whilst most of the site is situated within the Blaby District Council administrative boundary, a small area of the site adjacent to the B4668 is located within Hinckley and Bosworth Borough Council administrative area in addition the traffic impacts have potential to occur off-site and across neighbouring authorities. For this reason, it is necessary to consider the Hinckley and Bosworth policy.

3.64. The core strategy sets out the overarching strategy and core policies to guide the future development of the borough up to 2026.

3.65. The local plan is gradually being replaced by Development Plan Documents (DPDs) which form part of the Local Development Framework. Most of the Local Plan Policies from the 2006 local plan have been saved until they are replaced by policies in the DPDs.

3.66. The primary spatial objective for transportation and the need to travel reads:

> *'To reduce the high reliance on car travel in the borough and to increase the opportunities for other forms of transport by focusing the majority of development in the Hinckley urban area where there is a range of transport options available and through securing improvement to public transport infrastructure and facilities that promote walking and cycling and through the use of travel plans.'*

Additional Transport Planning Guidance

Design Manual for Roads and Bridges

3.67. The Design Manual for Roads and Bridges provides guidance as to the requirements to the environmental assessment (LA 101) for larger development schemes.

Manual for Streets 2

3.68. Manual for Streets 2 (MfS2) - Wider Application of the Principles, is a companion guide to MfS and builds on the philosophies set out in MfS and demonstrates how they can be extended beyond residential streets.

Leicestershire Highway Design Guide

3.69. Part 3 of the Leicestershire Highway Design Guide is intended to help design development layouts that provide safe and free movement for all road users, including cars, lorries, pedestrians, cyclists, and public transport.

3.70. It provides guidance on 'the overall development concept in terms of site access and highways and transportation impacts' and sets out the car parking and servicing requirements for new developments.

3.71. This guidance as well as operational requirements has been considered in developing the highways and transportation strategy for the proposal.

Conclusion

3.72. The development proposals, development access and highway improvement schemes have been designed in accordance with policy and guidance.

3.73. Overall, the transport planning policy which relates to the proposed development is fully satisfied by this TA and the accompanying suite of documents.

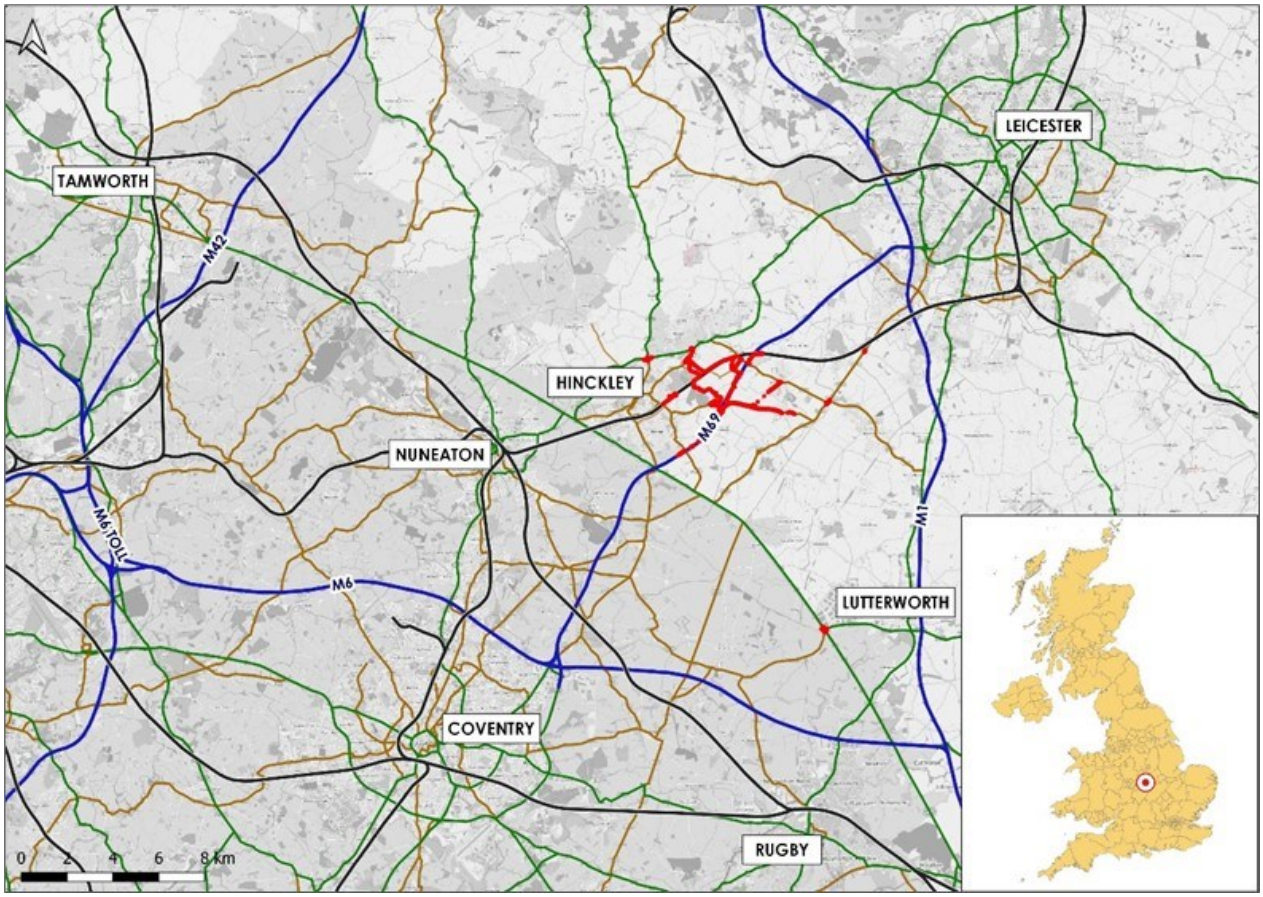
4. EXISTING CONDITIONS

Site Location

4.1. The site is located to the north-east of Hinckley, Leicestershire and is bound by the Felixstowe to Nuneaton rail line which forms its north-western boundary and the M69 motorway to the east (including Junction 2 at the southeast corner of the site).

4.2. Figure 4-1 below displays the HNRFI redline boundary in context to the surrounding major settlements and the highway network.

Figure 4-1: Contextual Site Location



4.3. Hinckley town centre and railway station are both located approximately two miles to the southwest, Earl Shilton and Barwell lie approximately two miles to the north and Stoney Stanton and Sapcote are approximately two miles to the east. The B4669 Hinckley Road runs east-west to the south of the site, and Burbage Common Road routes through the site and enters/ exits at two separate locations to the north).

Site Description

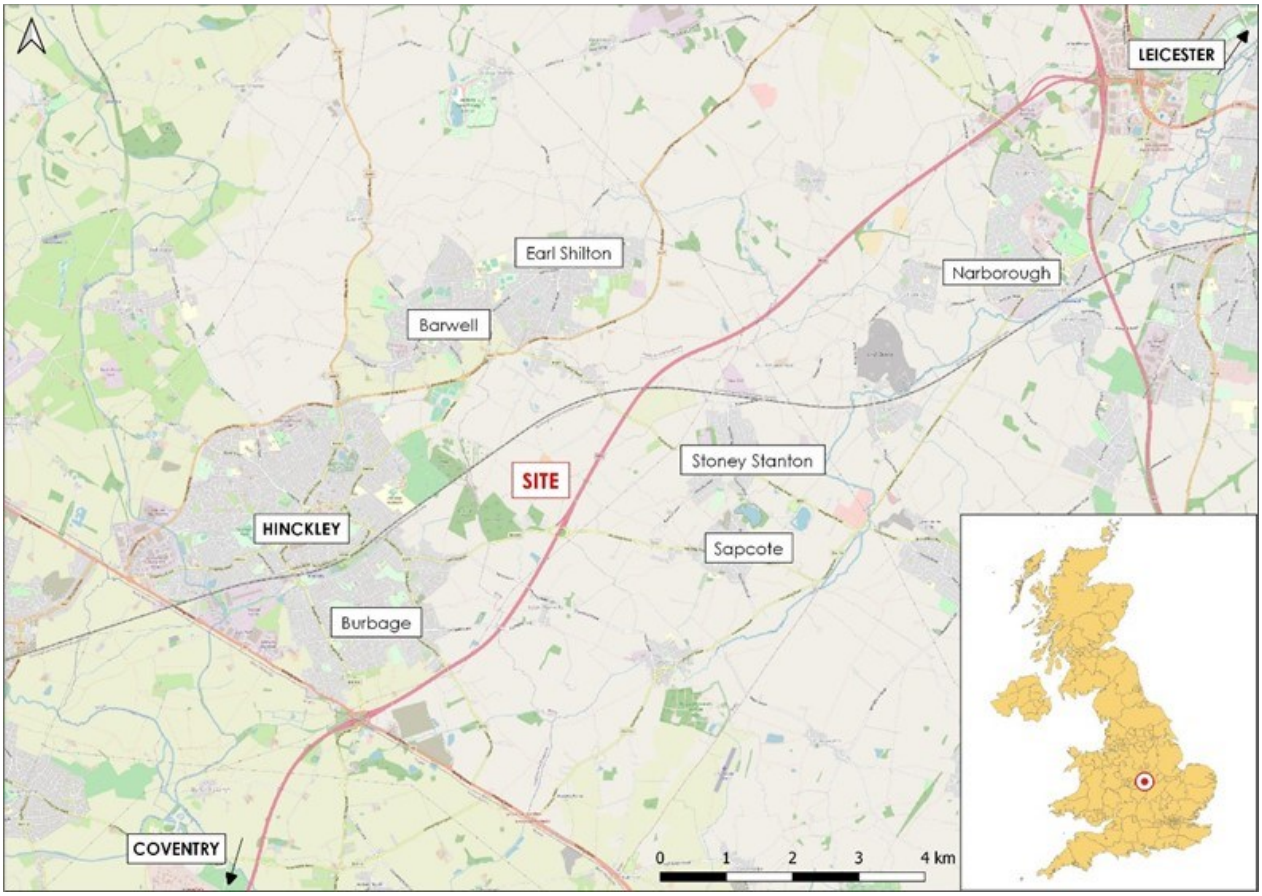
4.4. The Main HNRFI Site appears broadly level, though it slopes gently downhill from a high point of 110m Above Ordnance Datum (AOD – i.e. above sea level) adjacent to M69 Junction 2 to a low point of 83m AOD beside the railway at the northern end of the Main Site.

4.5. South-west of M69 Junction 2 the M69 motorway falls gently to a height of c. 96m AOD at the southern extremity of the DCO Site.

4.6. To the west of the railway the A47 Link Road corridor falls from 99m to c. 93m before rising gently to 96m where it joins the A47 Leicester Road. This gentle valley is associated with an unnamed watercourse.

4.7. Settlements closest to the HNRFI site include Burbage and Hinckley to the south-west, Barwell and East Shilton to the north and Stoney Stanton and Sapcote to the east as shown in Figure 4-2.

Figure 4-2: Urban Areas



Strategic Road Network

M1

4.8. The M1 is a north-south arterial route stretching the 311km (193 miles) between London and Leeds. The M1 passes Northampton, Leicester, Nottingham, Derby, Sheffield and Wakefield. The nearest point of access in relation to the site is approximately 7.2 miles to the north-east at Junction 21.

M6

4.9. The M6 extends from Junction 19 of the M1 at the Catthorpe interchange, near Rugby via Birmingham then heads north, passing Stoke-on-Trent, Liverpool, Manchester, Preston, Lancaster, Carlisle and terminating at the Gretna Junction (J45). The nearest point of access to the M6 in relation to the site is approximately 9.5 miles to the south of the site via Junction 2, known as the Ansty Interchange.

4.10. The M6 Toll, also known as the Birmingham North Relief Road or the Midland Expressway, connects M6 Junction 3a at the Coleshill Interchange to M6 Junction 11A at Wolverhampton with 27 miles of six-lane motorway. The M6 Toll is the northern bypass for the West Midlands, designed to relieve traffic congestion along the M6 through the urban area.

M42

4.11. The M42 routes north-east from Bromsgrove in Worcestershire to the south-west of Ashby-de-la-Zouch in Leicestershire, passing Redditch, Solihull, the National Exhibition Centre (NEC) and Tamworth on the way. The M42 is a road of two parts. Its southern section forms part of the box of motorways around Birmingham, traversing the southern and eastern sides of the city and linking the M5 and M6; it then strikes off to the north-east, towards Nottingham and the East Midlands. The A42 is a direct continuation of the motorway route that carries traffic through to the M1.

4.12. The nearest point of access to the M42 in relation to the site is located approximately 25km (15.5 miles) to the north-west via Junction 10 of the M42.

M69

4.13. The M69 is the motorway across approximately 26km (16 miles) between Leicester and Coventry, passing Nuneaton and Hinckley with connections available to the M1 and M6. The M69 connects to the M1 via Junction 21, approximately 11km (7 miles) to the north-east of the site and at the southern end of the M69, there are free-flowing slip roads onto the M6 towards Birmingham. Further connections are also available to the A5 via Junction 1 of the A5, approximately 4km (2.5 miles) to the south-west of the site.

4.14. The nearest point of access in relation to the site is located at the southern extent of the site via Junction 2 of the M69.

A5

4.15. The A5 trunk road connects with M69 Junction 1 approximately 4.2km south of the site access (and Junction 2) and acts as a key north – south link between the M42/Tamworth and the M1/M45/Milton Keynes. The A5 is a single carriageway road within the vicinity of Hinckley. To the north of the M69 the road is subject to a speed limit of 40mph and to the south it is subject to a speed limit of 60mph (national speed limit).

4.16. Around 2 miles to the south of the M69 the A5 turns into a grade separated dual carriageway. To the north the A5 provides access from the M69 to both the recently developed Hinckley Commercial Park and the Teal Business Park.

Local Highway Network

4.17. In addition to the site's accessibility to the SRN, for the purposes of commuting it is equally important that the site is accessible from the local highway network.

B4669 Sapcote Rd/ Hinckley Road

4.18. The B4669 runs in an east-west alignment immediate south of the site and forms a grade-separated junction with the M69 motorway at Junction 2. Access to the site is to be derived from this location. To the west the B4669 Sapcote Road provides a connection into Hinckley and to the east the B4669 Hinckley Road provides connections to the villages of Sapcote and Stoney Stanton.

4.19. The B4469 is a single carriageway road and within the vicinity of the site is subject to the national speed limit (60mph). On entry to the urban area of Hinckley this reduces to 40 and then 30mph. There are various side road junctions along the B4469 including the B578, Brookside and Park Road which serve residential areas in the southern part of Hinckley.

4.20. At the side road junction with Park Road the B4469 continues as the B590. In the urban area of Hinckley there is generally footway provision on both sides of the road, and in the vicinity of the site a footway on the northern side of the carriageway links Hinckley with M69 Junction 2.

4.21. The carriageway is generally well lit in the urban area of Hinckley and at key junctions but is generally unlit in the rural environment between Hinckley and M69 Junction 2.

4.22. To the east of M69 Junction 2 the B4669 provides a connection with the village of Sapcote and the B4114 Coventry Road to the south. In this location the road is generally rural in nature and is subject to the national speed limit. When the road enters the village of Sapcote the speed limit reduces to 30mph.

4.23. Footway provision is generally provided on both sides of the carriageway within the urban area of Sapcote. In Sapcote and at key junctions the carriageway is lit. However, in rural settings the carriageway is generally unlit.

Burbage Common Road

4.24. Burbage Common Road is a rural lane which links the B4668 and the B581 passing through the northern part of the site. The majority of the carriageway consists of a single-track lane (3m wide) with intermittent passing places. It is primarily fronted by open fields with the occasional residential property and Woodhouse farm butchery. It is unlit pedestrians/vehicles share the space.

4.25. On the northern boundary of the site, it passes over the rail line via a railway bridge. It is proposed that as part of the development Burbage Common Road will be stopped up within the site boundary. Access will be retained for existing properties but movements within the site will be restricted.

B590

4.26. The B590 connects with the arterial routes into the town of Hinckley including the B4669, Leicester Road, Hollycroft, B466 and Rugby Road. These roads act as the local distributor roads from the surrounding residential areas. The A590 forms a circular route around the town centre. Therefore, this road prevents vehicles from having to pass through the town centre to travel from the south to the north or the east and the west of Hinckley.

4.27. The carriageway varies in width and generally connects with side roads via signalised or priority junctions with ghost island right turn lanes. The road is subject to a 30mph speed limit. The carriageway is generally well lit with footways on both sides which connect the Town Centre with the surrounding residential environment. Along Hollier's Walk to the north of Hinckley Town Centre there is a time limited HGV restriction in place for vehicles over 7.5 tonnes between 1600 and 1000 except for loading. The B590 where it is known locally as Hawley Road provides a connection with Hinckley Rail Station

A47

4.28. The A47 is a major road which runs along the northern boundary of Hinckley. This is likely to act as a local route for vehicular movements accessing the site from the surrounding area which are not as well connected to the strategic highway network. This would include villages such as Barwell and Kirkby Mallory and industrial sites such as the Caterpillar UK Ltd plant in the village of Peckleton.

4.29. To the west the A47 connects with the A5 and Nuneaton with Leicester City Centre to the east. Within the area of Hinckley, the A47 is a 9-metre-wide single carriageway road with no direct frontage. It has a segregated walking and cycling route on its southern boundary. The A47 connects with amongst others the B4666, Stoke Road, B4667, B4668 and B581 via either roundabout or signalised junctions.

B581

4.30. The B581 runs from the A47 and the village of Barwell to the village of Stoney Stanton passing over the M69. The road is primarily rural in nature with some intermittent residential frontage. It is subject to a 40mph speed limit to the north of the M69, the national speed limit (60mph) to the south of the M69 and 30mph within the village of

Stoney Stanton. It provides secondary access to the site via Burbage Common Road or via a connection with Hinckley Road/B4669 to the south of the site.

B4114 Coventry Road

4.31. The B4114 is an arterial road to the south of the site. It connects with the A5 to the west via a complex priority junction and to the east with the outskirts of Leicester and M1 Junction 21. This connects with the development site via a simple priority junction with the B4669.

4.32. The B4114 provides access to a number of villages along the route including Sharnford, Primethorpe, Croft, Littlethorpe and Narborough. The road is generally a single carriageway road except for a small section within the vicinity of the village of Croft which widens to a dual carriageway with a central reservation.

4.33. Where there is no direct frontage to the carriageway it is generally unlit with no footway provision. Where the road passes through the villages of Sharnford and Narborough the road is generally well lit with footway provision in place. The speed limit along the road varies from 30 mph to 60 mph national speed limit. There are no weight limit restrictions on the road with various lay-bys along the side of the carriageway.

B4668

4.34. B4668 connects with Burbage Common Road which passes to the north of the proposed development site. The road then continues into Hinckley where it is directly fronted by residential properties. The B4668 is a single carriageway road with a minimum width of around 8 metres. It is generally well lit and has footway provision on both sides of the carriageway within the urban area.

4.35. Within Hinckley the road is subject to a 30mph speed limit. Outside the urban area the speed limit increases to 40 and then 60mph. No weight or height restrictions are in place along the road.

A447 Ashby Road

4.36. A447 Ashby Road provides a main connection to the A511 in the North for Ashby de-la Zouch to Hinckley, passing through or close to Ibstock, Market Bosworth, Cadeby, Stapleton and then crossing the A47 at a signal-controlled junction into Hinckley.

4.37. It is a single carriageway with footways, private driveways and street lighting being present on a 900 metres section to the north of Hinckley between the junction with the A47 and the junction with Rogue's Lane / Hinckley Road. There are regular bus services on the A447.

Hollycroft / Stoke Road

4.38. Hollycroft and Stoke Road provides another connection into Hinckley Town Centre and to the A590 from the A47 and residential suburbs in north-western Hinckley. This connects with the development site via the B590 and B4669.

4.39. These roads pass through residential suburbs with direct frontage. Stoke Road also has speed cushions in place as traffic calming measures. The carriageways are a minimum of 6 metres wide, generally well-lit and have footway provision on both sides. The road is subject to a 30mph speed limit. This road is also a major bus route into Hinckley.

B4666

4.40. The B4666 connects the B590 with the A5. This road therefore acts as a major route into Hinckley from the west and connects the western areas of Hinckley with the development site via the B590 and B4669.

4.41. This is a single carriageway road which is well lit. There is a shared use walking and cycling route which runs along the northern side of the carriageway and is a major bus route into the town. The road is fronted directly by residential properties as well as commercial properties including Tungsten Park and Harrowbrook Industrial Estate.

Rugby Road

4.42. Rugby Road is another key link road which connects residential areas to the south-east of Hinckley to M69 Junction 1. This is likely to be a key connecting route to the site from residential areas as well as commercial and industrial units located in south-west Hinckley.

4.43. Again, this road has limited direct frontage and is subject to a 30 to 40mph speed limit. The carriageway is generally well lit with a footway on the western side of the carriageway and a shared use walking and cycling path on the eastern side of the carriageway.

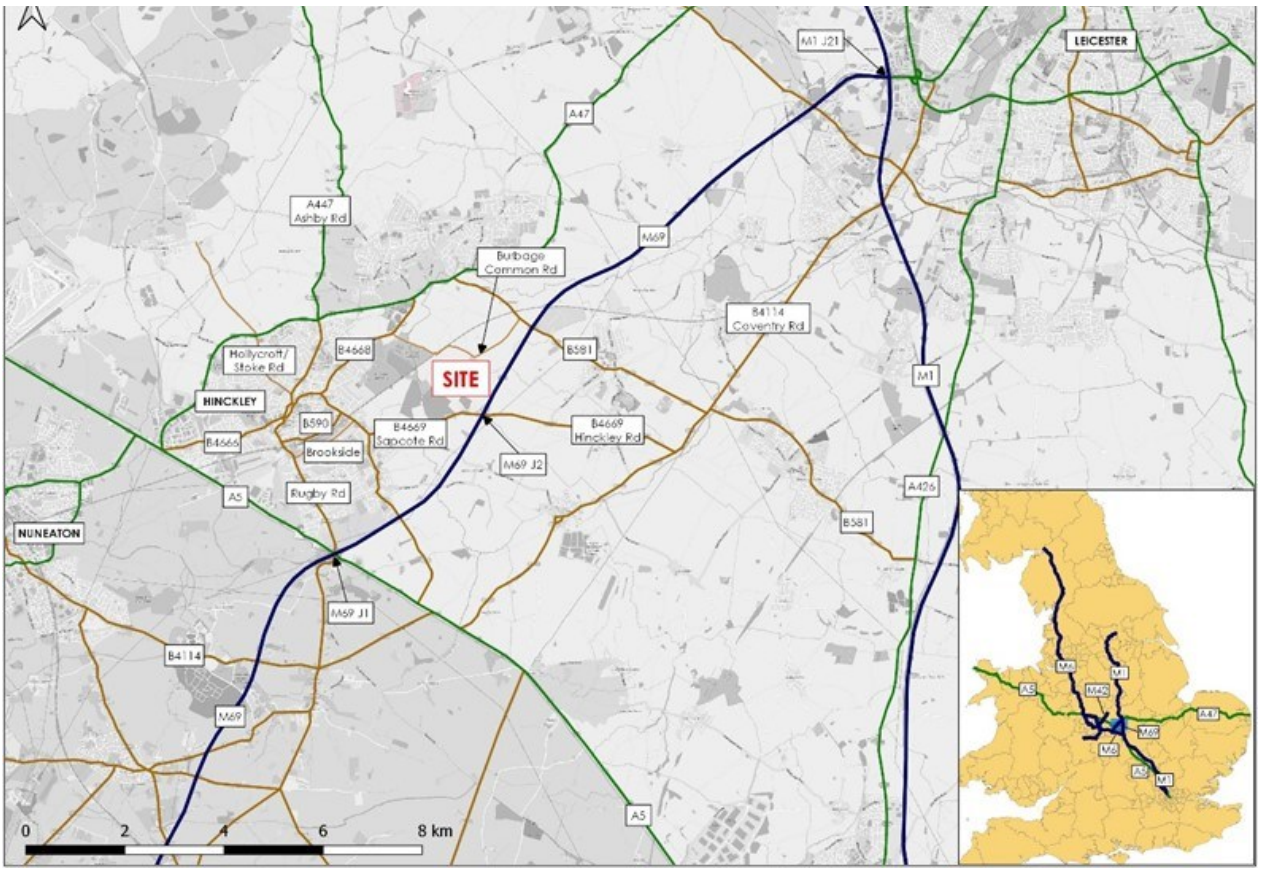
Brookside

4.44. Brookside is a local road which connects Rugby Road with the B4669. This connects the site with residential area to the south-west of Hinckley and runs parallel to the B590.

4.45. The carriageway is generally around 6m wide with traffic calming measures in the form of speed humps in place. Off-road lay-bys for residential parking is generally provided on both sides of the carriageway. The carriageway is well lit with pedestrian footways on both sides of the carriageway and is also identified as suitable for on-road cycling by the provision of road markings on the carriageway edge.

4.46. A detailed plan of the SRN and local highway network is shown in Figure 4-3.

Figure 4-3: Highway Network



Local Facilities

4.47. Considering the scale of the HNRFI and its employment nature, it is envisaged that local food retail will be provided internally within the warehouse units by the individual occupiers.

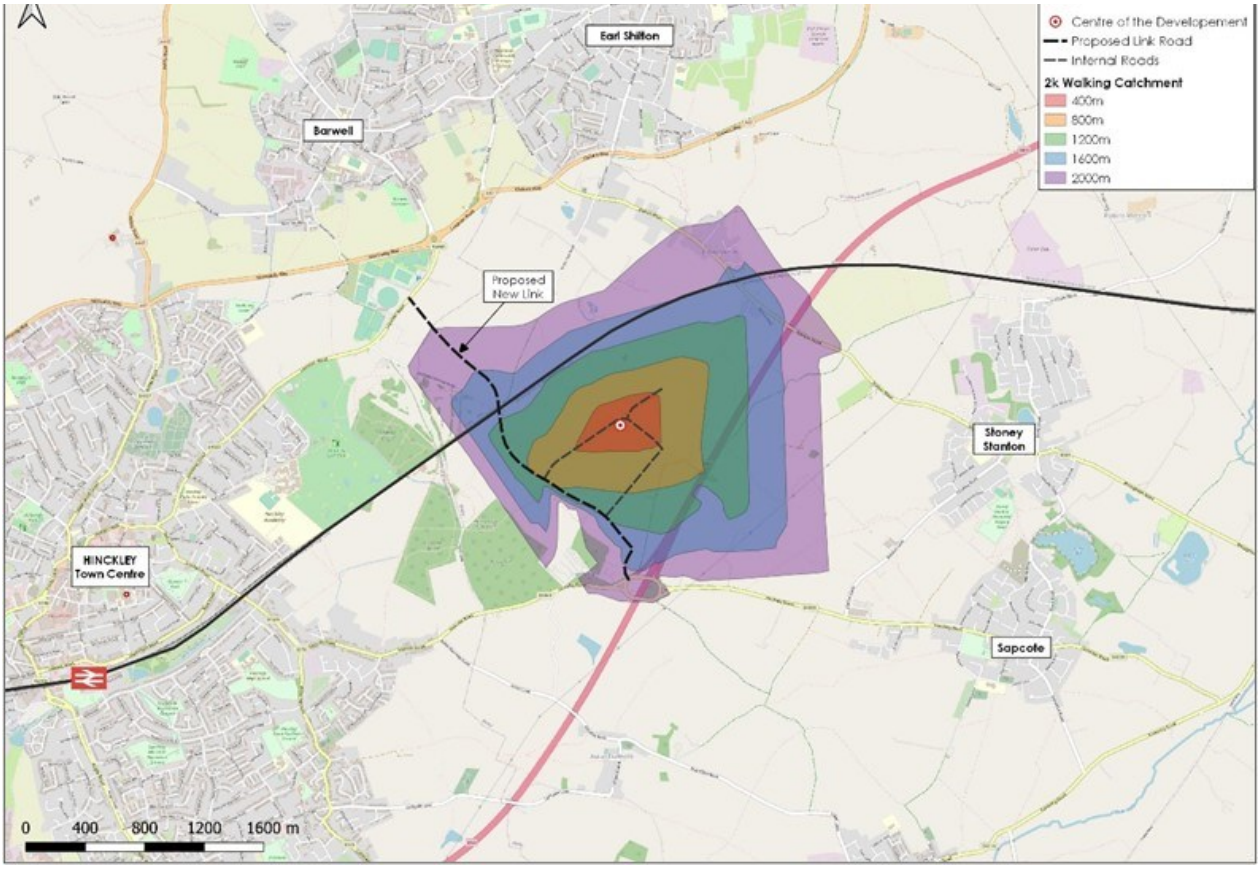
4.48. Local facilities including post office, banks, GPs, dentists, convenience stores, restaurants and pubs are located in Hinckley. Hinckley town centre is approximately 4km from the site.

Pedestrian Travel

4.49. 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. GPJF states that an average walking speed of approximately 1.4m/s (5km's/hr) can be assumed.

4.50. Figure 4-4 identifies a 2km walking distance from the proposed development site.

Figure 4-4: 2km Pedestrian Isochrone



4.51. Given the location of the site, the opportunities to encourage more people to walk to the site are limited. As can be seen in Figure 4-4 above, the nearest built-up area of Hinckley is beyond the 2km threshold from the site.

4.52. Given the size of the site, crossing the site will involve significant distances and hence the walk accessibility will vary.

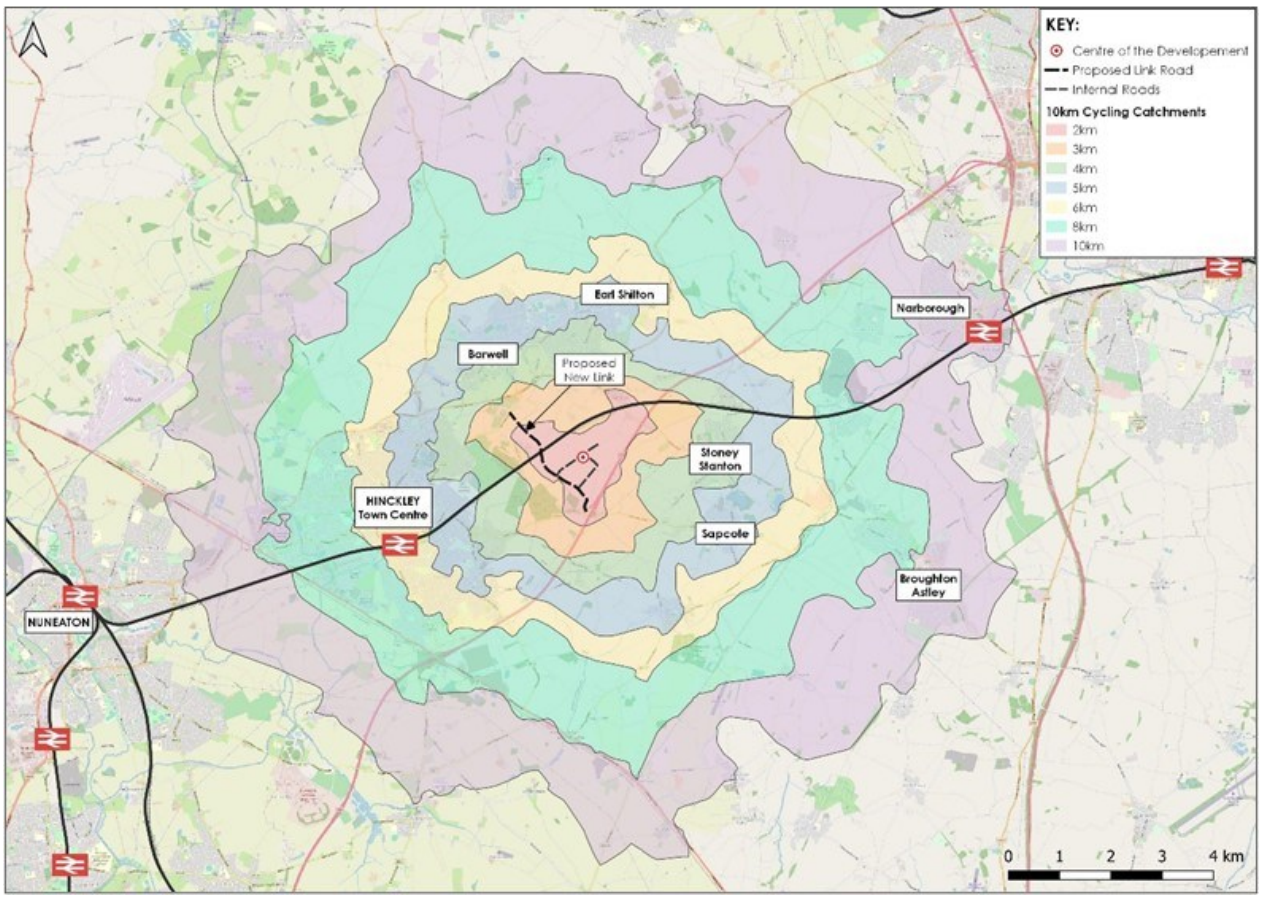
4.53. Existing pedestrian facilities are described in detail in Walking, Cycling & Horse-riding Assessment (WCHAR) Assessment Report appended to this Transport Assessment (Document Reference: 6.2.8.1.15). A summary of the information is included below.

Cycle Travel

4.54. Local Transport Note (LTN) 1/04 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.

4.55. Figure 4-5 shows a 10km cycling distance centred at the proposed development site.

Figure 4-5: 10km Cycle Isochrone



4.56. The 10km cycling catchment area demonstrates that employees from Sapcote, Stoney Stanton, Barwell, Earl Shilton and the eastern part of Hinckley are within a 5km commutable distance.

4.57. The Hinckley railway station is just outside the 5km catchment area, but high-quality cycle infrastructure could attract cyclists for longer multimodal rail-bicycle journeys.

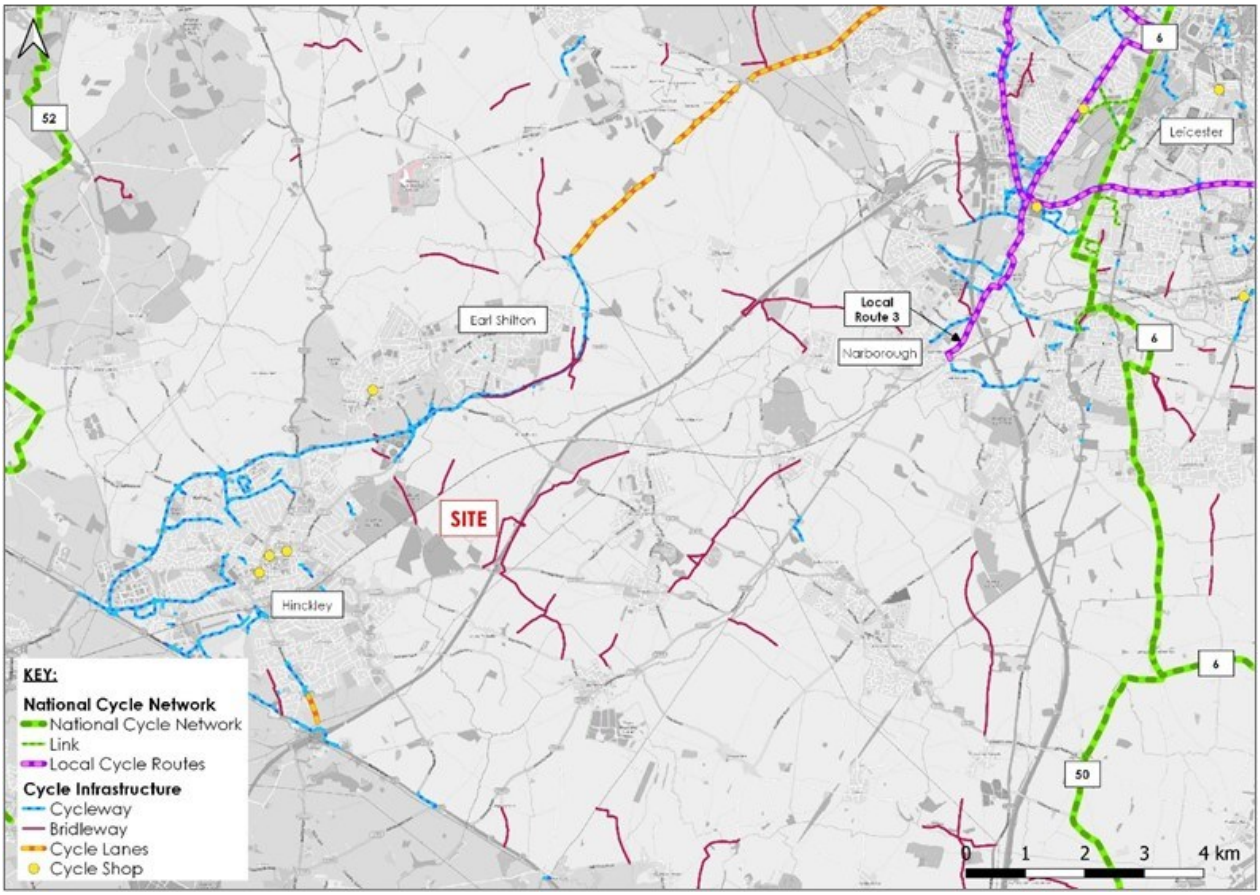
4.58. Figure 4-6 shows the wider context of strategic cycle infrastructure. Although there is some cycle infrastructure in place in the area, the access to the site is limited. However, the A47 benefits from cycle infrastructure. From the A5 through to the roundabout with Leicester Road (north of Earl Shilton), there is a shared footway/cycleway adjacent to the road. To the north of that roundabout there are on-road cycle lanes.

4.59. Cycle route to Hinckley is provided along the A47 on the northern edge of town to the roundabout with the B4668. The proposed access link road will join the B4668 and shared cycle/footway connections will be provided. Direct cycle routes to Hinckley town centre are limited.

4.60. Cycle routes from Leicester are of high quality but terminate in Narborough. Leicester

city centre can be accessed either via off-road NCN route 6 or via a local cycle route 3 along Narborough Road. Additionally, as the local cycle route 4 runs adjacent to the city ring road, other parts of the city can be also easily accessed by bike. To get to the City from the site cyclists can utilise the A47 and go via Enderby to Narborough and or the B4114 to the south or go via local cycle routes to the northwest.

Figure 4-6: Cycle Infrastructure



4.61. Existing cycle and equestrian facilities are described in detail in the WCHAR appended.

4.62. Both Leicestershire and Warwickshire County Councils have schemes (Hinckley Town centre improvement scheme and Transforming Nuneaton, respectively) to improve active travel infrastructure in the area. These will comprise of improved cycle infrastructure along the A47 connecting Nuneaton and Hinckley and local improvements across Hinckley.

Public Rights of Way

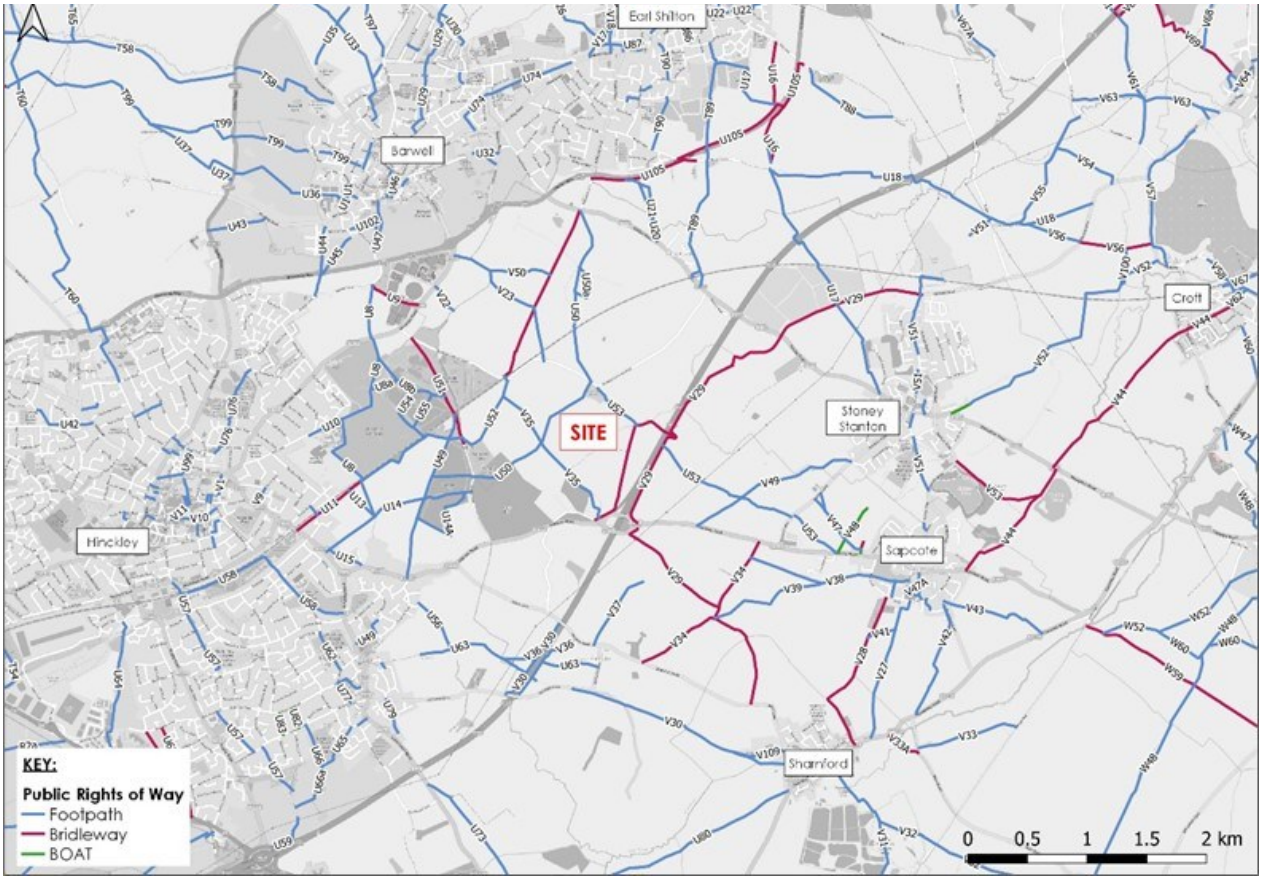
4.63. A Public Rights of Way Strategy has been prepared by Consultants EDP and forms part of the submission documents (document reference 6.2.11.2).

4.64. Figure 4-7 shows the existing Public Right of Way (PROW) in and around the site.

4.65. The PRoW within the site boundary include:

- Footpath U50/1, 2 and 3. Footpath U50 traverses the site in a north-south alignment and is separated into three sections:
- Section 1 connects to a network of footpaths in Burbage Woods to Footpath V35 towards the centre of the development site;
- Section 2 connects Footpath V35 to Burbage Common Lane, close to Woodhouse Farmhouse; and
- Section 3 connects Burbage Common Lane, close to Woodhouse Farmhouse to the B581 at Elmesthorpe, crossing over the railway line.
- Footpath V35/1 and 2. Footpath V35 traverses the site in a northwest – southeast alignment and is separated into two sections: Section 1 connects the gyratory of M69 Junction 2 to Footpath U50; Section 2 connects Footpath U50 to Footpath U52 close to where Burbage Common Road passes over the railway line.
- Footpath U53 connects Burbage Common Road close to Woodhouse Farmhouse to a bridleway which runs along the western edge of the site.
- Footpath U52/6 and 7. Footpath U52 runs along the eastern section of the site connecting a network of footpaths in Burbage Woods to Burbage Common Road at the railway bridge.
- Footpath V23 runs north from Burbage Common Road, at level over the railway line to a bridleway which continues north to Elmesthorpe and a separate footpath which continues to the B4668 close to its junction with the A47.

Figure 4-7: Existing Public Rights of Way



Walking, Cycling & Horse-riding Assessment

4.66. BWB Consulting Assessor has prepared a WCHAR Assessment Report appended to this report. This provides an assessment of the existing facilities and provision for pedestrians, cyclists, and equestrians. The report was developed in accordance with the requirements of DMRB GG 142 Walking, Cycling and Horse-Riding Assessment & Review (WCHAR) to inform the design of the proposed site and improvement Bus Services.

Bus Services

4.67. The Guidelines for Planning for Public Transport in Developments, states that "generally walking distances to bus stops in urban areas should be a maximum of 400m and

preferably no more than 300m". However, the Buses in Urban Developments[14] guidance advises a more rigorous approach to catchment area planning as displayed in Table 4-1.

Table 4-1: Recommended Maximum Walking Distances to Bus Stops

Situation	Maximum Walking Distance
Core bus corridors with two or more high-frequency services	500m
Single high-frequency routes (every 12 minutes or better)	400m
Less frequent routes	300m

4.68.

4.69. The Hinckley site lies to the north-east of the main town centre. There are bus services that run in relative proximity to the site, but there are no stops that sit within the recommended 400m walk radius. Figure 4-8 and Table 4-2 highlight the core services linking the major towns and cities in the vicinity.

[14] *Buses in Urban Developments, Chartered Institution of Highways and Transportation, 2018*

Figure 4-8: Existing Bus Services

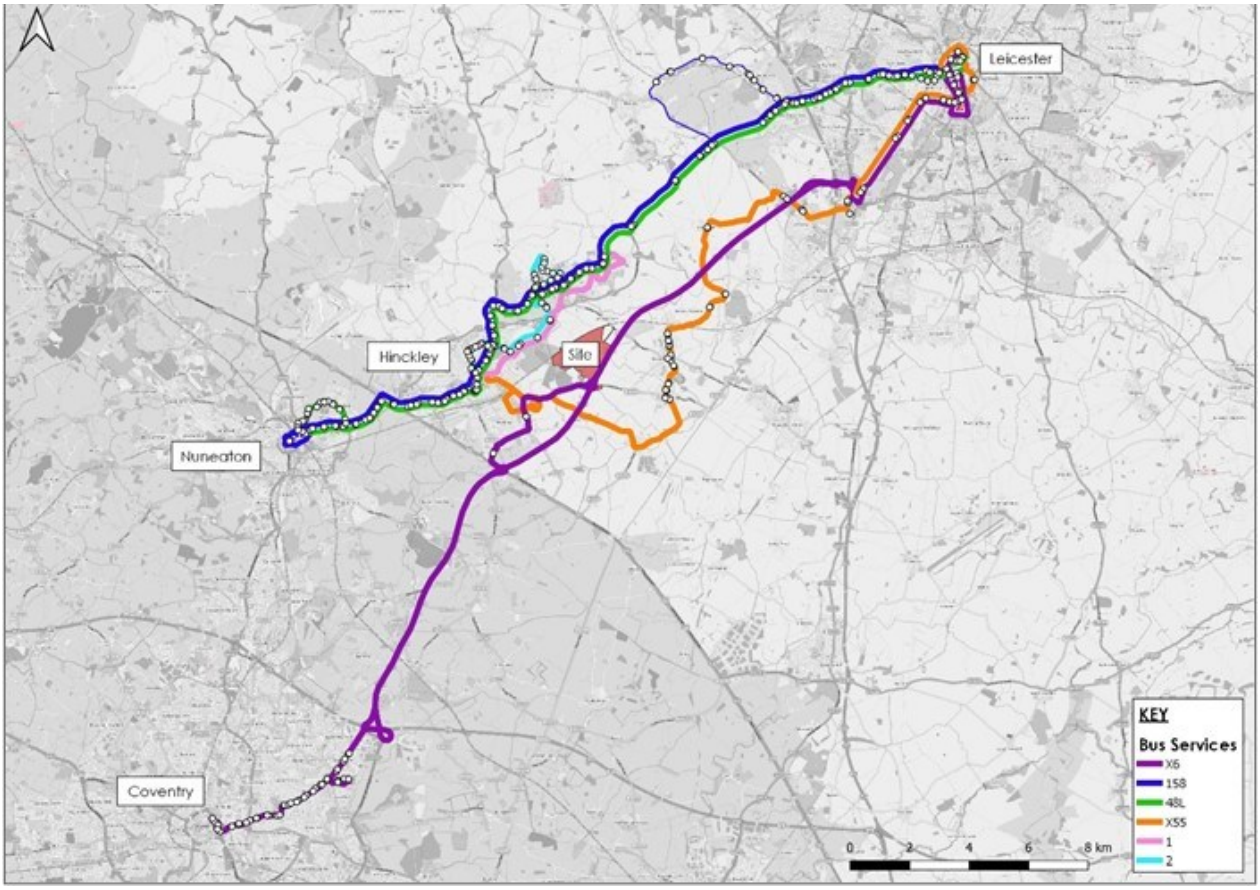


Table 4-2: Existing Bus Services

Service	Operator	Route	Approximate Frequency (minutes)		
			Mon-Fri	Sat	Sun
X6	Arriva	Coventry – Leicester (express via	c 90	c 90	-
X55	Arriva	Leicester – Fosse Park – Hinckley (via Stoney Stanton and Sapcote)	180 Hourly morning service between Stoney and	180	-
158	Arriva	Nuneaton – Leicester	20	30	60
48	Stagecoach	Leicester – Hinckley – Nuneaton	30	30	60
1	Arriva	Earl Shilton – Hinckley	c 90	120	-
2	Arriva	Barwell - Hinckley	120	120	-

4.70. Table 4-3 sets out the typical timetable information for weekday bus services. First/ last service based on time service arrives/leaves the nearest bus stop to the development site. Times for 158 and 48 services are for the Crescent bus station / Regent Street in Hinckley town centre.

