

## Chapter 12 – Transportation

### 12.1 INTRODUCTION

- 12.1.1 This chapter of the Environmental Statement (ES) assesses the likely significant environmental effects created by the changing transport conditions introduced by the proposed development.
- 12.1.2 The Northampton Gateway Strategic Rail Freight Interchange (SRFI), the ‘proposed development’ is described in Chapter 2 of this ES and reference should be made to that chapter for the description of the development that has been assessed.
- 12.1.3 The proposed development would increase and change the pattern of traffic movements on the highway network and could also alter the conditions for other highway users. Hence the effects of the changes on non-motorised users (NMUs) (pedestrians, cyclists, equestrians) as well as drivers are assessed. This chapter of the ES does not present the rail freight strategy, which is considered in a separate report.
- 12.1.4 The assessment process and methodology are described in the documents that are appended to this Chapter of the ES, which, when taken together, also comprise the Transport Assessment (TA). This includes the Framework Travel Plan (FTP) for the development. Information provided within each document is intended to be complementary and the separate documents are intended to be read in conjunction with one another to establish the full transport picture. Where relevant, summaries only are included in this ES chapter and, in general, reference should be made to the relevant document for detail.
- 12.1.5 This chapter describes the assessment methodology, the transport planning policy context of the proposed development, the baseline conditions currently existing at the proposed development site and its surroundings, the proposed development design measures required to prevent, reduce or offset any significant adverse effects, and the likely residual effects after these measures have been employed.
- 12.1.6 The appended TA documents examine the generation, distribution and assignment of trips associated with the proposed development and the effects of the external trips (beyond the site boundary) on the surrounding transport network. The FTP examines the accessibility of the site by public transport, cycling and walking, and identifies the likely modal split of person trips associated with the development. The impact of the development trips on the surrounding transport infrastructure is addressed and it is demonstrated that the identified ‘highway mitigation works’, in combination with the FTP, would appropriately address for the increased travel demand.
- 12.1.7 The proposed development would provide public transport, pedestrian and cycle provision for non-car based modes of transport.

### 12.2 ASSESSMENT METHODOLOGY

#### **General approach**

- 12.2.1 This Chapter of the ES describes the findings of the appended TA documents, including the FTP, which have been undertaken to support the application for a Development Consent Order (DCO) for the proposed development. It examines the relationship between the proposed development and the transport network, the effect of the development on that network, and the need to provide improvements to infrastructure to accommodate the proposed uses in a sustainable manner.

- 12.2.2 The assessment has been undertaken using a Department for Transport (DfT) WebTAG compliant transport model and applying a methodology that accords with best practice guidance. It includes an assessment of both the local highway network and the Strategic Road Network (SRN) serving the proposed development, the latter in accordance with DfT 'Circular 02/2013 The Strategic Road Network and the Delivery of Sustainable Development'.
- 12.2.3 In addition, this ES Chapter examines the environmental impact of the changing transport conditions resulting from the proposed transport infrastructure and highway mitigation works. This is based on guidance contained within the DfT 'Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment, Section 3, Parts 8 and 9'.
- 12.2.4 For the purposes of assessment, four categories of impact scale have been used, comprising; **negligible**; **minor**; **moderate** and **major**. The definition of the significance of the impact is described in Table 12.1.

Table 12.1 Definition of impact scale

Scale of impact	Definition
Negligible	An effect that is considered not to be significant or to have no influence. This is applicable where there is a neutral impact which is neither positive nor negative.
Minor	An effect that may be a local issue.
Moderate	An effect that will be important at local level and potentially upwards.
Major	An effect that will be important at borough, county, or regional level.

- 12.2.5 Where impacts are recorded as being minor, moderate or major, and cause an increase in existing congestion, journey times or exacerbate existing safety problems, then the individual impact is described as an **adverse** one. Where they relieve, then the impact is termed **beneficial**. Negligible impacts cannot be perceived and hence are neither adverse nor beneficial.
- 12.2.6 In addition to the significance of the impact, the assessment also considers whether the environmental impacts are **permanent** or **temporary**.
- 12.2.7 To assess the environmental impact of the proposed development and its traffic, the initial stages are to determine the baseline and future year traffic volumes and characteristics, determine the time periods for assessment, and to identify the geographical boundaries of assessment. Once this information is established, the predicted impacts are assessed, along with measures to mitigate any adverse impact.

### Scoping Criteria

- 12.2.8 Northamptonshire County Council (NCC) is the local highway authority responsible for the transportation issues within Northamptonshire. Highways England has responsibility for the SRN which, adjacent to the proposed development site, comprises the M1 motorway, M1 Junctions 15 and 15A, the A45, A43 and A5.
- 12.2.9 The scale of development requires a transport strategy that seeks to manage travel demand from the outset, whilst providing appropriate access to serve the development and addressing the impact of the development trips on the existing local and SRN.

- 12.2.10 In accordance with the PINS Scoping Opinion report (ref TR050006), the assessment of the transport impact of the development is based on a comprehensive transport modelling exercise, for which a Transport Working Group was established to oversee the process. The Transport Working Group comprises representatives from the two highway authorities described above and Highways England's term consultant Aecom, along with specialist transport consultants acting for Roxhill (Junction 15) Ltd.
- 12.2.11 Buckinghamshire County Council and South Northamptonshire Council requested in the Scoping Opinion that they join the Transport Working Group. These requests were followed up with each Council. This included meeting with Buckinghamshire County Council on the 13<sup>th</sup> of March 2017 to discuss the proposed development, its likely impacts within Buckinghamshire, and their involvement in the Transport Working Group. Following this meeting, and having gained a fuller understanding of the role of the Transport Working Group, Buckinghamshire County Council confirmed that their representation on the group was not necessary. It was agreed separately with South Northamptonshire Council that they were appropriately represented on the Transport Working Group via the attendance of the NCC highway officer representing South Northamptonshire Development Control.
- 12.2.12 The Transport Working Group has met on an approximately monthly basis since July 2016, with continuing regular meetings planned up to submission of the DCO application.
- 12.2.13 NCC and Highways England have agreed, via the Transport Working Group, the assessment methodology, scope and key modelling inputs via a series of transport related documents and Technical Notes. The agreed documents, along with additional Technical Notes, detailed assessments, and outputs are appended to this ES, which together comprise the TA for the scheme, as listed in Table 12.2 below. The documents agreed with the Transport Working Group are marked with an asterisk.

Table 12.2 Transport Assessment documents appended to the ES

Document name	Ref/Description	Appendix
Framework Travel Plan	FTP	12.1
Public Transport Strategy	PTS	12.2
Traffic surveys (baseline)	traffic surveys	12.3
PRoWs (baseline)	drawings	12.4
Personal Injury Accident Assessment (baseline)	road safety	12.5
TN1: Transport Modelling Methodology*	strategic modelling	12.6
TN2: Trip Generation*	strategic modelling	12.7
TN2 Addendum: Opening Year Trip Generation*	strategic modelling	12.8
TN3: HGV Trip Distribution*	strategic modelling	12.9
TN4: Scope of Highway Design Work*	design	12.10
TN5: M1 Junction 15	detailed modelling	12.11
TN6: M1 Junction 15A	detailed modelling	12.12
TN7: A45 Queen Eleanor Gyratory and Wootton Interchange	detailed modelling	12.13
TN8: A508 Corridor	detailed modelling	12.14
Road Bypass Options Report	detailed modelling	12.15
Highway Mitigation Overview	drawings	12.16
General Arrangement Drawings	drawings	12.17
WSP TN: NSTM2 Light Vehicle Trip Distribution*	strategic modelling	12.18

Document name	Ref/Description	Appendix
NSTM2: M1J15 Northampton Gateway SRFI Local Model Validation Report*	strategic modelling	12.19
NSTM2: Reference Case Assumptions*	strategic modelling	12.20
NSTM2: Modelling outputs presentation	strategic modelling	12.21
M1 J15 & J15A VISSIM Model - Local Model Validation Report*	micro-simulation	12.22
M1 J15 & J15A VISSIM Model - Local Model Validation Report Addendum*	micro-simulation	12.23
VISSIM Outputs	micro-simulation	12.24
A45 Geometry and Design Standard	design	12.25
Construction methodology	construction	12.26
Road to Rail Freight modal shift calculations	modal shift	12.27

### Assessment methodology

- 12.2.14 To provide a robust assessment of the proposed development transport impacts in the future assessment year, it was agreed with the Transport Working Group that a two-stage assessment is followed:
- Strategic Modelling – to deal with issues such as traffic re-assignment, link capacity, congestion and the cumulative impacts of committed future developments and network improvements, and provide traffic data;
  - Detailed junction modelling using micro-simulation and other industry standard assessment tools, to demonstrate the satisfactory operation of the network with the proposed development and associated highway works in place.
- 12.2.15 The Transport Working Group required that at a strategic level, the transport effects of the proposed development scheme be modelled using NCC’s transport model, known as the Northamptonshire Strategic Transport Model (NSTM2). WSP Ltd maintain and operate the NSTM2 on NCC’s behalf and have undertaken all strategic modelling work, with outputs provided to the Transport Working Group. Further details regarding the NSTM2 assessment work is provided at Section 12.5 of this ES.
- 12.2.16 The NSTM2 has undergone a recent major update, including a full calibration and re-validation process, including all appropriate committed and allocated development, thereby ensuring consistency with the adopted Core Strategy Local Plans. In addition, a comprehensive process of calibration and re-validation of the areas of the model to the south of the M1 and the surrounding villages has been undertaken to ensure that the existing baseline conditions in these areas are accurately understood and represented in the NSTM2.
- 12.2.17 It was agreed with the Transport Working Group that the multi-modal facility of the NSTM2 would not be used. Instead appropriate modal split targets for public transport and other sustainable travel modes are identified in the FTP (Appendix 12.1) and a separate Public Transport Strategy (Appendix 12.2) has been developed. This approach, with no allowance for modal shift in the modelling ensures a robust, or ‘worst-case’ approach.
- 12.2.18 The assessment scenarios to be modelled using the NSTM2 were agreed with the Transport Working Group, as described in Technical Note 1 (Appendix 12.6) and summarised at Table 12.3, below.
- 12.2.19 An iterative assessment and design process has been followed, in which the need for highway interventions have been identified using the NSTM2, by comparing the

modelling outputs from the difference assessment scenarios. This has then been followed by detailed analysis using industry standard assessment tools and, in the case of the SRN, micro-simulation, to develop appropriate highway mitigation works. This work is described at Section 12.5 of this ES Chapter.

Table 12.3: Transport modelling assessment scenarios

Scenario	ID	Description
Reference Case	B1	2021 Opening Year
	C1	2021 DfT 02/2013 Circular Compliant
	D1	2031 Future Year
Development Case without highway mitigation works	E1	2021 Opening Year
	F1	2021 DfT 02/2013 Circular Compliant
	G1	2031 Future Year
Development Case with highway mitigation works	H1	2021 Opening Year
	I1	2021 DfT 02/2013 Circular Compliant
	J1	2031 Future Year

- 12.2.20 The highway mitigation works have then been coded into the NSTM2, and the model re-run to confirm that the proposed highway improvements achieve the required outcomes as part of the iterative process referred to above.

### 12.3 **PLANNING POLICY CONTEXT**

#### **General**

- 12.3.1 This section considers relevant national and local policies together with guidance on transport and land use.

#### **Committed development and infrastructure schemes**

- 12.3.2 The main site is not subject to any extant planning consents of significance in terms of traffic generation. On this basis, no account of any existing land uses at the main site has been made.

- 12.3.3 There are a significant number of development schemes with planning consent in vicinity of the site, whose traffic effects need to be taken into account. In addition, committed or planned highway infrastructure, and other major development sites that are currently the subject of planning applications but are not yet committed, have been included where agreed with the Transport Working Group. These schemes, together with relevant and potential Local Plan allocations have been incorporated into the NSTM2 modelling.

- 12.3.4 The committed schemes include the Hardingstone SUE and Daventry International Rail Freight Terminal, as requested by Northampton Borough Council in their Scoping Opinion response. The inclusion of the proposed development at Mere Lane (reference 15/01531/OUT), the third site noted by Northampton Borough Council, was discussed with the Transport Working Group. It was agreed that this would be accounted for via TEMRPO traffic growth, as it was too remote from the proposed development site to require site specific modelling.

#### **Relevant Transport Policy**

- 12.3.5 The key transport-related policies and guidance of relevance to the proposed development are contained within the following documents:

- National Policy Statement for National Network (December 2014);
- National Planning Policy Framework (March 2012);

- National Planning Practice Guidance: Travel Plans, Transport Assessments and Statements in Decision Making (2014);
- DfT Circular 02/2013 'The Strategic Road Network and the Delivery of Sustainable Development';
- West Northamptonshire Joint Core Strategy Local Plan Part 1 (December 2014);
- South Northamptonshire Local Plan Saved Policies (December 2014);
- Northamptonshire Transportation Plan (March 2012), including:
  - Northamptonshire Road Freight Strategy (December 2013);
  - Northamptonshire Major Roads Strategy (December 2013)
  - Northamptonshire Bus Strategy requirements (January 2013).
- A45/M1 Northampton Growth Managements Scheme (March 2012);
- Highways England Road Investment Strategy 2015 to 2020 (March 2015);
- Design Manual for Roads and Bridges (DMRB);
- Northamptonshire Parking Standards (September 2016).

12.3.6 The policy framework of the transport-related policies listed above which are relevant to this TA are reviewed in the following sections.

#### **The National Policy Statement for National Network (NPSNN)**

12.3.7 The purpose of the NPSNN is to set out the importance of delivering Nationally Significant Infrastructure Projects (NSIPs) on the national road and rail networks in England to support national and local economic growth and regeneration. Hence, the NPSNN provides direction for NSIPs, including SRFIs, from a planning and design perspective, which The Secretary of State will use to decide whether to consent NSIP applications.