Table 4-3: Summary of Weekday Bus Timetables

Service	Route	First Service	Last Service
X6	Coventry - Leicester (via M69)	07:57	18:32
	Leicester - Coventry (via M69)	08:04	18:38
X55	Leicester - Fosse Park - Stoney Stanton -Hinckley	08:03	19:39
	Hinckley - Stoney Stanton - Fosse Park -Leicester	05:39	18:06
158	Nuneaton - Leicester	06:53	21:14
	Leicester - Nuneaton	06:45	20:36
48L	Leicester (L) - Earl Shilton (ES) - Hinckley (H) - Nuneaton (N)	05:17 (ES) 06:52(L)	20:09 (L), 21:12 (ES), 22:08 (H)
	Nuneaton - Hinckley - Earl Shilton - Leicester	05:44	20:23, 21:52 (Terminates H)
1	Earl Shilton - Hinckley	09:07	15:47
	Hinckley - Earl Shilton	08:49	15:19
2	Barwell - Hinckley	08:16	16:46
	Hinckley - Barwell	09:54	17:24

4.71. The X6 is an express service between Leicester and Coventry which uses the M69 in the vicinity of the site. It detours into Burbage as part of its route. The route presents advantages for an employee service; it covers the larger conurbations where the workforce is likely to be sourced, it is relatively fast due to the use of the M69 and therefore has a reduced number of stops.

4.72. The X55 also routes from Leicester but through several villages either side of the M69, including Thurlaston, Stoney Stanton, Sapcote and Sharnford. The route is more circuitous and therefore, slower than the X6. However, the route does pass through local villages where some of the potential workforce for the site may be sourced.

4.73. The 158 Arriva service and the 48 Stagecoach service link Nuneaton, Hinckley and Leicester via the A47. The 158 service is slightly more frequent.

4.74. The 1 and 2 services, operated by Arriva, are both short local services between Hinckley and Earl Shilton and Barwell, respectively. They are infrequent with short operating hours.

Rail Services

4.75. The site is located on the Felixstowe to Nuneaton line. The nearest stations are in Hinckley and in Narborough as shown in Figure 4-9. The Hinckley Railway Station is within approximately 4km of the centre of the site, whilst Narborough Railway Station is approximately 10km away. The Hinckley station provides hourly trains in the direction of both central Leicester, Nuneaton and Birmingham. As such, rail travel as part of a multi-modal journey (i.e., via cycle or bus) also provides an opportunity to increase the sustainability and connectivity of the site.

Figure 4-9: Existing Railway Stations

4.76. Table 4-4 provides information about train frequency and journey times to nearby destinations. Whilst the journey times from Leicester and Nuneaton are short, there are no direct trains between Hinckley and Coventry and a change either in Nuneaton or Birmingham is required. The times shown for the first and last services are the times trains arrive at Hinckley Train Station.

Table 4-4: Local Rail Services

Destination	Approx. Weekday Daytime Frequency	Approx. Journey Time	First Service		Last Service	
			Outbound	Inbound	Outbound	Inbound
Leicester	60min	19min	06:37	05:55	22:46	22:58
Nuneaton	60min	6min	05:55	06:38	22:57	22:47
Coventry (one	60min	40 - 75min	06:27	06:38	22:57	22:47

Highway Safety

4.77. A highway safety assessment has been undertaken for the study area comprising a Personal Injury Collision Review and a future highway safety assessment using industry standard software COBALT.

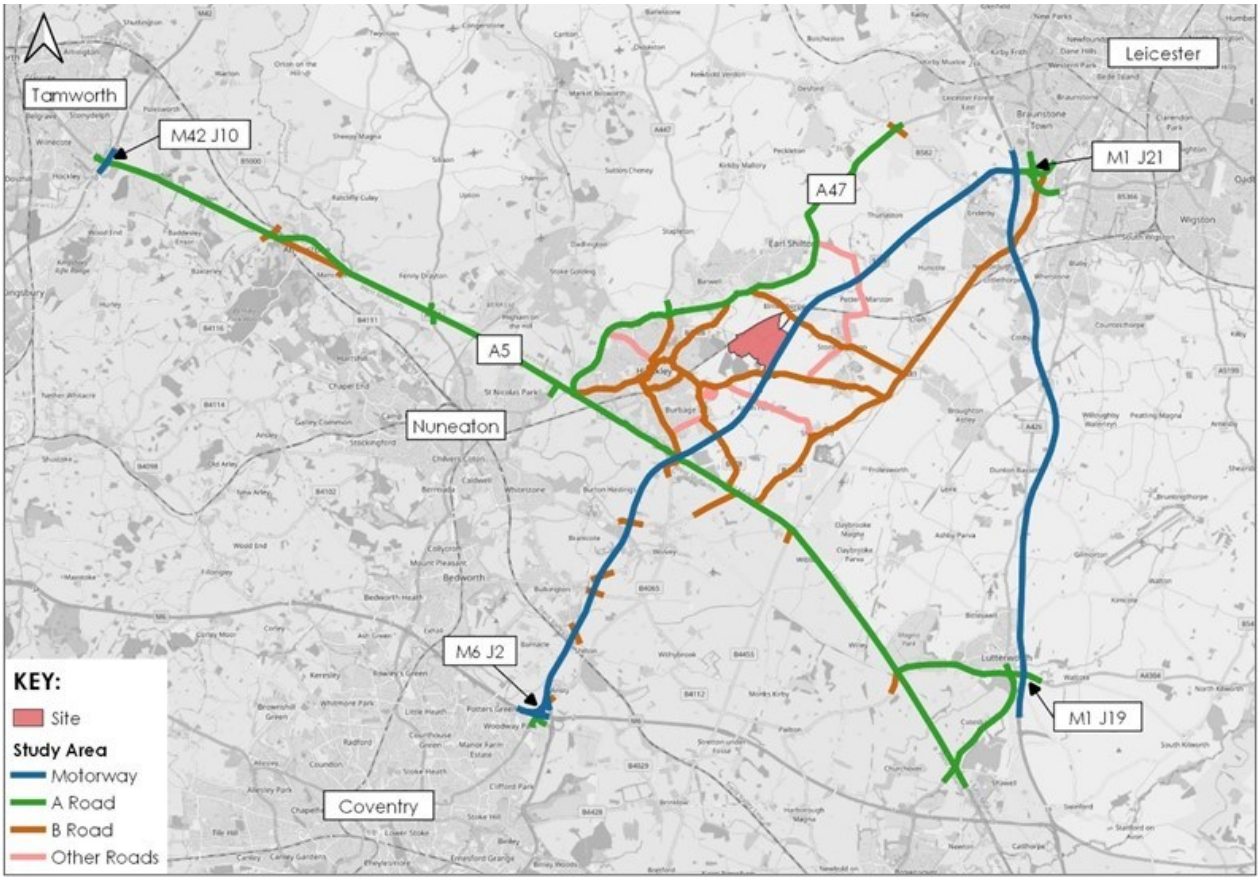
4.78. Personal Injury Collision (PIC) data has been obtained from the Department for Transport (DfT) and reviewed for the most recent available five-year period (2015 – 2019) of normal highway operation in the vicinity of the site. The most recent years 2020 and 2021 were not selected as the international Covid19 pandemic has had a major impact on highway operation nationally as the UK experienced lockdowns and a slow post lockdown return to work. The pre-Covid19 selection is considered to represent an accurate reflection of local highway network operation in normal circumstances.

4.79. The COBALT software undertakes the analysis of the impact on accidents as part of the economic appraisal for a road or development scheme, in accordance with the Department for Transport's Transport Analysis Guidance. COBALT assesses the safety aspects of road or development schemes based on a comparison of accidents by severity and associated costs, across an identified network, for the 'Without-Scheme' and 'With-Scheme' forecasts. The analysis and appraisal is undertaken using details of the individual link and junction characteristics, their forecast traffic volumes and relevant accident rates and costs.

4.80. Figure 4-10 shows the study area. It comprises:

- the M69 between the M1 Junction 21 and the M6 Junction 2;
- the M1 between Junctions 19 and 21;
- the A5 between Gibbet Roundabout and the M42 Junction 10;
- the A47 between the A5 and Desford Crossroad (B582);
- the B4114 between the A5 and Leicester;
- other selected B roads and unclassified roads as shown below.

Figure 4-10: Collision History Study Area



4.81. A total of 989 PICs were recorded across the study area. Of these collisions, 825 (83%) were classified as being slight in severity, 137 (14%) classified as serious and 27 (3%) were classed as fatal.

4.82. A breakdown of collisions by severity and year is presented in Table 4-5.

Table 4-5: Collision Severity by Year

Severity	2015	2016	2017	2018	2019	Five Year Total
Fatal	7	7	5	3	5	27
Serious	32	36	20	31	18	137
Slight	207	221	145	118	134	825
Total	246	264	170	152	157	989

Casualties

4.83. Of the 989 Personal Injury Collisions recorded there were 2043 vehicles and 1422 casualties recorded.

4.84. Of the 1422 Casualties, 1080 were car/taxis occupants and 278 were vulnerable road users (powered two-wheeler users, cyclists and pedestrians) which are reviewed in more detail below.

4.85. Of the 1422 Casualties there were 1241 (87%) slights, 154 (11%) serious and 27 (2%) fatal injuries recorded. Of the fatal casualties, 13 were vulnerable road users (48% of the total fatal and 1% of all casualties)

Pedestrians

4.86. In total, 74 pedestrians were injured or killed over the five years period. Of the 74, 54 were recorded as slight, 12 serious and eight fatal injuries. Of the 20 KSI (Killed or seriously Injured), five were crossing at either facilities or elsewhere, nine were in the carriageway, two on the footway/verge and four were in an unknown location. There were eight pedestrian fatalities within the study area.

Cyclists

4.87. In total, 81 cyclists were injured over the five-year period within the study area. Of the 81 cyclists, 66 were recorded as having slight injuries and 15 with serious injuries. There were no fatal cycle casualties.

4.88. No clusters with three or more cyclist casualties have been identified.

4.89. There have been 31 (38%) collisions involving cyclists in Hinckley within the area bounded by the A5, A47 and the M69 (excluding these roads).

4.90. In total, three serious and 12 slight collisions occurred on the 9.4 miles (15.1km) long section of the B4114 (Coventry Road / Leicester Road / Narborough Road South) between the A5 and the A5460 roundabout near Fosse Shopping Park roundabout near the M1 J21.

Powered Two Wheelers

4.91. In total 99 powered two-wheeler (PTW) users were injured in the five-year period within the study area. Of the 99 casualties, 67 experienced slight, 27 serious and five fatal injuries.

4.92. The highest number of PTW casualties occurred on the 22.8 miles (36.7km) long section of the A5 with 35 casualties, resulting in 23 slight, 11 serious and one fatal injury.

Collisions on key routes and Junctions Hotspots

4.93. Of the 989 PICs recorded the following were record on each key routes close to the site in the study area in the last 5 years:

- 92 on the M69 between the M1 Junction 21 and the M6 Junction 2;
- 70 on the M1 between Junctions 19 and 21;
- 239 on the A5 between Gibbet Roundabout and the M42 Junction 10;
- 64 on the A47 between the A5 and Desford Crossroad (B582);
- 108 on the B4114 between the A5 and Leicester;
- 11 on the B4668; and
- 32 on the B4669.

4.94. Over the five-year period 27 fatal collisions occurred within the study area on the following routes. These collisions are shown in Table 4-6.

Table 4-6: Fatal Collision Locations

Location	2015	2016	2017	2018	2019	Five Year Total
A5	4	1	1	0	2	8
M69	1	2	2	0	1	6
B4114	1	1	1	1	0	4
M1	1	1	0	1	0	3
A4303	0	1	0	0	0	1
A426	0	1	0	0	0	1
A563	0	0	1	0	0	1
B581	0	0	0	0	1	1
B590	0	0	0	0	1	1
C6707	0	0	0	1	0	1
Total	**7**	**7**	**5**	**3**	**5**	**27**

4.95. Three routes experienced more than three fatal collisions in the five years and these are then reviewed further in terms of location below.

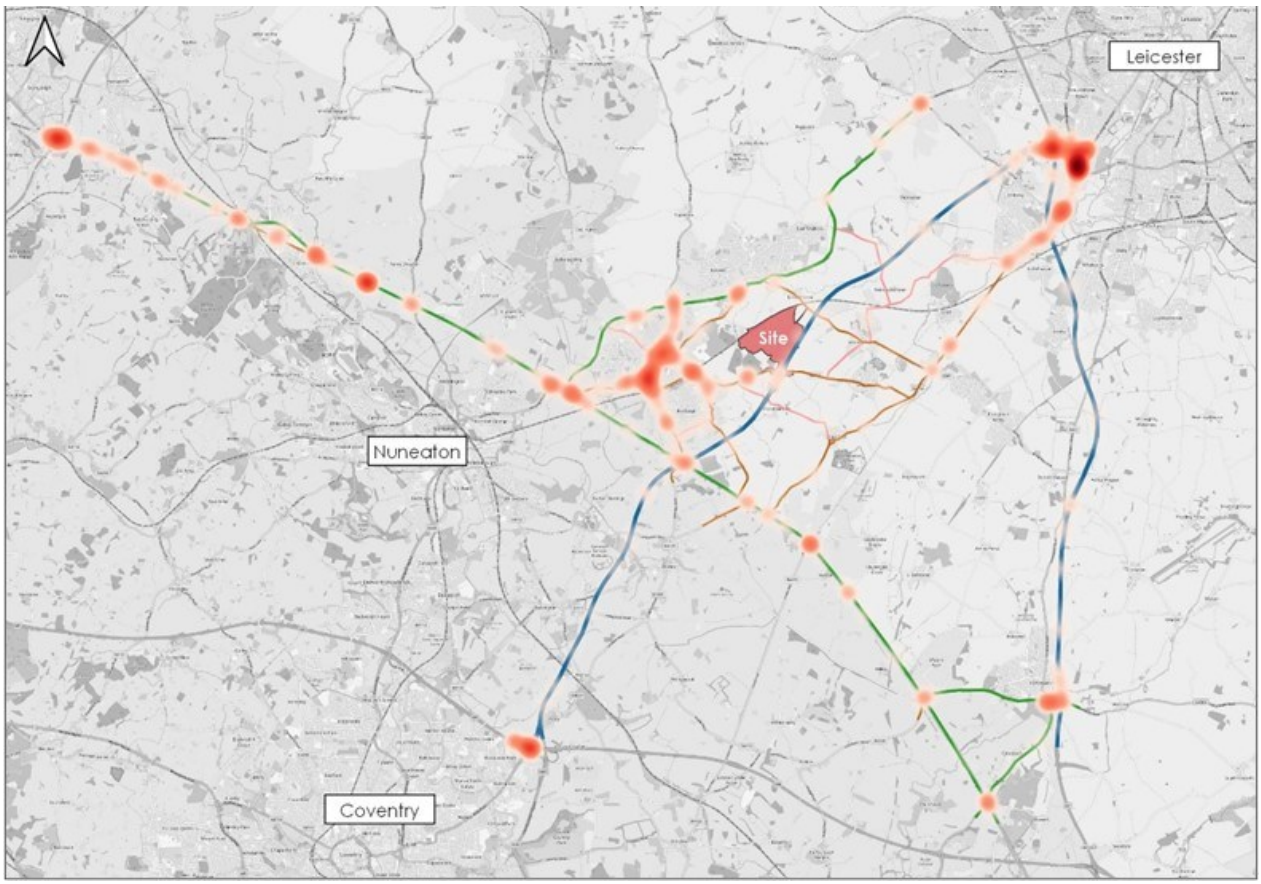
4.96. Of the eight fatal collisions on the A5, three were at High Cross/Fosse Way staggered junction, one at Gibbet Lane roundabout, one west of Higham Lane, one south of High Cross, one north of Woodway Lane and one north of Mere Lane.

4.97. Four of the M69 collisions took place on the northbound carriageway; one between junctions 1 to 2, and three between junctions 2 to 3 (south of Thurlaston). Two incidents occurred on the southbound carriageway between junctions 3 to 2 (either side of the B581).

4.98. Of the four on the B4114, two are south of the A5 and north of Gipsey Lane, one between Sharnford Road and the B4669 and one at Broughton Road junction near Croft

4.99. For all the collisions on those key routes a number of collision hot spots at junctions have been identified within the study area are mapped and shown Figure 4-11 below.

Figure 4-11: Collision Heatmap



4.100. The road network to the southwest of Leicester, southeast of M1 J21 appears to have the highest number of recorded PICs. Relatively high number of collisions occurred on the A5 and at some junctions in Hinckley. On the other hand, records on the A47 do not raise severe safety concerns.

4.101. When the locations were analysed in detail, 29 locations were identified as hotspots with clusters of collisions. These locations include five junctions to the southwest of Leicester, 10 junctions on the A5, seven junctions in Hinckley, two on the B4114 Coventry Road and the M6 J2 and Desford Crossroads. These locations account for 28% (280) of all PICs within the study area.

4.102. The five locations with the highest number of PICs are:

- A563 Lubbesthorpe Way / Soar Valley Way / B4114 Narborough Rd South;
- M42 Junction 10 Roundabout;
- A5 Watling St / Woodford Lane;
- M6 Junction 2 Roundabout;
- M1 Junction 21 Roundabout.

4.103. The five locations listed above were examined in further detail and are reviewed below.

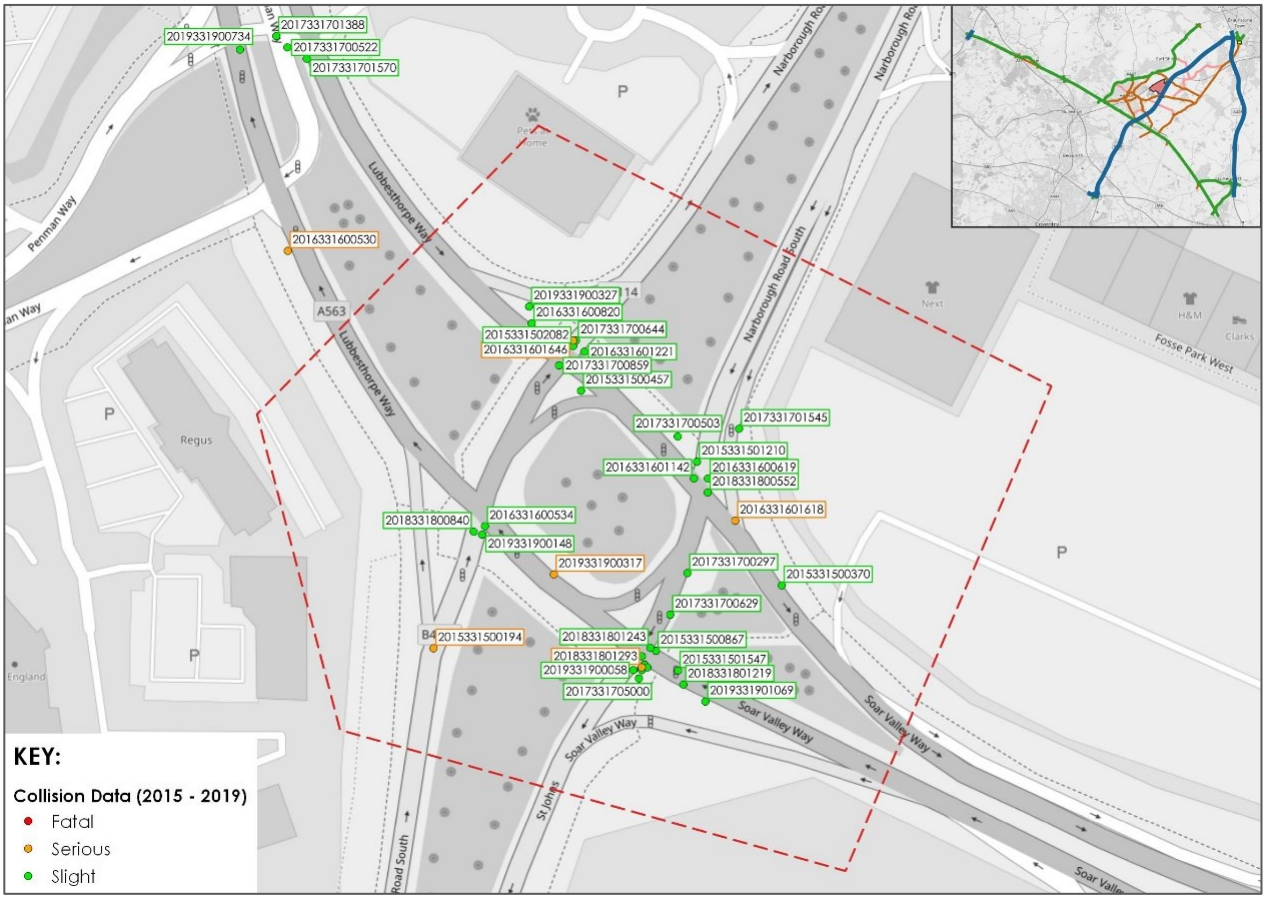
A563 Lubbesthorpe Way/Soar Valley Way/B4114 Narborough Road South

4.104. Figure 4-12 shows that a total of 35 collisions have occurred at the A563 Lubbesthorpe Way / Soar Valley Way / B4114 Narborough Road South junction. Table 4-7 provides a breakdown of the collision severity at the junction.

Table 4-7: A563/Soar Valley Way/B4114 Junction Collision Severity Table

Severity	2015	2016	2017	2018	2019	Five Year Total
Fatal	0	0	0	0	0	0
Serious	1	2	0	1	1	5
Slight	8	6	8	4	4	30
Total	**9**	**8**	**8**	**5**	**5**	**35**

Figure 4-12: A563 Lubbesthorpe Way/Soar Valley Way/B4114 Narborough Road South junction



4.105. Over the five-year period 30 PICs were classified as being slight severity, 5 of serious severity and no fatalities. However, as shown in Figure 4-12, the serious collisions all

occurred at different locations.

4.106. The remaining 30 slight injury collisions occurred throughout the entire gyratory of the junction and within the immediate vicinity of the junction, with the only obvious clusters being located on the approach arms to the junction.

4.107. The collision trend is generally reduced from nine collisions in 2015 to only five in 2019.

4.108. Having reviewed the PIC data for all injury collisions, there does not appear to be any common causal factors attributable to the highway layout present within the data recorded.

M42 Junction 10 Roundabout

4.109. Figure 4-13 shows that a total of 17 collisions have occurred at Junction 10 of the M42 motorway. Table 4-8 provides a breakdown of the collision severity at the junction.

Figure 4-13: A5/ M42 Junction 10 Junction

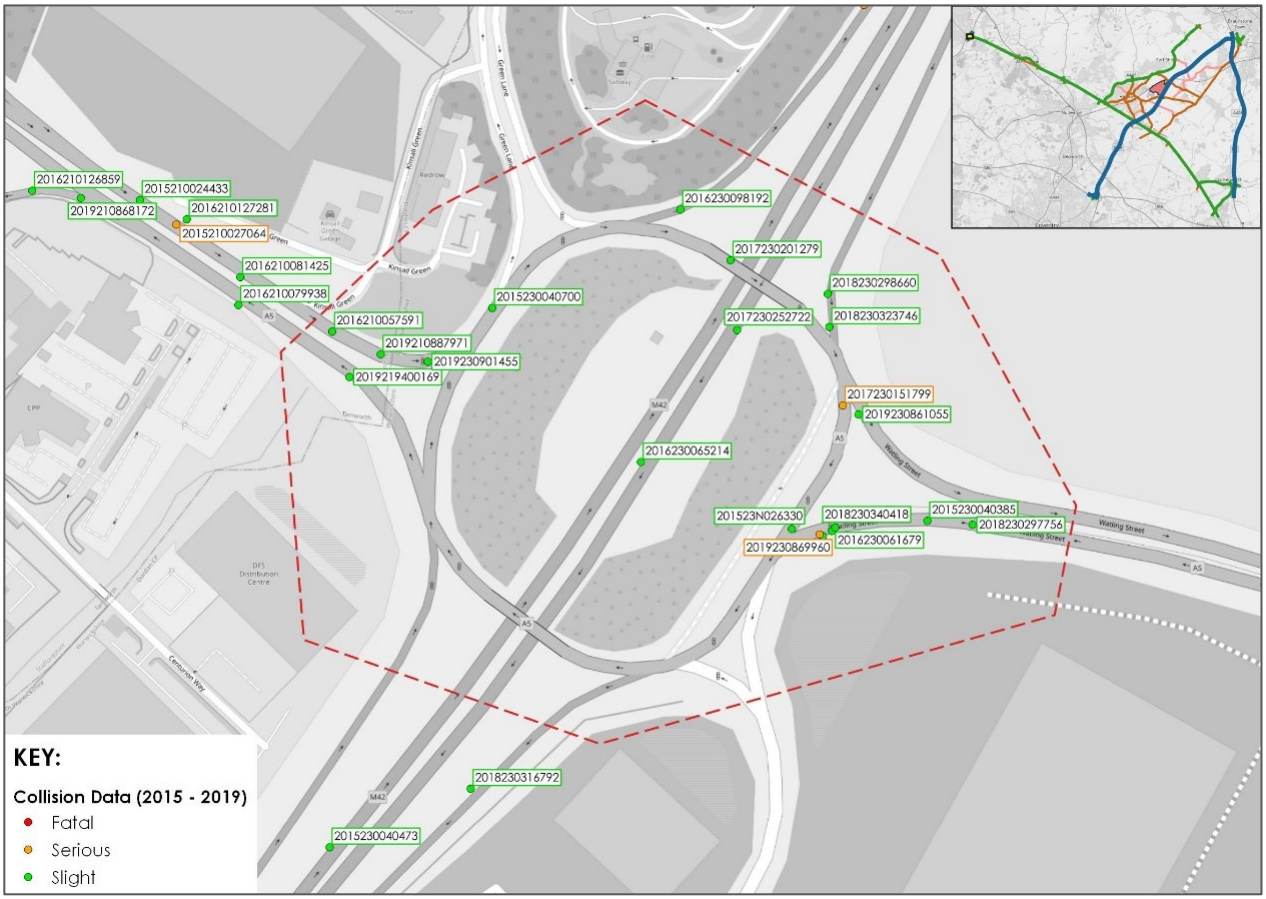


Table 4-8: A5/M42 junction 10 Junction Collision Severity Table

Severity	2015	2016	2017	2018	2019	Five Year Total
Fatal	0	0	0	0	0	0
Serious	0	0	1	0	1	2
Slight	3	2	1	4	5	15
Total	**3**	**2**	**2**	**4**	**6**	**17**

4.110. There were no fatal collision and two of the collisions within the study area were classified as serious severity. However, as shown in Figure 4-13, the serious collisions occurred at different locations on the gyratory of the junction.

4.111. The remaining 15 slight severity injury collisions occurred throughout the junction, and the approach arms. The only identifiable clusters being present on the approach arms of the A5.

4.112. Having reviewed the data for the personal injury collisions, there are no common trends present within the data.

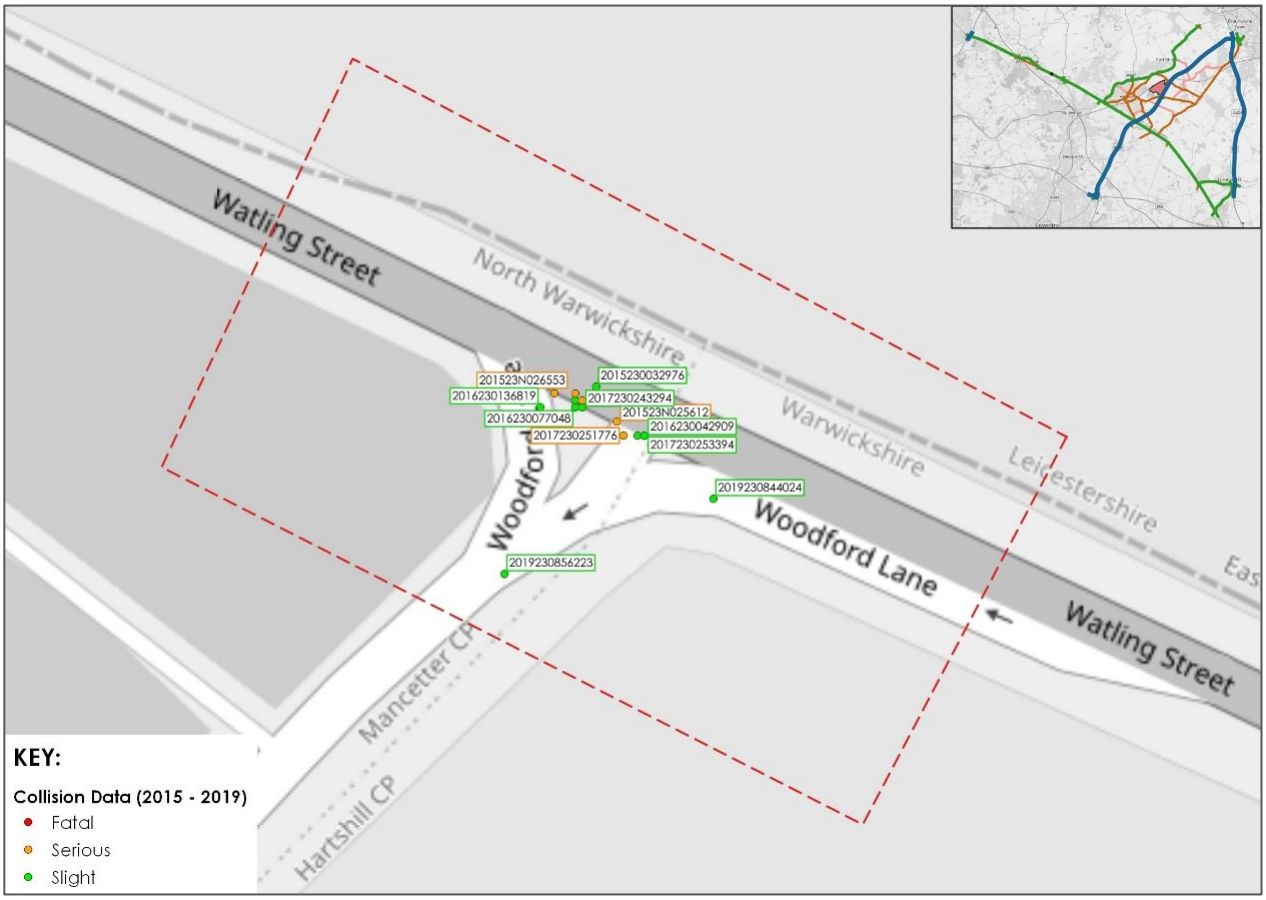
A5 Watling Street/Woodford Lane Junction

4.113. Figure 4-14 shows that a total of 18 collisions have occurred at the A5 Watling Street / Woodford Lane junction. Table 4-9 provides a breakdown of the collision severity at the junction.

Table 4-9: A5 Watling Street/Woodford Lane Junction Collision Severity Table

Severity	2015	2016	2017	2018	2019	Five Year Total
Fatal	0	0	0	0	0	0
Serious	2	2	1	0	0	5
Slight	3	5	3	0	2	13
Total	**5**	**7**	**4**	**0**	**2**	**18**

Figure 4-14: A5 Watling Street/Woodford Lane Junction Collision Map



4.114. There were 13 PICs classified as being slight severity, 5 of serious severity and no fatalities. No collisions involved vulnerable road user casualties.

4.115. The collisions occurred on the junction itself with two occurring on Woodford Lane as vehicles entered from Watling Street. These two collisions still remain within close proximity of the junction.

4.116. Collisions would appear to be related to turning movements and the speed of the roads being 50mph and 60mph on approach.

4.117. A recent highway safety scheme at the junction, implemented in the Autumn of 2020, by the Highway Authority which included advance warning signs, advance road markings and high-quality anti-skid surfacing to assist the control of vehicles on approach to the junction as illustrated by Figure 4-15, extracted from Google Maps.

Figure 4-15: A5 Watling Street/Woodford Lane Junction Highway Safety Scheme

4.118. The scheme aims to provide advance warning of the junction to vehicles on the A5 major arm of the junction and vehicles turning, encourage and assist speed reduction on approach to reduce the probability and severity of any future collisions.

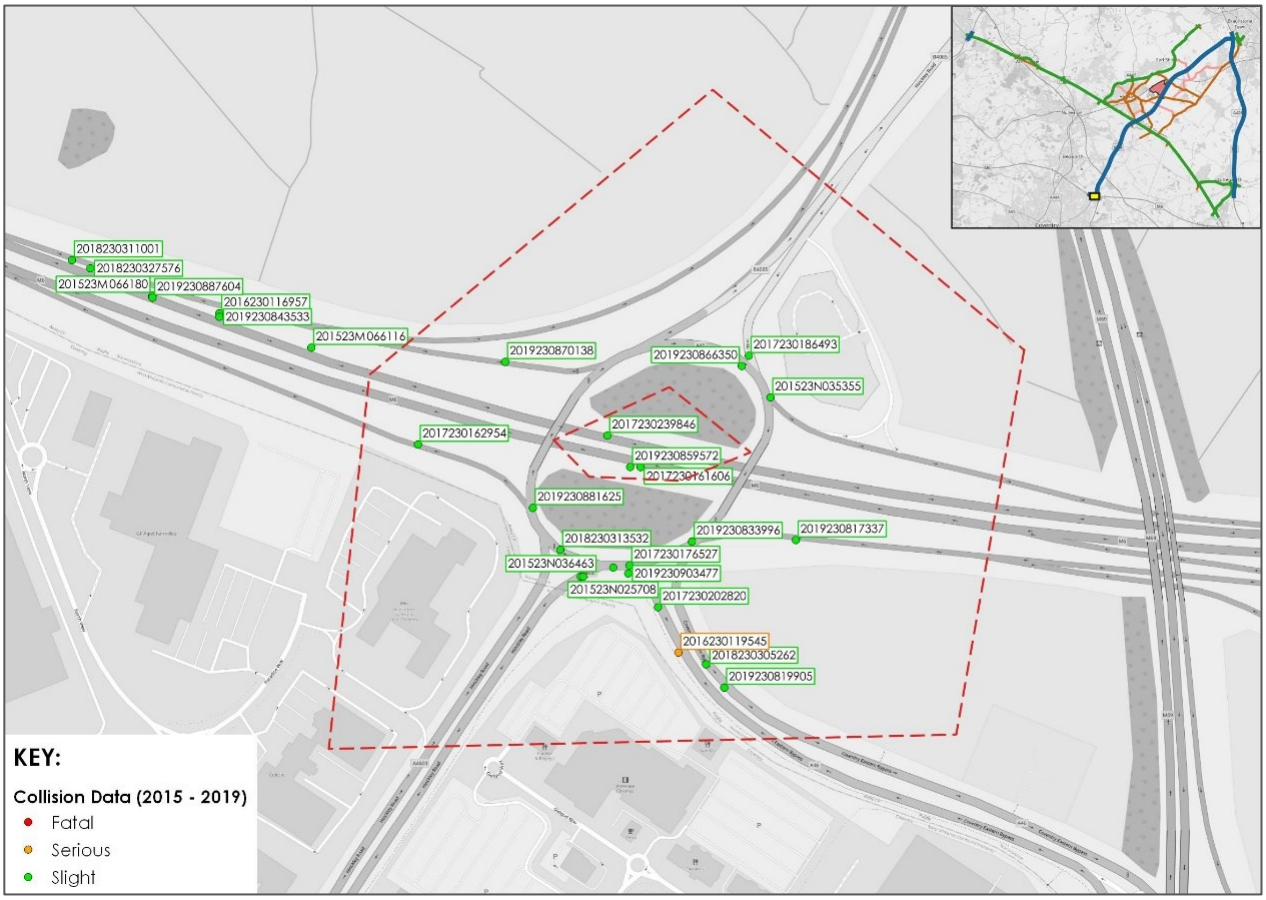
M6 Junction 2 Roundabout (Ansty Interchange)

4.119. Figure 4-16 shows that a total of 18 collisions have occurred at the M6 Junction 2 roundabout. Table 4-10 provides a breakdown of the collision severity at the junction.

Table 4-10: M6 Junction 2 Roundabout Collision Severity Table

Severity	2015	2016	2017	2018	2019	Five Year Total
Fatal	0	0	0	0	0	0
Serious	0	1	0	0	0	1
Slight	4	0	4	2	7	17
Total	**4**	**1**	**4**	**2**	**7**	**18**

Figure 4-16: M6 Junction 2 Roundabout Collision Map



4.120. There were no fatal injury collisions recorded in the study area over the five-year period. Only one of the collisions within the study area was classified as serious severity which occurred in 2016 resulting in two casualties, neither of which were classified as vulnerable road users.

4.121. The remaining 17 slight severity injury collisions occurred throughout the junction, and the approach arms with the only identifiable cluster being present on the south of the junction (approach arm of the A46, gyratory and the departure lane of the A4600), albeit occurring across the five-year period.

4.122. Having reviewed the data for the slight injury collisions, there are no common causal factors present within the data.

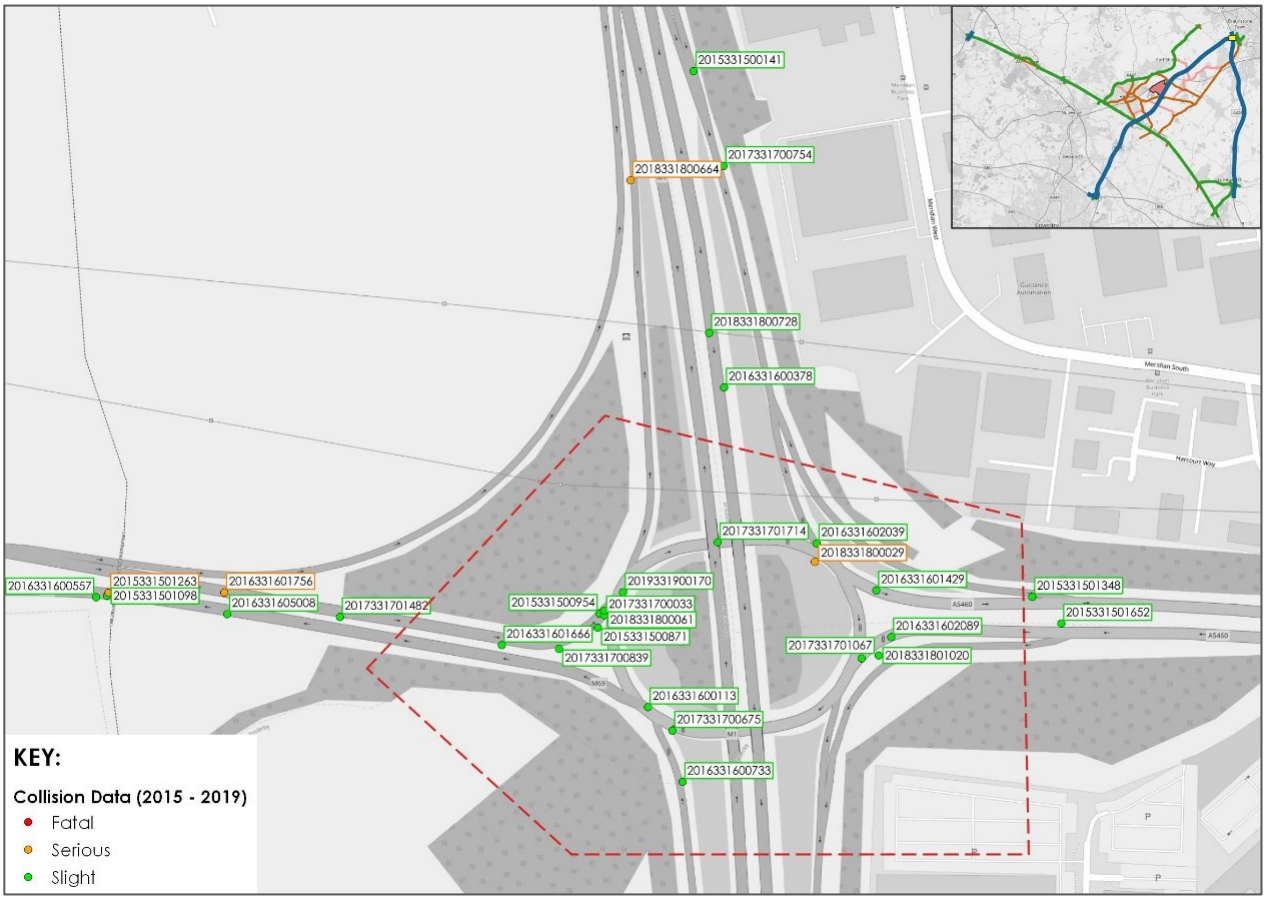
M1 Junction 21 Roundabout

4.123. Figure 4-17shows that a total of 17 collisions have occurred at the M1 Junction 21 roundabout with the M69 and A5460. Table 4-11 provides a breakdown of the collision severity at the junction.

Table 4-11: M1 Junction 21 Roundabout Collision Severity Table

Severity	2015	2016	2017	2018	2019	Five Year Total
Fatal	0	0	0	0	0	0
Serious	0	0	0	1	0	1
Slight	2	6	5	2	1	16
Total	**2**	**6**	**5**	**3**	**1**	**17**

Figure 4-17: M1 Junction 21 Roundabout Collision Map



4.124. There were no fatal injury collisions recorded in the study area over the five-year period. Only one of the collisions within the study area was classified as serious severity which occurred in 2018 resulting in one vehicle occupant casualty.

4.125. The remaining 16 slight severity injury collisions occurred throughout the junction, and the approach arms with the only identifiable cluster being present on the M69 approach arm of the roundabout. This approach is the only entry arm onto the roundabout which is not signalised and operates as a give-way priority entry-arm.

Proposed Development COBALT Appraisal

4.126. An analysis of the impact on accidents as part of economic appraisal for the scheme with use of the DfT COBALT software has been undertaken.

4.127. COBALT (COst and Benefit to Accidents – Light Touch) is the Department for Transport's ('DfT') software tool for forecasting road accident impacts. COBALT assesses the safety aspects of road schemes using detailed inputs of either (a) separate road links and road junctions that would be impacted by the scheme; or (b) combined links and junctions. The assessment is based on a comparison of accidents by severity and associated costs across an identified network in 'Without-Scheme' and 'With-Scheme' forecasts, using details of link and junction characteristics, relevant accident rates and costs and forecast traffic volumes by link and junction.

4.128. Personal injury Collisions (PIC) occurring on the local highway network are considered in general to be attributable to traffic flows, such that an increase in traffic flows will result in a corresponding increase in PICs.

4.129. Traffic Flow with and without development were assessed to determine the scope of assessment which includes 18 highway links on the A5 and A47 corridors and local villages. Highways with the most significant change in traffic flow as a result of development are generally not within areas of collision hotspots. The junctions assessed through the PIC review are also included in the COBALT assessment.

4.130. Table 4-12 summarises the baseline annual average accident rates and the corresponding typical annual accident rates along the links considered within this assessment for 2019, the most recent pre-covid data available.

Table 4-12: 2019 Baseline and Future 2036 Collision and Safety Levels

Link No.	Road	2019 Typical Annual Accidents (as calculated by Cobalt)	2019 Actual Observed Annual PIC	2036 Baseline Typical Annual Accidents	2036 Typical Annual Accidents with Proposed Development
1	A5 (Link 1)	1.0	1.6	0.9	0.9
2	A5 (Link 2)	2.8	2.4	2.3	2.3
3	A5 (Link 3)	1.3	1.8	1.2	1.2
4	A5 (Link 4)	2.4	1.2	2.2	2.1
5	A5 (Link 5)	2.2	1.6	2.0	1.9
6	A5 (Link 6)	0.8	1.2	0.8	0.9
7	A5 (Link 7)	1.5	0.8	1.2	1.2
8	A5 (Link 8)	1.5	0.8	1.5	1.5
9	A5 (Link 9)	2.2	2.6	1.9	1.8
10	A5 (Link 10)	4.3	4.4	3.6	3.6

Link No.	Road	2019 Typical Annual Accidents (as calculated by Cobalt)	2019 Actual Observed Annual PIC	2036 Baseline Typical Annual Accidents	2036 Typical Annual Accidents with Proposed Development
11	A47 (Link 1)	0.9	0.8	0.7	0.7
12	A47 (Link 2)	1.0	0.8	0.9	0.9
13	A47 (Link 3)	1.2	1.0	0.9	0.9
14	A47 (Link 4)	1.2	0.6	0.8	0.9
15	A47 (Link 5)	0.4	0.4	0.3	0.3
16	Sapcote (Link 1)	0.3	0.4	0.2	0.4
17	Sapcote (Link 2)	0.5	0.4	0.4	0.7
18	Stoney Stanton (Link 1)	0.1	0.2	0.1	0.1
Junction No.	**Roads**	**2019 Typical Annual Accidents (as calculated by Cobalt)**	**2019 Actual Observed Annual PIC**	**2036 Baseline Typical Annual Accidents**	**2036 Typical Annual Accidents with Proposed Development**
1	A563 Lubbesthorpe Way/Soar Valley Way/B4114 Narborough Road South	8.9	7.0	9.0	9.1
2	M42 Junction 10 Roundabout	5.2	7.4	5.3	5.3
3	A5 Watling Street/Woodford Lane	1.6	2.2	1.8	1.8
4	M6 Junction 2 Roundabout	4.1	4.0	5.4	5.5
5	M1 Junction 21 Roundabout	5.9	5.8	6.2	6.2

4.131. Table 4-12 shows that compared to actual accident rates the predicted rates are higher on 10 links and lower on 7 links with one predicted outcome matching the observed rate.

4.132. In the Baseline Scenario there were links where the COBALT predicted a rate higher than the observed annual rate. Links 4, 7, 8 and 14 have a predicted rate approximately double the actual observed annual accidents. There were also links where the COBALT predicted a lower rate than the observed accidents, these being links 1, 3 and 6 where the rate is approximately one third lower than the actual observed annual accidents.

4.133. The COBALT assessment does not consider link geometry, road surface material to manage vehicle speed, signage or lighting, all factors which can influence the occurrence of accidents.

4.134. The future scenarios are both predicted to marginally reduce from the baseline figures across all links despite predicted traffic growth having been considered.

4.135. There is predicted to be a very slight increase in accident rate at two junctions in future however there is no material increase in accident rate with development over that

without, the maximum being 0.1 on junctions 1 and 4 which does not indicate the need for mitigation.

Summary

4.136. Review of collisions occurred within the study area over a five-year period has been undertaken with a primary focus on vulnerable users and a detailed assessment of identified collision hotspots and clusters have been identified. A COBALT assessment of the links impacted by the proposed development and those junctions identified through the PIC review.

4.137. It has been concluded that following a thorough review of the records, it is considered that there are no inherent highway safety concerns likely to be exacerbated by the proposed development.

5. PROPOSED DEVELOPMENT

Introduction

5.1. Hinckley National Rail Freight Interchange (HNRFI) is a proposed B8 (warehousing) employment development and National Rail Freight Terminal located to the north-west of M69 Junction 2, to the east of Hinckley. With a capacity of 850,000sqm of employment land, this development is expected to generate between 8,400 and 10,400 jobs.