12.3.8 The overall strategic aims of the NPSNN and the National Planning Policy Framework (NPPF) are consistent due to both documents' over-arching theme to support sustainable development. However, the NPPF is not intended to contain specific policies for NSIPs. The NPSNN assumes that function and provides the Transport Policy which will guide individual NSIPs brought under it. The NPSNN provides guidance and imposes requirements on matters such as good scheme design, as well as the treatment of environmental impact.

12.3.9 The Government's vision and strategic objectives for the national networks is described on page 9 of the NPSNN as follows:

*"The Government will deliver national networks that meet the country's long-term needs; supporting a prosperous and competitive economy and improving overall quality of life, as part of a wider transport system. This means:*

- *Networks with the capacity and connectivity and resilience to support national and local economic activity and 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."*

12.3.10 A primary concern relating to the national network is the continued dependency on the strategic road network as "...congestion is forecast to grow fastest on the strategic road network" (paragraph 2.19). Paragraph 2.43 of the NPSNN identifies the importance of SRFIs to "...enable freight to be transferred between transport modes, thus allowing rail to be used to best effect to undertake the long-haul primary trunk journey, with other modes (usually road) providing the secondary (final delivery) leg of the journey". Paragraph 2.44 states "The aim of a 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.”*

- 12.3.11 To facilitate this modal transfer, the NPSNN states that a network of SRFIs is needed across the regions, to serve regional, sub-regional and cross-regional markets. In all cases it is essential that these have good connectivity with both the road and rail networks.
- 12.3.12 The Government has therefore concluded that “...*there is a compelling need for an expanded network of SRFIs*” (paragraph 2.56).
- 12.3.13 Given the strategic nature of large rail freight interchanges NSPNN states at paragraph 4.84 “...*it is important that new SRFIs or proposed extensions to RFI upgrading them to SRFIs, are appropriately located relative to the markets they will serve, which will focus largely on major urban centres, or groups of centres, and key supply chain routes. Because the vast majority of freight in the UK is moved by road, proposed new rail freight interchanges should have good road access as this will allow rail to effectively compete with, and work alongside, road freight to achieve a modal shift to rail. Due to these requirements, it may be that countryside locations are required for SRFIs.*”
- 12.3.14 NPSNN advises at paragraph 4.88 that a SRFI development “...*should provide 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.*”
- 12.3.15 NPSNN states at paragraph 4.89 that “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.”
- 12.3.16 The NPSNN provides specific advice for SRFI development, stating that a project with significant transport impacts should include a Transport Assessment, using the WebTAG methodology stipulated in DfT guidance. If a development is subject to EIA and is likely to have significant environmental impacts arising from impacts on transport networks, the applicant’s environmental statement should describe those impacts.
- 12.3.17 Paragraph 5.208 states “Where appropriate, the applicant should prepare a travel plan including management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport and sustainable modes where relevant, to reduce the need for any parking associated with the proposal and to mitigate transport impacts.”
- 12.3.18 For schemes impacting on the Strategic Road Network, paragraph 5.209 states that “...*applicants should have regard to DfT Circular 02/2013 ‘The Strategic Road Network and the delivery of sustainable development’ (or prevailing policy).*”
- 12.3.19 Regarding SRFIs, paragraph 5.213 states: “Projects may give rise to impacts on the surrounding transport infrastructure including connecting transport networks. The Secretary of State should therefore ensure that the applicant has taken reasonable steps to mitigate these impacts. Where the proposed mitigation measures are

*insufficient to reduce the impact on the transport infrastructure to acceptable levels, the Secretary of State should expect applicants to accept requirements and/or obligations for funding infrastructure and otherwise mitigating adverse impacts on transport networks...”*

- 12.3.20 Paragraph 5.214 states *“Provided that the applicant is willing to commit to transport planning obligations and, to mitigate transport impacts identified in the WebTAG transport assessment (including environment and social impacts), with attribution of costs calculated in accordance with the Department’s guidance, then development consent should not be withheld. Appropriately limited weight should be applied to residual effects on the surrounding transport infrastructure.”*
- 12.3.21 Paragraph 5.215 sets out that *“mitigation measures for schemes should be proportionate and reasonable, focussed on promoting sustainable development”*, and at paragraph 5.216 that *“where development would worsen accessibility such impacts should be mitigated so far as reasonably possible”* and that *“there is a very strong expectation that impacts on accessibility for non-motorised users should be mitigated”*. Paragraph 5.218 sets out that *“...travel planning should be undertaken for all major developments which generate significant amounts of transport movement”*.
- 12.3.22 Having regard to the NPSNN, the proposed SRFI will, from the outset, be able to accommodate 4 trains per day, expanding to 16 trains per day as demand increases, and provide direct rail access to a significant proportion of the on-site warehousing. It will be capable of accommodating 775m long trains. The access strategy includes measures to connect the main site with the adjacent community and sustainable travel network and includes a separate public transport strategy to ensure, along with the measures set out in the FTP, that travel by sustainable modes are maximised as far as is practicable. Highway mitigation works are proposed to reduce the impact of the development trips on the transport infrastructure to acceptable levels, with the proposed M1 Junction 15 and A45 improvements directly related to the suitability of the site for development of an SRFI.

### **The National Planning Policy Framework (NPPF)**

- 12.3.23 As referred to above, the NPSNN, rather than the NPF, provides the national policy context for NSIP applications. However, for context with regard to transport issues paragraph 32 of the NPPF guides decision makers to apply the following key principles:
- *“the opportunity for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
  - *safe and suitable access to the site can be achieved for all people; and*
  - *improvements can be undertaken within the transport network that cost effectively limits the significant impacts of the development. Developments should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.”*
- 12.3.24 There is a requirement to ensure that development generating significant demand for travel is located where it can be accessed by sustainable travel modes and where efficient delivery of goods and supplies can be accommodated.

### **National Planning Practice Guidance (NPPG): Travel Plans, Transport Assessments and Statements in Decision Making**

- 12.3.25 This document sets out the methodology and requirements for Travel Plans, Transport Assessments and Statements for developments. In determining whether a Transport Assessment and Travel Plan will be needed for a proposed development,



this document states that local planning authorities should take into account the following considerations:

- the Transport Assessment and Statement policies, and the Travel Plan policies (if any) of the Local Plan;
- the scale of the proposed development and its potential for additional trip generation;
- 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 Transport Assessment and Travel Plan (e.g. minimising traffic generated at peak times); and
- relevant national policies, including the decision to abolish maximum parking standards for both residential and non-residential development.

### **DfT Circular 02/2013**

- 12.3.26 DfT Circular 02/2013 'The Strategic Road Network and the Delivery of Sustainable Development' sets out Highways England's (then Highways Agency) policy on how it will engage with local communities and the development industry to deliver sustainable development and maintaining the principal purpose of the SRN.
- 12.3.27 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.
- 12.3.28 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 over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed"*.
- 12.3.29 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"*.
- 12.3.30 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.
- 12.3.31 In assessing development impact, the Circular states, in paragraph 33, that *"only after travel plan and demand management measure have been fully explored and applied will capacity enhancement measures be considered"*.
- 12.3.32 In terms of mitigation of development impact, paragraph 34 states that *"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"*.

### West Northamptonshire Joint Core Strategy (JCS) Local Plan (Part 1)

- 12.3.33 The Core Strategy sets out the long-term vision and objectives for the whole of the area covered by Daventry District, Northampton Borough and South Northamptonshire Councils for the plan period up to 2029, including strategic policies for steering and shaping development.
- 12.3.34 Paragraph 3.6 of the JCS emphasises private sector investment is “*fundamental to the successful achievement of the spatial vision and objectives through the spatial strategy*”
- 12.3.35 The JCS has provided 16 ‘Spatial Objectives’ at paragraph 4.63, which provide the direction for the policies of the JCS, with the relevant listed below:
- Objective 1 - Climate Change
    - Promoting sustainable design and construction in all new developments.
    - Ensuring new developments promote the use of sustainable travel modes.
  - Objective 2 - Infrastructure and Development.
    - Ensure social, physical and green infrastructure is adequately provided to meet the needs of people and business in a timely and sustainable manner, in response to regeneration and new development in West Northamptonshire.
  - Objective 3 - Connections
    - Encourage the use of sustainable travel and consequently promote developments which will maximise the use of alternative travel modes in order to combat congestion, reduce carbon emissions and address social exclusion for those in both rural and urban areas who do not have access to a private car.
  - Objective 8 - Economic Advantage
    - Strengthen and diversify West Northamptonshire’s economy by taking advantage of West Northamptonshire’s internationally well-placed location, strategic transport network and proximity to London and Birmingham.
- 12.3.36 The JCS notes at paragraph 8.16 that “*...in identifying sites for further strategic distribution development regional advice is that priority should be given to sites that can be served by rail freight and operate as intermodal terminals. At the regional level there is strong support for further rail related strategic distribution development and that further provision should be made in the West Northamptonshire area*”.

### Northamptonshire Transportation Plan (NTP)

- 12.3.37 The third NTP was adopted in March 2012 and sets out NCC’s long-term visions and objectives for transport and the policies to implement the objectives. The NTP encompasses a selection of ‘Daughter Documents’ and consists of Town and Thematic Strategies. The NTP’s ultimate aim is to accompany the efforts of the Local Enterprise Partnerships in the area to secure the delivery of the JCS and provide a clear transport strategy for Northamptonshire.
- 12.3.38 The overall vision of the Transportation Plan is provided at page 17 of the NTP, it states: “*For Transport and Travel to contribute towards making Northamptonshire a great place to live and work, through creating tangible transport options to satisfy individual needs and to encourage more sustainable travel. The transport system will provide fast and efficient movement of people and goods, and will be accessible for all. Expanding networks and capacity of networks in Northamptonshire will be fully integrated into new developments and regeneration areas to support more sustainable communities. Economic growth and prosperity is a top priority for Northamptonshire and connectivity has a vital role to play in encouraging businesses to locate to the area, and getting people to work and services such as education and*

*health, as well as to leisure activities and for shopping. Improved technology and local accessibility will reduce the need to travel, whilst supporting economic growth, within a low carbon environment and Northamptonshire will become an exemplar for the latest developments in information technology, fuel technology, and new forms of transport. The county council will work in partnership with all stakeholders and the wider community to deliver this transport vision and strategy”.*

- 12.3.39 The following policies are given at pages 58 and 68 of the NTP relevant to the proposed development.
- 12.3.40 *“Strategic Policy 2: We will support the introduction of effective and attractive sustainable transport options that will encourage lasting modal shift in Northamptonshire. We have set two targets for modal shift, based on 2001 Census journey to work data, to achieve by 2031:*
- *A reduction of 5% in single occupancy car journeys to work from the existing built up areas of the towns*
  - *A reduction of 20% in single occupancy car journeys to work from new developments.”*
- 12.3.41 *“Strategic Policy 3: We will ensure that all new developments are well connected by public transport and walking, cycling and motor vehicles routes, to the existing transport network or one that can be reasonable expected to be created – this will allow ease of movement between the development and existing built up areas and provide access to employment and key services.”*
- 12.3.42 *“Strategic Policy 19: We will work to improve journey times and reliability on the highway and rail networks in order to increase the efficiency of freight movements and facilitate the local economy to grow.”*

#### **Northamptonshire Road Freight Strategy (NRFS)**

- 12.3.43 Northamptonshire Road Freight Strategy (NRFS) is a ‘daughter document’ of the NTP and prioritises the existing road freight implications and measures required to mitigate such impacts.
- 12.3.44 In the strategic context, the NRFS states at page 15 that: *“The continuing choice of Northamptonshire as a location for distribution activity is dependent on continuing good transport links. Congestion causes delay and leads to unreliability in journey times, which has far-reaching negative consequences for distribution operation. The performance of the strategic road network is therefore of critical consequence. If, or when, it becomes severely congested it poses a threat that could lead to companies re-locating elsewhere. It can also cause rat-running on to less suitable routes”.*
- 12.3.45 The NRFS provides relevant material to the proposed development because the Strategic Freight Network identifies the A45, A508, and A43 located to the immediate north, east, and south of the main site as ‘strategic lorry routes’. Consequently, these respective routes, as well as the M1 Motorway, are prominent corridors for heavy goods vehicles (HGV) movements within Northamptonshire.
- 12.3.46 The NRFS contributes to Northamptonshire’s vision given at page 12, to *“encourage the sustainable distribution of goods through minimising road based travel and the associated environmental impacts of road haulage, whilst maintaining economic efficiency and helping to improve the quality of life for the residents of Northamptonshire”.*
- 12.3.47 To fulfil Northamptonshire’s vision of an enhanced road freight network, the NRFS has set out at page 12 six objectives which will provide the framework of the document:

- To mitigate measures related to growing demand;
- To reduce the impacts connected to increased demand;
- To address the problems caused by HGV traffic in both urban and rural locations and to reduce the impact of HGVs on local communities, especially concerning overnight lorry parking;
- To influence movement patterns and encourage sustainable distribution within the county;
- To encourage commercial and economic growth;
- To reduce the environmental impact of freight movement and reduce the impact of HGV's on inappropriate routes e.g. rural areas, areas in Air Quality Management Areas (AQMAs), and areas with weight restrictions; and
- To manage the network to provide ease of movement through the county and to reduce the impacts of congestion and 'lost productive time'.

12.3.48 Further, the NRFS draws out at page 19 the constraints and challenges posed by solely road freight movement, which include:

- The impacts on the SRN as *"lorries are the primary cause of road deterioration"*
- Problems related to *"link speeds, patterns and types of accidents"*
- Challenges to local areas notably; *"pick-up and delivery impacts, parking, noise and vibration emission, bridge strikes and queuing to access delivery sites"*.

12.3.49 Therefore, the relevant constraints of purely road freight operations listed above emphasises the *"ability to move freight by rail is crucial to the economy"* (page 21) which is to become more prominent with the requirements of reducing emissions and congestion.

#### **Northamptonshire Major Roads Strategy**

12.3.50 The Northamptonshire Major Roads Strategy is a 'daughter document' of the NTP and concentrates on the main roads outside our larger towns, and complements the Town Transport Strategies which cover the road network within the larger towns.

12.3.51 The Northamptonshire Major Roads Strategy shows how the Major Roads Strategy ties in with the six over-arching Northamptonshire Transportation Plan. Notably, the document outlines at page 10:

- Investment in the highway infrastructure will be important to meet the transport demands of the future, including those arising from new development;
- Highway improvements help to discourage traffic from using unsuitable routes which have an adverse effect on local communities;
- Highway improvements will be planned to make suitable provision for all road users, not just the car;
- Highway improvements can have a significant impact on business, by shortening journey times and improving journey time reliability for key movements;
- Highway improvements can help to reduce congestion and the environmental impact of traffic;
- Highway improvements need to be developed that offer the best value for money in tackling the problems identified.

#### **Northamptonshire Bus Strategy**

12.3.52 The Northamptonshire Bus Strategy is 'daughter document' of the NTP. Page 7 of the NTP outlines that *"Expanding networks and capacity of networks in Northamptonshire will be fully integrated into new developments and regeneration areas to support more sustainable communities"*.

- 12.3.53 Therefore, as set out at page 10, the Northamptonshire Bus Strategy aims amongst other objectives to *“increase the attractiveness of bus travel to encourage modal shift and allow the housing growth proposed in the county to be accommodated”*. In doing so, the bus network will provide benefits such as reduced congestion and carbon emissions, and the benefits from ensuring people can have good access to jobs and services and contribute to the economy.
- 12.3.54 It outlines that in all proposals where Transport Assessments are required, developers shall clearly set out the number of trips expected to be generated by each mode, including by bus. Credible mode shares, when compared with the existing census-derived data for journey-to-work mode, should be set out, having regard to the level of access to high quality bus services.

#### **A45/M1 Northampton Growth Management Scheme (NGMS)**

- 12.3.55 Highways England (formerly the Highways Agency) in partnership with NCC and other local authorities in west Northamptonshire undertook a study of the A45/M1 around Northampton. Following consideration of the forecast strategic road network impacts, it was concluded that the A45/M1 Northampton Growth Management Scheme (NGMS) should be implemented.
- 12.3.56 Central to potential impacts of developments on the Strategic Road Network (SRN) is a study by the then Highways Agency of the SRN around Northampton, notably the M1 and A45. As reported at paragraph 2.2, the study concluded that *“...there is no feasible and environmentally acceptable solution to accommodating potential peak period traffic demand through large scale capacity improvements to the A45 and its numerous junctions”*.
- 12.3.57 The study determined the NGMS should be put into operation to satisfactorily cater for the projected development growth (to 2026). Paragraph 2.3 states that the *“NGMS has been designed to ensure that vehicular access and egress onto the SRN is managed effectively and that the safety and free flow of traffic on the A45 and M1 is maintained over the plan period”*
- 12.3.58 The NGMS includes a list of proposed schemes (Annex 1) which will formulate the overall strategy for improvements to the A45/M1 corridor, consequently accommodating future developments and mitigating the impacts of the potential increase of traffic flows of the SRN in the Northampton area. The schemes comprise:
- M1 J15:
    - Ramp metering on northbound on-slip
    - Exit to A45 expanded from two to three lanes
    - Creation of fourth lane to the M1 southbound off-slip
    - Road markings to be upgraded for the eastern bridge section.
  - A45 Wootton Interchange:
    - Ramp metering to be introduced for the northbound on-slip.
  - A45 Queen Eleanor Interchange:
    - Upgraded MOVA traffic signals system to be proposed for all existing traffic signals.
    - Introduce ramp metering for the northbound and southbound on-slips
    - For the northbound on-slip, the short merge will be removed and traffic will access the A45 mainline only through the lane gain facility
    - London Road approach to be signalised (including circulatory carriageway)
    - Widening Newport Pagnell Road (B526).
  - A45 Brackmills Interchange:
    - Upgraded MOVA traffic signals system for all existing traffic signals

- Traffic signals at both the Caswell Road approach and entry to the A45 southbound on-slip (from Pavilion Drive).
  - A45 Barnes Meadow Interchange:
    - Ramp metering on northbound on-slip
    - Removal of short merge and traffic can only access A45 mainline through the northbound lane gain facility
    - MOVA controlled traffic signals.
  - A45 Lumbertubs Interchange:
    - Upgraded MOVA controlled traffic signals system to be proposed for all existing traffic signals
    - Ramp metering to be planned for both northbound and southbound on-slips
    - Removal of short merge on southbound on-slip road meaning traffic can access the A45 mainline only through the lane gain facility.
  - A45 Great Billing Interchange:
    - Ramp metering at both northbound and southbound on-slips
    - MOVA controlled traffic signals.
- 12.3.59 The A45/M1 NGMS Memorandum of Understanding provides an agreed basis for supporting the funding and delivery of the NGMS, including through negotiated contributions secured by Section 106 planning obligations. It is an agreement between Highways England, NCC and the Local Planning Authorities.
- 12.3.60 Except for the works at M1 Junction 15 (which are not included following advice from Highways England), all other NGMS works are included for in the NSTM2.

#### **Highways England Road Investment Strategy (2015-2020)**

- 12.3.61 The purpose of Highways England's Road Investment Strategy (RIS) is to focus on the Strategic Road Network (SRN) by outlining *"the foundations for a better future – foundations on which future Road Investment Strategies will build, as we strive to achieve our vision of a revolutionised SRN that will underpin progress and prosperity for generations to come"* (page 9).
- 12.3.62 The RIS highlights the impact of increased congestion on the SRN, including an annual cost of £3.7 billion for the freight industry and indicated *"traffic density on UK motorways is 113 million vehicles per mile of road compared to 47 million in Germany and 39 million in France"* (page 19).
- 12.3.63 Therefore, central to the RIS is the £15 billion investment which *"has been committed to road investment between 2015 and 2021, with annual funding on enhancements tripling to £3 billion per year by 2021"* (page 19).
- 12.3.64 Below lists the schemes in vicinity of the site that are described in the current RIS 2015 to 2020:
- M1 Junctions 13-19 ) - The scheme upgrades the M1 to Smart Motorway between Junction 13 (Milton Keynes South) and Junction 19 (M6 Catthorpe interchange). Junction 13 to 16 is under construction and Junctions 16 to 19 commences in March 2018. junction (scheme newly announced in this RIS) - Improvement to the Abthorpe junction on the A43 near Towcester. Along with the A5 Towcester relief road, the scheme supports the Towcester southern extension and helps remove traffic from the centre of the town.
  - A5 Towcester Relief Road (scheme committed subject to other contributions) - A new link road to the south of Towcester, agreed as part of the Towcester southern expansion, allowing traffic to bypass the town centre.
  - A45/A6 Chowns Mill junction improvement (scheme newly announced in this RIS) - Upgrade of the Chowns Mill junction between the A45 and A6 in Northamptonshire.

- A45 Thrapston to Stanwick (scheme developed for next road period) - Upgrading the existing single carriageway section of the A45 between Stanwick and Thrapston, so the A45 can provide a continuous Expressway between the A14 and the M1.

12.3.65 In addition to the above, Highways England announced a £220 million fund in March 2017 for junction upgrades, roundabout improvement and better traffic signalling for traffic hotspots. This include £3.3 million for improvements to the A5/A408 Old Stratford roundabout. Details of this scheme were obtained from Highways England and are included in the NSTM2.

#### **Design Manual for Roads and Bridges (DMRB)**

12.3.66 The purpose of the DMRB is to provide requirements, advice and guidelines for the SRN and is therefore mandatory for all works undertaken on motorway and all purpose trunk roads. In preparing the proposed highway mitigation works associated with the development the DMRB guidelines has been applied including relevant Interim Advice Notes (IANs).

#### **Northamptonshire Parking Standards (September 2016)**

12.3.67 NCC adopted new parking standards in September 2016. The previous countywide parking standards applied a maximum car parking space allowance, as car parking was used as a demand management tool.

12.3.68 The aims of the September 2016 parking standards document are provided at page 2, and include *“to support the provision of sufficient, usable parking within development without compromising highway safety whilst supporting good design and sustainable travel.”* The new standards therefore provided minimum car parking requirements. The new standards are the relevant guidance for the proposed development and have therefore been applied.

#### **Overall Compliance with Policy**

12.3.69 The proposed development and supporting transport documents listed at Table 12.2 have been developed with due regard to the above policy documents, with emphasis given to the guidance set out in the NPSNN. The proposals include improvements and alterations to both the SRN and local highway network, as well as to sustainable infrastructure and transport services.

12.3.70 The policy documents state that development should be sited in sustainable locations with access to existing facilities and services. In the case of an SRFI it is also necessary to identify a suitable location to provide the required connection to the rail freight network, with excellent connections to the SRN. The proposed development site achieves these requirements and, as such, meets with the Government Objectives in NPSNN and national, regional and local transport policies and objectives summarised in this Chapter. It can therefore be concluded that the proposed development meets relevant policy guidelines and specific requirements in terms of transport.

## **12.4 BASELINE CONDITIONS**

### **Site location and context**

12.4.1 The main site is located to the southwest of M1 Junction 15, approximately 6km from Northampton Town Centre. It is bounded to the northeast by the M1 Motorway, to the east by the A508, to the north by Collingtree Road, and by the Northampton Loop line

of the West Coast Mainline railway to the west. The distribution centre of Grange Park sits on M1 Junction 15 to its immediate east, and the recently approved Sustainable Urban Extension at Collingtree is located to the immediate north of the M1.

- 12.4.2 In the local context, Northampton is served by three junctions of the M1, being; Junctions 15, 15A and 16. The A45 is also the main route to the east of England via the A14, resulting in the route forming an important artery for local and national traffic.

### **M1 Motorway**

- 12.4.3 The M1 Motorway is a strategic route for local, regional and international traffic and it plays an important role as a direct motorway between the north and south and a major route connecting major conurbations. Near Junction 15 it comprises a standard 3-lane motorway with hard shoulders. This section of the M1 is congested during the weekday morning and evening peak hours and at other times when traffic flows are heavy.

- 12.4.4 Works to up-grade the M1 between Junctions 19 to 16, to all lane running are currently ongoing as part of the Highways England Smart Motorway Project. These works are due to be completed in 2017 and will reduce congestion of this section of the M1. To complement that scheme, Highways England have confirmed works to extend all lane running to include M1 Junctions 16 to 13. The design of the M1 Junction 16 to Junction 13 scheme is expected to be completed in 2017, with work commencing in 2018 followed by a 32-month construction programme. However, whilst the works may include reconfiguration of the slip-roads, they do not include improvements to the junctions themselves.

### **M1 Junction 15**

- 12.4.5 M1 Junction 15 was re-built in 1998 from a two-bridge roundabout to the current single bridge arrangement which passes over the M1 mainline. The final layout of the junction was a tear-drop arrangement incorporating a series of tight radii. The constrained geometry and high traffic demand, particularly during peak times, means the junction is often very heavily congested. Queue surveys undertaken in May 2014 showed that average queue lengths on the A45 approach reach approximately 160 to 200 metres in the morning and evening peak periods, with average queuing on the A508 approach observed to be approximately 240 metres in the morning peak and approximately 420 metres in the evening peak.

- 12.4.6 The M1 off-slips and A45 approach to Junction 15 are controlled by traffic signals, with the A508 and Saxon Avenue approaches operating under a give way arrangement. The junction can be difficult to navigate, particularly the south roundabout where the road markings are worn. Further, the lane allocation around the three-lane circulating carriageways at the A508 and A45 approaches are confusing; for example, vehicles from the M1 northbound off-slip can turn right in all three lanes despite there being two exit lanes onto M1 northbound, whilst vehicles from the bridge can only turn right in two lanes, making it difficult for vehicles at the A508 give way line to judge entry onto the roundabout.

- 12.4.7 A shared use footway/cycleway is provided along the northern side of the junction, connecting with narrow footways on the A45 and the A508. A separate footway/cycleway link is provided across the northern part of the junction, to connect with the footway/cycleway on the northern side of Saxon Avenue. Except for the M1 northbound on-slip, which is provided with a controlled signalised crossing, all other crossings at the junction are uncontrolled.



- 12.4.8 As described in Section 12.3, Highways England, as part of their M1/A45 NGMS have identified an improvement scheme for Junction 15. The scheme could potentially provide a capacity improvement of around 9% at the junction. However, this would still leave the junction over capacity at current traffic levels, and Highways England advised that there is no certainty whether an improvement at Junction 15 would be delivered and that this scheme should not be included within the NSTM2.