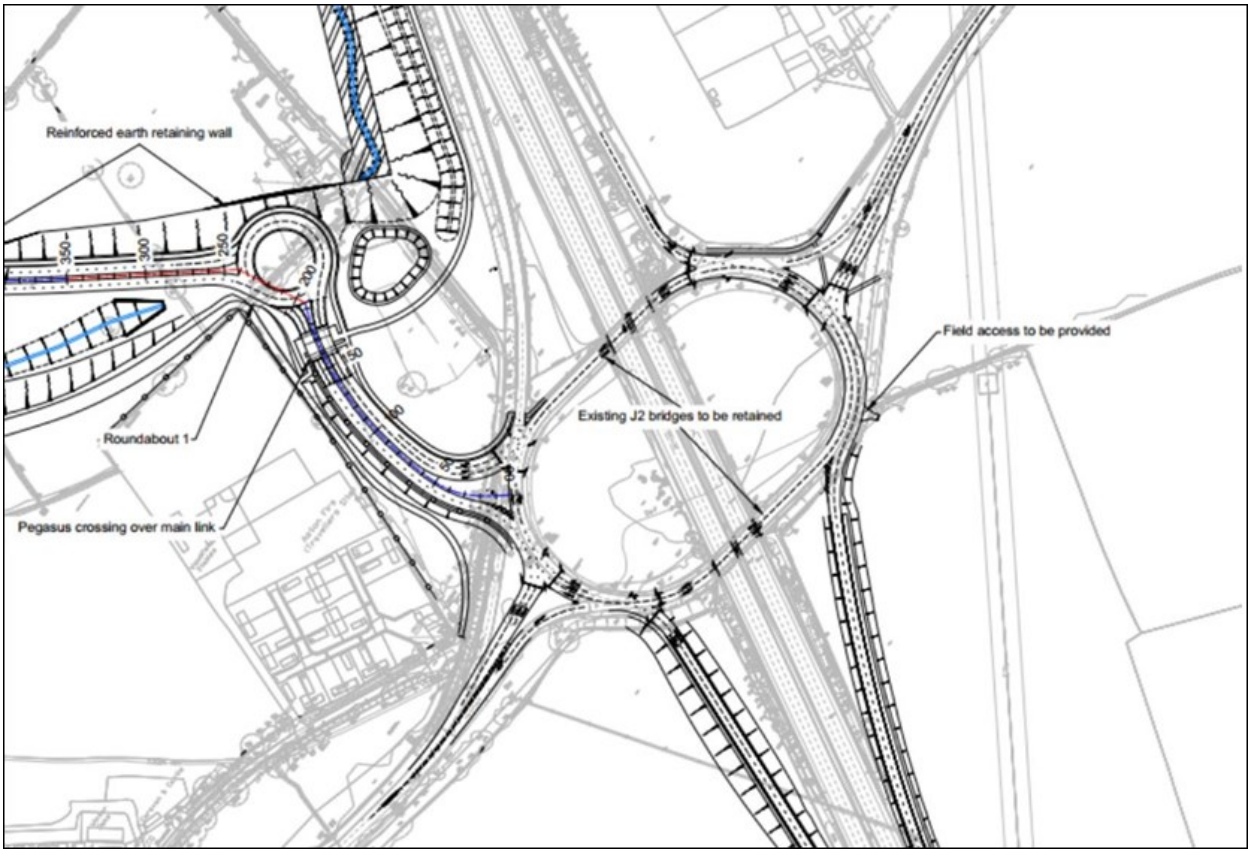
5.2. The indicative site layout is provided in Appendix 1 of this Transport Assessment (Document Reference 6.2.8.1.1).

Vehicular Access – Access Infrastructure

5.3. Proposed Access Infrastructure to the site comprises via two vehicular points; from the M69 J2 and a new roundabout junction on the B4668 linked by a new distributor link road (A47 Link Road). The access layout is shown in Appendix 2 of this TA (Document Reference 6.2.8.1.2)

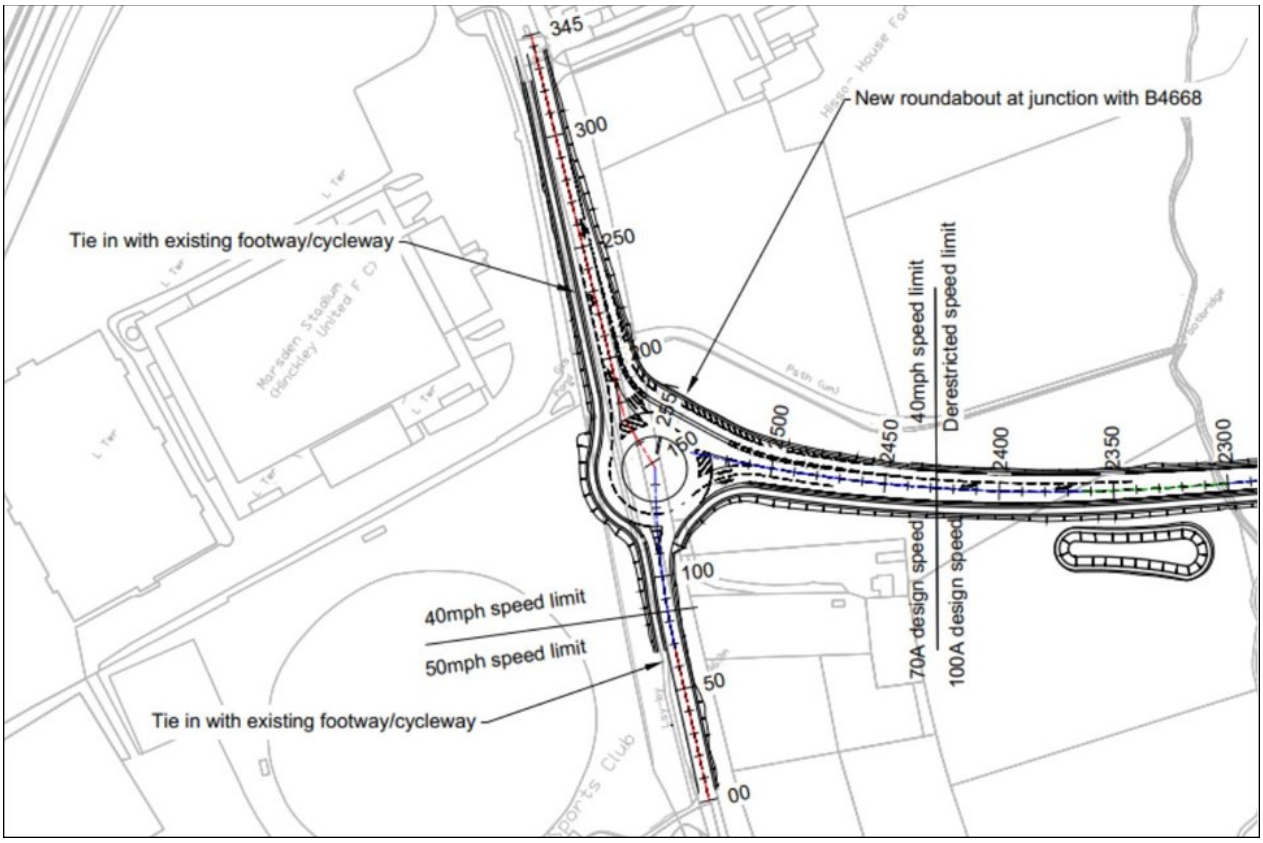
5.4. The M69 motorway junction 2 roundabout is the proposed primary development access. The roundabout will be modified to include an additional arm into the site and signalisation. As part of the access, new south facing slip roads (off and on slips) are proposed to give direct and all movement access onto the Strategic Road Network. The primary development access is shown in below in Figure 5-1.

Figure 5-1: Proposed Primary Development Access



5.5. Secondary access to the development will be provided via a new three-arm roundabout to connect the new distributor link road to the B4668 Leicester Road. The B4668 then connects to the A47 via a four-arm roundabout approximately 400m to the northeast where the B4668 approach arm of the roundabout will be widened slightly, and flare length increased. The new roundabout is shown below in Figure 5-2.

Figure 5-2: Proposed Secondary Development Access



5.6. The new distributor road will link Junction 2 of the M69 through the site, crossing the railway to the B4668 and ultimately the A47. In addition to providing access to the main HNRFI site, the Link road is intended to mitigate the background traffic movements in the local area through the creation of a new direct link to the SRN at M69 Junction 2.

5.7. The road is designed as a dual carriageway in the section between the M69 Junction 2 and the western site access (approximately 990 metres) to accommodate the majority of development traffic. From the western development access onwards to the B4668 Leicester Road the link road will be a single carriageway (approximately 1,500 metres) to accommodate largely local traffic and low levels of development traffic.

5.8. A shared cycle route will be provided adjacent to the road and routes provided for pedestrians to link through to existing Public Rights of Ways and Burbage Common.

5.9. Access to the development from the new distributor road is proposed via two roundabouts as shown in the site indicative masterplan (Appendix 1 of this TA (Document Reference 6.2.8.1.1). The internal layout will benefit form a road creating a loop from the distributor road through the development providing access to individual

units.

Pedestrian and Cyclist Access

5.10. Walking, Cycling and Horse-riding Assessment (HNRFI-BWB-GEN-XX-RP-TR-0024-S1-P01) reviewed the current provision and Table 5-1 highlights a list of opportunities for non-motorised users. The document is provided at Appendix 15 of the Transport Assessment, Document Reference 6.2.8.1.15.

Table 5-1: Opportunities for Pedestrians, Cyclists and Equestrians

Opportunity Number	Description
	General Opportunities
1	Provision of a shared use footway / cycleway along the link road to tie into existing facilities at Leicester Road.
2	Divert / stop up existing PROW V29 and provide a safe NMU route connecting Smithy Lane, across the proposed link road to provide a continuous route to Burbage Common Road.
3	Provision of a Pegasus Crossing facility on the new link road, to provide a safe crossing facility for pedestrians, cyclists and horse riders using the route.
4	Divert / stop up existing PROW V23 and provide a safe NMU route connecting Smithy Lane, to Leicester Road.
5	Provide appropriate pedestrian and cyclist crossing facilities along the HNRFI access road.
	Strategic Opportunities
6	Appropriate consideration should be given to ensuring that the proposals take into consideration Leicestershire County Council's Hinckley Town Centre improvement scheme. Further liaison should take place with LCC to establish the interaction between the schemes and to determine who delivers what work.
	Pedestrian Specific Opportunities
7	Consideration should be given to improving the footways along the northern edge of M69 Junction 2 gyratory. This could take the form of general maintenance, i.e. weeding, de-silting and trimming back overgrown areas and resurfacing.
8	Provide appropriate drop kerb crossings at both northbound slip roads.

5.11. A Sustainable Transport Strategy & Plan (STS) has been developed for the proposed development (HNRFI-BWB-GEN-XX-RP-TR-0014) with the Transport Working Group and key operators. The STS is appended to this Transport Assessment in Appendix 14, Document Reference 6.2.8.1.14.

5.12. The aim of the STS is

'To create an environment for employees that actively promotes a range of sustainable, low carbon travel choices and reduces the overall need to commute to work by car'.

5.13. To support the aim the document suggests a set of measures to reduce the overall volume of car journeys to and from HNRFI whilst supporting the Site's sustainable access options for prospective employees from the outset.

5.14. A key element of the walking improvements should focus on accessibility of bus stops and the internal site layout will include direct and safe walking routes towards them. They will be located within a 400m walk of each of the B8 units as well as providing a bus hub and gate off the A47 link road through the site. These bus stops would be high quality in nature, with live timetable information and bus shelters to attract individuals to use this mode of travel.

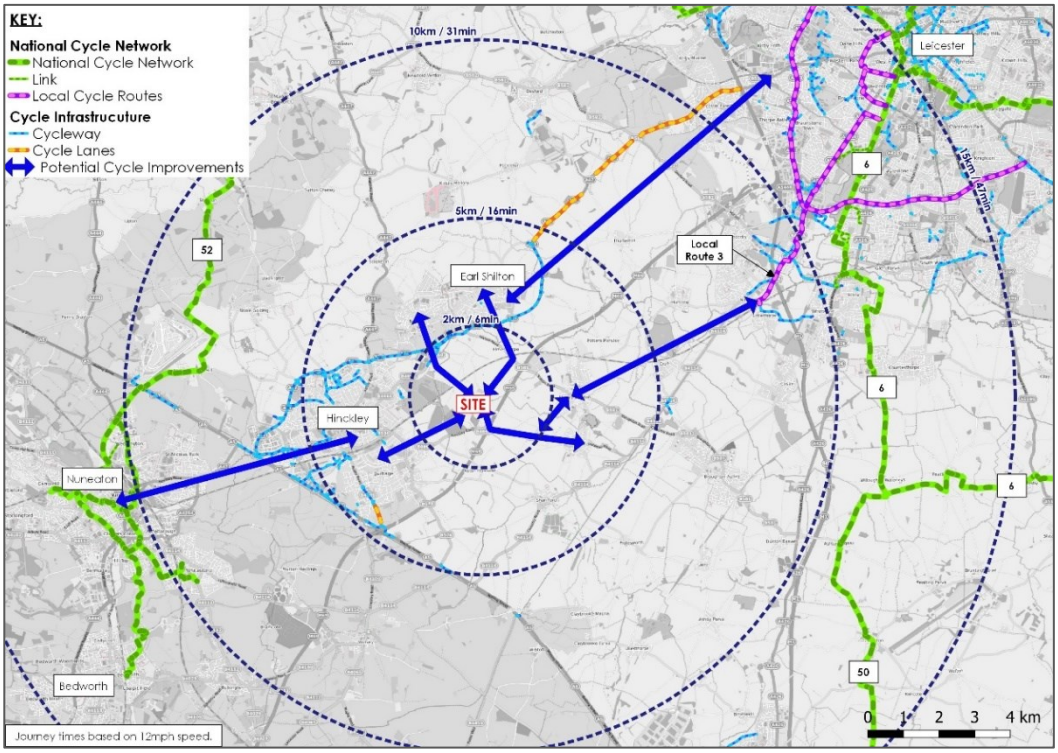
5.15. The cycling catchment area is shown in Figure 4-5. It demonstrates that employees from Hinckley, Sapcote, Earl Shilton and Stoney Stanton are within an easy commutable distance. includes the proposed infrastructure, namely the new A47 Link Road which will open the site from the north-west and south to Nuneaton. The site will be accessible also from Earl Shilton and Barwell.

5.16. High quality cycle infrastructure on the A47 Link Road will create opportunities to attract cyclists from further afield. Connecting existing cycle lanes on the A47 and proposed cycle lanes on the new link road could attract cyclists from as far as Leicester and Nuneaton. There are proposed infrastructure improvements by Warwickshire which are described in the following section.

5.17. In addition to this, cycling can also play a role in longer multimodal rail-bicycle journeys with the Hinckley railway station within 6km cycling distance.

5.18. Figure 5-3 below schematically shows the potential cycle route corridors which could be used by employees to maximise cycle travel to the site.

Figure 5-3: Cycle Route Corridors



Transforming Nuneaton

5.19. Warwickshire County Council (WCC) and Nuneaton and Bedworth Borough Council (NBBC) are working together to deliver the transformation of Nuneaton town centre, by implementing mixed-use regeneration for boosting economic growth.

5.20. The Transforming Nuneaton (Ring Road Highway Improvements) Programme has ambition to enhance existing cycling infrastructure, along with creating new infrastructure therefore encouraging more sustainable travel.

A47 Long Shoot Cycle Route

5.21. This will create approximately 1.4km of new high quality, safe, segregated cycle track on the A47 The Long Shoot between Eastboro Way and the A5 Watling Street as part of a strategic cycle route connecting Nuneaton to Hinckley.

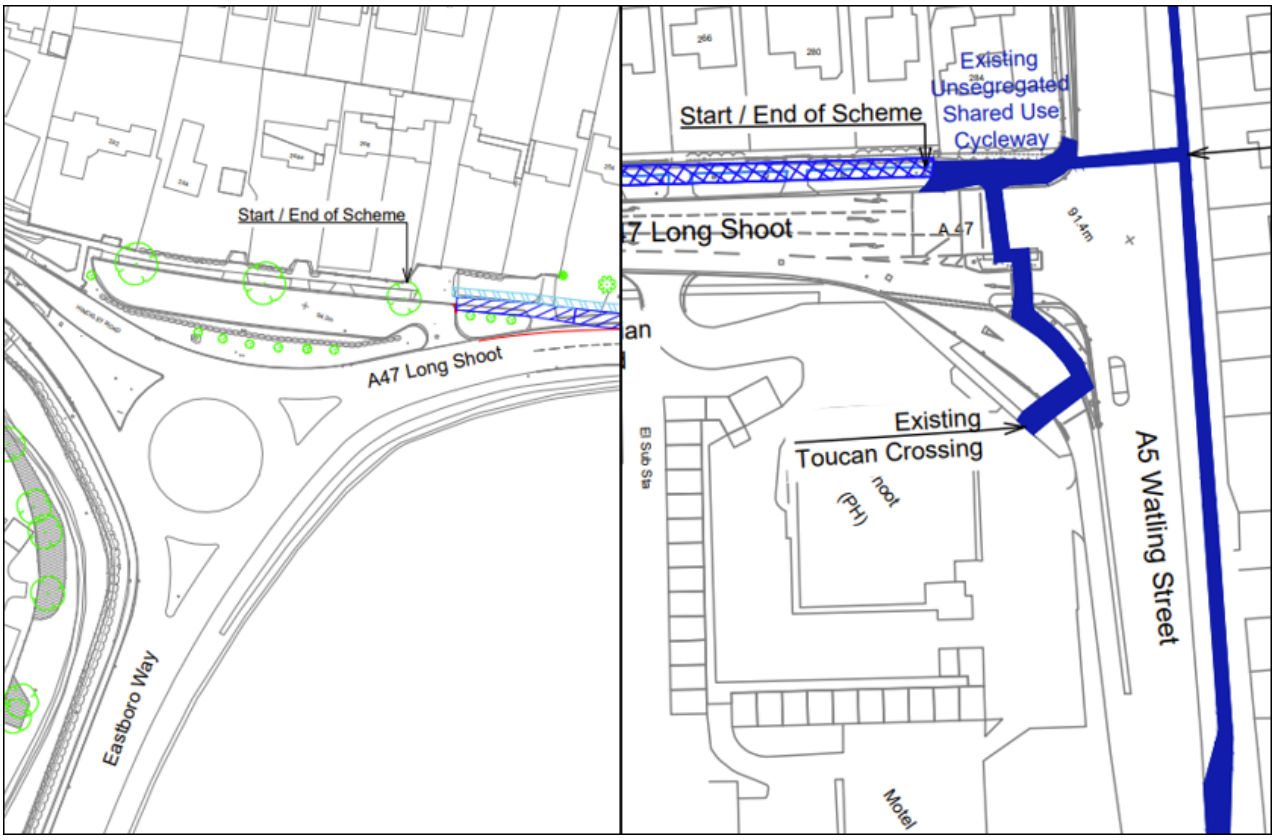
5.22. The scheme will encourage and enable a shift from car-based travel to cycling for local journeys, providing the necessary sustainable transport links to the town centre and rail station to support Transforming Nuneaton and the significant residential expansion in north-east Nuneaton.

5.23. To the west, the scheme will connect to new cycling infrastructure to be delivered by the A47 highway improvement scheme to create a continuous cycle route between north-east Nuneaton and the town centre. To the east, the scheme will connect with the existing cycle route on the A5 to provide a connection to Hinckley. WCC have approved an allocation of £0.438 million for the A47 Long Shoot cycle route scheme to start on site

within the next year.

5.24. The start and end of the WCC scheme are illustrated in Figure 5-4 to demonstrate how the scheme will connect with the existing infrastructure at The Longshoot junction on the A5 and the Eastboro Way off the A47 south of the A5.

Figure 5-4: The Long Shoot Cycle Route



A47 Hinckley Road Improvements

5.25. The A47 Hinckley Road scheme will provide eastern Nuneaton with a new junction, an improved roundabout with additional pedestrian facilities and improved road and cycling infrastructure.

5.26. It is the main route into Nuneaton from the A5 and east Nuneaton to the town centre. The corridor passes through an existing densely populated area which will experience significant housing expansion through the Borough Plan proposals.

Bike / E-Bike Hire Scheme

5.27. A bike share scheme is a service whereby cycles are made available for use by individuals on a short-term basis for a membership and a small fee per ride.

5.28. Many bike hire schemes allow people to collect a bike from a docking station (bike rack) where it is locked until release by computer control following payment. The user then returns the bike to a dock from the same system. Other bike share schemes are dockless

and bikes can be picked up and dropped off from virtual docks in a range of locations, which can be identified via a mobile phone app.

5.29. A new bike/e-bike hire hub could be incorporated into the HNRFI which would provide easy, convenient access to cycle travel. This could be linked in combination with the new e-bike scheme which has been introduced in Leicester (as described in the STS), as part of an expanded, joined up regional approach to bike hire. These hubs have the potential to be expanded to link to hubs/cycle parking at Hinckley/Narborough railway stations.

5.30. This provision would provide good opportunities for the employees to cycle for all or part of their journey. In addition, the membership pricing system and the provision of bike stations at local train stations could also encourage multi-modal journeys.

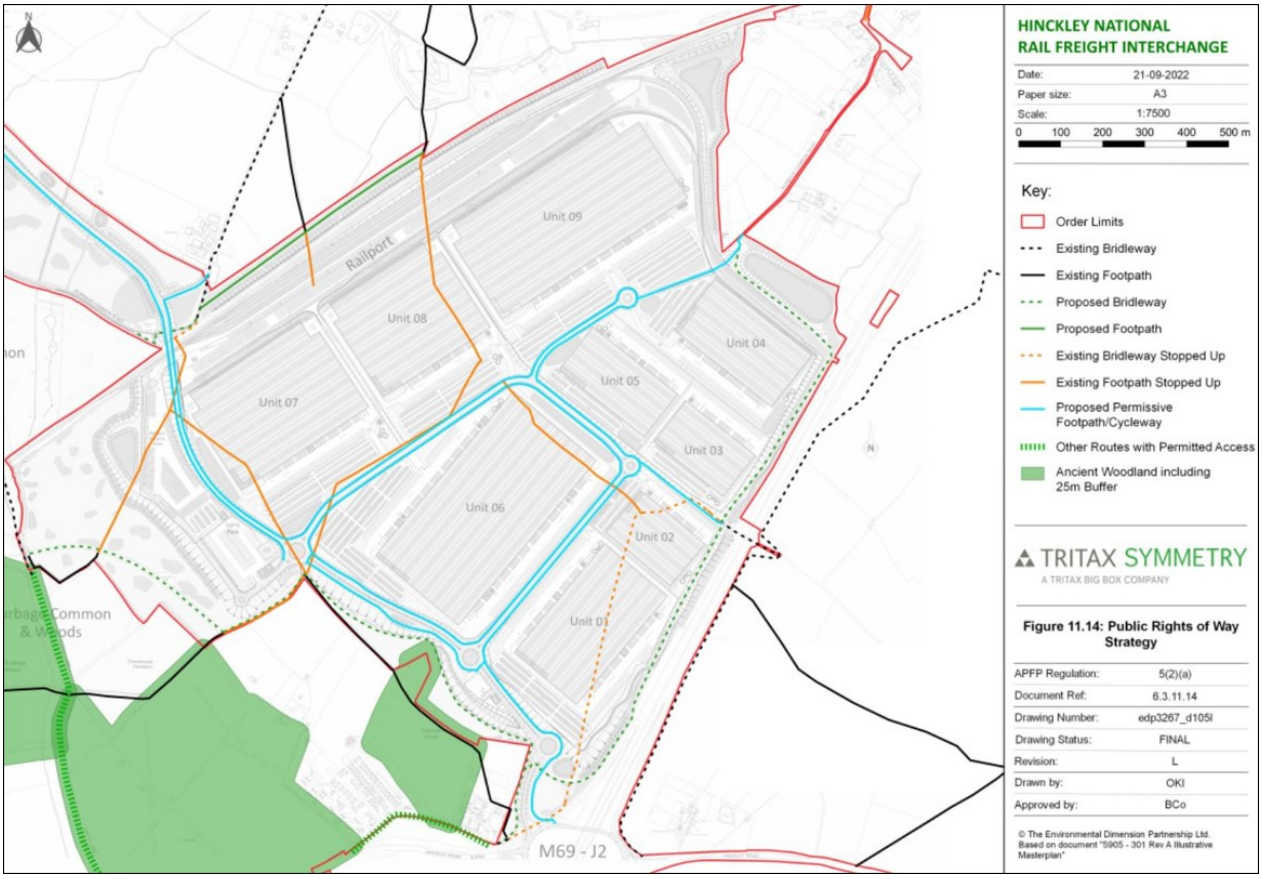
5.31. Discussions will be undertaken with the key stakeholders to understand the viability of these options and the opportunity could be explored further and promoted in the Travel Plan process.

Public Rights of Way

5.32. Development of the site presents an opportunity to improve existing access to Burbage Common and Wood through the creation of additional access points and extensions linking to Burbage Common and Wood through the diversion of existing PRoW.

5.33. Figure 5-5 shows the proposed PRoW proposals which are detailed in the Public Rights of Way Appraisal and Strategy (Document Reference 6.2.11.2 ES Appendix 11.2).

Figure 5-5: Proposed PRoW Strategy



5.34. Two footpath routes (Footpaths V23/1 and U50/3) cross the Hinckley to Leicester railway line via unprotected crossings. These are footpath, bridleway and user worked crossings where the onus is on the crossing user to check for an approaching train before they cross the railway.

5.35. It is proposed to close these two crossings and instead provide a link southward from Footpath U50/4 along the northern edge of the railway, passing Footpath V23/1 and linking with Bridleway U52/9 and Footpath U52/8 which provide a safer route via a new bridge over the railway.

5.36. The PRoW assessment (Doc Ref 6.2.11.2 ES Appendix 11.2) has identified that most footpaths within the site are only lightly used and there is significant capacity to support new users on the existing network. Whilst some re-routing will be required as part of the development, access to the existing network would be enhanced through the creation of new linkages, improved marking of routes, removal of obstructions, appropriate vegetation management and the removal of gates/stiles as part of an overall enhancement programme.

5.37. Shared paths will be provided adjacent to all roads through the site, allowing continued pedestrian access north, east, south, and west through the site, whilst new bridleway provision will also provide access for walkers.

5.38. The baseline assessment has identified limited equestrian use of the existing bridleway network within the study area.

5.39. There is commuting and access from surrounding liveries and stables towards the north of Burbage Common Road with Bridleway U52/9 and Burbage Common to the west of the site. However, there are currently no suitable connections to the Bridleway network within or to the east of the site. There is therefore opportunity to create a new traffic free link, routing a bridleway around the eastern edge of the site to connect with Bridleway V29.

5.40. Whilst part of Burbage Common Road will be lost through the site, the proposals represent an opportunity to create a traffic free, dedicated bridleway route around the perimeter of the site. Further details are included in the PRoW Strategy created by EDP (Document Reference 6.2.11.2 ES Appendix 11.2).

5.41. In addition to the above, the proposals will close rail level crossings to improve public safety at additional locations outside the HNRFI Site within the wider DCO limits. These crossings include The Outwoods (U8/1) where a pedestrian footbridge will be installed and the level crossing closed, Alternative routes are proposed to allow level crossings to be closed at Elmsthorpe (T89) and Thorneyfields (U17). These are shown on Figure 11.5 of the Rights of Way Strategy (Document Reference 6.3.11.15).

Public Transport Provision

Bus Infrastructure

5.42. The construction of the A47 link Road between the Junction 2 and the B4668 creates fast and easy linkage to the southern end of the HNRFI site. A layby will be built on the westbound carriageway which will provide full kerbed separation from the link road. A large purpose-built shelter will be constructed on the southern kerb (Drwg HRF-BWB-LSI-D4-CH-00100 Document 2.4D).

5.43. A smaller unsegregated lay-by will be installed on the eastbound kerb approximately 100m to the west of the segregated stop. This will have a smaller shelter. It is anticipated that any fixed route services that layover temporarily will use the segregated stop and will then slingshot around Roundabout 3 back toward Junction 2, M69.

5.44. A controlled pedestrian crossing point will be installed on the link road on the key desire line between the secondary bus stop on the eastbound link and the main segregated stop on the southern side of the link road.

5.45. Demand Responsive Transport (DRT) services will be able to use the laybys discussed above and will use the private loop roads to access the wider site. Typically, the stops will be simple flags around the private road network.

5.46. The extension of the X6 service and provision of site bound DRT service will progressed through a private service agreement and subject to conditions, as discussed with LCC.

Public Transport Opportunities for Shift Workers

5.47. Typical shift patterns for B8 Warehousing are as follows:

- 06:00 – 14:00;
- 14:00 – 22:00;
- 22:00 – 06:00.

5.48. To accommodate the demand of shift workers from different locations the following public transport improvements are suggested:

Coventry and Leicester City Areas

5.49. The X6 service has potential to pick up core demand from Coventry and Leicester city areas. Minimal stops and routing via the M69 present the best service to encourage modal shift from the car. Existing services will need to be extended to cover the 6am and 10pm shifts and there may be need for additional capacity during the day for the 2pm shift change. This will be adapted and adjusted through the build out phase of the development.

5.50. Based on the current timetable and an assumption on continental shifts there would be incremental hours increase of circa 7 hours per day, with associated additional operating costs. As the site develops an alternative scenario will put an additional vehicle into the cycle to increase the frequency around shift changes (ie to minimise the wait between people arriving at their place of work and their shift starting, or finishing their shift and the bus departing to take them home.

Nuneaton, Hinckley and Surrounding Villages

5.51. Introduction of DRT as part of 3-year trial through LCC has been ongoing as part of the national bus strategy; Vectare, who run the existing service have proposed options to provide a 'Many to One' extension of their existing DRT services to the access site. This would allow groupings of individuals to access the HNRFI at specific times of day without the reliance on fixed route services. It allows greater flexibility in the early stages of the project and may lead to identification of fixed routes where demand is highest. Subject to site design, the service can support multiple drop off / pick up points within the site, and bus stop poles, flags, shelters and timetable cases are required to support.

5.52. The service will operate between 04:00 and 00:00, seven days a week. The service will not operate on Christmas Day, Boxing Day and New Year's Day. The length of service day is comprehensive to enable all journey opportunities that may be required.

5.53. The service will serve a zone which is predominantly to the north and east of the site, bounded by the M1 motorway in the east, and A5 trunk roads.

5.54. The 48L Services from Nuneaton to Hinckley are regular and operate early (5:50am) until late (10pm). This presents a good opportunity for connection to the DRT service linking the site with the centre of Hinckley.

5.55. Similar to shift staff, strategies for office-based employees working the standard 9 to 5

pattern have been developed.

Coventry and Leicester City Areas

5.56. The X6 currently would permit travellers from both cities to arrive on site within an hour of the 9am start, similarly the return journey coincides with a service around the site at 5pm for both directions. Minor adjustments to timetabling will assist in allowing for better coordination with office start times.

Leicester Nuneaton and Hinckley

5.57. Rail inter-connectivity is an option for travellers from Leicester and Nuneaton. Half hourly services operate to and from Hinckley station during peak hours. A DRT bus service would present an alternative to a shuttle service to the site, allowing for greater flexibility around potential delays on the rail network than a fixed timetable.

Surrounding Villages

5.58. As per the LCC pilot DRT is likely to be the main alternative access for villages surrounding the site.

Parking Provision

5.59. Leicestershire City Council (as a local highway authority) provides parking standards guidance in their 'Leicestershire Highway Design Guide – Part 3 Design Guidance' document.

5.60. Section DG14 sets out off-street parking standards and gives guidance on the design of parking in residential, employment and commercial developments. It covers vehicle parking, provision for service vehicles, motorcycle parking and cycle parking.

5.61. Out of Town standards for B8 Warehousing car parking will apply to the HNRFI. The standard quotes a maximum of one space for every 120sqm of GFA.

5.62. The relevant parking guidance is subsequently set out in Table 5-2. However, it should be noted that LCC would assess the provision on a site-by-site basis.

Table 5-2: LCC Parking Guidance – B8 Warehousing

Cars	Disabled	HGV's	Motorcycles	Bicycle	Electric Vehicles
One space for every 120sqm of B8 Warehousing (out of any town)	Six bays plus 2% of total parking spaces (when total over 200 spaces)	One lorry space for every 400sqm	One space, plus an additional space for every 10 car parking spaces.	One space per 400sqm	Not specified

5.63. Minimum car parking size is 2.4m x 5.5m, with 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.

5.64. Motorcycle parking spaces should be 2.5m x 1.5m with a 1m space between each bike.

5.65. Cycle parking should be secure and under cover and Sheffield stands are preferred. They can accommodate two cycles provided that stands are placed 1m apart and at least 0.5m from any wall.

5.66. The exact level of parking for each vehicle type and unit will be determined as the future reserved matters applications come forward. It will meet the needs of the identified end user in accordance with current parking policy at that time.

5.67. Car Club and Car Sharing opportunities will be explored and form part of the HNRFI Travel Plan.

5.68. The illustrative masterplan development comprises nine units of different floor areas. The appropriate maximum parking requirements calculated in accordance with the LCC guidance (presented in Table 5-3) are shown for each unit.

Table 5-3: LCC Maximum Parking Requirements for the B8 Units

Unit	GFA (sqm)	Total Car Parking	Standard Car	Disabled Car	HGV	Motorcycle	Bicycle
Unit 1	64,222	552	535	17	161	55	161
Unit 2	26,524	231	221	10	66	23	66
Unit 3	26,663	233	222	10	67	23	67
Unit 4	46,915	405	391	14	117	40	117
Unit 5	34,374	298	286	12	86	30	86
Unit 6	135,637	1159	1130	29	339	114	339
Unit 7	97,594	836	813	22	244	82	244
Unit 8	78,920	677	658	19	197	67	197
Unit 9	132,200	1130	1102	28	331	111	331
Total	**643,049**	**5473**	**5,359**	**114**	**1608**	**114**	**114**

5.69. The illustrative masterplan (Appendix 1 of this TA, Document Ref 6.2.8.1.1) suggests that the units will benefit from the parking provision as shown in Table 5-4 below.

Table 5-4: Proposed Indicative Parking Provision

Unit	GFA (sqm)	Total Car Parking	HGV
Unit 1	64,222	534	114
Unit 2	26,524	221	45
Unit 3	26,663	222	53
Unit 4	46,915	391	63
Unit 5	34,374	286	51

Unit	GFA (sqm)	Total Car Parking	HGV
Unit 6	135,637	1130	191
Unit 7	97,594	813	76
Unit 8	78,920	658	63
Unit 9	132,200	1102	180
B8 Unit Total	**643,049**	**5,357**	**836**
Railport	465	99	0
Lorry Park & Drivers Welfare	465	11	104
Amenity & Security Offices	465	18	0
Total	**644,444**	**5,408**	**943**

5.70. Table 5-4 demonstrates that the illustrative masterplan includes car parking provision in accordance with the current LCC guidance. It is also in line with provision at other sites within TSL's ownership. Parking provision for HGVs, excluding loading bays, is circa 52% of the maximum provision the LCC guidance allows.

HGV Routes & Servicing

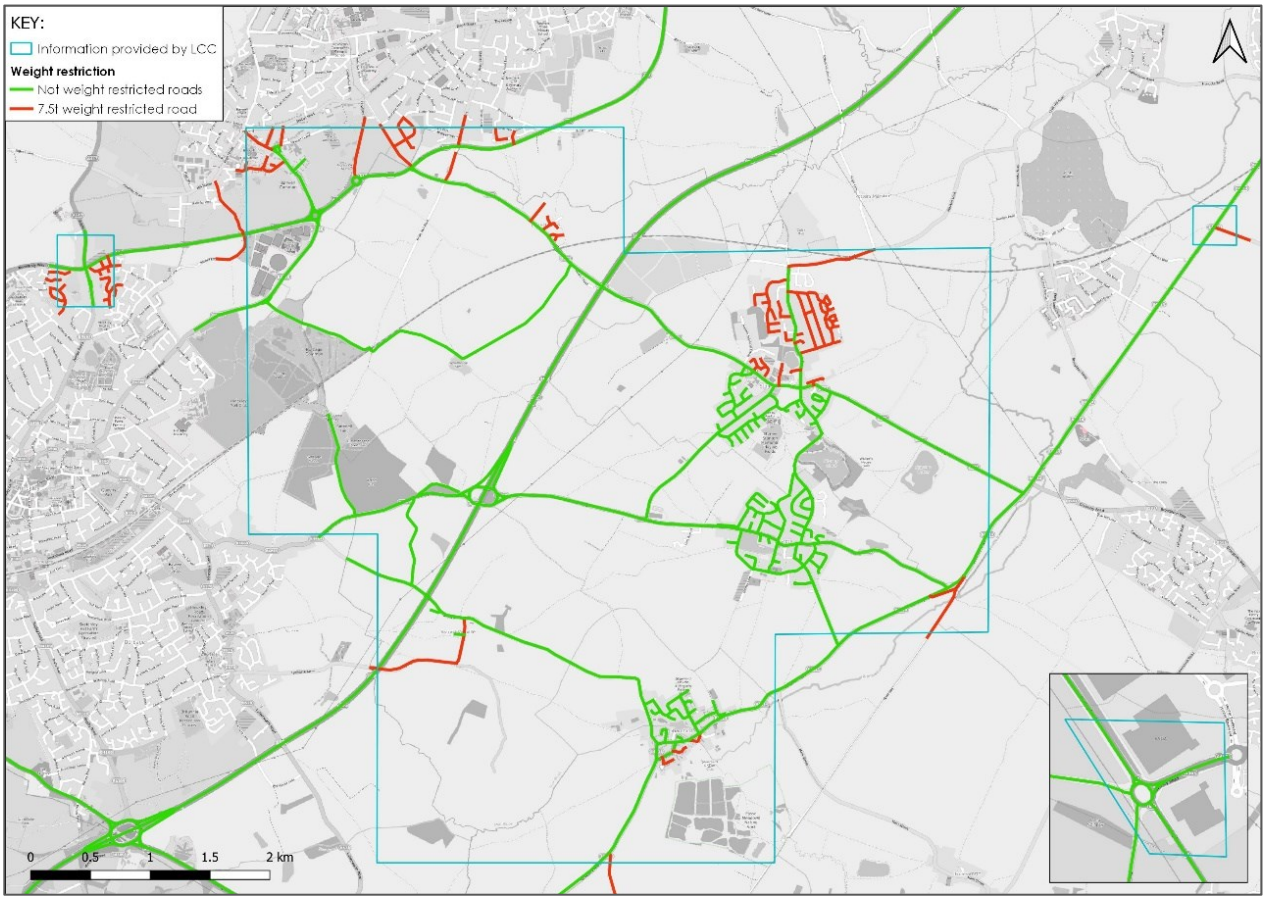
5.71. An HGV Route Management Plan & Strategy report (Document Ref: 17.5) is being developed, with a first draft shared with the TWG for comment, which provides details of:

- The proposed HGV Route Management Plan & Strategy identifying preferred and undesirable routes to and from HNRFI before and after the delivery of new highway infrastructure associated with the site;
- For any end occupiers who operate high sided vehicles a mechanism will be put in place for checking heights of vehicles leaving and travelling to the B8 units with route management to avoid low bridges in the area including the A5 Nutts Lane Railway Bridge.
- The proposed enforcement mechanisms and monitoring of the HGV Route Management.

5.72. Current weight restrictions within the area have been reviewed in order to develop an appropriate HGV route strategy. Figure 5-6 indicates existing restrictions around the HNRFI site, on the whole these are advisory, though 7.5t weight limits are present at:

- Huncote Roads (to the north of Stoney Stanton);
- Local roads in Stoney Stanton;
- Local roads in Barwell and Earl Shilton including Leicester Road and Station Road.

Figure 5-6: Existing Local HGV Restrictions



HGV Routes

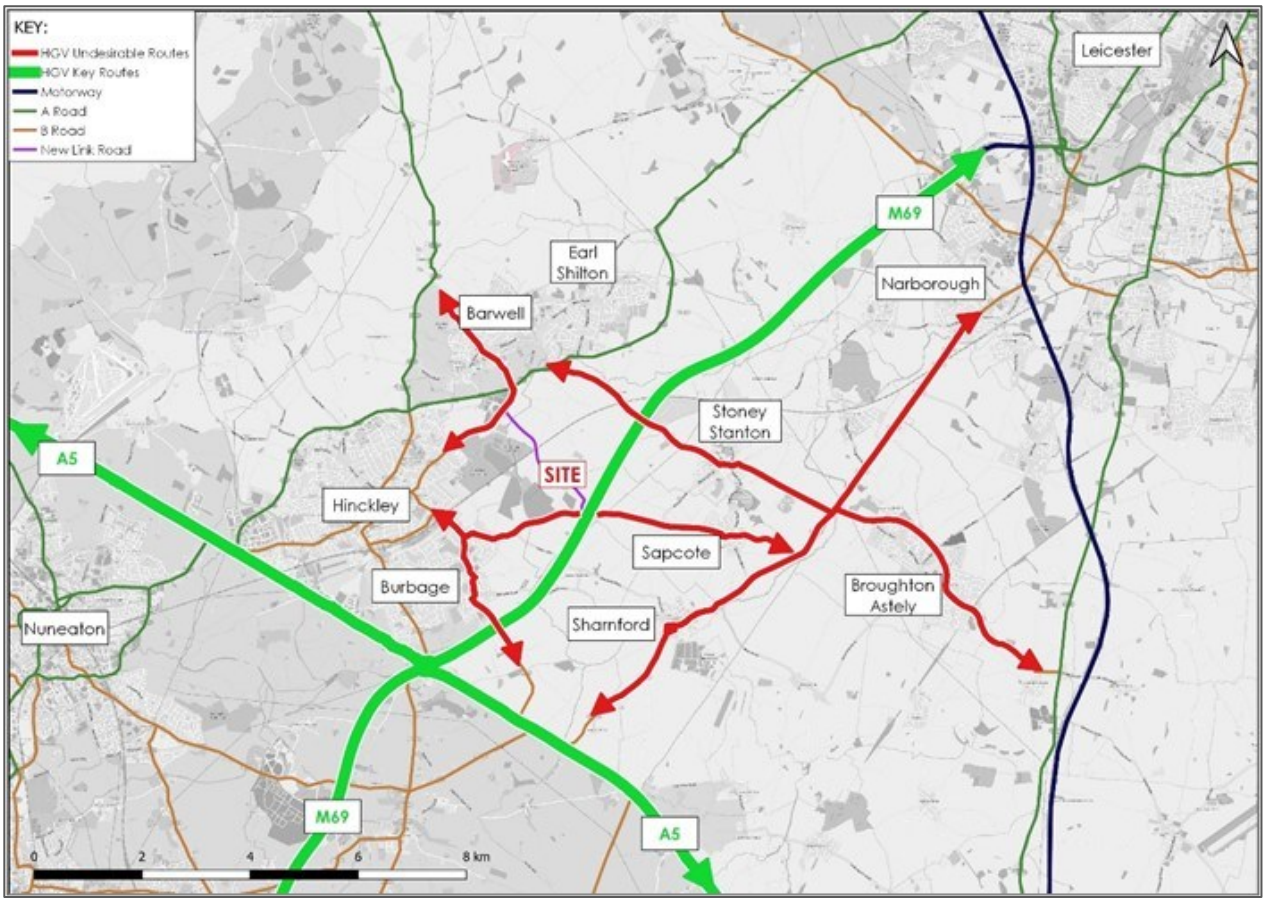
5.73. Subsequently, the recommended "permitted routes" for HGVs associated with the proposed development are set out as follows. These routes broadly follow the strategic road network which surrounds the site and are illustrated on Figure 5-7.

- To / from "The North": M69 north (J2), M1 north (J21)
- To / from "The East": M69 south (J2), A5 east (M69 J1), A4303, M1 south (J20), A14 (M1 J19)
- To / from "The Southeast": M69 south (J2), A5 east (M69 J1), A4303, M1 south (J20)
- To / from "The South": M69 south (J2), A46 south, M40 south (J15)
- To / from "The Southwest": M69 south (J2), M6 north (J2), M42 south (J4), M5 south; or M69 south (J2), A46 south, M5 south (J9)
- To / from "The Northwest": M69 south (J2), M6 north (J2); or M69 south (J2), A5 west (M69 J1), M6 Toll / M6 north. A47 south, A5 west (alternative route)

5.74. Whilst encouraging HGV traffic to use the strategic roads which surround the site, HGV traffic will be discouraged from using local roads which route through sensitive settings

such as local villages to route between the site and the key strategic roads. However, it is difficult to restrict the movement of HGV's as they are permitted to use any classification of road for access and deliveries even if there is a weight restriction in place (unless it is a structural weight limit). As a main through route, HGV's are directed to use the most appropriate route via motorways, dual carriageways and main roads.

Figure 5-7: Key Desirable and Undesirable HGV Routes



5.75. In case of an incident on the Strategic Road Network, there will be a site access emergency plan in place which will include alternative routes to/from the Site managed by the on-site travel plan coordinator.

5.76. An indicative signage strategy for HGVs travelling to the HNRFI site will be developed. This strategy will be implemented by providing the appropriate road signs on the public highways within a wider area to navigate drivers to the site via the identified key routes.

5.77. As outlined above, the site benefits from a direct access onto the Strategic Road Network via M69 Junction 2. Routes will be signed on M69, M6, A5 and A4303.

5.78. The HGV Route Management Plan & Strategy (Document Reference 17.4) includes suggested measures for the B8 unit occupiers and the Terminal operator to consider and sets out their responsibilities as well as measures to monitor, report and enforce the Route Management Strategy.

Construction

5.79. Details of construction of the proposed development are yet to be finalised. Notwithstanding this, it is likely that construction works associated with the proposed development will be undertaken between 07:00-19:00 during weekdays and 07:00-14:00 on Saturdays. However, the hours of construction operation will be determined by an appropriately worded DCO requirement.

5.80. A preliminary Construction Traffic Management Plan (CTMP Document ref: 17.6) has been produced for the site providing an initial framework and an indication of what the CTMP will include as a minimum.

5.81. A CTMP is an organic management plan which sets out the managing principles for the site throughout the construction period. It is a formal document approved by construction stakeholders, the client, the principal contractor, the highways consultant and the architect which outlines the proposed building works to be undertaken, the method, mechanisms, resources, monitoring and management of construction activities and traffic. It details how the impacts from the development site, relating to both on site activities and transport arrangement will be minimised throughout each phase of this complex development site.

5.82. The Principal Contractor for the site, once appointed, will be responsible for the CTMP. The CTMP would be submitted to the local highway authority for approval prior to construction and will be subject to ongoing agreement through the construction phases.

5.83. The CTMP will include the following:

- Introduction – the planning reference number, site address, project details and overview, and the site description and context.
- Site Management – site personnel, site layout and welfare arrangements, visitor arrangements, site security, managing materials, site storage and good housekeeping
- Community liaison - communication and complaints procedure
- Implementation, monitoring and corrective action - site inspection frequency, monitoring compliance and corrective procedures
- Site Operations – Agreed working hours, deliveries and transport of materials, plant and equipment to site, Traffic management including any temporary arrangements, HGV routing plans, pedestrian and cycle safety, temporary structures such as cranes, road closures, diversions and signage.
- Noise and Vibration – Site specific mitigation measures, noise assessments if required, acoustic screening and hoarding details.
- Dust – Dust impact assessment if required, site specific mitigation measures, preventative measures such as wheel wash, road sweeping/cleaning.
- Air Quality – An inventory of any non-road mobile machinery (NRMM) and demonstrate compliance to the Stage IV of EU Directive 97/68/EC (as amended) as a minimum, service logs and emissions record.

- Mud – Details of any road sweeping vehicles and frequency of deployment, details of wheel wash facilities.
- Artificial Lighting - details on how obtrusive artificial light will be minimised during the development including any drawings and/or assessments of temporary lighting installations where applicable.
- Waste Management – measures and mitigation for waste management, details of any hazardous or dangerous materials identified at or likely to be encountered at the development site, confirmation of any surveys, and waste minimisation strategies, including schemes for recycling and/or disposing of waste resulting from the proposed development and the management of site won materials.
- Environment – soil and land management, control of watercourses and ground water

5.84. In addition to the CTMP, the Principal Contractor will be responsible for providing and managing the Construction Environmental Management Plan (CEMP Document Ref: 17.1) and a Construction Travel Plan (CTP).