#### **M1 Junction 15A**

- 12.4.9 M1 Junction 15A is a grade-separated dumb-bell interchange with northern and southern roundabouts connected by a dual carriageway link road which passes underneath the M1 mainline. M1 Junction 15A connects the A43 to the south and the A5123 to the north, which provides access to Northampton. M1 Junction 15A also provides access to the Swan Valley industrial estate and the Northampton Service Station via a series of connected roundabouts.
- 12.4.10 The northern roundabout has three approaches, all providing two lanes and are priority controlled. There is also a stub arm to the east which was provided as a potential access to the Milton Ham development site. However, that site does not currently have a valid planning permission.
- 12.4.11 The southern roundabout also has three approaches. The M1 northbound off-slip approach has a single lane, with a give way entry to the roundabout. The A43 north and south approaches have two lanes and have give way entries to the roundabout. There is a gated access to agricultural land to the east of the southern roundabout.
- 12.4.12 There are no NMU facilities at the junction, although the public footpath KX2 crosses the A43 approximately 70m south of the junction.
- 12.4.13 At peak times, the M1 northbound and southbound off-slips are susceptible to congestion, with queueing and delay experienced on the M1 northbound off-slip especially. Traffic and queue surveys were undertaken on 10 March 2016 which showed that average queue lengths on the M1 northbound off-slip approach reach approximately 160 to 200 metres in the evening peak period. Queueing on the A5123 and A43 approaches were shown to be less significant in both peak periods.

#### **A45**

- 12.4.14 The A45 London Road forms the main arterial route between the M1, Northampton and the east of England and is of dual carriageway standard throughout the locality. It is subject generally to the national speed limit beyond the immediate confines of Junction 15, where it is subject to a 40mph speed limit. The road carries large volumes of traffic throughout the day and is particularly busy during peak times.
- 12.4.15 A footway is provided along the northern side of the road, although on the approach to Junction 15 there is also a footway on the southern side.
- 12.4.16 The NGMS recognises the importance of the A45 in helping to support growth and sustain the economy throughout the region, and is agreed with the neighbouring planning authorities and NCC for its future management and safe-guarding. The proposals comprise a series of demand management measures such as signalisation and ramp-metering to limit congestion along the A45 at peak times. The NGMS contains only limited proposals for improving M1 Junction 15, and as described above, Highways England have advised that there is no certainty when that improvement would be delivered, as other NGMS junctions have been identified as priorities.

- 12.4.17 As a result, and the exclusion of any significant improvements at M1 Junction 15 from the Smart Motorway Project, M1 Junction 15 will inevitably become more congested in the future.

### **A508**

- 12.4.18 Generally rural in nature, the A508 forms a link with the A5 to the south and M1 Junction 15 to the north. It is an important part of the principal road network and forms part of the SRN diversion route for the M1, A45 and A5. It bisects the village of Roade and passes adjacent to the smaller village of Grafton Regis. The A508 is a single carriageway road. In the vicinity of the main site it has a single narrow footway on the western side of the road that links with M1 Junction 15.
- 12.4.19 The speed limit varies along the A508, with the northern and southern sections of the road generally derestricted, with 30mph speed limits present through Roade and Grafton Regis, and a 50mph speed limit on the sections to the north and south of Roade, where there is a higher concentration of bends and priority controlled junctions.
- 12.4.20 To the south of the main site, Blisworth Road (becoming Courteenhall Road to the west) forms a simple priority controlled T-junction with the A508. Drivers turning right from the A508 into Blisworth Road block southbound traffic on the A508, leading to queuing traffic and delays. There is a concern from residents that drivers use Blisworth Road to 'rat-run' between the A508 and the A43 and vice versa, passing through Blisworth village.
- 12.4.21 To the south of the main site, the A508 passes through the village of Roade, where the alignment is constrained at the Stratford Road/High Street mini-roundabout and over the narrow railway bridge. Stop-start traffic is frequently seen and at peak times and queues of stationary traffic can quickly develop. Heavy goods vehicles travelling in opposing directions on the A508 bridge over the railway are often obliged to give way to each other as they are not able to pass safely on the bridge structure itself.
- 12.4.22 Signal controlled crossings are provided at three separate locations within Roade providing priority for pedestrians wishing to cross. A number of at grade pedestrian crossings with central refuges are also provided within Roade allowing pedestrians to cross the A508 in two stages. There are no pedestrian crossing facilities provided in Grafton Regis.
- 12.4.23 To the south of Roade, the A508 has a staggered crossroads junction with Rookery Lane and Ashton Road. Immediately to the south of the junction, there are a series of bends in the A508, which are a known accident hotspot.

### **Baseline traffic surveys**

- 12.4.24 To inform the baseline position, a total of 42 traffic counts have been undertaken as part of the NSTM2 calibration and re-validation exercise of the area to the south of the M1. The locations of the traffic counts are shown in the figure provided in Appendix 12.3, and have included:
- 39 two-week automatic tube counters undertaken in two batches between 19<sup>th</sup> and 3<sup>rd</sup> October 2016 and 10<sup>th</sup> and 23<sup>rd</sup> October 2016.
  - Full morning and evening peak period turning counts undertaken on 22<sup>nd</sup> September 2016 at:
    - A508/Northampton Road junction in Roade
    - Stratford Road/High Street mini-roundabout in Roade
    - A5/A508 Northampton Road roundabout.

- 12.4.25 In addition, baseline traffic and NMU data is available from the following traffic surveys:
- M1 Junction 15: one-week automatic tube counters on each approach arm to M1 Junction 15, undertaken between 1<sup>st</sup> May 2014 and 7<sup>th</sup> May 2014.
  - M1 Junction 15: full peak hour turning count at M1 Junction 15 undertaken on 1<sup>st</sup> May 2014.
  - M1 Junction 15 and 15A: count data provided by Highways England, undertaken on 10<sup>th</sup> March 2016.
  - AM and PM peak period ANPR Camera surveys at the locations shown on the Appendix 12.3 on 21<sup>st</sup> and 22<sup>nd</sup> March 2017
  - M1 Junction 15, A508 and Blisworth Road 12 hour (0700 to 1900hrs) non-motorised user surveys, undertaken on 6<sup>th</sup> and 7<sup>th</sup> of June 2017.

#### **Baseline Conditions for Walking, Cycling and Equestrians**

- 12.4.26 The existing NMU facilities near the main site are described in the FTP, with the PRoW passing through and near the main site shown at Drawing ADC1475/009 at Appendix 12.4.
- 12.4.27 At M1 Junction 15 a shared use footway/cycleway is provided along the northern side of the junction, connecting with narrow footways on the A45 and the footway provided along the western side of the main site frontage with the A508. A separate footway/cycleway link is provided across the northern part of the M1 Junction 15, to connect with the footway/cycleway on the northern side of Saxon Avenue. Except for the M1 northbound on-slip, which is provided with a controlled signalised crossing, all other crossings at the junction are uncontrolled. To the north of the A45/Watering Lane a shared use footway/cycleway is provided alongside the western side of the A45, which connects into the wider Northampton cycle network.
- 12.4.28 Public footpath KX17 provides a connection from Collingtree Close, in Collingtree, over the M1 via the existing bridge and across the main site towards the A508. KX17 links with public footpath KX13 which also crosses the main site, linking with the existing bridge over the West Coast Mainline railway.
- 12.4.29 There are several public rights of way, including footpaths and bridleways, in and around Roade, as shown at Drawing ADC1475/001 at Appendix 12.4. PRoWs KZ30, KZ19, KZ2a, RZ3 and KZ10/RZ1 located on the western side of Roade would be affected by the proposed Roade Bypass.

#### **Baseline Public Transport Conditions**

- 12.4.30 The existing public transport services near the main site are shown at Figures 4.2 and 4.3 of the PTS (Appendix 12.2).
- 12.4.31 At present, the main site has limited accessibility by bus, with Services 33/33a, X4 and X7 operating along the A508 and passing by the main site. The X4 and X7 are both express limited-stop services, with the nearest stop to the main site being in Roade. The services begin operation just after 0600 hours and finish before 2100 hours. The 33/33A is a frequent stop service that runs hourly (combined) between 0900 hours and 1800 hours, serving stops to the south of the main site by Courteenhall Road.
- 12.4.32 This means that there are no services operating by the main site between 0600 hours and 2200 hours, which are key shift changes for the proposed development. Public transport accessibility is better during the day, with a travel time of less than 30 minutes to Northampton Town Centre. However, in line with the Northamptonshire Bus Strategy requirements, an hourly service will not be adequate to meet the needs of employees and make public transport an attractive alternative to the private car. A

comprehensive strategy to ensure that the development site is accessible by bus is therefore proposed. This is discussed further at Section 12.6 of this ES Chapter and within the PTS.

- 12.4.33 The nearest railway station to the site is Northampton, on the West Coast Main Line loop from Birmingham to London. It is within 30 minutes cycle time (4.5 miles) of the main site. The railway station is served by a good service to and from Rugby, at least every 20 minutes at peak times together with further direct trains to London and Birmingham. The opportunity will therefore exist in the future for staff to travel by train to Northampton and complete their journey either by cycle or via the connecting bus services described in the PTS.

#### **Baseline Highway Safety Conditions**

- 12.4.34 An assessment of the accident data on the road network impacted by the proposed development has been undertaken. This is reported in the Personal Injury Accident (PIA) Assessment report provided at Appendix 12.5.

- 12.4.35 PIA data for the for the last five years of operation of was obtained from NCC. The study area comprised:

- M1 Junction 15;
- M1 Junction 15A;
- A45 between M1 Junction 15 and the Queen Eleanor Interchange;
- A508 between M1 Junction 15 and the south of the Stoke Bruerne;
- Road village and Knock Lane/Blisworth Road;
- A508 through Grafton Regis;
- Milton Malsor;
- Blisworth; and
- A43/Towcester Road.

- 12.4.36 The assessment identifies the following clusters and trends in PIAs that suggest existing problems:

- M1 Junction 15 - a cluster of six PIAs at the M1 southbound off-slip/A45 northbound exit at the junction, indicative of congested traffic conditions.
- M1 Junction 15 - a cluster of four PIAs on the A508 northbound approach to the junction, comprising a combination of rear end shut and collisions on the circulatory carriageway and at the give way.
- M1 Junction 15A - a cluster of five PIAs on the A43 eastbound approach to the southern roundabout , and a cluster of three PIAs on the circulatory carriageway passing this approach towards the A43 north.
- Queen Eleanor Interchange – small clusters of PIAs on each approach to the junction, indicative of the busy conditions at the interchange.
- A45 – driver error was a prominent factor, including sudden breaking, rear end shuts, and travelling too fast for the road conditions.
- A508/Blisworth Road (Courteenhall Road) junction – a cluster of four PIAs at the junction.
- A508 bend to south of Blisworth Road (Courteenhall Road) – a cluster of four PIAs, three of which relate to loss of control and drivers travelling too fast of the road conditions.
- A508 bends south of Rookery Lane/Ashton Road crossroads - a cluster of accidents on the bends to the south of the crossroads, suggesting a trend of drivers travelling too fast in adverse road conditions, as the majority of the PIAs occurred in wet/damp or frost/icy roads conditions.
- A43/Towcester Road – a cluster of four PIAs, all involving vehicles turning right from the A43 into Towcester Road.

12.4.37 At the remaining PIA study areas, the assessment did not identify any specific locations or trends where the proposed development could exacerbate existing traffic safety issues.

## 12.5 ASSESSMENT OF LIKELY SIGNIFICANT ENVIRONMENTAL EFFECTS

### Introduction

12.5.1 The assessment scenarios include the 2021 Opening Year and 2031 Future Year. The 2021 Opening Year scenarios consider the traffic conditions with, and without, the first phase of the proposed development being operational. Further details on the first phase of the proposed development are provided at the Technical Note 2 Addendum report (Appendix 12.8).

12.5.2 The 2031 Future Year scenarios considers the traffic conditions with, and without, all the development being operational. The greatest environmental change will generally be when the development traffic is at the largest proportion of the total flow, which is taken to be on completion of the proposed development. Hence the 2031 Future Year traffic flows from the NSTM2 scenarios are used to undertake assessment of the transport environmental effects of the proposed development.

12.5.3 At this stage, assessment of the proposed development impact has also been undertaken based on the 2031 Future Year assessment scenario for both the SRN and the local highway network. This is a robust position to adopt, as this scenario has the greatest traffic growth and therefore represents the scenario when peak hour highway capacity is lowest, and when the development has greatest potential to impact upon the operation of the highway network. However, prior to submission of the DCO application, the traffic impacts of the proposed development on the SRN will also be examined in accordance with the requirements set out in DfT '02/2013 Circular' as described at paragraph 12.3.32.

12.5.4 The peak hours (0800-0900 and 1700-1800 hours), represent the time periods when background traffic flows are at their greatest and therefore the available capacity of the highway network is at its lowest. Hence these are the assessment periods used in the detailed modelling work. The development's traffic flows would also be spread throughout the day and therefore, where appropriate, likely effects based on 24-hour annual average daily traffic flows (AADT) are examined.

### Development Trip Generation

12.5.5 Table 8 of Technical Note 2 (Appendix 12.7) presents the person and vehicular traffic generation calculations for the proposed development. The two-way external person trip generation (combined total movements in and out of the site) are summarised at Table 12.5.

Table 12.5: Off-site person trips (two-way)

Period	Person Trips
AM Peak Hour	1,111
PM Peak Hour	1,393
Daily	17,657

12.5.6 Table 12.6 summarises the vehicle trip generations used in the TA work, which are based on the agreed trip generation assessment methodology presented in Technical Note 2.

Table 12.6: Off-site vehicle trips (two-way) not accounting for the Travel Plan

Period	Light Vehicles	HGVs
AM Peak Hour	775	269
PM Peak Hour	1,035	268
Daily	12,286	4,245

- 12.5.7 It is important to note that the vehicle trip generations assume a single occupancy vehicle (SOV) rate of 92%. Whilst this provides a robust position for assessment of the highway capacity, it is not representative of the likely modal share that would be achieved by the proposed development once the sustainable transport initiatives presented in the FTP (Appendix 12.1) and the PTS (Appendix 12.2) are considered.
- 12.5.8 The employee (light) vehicles trips presented at Table 12.8 do not therefore represent the expected public transport modal share, or the potential for car sharing.
- 12.5.9 Table 3 of the FTP (Appendix 12.1) sets out the modal shift targets for employees of the proposed development. The modal share targets have been extracted from the FTP and are given at Table 12.7.

Table 12.7: Modal share targets

Mode	Baseline	Year 3 interim target	Year 5 target
SOV	92%	85%	74%
Car share	5%	7%	12%
Public transport	3%	6%	10%
Walking & cycling	0%	2%	4%

- 12.5.10 Table 12.8 summarises the resulting off-site vehicle trip generation taking into account the above SOV modal share target for employees.

Table 12.8: Off-site vehicle trips (two-way) accounting for the Travel Plan

Period	Light Vehicles	HGVs
AM Peak Hour	620	269
PM Peak Hour	828	268
Daily	9,871	4,245

- 12.5.11 Notwithstanding the above, the Transport Working Group requested that the assessment of the vehicle impacts be undertaken using the vehicle trip generation without considering the effect of the FTP or PTS. The assessment of the traffic impact of the proposed development is therefore robust as it does not include for the required 20% reduction in employee journeys to and from work that is the target identified in the FTP.

### Strategic Transport Modelling

- 12.5.12 A full description of the NSTM2 assessment methodology is provided in the following supporting documents:
- Technical Note 1 (Appendix 12.6), which presents the strategic modelling approach;
  - Technical Note 2 (Appendix 12.7, which presents Trip Generation for the development;
  - Technical Note 2 Addendum (Appendix 12.8), which presents the Opening Year Trip Generation for the development;

- Technical Note 3 (Appendix 12.9), which presents HGV Trip Distribution for the development;
- WSP TN (Appendix 12.18), which presents the distribution for the development light vehicle trips;
- LMVR1 (Appendix 12.19), which is the Local Model Validation Report and confirms that the NSTM2 model is suitable for assessment of the traffic impacts associated with the proposed development;
- NSTM2: Reference Case Assumptions (Appendix 12.20), which sets out committed development and infrastructure schemes included in the strategic transport modelling. In accordance with the transport modelling scenarios summarised at Table 12.3 of this ES Chapter, the reference case assumptions are provided for the '2021 Opening Year', the '2031 Future Assessment Year' and the '2021 02/2013 Circular Compliant' scenarios;
- NSTM2: Modelling Outputs (Appendix 12.21) which presents an overview of the strategic modelling findings.

### Detailed Junction Modelling

- 12.5.13 Detailed modelling has been undertaken for M1 Junction 15 and Junction 15A using LinSig and micro-simulation software. At the other study area junctions a combination of LinSig (for signal controlled junctions) and Junctions 8 (for priority controlled junctions) has been used.
- 12.5.14 Highways England provided their 2016 validated VISSIM M1J15 & M1J15A micro-simulation model. Highways England's local model validation report (LMVR) for the model is provided at Appendix 12.22. To ensure that the VISSIM model was appropriate for assessment of the impacts of the proposed development on the SRN, it was updated to include the A45/Watering Lane junction and to incorporate four lanes running on the M1 throughout the extent of the model, in accordance with the smart motorway project. These changes are recorded in the LMVR Addendum provided at Appendix 12.23.

### Study area

- 12.5.15 To determine the study area, a review of the impacts forecast by the NSTM2 was undertaken. The NSTM2 accounts for increased traffic flow as a direct result of the development traffic and changes in traffic flows that resulting from the reassignment of existing traffic to alternate routes, for example because of M1 Junction 15 improvements, Roade Bypass and the other highway improvements.
- 12.5.16 Based on the NSTM outputs (Appendix 12.21), in combination with Technical Notes 5 to 8, and the Roade Bypass Options Report (Appendices 12.11 to 12.15), the following study area was identified to be considered in greater detail:
- M1 Junction 15;
  - A45 between M1 Junction 15 and Queen Eleanor Interchange;
  - M1 Junction 15A;
  - A508 between M1 Junction 15 and the A5; and
  - Knock Lane/Blisworth Road.
- 12.5.17 Where capacity remains, and a junction or link continues to perform within capacity, then the degree to which spare capacity is eroded by the development is not relevant. Where junctions are already over capacity, or would be taken so by the development, then the potential effects of the scheme are assessed. These would manifest themselves in the form of increased queuing and delays to existing traffic, which would all be **adverse** impacts. Where journey times are shortened or queues reduced because of the improvement works, then the impacts would be **beneficial**.

- 12.5.18 Other considerations such as road safety may also be impacted upon, so this aspect is also considered as a potential effect as well as highway capacity.
- 12.5.19 In addition to the above, and in accordance with the DMRB Volume 11, the potential environmental effects associated with the new transport infrastructure fall under three general headings:
- a) Disruption due to construction;
  - b) Impact on pedestrians, cyclists, equestrians and the community (termed pedestrians and others), as follows:
    - Journey length and local travel patterns – defined as both the distance travelled, and time taken, for pedestrians and others;
    - Amenity - defined as the relative pleasantness of a journey for pedestrians and others;
    - Severance - defined as the separation of residents from facilities and services they use within their community, caused by new or improved roads or by changes in traffic flows.
  - c) Impact on vehicle travellers, as follows:
    - Driver stress - defined as the adverse mental and physiological effects experienced by a driver passing through a road network; and
    - View from the road - defined as the extent of which travellers, including drivers, are exposed to the different types of scenery through which a route passes.

## **12.6 DESIGN OF PROPOSED DEVELOPMENT**

12.6.1 The proposed development will provide improved road access, improvements to public transport services, and improved facilities for pedestrians and cyclists. Unless otherwise stated, all drawings referred to in this section are separate application documents and are referred to by the appropriate DCO document number.

12.6.2 The scope of the design works to be submitted with the DCO application has been agreed with Transport Working Group, as set out in Technical Note 4 (Appendix 12.10).

### **Highway mitigation strategy**

12.6.3 Initial assessment suggested that approximately 90% of development traffic would seek to access the development to and from the north at M1 Junction 15. This was confirmed as 85% of light vehicle trips and 91% of HGV trips by the NSTM2 modelling. Therefore, ensuring good access to the M1 is a priority for the proposed development. However, as described in the baseline conditions, M1 Junction 15 is acknowledged to currently operate over capacity during the morning and evening peak hour period with long queues forming on the A45 and A508.

12.6.4 The deficiencies associated with the existing junction layout would act as a barrier to the development. Understanding that M1 Junction 15 is an existing constraint on growth in the area, the need for a significant and comprehensive enlargement and reconfiguration of the junction has long been understood and was acknowledged at an early stage in the project.

12.6.5 In addition, initial assessment suggested that around 9% of the development employee traffic and 9% of the development heavy goods vehicle (HGV) traffic, would use the A508 to travel to and from the south of the main site. This was confirmed by the NSTM2 modelling as 15% of light vehicle trips and, accounting for the proposed configuration of the site access that would prevent HGVs departing the development from travelling south on the A508, 9% of HGV arrivals.



- 12.6.6 In doing so, some of this traffic would pass through the village of Roade. When compared to the current baseline conditions, the proposed development could increase total daily traffic levels in Roade by around 13%. The development could potentially also increase the daily number of HGVs passing through the village by some 17%, or around 190 daily HGV trips. This increase in HGVs would represent, on average, approximately one additional northbound HGV trip through the village every eight minutes.
- 12.6.7 Due to the existing conditions at Roade, with the A508 bisecting the village and the existing congestion issues at the mini roundabout and the narrow railway bridge, it was considered that the above increases in traffic passing through the village would not be an acceptable development impact. Therefore, in consultation with NCC, an early concept for the highway mitigation strategy was the inclusion of a new Roade Bypass to take through-traffic, particularly HGVs, out of the village centre.
- 12.6.8 The overall package of highway works has evolved from this starting point, following an iterative design and assessment process using both the NSTM2 and detailed transport models. A key finding from the NSTM2 modelling of the combined impact of the proposed improvement works at M1 Junction 15, M1 Junction 15A, and the Roade Bypass, is that existing traffic is drawn back onto the SRN and principal road network, particularly the A508. This is a beneficial impact since these are the roads most suited for that traffic and there is a consequential reduction in traffic on the surrounding local roads and some of the surrounding villages. However, to ensure that the A508 can accommodate the traffic increase, a series of improvements are identified to along the road as part of the proposed A508 route upgrade.
- 12.6.9 The resulting package of highway improvements are shown to provide betterment to the adjacent highway network, providing reduction in driver delay, improved journey times, and draw existing background traffic onto the principal road network away from local roads and the surrounding villages.
- 12.6.10 The overall highway mitigation strategy is shown diagrammatically at **Drawing NGW-BWB-GEN-XX-SK-C-SK28-S1-P6** at Appendix 12.16 and comprises the following package of highway mitigation works:
- Construction of a new roundabout on the A508 Northampton Road to serve as the access to the development, configured to require all departing HGVs to travel north to M1 Junction 15;
  - Dualling of the A508 carriageway between the new site access roundabout and M1 Junction 15;
  - Significant enlargement and reconfiguration of M1 Junction 15;
  - Widening of the A45 to the north of M1 Junction 15 and the signalisation of the Watering Lane junction;
  - Alteration of M1 Junction 15A to provide an additional lane and signalised on the A43 northbound approach, signal control and additional flared lane on the A43 eastbound approach, an additional lane on the A5123 southbound approach and circulatory carriageway widening;
  - A financial contribution towards a larger capacity improvement scheme at the A45 Queen Eleanor Interchange;
  - Construction of a new Bypass west of Roade between the A508 Northampton Road to the north of Roade and the A508 Stratford Road to the south of Roade, including a four arm roundabout connecting the Bypass to Blisworth Road;
  - 7.5T environmental weight restriction (with access permitted for loading):
    - throughout Roade
    - along Knock Lane/Blisworth Road between Roade Bypass and Stoke Road
    - along Courteenhall Road between the A508 and High Street, including parts of Blisworth
    - along the unnamed road between the A508 and Quinton.

- Alterations at key locations along the A508 as part of an 'A508 route upgrade'; comprising:
  - Blisworth Road junction improvement
  - Rookery Lane/Ashton Road junction improvement
  - Pury Road junction improvement
  - Knock Lane/Stoke Road junction improvement
  - Provision of a pedestrian crossing at a bus stop in Grafton Regis (although not on the A508 this is required as a result of changing traffic volumes on the A508).

#### Site access

- 12.6.11 Access to the proposed development would be taken from a new roundabout on the A508 that runs alongside the eastern boundary to the main site. The approximately ½km section of the A508 between the site access roundabout and M1 Junction 15 would be upgraded to a dual carriageway. The general arrangement of the proposed site access junction is shown on Drawing NGW-BWB-HGN-03-DR-C-00102, **DCO Highway Plans document number 2.4B**.
- 12.6.12 The strategic modelling showed that, whilst HGV arriving at the site from the south routed via the A508, there was a tendency for departing HGV traffic to use Courteenhall Road and Towcester Road to cut across to the A43. Therefore, an integral part of the access layout is the provision of a segregated left turn lane for traffic travelling northbound to M1 Junction 15. The roundabout will include a height barrier (within the private estate road) to prevent HGVs turning right at the roundabout, thereby requiring all HGVs departing the site to travel north on the A508 and access the wider highway network via M1 Junction 15.
- 12.6.13 This physical enforcement of the site access layout will be backed up by the installation and use of Automatic Number Plate Recognition (ANPR) enforcement cameras on the site access arm of the roundabout and on the A508 to the south of the access roundabout. The cameras will record the number plates of all departing HGVs and these will be matched with the number plates of HGVs travelling southbound on the A508. HGV drivers found to be disregarding the HGV right turn ban will thus be identified and subject to an enforcement regime.

#### M1 Junction 15 and A45 improvement works

- 12.6.14 The M1 Junction 15 and the A45 improvements are discussed in detail at Technical Note 5 (Appendix 12.11) and at the A45 Geometric Design Standard report (Appendix 12.25) the general arrangement is shown on Drawing NGW-BWB-HGN-03-DR-C-00102, **DCO Highway Plans document number 2.4B**. The works consist of the following elements:
- Enlargement of both the northern and southern dumbell 'roundabouts';
  - Realignment and widening on the A45 approach to the junction to provide five lanes;
  - Signalising and widening of the Saxon Avenue approach to the junction;
  - Provision of three full lanes southbound over the M1 bridge;
  - Longer section of three lanes on the M1 northbound off-slip, widening to five lanes at the entry;
  - Dualling of the A508 approach and exit, with five lanes provided at for the A508 northbound at the entry;
  - A cut-through for M1 northbound traffic to the A45/Saxon Avenue;
  - Widening on the M1 southbound off-slip to provide six lanes at the entry;
  - A45 northbound widened to provide three lanes from J15 to beyond Watering Lane junction;
  - Watering Lane junction with the A45 signalised;

- Change to the speed limit on this section of the A45 to become 50mph;
- Removal of the northbound parking lay-by; and
- Removal of two bus stop lay-bys, with a replacement bus stop provided on Watering Lane.

12.6.15 The layout would also include improved routes for pedestrians and cyclists travelling across the junction, who would be provided with traffic signal controlled facilities at each crossing location.

12.6.16 In addition to the above, Technical Note 7 (Appendix 12.13) identifies a potential highway mitigation scheme at the A45/Queen Eleanor Gyratory. The general arrangement of this scheme is shown at **Drawing ADC1475/SK03 Rev C** provided at Appendix 12.17. The scheme has been designed to complement the NGMS works at the junction and comprises widening the A5076 Mere Way approach to the gyratory and changes to the lane markings and designations. NCC have confirmed that they are developing a comprehensive improvement scheme for the junction and therefore it would not be appropriate to provide the proposed improvement scheme in isolation. It is therefore proposed that a financial contribution, equivalent to the cost of implementing the proposed works, would be made in lieu of undertaking the physical works.