The Eastern Villages

5.85. The development proposals will introduce a substantial employment site into a predominantly existing rural location with the villages of Earl Shilton and Barwell approximately two miles to the north and Stoney Stanton and Sapcote approximately two miles to the east.

5.86. The B4669 Hinckley Road runs east-west to the south of the site, and Burbage Common Road routes through the site and enters/ exits at two separate locations to the north).

5.87. The impacts on the Fosse Villages to the east of the M69 has been a key consideration in the development of infrastructure.

5.88. The 2019 Highway focused consultation suggested three core options for the area:

- a bypass around Stoney Stanton;
- a bypass around Sapcote; and
- a link on the western side of the M69 from Junction 2 to the A47.

5.89. These were not signed off by Leicestershire County Council Highways at the time, though there were discussions with the LCC Growth team about the options.

5.90. Preliminary modelling was carried out on PRTM 1.0 to understand impacts around the network. These were reviewed, it became apparent that the A47 Link Road alleviated existing and forecast pressures on either side of the M69. At the same time, the 2019 consultation indicated a widespread disapproval for all options, though the bypass options drew the most objection.

5.91. Following a project hiatus in 2020, an opportunity to recalibrate the modelling was presented. It was subsequently agreed with LCC that the A47 link was included alongside the south facing slips as 'Access Infrastructure' but that the bypasses around Sapcote

and Stoney Stanton were not included.

5.92. Following two iterations of the PRTM this section assesses the potential need for the bypasses using the latest, fully agreed, model run.

With Access Infrastructure Proposals

5.93. From the initial PRTM 1.0 review, it was evident that the introduction of the new south-facing slips created significant redistribution of background traffic, not related to the HNRFI development.

5.94. For the revised runs using PRTM2.1 and PRTM 2.2 and as agreed with LCC Highways and the TWG, a scenario (b) which allowed for new access infrastructure, but without the HNRFI development was tested. This was to understand how much of the impact is background traffic against newly generated traffic from the site.

5.95. Figure 5-8 and Figure 5-9 indicate impacts southbound on the M69 and on the B4669 east of the site in the 2036 AM and PM peak hour periods. This would align with traffic now having direct access to the SRN to head south and vice versa from the east.

5.96. Sapcote and Stoney Stanton have an approximate population of 6,500 alongside existing businesses, much of this movement is rerouting for convenience according to the model results.

Figure 5-8: AM 2036 WoDevWInf-WoDev

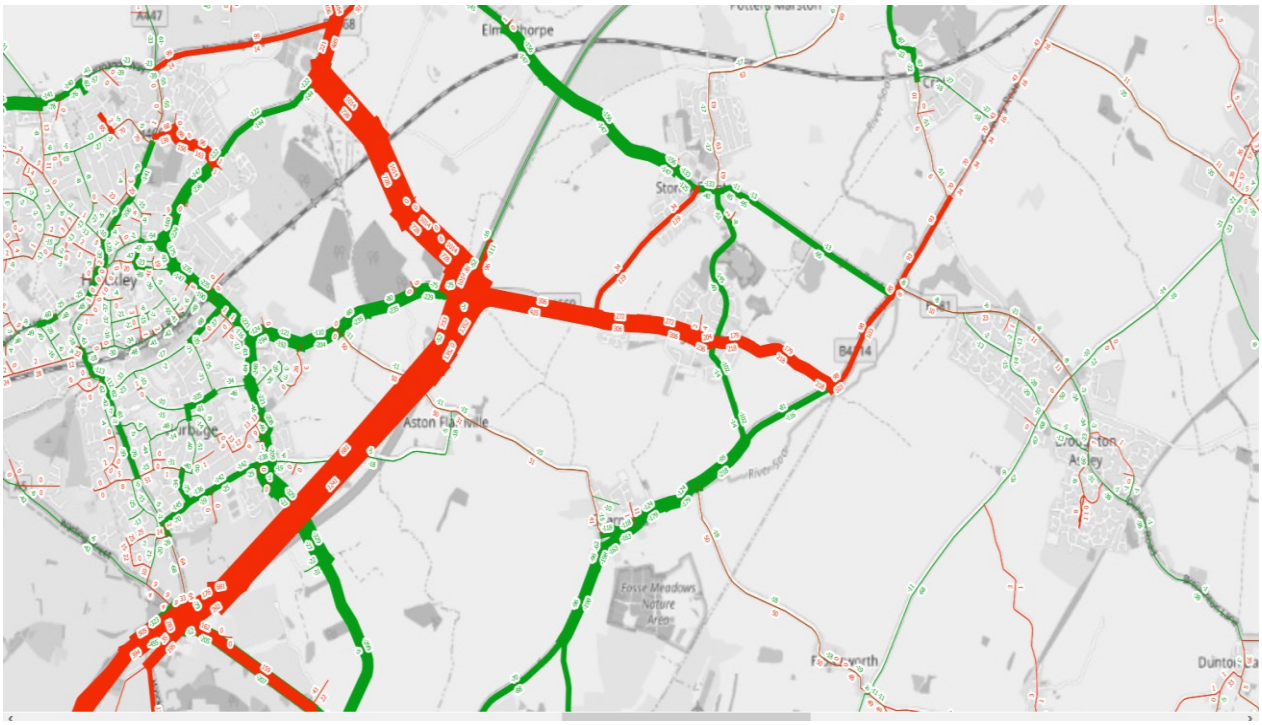
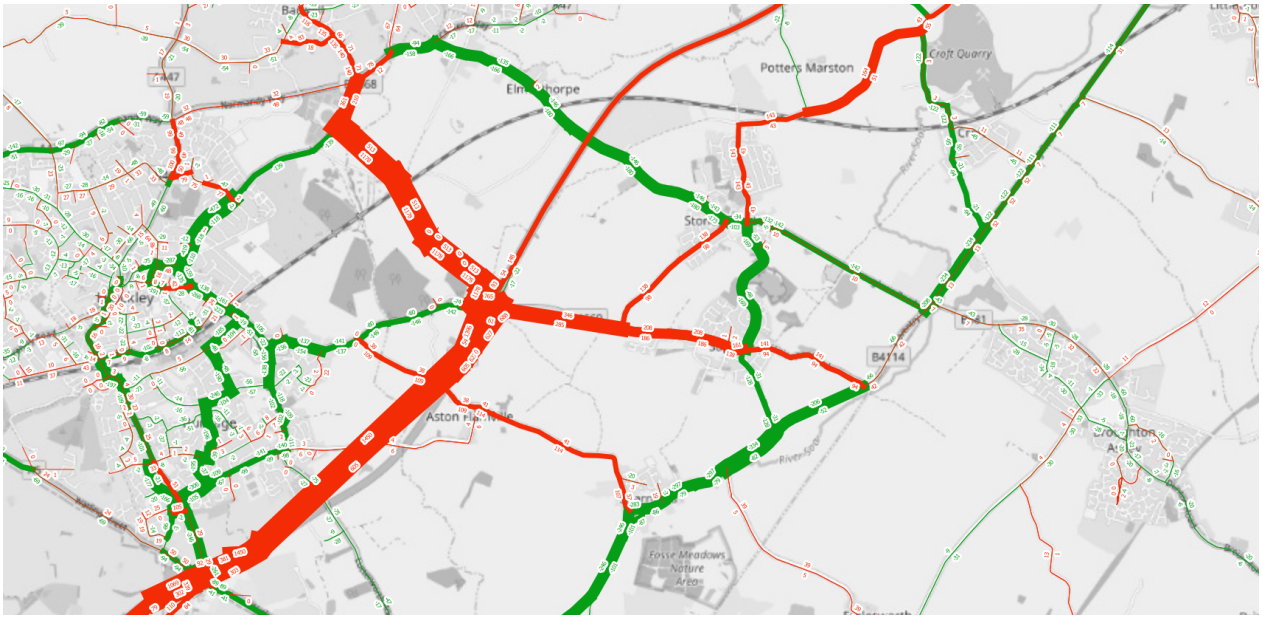


Figure 5-9: PM 2036 WoDWInf-WoDev



5.97. The traffic modelling outputs highlight the following redistribution effects:

- Constraints at M1 J21 means that alternative traffic routes to Leicester City and the M1 are used, such as the A47 and the B4114, while changes in traffic movement on the M69 northbound itself are minimal.
- The new A47 Link Road not only removes east/west traffic from the B581, Hinckley and Elmesthorpe. It also appears to push traffic towards the B4669 east of the M69 which is accessed directly from M69 Junction 2 as it provides a new and convenient route from the west.
- Similarly, the new southern slips provide a direct access to Sapcote, Stoney Stanton and to some degree Huncote and Broughton Astley. This reduces through traffic at Sharnford, Hinckley, Burbage and Elmesthorpe which would have previously routed via the B4669 (west), the B4114 and B581.

With Development

5.98. The following Figure 5-10 and Figure 5-11provides an overview of the total development traffic flow change alongside the redistributed background traffic (with access infrastructure).

Figure 5-10: AM WDevWInf-WoDev 2036

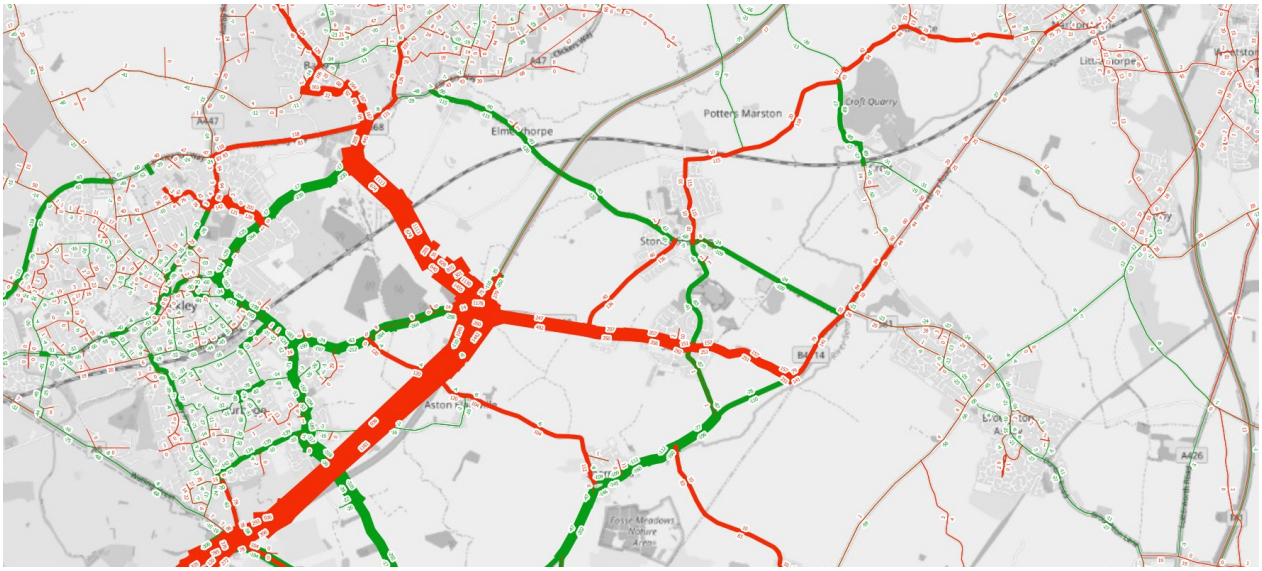
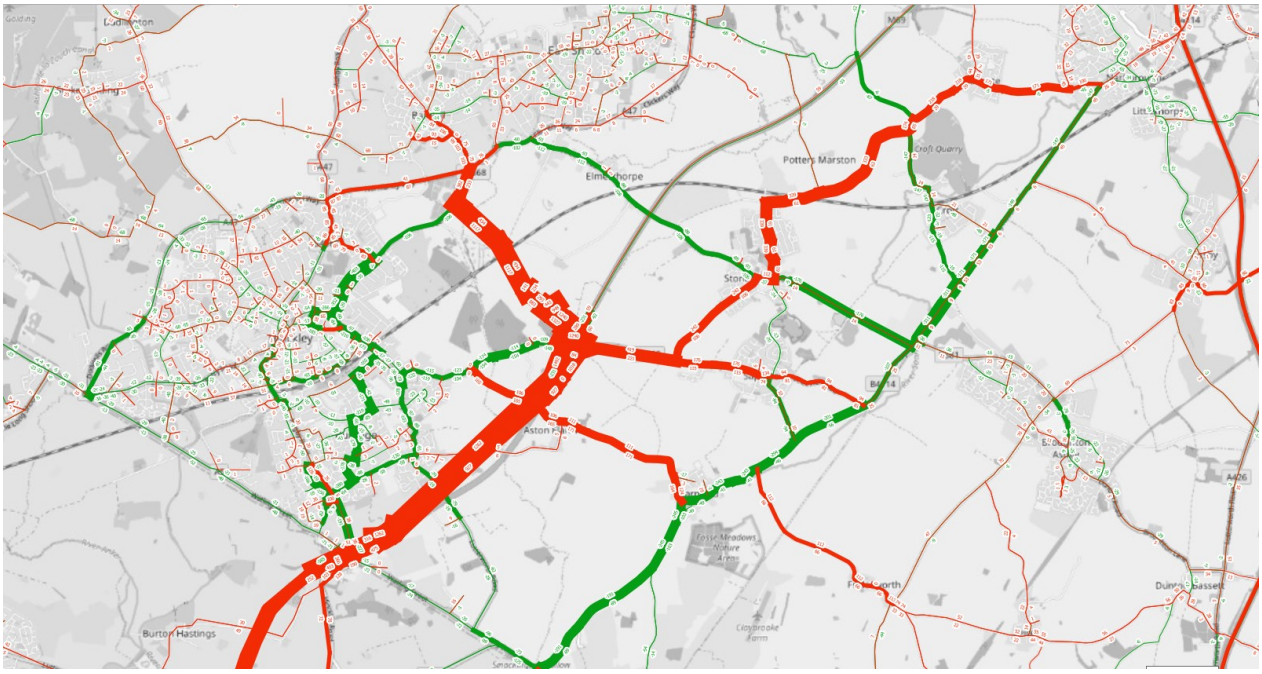


Figure 5-11: PM WDevWInf-WoDev 2036



5.99. The traffic modelling outputs highlight the following redistribution effects of the new infrastructure and including the HNRFI development:

- Flow differences are small when compared with redistributed traffic and focused on primary routes on the SRN and A47 around Hinckley.
- There remain increases on the proposed A47 Link Road and onto the M69 to the south of J2. However, development trips from the site are largely using the M69 and it is displaced trips that make up most new trips on the alternative routes.

- Small differences exist between the AM and PM peak hours- these primarily relate to movements around the A47 and on Huncote Road to and from Narborough. Though these are relatively small when compared with the background diverted traffic. It is likely that northbound routes will also use the B4114.

PRTM 2.2

5.100. Comparisons between the Without Development with Access Infrastructure and With Development with Access Infrastructure, highlight the development impacts on the Eastern Villages.

5.101. Existing traffic diverting to new Access Infrastructure is evident. The villages of Sapcote and Stoney Stanton have a combined population of circa 6,500 alongside major trip attractors such as Stoney Cove. A significant volume of trips in Sapcote originate or have a destination within the village evidenced by the select link analysis (see bullet 5 of paragraph 1.329 below). Current routes from the M69 south/A5 are via Hinckley or Sharnford (via A5).

5.102. The newly configured Junction 2 will reduce journey times and improve convenience for current residents and businesses. These movements appear to be the major change in diverted traffic.

5.103. Development flows from HNRFI are limited to low numbers of cars and LGVs heading through Stoney or Sapcote.

5.104. The newly proposed A47 Link Road through to the A47 provides relief for the east/west routes including the B581, Pingle Lane, Croft Lane and the B4669 through Hinckley.

5.105. What does this mean for the Eastern Villages?

- Traffic is diverting from existing links through Junction 2; including the B4114 and B581.
- Journeys from the A5 and M6 in the south are more convenient on the M69. Therefore, less traffic is using the B4114 to and from the A5 in the south.
- Journeys from the west of the M69 (Hinckley/Earl Shilton/Barwell/Elmesthorpe etc) are using the newly proposed A47 Link Road to access Junction 2, reducing demand on the B581 and B4669 west of the M69.
- The resultant redistribution of the above means the B4669 (Hinckley Road) east of the M69 is impacted by the diverted traffic; though this splits at its junction with Stanton Lane, producing lower impacts through Sapcote than on the B4669 immediately east of Junction 2 M69.
- Through traffic in Sapcote appears to be heading to Broughton Astley and surrounding villages. A substantial proportion of traffic in Sapcote is generated by the village itself. As evidenced by the select link analysis included within the Forecast Model Report (extract below). This indicates the origin and destination of flows within the centre of Sapcote. The images show

that traffic is drawn from the area and surroundings rather than significantly further afield as would be expected for through-routing.

- Some development traffic uses the Eastern Villages routes, but in proportionately much lower numbers and limited predominately to light vehicles. HGVs will use the SRN. The PM peak also has a reduced impact when compared with the AM. Measures will be in place to manage HGV traffic from the site, including enforcement measures.
- Vastly improving capacity will 'induce' further demand, I.e., attract more vehicles on to the network. A bypass in this location will pull more through-routing traffic while a significant number of vehicles will remain on the existing road due to having an origin or destination within Sapcote or Stoney Stanton. This can be influenced much better by traffic management measures to discourage through-routing. A bypass is highly unlikely to be a beneficial addition to the local highway network.
- The future RIS schemes at J21 and M1 will have a positive impact on reducing through traffic when they come forward. At this stage we are not able to model these effects as plans are not sufficiently developed.

5.106. Comparisons between the Without Development with Access Infrastructure and With Development with Access Infrastructure indicate significant flow redistribution as a result of the newly proposed M69 Southern slip roads and A47 Link Road.

5.107. Development-only trips are a relatively low proportion of the change in traffic flow.

5.108. Impacts are most keenly felt on the short section of B4669 immediately east of Junction 2; though these impacts split prior to entering Sapcote.

5.109. Flows on the B4114 are lower than anticipated. This is likely to be due to localised delays at junctions which are to be addressed as part of mitigation.

5.110. Redistributive impacts appear to be 'moving' traffic from one part of the network to another. With multiple access options, this is likely to balance as traffic finds the most convenient routes to destinations.

5.111. Much of the traffic going to Sapcote and Stoney Stanton is re-routed existing traffic to the villages rather than new vehicles to the network. Accessibility is improved to the Eastern Villages as a whole.

Eastern Villages Summary

5.112. A short stretch of by-pass around Sapcote is more likely to bring traffic into the area as through routes become more convenient.

5.113. The introduction of new access infrastructure, specifically the new southern slip roads providing all movement access to the M69 motorway at junction 2 and the new access route through the site linking the motorway with the A47 in the north has the added benefit of improving access to the eastern villages.

5.114. Based on the evidential traffic flows it is concluded that the Eastern Villages bypass is not

required as part of the development proposals.

6. TRIP GENERATION, MODAL SPLIT AND TRIP DISTRIBUTION

Introduction

6.1. This chapter describes the forecast HNRFI operations and quantifies the associated development trips. The methodology for calculating the vehicle and person trip generation is presented and a model used for trip distribution is described. All of these inputs have been agreed with the TWG ahead of the model run.

Trip Types

6.2. The proposed national rail freight terminal and the associated warehousing would generate the following trip types:

- Rail freight terminal:

  HGV trips internal
  HGV trips external
  Light vehicles (employee/visitor) trips external

- B8 Warehousing with rail freight terminal operational

  HGV trips internal
  HGV trips external
  Light vehicles (employee/visitor) trips external

Trip Generation

6.3. Due to the specific characteristics of an NRFI, it was necessary to develop a bespoke trip generation methodology as conventional databases such as TRCIS would not provide relevant results.

6.4. To ensure an early and continuous engagement of the relevant authorities and to agree the methodology and the number of trips generated by the proposed development. The Trip Generation Addendum note set out the changes and amendments to previously agreed trip generation position and has been signed off by the TWG members (October 2021) for use in the strategic modelling included in Appendix 3 of this TA (Document Reference 6.2.8.1.3). The appendices of this document set out clarifications and source details and are listed below.

- HNRFI-BWB-GEN-XX-RP-TR-0011-S4-P04_Trip Generation Addendum (by BWB Consulting)
- Hinckley NRFI Background Paper: Road Traffic Movements Associated with the Rail Freight Terminal (by WSP/Baker Rose).
- 07700-HYD-XX-XX-RP-TP-1003-P08-Trip Generation (vehicles) (by Hydrock).
- TR004 A-E Trip Generation Report and Supporting Evidence (by Hydrock).
- HNRFI-BWB-GEN-XX-RP-TP-0007-S4-P01_Review of Approved Documents (by BWB Consulting).

- HNRFI-BWB-GEN-XX-RP-TR-0021- Rail Freight to HGV Movement HE Response (by BWB Consulting).
- RAILPORT GENERATION OF HGV MOVES TO AND FROM THE PUBLIC HIGHWAY (by Baker Rose Consulting).
- RAILPORT GENERATION OF HGV MOVES TO AND FROM THE PUBLIC HIGHWAY Response to HBBC Queries (Baker Rose Consulting).

6.5. The final version of the trip generation is summarised in this section of the report

6.6. As with other Rail Freight applications across the Midlands, the rates have been derived from applications at several different sites with extant permissions in place and surveys at DIRFT (Daventry International Rail Freight Terminal) in 2016 and Swan Valley B8 park (for Light vehicles). This has provided a robust rate for the site.

Rail Freight terminal Trip Generation

6.7. Consultants Baker Rose undertook a bespoke trip generation exercise linked directly to the estimated terminal handling capacities.

6.8. A number of factors impact the terminal capacity:

- Track Capacity – the number of trains that can be unloaded at one time.
- Track Utilisation – the number of trains per day that can be unloaded on each track.
- Installed Crane Capacity – Lifts per hour X operational hours per day X number of cranes.
- Container storage capacity.
- Train length.
- Operating days per annum.
- Operating efficiency.

6.9. The total movements off site have been calculated based on the container numbers and the maximum 16 paths per weekday and 4 trains paths per weekend day (Saturday). A train path is the infrastructure capacity needed to run a train between two places over a given time-period.

6.10. The ratio of external HGV movements to internal has been based on similar numbers for Northampton Gateway and West Midlands Interchange, feedback from potential operators and Network Rail. Subsequently, an external/internal split of HGV movements has been set at 70/30 which aligns with similar open access Terminal sites in the Midlands.

6.11. The key factors for the road freight derivations are:

- Standard utilisation percentage of train = 81%.
- Factor for Twenty Foot Equivalent Unit (TEU) to Container Numbers (typically Forty foot) = 1.8.
- Number of Movements per Container = 1.35.
- Ratio External: Internal = 70:30.

6.12. Factoring the above, calculations of the rail terminal HGV number of movements per train, per day and per annum are summarised in Table 6-1 and Table 6-2 respectively.

Table 6-1: Rail Terminal HGV Movements per Train

Container movements per train	One-way lifts	Two-way lifts
Twenty-foot unit equivalents (TUE) (max)	96	192
Number of containers (max)	64	128
Number of containers at 80% efficiency	52	104
Number of HGV movements (1.35 per container)	**70**	**140**

6.13. The maximum number of trains per weekday will be 16 trains and there will be up to 4 train paths per weekend day (Saturday). The associated number of HGV movements per day is presented in Table 6-2.

Table 6-2: Rail Terminal Daily and Annual HGV Movements

Activity	Weekday Movements		Weekend Day Movements	
	One-way	Two-way	One-way	Two-way
Trains	16		4	
Containers	720	1,440	180	360
Daily HGV Movements	**972**	**1,944**	**243**	**486**
Operating Days per Annum	260		104	
Annual HGV Movements	**252,720**	**505,440**	**25,272**	**50,544**
Total Annual One-way HGV	277,992			
Total Annual Two-way HGV	555,984			

6.14. To convert the daily figures into an hourly rate, a daily profile is necessary. There is limited information available on rail terminal daily trip profiling – however a daily profile obtained from the Rail Central Rail Operations Report has been approved by stakeholders as a suitable and evidenced proxy from which to estimate the daily profile.

6.15. The daily profile is shown graphically in Figure 6-1 is converted in the hourly HGV movements and detailed in Table 6-3.

Figure 6-1: Rail Central Operations Report HGV Distribution Percentages by Hour

Table 6-3: Hinckley Rail Terminal HGV Movements per Hour (Two-Way)

Hour	HGV Trips		Hour	HGV Trips		Hour	HGV Trips	
00:00	4	0.2%	08:00	101	5.2%	16:00	156	8.0%
01:00	8	0.4%	09:00	99	5.1%	17:00	142	7.3%
02:00	8	0.4%	10:00	138	7.1%	18:00	132	6.8%
03:00	6	0.3%	11:00	130	6.7%	19:00	80	4.1%
04:00	16	0.8%	12:00	173	8.9%	20:00	31	1.6%
05:00	51	2.6%	13:00	140	7.2%	21:00	14	0.7%
06:00	117	6.0%	14:00	99	5.1%	22:00	6	0.3%
07:00	156	8.0%	15:00	138	7.1%	23:00	4	0.2%
Typical Daily Total Movements							1949	100.0%

6.16. In addition to the above, Baker Rose has indicated that a small number of light vehicle trips are also expected, arising from employee and visitor/servicing trips. This equates to 112 two-way trips (56 arrivals, 56 departures) all occurring outside of the peak hours.

6.17. The total trip generation of the rail freight terminal is therefore set out in Table 6-4.

Table 6-4: Hinckley Rail Terminal Total Trip Generation (Maximum)

Vehicle Type	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)			24 Hour Daily Total		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
LGV	0	0	0	0	0	0	56	56	112
HGV	51	51	101	71	71	142	975	974	1949
Total	51	51	101	71	71	142	1031	1030	2061

Rail Freight Trip Generation - Internalisation

6.18. A split between external/internal HGV movements has been set at 70/30 which aligns with similar open access Terminal sites in the Midlands. Applying the ratio to the total maximum daily rail terminal movements from Table 6-4, the rail terminal HGV trips have been calculated as shown in Table 6-5

Table 6-5: Hinckley Rail Terminal HGV Internal/External Movements (Maximum)

Trip Type	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)			24 Hour Daily Total		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
Internal (30%)	15	15	30	22	21	43	295	294	589
External (70%)	36	35	71	50	49	99	680	680	1360
Total	51	50	101	71	71	142	975	974	1949
Daily Profile %	5.2%			7.3%			100.0%		

B8 Warehousing Trip Generation

6.19. Five sites have been included to calculate the most appropriate trip rates for the B8 warehousing units. The following sites have been identified as comparable/relevant to HNRFI proposals and have been included in the trip generation analysis:

- Daventry International Rail Freight Terminal (DIRFT III).
- West Midlands Interchange.
- East Midlands Gateway.
- Rail Central.
- Northampton Gateway.

6.20. Individual trip rates for each site are included in the Hydrock report reference: 07700-HYD-XX-XX-RP-TP-1003-P08 appended to the HNRFI-BWB-GEN-XX-RP-TR-0011-S4-P04_Trip Generation Addendum report included in Appendix 3 (Document Reference 6.8.1.8.1.3).

6.21. To derive a trip rate for application to the Hinckley NRFI proposal, a conventional method consisting of deriving a mean average of the trip rates of the sites above has been undertaken. These average trip rates are presented in Table 6-6 and the resultant warehousing trips for 850,000sqm of B8 GFA has been calculated and is shown in Table 6-7

Table 6-6: Hinckley B8 Trip Rates

Vehicle Type	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)			24 Hour Daily Total		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
LGV	0.106	0.014	0.119	0.041	0.108	0.150	0.967	0.954	1.921
HGV	0.020	0.022	0.042	0.022	0.025	0.046	0.499	0.449	0.898
Total	**0.126**	**0.035**	**0.161**	**0.063**	**0.133**	**0.196**	**1.416**	**1.403**	**2.819**

Table 6-7: Hinckley B8 Trip Generation

Vehicle Type	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)			24 Hour Daily Total		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
LGV	899	117	1,016	351	922	1,273	8,218	8,108	16,326
HGV	172	184	356	186	209	395	3,818	3,819	7,637
Total	**1,071**	**301**	**1,372**	**536**	**1,131**	**1,668**	**12,035**	**11,927**	**23,962**

6.22. The combined total external trip generation for the Hinckley NRFI is comprised of data from the above Table 6-5 for the rail terminal external trips and the B8 warehousing data presented in Table 6-7. This combined total trip generation of the site with all elements fully built out and functioning is presented in Table 6-8**.**

Table 6-8: Hinckley NRFI Combined Total External Trip Generation

External Vehicle Type	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)			24 Hour Daily Total		
	Arrive	Depart	Total	Arrive	Depart	Total	Arrive	Depart	Total
B8 LGV	899	117	1,016	351	922	1,273	8,218	8,108	16,326
NRFI LGV	0	0	0	0	0	0	56	56	112
Total LGV	**899**	**117**	**1,016**	**351**	**922**	**1,273**	**8,274**	**8,164**	**16,438**
B8 HGV	172	184	356	186	209	395	3,818	3,819	7,637
NRFI HGV	36	35	71	50	50	99	680	680	1361
Total HGV	**208**	**219**	**427**	**235**	**259**	**494**	**4,498**	**4,500**	**8,998**
Total External Trips	**1,107**	**336**	**1,443**	**586**	**1,181**	**1,767**	**12,772**	**12,664**	**25,435**

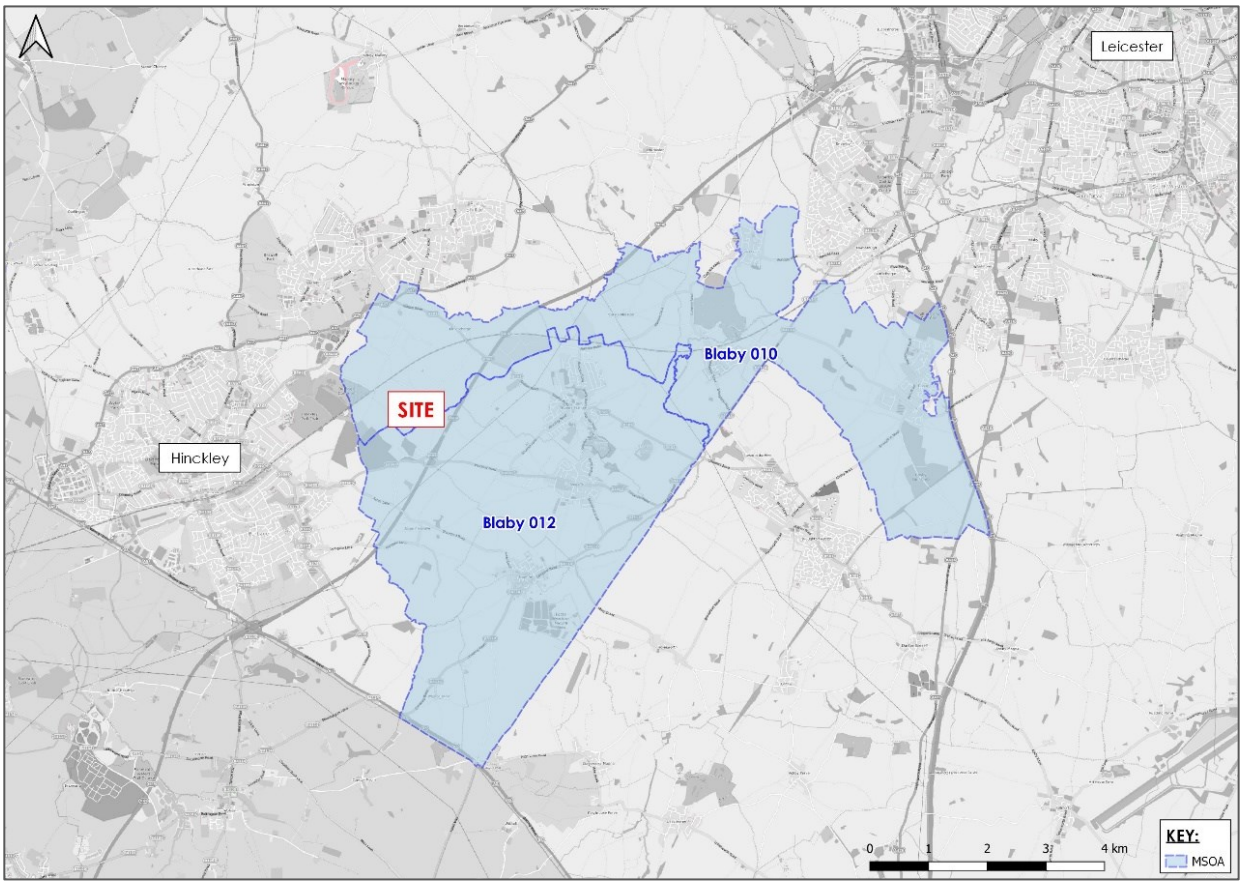
Modal Split

6.23. In addition to the vehicle trips elaborated above, calculations of person trips travelling to and from the site have been undertaken. These will account mostly for employees of

the B8 element of the proposals.

6.24. In the absence of baseline travel data for the site, reference has been made to the Office of National Statistics (ONS) Neighbourhood Statistics (2011) for the Middle Super Output Area (MSOA) – "Blaby 010" and "Blaby 012", to determine the method of travel to work to the areas and establish the likely method of travel to work for employment trips. Both MSOAs were selected for analysis, as parts of the site are located within both areas as shown in Figure 6-2

Figure 6-2: Middle Super Output Areas



6.25. Table 6-9 summarises the modal choice for employment trips to the "Blaby 010" and "Blaby 012" zones based on the Census Journey to Work data.

Table 6-9: Journey to Work Modal Split (2011 Census)

Travel to Work Mode	Modal Split
Car Driver	75%
Walk	11%
Car Passenger	7%
Bus	3%
Bicycle	2%

Motorcycle	1%
Train	0%
Other	1%
Total	**100%**

Source: Nomis – Office for National Statistics

6.26. Table 6-9 indicates that currently approximately only 3% of trips are made using public transport and 13% are walking / cycling trips. The figures provide a baseline from which a Framework Travel Plan (FTP) will set 'indicative measures and targets' to encourage greater adoption of sustainable modal travel options than is following the development.

Person Trip Generation

6.27. The modal splits outlined in Table 6-9 have been combined with the light vehicle trip generation in Table 6-8 to calculate the two-way person trips associated with the proposed development, shown in Table 6-10. As the main purpose of an HGV trip is the transportation of its cargo, the HGV trips have been excluded from this calculation.

Table 6-10: Multi-Modal Trip Generation

Mode	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
	Arrive	Depart	Total	Arrive	Depart	Total
Car Driver	899	117	1016	351	922	1273
On Foot	132	17	149	51	135	187
Car Passenger	84	11	95	33	86	119
Bicycle	24	3	27	9	25	34
Bus	36	5	41	14	37	51
Motorcycle	12	2	14	5	12	17
Train	0	0	0	0	0	0
Other	12	2	14	5	12	17
Total	1,199	156	1,355	468	1,229	1,697

6.28. The above represents the likely trip generation and modal travel in the peak hours for the HNRFI. However, the site-wide Framework Travel Plan (FTP) requires each end occupier to prepare their own specific Travel Plan in accordance with the aims and objectives of the FTP to encourage sustainable travel and minimise single occupancy car trips.

Opening Year 2026

6.29. Phasing of the HNRFI could affect the highway impact on the road network. However, for robustness, the full development traffic flow has been modelled in the 2026 scenario.

6.30. Once the site is fully developed and operational it will comprise of 850,000 sqm of B8 use and the full build out will allow for 16 trains on weekdays by 2036.

Trip Distribution

6.31. Hinckley NRFI will be a significant employment site on the edge of the West and East Midlands. Consultants AECOM produced a Technical Note "PRTM – Hinckley National Rail Freight Interchange Strategic Modelling: Development Trip Distribution" (included in Appendix 4 of this TA, (Document Reference 6.2.8.1.4) as part of the strategic modelling suite of documents and provides an insight to the extents of the commuter journeys. It presents the methodology, assumptions, and results of the NRFI employee and freight distribution needed to develop the development-related OD trip matrices, both for employee and freight trips, to and from the proposed development.

Car Trips

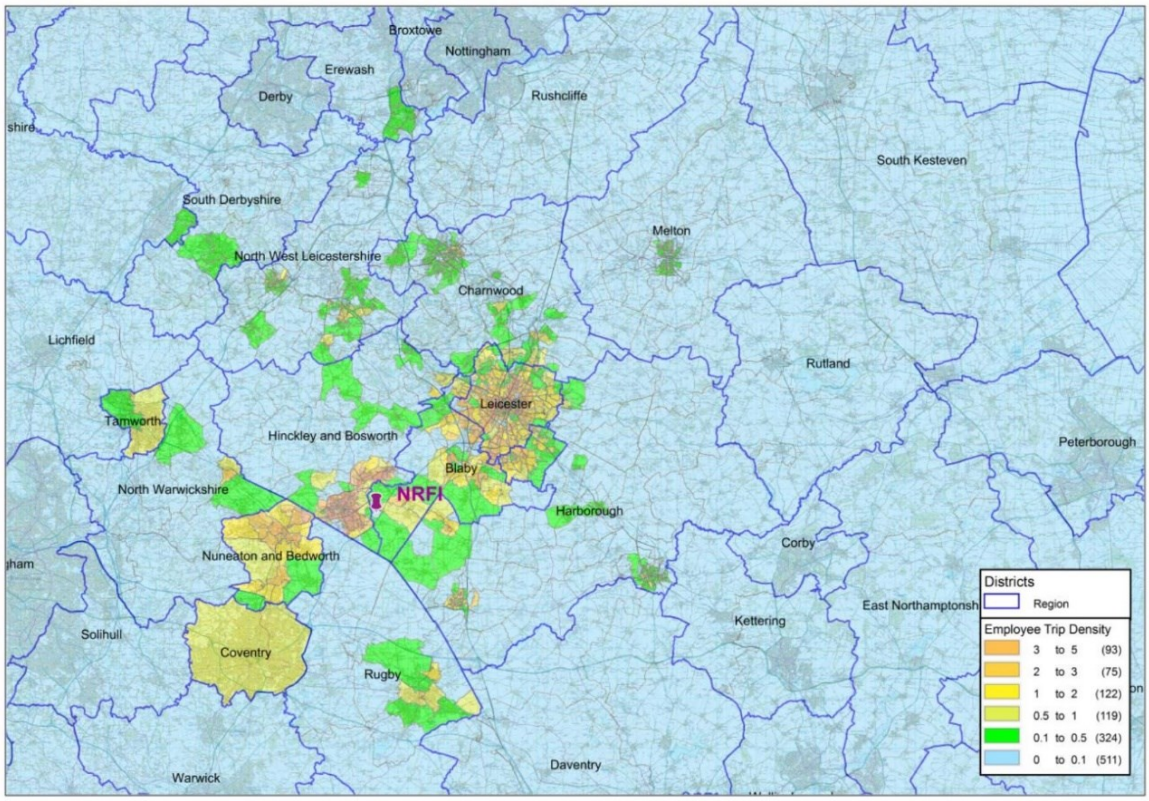
6.32. The trip distribution for employees used a bespoke gravity model, calibrated to trip length distributions derived from JTW data from comparable developments. Magna Park (west of Lutterworth) and Daventry International Rail Freight terminal (DIRFT) were analysed as a 'proxy' trip length distribution for employees.

6.33. Table 6-3 and Figure 6-4 graphically demonstrates the output of the data processed from the gravity model.

6.34. The general pattern aligns with expectations based on population densities across the area, with Hinckley, Leicester, Nuneaton, Blaby and Coventry all feasible key employee origins.

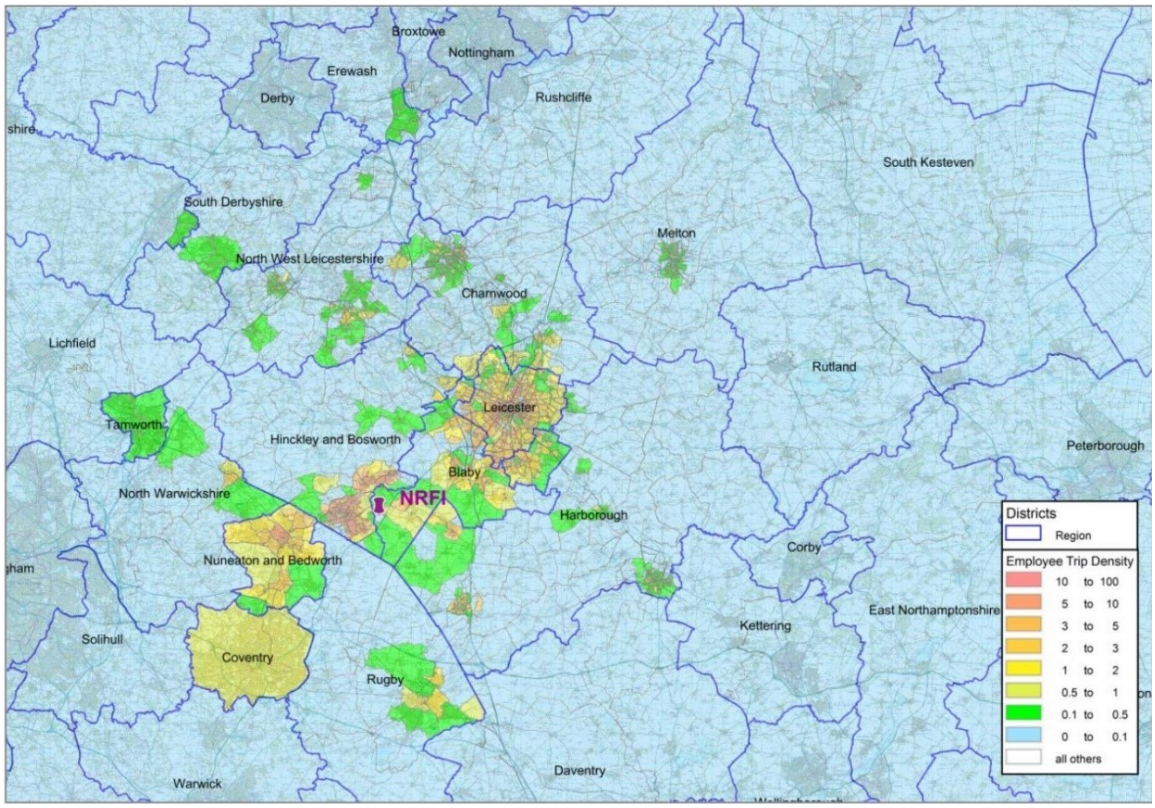
6.35. The Eastern Villages of Stoney Stanton, Sapcote and Sharnford are also predicted to contain demand for employment at the HNRFI site. This translates to some likely public transport and sustainable mode demand, given the relative proximity to the site.

Figure 6-3: Modelled HNRFI Employee Trips to HNRFI (2036 AM)



Source: AECOM TN 1 Hinckley NRFI Development Trip Distribution

Figure 6-4: Modelled HNRFI Employee Trips to HNRFI (2036 PM)



Source: AECOM TN 1 Hinckley NRFI Development Trip Distribution

6.36. Shift patterns are a critical consideration when looking at the overall access to the site for B8 the 3 general shifts operate in an 8-hour cycle across 24 hours: 06:00-14:00, 14:00-22:00 and 22:00-06:00 with office/management staff working the normal 9 to 5 hours.

6.37. It is anticipated that the jobs will be split as follows:

- 70% are warehouse staff/drivers (shift workers).
- 20% office/management staff.
- 10% Support Staff such as cleaners, catering, security etc.

Freight Trips

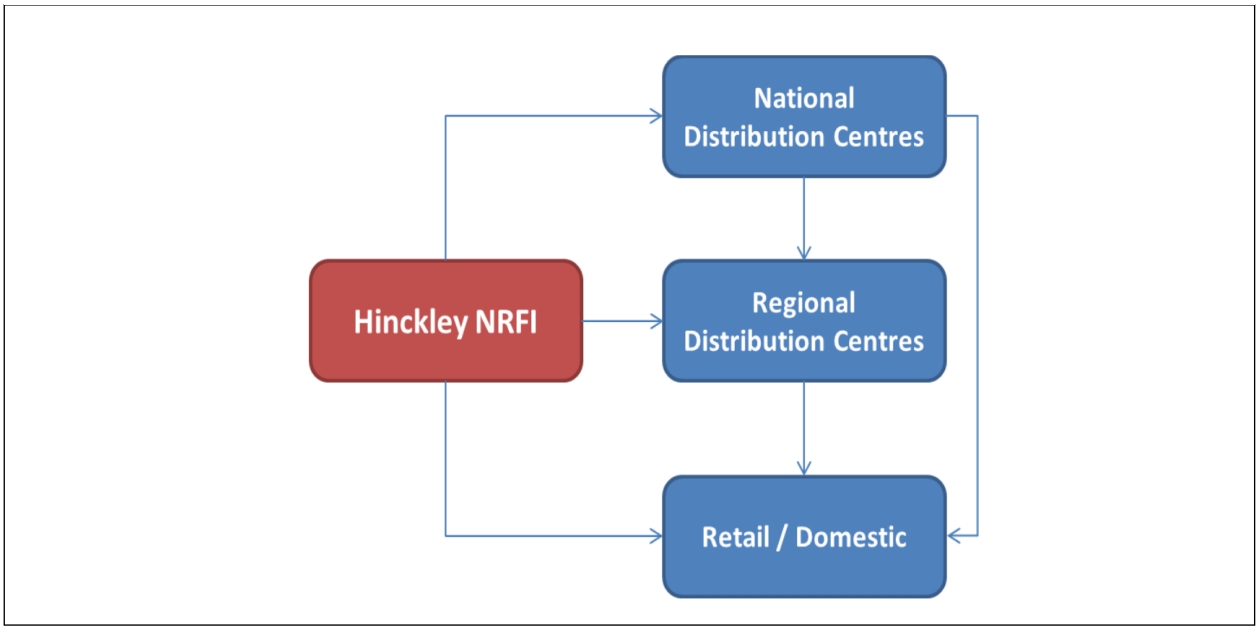
6.38. HGVs will be used for the movement of goods to and from the proposed NRFI. The estimate of HGV trips arriving at and departing from the site is presented in Table 6-8 Hinckley is located within the so-called “Golden Triangle”, where many of the UK’s National Distribution Centres (NDCs) are located, with access to over 90% of the UK population within 4 hours’ driving time. Apart from the NDCs, this area also includes a number of Regional Distribution Centres (RDCs).

6.39. Both NDCs and RDCs receive, hold, and redistribute goods to the next level within their supply chain. Typically, NDCs are larger in scale than RDCs, and hold goods for a longer period of time. Therefore, dwell times are shorter at RDCs and they are normally

associated with retailers.

6.40. The proposed HNRFI is planned to be a multi-purpose goods interchange and distribution facility. Following delivery of cargo from the major cargo terminals (e.g., Southampton, Liverpool, and Humber Estuary) by rail, goods are expected to be transported to a range of logistic and distribution centres for further distribution, or directly to retail outlets by road. The flow diagram shown in Figure 6-5 reflects the expected likely distribution to and from the future HNRFI.