#### **M1 Junction 15A improvement works**

12.6.17 The VISSIM micro-simulation modelling demonstrates that in the 2031 Reference Case scenarios existing congestion at M1 Junction 15A is forecast to lead to significant congestion at the junction, resulting in queues forming on the slips roads that would block back to the M1 mainline. The addition of the development traffic was shown to cause further reassignment of existing traffic onto alternate routes because of this congestion, potentially leading to impacts at other locations. Therefore, an improvement scheme is proposed.

12.6.18 The above assessment and proposed highway improvement scheme at M1 Junction 15A is described in detail in Technical Note 6 (Appendix 12.12) and the general arrangement of it is shown on Drawing NGW-BWB-HGN-06-DR-C-00106, **DCO Highway Plans document number 2.4F**. The improvement comprises alterations to both the southern and northern roundabouts:

- Southern roundabout:
  - Provision of an additional flared lane and signalisation of the A43 northbound approach;
  - Signalisation and provision of a short flare on the A43 eastbound approach; and
  - Circulatory carriageway widening.
- Northern roundabout:
  - Signalisation of the A43 northbound entry;
  - Provision of an additional flared lane on the A5123 approach to the roundabout; and
  - Circulatory carriageway widening.

#### **Road Bypass**

12.6.19 The Road Bypass proposal is for a 100kph design speed single carriageway road around the western side of the village, with foot and cycle provision along the length of the route, with tree planting, environmental bunding and general landscaping. The options for the proposed Bypass are discussed in Road Bypass Options Report provided at Appendix 12.15 and the general arrangement of the proposed scheme is shown on Drawings NGW-BWB-HGN-03-DR-C-00103 and NGW-BWB-HGN-04-DR-C-00104, **DCO Highway Plans document numbers 2.4C and 2.4D**.

12.6.20 The proposals comprise:

- The construction of a new highway linking the A508 Northampton Road to the A508 Stratford Road;
- The provision of roundabout junctions between the Roade Bypass and the A508 Northampton Road, A508 Stratford Road and Blisworth Road
- Drainage swales and attenuation features;
- A bridge over the west coast mainline railway;
- An underpass for bridleway RZ1;
- The alteration and diversion of existing public rights of way;
- The construction of a shared use footway and cycleway; and
- Environmental mitigation bunds.

#### **A508 route upgrade**

12.6.21 A beneficial outcome of improving M1 Junction 15 and providing the Roade Bypass is that background traffic is drawn back onto the A508. Therefore, in addition to the Roade Bypass, mitigation works are proposed at key locations on the A508 to ensure that the route operates satisfactorily and safely. This is described in detail at Technical Note 8 at Appendix 12.14. The route upgrade comprises:

- Alteration to the A508/Blisworth Road (Courteenhall Road) T-junction to become a left-in left-out only junction the general arrangement of which is as shown in Drawing NGW-BWB-HGN-03-DR-C-00103, **DCO Highway Plans document number 2.4C**. This would include the relocation of the existing bus stop currently located to the south of Courteenhall Road approximately 70 metres further south.
- Alterations to Stoke Road/Knock Lane (Blisworth Road) priority T-junction to widen the carriageway and improve the highway drainage, the general arrangement being as shown in Drawing NGW-BWB-HGN-06-DR-C-00106, **DCO Highway Plans document number 2.4F**;
- A capacity and road safety improvement scheme at the A508/Rookery Lane/Ashton Road staggered crossroads the general arrangement being as shown in Drawing NGW-BWB-HGN-05-DR-C-00105, **DCO Highway Plans document number 2.4E**;
- Alteration to the A508/Pury Road ghost island T-junction to increase the storage area for traffic turning right from the A508 the general arrangement being as shown in Drawing NGW-BWB-HGN-06-DR-C-00106, **DCO Highway Plans document number 2.4F** ;
- A new pedestrian refuge on the A508 at Grafton Regis to assist with crossing to the northbound bus stop, and provision of a right turn harbourage facility for northbound traffic from the A508 turning in to Church Lane, the general arrangement being as shown in Drawing NGW-BWB-HGN-06-DR-C-00106, **DCO Highway Plans document number 2.4F**.

#### **Speed limit and environmental weight restrictions**

12.6.22 To complement the changes in road layouts, some changes to the existing speed limits are proposed on the A45 and A508. To assist cyclist crossing Watering Lane at its junction with High Street, it is also proposed to extend the existing 20mph speed limit on Watering Lane to the west to include the High Street junction. The proposed changes are shown at the **Speed Limit Plans DCO document numbers 2.7A, 2.7B, 2.7C, and 2.7D**.

12.6.23 The following 7.5T environmental weight restriction (with access permitted for loading), as shown on the **Traffic Regulation Plan DCO document number 2.6**, are proposed:

- throughout Roade;
- along Knock Lane/Blisworth Road between Roade Bypass and Stoke Road;
- along Courteenhall Road between the A508 and High Street, including parts of Blisworth; and
- along the unnamed road between the A508 and Quinton.

#### **Road Safety**

12.6.24 All of the proposed highway mitigation works will be the subject of a Stage 1 Road Safety Audit (RSA) in accordance with HD 19/15.

12.6.25 All recommendations identified within the RSA1 report will be considered within the Design Team Response Report. Where necessary, changes to the scheme will be incorporated within the drawings accompanying the DCO application.

#### **Walking and Cycling**

12.6.26 The walking and cycling strategies for the proposed development are described in the FTP (Appendix 12.1).

12.6.27 The proposed development will provide new walking and cycling infrastructure connecting the main site with the existing networks in Northampton, to the north. The proposed development will provide a new shared use footway/cycleway set back from the western side of the dualled section of the A508 between the site access roundabout and M1 Junction 15. In addition, a second, more direct pedestrian and cycle access would be provided midway along this section of the A508, providing access to the main development spine road. The new footway/cycleway will connect with existing footway/cycleway facilities at M1 Junction 15, which would be improved, with traffic signal controlled crossings provided at all crossing points.

12.6.28 To the south of the site access roundabout, a new shared footway/cycleway would be provided alongside the east side of the A508 to the junction with the unnamed road to Quinton, from where access to National Cycle Network Route 6 is available.

12.6.29 Within the main site, shared footway/cycleways would provide access to each of the warehouse development plots and Rail Terminal.

12.6.30 Public footpaths KX17 and KX13 that cross the main site would be diverted and extended to form a loop within the landscape bunding. Part of the diverted route would be upgraded to provide an adopted shared footway/cycleway that would connect with the new facility adjacent to the A508 and connect M1 Junction 15 with the site access. The adopted footway/cycleway would extend within the main site to the south of the site access roundabout, thereby providing cycle access to Zone A4 of the main site. To the south of Zone A4 a public footpath would complete the new loop arrangement linking with the existing public footpath and bridge over the West Coast Mainline railway. The changes to the PRoW are shown on the **Access and Rights of Way Plans DCO document numbers 2.3A to 2.3E**.

12.6.31 These proposals would provide a new shared footway/cycleway that would connect the development to Collingtree and the wider Northampton area, via the existing bridge over the M1. This would also include a footway/cycleway connecting directly with the main spine road to provide a direct access into the development from the M1 bridge at Collingtree.

- 12.6.32 A shared footway/cycleway will be provided on the eastern side along the length of the new Roade Bypass. The proposed Roade Bypass crosses public footpaths KZ30, KZ19, KZ2a and RZ3, and bridleway KZ10/RZ1. As shown on the **Access and Rights of Way Plans DCO document numbers 2.3C and 2.3D**, at grade pedestrian crossing with a central refuge would be provided for each of the public footpaths crossing points, thereby allowing the bypass to be crossed in two stages. An underpass suitable for equestrians is provided for the bridleway KZ10/RZ1.
- 12.6.33 A new pedestrian refuge, as generally shown on Drawing NGW-BWB-HGN-06-DR-C-00106, **DCO Highway Plans document number 2.4F** would be provided on the A508 in Grafton Regis to allow pedestrians crossing the road to access the northbound bus stop, to do so in two stages.
- 12.6.34 Prior to submission of the DCO application the proposals for NMUs will be subject to a Walking, Cycling & Horse-Riding Assessment Review, which will be completed in consultation with NCC and Highways England. Where necessary, changes to the proposals will be incorporated within the drawings accompanying the DCO application.

#### **Public Transport Strategy**

- 12.6.35 Public transport will play an important role in providing access for staff coming to the site and the strategic for the development is described in detail in the PTS report provided at Appendix 12.2.
- 12.6.36 The PTS includes the introduction of a new bus service specifically to serve the main site, as well as building on the existing local bus network through the extension of a service, provision of additional capacity, and improved infrastructure. The PTS has emerged from discussion with the local bus operator (Stagecoach) and the public transport officers at NCC.
- 12.6.37 The focus of the strategy is threefold:
- The development of a new express service from the main site to Northampton Town Centre, built around key shift-time changes.
  - The extension of service 7 from Grange Park to the main site. Service 7 currently operates from Moulton Park in the north of town, through Northampton to Grange Park in the south.
  - New bus stops on the A508 for the 33/33a, X4 and X7 Services.
- 12.6.38 Figure 7.1 of the PTS summarises the existing bus services that operate near the site and the proposed new and enhanced bus routes.
- 12.6.39 The new bus service would offer direct access from the site to Northampton Town Centre, utilising the most direct route (most likely A508/A45/A508). Travel time is expected to be around 20 minutes. The service would utilise the main site entrance on the A508, penetrate the site and serve the spine road. Buses from Northampton Town Centre would arrive at an appropriate time before the start of main shifts (0600, 1400, 2200), and drop off employees. The bus would then dwell during shift change times on a dedicated layby (and turning circle) at the end of the spine road before picking up employees and returning to the Town Centre via the same route.
- 12.6.40 The location of the Town Centre stops will be dictated by need, and could include the Railway Station. There may be the option of starting the service to the north west of the Town Centre, allowing direct access from areas such as Dallington, Duston or St James End, before going directly from the Town Centre to the site.

- 12.6.41 Service 7 currently operates from the Town Centre to Grange Park on a Monday to Saturday from 0605 until 1900, with a 30-minute frequency and a peak-time travel time of 28mins. The service operates hourly on a Sunday. The service would be extended to serve the proposed development after Grange Park, crossing the M1 along the A508, penetrating the site and serving the spine road before turning at the turning-circle and returning to its current route.
- 12.6.42 The extension of service 7 would require an additional bus added to the current peak vehicle requirement to maintain the 30-minute frequency. This would give employees throughout the day access to the site from Northampton Town Centre and the north, without affecting the travel time of the existing service 7 passengers. Extending an existing service provides added financial viability due to the existing patronage.
- 12.6.43 New bus stops and laybys would be created on the A508 either side of the new site access roundabout, as shown generally on Drawing NGW-BWB-HGN-03-DR-C-00102, **DCO Highway Plans document number 2.4B**, and a Toucan crossing provided on the northern arm of the roundabout to provide direct and safe access to the southbound bus stop. This would provide access to an hourly service in each direction between Milton Keynes and Northampton.
- 12.6.44 Four bus stops will be included within the development site, one near the entrance to the site and another two bus stops along the spine road of the development. A final stop will be positioned at the far end of the internal spine road. These bus stops will ensure that employees commuting by bus will not have a long walk from the bus stop to their workplace. Layover facilities will be provided to allow the service to drop off passengers before the start of the shift and then pick up passengers finishing their shift.
- 12.6.45 Figure 8.1 of the PTS shows the reach of local public transport services from the site with the proposed service 7 extension. The Town Centre would be accessible within 30 minutes between 0800 and 1000 on a weekday and, through interchange, the north, east and west of Northampton are accessible within 1 hour. The modelling shows that 10,717 residents can access the site within 30 minutes by public transport between 0800 and 1000 on a weekday (7,114 of working age population) and 129,487 within an hour by public transport (87,228 of working age population).
- 12.6.46 By offering regular and reliable services, at appropriate times, public transport becomes a viable alternative to the private car. The scale of the development is such that it is proposed that both the new service, and the extended service 7, will be running at the point of first occupation. In combination with promotion through the site Travel Plan, this will maximise the potential for use by employees as the site grows.

### **Parking Provision**

- 12.6.47 Parking will be provided at the main site in accordance with NCC's latest parking standards (September 2016).
- 12.6.48 The indicative masterplan demonstrates compliance with these parking standards, and the proposed parking is summarised at Table 12.9.
- 12.6.49 As shown, accessible (including disabled) car parking will be provided at 10% of the total car parking.
- 12.6.50 Additional HGV awaiting/parking will also be provided in the form of HGV lay-bys provided within the site along the development spine road.

Table 12.9: Proposed parking (indicative masterplan)

Unit No.	Total sqm	Proposed Parking						
		Car	Cycle	PTW	Accessible	HGV (loading)	HGV (waiting)	HGV (total)
1	49239	406	98	16	41	108	75	183
2	50632	422	101	17	42	90	71	161
3	63453	529	127	20	53	108	88	196
4	77109	643	154	24	65	54	110	164
5	64475	537	129	21	54	54	88	142
6	50911	426	102	17	43	90	86	176
7	110647	916	220	33	92	68	126	194
Freight Terminal	1858	40	0	0	2	0	85	85
<b>Total</b>	<b>468324</b>	<b>3919</b>	<b>931</b>	<b>148</b>	<b>392</b>	<b>572</b>	<b>729</b>	<b>1301</b>

12.6.51 As part of the FTP car sharing will be actively promoted and to encourage this 8% (approx. 320 spaces) of the total car parking spaces would be marked for those car sharing. These spaces would be split between the units and located next to the entrance to the buildings.

12.6.52 To encourage the use of electric vehicles 5% (approx. 200 spaces) of the total car parking spaces provided will include electric charging points, with passive provision provided for a further 5% of the total provision.

## 12.7 RESIDUAL EFFECTS

### Disruption Due to Construction

12.7.1 The overarching systems and controls that would be adopted during the construction of the proposed development and associated highway mitigation works are set out in the provisions of the Draft DCO and will be detailed within the Construction Environmental Management Plan (CEMP) that will be submitted with the final DCO application.

12.7.2 The Infrastructure Summary Programme (Appendix 12.26) breaks down the construction works into four key components, as listed below:

- Off-site highway improvements;
  - M1 J15 & A45 improvements and link to site access
  - M1 J15A improvements
  - Roade Bypass and A508 improvements.
- On-site;
  - Bulk earthworks
  - Landscaping
  - Road.
- Rail Terminal; and
- Buildings.

12.7.3 The Infrastructure Summary Programme includes the indicative construction programme showing the above work components. The works would be phased over a 5.5 year period.

12.7.4 Works would commence on:

- The A508 site access junction and dualling of the A508 between the site access and M1 Junction 15;
- The M1 Junction 15 and A45 improvements; and
- On-site earthworks and roads.



- 12.7.5 Prior to occupation of the first building on the site, the following works will have been completed:
- The A508 site access junction and dualling of the A508 between the site access and M1 Junction 15;
  - The M1 Junction 15 and A45 improvements;
  - Landscaping phases 1 and 2;
  - Road construction phases 1 and 2; and
  - Rail Terminal.
- 12.7.6 There are a number of constraints on the off-site works components and other practical restraints, which will be set out in the CEMP. However, the importance of managing the phasing of the components to mitigate delays and disruption on the existing highway network is recognised as the most significant practical restraint.
- 12.7.7 Generally, this is best achieved by diverting traffic onto new alignments away from works under construction and controlling the level of interference on the networks at any time. Therefore, the CEMP will define additional restraints that could be imposed. These will be discussed and agreed with HE and the local highway authorities during the detailed design.
- 12.7.8 Construction work within the development site would be confined to the following:
- 07:00 -19:00 hours Monday to Friday;
  - 07:00 -16:00 hours Saturday.
- 12.7.9 All delivery vehicles and plant arriving and leaving the site would also comply with the same time restrictions, although site personnel would be permitted to access the site shortly before these hours and exit the site shortly after them. Construction work outside the development site will require night working to comply with the requirements of HE, or for practical and safety reasons.
- 12.7.10 In summary, for the construction process, and to ensure a robust assessment, the following assumptions have been made:
- A 5.5 years construction period; and
  - A 10 hour, five day working week for 49 weeks per year.
- 12.7.11 Based on the construction programme and total mass of material required for each key works component identified within the Infrastructure Summary Programme, the total numbers of HGV and light goods vehicle (LGV) movements have been estimated. Estimates for the number of construction workers travelling to the site by car and van have also been made.
- 12.7.12 A summary of the estimated average daily construction traffic movements is provided a Table 12.10. This is based on a 5-day working week, assuming 49 working weeks per year. It is therefore a robust assessment as the average excludes Saturday working, the inclusion of which would reduce the overall daily traffic movement figures given in the table. A detailed assessment is included in the Construction Traffic Methodology Report, which is included at Appendix 12.26.

12.10: Average daily construction traffic movements (one-way)

Year	HGV	LGV	Car	Vans	Total
1	147	33	117	157	455
2	171	39	175	129	515
3	125	28	86	95	334
4	72	14	36	48	170
5	72	14	36	48	170
6	36	7	18	24	85

- 12.7.13 Access and egress to each part of the off-site construction works would be via a metalled access road joined to the public highway. Access to the main site during the earlier stages of the construction process, would be via a new temporary ghost island priority controlled T-junction construction on the A508. The general arrangement of this is shown at **Drawing NGW-BWB-GEN-XX-SK-C-SK07-S2-P2** provided at Appendix 12.17. Whilst the temporary junction is in place the speed limit on this section of the A508 will be reduced from derestricted to 40mph via a temporary Traffic Regulation Order provided for in the draft DCO. The temporary junction would be replaced with the site access roundabout as part of the site access construction works prior to first occupation on the main site.
- 12.7.14 The routing of construction traffic would be agreed with the Police, NCC, Highways England and the Project Manager. Delivery vehicles would be routed via the principal and strategic road networks to avoid effects on local residential areas. No heavy construction traffic would be permitted to use the A508 to the south of the main site.
- 12.7.15 Based on Table 12.10, Year 2 would be the busiest in terms of HGV and LGV movements associated with the construction process. During Year 2 it is estimated that an average of 171 daily one-way HGV movements would visit the site, with 39 daily one-way LGV movements.
- 12.7.16 Taken over the 10-hour working day, the above one-way movements would equate to some 34 HGV two-way movements per hour, and around 8 two-way LGV movements per hour. Even allowing for doubling this average figure, to accommodate short periods of peak demand, these flows are low in the context on the adjacent highway network flows, which at M1 Junction 15 average around 6,300 vehicles during each of the morning and evening peak hours. Hence these flows will not require mitigation works in their own right.
- 12.7.17 For construction workers, when taken in total, the busiest period for car and van movements would also be Year 2, when a total of 304 daily one-way movements are forecast. To understand the likely origins of construction staff, the employee trip distribution has been extracted from the NSTM2. This has then been used to establish the traffic impacts on the main routes to and from the site.
- 12.7.18 It is assumed that the majority of staff (80%) would arrive just prior to the start of work at 0700 hours and leave the site just after at 1900 hours. The resulting cumulative additional trips on the existing highway network are summarised at Table 12.11. The detailed calculations are included at Appendix 12.26.

Table 12.11: Distribution of construction staff arrival and departure trips

Route	Trips
A45	109
M1 South	50
A508	37
M1 North	47

12.7.19 Table 12.6 shows that the traffic impact of the additional journeys associated with construction staff movements to the site in the morning and from the site in the evening would be diluted, as they would be split across a number of main routes. Furthermore, the operation times of the construction site would mean that staff movements do not generally coincide with the highway network peak hours. It is therefore concluded that construction staff movements would not have a material impact on the operation of the existing highway network.

12.7.20 It is concluded that the construction traffic would not result in a material impact on the operation of the existing highway network. The measures and procedures outlined in the CEMP will ensure that any adverse environmental impacts are minimised and heavy construction traffic would not be permitted to travel on the A508 to the south of the site, thereby avoiding impacting upon local villages. Overall it is concluded that the construction phase of the development would have a **temporary adverse** impact of **moderate significance** on the operation of the surrounding highway network.

### Operation

12.7.21 This section of the ES examines the residual transport impact once the development would be in operation and the associated infrastructure improvements and other mitigation measures are in place.

12.7.22 The proposed development comprises a large scale Strategic Rail Freight Interchange. The SRFI consists of the 'B8 warehousing and distribution' area on the eastern part of the site, and the 'intermodal rail freight terminal' on the western part of the site, which in due course may also include provision of a Rapid Rail Freight (RRF) facility.

12.7.23 The SRFI would take the form of a number of large scale units that would support a combination of B8 uses. The Parameters Plan sets out a maximum area for the warehousing and distribution use at the development, which will not exceed 5,037,510sqft (468,000sqm).

12.7.24 The development could therefore comprise up to 468,000sqm of floor space for B8 use. However, to provide some flexibility for future occupiers seeking mezzanine space, an allowance for up to one third of the units (155,000sqm) to provide B8 mezzanine floor space use has also been made.

12.7.25 The Parameters Plan makes provision for direct rail served warehouse units by means of dedicated rail connections to some of the warehouse units within the overall site. However, the proposed development would also provide its own dedicated intermodal rail freight terminal.

12.7.26 The intermodal rail freight terminal would take the form of an independent facility and associated container storage. The loading and unloading sidings and the associated pad would be able to accommodate trains of up to 775 metres in length, to allow the longest trains to be accommodated.

12.7.27 Container movements to individual warehouse units on the site would either be direct to the individual warehouse unit by means of an adjacent rail loading/unloading pad, or by delivery of the containers by rail to the main loading/unloading terminal with the containers then being transferred by tug unit from the terminal to the warehouse unit.

- 12.7.28 All the B8 units are likely to operate on a 24-hour basis, seven days a week. The main shifts are therefore likely to be 0600-1400 hours, 1400-2200 hours and 2200-0600 hours, although there will be some variation depending on the individual occupier requirements. Some occupiers may operate a 12-hour shift, for example from 0700-1900 hours and 1900-0700 hours.
- 12.7.29 In keeping with most inland rail freight terminals, the rail freight terminal is likely to operate on a 24-hour basis from Monday to Friday, and until Saturday lunchtime. However, volume growth at the main ports could lead to an increase to 6 or 7 day operation in the future.
- 12.7.30 It is anticipated that it would take several years before the rail freight terminal at Northampton Gateway would operate at full capacity. The rail freight terminal will be operational upon the opening of the development and will have capacity to accommodate at least 4 trains per day. Therefore, assuming an opening date of 2021, it is unlikely that the maximum handling capacity for rail activity will have been realised by then. For the purposes of assessment however, and to ensure a robust approach, maximum capacity has been assumed to occur within the assessment periods set for the transport modelling process

#### Modal Shift from Road Freight to Rail Freight

- 12.7.31 The Technical Notes 2 (and Addendum) and Technical Note 3 set out the trip generation and, trip distribution for the proposed development (Appendices 12.7 to 12.9), and the modal split for the proposed development once operational is given at the FTP (Appendix 12.1). The proposed development, comprising both the warehousing distribution units and the rail terminal, would generate the following type of trips:
1. Employee trips to and from work at both the warehousing units and the rail terminal.
  2. Visitor and delivery trips to both the warehousing units and the rail terminal.
  3. HGV traffic to and from the warehousing units.
  4. HGV traffic to and from the rail terminal.
  5. HGV/tugs traffic between the rail terminal and the warehousing units.
  6. Rail trips.
- 12.7.32 Only trip types 1 to 4 would use the off-site highway network. Trip type 5, would be on the internal road network, between the rail terminal and warehousing area. Trip type 6 would be on the rail network only.
- 12.7.33 The Technical Note 2 (Appendix 12.7) focuses on trip types 1 to 2, as the TA is ultimately concerned with the impact of the development on the off-site highway network. However, it is recognised that the number of HGVs generated (trip types 3, 4 and 5) relates to the amount of rail trips (trip type 6) and the size of the containers/type of goods. Furthermore, the amount of external HGV trips (trip types 3 and 4) relates to the number of internal trips (trip type 5) and the operation and interaction between the rail terminal and the on-site warehousing.
- 12.7.34 The above dependencies and interactions are included for in the calculated trip generations. Once the rail terminal at Northampton Gateway is fully operational it could accommodate an average maximum through-put of around 1384 containers a day. This is a mode shift from road freight to rail freight equivalent to 928 HGV loads or 1,856 two-way HGV movements per day. Appendix 12.27 includes an example of how this could translate to a modal shift from road freight to rail freight. The example demonstrates that, annually, the proposed development could remove over 92 million HGV miles per year from the highway network equating to over £50 million per year in

monetised environmental benefits as calculated using the methodology set out in the Department for Transport's Guide to Mode Shift Revenue Support Scheme.

- 12.7.35 Taken together the above modal shift and resultant reduction in overall HGV mileage represents a **permanent beneficial** impact of **major significance**.
- 12.7.36 It should be noted that many of the remaining HGV trips forecast to be generated by the proposed development would already be present on the highway network. This is because many of the HGV trips would be associated with the delivery of goods to meet existing business demand in the locality. Hence, such HGV movements would already exist locally to those businesses, and the development of the SRFI would not add additional HGV traffic in these areas. Rather, it will provide a distribution hub, meaning that journey distances will be reduced, reducing overall HGV mileage on the road network.
- 12.7.37 Nevertheless, to ensure that the full impact of the proposed development is modelled in the vicinity of the site, the transport modelling has assumed that all HGV trips would be new trips to the highway network. For the reasons given above, this results in a robust assessment of the traffic impacts as it means that there is some double counting of HGV traffic, particularly on the main links to and from, and within, the urban areas and settlements.

#### Impact on Highway Network Operation

- 12.7.38 The impact on the transport network of the proposed development traffic given at Table 12.6, along with the effects of existing traffic reassignment associated with the highway mitigation works is examined in detail at Technical Notes 5 to 8 (Appendix 12.11 to 12.14). A summary of the initial VISSIM modelling results is provided at Appendix 12.24.
- 12.7.39 The strategic modelling demonstrates that the proposed highway mitigation works remove existing congestion 'bottlenecks' on the highway network, particularly at M1 Junction 15 and 15A, and at Roade. Therefore, existing traffic is forecast to reassign to use the principal road network, with increases in traffic forecast on the A508 between the A5 and M1 Junction 15, and at M1 Junction 15 and 15A.
- 12.7.40 This is a desirable outcome of the mitigation proposals, as the A508 is a primary route and the reassignment leads to a consequential reduction in traffic on many of the surrounding local roads and the villages of Milton Malsor, Blisworth, Roade and Ashton.
- 12.7.41 The proposed Roade Bypass leads to a significant reduction in traffic passing through Roade. The NSTM2 demonstrates that existing HGV traffic would choose to use the new Bypass rather than travel through the centre of the village. However, this would be reinforced through the proposed 7.5t environmental weight restriction through the centre of the village.
- 12.7.42 The impact of the increased traffic on the A508 is examined at Technical Note 8 (Appendix 12.14), where it is shown that the A508, with the proposed highway mitigation works, would satisfactorily accommodate the changes in traffic flows.
- 12.7.43 The proposed alteration of the A508/Blisworth Road (Courteenhall Road) simple priority controlled T-junction to become a left-in, left-out only junction, would remove a significant (5 minute) existing delay for drivers travelling southbound on the A508. The removal of the right turn from the A508 to Courteenhall Road would also reduce the number of drivers choosing to cut through Blisworth to access the A43 from the A508. Blisworth residents and those wishing to access Courteenhall Road from the

A508 would instead use Roade Bypass and the new roundabout junction on Knock Lane.