Figure 6-5: Expected Distribution of Freight from the Proposed HNRFI within the Supply Chain

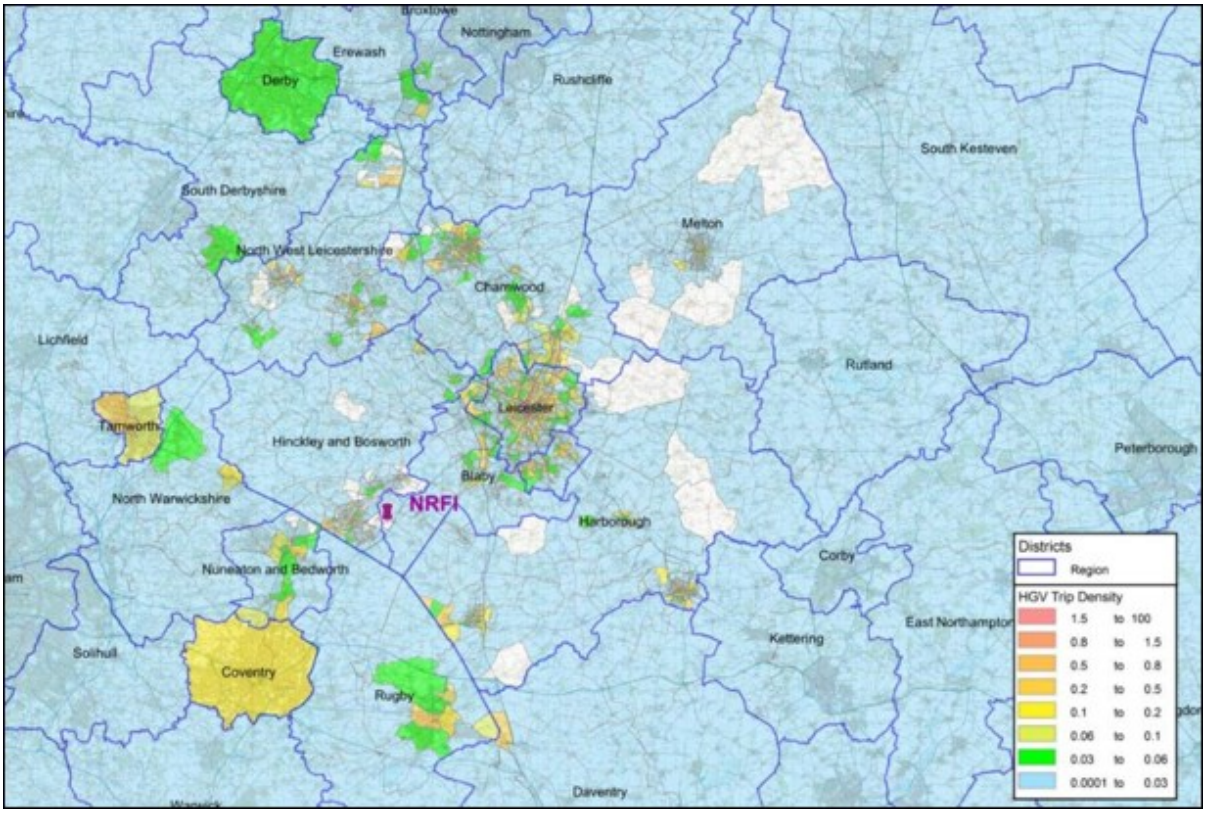


Source: AECOM TN 1 Hinckley NRFI Development Trip Distribution

6.41. Goods are expected to be transported by road into a range of both NDCs and RDCs, as well as directly to the end users. The proportion of goods transported to each of these is likely to depend on type of goods and commodities. For example, goods which are seasonal (such as outdoor/garden equipment, summer clothing etc.) and those which are non-time sensitive and/or have long lead-times (e.g., toys, electricals etc.) generally go direct to NDCs, for storage ahead of demand or as bufferstock etc.

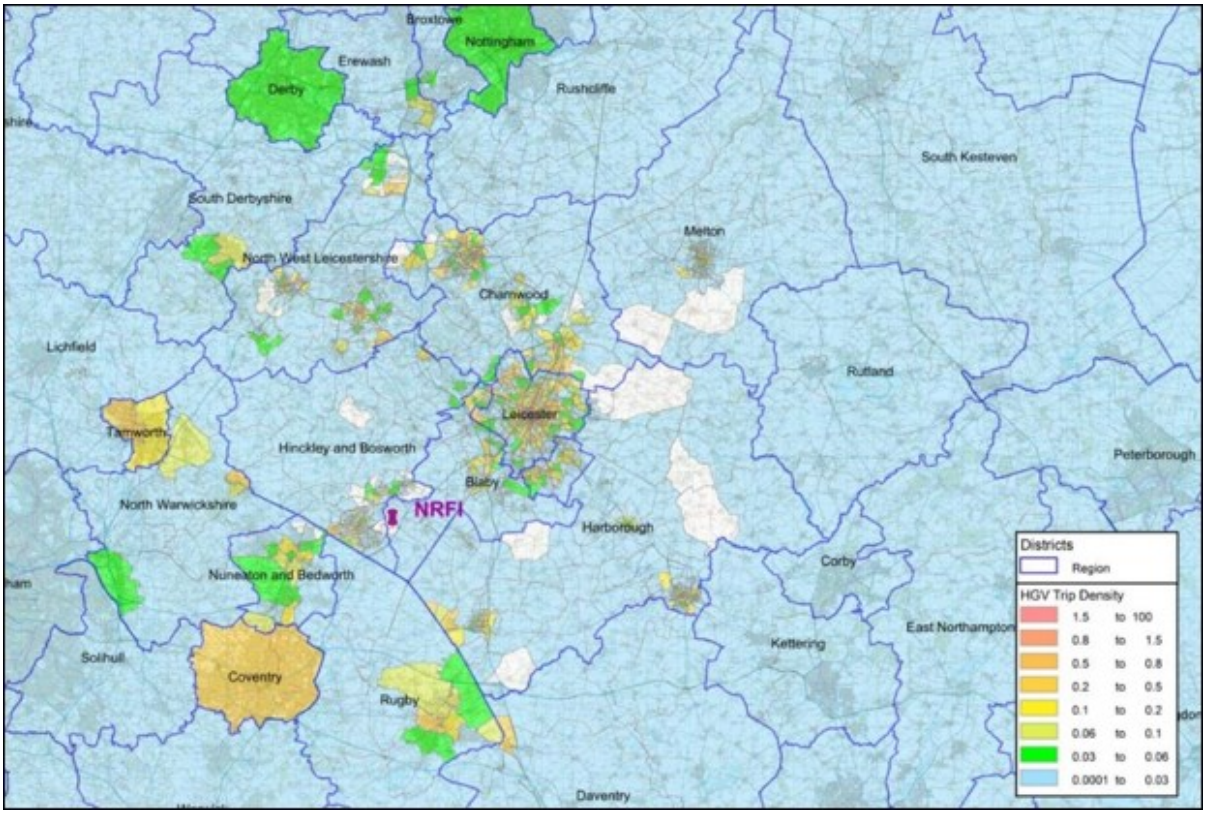
6.42. Subsequently, three separate OD matrices were developed for each type of trips. Figure 6-6 and Figure 6-7 illustrate aggregated results for the three freight movement categories.

Figure 6-6: Modelled HGV Trips to HNRFI in AM Peak (All Freight Movements)



Source: AECOM TN 1 Hinckley NRFI Development Trip Distribution

Figure 6-7: Modelled HGV Trips to HNRFI in PM Peak (All Freight Movements)



Source: AECOM TN 1 Hinckley NRFI Development Trip Distribution

7. ASSESSMENT METHODOLOGY AND PARAMETERS

Introduction

7.1. This section of the TA describes the key assessment parameters and evidence-based assumptions used in this TA. These feed into the traffic impact assessment.

Assessment Methodology

7.2. The transport modelling for the HNRFI scheme has comprised the following assessment methodology:

- bespoke assessment of trip generation and trip distribution as described in the previous chapter;
- strategic transport modelling with use of PRTM 2.2 to assess the effects of the development traffic and traffic reassignment associated with the highway infrastructure proposals and mitigation schemes;
- identifying junctions for a detailed standalone assessment;
- detailed junction modelling using industry-standard assessment tools and micro-simulations;
- development of mitigation schemes where necessary.

PRTM 2.2 Model

7.3. The Leicester and Leicestershire Integrated Transport Model (LLITM) was developed by AECOM for Leicestershire County Council (LCC) between 2009 and 2011. Subsequently as the strategic modelling demand increased, a more detailed variant of the model was produced, now referred to as the Pan-Regional Transport Model (PRTM).

7.4. Version 2.2 of the model was utilised for the scheme to understand what the reassignment of traffic is due to the proposed scheme and infrastructure. It is the most recently available version and was signed off by the LCC Network Data Intelligence team (NDI) following a review in June 2021 and included in Appendix 5 of this TA (Document Reference 6.2.8.1.5)

7.5. PRTM 1.0 utilised a trip-end model, based upon the DfT's National Trip-End Model (NTEM), to estimate trip making in the future. This took into account the number of people, households, jobs, etc. to provide a generic growth factor for each site.

7.6. PRTM 2.2 however utilises trip rates extracted from committed development transport assessments for 13 strategic sites around the Midlands. This was in order to provide a more accurate representation of development impacts on the future year modelling.

7.7. Since the June 2021 run of the PRTM 2.2 for the Hinkley NRFI Core, a change to background infrastructure proposals has been announced. This was the removal of the Dodwells/Longshoot widening scheme, identified under NH's RIS2 projects. This has meant that revised modelling outputs are to be produced based on the new projections and fully agreed base modelling/ trip generation.

Baseline Traffic Surveys

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

- Origin and Destination Surveys using Automatic Number Plate Recognition (ANPR).
- Journey time surveys.
- Manual Classified Turning Count (MCC).
- Queue Length Surveys.
- Traffic Flow - Automatic Traffic Counts (ATC).

7.9. In addition, a range of sources have been used to obtain the above data. All of the surveys that have taken place were carried out prior to the 2020 Covid 19 pandemic. These include:

- Commissioning bespoke traffic surveys (starting in 2017, and through to 2019).
- Obtaining data collected/held by Leicestershire County Council.
- Obtaining data collected/held by National Highways.

7.10. These data sources have been assessed against AM and PM peak hours, as these are the periods assessed in the highway's technical assessment. A review of the data collected has identified an AM peak hour of 08:00hrs - 09:00hrs, and a PM peak hour of 17:00hrs - 18:00hr.

7.11. For the collection of the MCC data the suitable survey periods were identified as 07:00-19:00, as this allows any assessment to use the movements of traffic both in and out of the peak hours, allowing robust assessments to be undertaken.

7.12. Vehicle Classification has been broken down into the following: Cars and taxis, Motorcycles, Pedal Cycles, Light goods vehicles i.e., delivery vans excluding vehicles with twin rear tyres, OGV1 consisting of all goods vehicle with two axles with twin tyres, three axles (rigid), tractors, ambulances, road rollers, OGV2 consisting of all goods vehicles with three axles (articulated), four axles or more (rigid or articulated) and PSV including buses and coaches.

7.13. The counts use High Mast Digital Video with flows aggregated at 15-minute intervals.

7.14. Installation has been carried out by experienced and trained technicians; site reports provide details of all installations. A standard 10% check was carried out on all Digital movie recordings. All data has been double punched to ensure accuracy.

Core Base Model

7.15. A core base model uses the wider PRTM suite which has been designed to forecast from a base year of 2014 up to a forecast horizon of 2051. The identification of the emerging issues over this time frame is the primary purpose of the PRTM. The PRTM itself is an

upgrade of the previous Leicester and Leicestershire Integrated Transport Model. This includes a larger area of the Midlands surrounding Leicestershire and more detailed network and zoning with congestion represented by speed-flow curves.

7.16. Separate base year model reviews have been produced by Leicestershire NDI team specific to the outputs to the HNRFI site. The PRTM has been enhanced and updated since the previous Hinckley NRFI base year model review undertaken in 2018. As part of this enhancement, the PRTMv2.2 has been recalibrated and validated using observed count data and journey times, potentially affecting modelled flows and journey times. The latest report version is included in Appendix 6 of this TA (Document Reference 6.2.8.1.6) along with a local network addendum to cover issues in Blaby.

7.17. The network and zoning around the proposed development site are unchanged materially; therefore, only a review of the updated model calibration and validation performance within the PRTMv2.2 in the vicinity of the proposed development has been undertaken in the base year review.

Forecast Modelling and Brief

7.18. Following the production of the base modelling a full brief specific to outputs for the HNRFI site has been shared and commented on by the TWG. This is included in Appendix 7 of this TA (Document Reference 6.2.8.1.7, part 9 of 20).

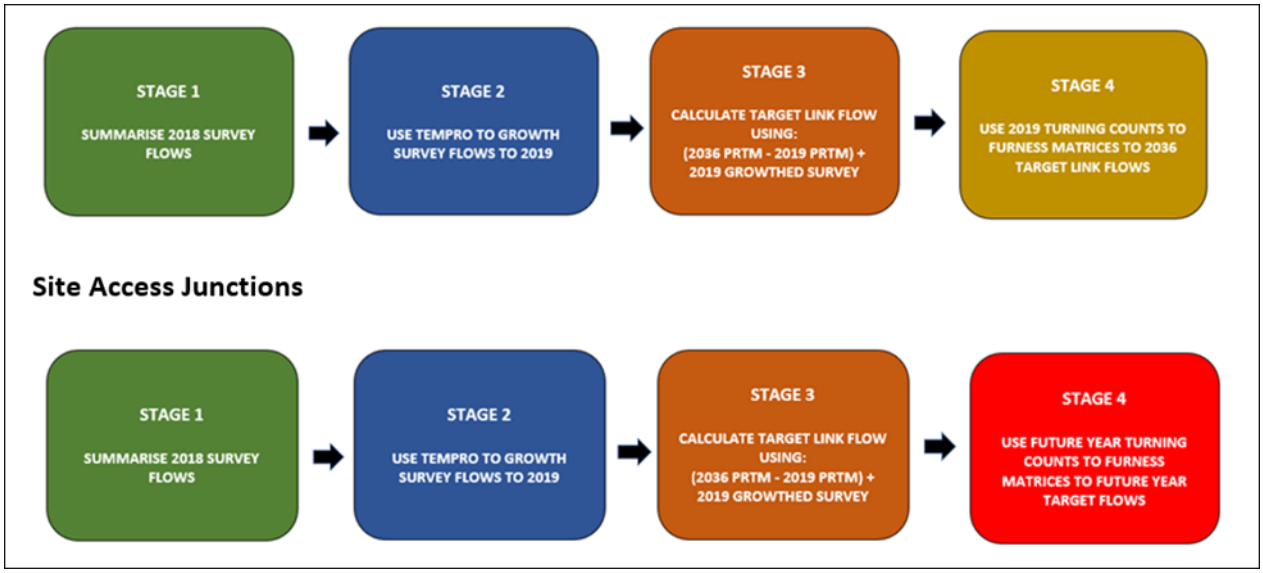
Furnessing

7.19. Several options on how to derive the forecast flows through furnessing of modelled flows have been explored.

- Option 1: Use target entry and exit flows directly extracted from PRTM;
- Option 2: Use linear interpolation to obtain 2018 PRTM base and use this in conjunction with future PRTM flows to derive growth factors. These growth rates are then applied to observed flows to derive future forecast flows and junctions; and
- Option 3: Use linear interpolation to obtain 2018 PRTM base and calculate absolute differences in link flows between calculated 2018 PRTM and the respective future year PRTM flows. The absolute differences are then added to 2018 observed flows to derive future forecast link flows for each scenario. The base 2018 observed turning counts are then used to furness the future forecast matrices.

7.20. Option 3 of the furnessing methodologies presented was the most preferable option. A further update and review of the furnessing methodology was undertaken in June 2021 and then April 2022 to derive future forecast traffic flow matrices for assessed junctions. A flow chart of the methodology is provided in Figure 7-1 below.

Figure 7-1: Furnessing Methodology



7.21. It should be noted that currently the furnessing methodology has been applied to all junctions except for the M69 Junction 2 and the proposed second access on the B4668 Leicester Road. As there are additional arms to these junctions, observed turning movements cannot be used to furness the matrices. Furthermore, it is considered that the proposed infrastructure will significantly alter the turning movement at these junctions.

7.22. Therefore, a different approach for 'Stage 4' is taken only for the site access junctions. Instead of using observed turning count proportions to furness the matrices, the PRTM turning counts for the respective future year scenarios to furness the matrices will be used. This methodology utilises observed counts to calculate a more realistic link flow at the junction whilst accounting for the redistribution of traffic anticipated at M69 J2 with the inclusion of new arms to the junction. Similar approach would be taken for the secondary access. This has been accepted by LCC and NH.

Assessment Years

7.23. As set out in the Forecast Model Brief, the following assessment years have been selected:

- Opening year 2026;
- future year 2036.

7.24. The assessments of the above years include the weekday peak hours of the local highway network as determined from the traffic surveys, these are 08:00 – 09:00 and 17:00 – 18:00.

Assessment Scenarios

7.25. The Following Modelling scenarios are required for the opening year and the Future Year. Access Infrastructure is set out in Paragraphs 5.3 to 5.9 above.

Opening Year 2026

i. Without Development (WoD)- Do Nothing

ii. Without Development (WoDWPA) with Proposed Access Infrastructure - Do Minimum

iii. With Development (WDWPA) with Proposed Access Infrastructure – Do Something

Future Year 2036

i. Without Development (WoD) – Do Nothing

ii. Without Development (WoDWPA) and with Proposed access infrastructure – Do Minimum

iii. With Development (WDWPA) with Proposed access infrastructure - Do Something

7.26. It should be noted that the development proposal does not include only the HNRFI development traffic itself, but also the associated access infrastructure that will result in redistribution of the existing traffic. Hence, there is potential for net flow difference to be negative when the redistribution results in decrease of trips on a link.

Study Area and PRTM Assessment

7.27. For the model scenarios the following outputs for the AM Peak and PM Peak hour have been processed through the PRTM model to understand the Area of Influence (AoI) or Study Area:

7.28. Confirmation of the Area of Influence in using those links which are forecast with:

i. Maximum turning VoC in excess of 85% in any scenario;

ii. The development causes a VoC change of 5%; and

iii. There is a flow change of 30 vehicles.

iv. With the inclusion of the proposed development in the 2036 forecast;

v. Plots showing the routeing of traffic (including HGV traffic) to / from the proposed development in 2026 and 2036 for the with and without development scenarios and

vi. Details of the forecast flows and volume-capacity ratios within the development AOI

Identifying Junctions for Detailed Review

7.29. Traffic flow outputs have been taken from the strategic traffic model PRTM 2.2 undertaken by AECOM on behalf of Leicestershire County Council's (LCC). The traffic flows have subsequently been through a furnessing process to approximate the turning flows against observed traffic data.

7.30. The SATURN model was used to identify junctions which might operate at or over capacity in the future which require further detailed assessment using the appropriate

industry standard modelling software. The PRTM 2.2 model results and the subsequent discussions held with the Transport Working Group (TWG) identified an initial total of 38 junctions with further junctions requested by LCC in August 2022 (several of which were already identified), totalling 54 junctions to review.

7.31. For those junctions within the PRTM buffer zone, primarily in Warwickshire, flows from the PRTM at the entry points to the WCC modelled zones are to be provided and run through the validated models by the WCC team. This is to help identify impacts within the buffer on local and strategic roads.

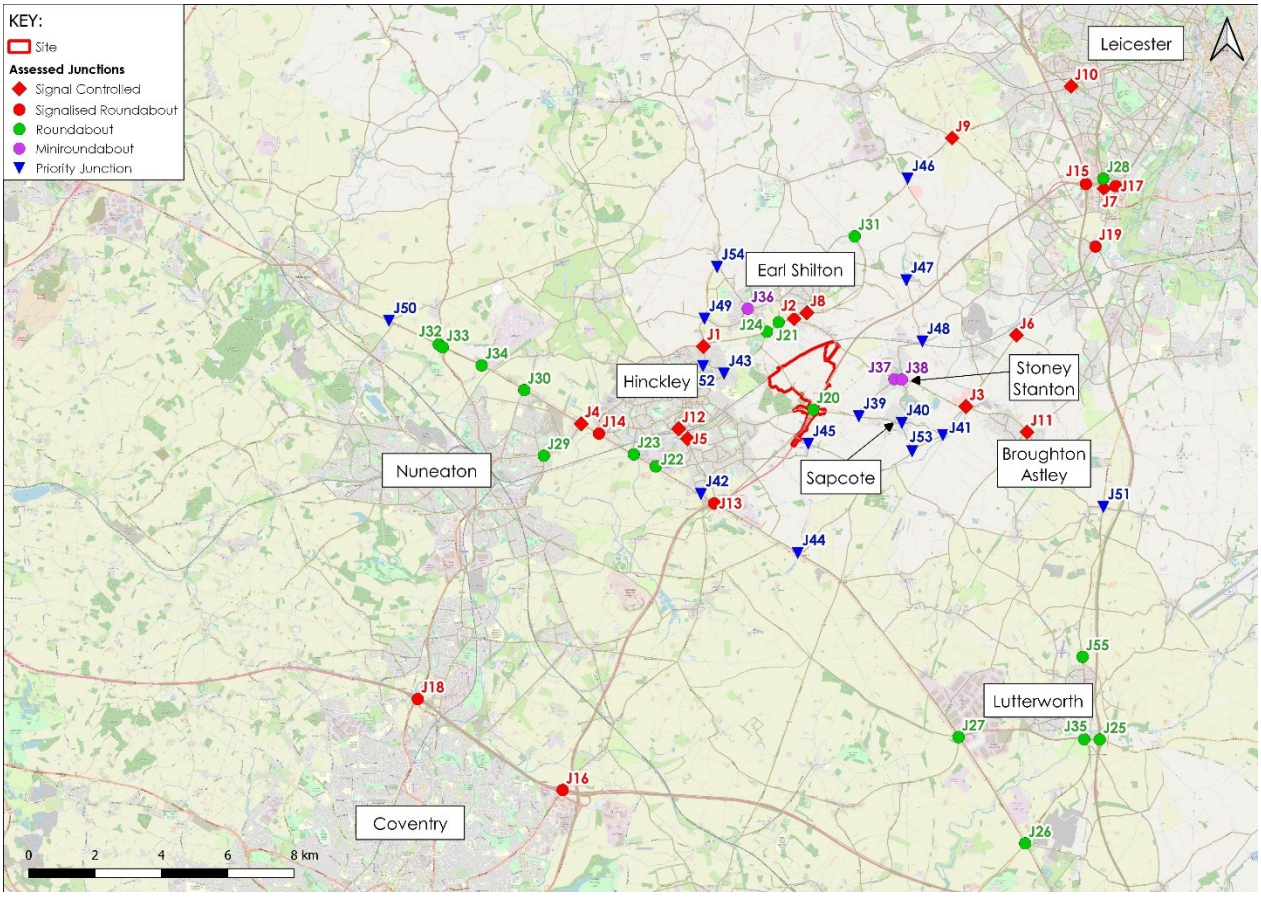
7.32. The junctions identified from the PRTM 2.2 model and through the TWG for further assessment comprise 16 priority (give-way) junctions, 17 roundabout junctions, 12 signal-controlled junctions, 7 signal-controlled roundabouts, and two mini-roundabouts. They are set out in Table 7-1 below, and a plan visually illustrating the locations of these junctions relative to the development site is included in Figure 7-2.

Table 7-1: Initially Identified Junctions within the AOI for further Assessment

Junction Type	JCT ID	Survey Jct Ref	Junction	Location
Signal Controlled	J1	13	Ashby Rd / A47	Hinckley
	J2	15	A47 / B581	Earl Shilton
	J3	21	B4114 Coventry Rd / B581 Broughton Rd	East of Stoney Stanton
	J4	26	A47 / A5 (Longshoot)	Between Hinckley and Nuneaton
	J5	27	Rugby Rd / Brookside	Hinckley
	J6	50	Coventry Rd / Croft Rd	Croft
	J7	-	A563 / A5460	Leicester
	J8	65	A47 / Wilkinson Lane	Earl Shilton
	J9	66	A47 / B582 Desford Road	Between Hinckley and Leicester
	J10	-	Braunstone crossroads	Leicester
	J11	-	B581/Cosby Road, Broughton Astley	Broughton Astley
	J12	-	Rugby Road/Hawley Road, Hinckley	Hinckley
Signalised Roundabout	J13	22	M69 Junction 1 / A5	South of Hinckley
	J14	25	A5 / B4666 / A47 (Dodswells)	SW of Hinckley
	J15	-	M1 Junction 21 / M69 Junction 3	Leicester
	J16	-	M6 Junction 2	Coventry
	J17	-	Narborough Rd Roundabout	Leicester
	J18	-	M6 Junction 3	Coventry
	J19	-	B4114/Foxhunter roundabout	SW of Leicester
Roundabout	J20	52	M69 Junction 2	Site access
	J21	14	A47 Leicester Rd / Clickers Way / Carrs Hill	Barwell
	J22	23	A5 / Logix Rd	South of Hinckley
	J23	24	A5 / Hammonds Way	South of Hinckley
	J24	29	The Common Barwell / A47 / B4668 Leicester Rd	Barwell

Junction Type	JCT ID	Survey Jct Ref	Junction	Location
	J25	-	M1 Junction 20	Lutterworth
	J26	47	A5 / A426 / Gibbet Ln	South of Lutterworth
	J27	48	A5 / A4303 / B4027 / Coal Pit Ln	Magna Park
	J28	-	Lubbesthorpe Way Roundabout	Leicester
	J29	-	A47 / A4254 Eastboro Way	Nuneaton
	J30	68	A5 / Higham Ln / Nuneaton Ln	West of Hinckley
	J31	-	A47/Leicester Road roundabout	North of Earl Shilton
	J32	-	A5/Royal Redgate	West of Hinckley
	J33	-	A5/A444 Fenny Drayton	West of Hinckley
	J34	-	A5/MIRA	West of Hinckley
	J35	-	A4303 Frank Whittle	Lutterworth
	J55	-	A426 Lutterworth East Northern Access	Lutterworth
Mini roundabout	J36	-	Shilton Road mini-roundabout, Barwell	South of Earl Shilton
	J37	17	Hinckley Rd / New Rd / B581	Stoney Stanton
	J38	18	New Rd / Long St / Broughton Rd	Stoney Stanton
Priority Junction	J39	19	B4669 / Stanton Ln	Sapcote
	J40	20	Leicester Rd / Grace Rd/ Sharnford Rd	Sapcote
	J41	28	B4669 Leicester Rd / B4114 Coventry Rd	Sapcote
	J42	-	Wolvey Rd / A5	Hinckley
	J43	-	Stoneygate Drive / Leicester Rd / Bradgate Rd	Hinckley
	J44	-	B4114 / A5	SE of Hinckley
	J45	41	Hinckley Rd / Lynchgate Ln / Sharnford Rd	Aston Flamville
	J46	-	Dan's Ln / A47 Hinckley Rd	Between Hinckley and Leicester
	J47	45	Thurlaston Ln / Watery Gate Ln / Pingle Ln	Earl Shilton
	J48	46	Huncote Rd / Stanton Ln / Pingle Ln	Stoney Stanton
	J49	-	A447 Rogues Lane	West of Earl Shilton
	J50	-	A5/Drayton Lane, Fenny Drayton	West of Hinckley
	J51	-	A426/Coopers Lane	East of Broughton Astley
	J52	-	Ashby Road/Barwell Lane, Hinckley	Hinckley
	J53	-	B4114/Sharnford Road, Sapcote	South of Sapcote
	J54	-	A447 Ashby Road/Stapleton Lane, Barwell	West of Earl Shilton

Figure 7-2: Identified Junction Locations and Type



7.33. The identified junctions are further refined where development impacts result in changes as described in i) to iv) above or are located on sensitive routes in the AOI to determine the definitive list of junctions for further assessment.

7.34. Table 7-2 below provides a summary of total flow change and the respective percentual highway impact between 'With Development' and 'Do Nothing' scenarios and in both AM and PM peak hours. The table is sorted by the greatest detrimental impact regardless the time period.

Table 7-2: Total Flow Change and Highway Impact

ID	AM Peak Hour (08:00-09:00)				PM Peak Hour (17:00-18:00)			
	WoD Flow	WD Flow	Total Flow Change	Highway Impact	WoD Flow	WD Flow	Total Flow Change	Highway Impact
J20	1370	4372	3002	219%	1586	4949	3363	212%
J45	346	446	100	29%	261	545	284	109%
J39	889	1635	746	84%	987	1630	643	65%
J48	488	613	126	26%	521	927	406	78%
J40	1189	1514	325	27%	1305	1414	110	8%
J24	3243	3859	616	19%	3671	4227	556	15%

ID	AM Peak Hour (08:00-09:00)				PM Peak Hour (17:00-18:00)			
	WoD Flow	WD Flow	Total Flow Change	Highway Impact	WoD Flow	WD Flow	Total Flow Change	Highway Impact
J41	1340	1561	221	17%	1256	1176	-79	-6%
J54	1248	1421	173	14%	1372	1454	82	6%
J52	1852	2095	243	13%	1893	1923	30	2%
J36	928	1047	119	13%	1075	1133	58	5%
J38	1178	1103	-74	-6%	1376	1520	144	11%
J37	1155	1129	-27	-2%	1390	1507	118	8%
J49	1797	1801	5	0%	1794	1913	119	7%
J1	2969	3146	177	6%	3033	3203	169	6%
J3	2550	2645	95	4%	2513	2252	-261	-10%
J21	2761	2861	100	4%	3174	3214	41	1%
J8	1415	1457	43	3%	1511	1563	52	3%
J31	1531	1584	53	3%	1541	1577	36	2%
J46	1987	2039	52	3%	2343	2341	-3	0%
J13	5327	5454	126	2%	5843	5826	-16	0%
J51	1341	1357	16	1%	1453	1486	34	2%
J15	6612	6602	-10	0%	6481	6595	114	2%
J17	5553	5582	30	1%	5455	5538	84	2%
J27	3808	3855	48	1%	3870	3860	-11	0%
J18	8194	8291	97	1%	8924	9000	76	1%
J16	5935	6000	65	1%	5866	5917	50	1%
J19	5349	5330	-19	0%	5359	5399	39	1%
J35	4906	4941	35	1%	4993	4986	-7	0%
J9	2622	2640	17	1%	2955	2948	-7	0%
J7	5762	5758	-4	0%	5988	6022	34	1%
J6	2091	2101	11	1%	1729	1647	-82	-5%
J55	2443	2451	8	0%	2363	2408	45	2%
J29	2252	2244	-8	0%	2371	2380	8	0%
J4	3101	3065	-36	-1%	3234	3243	9	0%
J32	3470	3478	8	0%	3500	3428	-72	-2%
J33	3512	3519	7	0%	3533	3461	-72	-2%
J10	3516	3522	6	0%	3532	3504	-28	-1%
J50	2434	2434	0	0%	2541	2460	-81	-3%
J26	3068	3062	-6	0%	3463	3459	-3	0%
J28	5378	5362	-16	0%	4281	4223	-58	-1%
J34	3012	3003	-10	0%	2856	2831	-25	-1%
J11	1199	1155	-44	-4%	1368	1362	-6	0%
J30	2691	2637	-55	-2%	2697	2667	-30	-1%
J42	2188	2141	-47	-2%	2617	2518	-99	-4%
J14	4091	3938	-153	-4%	4117	4027	-89	-2%
J22	2385	2307	-78	-3%	2658	2596	-62	-2%
J23	2290	2204	-86	-4%	2502	2436	-66	-3%
J2	2072	1952	-119	-6%	2332	2190	-143	-6%
J12	2331	2168	-163	-7%	2502	2356	-146	-6%
J5	1784	1607	-178	-10%	1932	1809	-123	-6%

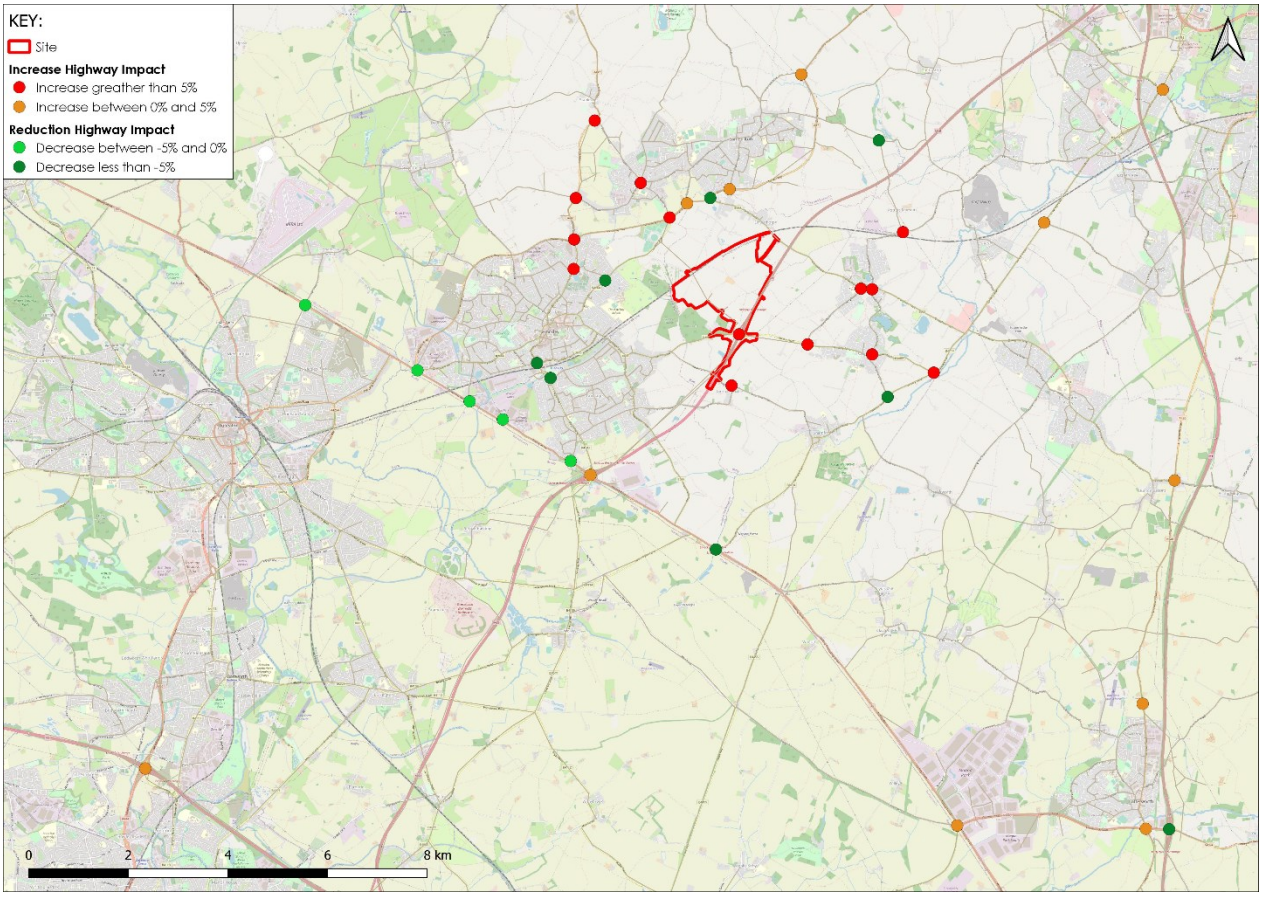
ID	AM Peak Hour (08:00-09:00)				PM Peak Hour (17:00-18:00)			
	WoD Flow	WD Flow	Total Flow Change	Highway Impact	WoD Flow	WD Flow	Total Flow Change	Highway Impact
J44	2711	2534	-177	-7%	2798	2602	-197	-7%
J43	1992	1845	-147	-7%	2148	1598	-550	-26%
J25	1823	1415	-408	-22%	1422	1264	-158	-11%
J47	420	369	-51	-12%	554	483	-71	-13%
J53	1265	989	-276	-22%	1452	1111	-341	-24%

7.35. In summary, the development will result in the following highway impact across the 55 identified junctions in the AOI:

- greater than a 5% increase in traffic flow at 14 junctions;
- increased traffic flow between 0% and 5% at 18 junctions, although two of the junctions experience a greater reduction in flow in the PM peak, so on balance the greater impact is the beneficial reduction;
- reduced traffic flow between 0% and -5% at 15 junctions; and
- reduced traffic flow greater than -5% at eight junctions.

7.36. The flow changes and highway impact are visually displayed in Figure 7-3

Figure 7-3: Total Peak Hour Flow Changes and Highway Impact



7.37. Figure 7-3 highlights the geographical locations of the junctions impacted according to criteria listed in Table 7-2 above.

7.38. The most impacted junctions are located closest to the Site as would be expected (greater than 5%) however, the greatest reduction in flow is also noted to be in relatively close proximity to the site as traffic reroutes from roads towards the A5 onto the new southbound access at junction 2 of the M69.

7.39. Further afield to the east and south strategic junctions experience some minor increases below 5% increases, whilst the A5 to the west shows consistent minor reductions in flow 5% change.

7.40. In order to determine which of the junctions require further detailed assessment based on the PRTM 2.2 model results the traffic flows and junction performance were measured against four criteria:

- Criteria 1: Increase in flow of over 3%
- Criteria 2: Maximum VoC over 85% in any scenario
- Criteria 3: Increase of VoC of over 1%
- Criteria 4: Maximum VoC less than 85% & increase in VoC greater than 15%

7.41. Table 7-3 presents the VoC results for each junction assessed against criteria 2, 3 and 4.

Table 7-3: VoC Change and Highway Impact

ID	AM Peak Hour (08:00-09:00)						PM Peak Hour (17:00-18:00)					
	WoD VoC	WD VoC	VoC Change	Criteria 2	Criteria 3	Criteria 4	WoD VoC	WD VoC	VoC Change	Criteria 2	Criteria 3	Criteria 4
J1	99%	99%	-1%	✓	×	×	96%	98%	2%	✓	✓	×
J2	79%	67%	-	×	×	×	100%	103%	3%	✓	✓	×
J3	101%	103%	2%	✓	✓	×	97%	88%	-8%	✓	×	×
J4	97%	100%	3%	✓	✓	×	100%	100%	0%	✓	×	×
J5	90%	86%	-4%	✓	×	×	97%	88%	-8%	✓	×	×
J6	97%	98%	2%	✓	✓	×	98%	99%	1%	✓	✓	×
J7	98%	97%	-1%	✓	×	×	81%	81%	0%	×	×	×
J8	84%	90%	6%	✓	✓	×	65%	67%	2%	×	✓	×
J9	102%	102%	0%	✓	×	×	102%	103%	1%	✓	×	×
J10	102%	102%	0%	✓	×	×	98%	97%	-1%	✓	×	×
J11	100%	100%	0%	✓	×	×	100%	101%	1%	✓	×	×
J12	100%	100%	0%	✓	×	×	100%	101%	0%	✓	×	×
J13	102%	99%	-3%	✓	×	×	101%	88%	-12%	✓	×	×
J14	78%	78%	-1%	×	×	×	87%	84%	-3%	✓	×	×
J15	109%	108%	-1%	✓	×	×	107%	106%	-1%	✓	×	×
J16	96%	95%	-1%	✓	×	×	87%	90%	3%	✓	✓	×
J17	98%	100%	2%	✓	✓	×	77%	78%	1%	×	✓	×
J18	106%	106%	0%	✓	×	×	101%	101%	1%	✓	×	×
J19	96%	96%	0%	✓	×	×	100%	101%	0.61%	✓	×	×
J20	36%	77%	40%	×	✓	✓	39%	91%	52%	✓	✓	×
J21	78%	81%	3%	×	✓	×	72%	67%	-5%	×	×	×
J22	81%	79%	-2%	×	×	×	81%	80%	-1%	×	×	×
J23	74%	71%	-2%	×	×	×	81%	81%	-1%	×	×	×
J24	52%	82%	30%	×	✓	✓	71%	99%	27%	✓	✓	×
J25	76%	72%	-4%	×	×	×	71%	68%	-3%	×	×	×
J26	101%	102%	1%	✓	×	×	99%	101%	1%	✓	✓	×
J27	100%	101%	1%	✓	✓	×	99%	100%	1.27%	✓	✓	×
J28	47%	47%	1%	×	×	×	62%	62%	0%	×	×	×
J29	46%	43%	-3%	×	×	×	38%	37%	-1%	×	×	×
J30	80%	83%	3%	×	✓	×	78%	80%	2%	×	✓	×
J31	38%	42%	5%	×	✓	×	39%	40%	1%	×	✓	×
J32	60%	62%	2%	×	✓	×	52%	51%	-1%	×	×	×
J33	57%	57%	1%	×	×	×	80%	79%	-1%	×	×	×
J34	86%	90%	3%	✓	✓	×	57%	59%	2%	×	✓	×
J35	107%	106%	-1%	✓	×	×	102%	104%	2%	✓	✓	×

ID	AM Peak Hour (08:00-09:00)						PM Peak Hour (17:00-18:00)					
	WoD VoC	WD VoC	VoC Change	Criteria 2	Criteria 3	Criteria 4	WoD VoC	WD VoC	VoC Change	Criteria 2	Criteria 3	Criteria 4
J36	83%	78%	-5%	×	×	×	88%	87%	-1%	✓	×	×
J37	59%	52%	-8%	×	×	×	31%	52%	21%	×	✓	✓
J38	36%	33%	-4%	×	×	×	43%	40%	-3%	×	×	×
J39	28%	50%	22%	×	✓	✓	31%	52%	21%	×	✓	✓
J40	37%	51%	14%	×	✓	×	43%	40%	-3%	×	×	×
J41	28%	47%	19%	×	✓	✓	59%	33%	-26%	×	×	×
J42	75%	67%	-8%	×	×	×	79%	77%	-2%	×	×	×
J43	67%	40%	-	×	×	×	59%	33%	-26%	×	×	×
J44	100%	89%	-	✓	×	×	84%	85%	1%	×	✓	×
J45	10%	13%	4%	×	✓	×	6%	18%	11%	×	✓	×
J46	61%	65%	4%	×	✓	×	49%	49%	0%	×	×	×
J47	13%	12%	-1%	×	×	×	20%	16%	-5%	×	×	×
J48	16%	18%	3%	×	✓	×	18%	30%	12%	×	✓	×
J49	83%	89%	6%	✓	✓	×	100%	101%	0.2%	✓	×	×
J50	81%	85%	5%	×	✓	×	74%	71%	-3%	×	×	×
J51	101%	101%	0%	✓	×	×	100%	101%	0.2%	✓	×	×
J52	61%	64%	3%	×	✓	×	49%	64%	15%	×	✓	×
J53	42%	29%	-	×	×	×	51%	36%	-15%	×	×	×
J54	65%	75%	10%	×	✓	×	49%	64%	15%	×	✓	×
J55	100%	101%	1%	✓	×	×	101%	99%	-2%	✓	×	×

7.42. To refine the junction selection an overall assessment was undertaken using a combination of criteria and reviewing the specifics of each junction operation to rule out any anomalous percentage selections. The following combinations were used:

- **Combination 1:** Criteria 1 and 2 – Flow increase>3% / Max VoC >85% in any scenario
- **Combination 2:** Criteria 2 and 3 – Max VoC >85% / Voc increase>1%
- **Combination 3**: Criteria 1 and 4 – Flow increase>3% / Max VoC< 85% & VoC increase>15%

7.43. The results are provided in Table 7-4.

Table 7-4: Highway Impact Assessment for Detailed Junction Capacity Modelling

ID	AM Peak Hour (08:00-09:00)				PM Peak Hour (17:00-18:00)				Overall Assessment	Comments
	Criteria				Criteria					
	1	2	3	4	1	2	3	4		
J1	✓	✓	✗	✗	✓	✓	✓	✗	✓	Modelling Required
J2	✗	✗	✗	✗	✗	✓	✓	✗	✓	Modelling Required
J3	✓	✓	✓	✗	✗	✓	✗	✗	✓	Modelling Required
J4	✗	✓	✓	✗	✗	✓	✗	✗	✓	Modelling Required
J5	✗	✓	✗	✗	✗	✓	✗	✗	✗	Refer to Note 1
J6	✗	✓	✓	✗	✗	✓	✓	✗	✓	Modelling Required
J7	✗	✓	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J8	✓	✓	✓	✗	✓	✗	✓	✗	✓	Modelling Required
J9	✗	✓	✗	✗	✗	✓	✗	✗	✗	Refer to Note 1
J10	✗	✓	✗	✗	✗	✓	✗	✗	✗	Does not meet modelling criteria
J11	✗	✓	✗	✗	✗	✓	✗	✗	✗	Does not meet modelling criteria
J12	✗	✓	✗	✗	✗	✓	✗	✗	✗	Does not meet modelling criteria
J13	✗	✓	✗	✗	✗	✓	✗	✗	✗	Refer to Note 2
J14	✗	✗	✗	✗	✗	✓	✗	✗	✗	Refer to Note 1
J15	✗	✓	✗	✗	✗	✓	✗	✗	✗	Refer to Note 3
J16	✗	✓	✗	✗	✗	✓	✓	✗	✓	PM peak indicates increase in VoC from 87% to 90% however there is only an increase of 50 vehicles equating to 1% increase in traffic at this junction therefore it is considered that modelling of this junction is not required.
J17	✗	✓	✓	✗	✗	✗	✓	✗	✓	AM Peak indicates VoC increase of 2% from 98% to 100% however there is an increase of only 30 additional vehicles (~1%) at the junction which equates to an indiscernible 1 vehicle every two minutes. It is considered further detailed modelling is not required.
J18	✗	✓	✗	✗	✗	✓	✗	✗	✗	Does not meet modelling criteria
J19	✗	✓	✗	✗	✗	✓	✗	✗	✗	Does not meet modelling criteria
J20	✓	✗	✓	✓	✓	✓	✓	✗	✓	Modelling Required
J21	✓	✗	✓	✗	✗	✗	✗	✗	✗	Refer to Note 1
J22	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J23	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J24	✓	✗	✓	✓	✓	✓	✓	✗	✓	Modelling Required
J25	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J26	✗	✓	✗	✗	✗	✓	✓	✗	✓	Modelling Required
J27	✗	✓	✓	✗	✗	✓	✓	✗	✓	Modelling Required
J28	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J29	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J30	✗	✗	✓	✗	✗	✗	✓	✗	✗	Refer to Note 1
J31	✓	✗	✓	✗	✗	✗	✓	✗	✗	Does not meet modelling criteria
J32	✗	✗	✓	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J33	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria

ID	AM Peak Hour (08:00-09:00)				PM Peak Hour (17:00-18:00)				Overall Assessment	Comments
	Criteria				Criteria					
	1	2	3	4	1	2	3	4		
J34	✗	✓	✓	✗	✗	✗	✓	✗	✓	AM peak indicated increase of approximately 3% in VoC however flow change indicates reduction of total traffic at junction in WD scenario therefore this does not require modelling
J35	✗	✓	✗	✗	✗	✓	✓	✗	✓	PM peak indicated increase of approximately 2% in VoC however flow change indicates reduction of total traffic at junction in WD scenario therefore this does not require modelling
J36	✓	✗	✗	✗	✓	✓	✗	✗	✓	PM peak indicates reduction in VoC from 87% to 86% therefore this does not require modelling
J37	✗	✗	✗	✗	✓	✗	✓	✓	✓	Modelling Required
J38	✗	✗	✗	✗	✓	✗	✗	✗	✗	Refer to Note 1
J39	✓	✗	✓	✓	✓	✗	✓	✓	✓	Modelling Required
J40	✓	✗	✓	✗	✓	✗	✗	✗	✗	Refer to Note 1
J41	✓	✗	✓	✓	✗	✗	✗	✗	✓	Modelling Required
J42	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J43	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J44	✗	✓	✗	✗	✗	✗	✓	✗	✗	Does not meet modelling criteria
J45	✓	✗	✓	✗	✓	✗	✓	✗	✗	Refer to Note 1
J46	✗	✗	✓	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J47	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J48	✓	✗	✓	✗	✓	✗	✓	✗	✗	Refer to Note 1
J49	✗	✓	✓	✗	✓	✓	✗	✗	✓	AM Peak: VoC increase of 6% from 83% to 89% however there is an increase of only 5 vehicles at the junction. PM Peak: Increase of only 0.2% in VoC which is negligible.
J50	✗	✗	✓	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J51	✗	✓	✗	✗	✗	✓	✗	✗	✗	Does not meet modelling criteria
J52	✓	✗	✓	✗	✗	✗	✓	✗	✗	Does not meet modelling criteria
J53	✗	✗	✗	✗	✗	✗	✗	✗	✗	Does not meet modelling criteria
J54	✓	✗	✓	✗	✓	✗	✓	✗	✗	Does not meet modelling criteria
J55	✗	✓	✗	✗	✗	✓	✗	✗	✗	Does not meet modelling criteria

- *Note 1: At the request of LCC/NH a number of junctions were assessed as part of PRTM 2.1 modelling run. These junctions have been retained through the PRTM 2.2 modelling for consistency despite no longer meeting assessment criteria.*
- *Note 2: Whilst this junction does not meet assessment criteria it was deemed pertinent that the junction was modelled due to the change in base traffic behaviour as a result of the proposed infrastructure provided by the scheme.*
- *Note 3: Whilst this junction does not meet assessment criteria and the proposed infrastructure does not change base traffic behaviour. LCC/NH requested a review of this junction. Therefore the junction is reviewed in the Highway Impact chapter (8.0) of the Transport Assessment.*
- *Note 4: Criteria 1 is scored from the results of Table 7-3*

7.44. Table 7-4 identifies that there are 24 junctions of the initial 55 selected that require detailed capacity assessment (Including for Notes 1 to 3).

Summary

7.45. It has been determined through strategic modelling and an iterative scoping process with the TWG that there were 55 junctions requiring further assessment.

7.46. The Strategic modelling results were reviewed against a combination of four filtering criteria to determine exactly which of the 55 were predicted to operate close to their capacity by 2036 or are deemed to be sensitive when all growth is considered.

7.47. It has been determined that 23 existing junctions require detailed junction capacity assessment. VISSIM, LinSig and Junctions 10 models were developed as appropriate for each junction to be assessed and the results are presented in the following section.

8. HIGHWAY IMPACT

Introduction

8.1. This section examines the potential highway impact of the development proposals on the following junctions using industry standard micro-simulation modelling software:

Modelling Software and Interpretation

Junctions 10

8.2. The traffic impact of the proposals has been assessed using TRL industry-standard modelling software JUNCTIONS 10 (PICADY) for priority T-junctions or crossroad junctions and (ARCADY) for priority roundabout junctions.

8.3. PICADY/ARCADY models return results in Ratio to Flow Capacity (RFC) and queueing in each 15-minute time segment, measured in the number of passenger car units (PCUs).

8.4. RFC values between 0.00 and 0.85 indicate satisfactory operating conditions, values of between 0.85 and 1.00 represent variable operation (i.e. queues building at the junction resulting in increased vehicle delay moving through the junction). RFC values in excess of 1.00 represent overloaded conditions.

.LinSig

8.5. The traffic impact of the proposals has been assessed using JCT industry-standard modelling software LinSig for signal-controlled junctions.

8.6. The results from LinSig models are expressed in Practical Reserve Capacity (PRC), which is calculated based on a maximum Degree of Saturation (DoS) on each signalised approach and is a measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all links/streams. Therefore, if the worst link's DoS is 90% the PRC then would be 0%. Negative numbers indicate that the junction would experience longer delays and overloading.

8.7. The DoS is a function of Demand vs Capacity and the results are interpreted using the following bands:

- 0%-90% - The junction operates within capacity; traffic clears the junction every cycle of the signals.
- 90%-100% - Traffic will experience some delay it is unlikely as to whether every queued vehicle at the start of the green phase will clear the junction within the same cycle, an arm experiencing a DoS above 90% is considered to nearing capacity and therefore failing.
- 100%+ - The arm is significantly over capacity; queues may exponentially increase as traffic struggles to clear the junction.

8.8. LinSig also illustrates the queuing results as Mean Maximum Queuing (MMQ). The Mean Maximum Queue is the sum of the Maximum Back of Uniform Queue and the Random

& Oversaturation Queue. It represents the maximum queue within a typical cycle averaged over all the cycles within the modelled time period

VISSIM

8.9. Due to the scale of the proposed development and the likely vehicular trips that it will generate two comprehensive micro-simulation models of the M69 Junction 1 and Junction 2 signalised roundabouts has been developed using PTV Group's VISSIM software.

8.10. A Local Model Validation Report (LMVR) in Appendix 9 of this TA (Document Reference 6.2.8.1.9) summarises the methodology used to build and test the model, as well as the results obtained to determine the suitability of the model for use in proposed option testing. These have been reviewed and signed off by members of the TWG following technical comments received on the model calibration.

8.11. National Highways have also provided VISSIM models for the following junctions:

- Gibbet Lane Roundabout on the A5 and the A426 which included the recent changes associated with the Motorway Service Area at M6 junction 1 and the proposed developed scheme at the roundabout itself. However, the model included a much larger extent than that was required to assess the scheme impact, therefore a standalone LinSig assessment has been undertaken at the junction instead.
- A5/A47 Longshoot and Dodwells junctions.

Development Access Infrastructure Operation

8.12. The following assessment summarises the junction operation of the development site access junctions with the M69 at junction 2 to the east of the site and with the B4668 to the northwest of the site.

Primary Development Access- M69 Junction 2 Roundabout

8.13. The HNRFI will be accessed from a new arm off the M69 Junction 2 roundabout which will be enhanced by two south facing slip roads as described in 5.3.

8.14. Microsimulation modelling of the forecast modelling scenarios were undertaken to understand the impact of the proposed scheme as well as rerouting of background traffic.

8.15. A summary of the network performance indicators for all assessed scenarios is presented in Table 8-1 to Table 8-4 below.

Table 8-1: M69 J2: AM Peak – 2026 (07:30 – 08:30 & 08:30 – 09:30)

	Hour 1					Hour 2					
Scenario	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	End of Model - Latent
AM_2026_WoDWos	07:30 - 08:30	8	92	6643	0	08:30 - 09:30	6	94	5284	0	0
AM_2026_WoDWS	07:30 - 08:30	25	80	8223	0	08:30 - 09:30	20	83	6384	0	0
AM_2026_WDWS	07:30 - 08:30	38	73	9288	0	08:30 - 09:30	26	79	7337	0	0

Table 8-2: M69 J2 AM Peak – 2036 (07:30 – 08:30 & 08:30 – 09:30)

	Hour 1					Hour 2					
Scenario	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	End of Model - Latent
AM_2036_WoDWos	07:30 - 08:30	8	92	6917	0	08:30 - 09:30	6	94	5530	0	0
AM_2036_WoDWS	07:30 - 08:30	28	79	8977	0	08:30 - 09:30	43	77	6829	63	0
AM_2036_WDWS	07:30 - 08:30	59	66	9892	22	08:30 - 09:30	33	75	7951	0	0

Table 8-3: M69 J2: PM Peak – 2026 (16:30 – 17:30 & 17:30 – 18:30)

	Hour 1					Hour 2					
Scenario	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	End of Model - Latent Demand
PM_2026_WoDWos	16:30 - 17:30	6	94	5948	0	17:30 - 18:30	6	94	5717	0	0
PM_2026_WoDWS	16:30 - 17:30	77	63	7545	5	17:30 - 18:30	30	79	7226	0	0
PM_2026_WDWS	16:30 - 17:30	63	65	8416	0	17:30 - 18:30	27	79	7863	0	0

Table 8-4: M69 J2: PM Peak – 2036 (16:30 – 17:30 & 17:30 – 18:30)

	Hour 1					Hour 2					
Scenario	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	End of Model - Latent Demand
PM_2036_WoDWos	16:30 - 17:30	7	94	6329	0	17:30 - 18:30	6	94	6098	0	0
PM_2036_WoDWS	16:30 - 17:30	118	51	7894	133	17:30 - 18:30	109	54	7780	72	0
PM_2036_WDWS	16:30 - 17:30	131	48	8673	183	17:30 - 18:30	108	54	8556	37	0

8.16. The above tables indicated that there is an increase in delay in all WDWS scenarios when compared to the respective WoDWoS scenarios. However, it should be noted that the junction currently is a three-arm priority-controlled roundabout which is proposed to form a 5 arm signalised roundabout.

8.17. Signalisation of entry arms generally add delay to journey times however a review of the network performance indicates that the junction is able to accommodate more than 2,000 additional vehicles in all WDWS scenarios whilst operating satisfactorily. Therefore, it is considered no further refinements to the design is required.

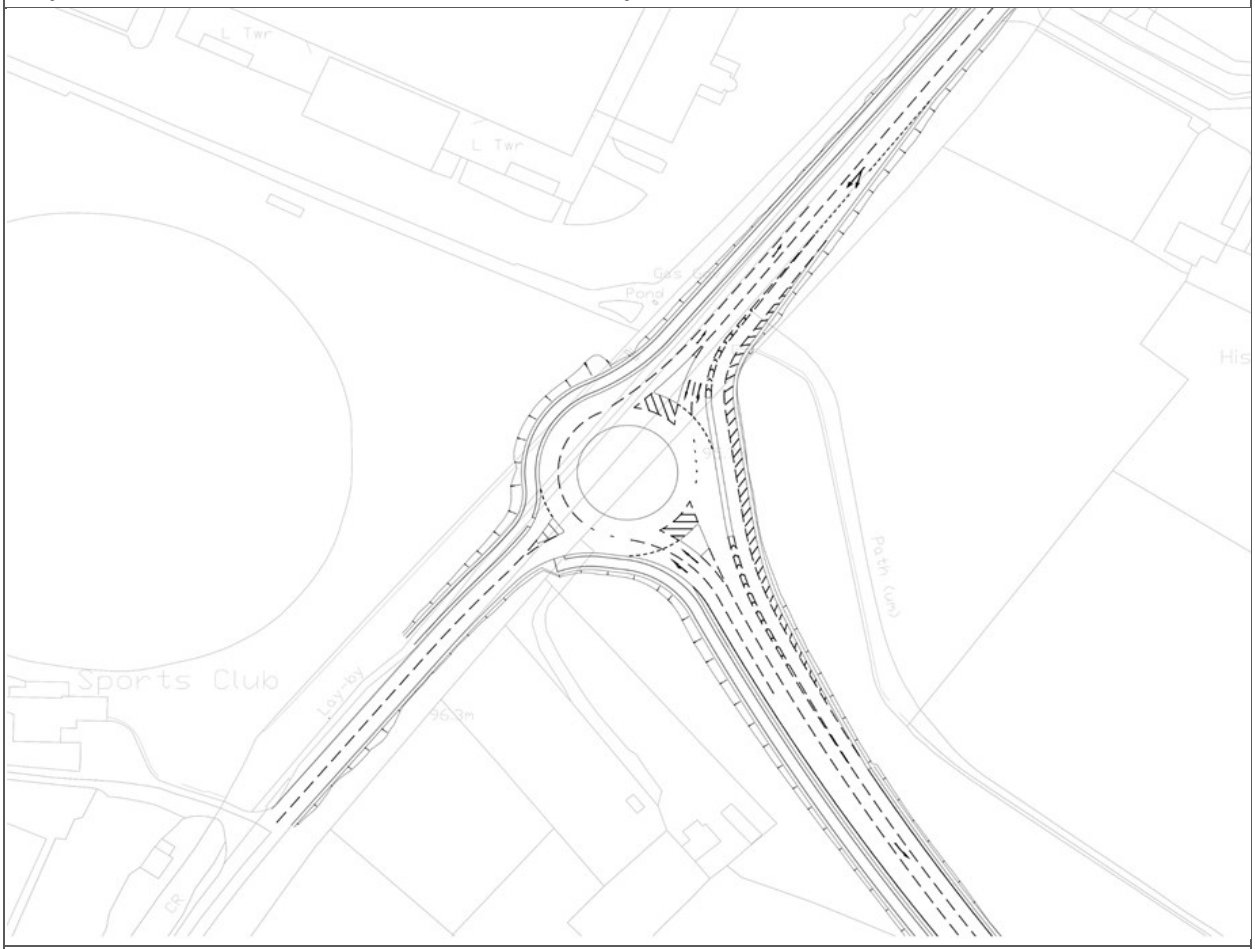
Secondary Development Access Junction –B4668 Leicester Road / A47 Link Road Roundabout

8.18. The proposed B4668 Leicester Road / A47 Link Road junction will be a 3-arm priority roundabout with a 50m ICD. Two lane entries are provided on the northern Leicester Road arm and the A47 Link Road arm, with a single lane entry provided on the southern Leicester Road. There is also a segregated left turn lane provided for traffic travelling onto the link road from Leicester Road to the north. Shared footway/cycleway facilities are provided around the southern and western side of the junction.

8.19. Table 8-5 shows the form and summarises the operation of the proposed B4668 Leicester Road / A47 Link Road roundabout.

Table 8-5: Secondary Development Access Junctions 10 Capacity Assessments

Proposed B4668 Leicester Road / A47 Link Road Layout



2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Leicester Road (N)	-	-	24%	0.3	21%	0.3
B	A47 Link Road (E)	-	-	43%	0.7	40%	0.7
C	Leicester Road (S)	-	-	34%	0.5	41%	0.7
ARM		PM (17:00 -18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Leicester Road (N)	-	-	23%	0.3	25%	0.3
B	A47 Link Road (E)	-	-	69%	2.3	69%	2.3
C	Leicester Road (S)	-	-	36%	0.6	38%	0.6

8.20. As shown in the table above, the proposed B4668 Leicester Road / A47 Link Road junction would operate within capacity in all 2036 Scenarios. As a result, the proposed access junction should be acceptable.

SRN Junction Performance

Junction 21 M1/ Junction 3 M69

8.21. Junction 21 M69 has been considered from the start of the project. It was clear from initial reviews that the constraints at J21 M1 had significant impacts in the study area.

8.22. The SMART motorway scheme on the M1 between Junctions 19 to 21 was removed from the model at the request of National Highways and this is reflected in the PRTM outputs. The traffic flow change demonstrates vehicle flow is constrained by capacity issues that are already evident. Development traffic impacts are concentrated on flows on the northbound slip and the southbound off-slip. Both these manoeuvres are restricted by the mainline capacity of the M1, which is already being exceeded during peak times.

8.23. The development only trips (Dev Trip Distribution) demonstrate that most of the generated traffic from the development only is projected to use the M69 in either direction. It is the displacement of local traffic which is causing issues on the local network.

8.24. Proposals for the Leicester Western Access Scheme, which forms part of the future NH RIS3 strategy, have not been reviewed at this stage. They remain under development.

8.25. There has been consideration of modelling an unconstrained flow around Junction 21. This would remove existing capacity constraints in the model to understand the future demand at the junction. However, it would not accurately reflect what is the worst case for the County Network.

8.26. If nothing were to happen at Junction 21 through RIS3, then the impacts of the redistributed traffic on the local network are being mitigated. It would also not demonstrate a scenario which would be realistically implementable either now or in the future.

8.27. The following paragraphs and tables summarise the operation of the motorway junction as it currently exists which represents the worst-case scenario for the county network.

Table 8-6: Total Vehicle Flows at Junction 21 M1 With and Without Development

Road	AM Peak						PM Peak					
	Total Vehicles			HGVs			Total Vehicles			HGVs		
	WoD	WD	Diff.	WoD	WD	Diff.	WoD	WD	Diff.	WoD	WD	Diff.
M69 W	963	958	-5	50	43	-6	1027	1043	15	52	61	9
M1 N	1801	1744	-56	205	228	23	1799	1774	-25	177	212	36
A5460	3282	3331	49	234	245	10	3082	3189	107	139	149	10
M1 S	566	568	2	96	96	0	573	589	16	57	58	1
Total	**6612**	**6602**	**-10**	**585**	**611**	**26**	**6481**	**6595**	**114**	**425**	**481**	**56**

8.28. Table 8-6 indicates that in the morning peak hour period, although there are some increases in traffic movements on individual arms, there is a net reduction of approximately 10 vehicles at the junction. Increases are very small in percentage terms, as you would expect for a constrained junction.

8.29. The evening peak hour indicates an increase of approximately 114 vehicles is noted between the WoD and WD scenario. The increase is primarily from the A5460 arm of the roundabout which equates to approximately 3.5% increase in traffic. This level of change on this arm doesn't necessarily directly correlate to the development. However, there appears to be more capacity to allow additional flow to get through the junction possibly due to the changes in flow overall at the junction.

8.30. The change is proportionately low and therefore it is not considered that the proposed development has a material impact on the junction. Discussions with Leicester City Council around impacts on the A5460 Narborough Road have focused on the public transport offer to the site over infrastructure amendments on their network. This would make sense for J21 with the traffic numbers that the development is forecast to generate at the junction.

8.31. Bridge constraints and pinch-points on the J21 roundabout, combined with the low percentage impact would not warrant the significant costs associated with major structural changes. As mentioned previously, additional bus services and travel planning for the site are proposed to further mitigate impacts movements to and from Leicester City.

8.32. Further to the above, analysis of the PRTM data was undertaken to understand the breakdown of the development traffic routing through the junction. A summary of this is provided below in Table 8-7.

8.33. The HGV movements are primarily focused on the movements to and from the M1 north and southbound slips respectively. This is contrasted by a larger number of light vehicles making east/west movements toward Leicester. Logically this pattern corresponds with expected movements, HGVs routing toward destinations via the SRN and cars commuting to and from the nearest large conurbation to the site.

Table 8-7: HNRFI Development Traffic at J21 M1 Light/Heavy

From	To	AM			PM		
		LGV	HGV	Total	LGV	HGV	Total
M69 W	M1 N	24	50	74	119	50	169
M69 W	A5460	2	3	5	109	11	120
M1 N	M69 W	36	33	69	29	40	69
A5460	M69 W	159	14	173	69	16	85
Total		**221**	**100**	**321**	**326**	**114**	**443**

8.34. A summary of VoC analysis between the 2036 WoD and WD scenarios has been provided below.

Table 8-8: VoC Changes at Junction 21 With and Without Development

Road	AM Peak			PM Peak		
	WoD	WD	Diff.	WoD	WD	Diff.
M69 W	0.230	0.227	-0.003	0.246	0.251	0.005
M1 N	1.038	1.038	0.000	1.068	1.060	-0.008
A5460	1.014	1.014	0.000	1.014	1.014	0.000
M1 S	1.028	1.030	0.002	0.975	0.995	0.021
M1 NB Merge 1	0.981	0.955	-0.026	1.053	1.053	0.000
M1 NB Merge 2	1.000	1.000	0.000	1.000	1.000	0.000

8.35. Table 8-8 above indicates that the proposed development provides a betterment/low impact at the junction in both peak hour periods, with the highest level of VoC increase noted on M1 S arm in the evening peak hour equating to an increase of 2.1%. This is mainly to do with the redistribution of flows within the capacity of the junction. In terms of proportional impacts, the development impact is low.

Merge/Diverge

8.36. A summary of the findings from the merge/diverge assessment is presented in the table below. The layout references are from DMRB standards.

Table 8-9: Merge Diverge Outputs

ID / Location		Existing			2036 WoDWoS			2036 WDWS		
		Layout	Upstream No. Lane	Downstream No. Lane	Layout	Upstream No. Lane	Downstream No. Lane	Layout	Upstream No. Lane	Downstream No. Lane
Merge ID 1	M1 SB Merge	Layout B	3	3	Layout B	3	3	Layout B	3	3
Merge ID 2	M1 NB Merge	Layout E Option 1	3	4	Possible Layout H	3	5	Possible Layout H	3	5
Diverge ID 1	M69 EB Diverge	Layout A Option 1	2	2	Layout A	2	1	Layout A	2	1
Diverge ID 2	M1 SB Diverge	Layout F	4	3	Layout E	5	3	Layout E	5	3
Diverge ID 3	M1 NB Diverge	Layout A Option 2	3	3	Layout A	3	3	Layout A	3	3

Source: DMRB CD122 Geometric design for grade separated junction version 1.1.1

8.37. Table 8-9 illustrates that in the future year scenario without development M1 NB merge and M1 SB diverge require an additional mainline lane downstream and upstream respectively. Furthermore, the M1 NB merge may require an upgrade to the merge layout, potentially DMRB Layout H. It should be noted that this is because of the impact of existing projected background traffic and no provision of a SMART motorways scheme.

8.38. The proposed development has minimal impact on the merge/diverge assessment results, which is driven by movements on the M1 mainline. Widening of slip roads this would be beyond what is proportionate and reasonable for the HNRFI development to implement as part of a mitigation package, given the forecast impacts and the general redistribution of traffic.

Summary

8.39. Junction 21 M1 is a complex junction with signals, multiple slips and underbridges. It is already operating at or beyond capacity during peak periods. The PRTM model outputs identify that the junction is a major constraint within the study area for HNRFI. This is demonstrated with relatively low changes in flow both to and from the junction itself in the forecast model results. This is explained primarily by a redistribution of local traffic currently using the M69 to access Leicester and the M1 to alternative parallel routes.

Development traffic is forecast to continue to use the link, especially HGVs as the SRN offers the most efficient routes to destinations.

8.40. The PRTM data has been reviewed, both in terms of total change in flow by arm and with the development only flows extracted to understand the overall movement patterns of development traffic through this part of the network. The changes are minimal, which indicates the already constrained network conditions.

8.41. Merge/Diverge assessments have been carried out at Junction 21. These also indicate that slips will already be exceeding capacity in the baseline forecast years. The mainline flows and baseline traffic already trigger the need to upgrade the north and southbound slips. The HNRFI development traffic is proportionately low when mapped against the overall junction performance.

8.42. The Leicester Western Access project is coming forward through the next RIS programme. It is anticipated that this will radically alter the function of Junction 21. However overall, the HNRFI development impact at Junction 21 is not forecast to be large enough to trigger physical interventions proportionate to said impacts.

Junction Capacity Assessments

8.43. The following assessment summarises the junction operation and where mitigation requirements have been identified. These are where there is a clear impact in delay or capacity terms between the do minimum future year reference and the future year with development and access infrastructure. Capacity Model outputs are contained within Appendix 11 of this TA (Document Reference 6.2.8.1.11) and mitigation plans are within Appendix 13 (Document Ref 6.2.8.1.13).

8.44. For ease of reference, the mitigation model run results are included below and a summary of the mitigation proposals is included within the next section.

Table 8-10: Capacity Modelling Junctions

Junction Type	JCT ID	Junction	Location
Signal Controlled	J1	Ashby Rd / A47	Hinckley
	J2	A47 / B581	Earl Shilton
	J3	B4114 Coventry Rd / B581 Broughton Rd	East of Stoney Stanton
	J4	A47 / A5 (Longshoot)	Between Hinckley and Nuneaton
	J5	Rugby Rd / Brookside	Hinckley
	J6	Coventry Rd / Croft Rd	Croft
	J8	A47 / Wilkinson Lane	Earl Shilton
	J9	A47 / B582 Desford Road	Between Hinckley and Leicester
Signalised	J13	M69 J1/A5	Hinckley
	J14	A5/B4666/A47 Dodwells	Hinckley
	J21	A47 Leicester Rd / Clickers Way / Carrs Hill	Barwell
	J24	The Common Barwell / A47 / B4668 Leicester Rd	Barwell

Junction Type	JCT ID	Junction	Location
	J26	A5 / A426 / Gibbet Ln	South of Lutterworth
	J27	A5 / A4303 / B4027 / Coal Pit Ln	Magna Park
	J30	A5 / Higham Ln / Nuneaton Ln	West of Hinckley
Mini roundabout	J37	Hinckley Rd / New Rd / B581	Stoney Stanton
	J38	New Rd / Long St / Broughton Rd	Stoney Stanton
Priority Junction	J39	B4669 / Stanton Ln	Sapcote
	J40	Leicester Rd / Grace Rd/ Sharnford Rd	Sapcote
	J41	B4669 Leicester Rd / B4114 Coventry Rd	Sapcote
	J45	Hinckley Rd / Lynchgate Ln / Sharnford Rd	Aston Flamville
	J48	Huncote Rd / Stanton Ln / Pingle Ln	Stoney Stanton

Junction 1 - A47 Normandy Way / Ashby Rd

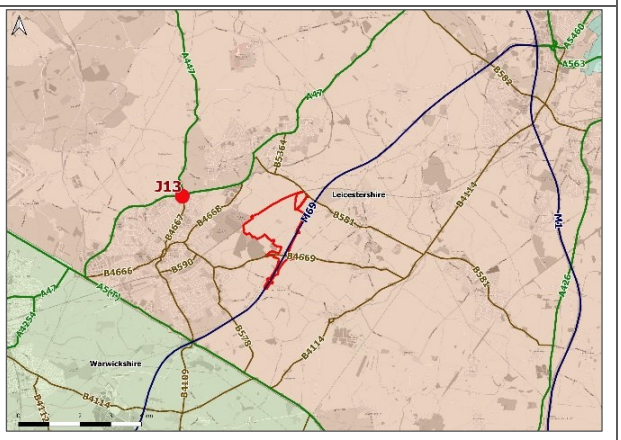
8.45. The A47 Normandy Way/Ashby Road junction is a 4-arm signalised junction operating under MOVA control, with two lane flared entries at each arm. There are pedestrian crossings provided in the form of dropped kerbs and markings on the carriageway, but there are no signals for pedestrians at the existing junction.

8.46. Table 8-11 shows the location, form and summarises the operation of the A47/Ashby Road Signal Junction.

Table 8-11: Junction 1 LINSIG Capacity Assessments

Layout

Site Location



2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Ashby Rd (N)	98.4%	18.7	89.4%	11.6	115.3%	57.1
B	Normandy Way (E)	96.4%	30.4	92.3%	25.0	91.9%	26.5
C	Ashby Rd (S)	89.5%	12.6	80.6%	9.6	91.4%	12.7
D	Normandy Way (W)	97.3%	17.1	76.7%	8.5	130.3%	32.0
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-9.4%	51.53	-2.6%	30.38	-44.7%	95.47
ARM		PM (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Ashby Rd (N)	98.4%	18.7	89.4%	11.6	115.3%	57.1
B	Normandy Way (E)	96.4%	30.4	92.3%	25.0	91.9%	26.5
C	Ashby Rd (S)	89.5%	12.6	80.6%	9.6	91.4%	12.7
D	Normandy Way (W)	97.3%	17.1	76.7%	8.5	130.3%	32.0
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-9.4%	51.53	-2.6%	30.38	-44.7%	95.47

8.47. As shown in the table above, the base 2036 scenarios are already limited with negative spare capacity in both the AM and PM peak hours. This improves with the access infrastructure in place, but then deteriorates with development scenarios.

8.48. Mitigation has therefore been explored and a revised junction layout included in Appendix 13 of this TA (Document Reference 6.2.8.1.13) which enhances capacity and improves pedestrian crossing facilities.

8.49. Initially, the geometric improvements were modelled to understand how the capacity could be improved effectively. This includes lengthened flares on all arms to accommodate additional traffic, along with introducing an Indicative right turn from Normandy Way (W) to Ashby Road (S) and two lanes are provided through the junction in a westbound direction. This requires extensive kerb works on most arms of the junction to widen the carriageway. The modelling of this mitigation showed that the junction would work within capacity in all modelled scenarios, including the 2036 with development scenarios.

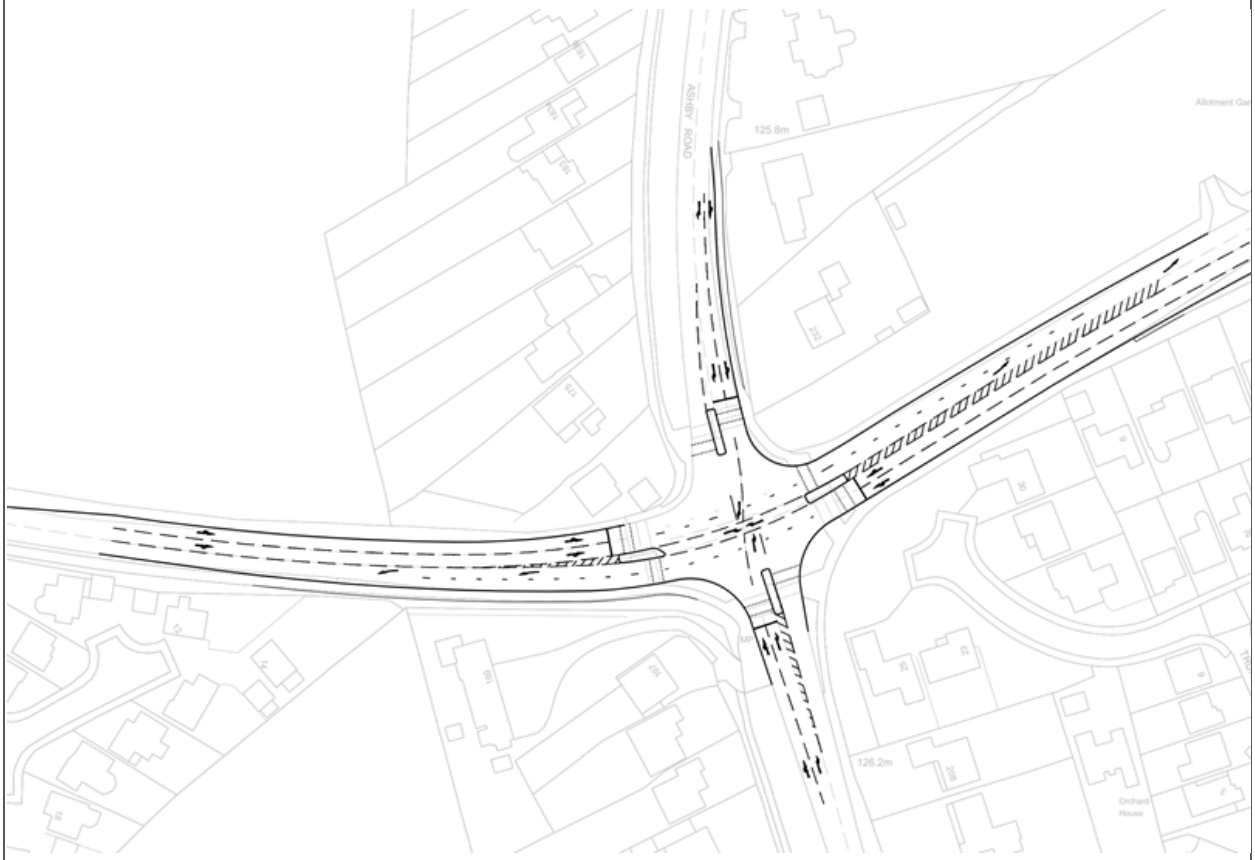
8.50. However, in addition to the geometric improvements at the junction, the provision of formal signal-controlled crossing points being introduced on each arm has also been examined.

8.51. This would provide a significant benefit to pedestrians albeit reducing the beneficial gain to the operation of the junction with the geometric mitigation to a nil detriment result.

8.52. Table 8-12 contains the capacity outputs for the revised junction, including the formal pedestrian crossings which is considered to offer an overall better solution, enhancing the junction for all road users and providing safe crossing facilities.

Table 8-12: Junction 1 LINSIG Capacity Assessments Mitigation

Proposed B4668 Leicester Road / A47 Link Road Layout



2036 Capacity Result

ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		DoS	MMQ	DoS	MMQ
A	Ashby Rd (N)	101.6%	44.1	76.5%	15.1
B	Normandy Way (E)	100.5%	28.5	21.8%	21.8
C	Ashby Rd (S)	78.7%	9.9	27.1%	27.1
D	Normandy Way (W)	75.9%	10.9	16.8%	16.8
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-12.9%	67.46	-7.2%	48.02

8.53. The above table shows that the overall PRC at the junction would be over capacity in the AM Peak hour at -12.9% compared to -9.4% in the 2036 Base Case, the impact of the development would only be 3.5% when including for the Development traffic. In the PM Peak hour, the capacity of the junction deteriorates from -1.7% to -7.2% which is an impact of 5.5% when including for the Development traffic.

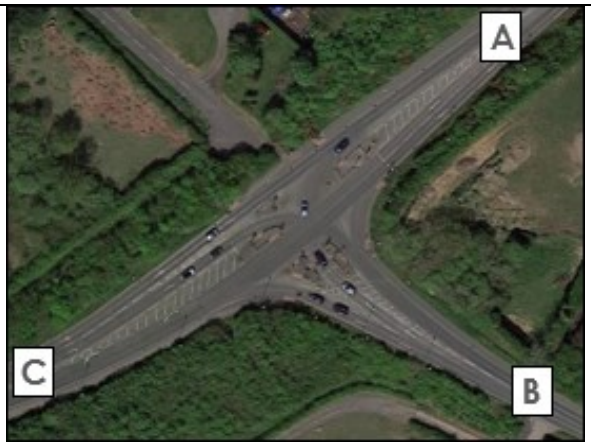
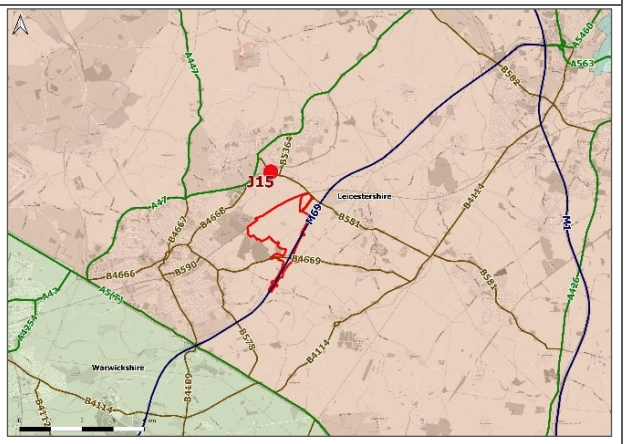
8.54. Whilst this presents impacts in both the AM and PM, the impact of the development would be minimal given the benefits to pedestrian movements at the junction.

Junction 2 – A47 Clickers Way / B581 Elmesthorpe Lane

8.55. The A47 Clickers Way / B581 Elmesthorpe Lane junction is a 3-arm signalised junction to the south of Earl Shilton with two lanes at each entry.

8.56. Table 8-13 shows the location, form and summarises the operation of the A47 Clickers Way / B581 Elmesthorpe Lane Signal Junction.

Table 8-13: Junction 2 LINSIG Capacity Assessments

Layout		**Site Location**					
							
2036 Capacity Result							
ARM		**Without Development**		**Without Development with Scheme**		**With Development**	
		AM Peak Hour (08:00-09:00)					
		DoS	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
A	A47 Clickers Way (E)	85.3%	12.1	76.7%	10.8	81.4%	11.6
B	B581 Elmesthorpe Lane	39.5%	4.3	29.0%	3.0	30.5%	3.2
C	A47 Clickers Way (W)	85.2%	12.7	74.8%	13.3	79.1%	13.6
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		5.5%	23.36	17.4%	18.92	10.6%	20.90
ARM		**PM (17:00 -18:00)**					
		DoS	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
A	A47 Clickers Way (E)	77.5%	10.0	64.3%	8.5	68.9%	9.0
B	B581 Elmesthorpe Lane	70.2%	10.3	59.6%	7.3	63.2%	7.9
C	A47 Clickers Way (W)	76.1%	12.9	76.5%	13.9	77.8%	14.4
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		16.1%	22.15	17.7%	18.44	15.7%	19.98

8.57. As shown in Table 8-13 above, the A47 Clickers Way/B581 Elmesthorpe Lane junction

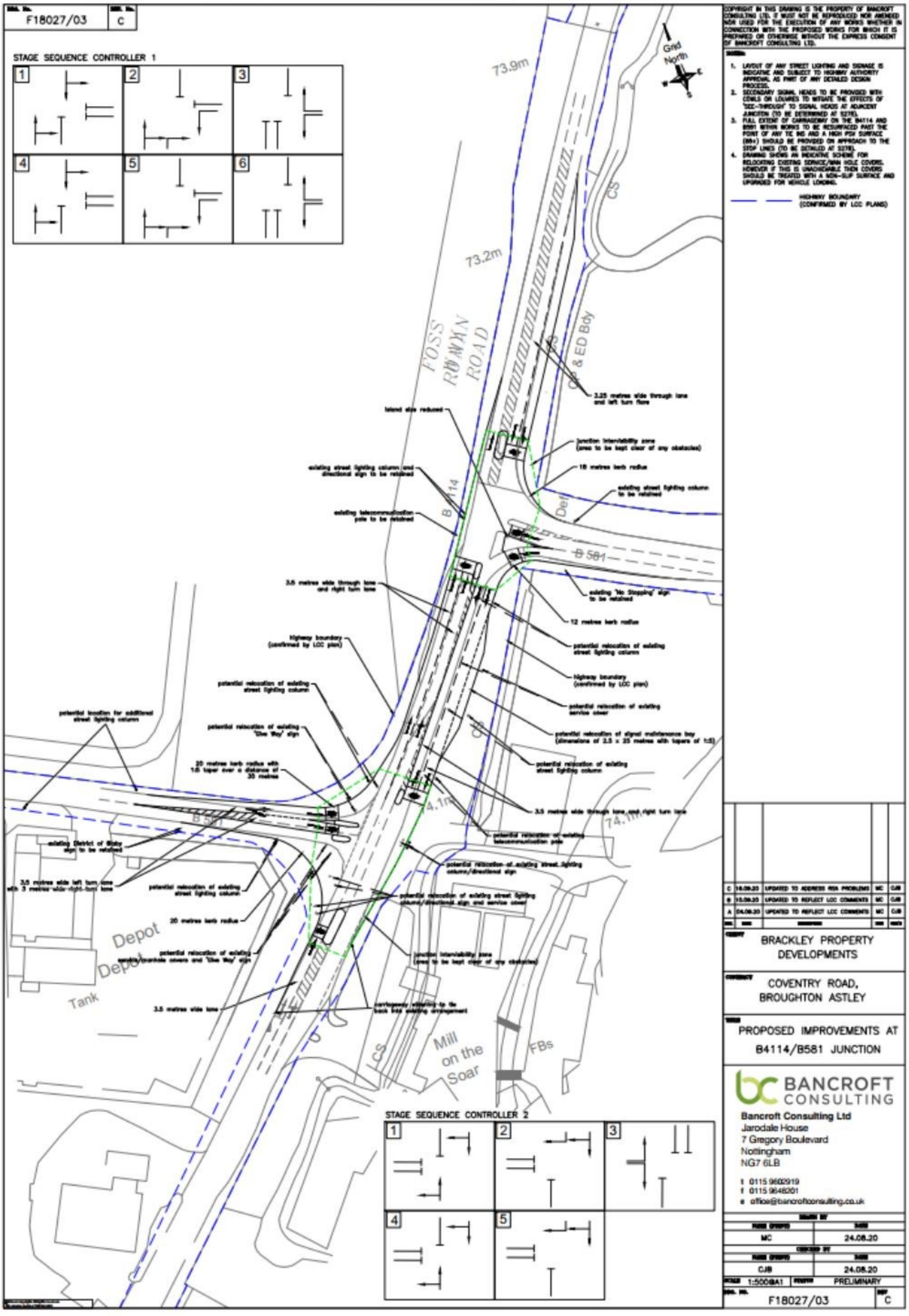
would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

Junction 3 – B4114 Coventry Road / B581 Broughton Road

8.58. The B4114 Coventry Road/B581 Broughton Road junction is currently a staggered part signal, part ghost island priority junction. The B581 crosses the B4114 between Stoney Stanton and Broughton Astley in form of a 3-arm signal-controlled junction (towards Broughton Astley) and a 3-arm ghost-island priority junction (towards Stoney Stanton). Southern and eastern arms of the signalised junction comprise of two lanes, northern of one. Southern arm benefits from advanced stop line for cyclists.

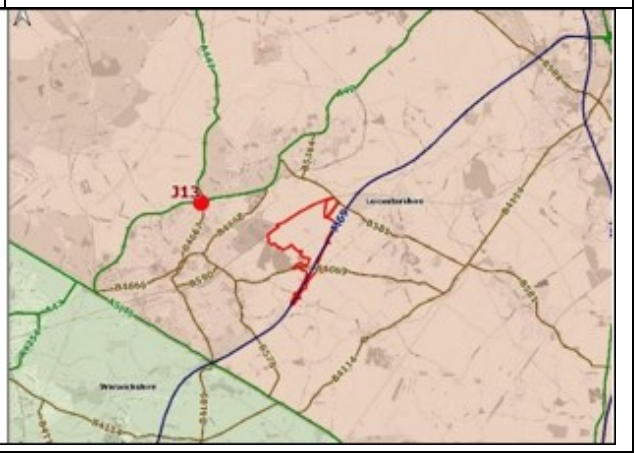
8.59. The junction has been reviewed as part of a committed development in Broughton Astley (Planning Reference: 19/00856/OUT) and a committed S278 scheme is proposed to provide a fully signal controlled staggered crossroads. The scheme is shown in Figure 8-1 below.

Figure 8-1: Committed Highway Improvement Scheme



8.60. The committed scheme has been modelled as the base case for the purposes of this assessment.

Table 8-14: Junction 3 LINSIG Capacity Assessments

Existing Layout	Site Location
	

2036 Capacity Result (Committed Scheme)

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Coventry Rd (N)	60.5%	6.4	66.1%	7.2	70.3%	7.9
B	B581 (E)	70.0%	7.9	71.8%	8.6	71.1%	8.9
C	Coventry Rd (S)	58.6%	11.1	66.7%	13.6	66.9%	13.7
D	Broughton Rd (W)	69.4%	12.6	70.7%	12.5	70.2%	12.1
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		28.6%	24.88	25.3%	26.64	26.6%	27.44
ARM		**PM Peak Hour (17:00 -18:00)**					
		DoS	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
A	Coventry Rd (N)	69.5%	7.9	62.9%	6.6	62.6%	6.7
B	B581 (E)	73.5%	6.9	66.0%	7.3	64.2%	6.9
C	Coventry Rd (S)	90.4%	21.5	76.4%	17.5	71.2%	15.4
D	Broughton Rd (W)	91.0%	17.5	74.8%	9.9	70.7%	8.4
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		-1.1%	37.16	17.8%	24.84	26.3%	23.08

8.61. As shown in Table 8-14 above, the B4114 Coventry Road/B581 Broughton Road junction would operate within capacity in all 2036 Scenarios, aside from the 2036 Base PM Scenario. As a result, no further works are required at this junction as part of the proposals.

8.62. However, if for any reason the committed scheme does not get constructed prior to the HNRFI Access Infrastructure opening, an alternative scheme has been proposed which mitigates the impact of the HNRFI scheme. This option is broadly based on the

committed scheme however the widening has been removed on Coventry Road (E) approach as the proposals have less impact on this arm following the introduction of the access infrastructure.

8.63. Table 8-15 sets out the form and summarises the operation of the alternative B4114 Coventry Road/B581 Broughton Road Signal Junction.

Table 8-15: Alternative Junction Mitigation Layout

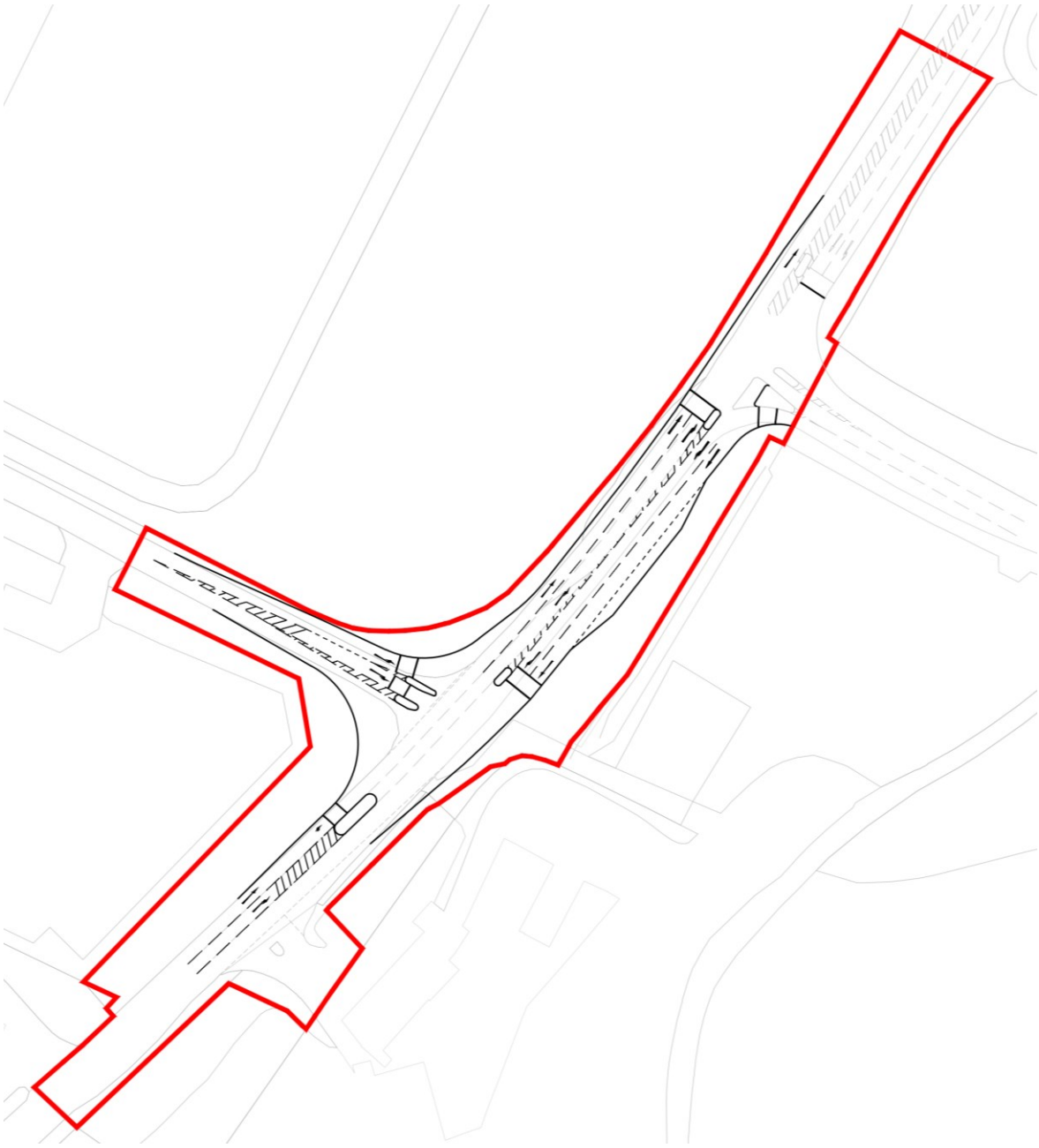
Alternative Layout


Table 8-16: Alternative Junction Mitigation Layout (Cont'd)

2036 Capacity Result (Proposed Option should the committed scheme not come forward)							
ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Coventry Rd (N)	61.2%	6.4	65.3%	7.1	70.8%	8.0
B	B581 (E)	70.0%	8.1	71.8%	8.5	71.1%	9.1
C	Coventry Rd (S)	58.6%	11.1	66.7%	13.6	66.9%	13.7
D	Broughton Rd (W)	69.4%	12.6	70.7%	12.5	70.2%	12.1
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		28.6%	24.45	25.3%	26.23	26.6%	27.01
ARM		PM (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Coventry Rd (N)	67.8%	7.5	61.5%	6.5	60.6%	6.6
B	B581 (E)	73.5%	6.6	71.3%	7.5	69.4%	7.4
C	Coventry Rd (S)	90.4%	21.0	76.4%	17.5	71.2%	15.4
D	Broughton Rd (W)	91.0%	17.5	74.8%	9.9	70.7%	8.4
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-1.1%	36.81	17.8%	23.95	26.3%	22.18

8.64. As shown in Table 8-16 above, the alternative scheme at the B4114 Coventry Road/B581 Broughton Road junction would operate within capacity in all 2036 Scenarios, aside from the 2036 Base PM Scenario. As a result, the alternative scheme should be acceptable should the S278 scheme not be provided by the committed scheme.

Junction 4 – A5 Watling Street / A47 Longshoot

8.65. The A5 Watling Street / A47 Longshoot junction is a 3-arm signalised junction with MOVA control. The A5 comprise of two lanes (127m long SB, 170m long NB) and the A47 has three lanes at entry (one left, two right, 62m long). Facilities for pedestrians are present. The junction is approximately 570m to the northwest of J25 and it has been observed that they affect one another in peaks.

8.66. Table 8-17 shows the location, form and summarises the operation of the A5 Watling Street / A47 Longshoot junction.

Table 8-17: Junction 4 LINSIG Capacity Assessments

Layout

Site Location

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	A5 Watling Street (E)	107.5%	50.5	108.4%	53.8	109.9%	59.6
B	A47 Longshoot	59.6%	5.7	59.5%	5.6	59.8%	5.7
C	A5 Watling Street (W)	44.6%	4.5	44.9%	4.5	45.3%	4.6
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-19.5%	50.77	-20.4%	53.96	-22.1%	59.75
ARM		PM (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	A5 Watling Street (E)	112.3%	69.0	113.1%	72.0	115.3%	80.7
B	A47 Longshoot	61.2%	5.8	62.2%	6.0	62.0%	5.9
C	A5 Watling Street (W)	38.6%	3.8	39.5%	3.8	40.3%	3.9
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-24.8%	69.98	-25.7%	73.54	-28.1%	82.23

8.67. As shown in the table above, the A5 Watling Street / A47 Longshoot junction would operate over capacity in all 2036 Scenarios. However, the impact of the proposed development is minimal and as a result, no further works are required at this junction as part of the proposals.

Junction 5 – Rugby Road / Brookside / Dudley Rise

8.68. The Rugby Road / Brookside / Dudley Rise junction is a 4-arm signalised junction operating under MOVA control, with two lane entries provided on Rugby Road and single lane entries on both Brookside and Dudley Rise.

8.69. Table 8-18 and Table 8-19 shows the location, form and summarises the operation of the Rugby Road / Brookside / Dudley Rise Signal Junction.

Table 8-18: Junction 5 LINSIG Capacity Assessments

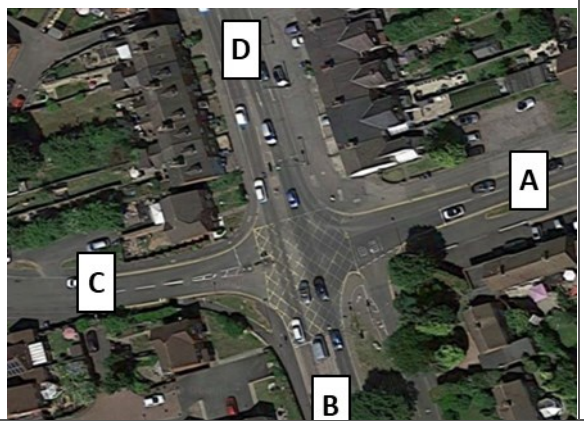
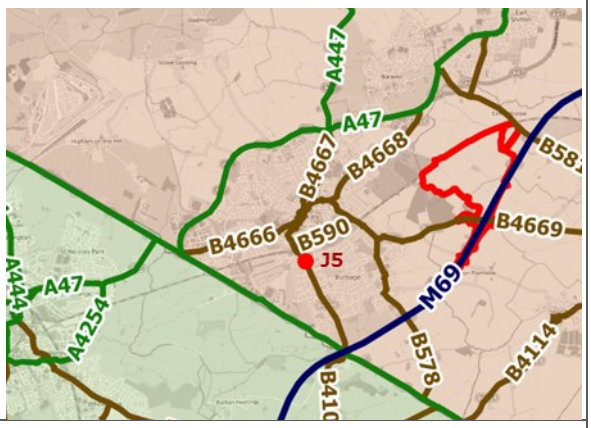
Layout							
						
2036 Capacity Result							
ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
A	Brookside (E)	92.9%	10.7	87.3%	8.5	84.7%	7.8
B	Rugby Road (S)	71.9%	10.8	68.0%	9.8	68.6%	9.9
C	Dudley Rise (W)	5.7%	0.2	5.7%	0.2	5.7%	0.2
D	Rugby Road (N)	101.5%	39.6	94.3%	22.4	94.7%	23.2
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		-12.7%	36.3	-4.7%	18.6	-5.3%	18.5

Table 8-19: Junction 5 LINSIG Assessment Layout (Cont'd)

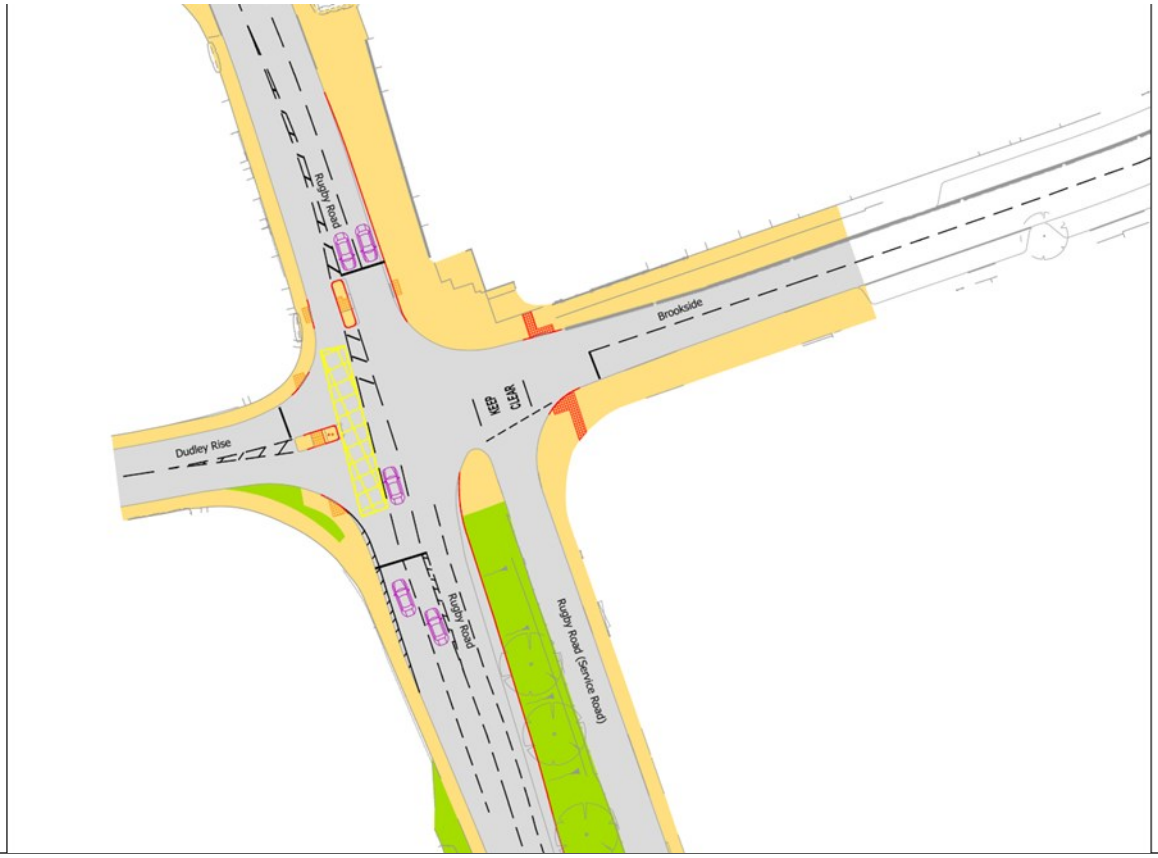
ARM		Without Development		Without Development with Scheme		With Development	
		PM (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Brookside (E)	80.5%	6.9	62.1%	4.4	63.1%	4.6
B	Rugby Road (S)	70.8%	10.5	61.0%	8.1	66.0%	9.3
C	Dudley Rise (W)	2.3%	0.1	2.3%	0.1	2.3%	0.1
D	Rugby Road (N)	86.8%	16.5	88.5%	17.5	87.8%	16.9
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		3.7%	13.3	1.7%	11.3	2.5%	11.5

8.70. As shown in the table above, the base 2036 scenario is already limited with negative spare capacity in the AM peak hours. This improves with the access infrastructure in place, but then deteriorates with development scenarios. The PM Peak hour scenarios work within capacity in all scenarios.

8.71. LCC have undertaken junction improvements at the Rugby Road / Brookside junction, by way of improving the right turn facility in the middle of the junction and providing two lanes in a southbound direction on Rugby Road.

8.72. Table 8-20 contains the capacity outputs for the improved junction, which is now in place and open on site.

Table 8-20: Junction 5 LINSIG Capacity Assessments with LCC Junction upgrade



2036 Capacity Results

ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		DoS	MMQ	DoS	MMQ
A	Brookside (E)	78.6%	6.9	63.1%	4.6
B	Rugby Road (S)	70.6%	10.4	66.0%	9.3
C	Dudley Rise (W)	5.7%	0.2	2.3%	0.1
D	Rugby Road (N)	82.1%	13.9	73.1%	11.0
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		9.7%	12.6	23.1%	9.0

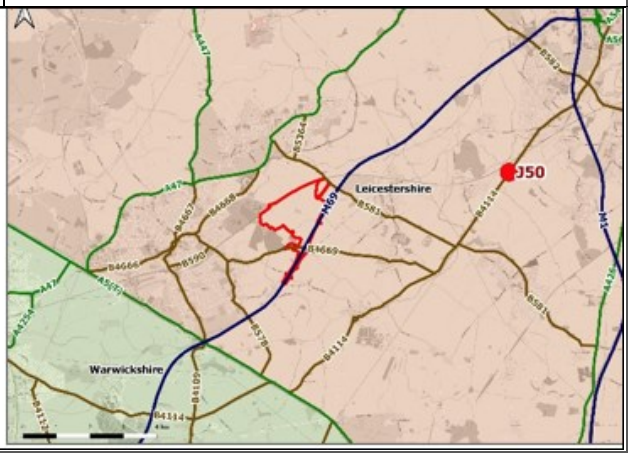
8.73. Table 8-20, shows that the Rugby Road/Brookside junction would operate within capacity in both future 2036 With Development Scenarios. As a result, no further works are required at this junction.

Junction 6 – Coventry Road / Croft Road

8.74. The Coventry Road / Croft Road junction is a 3-arm signalised junction to the east of Croft village. Coventry Rd includes 30m long left-turn lane in SB direction and approx' 65 long right-turn lane in NB direction with a separate phase. Croft Rd includes one lane only. There's a footway adjacent to the southern side of Coventry Rd, but signals for pedestrians are excluded.

8.75. Table 8-21 shows the location, form and summarises the operation of the Coventry Road / Croft Road junction.

Table 8-21: Junction 6 LINSIG Capacity Assessments

Layout	Site Location
	

2036 Capacity Result

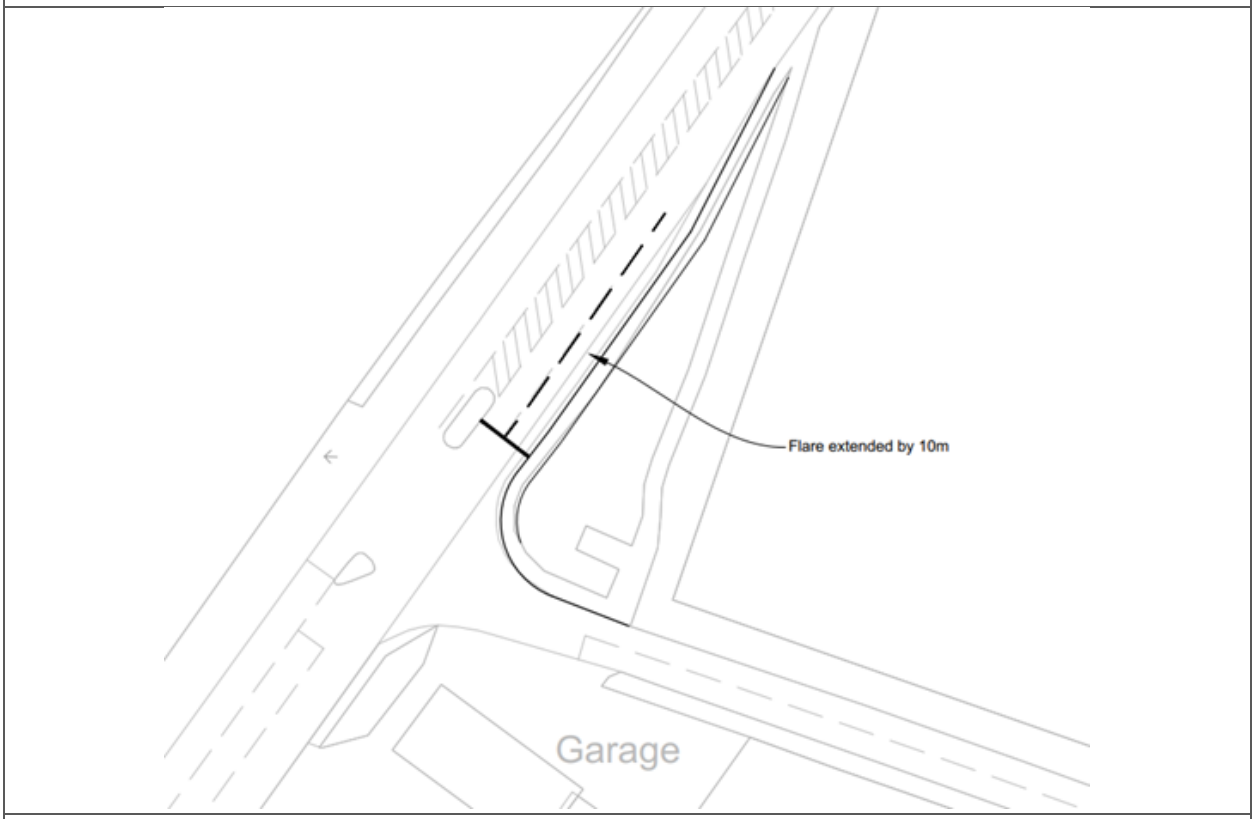
ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	A5 Watling Street (E)	83.9%	13.8	83.6%	14.2	83.5%	14.4
B	A47 Longshoot	81.6%	12.2	80.9%	11.3	84.2%	11.9
C	A5 Watling Street (W)	79.7%	15.3	79.6%	15.9	80.2%	15.3
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		7.3%	19.80	7.6%	19.52	6.9%	19.98
ARM		PM (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	A5 Watling Street (E)	93.4%	24.2	94.4%	25.9	96.0%	28.0
B	A47 Longshoot	92.9%	10.5	94.4%	10.7	94.4%	11.2
C	A5 Watling Street (W)	91.6%	13.9	91.3%	13.7	97.4%	19.5
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-3.8%	27.71	-4.9%	28.54	-8.3%	36.11

8.76. As shown in the table above, all of the AM 2036 scenarios operate within capacity even when including for the development traffic. However, the PM Peak scenarios the PRC is negative, even in the 2036 Base Scenario, worsening with the scheme infrastructure put in place and deteriorating further when the development traffic is included for.

8.77. Mitigation has therefore been explored and a revised junction layout included in Appendix 13 of this TA (Document Ref 6.2.8.1.13) which enhances capacity by extending the flare on Coventry Road to the North.

Table 8-22: Junction 6 LINSIG Capacity Assessments Mitigation

Proposed Mitigation



2036 Capacity Result

ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		DoS	**MMQ**	**DoS**	**MMQ**
A	Coventry Road (N)	80.1%	12.8	95.5%	26.9
B	Croft Road (E)	80.4%	11.3	90.1%	9.8
C	Coventry Road (S)	79.6%	15.3	91.9%	14.1
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		11.9%	18.77	-6.1%	28.86

8.78. Table 8-22 above shows that the overall PRC at the junction would improve in the AM Peak hour compared to the 2036 Base Scenario at the existing junction. Whilst the PM Peak hour does improve, the mitigation scheme does not mitigate the full impact of the

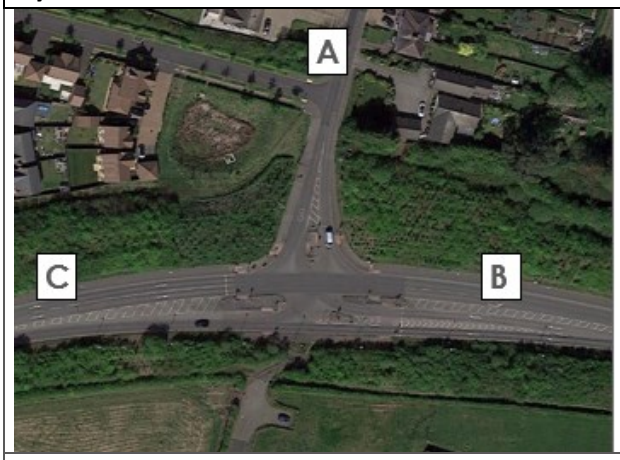
development traffic. It does however reduce the impact of the development at the junction to only 2.3% which should be an acceptable level.

Junction 8 – A47 Clickers Way / Wilkinson Way

8.79. The A47 Clickers Way / Wilkinson Way junction is a 3-arm signalised junction A47 East includes a right-turn lane 56m in length. Wilkinson Lane includes one lane. Staggered pedestrian crossings across all arms and the junction is lit.

8.80. Table 8-23 shows the location, form and summarises the operation of the A47 Clickers Way / Wilkinson Way Signal Junction.

Table 8-23: Junction 8 LINSIG Capacity Assessments

Layout	**Site Location**
	

2036 Capacity Result

ARM		**Without Development**		**Without Development with Scheme**		**With Development**	
		AM Peak Hour (08:00-09:00)					
		DoS	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
A	Wilkinson Way	78.6%	12.3	82.4%	13.1	82.1%	13.1
B	A47 Clickers Way (E)	80.4%	15.0	80.9%	15.5	83.7%	16.6
C	A47 Clickers Way (W)	65.2%	8.6	62.2%	8.1	63.2%	8.2
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		11.9%	17.39	9.2%	17.74	7.5%	18.41
ARM		**PM (17:00 -18:00)**					
		DoS	**MMQ**	**DoS**	**MMQ**	**DoS**	**MMQ**
A	A47 Clickers Way (E)	63.7%	7.5	64.6%	7.4	66.8%	7.8
B	B581 Elmesthorpe Lane	66.0%	12.1	63.3%	11.5	65.8%	12.2
C	A47 Clickers Way (W)	63.8%	8.4	63.7%	8.3	66.9%	9.1
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		36.4%	13.13	39.4%	12.79	34.4%	13.51

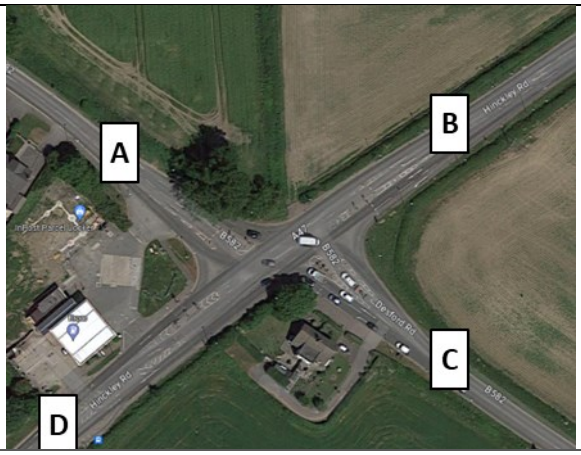
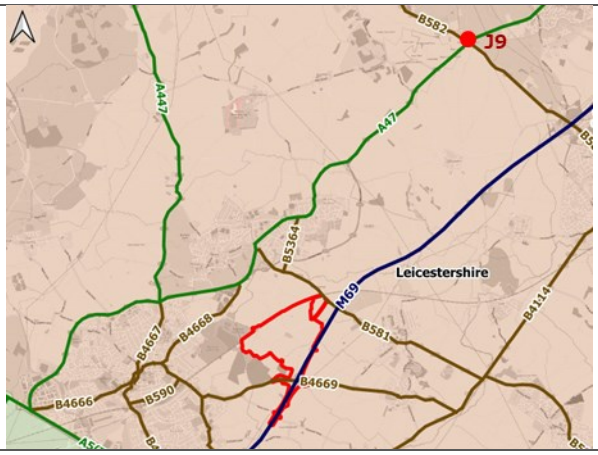
8.81. As shown in the table above, the A47 Clickers Way/ Wilkinson Way Signal Junction would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

Junction 9 – A47 / B582 Desford Road (Desford Crossroads)

8.82. The A47 / B582 Desford Road junction is a 4-arm signalised junction operating under MOVA control, with three lane entries provided on both B582 arms and the eastern A47 arm.

8.83. Table 8-24 shows the location, form and summarises the operation of the A47 / B582 Desford Road Signal Junction.

Table 8-24: Junction 9 LINSIG Capacity Assessments

Layout		Site Location					
							
2036 Capacity Result							
ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	B582 Leicester Lane (N)	116.4%	67.8	116.4%	67.7	116.9%	69.2
B	A47 Hinckley Road (E)	115.2%	86.5	115.9%	88.7	117.0%	93.4
C	B582 Desford Road (S)	75.3%	4.5	72.4%	4.2	74.1%	4.4
D	A47 Hinckley Road (W)	109.7%	56.9	111.7%	63.6	111.9%	64.2
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-29.3%	201.3	-29.3%	211.1	-29.9%	220.0
ARM		PM Peak Hour (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	B582 Leicester Lane (N)	70.2%	7.1	68.7%	6.9	70.7%	7.0
B	A47 Hinckley Road (E)	102.5%	29.9	100.8%	26.1	99.1%	23.8
C	B582 Desford Road (S)	125.1%	98.6	123.2%	91.8	127.0%	100.3
C	A47 Hinckley Road (W)	124.0%	95.9	124.7%	97.8	122.2%	92.7

	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes	-39.0%	246.7	-38.6%	234.9	-41.1%	240.0

8.84. As shown in Table 8-24 above, the A47 / B582 Desford Road junction would operate over capacity in all 2036 Scenarios. However, the proposed impact associated with the HNRFI development is limited to 0.6% PRC in the AM Peak and 2.1% in the PM Peak. As a result, no further works are required at this junction.

Junction 13 – M69 Junction 1

8.85. Initial assessment of M69 Junction 1 was undertaken which indicated that there may be some inefficiencies with the current MOVA configuration. Therefore, as part of the scheme, it is proposed that the MOVA at the junction is recalibrated to ensure the junction operates more efficiently.

8.86. All 'WDWS' and 'WoDWS' scenarios have utilised the recalibrated MOVA configuration. The existing MOVA configuration has been retained for the assessment of the reference case scenarios.

8.87. Overall network performance statistics are used to assess the operational assessment of one modelled scenario to another.

8.88. Key statistics used to provide a comparison between modelled scenarios are as follows:

- Average Delay - measure of the Total Delay / (Number of vehicles in the network + number of vehicles that have arrived).
- Average network speed - measure of the Total distance / Total Travel time,
- Vehicles Arrived- measure of the number of vehicles that have entered the network and reached their destination.
- Latent Demand is a measure of the number of vehicles that are unable to enter the network.

8.89. Table 8-25 to Table 8-28 below provide network performance indicators for all scenarios assessed.

Table 8-25: M69 J1 AM Peak – 2026 (07:30 – 08:30 & 08:30 – 09:30)

	Hour 1					Hour 2					
Scenario	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	End of Model - Latent
AM_2026_WoDWos	07:30 - 08:30	157	38	2185	1862	08:30 - 09:30	136	38	1918	2264	2049
AM_2026_WoDWS	07:30 - 08:30	54	57	1727	1	08:30 - 09:30	35	63	1372	0	411
AM_2026_WDWS	07:30 - 08:30	125	42	2296	1145	08:30 - 09:30	125	40	2002	1271	1013

Table 8-26: M69 J1 AM Peak – 2036 (07:30 – 08:30 & 08:30 – 09:30)

	Hour 1					Hour 2					
Scenario	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	End of Model - Latent
AM_2036_WoDWos	07:30 - 08:30	234	30	2309	1889	08:30 - 09:30	200	30	2077	2140	1874
AM_2036_WoDWS	07:30 - 08:30	155	38	2319	1817	08:30 - 09:30	159	35	1932	2430	3051
AM_2036_WDWS	07:30 - 08:30	181	35	2388	1662	08:30 - 09:30	132	36	1790	1917	1271

Table 8-27: M69 J1 PM Peak – 2026 (16:30 – 17:30 & 17:30 – 18:30)

	Hour 1					Hour 2					
Scenario	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	End of Model - Latent
PM_2026_WoDWos	16:30 - 17:30	192	32	2405	695	17:30 - 18:30	281	26	2266	524	0
PM_2026_WoDWS	16:30 - 17:30	72	51	2463	0	17:30 - 18:30	49	58	2147	1	0
PM_2026_WDWS	16:30 - 17:30	147	38	2453	365	17:30 - 18:30	138	40	2245	205	12

Table 8-28: M69 J1 PM Peak – 2036 (16:30 – 17:30 & 17:30 – 18:30)

	Hour 1					Hour 2					
Scenario	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	Time period	Delay Avg	Speed Avg	Vehicles Arrive	Latent Demand	End of Model - Latent
PM_2036_WoDWos	16:30 - 17:30	453	25	2288	1647	17:30 - 18:30	505	25	2075	2776	1005
PM_2036_WoDWS	16:30 - 17:30	170	35	2627	729	17:30 - 18:30	169	36	2343	675	1182
PM_2036_WDWS	16:30 - 17:30	167	35	2612	803	17:30 - 18:30	178	35	2359	771	511

8.90. A comparison between network performance indicators illustrates that the 'WDWS' scenarios have reduced average delay, increased vehicle speed and reduced latent demand when compared to the 'WoDWoS' scenarios in both peak hour periods. This illustrates that the 'WDWS' scenario generally operates better than the 'WoDWoS' scenarios therefore, it is considered no further mitigation should be required at the junction.

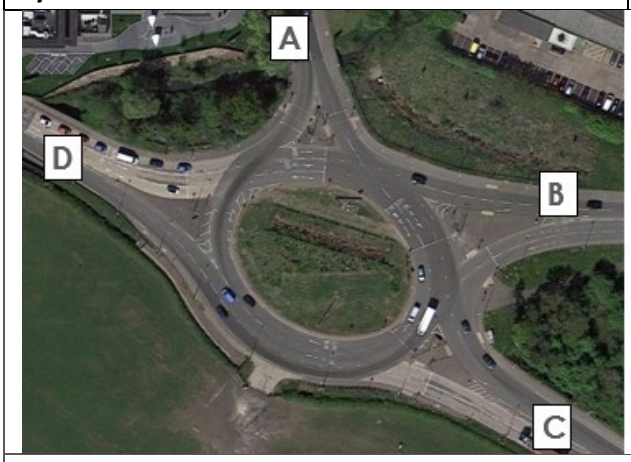
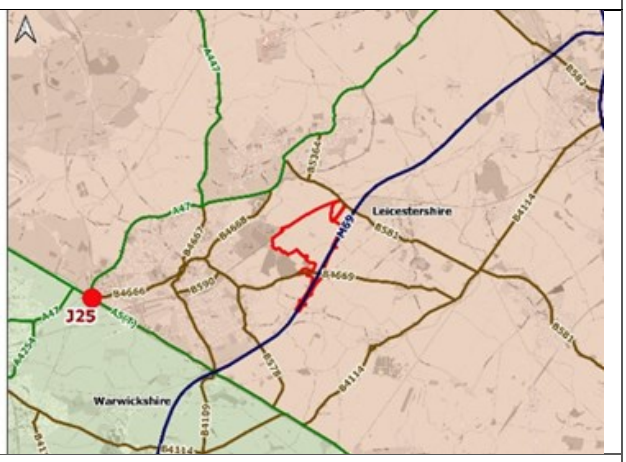
Junction 14 – A5 / B4666 / A47 (Dodwells)

8.91. The junction is a 4-arm signal controlled roundabout junction with three circulatory lanes. It has and ICD 73/87m, two lanes at all entries and ICD approx. 57m. The A5 is subject to a 50mph speed limit and B4666 to a 30mph speed limit. The A47 approach arm has a toucan crossing, other arms have dropped kerbs only. The junction is approximately 570m to the SE of A5/Longshoot and it has been observed that they affect one another in peaks.

8.92.

8.93. Table 8-29 shows the location, form and summarises the operation of the junction.

Table 8-29: Junction 14 LINSIG Capacity Assessments

Layout	Site Location
	

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	A47 Dodwells Rd (N)	81.7%	13.5	78.7%	11.5	76.6%	11.0
B	B4666 Coventry Rd (E)	79.8%	7.3	74.3%	7.1	78.1%	6.8
C	A5 Watling Street (SE)	81.6%	10.2	71.7%	8.6	70.2%	8.6
D	A5 Watling Street (NW)	81.6%	12.2	57.4%	7.3	78.9%	11.7
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		10.1%	41.82	14.4%	34.07	14.0%	35.59
ARM		PM (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	A47 Dodwells Rd (N)	73.4%	10.1	73.1%	9.7	74.3%	10.1
B	B4666 Coventry Rd (E)	69.6%	6.2	71.4%	6.2	73.8%	6.0
C	A5 Watling Street (SE)	71.2%	9.9	70.4%	9.8	72.6%	10.4
D	A5 Watling Street (NW)	72.0%	9.8	59.3%	7.6	60.0%	8.0
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		22.6%	35.78	23.1%	32.58	21.2%	32.79

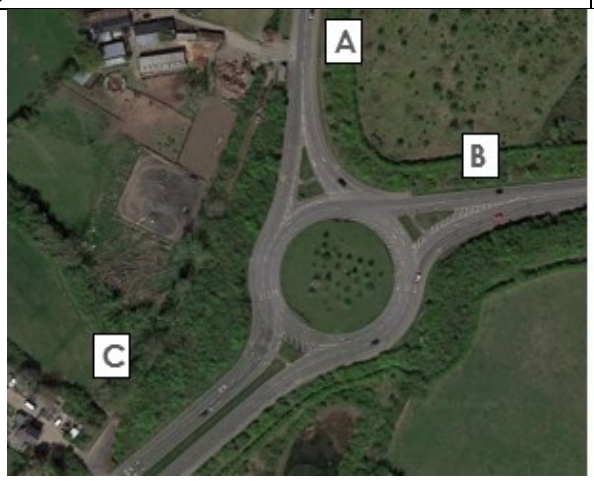
8.94. As shown in the table above, the A5 / B4666 / A47 Dodwells junction would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

Junction 21 – A47 Leicester Road / A47 Clickers Way / Carrs Hill Roundabout

8.95. The A47 Leicester Road / A47 Clickers Way / Carrs Hill Roundabout is a 3-arm priority roundabout with approx. 78m ICD, A47 to the southeast is a dual carriageway. Shared footway/cycleway around the junction with crossing points on all arms.

8.96. Table 8-30 shows the location, form and summarises the operation of the A47 Leicester Road / A47 Clickers Way / Carrs Hill roundabout.

Table 8-30: Junction 21 Junctions 10 Capacity Assessments

Layout	Site Location
	

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Leicester Road (Carrs Hill)	53%	1.2	58%	1.5	61%	1.7
B	A47 Clickers Way (E)	60%	1.6	60%	1.6	61%	1.7
C	A47 Leicester Road (W)	46%	0.9	45%	0.9	45%	0.9
ARM		PM Peak Hour (17:00 -18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Leicester Road (Carrs Hill)	33%	0.5	37%	0.6	35%	0.6
B	A47 Clickers Way (E)	72%	2.7	65%	2.1	68%	2.3
C	A47 Leicester Road (W)	59%	1.6	62%	1.8	63%	1.9

8.97. As shown in Table 8-30 above, the A47 Leicester Road / A47 Clickers Way / Carrs Hill Roundabout would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

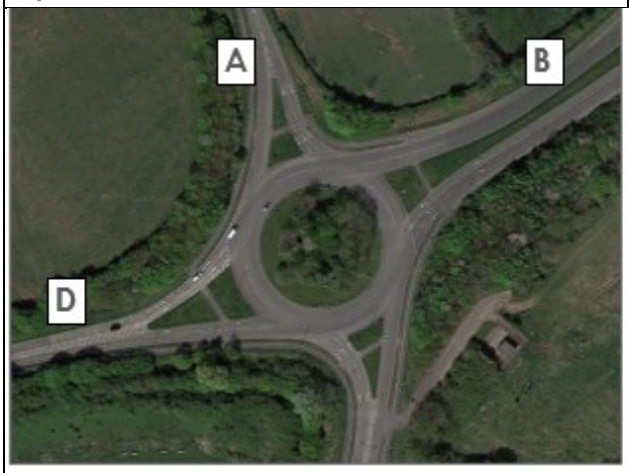
Junction 24 – The Common Barwell / A47 / B4668 Leicester Road Roundabout

8.98. The Common Barwell / A47 / B4668 Leicester Road Roundabout is a 3-arm priority roundabout with approx. 78m ICD, A47 to the SE is a dual carriageway. Shared footway/cycleway around the junction with crossing points on all arms.

8.99. Table 8-31 shows the location, form and summarises the operation of the Common Barwell / A47 / B4668 Leicester Road Roundabout.

Table 8-31: Junction 24 Junctions 10 Capacity Assessments

Layout



Site Location

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	The Common Barwell	40%	0.7	58%	1.4	61%	1.5
B	A47 Leicester Road (E)	60%	1.5	70%	2.3	73%	2.6
C	B4668 Leicester Road	41%	0.7	55%	1.2	58%	1.4
D	A47 (W)	41%	0.7	50%	1.0	56%	1.2
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	The Common Barwell	33%	0.5	44%	0.8	48%	0.9
B	A47 Leicester Road (E)	56%	1.3	59%	1.4	61%	1.5
C	B4668 Leicester Road	69%	2.2	94%	12.8	100%	26.6
D	A47 (W)	64%	1.7	76%	3.0	83%	4.5

8.100. As shown in Table 8-31 all of the AM 2036 scenarios operate within capacity even when including for the development traffic.

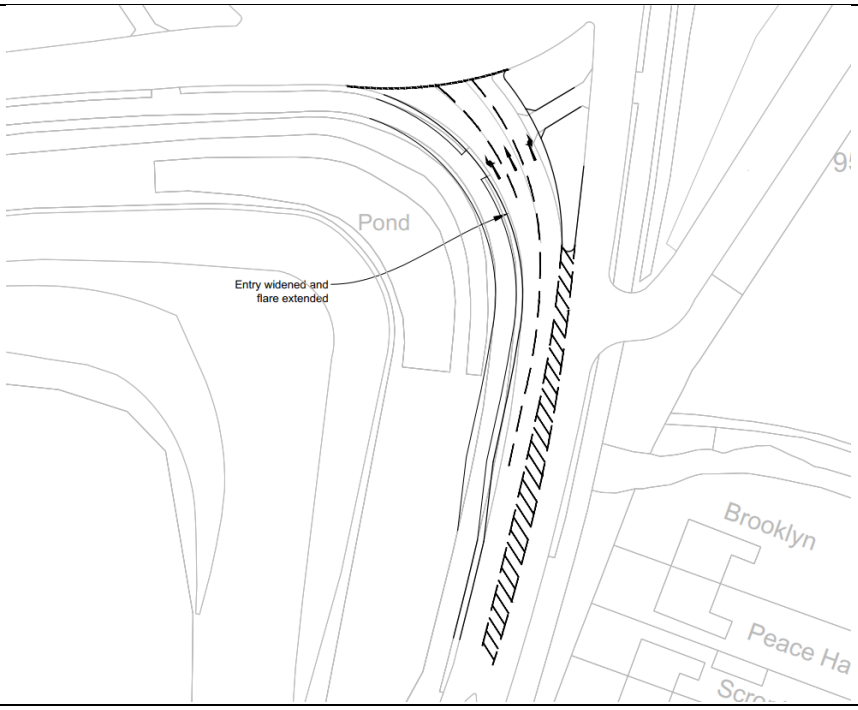
8.101. In the PM Peak scenarios, the 2036 Base Scenario operates within capacity, however the RFC is over 85% in the 2036 Base Scenario with the scheme infrastructure in place and deteriorates further when the development traffic is included.

8.102. Mitigation has therefore been explored and a revised junction layout included in Appendix 13 of this TA (Document Reference 6.2.8.1.13) which enhances capacity by introducing a small flare increase on the entry arm (B4668) and the carriageway is widened from 8.5m to 10.6m at the entry.

8.103. Table 8-32 shows the proposed scheme layout and demonstrates the junction performance including the mitigation scheme.

Table 8-32: Junction 24 Junctions 10 Capacity Assessments Mitigation

Proposed Mitigation



2036 Capacity Result

ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		RFC	QUEUE	RFC	QUEUE
A	The Common Barwell	61%	1.5	48%	0.9
B	A47 Leicester Road (E)	73%	2.6	61%	1.5
C	B4668 Leicester Road	50%	1.0	87%	6.2
D	A47 (W)	56%	1.2	84%	4.9

8.104. Table 8-32 demonstrates that with mitigation whilst the PM Peak hour is still slightly over usually accepted level of capacity at 87% RFC on the southern arm of the junction, it does increase the capacity of the junction to an acceptable, nil detriment level.

Junction 26 – A5 / A426 / Gibbet Lane

8.105. The A5 / A426 / Gibbet Lane junction is a 5-arm roundabout junction to the south of Lutterworth with ICD 77/62m. All arms are single carriageways. Junction is lit, no signals are currently present. No facilities for cyclists/pedestrians are provided.

8.106. Table 8-33 shows the location, form and summarises the operation of the A5 / A426 / Gibbet Lane junction.

Table 8-33: Junction 26 LINSIG Capacity Assessments

Layout

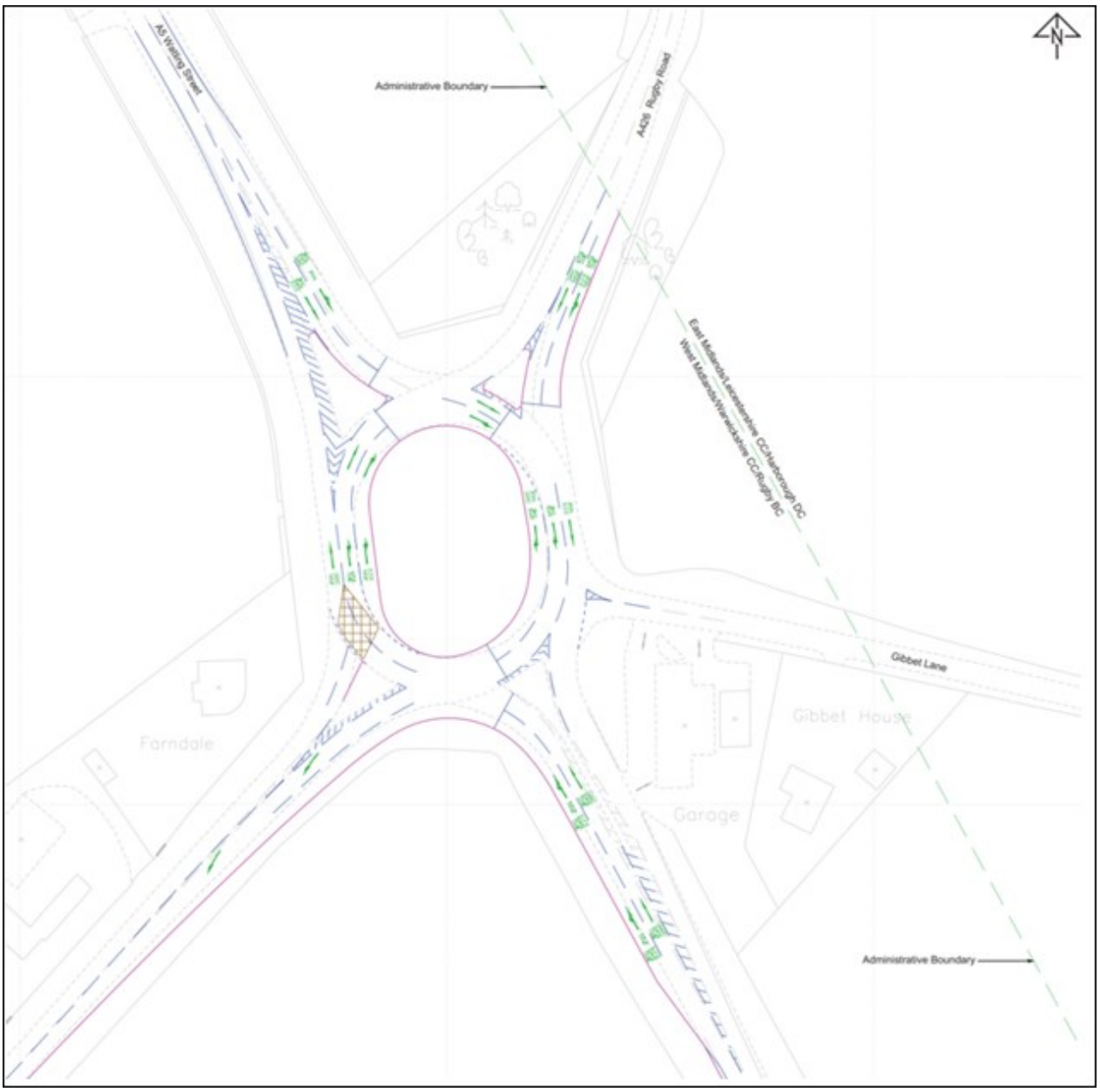
Site Location

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Rugby Road	70%	13.5	70%	13.5	71%	2.4
B	Gibbet Lane	95%	7.3	95%	7.3	133%	35.0
C	A5 (S)	104%	10.2	104%	10.2	107%	50.2
D	A426	79%	12.2	79%	12.2	80%	3.7
E	A5 (N)	69%	10.2	69%	10.2	77%	3.3
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Rugby Road	49%	1.0	49%	1.0	59%	1.4
B	Gibbet Lane	27%	0.4	27%	0.4	57%	1.3
C	A5 (S)	111%	80.0	111%	80.0	110%	77.1
D	A426	58%	1.4	58%	1.4	61%	1.6
E	A5 (N)	56%	1.3	56%	1.3	60%	1.5

8.107. As shown in the above Table 8-33, the A5 / A426 / Gibbet Lane junction would operate over capacity in all 2036 Scenarios, including the 2036 Base Scenarios. National Highways currently have a proposed signal scheme at the junction as shown in Figure 8-2 , which is examined in further.

Figure 8-2: NH Committed Highway Improvement Scheme



8.108. The committed NH scheme has been modelled to demonstrate the capacity improvement at the junction.

Table 8-34: Junction 26 LinSig Capacity Assessments Proposed Scheme

2036 Capacity Result (National Highways Committed Scheme)							
ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Rugby Road	137.1%	105.9	136.7%	104.8	153.5%	136.9
B	Gibbet Lane	51.6%	1.8	49.6%	1.7	53.5%	2.1
C	A5 (S)	159.0%	227.2	123.4%	128	103.3%	47.8
D	A426	71.8%	6.0	73.8%	7.0	77.9%	7.9
E	A5 (N)	88.2%	11.6	89.1%	12.4	92.6%	16.2
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-76.7	347.99	-51.9%	246.58	-70.6%	202.62
ARM		PM Peak Hour (17:00 -18:00)					
		DoS	MMQ	DoS	MMQ	DoS	MMQ
A	Rugby Road	94.6%	11.4	88.3%	9.3	96.0%	12.3
B	Gibbet Lane	30.1%	0.8	30.8%	0.8	38.0%	1.0
C	A5 (S)	110.2%	88.5	108.5%	81.4	108.4%	84.4
D	A426	69.9%	6.3	67.1%	5.7	69.4%	6.2
E	A5 (N)	90.1%	12.1	97.5%	18.4	87.4%	11.8
		PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)	PRC	Delay (PCU/Hr)
PRC over all lanes		-22.4%	105.84	-20.6%	101.14	-20.5%	99.69

8.109. As shown in Table 8-34 above, whilst the A5 / A426 / Gibbet Lane junction would operate over capacity in all 2036 Scenarios, including the 2036 Base Scenarios. The proposed development and associated infrastructure would have a small beneficial impact on the operation of the junction.

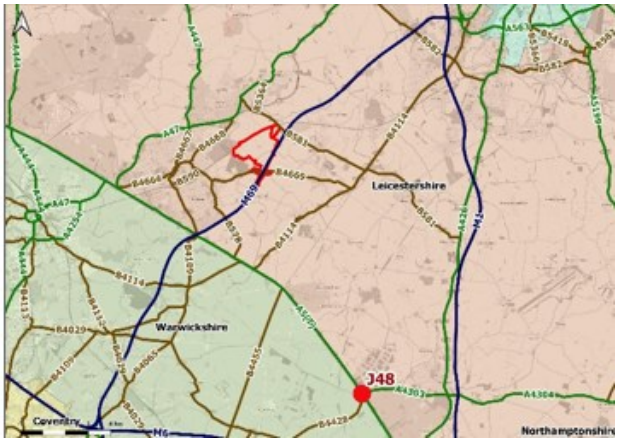
8.110. Despite this, the proposed development impacts in terms of PRC are nil in the AM and 0.1% in the PM when compared to the future baseline (without development). This is a minimal impact on the operation of the junction in proportionate terms, therefore no further works are proposed.

Junction 27 – A5 / A4303 / B4027 / Coal Pit Lane Roundabout

8.111. The A5 / A4303 / B4027 / Coal Pit Lane Roundabout is a 5-arm priority controlled roundabout junction near Magna Park with ICD 91/78m. The A4303 is a dual carriageway, other arms are single carriageways. Junction is lit, no signals are present. No facilities are provided for cyclists/pedestrians.

8.112. Table 8-35 shows the location, form and summarises the operation of the A5 / A4303 / B4027 / Coal Pit Lane Roundabout.

Table 8-35: Junction 27 Junctions 10 Capacity Assessments

Layout	Site Location
	

2036 Capacity Result

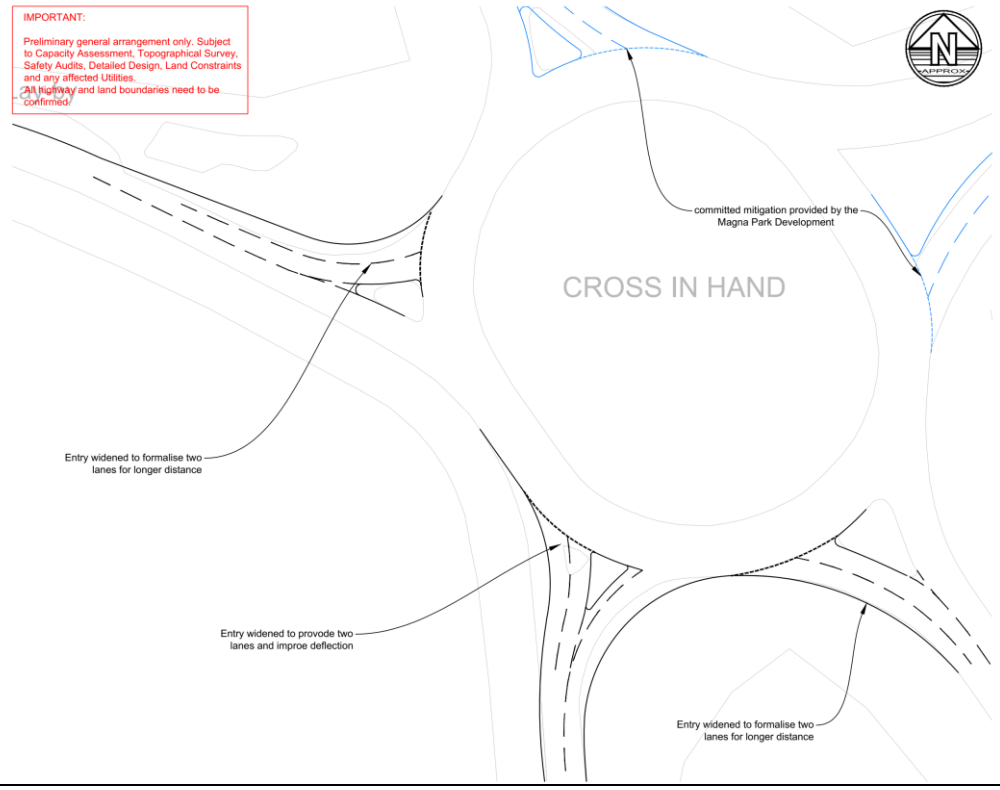
ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	A5 (N)	89%	7.5	90%	7.7	85%	5.4
B	A4303 (E)	73%	2.7	73%	2.7	76%	3.1
C	A5 (S)	83%	4.5	82%	4.4	87%	6.4
D	B4027 (S)	96%	11.7	94%	10.4	103%	22.1
E	Coal Pit Lane (W)	153%	106.8	150%	100.6	189%	187.3
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	A5 (N)	70%	2.3	70%	2.3	74%	2.9
B	A4303 (E)	83%	4.7	82%	4.5	83%	4.6
C	A5 (S)	76%	3.0	76%	3.0	81%	4.1
D	B4027 (S)	84%	4.8	77%	3.2	84%	4.7
E	Coal Pit Lane (W)	45%	0.8	42%	0.7	44%	0.8

8.113. As shown in Table 8-35 above, all of the PM Peak 2036 scenarios operate within capacity, even when including for the development traffic. However, in all of the AM Peak scenarios the RFC is over 85% on at least one of the arms in the 2036 Base Scenario, this improves slightly with the scheme infrastructure put in place and then deteriorates again once the development traffic is included.

8.114. Mitigation has therefore been explored. The junction already has proposed improvements being implemented on the A5 (N) and A4303 (E) arms as part of the Magna Park development, which have been included in our mitigation model and shown on the drawing below in blue. Further mitigation in the form of formalising two lanes for a longer distance on the A5 (S), B4027(S) and Coal Pit Lane has also been proposed and a revised junction layout is included in Appendix 13 of this TA (Document Reference 6.2.8.1.13).

Table 8-36: Junction 27 Junctions 10 Capacity Assessments Mitigation

Proposed Mitigation



2036 Capacity Result

ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		RFC	QUEUE	RFC	QUEUE
A	A5 (N)	81%	4.1	64%	1.8
B	A4303 (E)	76%	3.1	81%	4.3
C	A5 (S)	83%	4.5	76%	3.1
D	B4027 (S)	85%	5.0	70%	2.2
E	Coal Pit Lane (W)	90%	7.4	24%	0.3

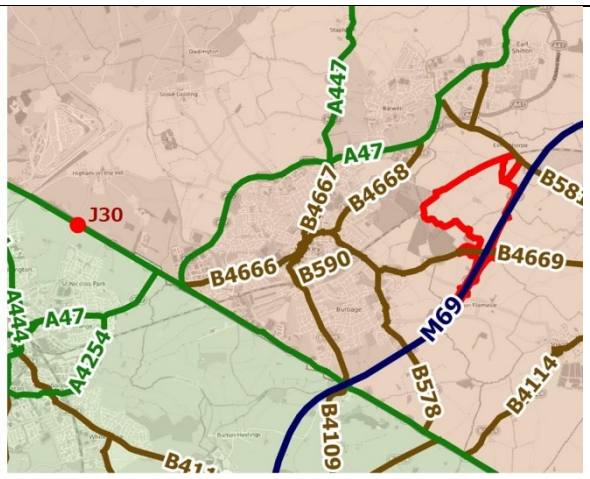
8.115. The above Table 8-36 shows that whilst the AM Peak hour is still slightly over usually accepted level of capacity at 90% RFC on the Coal Pit Lane of the junction, it does mitigate the impact of the development, to increase the capacity of the junction over the 2036 Base Case at the existing junction quite considerably.

Junction 30 – A5 Watling Street / Higham Lane / Nuneaton Lane Roundabout

8.116. The A5 Watling Street / Higham Lane / Nuneaton Lane Roundabout is a 4-arm priority roundabout with approx. 55m ICD. All arms at the roundabout are single lane carriageway flaring to two lanes at the entries. Shared footway/cycleway is provided around the junction with crossing points on all arms.

8.117. Table 8-37 shows the location, form and summarises the operation of the A5 Watling Street / Higham Lane / Nuneaton roundabout.

Table 8-37: Junction 30 Junctions 10 Capacity Assessments

Layout	Site Location
	

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Nuneaton Lane	47%	0.9	41%	0.7	43%	0.8
B	A5 Watling Street (E)	62%	1.8	61%	1.7	62%	1.9
C	Higham Lane	49%	1.0	48%	0.9	49%	1.0
D	A5 Watling Street (W)	53%	1.3	54%	1.3	55%	1.4
ARM		PM Peak Hour (17:00 -18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Nuneaton Lane	45%	0.8	40%	0.7	46%	0.8
B	A5 Watling Street (E)	72%	2.7	70%	2.6	73%	3.0
C	Higham Lane	43%	0.8	40%	0.7	43%	0.7
D	A5 Watling Street (W)	64%	1.9	64%	1.9	66%	2.1

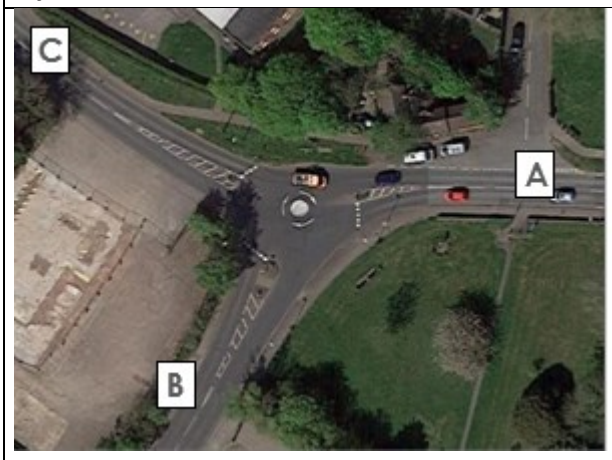
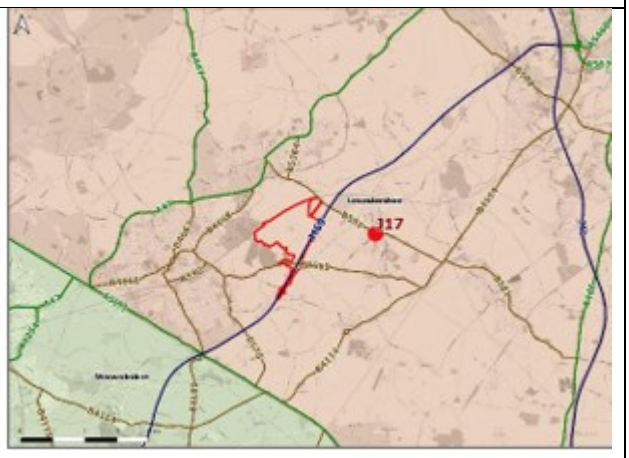
8.118. As shown in Table 8-37 above, the A5 Watling Street / Higham Lane / Nuneaton Lane Roundabout would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

Junction 37 – Hinckley Road / New Road / B581 mini roundabout

8.119. The Hinckley Road / New Road / B581 mini roundabout is a 3-arm mini roundabout junction in the middle of Stoney Stanton village with dropped kerb crossing facilities provided on the southern arm.

8.120. Table 8-38 shows the location, form and summarises the operation of the Hinckley Road / New Road / B581 mini roundabout.

Table 8-38: Junction 37 Junctions 10 Capacity Assessments

Layout	Site Location
	

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	New Road (E)	81%	4.1	79%	3.6	84%	4.9
B	Hinckley Road (S)	49%	1.0	50%	1.0	52%	1.1
C	B581 (W)	121%	87.7	104%	27.0	115%	60.5
ARM		PM Peak Hour (17:00 -18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	New Road (E)	112%	57.4	99%	17.2	107%	39.5
B	Hinckley Road (S)	90%	6.3	108%	28.1	136%	107.6
C	B581 (W)	100%	19.3	87%	5.8	97%	12.8

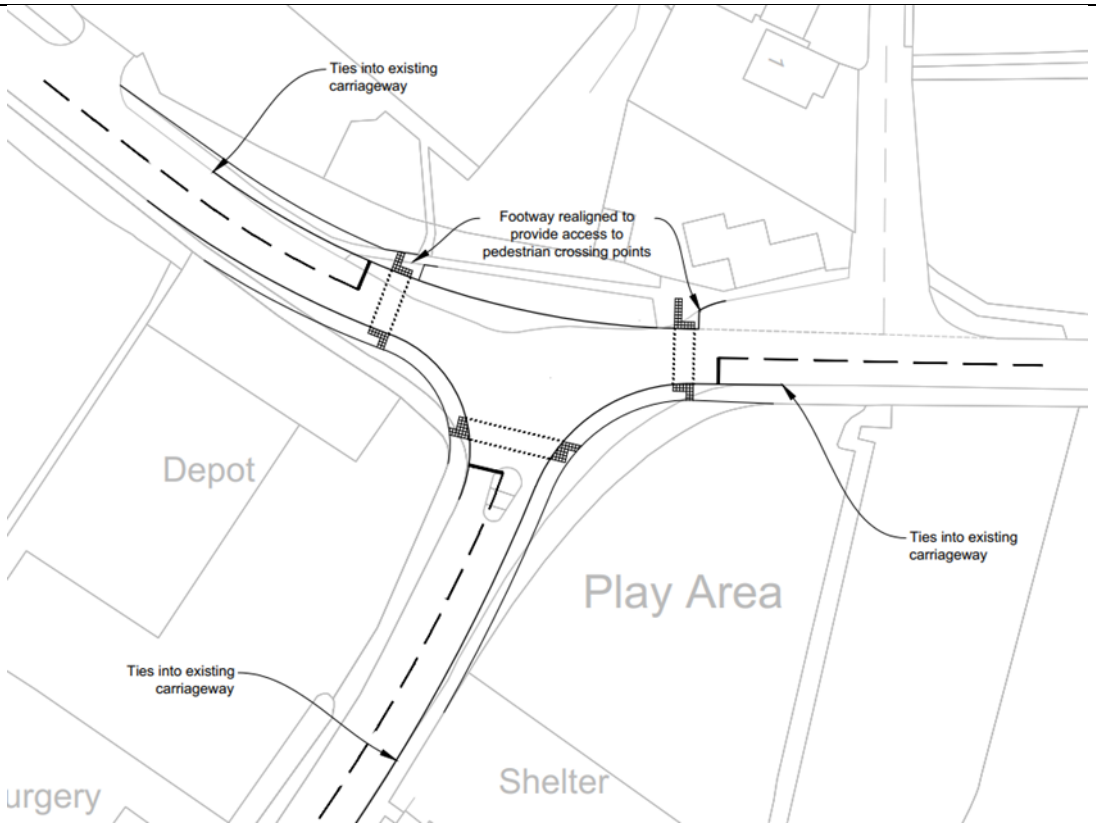
8.121. As shown in Table 8-38 above, the Hinckley Road / New Road / B581 mini roundabout would operate over capacity in all 2036 Scenarios.

8.122. As a result, mitigation has therefore been explored and a revised junction layout included in Appendix 13 of this TA (Document Ref 6.2.8.1.13) which introduces a 3-arm signal-controlled junction, has been proposed.

8.123. The highway improvement scheme has been modelled to demonstrate the capacity improvement at the junction. The form of the junction and the results are provided in Table 8-39 below.

Table 8-39: Junction 37 LinSig Capacity Assessments Mitigation

Proposed Mitigation



2036 Capacity Result

ARM		AM Peak Hour (08:00-09:00)		PM Peak Hour (17:00-18:00)	
		DoS	**MMQ**	**DoS**	**MMQ**
A	New Road (E)	52.9%	8.9	88.9%	21.3
B	Hinckley Road (S)	64.3%	7.1	87.8%	17.0
C	B581 (W)	64.0%	12.6	63.0%	11.4
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		39.9%	8.63	1.3%	19.59

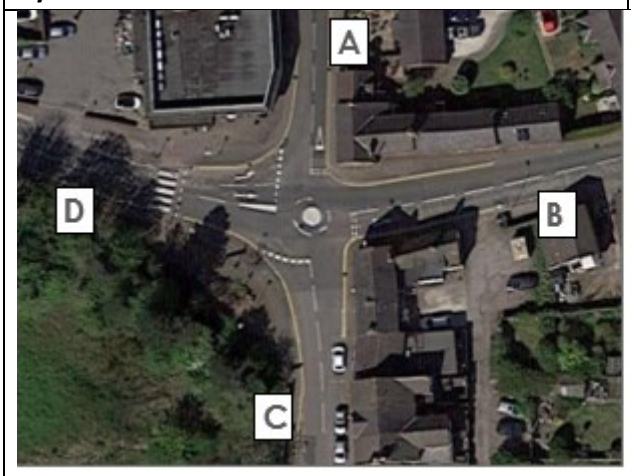
8.124. The above table shows that the signalisation of the Hinckley Road / New Road / B581 junction would operate within capacity in the 2036 AM and PM peak hours when including for the development traffic.

Junction 38 – New Road / Long Street / Broughton Road junction

8.125. The New Road / Long Street / Broughton Road junction is a 4-arm mini roundabout junction in the middle of Stoney Stanton village. There is a sequence of three mini roundabouts on the B581 though the village - J18 is approx. 220m to the east of J17. B581 EB benefits from two lanes at entry (13m long) and a zebra crossing. Long St is partially blocked by parking vehicles.

8.126. Table 8-40 shows the location, form and summarises the operation of the New Road / Long Street / Broughton Road mini roundabout.

Table 8-40: Junction 38 Junctions 10 Capacity Assessments

Layout	Site Location
	

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Long Street (N)	113%	39.2	108%	34.2	123%	74.8
B	Broughton Road (E)	55%	1.3	33%	0.5	36%	0.6
C	Long Street (S)	29%	0.4	21%	0.3	22%	0.3
D	New Road (W)	91%	8.8	75%	3.0	82%	4.5
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
A	Long Street (N)	80%	3.8	74%	2.7	76%	3.1
B	Broughton Road (E)	79%	3.6	82%	4.4	91%	7.7
C	Long Street (S)	66%	2.0	38%	0.6	59%	1.5
D	New Road (W)	88%	6.7	84%	4.9	106%	39.1

8.127. The existing junction operates at 113% RFC in the AM Peak hour on the northern arm (Long Street) of the junction in the 2036 Base scenario. This increases to 123% RFC when including for the development traffic. In the 2036 Base scenario PM Peak hour, the western arm of the junction (New Road), operates at 88% RFC increasing to 106% RFC when including for the development traffic. In addition, the eastern arm (Broughton Road) would be taken over capacity in the PM Peak when including for the development traffic operating at 91% RFC.

8.128. As a result of the above impact, the Long Street / B581 Broughton Rd / New Road mini roundabout junction has been reviewed for potential mitigation. Given the constraints around the junction in the form of buildings, limited adopted highway land and narrow footways, the only potential option for mitigation, would be to signalise the existing mini roundabout junction to provide signalised crossroads.

8.129. LinSig was used to model the proposed signalised junction and it was linked to the proposed signalised B581/ Hinckley Road/ New Road junction located to the west in a

network model to understand the correlation between the two proposed signal controlled junctions.

8.130. The LinSig model shows that the proposed Long Street / B581 Broughton Rd / New Road signal junction would operate at 96.6% DoS on the northern arm (Long Street) in the 2036 AM scenario with Development traffic included for and the Western arm (New Road) operates at 99.6% DoS in the same scenario. Whilst this shows a slight improvement on the northern arm of the junction in the AM Peak hour, the western arm of the junction operates worse with the signals in place.

8.131. The PM Peak hour shows the northern arm (Long Street) operating at 114.3% DoS, the eastern arm (Broughton Road) operating at 110.2% DoS and the western arm (New Road) operating at 93.6% DoS. This concludes that the junction would see a negative impact on the capacity as a result of introducing signals at the junction.

8.132. In addition to the above, the land constraints around the junction, could limit the possibility of providing signals equipment where necessary around the junction. The already narrow footways would be further reduced in width by the provision of signal poles and there would be limited options for mounting signal heads on the eastern side of the junction where buildings front the back of the footway. Refuge islands provided in the centre of the arms would limit the potential movements, especially by larger delivery vehicles or buses travelling through the junction.

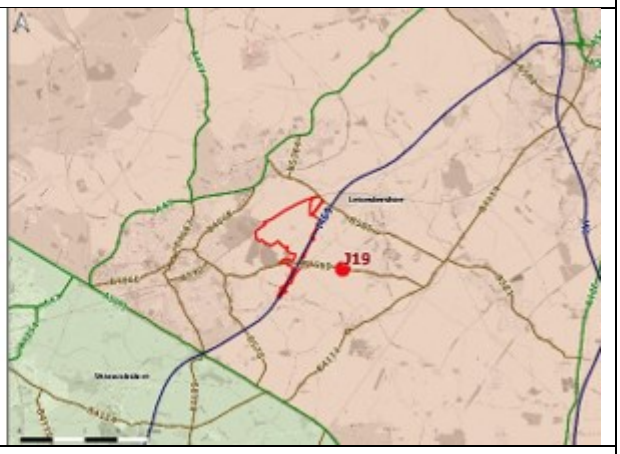
8.133. As a result, it is concluded that whilst the existing junction would operate over capacity in all of the 2036 scenarios, the existing form of the junction is the best performing junction that could be provided in this location, given the constraints surrounding the carriageway. Signalising the existing junction would result in the junction operating worse than the existing mini roundabout junction, therefore no physical mitigation is proposed at the Long Street / B581 Broughton Rd / New Road mini roundabout junction.

Junction 39 – B4669 / Stanton Lane junction

8.134. The B4669 / Stanton Lane junction is a 3-arm priority T-junction to the west of Sapcote village. Main road (B4669) is subject to a 50mph speed limit. No facilities are provided for pedestrians.

8.135. Table 8-41 shows the location, form and summarises the operation of the B4669 / Stanton Lane junction.

Table 8-41: Junction 39 Junctions 10 Capacity Assessments

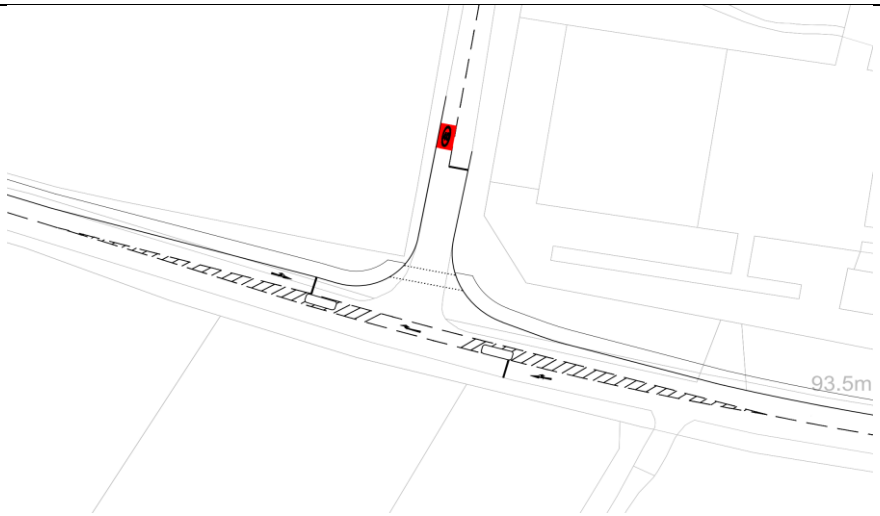
Layout	Site Location
	

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
B-AC	Stanton Lane to B4669	80%	3.8	144%	176.6	156%	235.8
C-AB	B4669 (E) to Stanton La	18%	0.3	74%	3.4	70%	2.8
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
B-AC	Stanton Lane to B4669	51%	1.1	113%	26.6	110%	18.7
C-AB	B4669 (E) to Stanton La	70%	2.9	119%	100.4	121%	120.1

8.136. As shown in the table above, the B4669 / Stanton Lane junction would operate over capacity in all but the base 2036 Scenarios. As a result, mitigation has therefore been explored and a revised junction layout included in Appendix 13 of this TA (Document Ref 6.2.8.1.13) which introduces a 3-arm signal-controlled junction, has been proposed.

Table 8-42: Junction 39 LinSig Capacity Assessments Mitigation

Proposed Mitigation					
					
2036 Capacity Result					
ARM		**AM Peak Hour (08:00-09:00)**		**PM Peak Hour (17:00-18:00)**	
		DoS	**MMQ**	**DoS**	**MMQ**
A	Stanton Lane	76.2%	8.0	81.4%	5.5
B	B4699 (E)	73.9%	11.3	49.7%	2.6
C	B4669 (W)	46.2%	5.3	82.8%	14.9
		PRC	**Delay (PCU/Hr)**	**PRC**	**Delay (PCU/Hr)**
PRC over all lanes		18%	9.03	8.7%	9.08

8.137. Signalising this junction with a very simple 3 phase 2 stage arrangement results in the junction operating within capacity in 2036 scenarios even when including for the proposed development flows.

8.138. However, the existing footway located over Stanton Lane would require a crossing point to be integrated into the junction. If this was staggered, then the junction would still operate within capacity, but limited available land and swept paths mean a suitable refuge island cannot be provided.

8.139. As a result, a crossing point has been proposed across the full width of Stanton Lane which would require an all-red stage, which impacts negatively on the junction capacity. The stop line on Stanton Lane would also require setting back to allow the swept paths of larger vehicles to work. The junction would work just over capacity if the crossing was double cycled, however it is unlikely that the crossing would be called this often, as a result the crossing has not been modelled in the mitigation scenario.

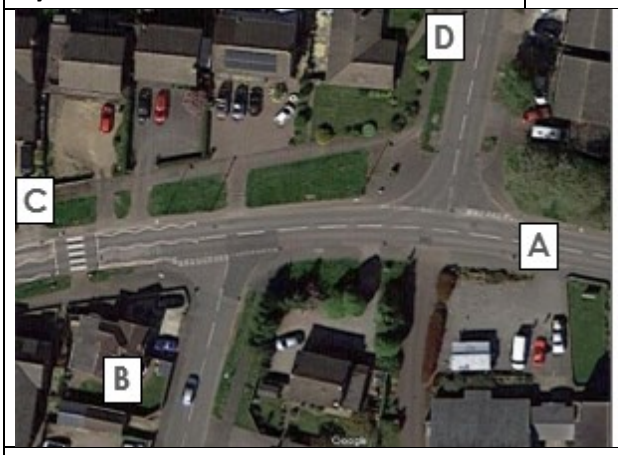
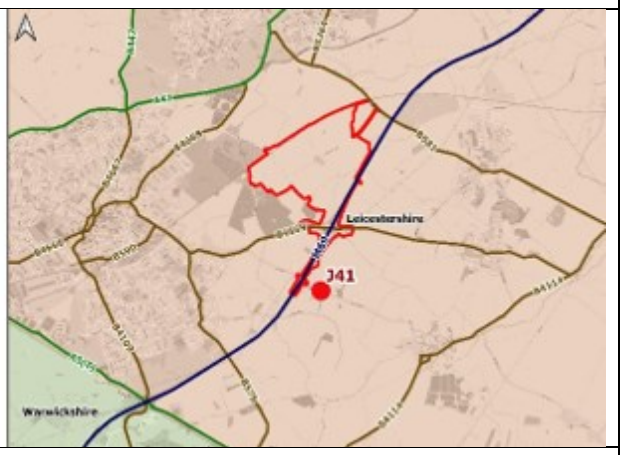
Junction 40 – Leicester Road / Grace Road / Sharnford Road junction

8.140. The Leicester Road / Grace Road / Sharnford Road junction is a 4-arm simple priority controlled staggered junction in the middle of Sapcote village. The distance between centrelines of minor arms is 34m. Zebra crossing present approx. 21m to the west of Sharnford Rd.

8.141. Table 8-43 below shows the location, form and summarises the operation of the

Leicester Road / Grace Road / Sharnford Road junction.

Table 8-43: Junction 40 Junctions 10 Capacity Assessments

Layout		Site Location					
							
2036 Capacity Result							
ARM		**Without Development**		**Without Development with Scheme**		**With Development**	
		AM Peak Hour (08:00-09:00)					
		RFC	**Queue**	**RFC**	**Queue**	**RFC**	**Queue**
B-C	Sharnford Rd to Leicester Rd (W)	12%	0.1	17%	0.2	19%	0.2
B-AD	Sharnford Rd to Leicester Rd & Grace Rd	20%	0.3	17%	0.2	20%	0.3
A-BCD	Leicester Rd (E) to Sharnford Rd, Leicester Rd	8%	0.2	8%	0.1	9%	0.2
D-A	Grace Rd to Leicester Rd (E)	26%	0.4	15%	0.2	23%	0.3
D-BC	Grace Rd to Sharnford Rd & Leicester Rd (W)	79%	3.7	58%	1.4	70%	2.3
C-ABD	Leicester Rd (W) to Leicester Rd (E), Sharnford	18%	0.3	34%	0.8	40%	1.0
Arm		**PM Peak Hour (17:00-18:00)**					
		RFC	**Queue**	**RFC**	**Queue**	**RFC**	**Queue**
B-C	Sharnford Rd to Leicester Rd (W)	52%	1.0	29%	0.4	31%	0.4
B-AD	Sharnford Rd to Leicester Rd & Grace Rd	83%	4.3	43%	0.8	62%	1.7
A-BCD	Leicester Rd (E) to Sharnford Rd, Leicester Rd	0%	0.0	17%	0.3	24%	0.5
D-A	Grace Rd to Leicester Rd (E)	9%	0.1	7%	0.1	9%	0.1
D-BC	Grace Rd to Sharnford Rd & Leicester Rd (W)	24%	0.3	17%	0.2	25%	0.3
C-ABD	Leicester Rd (W) to Leicester Rd (E), Sharnford	11%	0.2	15%	0.4	18%	0.4

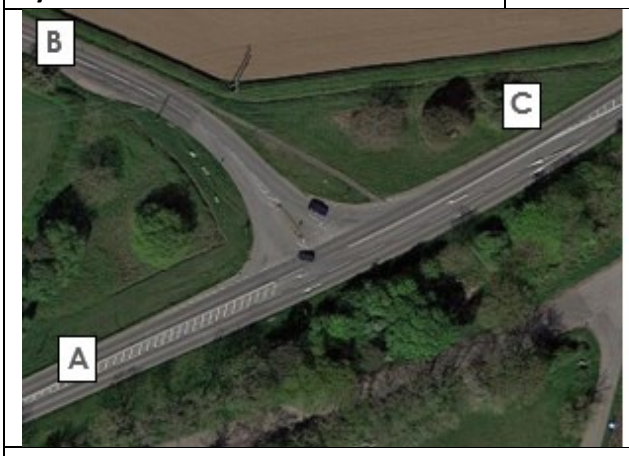
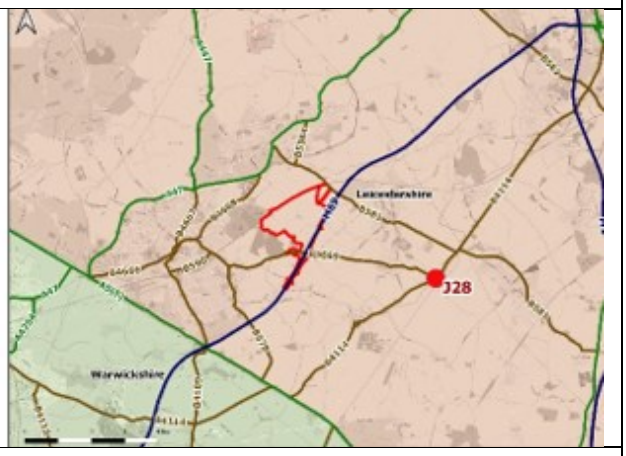
8.142. As shown in the table above, the Leicester Road / Grace Road / Sharnford Road junction would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

Junction 41 – B4669 Leicester Road / B4114 Coventry Road junction

8.143. The B4669 Leicester Road / B4114 Coventry Road junction is a 3-arm priority ghost-island junction to the east of Sapcote village with right-turn lane 73m in length. The B4114 is subject to the 50mph speed limit, the B4669 is subject to the National Speed Limit.

8.144. Table 8-44 shows the location, form and summarises the operation of the B4669 Leicester Road / B4114 Coventry Road junction.

Table 8-44: Junction 41 Junctions 10 Capacity Assessments

Layout		Site Location					
							
2036 Capacity Result							
ARM		**Without Development**		**Without Development with Scheme**		**With Development**	
		AM Peak Hour (08:00-09:00)					
		RFC	**Queue**	**RFC**	**Queue**	**RFC**	**Queue**
B-C	B4669 to B4114 (E)	26%	0.4	54%	1.3	60%	1.6
B-A	B4669 to B4114 (W)	5%	0.1	8%	0.1	12%	0.1
C-AB	B4114 (E) to B4669	38%	0.7	69%	2.4	80%	4.3
Arm		**PM Peak Hour (17:00-18:00)**					
		RFC	**Queue**	**RFC**	**Queue**	**RFC**	**Queue**
B-C	B4669 to B4114 (E)	50%	1.1	69%	2.3	62%	1.8
B-A	B4669 to B4114 (W)	6%	0.1	8%	0.1	6%	0.1
C-AB	B4114 (E) to B4669	33%	0.5	45%	0.9	44%	0.8

8.145. As shown in Table 8-44 above, the B4669 Leicester Road / B4114 Coventry Road junction would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

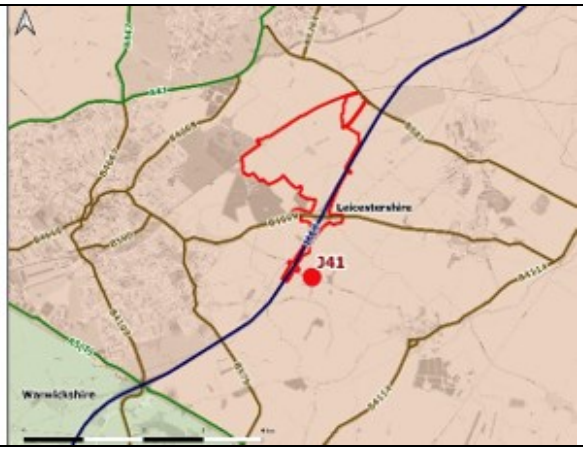
Junction 45 – Hinckley Road / Lynchgate Lane / Sharnford Road junction

8.146. The Hinckley Road / Lynchgate Lane / Sharnford Road junction is a 3-arm simple priority

junction in Aston Flamville with restricted visibility.

8.147. Table 8-45 shows the location, form and summarises the operation of the Hinckley Road / Lynchgate Lane / Sharnford Road junction.

Table 8-45: Junction 45 Junctions 10 Capacity Assessments

Layout		Site Location					
							
2036 Capacity Result							
ARM		**Without Development**		**Without Development with Scheme**		**With Development**	
		AM Peak Hour (08:00-09:00)					
		RFC	**Queue**	**RFC**	**Queue**	**RFC**	**Queue**
B-AC	Lynchgate Lane to Sharnford Road	19%	0.2	18%	0.2	19%	0.2
C-AB	Sharnford Road (W) to Lynchgate Lane	2%	0.0	1%	0.0	1%	0.0
Arm		**PM Peak Hour (17:00-18:00)**					
		RFC	**Queue**	**RFC**	**Queue**	**RFC**	**Queue**
B-AC	Lynchgate Lane to Sharnford Road	**14%**	**0.2**	**16%**	**0.2**	**17%**	**0.2**
C-AB	Sharnford Road (W) to Lynchgate Lane	**3%**	**0.0**	**3%**	**0.0**	**3%**	**0.0**

8.148. As shown in the Table above, the Hinckley Road / Lynchgate Lane / Sharnford Road junction would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

Junction 48 – Huncote Road / Stanton Lane / Pringle Lane junction

8.149. The Huncote Road / Stanton Lane / Pringle Lane junction is a 3-arm simple priority junction to the north of Stoney Stanton with restricted visibility.

8.150. Table 8-46 shows the location, form and summarises the operation of the Huncote Road / Stanton Lane / Pringle Lane junction.

Table 8-46: Junction 48 Junctions 10 Capacity Assessments

Layout	Site Location
	

2036 Capacity Result

ARM		Without Development		Without Development with Scheme		With Development	
		AM Peak Hour (08:00-09:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
B-AC	Pringle Lane (N) to Huncote Road & Stanton	35%	0.5	34%	0.5	37%	0.6
C-AB	Stanton Lane (E) to Pringle Lane (N)	17%	0.3	18%	0.3	19%	0.4
Arm		PM Peak Hour (17:00-18:00)					
		RFC	Queue	RFC	Queue	RFC	Queue
B-AC	Pringle Lane (N) to Huncote Road & Stanton	35%	0.5	36%	0.5	42%	0.7
C-AB	Stanton Lane (E) to Pringle Lane (N)	15%	0.3	14%	0.3	15%	0.3

8.151. As shown in Table 8-46 above, the Hinckley Road / Lynchgate Lane / Sharnford Road junction would operate within capacity in all 2036 Scenarios. As a result, no further works are required at this junction.

Summary

8.152. A total of 55 junctions have been identified for further review by LCC/NH through two separate PRTM model runs.

8.153. A detailed filtering process has been performed across all junctions identified, examining PRTM 2.2 Forecast Model outputs for 2036 both 'With' and 'Without Development'. The filtering looked at both flow changes because of the development, baseline forecast volume over capacity (VoC) results at junction nodes and changes in VoC at junction nodes forecast with the development.

8.154. The filtering process was required to focus the modelling and mitigation extents on those junctions most affected by both the development and the redistribution of background traffic because of the provision of new access infrastructure.

8.155. Following the filtering, 24 junctions were identified for standalone capacity modelling including the primary and secondary access junctions (M69 J2 and the B4688/A47 Link Road) using detailed traffic modelling packages as outlined earlier in this section.

8.156. For the offsite junctions (excluding the site accesses) a more detailed picture of the most impacted junctions has been examined. Of these, 15 were deemed to operate within theoretical junction capacity and 7 required additional mitigation to accommodate the development. Mitigation will seek to provide nil detriment impact of the development where appropriate to do so.

8.157. The following section discusses the highway mitigation package for the HNRFI development.

9. HIGHWAY MITIGATION

Introduction

9.1. Mitigation schemes for junctions have been developed where the LinSig or Junctions 9 model indicated that they might be operating at or over their theoretical capacity in 2036. These are local junction improvements to increase capacity to accommodate the additional traffic associated with the HNRFI scheme only. This includes for the provision of the access infrastructure proposed. Examples of these improvements are a new staging for signalised junctions, widening at roundabout approach or a change of the junction type, i.e., roundabout being modified into a signal-controlled junction.

9.2. The VISSIM outputs deal primarily with SRN junctions and signal operation. Junction 2 of the M69 being the most significantly impacted and re-designed. Reviews of impact to the SRN have been compared against background change, growth and known infrastructure schemes. Impacts at the PRTM buffer are to be assessed independently through the WCC modelling suite. Development flow impacts in these areas are relatively low.

9.3. In some locations there are already improvement schemes being proposed by the local authority to improve the existing conditions or by a third party when the junction might reach its capacity because of other development in the area.

Proposed Access Infrastructure

9.4. The proposed access Infrastructure includes the following:

- M69 J2 south facing two-lane slip roads (a northbound exit-slip and a southbound entry-slip) and signalisation of the roundabout.
- The A47 Link Road from a new access arm at M69 J2 (dual carriageway to the railway line and then single carriageway over the railway to the B4668 where a new roundabout is proposed.

Proposed Mitigation

9.5. Of the 21 assessed junctions, five are forecast to benefit from a reduction in flows as a result of the development, eight junctions will have minor highway impact between -5% and +5% and the highway impact at the remaining nine junctions will be greater than 5%.

9.6. In total seven junctions require direct interventions; two locations require traffic calming/public realm measures Table 9-1 below summarises the proposed mitigation measures.

Table 9-1: Proposed Mitigation

Junction ID	No.	LA/LHA	Location	Proposed Mitigation
37	B1	Blaby DC / LCC	Junction of B581 Station Road / New Road and Hinckley Road, Stoney Stanton	The existing mini-roundabout will be replaced by traffic lights with signalised crossings for pedestrians.
39	B2	Blaby DC / LCC	B4669 Hinckley Road and Stanton Lane, west of Sapcote	Traffic lights will be introduced with a phase to allow pedestrians and cyclists to cross.
Link scheme	B3	Blaby DC / LCC	Stanton Lane / Hinckley Road, south-west of Stoney Stanton	Reduction of the speed limit to 40mph from the national speed limit and introduction of a gateway traffic calming feature.
Link scheme	B4	Blaby DC / LCC	B4669 Hinckley Road/ Leicester Road, Sapcote	Traffic calming features and creation of public realm with junction improvements, bus stop relocation and inclusion of a pedestrian crossing at junction of Church Street with the B4669. Introduction of a gateway feature to the east of the village.
J3	B5	Blaby DC / LCC	B4114 Coventry RoadlB581 Broughton Road	New traffic lights are already scheduled to be introduced as part of the Broughton Astley S278 works (Planning Ref: 19/00856/OUT). Should the above committed scheme not come forward in advance of the opening of the HNRFI access infrastructure, the applicant proposes to undertake a mitigation scheme. This would include signalisation of the ghost island junction with the Broughton Road with separate right and left turn lanes and connecting to the existing signalled junction at Coventry Road on the B4114. This layout differs from the S278 proposals by removing the Coventry Road widening, the traffic levels forecast do not require improvements on this arm.
J6	B6	Blaby DC / LCC	B4114 Coventry Road and Croft Road, south-west of Narborough	Lane widening on junction approaches

Junction ID	No.	LA/LHA	Location	Proposed Mitigation
J1	HB1	Hinckley and Bosworth BC / LCC	Junction of A47 Normandy Way and A447 Ashby Road, Hinckley	It is proposed that the approach roads to this junction would all be widened to accommodate additional traffic. Indicative right turn and two lanes would be provided through the junction in a westbound direction. Formal signal-controlled pedestrian crossing points would be introduced.
J24	HB2	Hinckley and Bosworth BC / LCC	Junction of A47 Normandy Way / Leicester Road, the B4668 Leicester Road and The Common, south-east of Barwell	Widening of the entry arm on the B4668 Leicester Road
J27	H1	Harborough DC / National Highways	Cross in Hand roundabout at the junction of the A5 Watling Street, A4303 Coventry Road, B4027 Lutterworth Road and Coal Pit Lane, west of Lutterworth	Increased roundabout radius and widened lane entries on Coal Pit Lane and B4027 Lutterworth Road, with two lanes marked for longer distances for traffic approaching the junction on the A5 Watling Street from the south.

9.7.

9.8. Table 9-1 highlights the seven junctions assessed and two links as requiring highway intervention to mitigate the impact of the HNRFI development.

9.9. The largest scheme to be delivered is the M69 Junction 2 where the site access is proposed. The scheme also includes new south-facing slip roads to allow all-movements to eliminate HGV trips on the surrounding network to access the SRN.

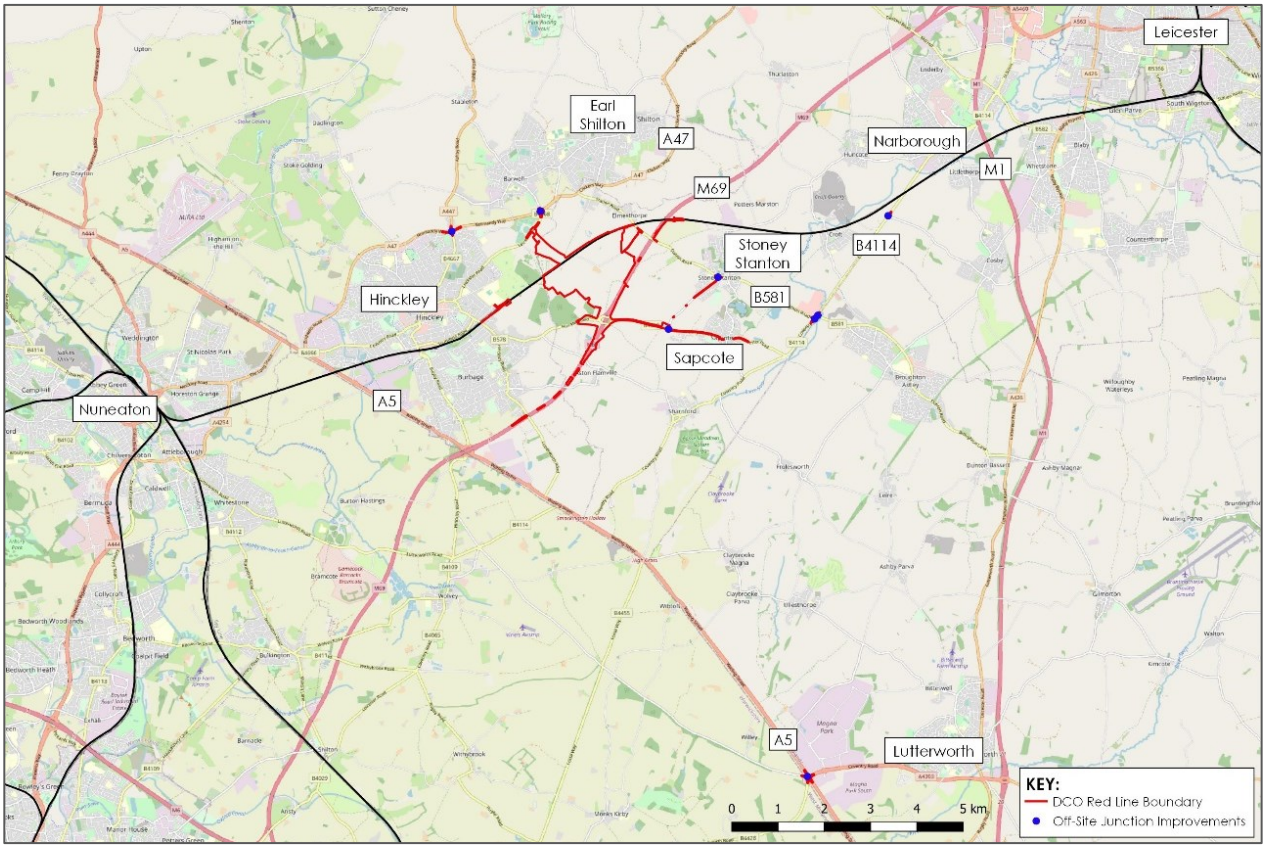
9.10. The mini-roundabout at New Road/Stanton Lane Stoney Stanton is to be reconfigured into signal-controlled junction.

9.11. Stanton Lane/B4669 priority-controlled junction to the west of Sapcote will be improved by new signals.

9.12. Two roundabouts and two signal-controlled junctions will require relatively minor amendments to increase capacity one or more entries.

9.13. Location of the junctions listed above is shown in Figure 9-1 below.

Figure 9-1: HNRFI Off-Site Junction Mitigation Schemes



Other Measures

Traffic Calming

9.14. To improve safety for non-motorised vehicle users through Sapcote and toward Stoney Stanton, a calming scheme has been designed. This also acts as a deterrent for through-traffic in the villages.

9.15. The focus of the calming scheme has been to enhance or formalise existing features which slow traffic through the villages of Stanton and Sapcote. This includes a speed limit change on Stanton Lane and, gateway features with additional give-way priority chicanes at the village boundaries, improvements to crossing facilities and reconfiguring the layout at the junction of Church Street and the B4669 Hinckley Road to improve pedestrian access and safety. These proposals would also relocate the bus stop on the northern kerb to a safer position.

9.16. Drawings of the preliminary designs for the above are included in Appendix 13 of this TA (Document Ref 6.2.8.1.13) and reflected in Highway Works Plan 2.4G.

10. SUMMARY AND CONCLUSIONS

Summary

10.1. This Transport Assessment forms part of the ES submission for HNRFI development. It provides detail on the transport work done to understand the development's wider impact on the strategic and local road networks. The analysis is based upon the agreed inputs and run of Leicestershire's PRTM model version 2.2. This approach to re-running modelling carried out earlier in the process, has been subject to comment and review by the HNRFI Transport Working Group (TWG) and agreements on inputs and methodology.

10.2. Standalone junction modelling has been informed by the initial PRTM 2.2 model run with outputs from the March 2022 model run. However, changes between previous runs have been relatively minor. Impacts are local to the A5 area around the Dodwells/Longshoot junctions, upgrades to which have been removed from the background infrastructure inputs for the latest model run.

10.3. VISSIM assessments for the forecast years have been processed following receipt of the revised model run data. PRTM base models have been reviewed and commented on by core members of the TWG and lead Highway Authorities. Amendments for localised validation were undertaken following feedback from LCC.

10.4. Hinckley National Rail Freight Interchange (NRFI) is a proposed B8 (warehousing) employment development and National Rail Freight Terminal located to the north-west of M69 Junction 2, to the east of Hinckley. With a capacity of 850,000m2 of employment land, this development is expected to generate between 8,400 and 10,400 jobs.

10.5. The rail freight interchange is intended to address national concerns around climate change and the need to reduce HGV movements from our strategic road network. This is outlined in recent DfT policy document 'Decarbonising Transport: A better, greener Britain'. The facility will act as a regional distribution site alongside some national operations. The rail enabled interchange will remove significant 'primary' HGV road movements from the ports to the site. Onward distribution of goods has been factored into the trip generation and distribution for the modelling outputs.

10.6. Sustainable access has been considered for staff and contractors employed at the site. The location is close to several key settlements within a 5km radius. This presents good opportunity for employees to use active travel modes to access the site. Current proposals intend to enhance pedestrian and cycle accessibility from the east and west on the A47 new link road.

10.7. Public transport access has been outlined with LCC Public Transport team, following initial discussions with Arriva as the principal bus operator in the area. The strategy is to enhance existing X6 services between Coventry and Leicester with new bus stop infrastructure within the site. Additional services on a demand responsive basis have been discussed for access to outlying towns and villages with Vectare who operate the existing Demand Responsive pilot in Leicestershire. This is to be developed but presents a scalable and appropriate solution for shift based working patterns. Connections to Hinckley Rail Station are to be linked to the DRT service provision.

10.8. Road safety statistics have been reviewed for the surrounding highway networks. A detailed COBALT review of expected accidents has been carried out. Results suggest impacts of increased traffic flow change happen on routes where accidents are comparatively low. Villages east of the M69 and routes west around the A47 do not appear to have particularly high concentrations of collisions nor changes to anticipated safety as a result of the development.

10.9. The access infrastructure has been developed to provide enhanced opportunity for operators to use the Strategic Road Network (SRN). New slips on the south side of Junction 2 permit access to and from the south for all road users. The linkage to the B4668 to the north-west completes a circulatory around Hinckley Town Centre, removing trips which would otherwise need to route through Junction 1 and Hinckley itself.

10.10. Further detail on Junction 2 arrangements from the VISSIM assessments indicate a signalised arrangement will work within the anticipated demand.

10.11. Trip generation has been scrutinised by the TWG in detail with queries raised over the rail to HGV movements. The rates have been signed off by core highway authority members of the TWG. The figures are as per the initial model run to date. The rates have used similar existing sites and have aligned with other RFI DCO applications. These are highly robust as they take the worst-case HGV and worst-case light vehicle movements from respective distribution sites.

10.12. Off-site traffic mitigation has been developed based on PRTM 2.2 to understand the extents of land-referencing and environmental studies for the off-site mitigation. The results have been based on flow change and maximum volume over capacity figures for junctions, subsequent detailed standalone models have been developed in the locations where development and background redistributed traffic impacts are most keenly felt above the future baseline scenarios. Further review of flow change and VoC impacts has been carried out for 55 junctions in total around the AOI and specific SRN junctions beyond. This has resulted in 7 junctions requiring mitigation to adequately accommodate the development traffic impact.

Conclusion

10.13. This Transport Assessment provides a position of the likely impacts and mitigation solutions. Development of sustainable transport and public transport provision has been subject to discussions with operators and stakeholders. Junction designs are based on reasonable estimates from the PRTM model.

10.14. The work throughout has involved engagement with the key stakeholders and has been carried out with transparency. This has been to ensure plans and strategies are communicated as widely and openly as possible.

10.15. Consequently, the report has aligned with the guidelines set out in the National Planning Policy Framework, specifically paragraphs 110 and 111 as the highway impacts on capacity, congestion and highway safety are cost effectively mitigated to an acceptable degree and consider safe and suitable access for all users.

10.16. The residual impacts following the construction of the access infrastructure and the off-site mitigation are not considered to be severe.

10.17.

10.18.

APPENDICES

Appendix 1: Illustrative Masterplan

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Appendix 2: Access Infrastructure

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Appendix 3: Trip Generation Addendum

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Appendix 4: Trip Distribution

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Appendix 5: Pan-Regional Transport Model Highway Assignment Local Model Validation Report (May 2021)

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Appendix 6: PRTM2.2 Base Year Model Review and Addenda

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Appendix 7: PRTM2.2 Forecast Modelling Brief

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Appendix 8: Furnessing Methodology

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Appendix 9: VISSIM LMVR Base Models

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Appendix 10: PRTM 2.2 Forecast Modelling May 2022

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Appendix 11: Capacity Assessment Junction Modelling

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Appendix 12: Forecast VISSIM Modelling M69 J2 and J1 Report

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Appendix 13: Mitigation Works Plans

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Appendix 14: Sustainable Transport Strategy

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Appendix 15: WCHAR