- 12.7.44 The results of the initial VISSIM micro-simulation modelling (Appendix 12.24) demonstrate that the proposed M1 Junction 15 and A45 highway improvements and the M1 Junction 15A improvements would provide a significant improvement to the operation of the SRN compared to the 2031 Reference Case.
- 12.7.45 Tables 12.12. summarise the initial micro-simulation modelling results for the for the 2031 Development Case compared to the 2031 Reference Case. This demonstrates the beneficial impact of the proposed M1 Junction 15 and A45 improvements, and M1 Junction 15A mitigation works on the operation of the SRN. The results show that journey times for both car drivers and HGV drivers would reduce.

Table 12.12: Change in of average journey between 2031 Reference Case and 2031 Development Case

Period	Change in average journey time per car	Change in average journey time per HGV
AM Peak Hour	-30%	-41%
PM Peak Hour	-56%	-62%

- 12.7.46 It should be noted that the initial modelling includes for the traffic reassignment effects associated with the M1 Junction 15 and A45 improvements, but it does not include for any reassignment effects associated with the M1 Junction 15A improvement works. This will be examined and reported prior to submission of the DCO application.
- 12.7.47 However, based on the strategic modelling outputs that do take into account the reassignment effects associated with the M1 Junction 15A mitigation works, it is shown that improving M1 Junction 15A leads to further traffic choosing to use the SRN instead of other, less appropriate, routes. It is therefore expected that the final micro-simulation results will show a lower average overall journey time saving per vehicle as compared to the initial results presented at Table 12.12 above, simply because the SRN will be accommodating more traffic. However, the overall effect of the proposed M1 Junction 15 and A45 improvements and M1 Junction 15A highway mitigation works on the operation of the SRN will continue to be a significant improvement on the 2031 Reference Case.
- 12.7.48 The results of the micro-simulation modelling in combination with the detailed junction assessment work therefore support the outcomes of the strategic modelling, demonstrating the suitability of the proposed highway mitigation works to accommodate the traffic increases associated with the proposed development.
- 12.7.49 Prior to submission of the DCO application, all the identified highway mitigation works will be modelled within the NSTM2 to confirm that the proposed works, in combination, deliver the improvements to the highway network that are forecast by the individual detailed assessments.
- 12.7.50 Overall, it is concluded that the proposed highway mitigation works are required to provide satisfactory access to the proposed development and to accommodate the traffic reassignment effects resulting from both the development traffic and proposed highway mitigation works. However, the highway works also release bottlenecks on the A508, M1 and A45 corridors, allowing the existing highway network to function in a safer and more efficient manner. This in turn draws traffic back onto the existing principal and strategic road network. In doing so traffic flows on many of the surrounding local roads and villages would reduce. Therefore, subject to confirmation following the final run of the NSTM2 prior to submission of the DCO application, the residual effects of the proposed development and highway mitigation works in general

traffic impact terms can be summarised as a **permanent beneficial** impact of **major significance**.

#### Impact on Pedestrians, Cyclists, Equestrians (NMUs) and the community

- 12.7.51 The proposed development and associated highway mitigation works would alter conditions for NMUs using the public rights of way that cross the main site and those crossing the proposed Roade Bypass. The proposed highway mitigation works would also alter the existing highway infrastructure. The changes are described at Section 12.6 of this ES Chapter.
- 12.7.52 The effect of the proposed development and associated highway mitigation works would be to increase traffic flows on the A508 between the A5 and M1 Junction 15, and on the SRN at M1 Junction 15 and M1 Junction 15A, on the A45 and on Knock Lane to the west of Roade Bypass.
- 12.7.53 There would be reductions in traffic flows through the centre of Roade due to the proposed Bypass and the proposed 7.5t environmental weight restriction. Traffic flows would also reduce through Blisworth, on Towcester Road and on Courteenhall Road. There would be 7.5t environmental weight restrictions for Knock Lane, Courteenhall Road and the unnamed road connecting the A508 with Quinton Green. The new pedestrian refuge provided on the A508 in Grafton Regis would reduce severance associated with accessing the northbound bus stop.
- 12.7.54 A new shared footway/cycleway would be provided on the eastern side of the A508 between the site access roundabout and the unnamed road to Quinton. A shared footway/cycleway would also be provided on the eastern side of the proposed Roade Bypass linking to existing facilities radiating from Roade. The existing footway/cycleway facilities at M1 Junction 15 would be improved and traffic signal controlled crossings provided at all crossing points.
- 12.7.55 PRoWs KX17 and KX13 that cross the main site would be diverted and extended to form a loop within the landscape bunding. Part of the diverted route would be upgraded to provide a shared footway/cycleway that in part would run adjacent to the A508. This shared footway/cycleway would connect the development to Collingtree and the wider Northampton area, via the existing bridge over the M1.
- 12.7.56 The Roade Bypass would affect public footpaths KZ30, KZ19, KZ2a and RZ3, and bridleway KZ10/RZ1. At each location, the impact of the Bypass proposals has been assessed. Suitable crossings points are provided for each of the footpaths and an underpass suitable for equestrians is provided for the bridleway.
- 12.7.57 Overall it is concluded that the proposed development and associated highway mitigation works would have a **permanent adverse** impact of **minor significance** on amenity and severance for pedestrians, cyclists and equestrians, and a **negligible** impact on journey length and local travel patterns for pedestrians, cyclists and equestrians.

#### Impact on Vehicle Travellers – Driver Stress

- 12.7.58 Driver stress has three main components: frustration, fear of potential accidents, and uncertainty relating to the route being followed.
- 12.7.59 Frustration is caused by a driver's inability to drive at a speed consistent with his or her own wishes in relation to the general standard of the road. It increases as speed falls. Congestion can lead to frustration creating a situation in which the driver does not feel in control, especially when he or she wishes to arrive at a destination by a certain time, but is held up by traffic congestion from which the duration of the resulting delay cannot be determined.

- 12.7.60 Taken in combination the proposed highway mitigation works on the A508, including the Roade Bypass, would reduce congestion and improve journey times and journey time reliability for drivers using this route. The micro-simulation modelling demonstrates that the proposed M1 Junction 15 and A45 improvements and M1 Junction 15A highway mitigation works will significantly reduce congestion on the SRN and reduce average peak hour journey times for car drivers. Initial results suggest that journey times could reduce by up to 56%. The effect of the proposed development and associated highway mitigation works would therefore be a reduction in driver frustration.
- 12.7.61 The main factors leading to driver fear of potential accidents is the presence of other vehicles, inadequate sight distances and the likelihood of pedestrians, particularly children, stepping into the road. Other factors include inadequate lighting, narrow roads, roadworks and poorly maintained road surfaces. Fear is highest when speeds, flows and the proportion of HGVs are high.
- 12.7.62 The proposed development would increase the number of HGVs using the road network to the north of the site. HGV increases to the south of the site would be modest and would be accommodated by the Roade Bypass. The proposed highway mitigation works would alter the routing of traffic, drawing traffic onto the A508 and away from the surrounding local roads and villages. Traffic and HGV flows on the A508 and the SRN near to the site are therefore predicted to increase, which could result in a corresponding increase in driver fear on these roads.
- 12.7.63 The proposed Roade Bypass and environmental weight restriction through Roade would significantly reduce A508 traffic passing through the village. Traffic and HGV flows through Roade would therefore reduce, as would traffic and HGV flows through Blisworth, on Towcester Road and on Courteenhall Road. This would lead to a reduction in driver fear on these roads and through Roade and Blisworth.
- 12.7.64 The NSMT2 forecasts a two-way morning and evening peak hour traffic flow on Roade Bypass of 2,130 and 2,032 vehicles, respectively in the 2031 future assessment year with the development in place. In accordance with Table 3 of DMRB (Volume 11, Section 3, Part 9) these flows are consistent with a high level of driver stress.
- 12.7.65 The proposed highway mitigation works at M1 Junction 15 would replace the existing give way arrangements with traffic lights for drivers entering the junction from the A508 and Saxon Avenue approaches. Drivers accessing the A45 from Watering Lane will also be provided with traffic lights. This would remove the need for drivers to judge gaps in busy traffic flows as is required under the current arrangement. Drivers will instead be provided with priority during the green traffic signal phase, thereby leading to a reduction in driver stress.
- 12.7.66 The proposed realignment and alteration to the speed limit on the A45 near M1 Junction 15 will bring traffic speeds in line with the prevailing road conditions, therefore leading to a reduction in driver fear.
- 12.7.67 Route uncertainty is caused primarily by signage that is inadequate for the individual's purposes. As detailed in Technical Note 4 (Appendix 12.10), a signage strategy will be prepared and agreed with the Transport Working Group as part of the DCO application. Therefore, route uncertainty would be low.
- 12.7.68 It is concluded the proposed development and associated highway mitigation works would have a **beneficial impact of moderate significance** on driver frustration, and a **beneficial impact of minor significance** on driver fear, with a negligible impact on route uncertainty.



- 12.7.69 Overall, when taken together, it is concluded the proposed development and associated highway mitigation works would have a **permanent beneficial** impact of **moderate significance** on driver stress.

Impact on Vehicle Travellers – View from the Road

- 12.7.70 The existence of a new road may enable more people to see the landscape than before. This benefit is assessed under the heading view from the road, as is any disbenefit that may arise where a road passes through visually unattractive areas. It is defined as the extent to which travellers, including drivers, are exposed to the different types of scenery through which a route passes.
- 12.7.71 The Roade Bypass would provide a more rural route for drivers using the A508, who currently route through Roade village. To the east of the bypass there would be restricted views of Roade, which would generally be screened by landscaping and environmental bunding. Views to the west of the bypass would be more open, providing views of the countryside. The new bridge over the West Coast Mainline would provide brief views of the railway.
- 12.7.72 The existing intermittent views across the site from the A508, Courteenhall Road, Collingtree Road and Northampton Road would be replaced with views of the proposed development which would be restricted via the use of new embankments and landscaping screening.
- 12.7.73 When taken overall, it is concluded that the proposed development and highway mitigation works would have a **negligible impact** on view from the road.

**12.8 CUMULATIVE EFFECTS**

- 12.8.1 NCC's NSTM2 includes for all committed development and allocated sites within the Northamptonshire area. The model also includes the committed infrastructure schemes and those highly likely to come forward before the forecast assessment year. This includes Highways England's Smart Motorway Projects. The cumulative impacts of the development in combination with other defined land uses and infrastructures scheme has therefore been assessed as part of the overall modelling work undertaken. Full details of the committed and allocated development and infrastructure schemes included in each of the NSTM2 assessment scenarios are detailed at Appendix 12.20.
- 12.8.2 There is a proposed NSIP project on an adjacent site ('Rail Central'), and an ES Scoping report has been submitted to the Planning Inspectorate by the project promoter. Although not a commitment in the traditional sense of an allocated site, or an approved planning permission, the intention is to also assess and report within the final ES submitted with the DCO application, on the potential cumulative effects of that emerging proposal in addition to the proposed development based on the information available in respect of Rail Central at the time.
- 12.8.3 However, judgements have been reached based on the modelling already undertaken, and the improved understanding of the future patterns and levels of traffic on the road network close to these two sites. It seems likely that, in combination with the planned and committed development, the cumulative effects of Rail Central would generate unacceptable and potentially severe transport and traffic impacts.

## 12.9 STATEMENT OF EFFECTS

- 12.9.1 As a result of the proposed design and highway mitigation works, the effects of the proposed development on the surrounding highway network will not result in any permanent moderate or major significant adverse residual effects.
- 12.9.2 The construction traffic would not result in a material impact on the operation of the existing highway network. The measures and procedures outlined in the Construction Management Environmental Plan will ensure that the any adverse environmental impacts during construction are minimised. Overall it is concluded that the construction phase of the development would have a **temporary adverse** impact of **moderate significance** on the operation of the surrounding highway network.
- 12.9.3 Once fully operational, the proposed development would remove over 92 million HGV miles per year from the highway network equating to over £50 million in monetised environmental benefits per year as calculated using the methodology set out in the Department for Transport's Guide to Mode Shift Revenue Support Scheme. The proposed development would provide a distribution hub, meaning that HGV journey distances would be reduced, reducing overall HGV mileage on the road network. Taken together the above modal shift and resultant reduction in overall HGV mileage represents a **permanent beneficial** impact of **major significance**.
- 12.9.4 The proposed highway mitigation works are required to provide satisfactory access to the proposed development and to accommodate the traffic reassignment effect resulting from both the development traffic and proposed highway mitigation works. However, the highway works also release bottlenecks on the A508, M1 and A45 corridors, allowing the existing highway network to function in a safer and more efficient manner. This in turn draws traffic back onto the existing principal and strategic road network. In doing so, traffic flows on many of the surrounding local roads and villages would reduce. Subject to confirmation following the final strategic transport modelling prior to submission of the DCO application, the residual effects of the proposed development in general traffic impact terms can therefore be summarised as a **permanent beneficial** impact of **major significance**.
- 12.9.5 With regards to impacts on pedestrians, cyclists, equestrians and the community it is concluded that the development proposals would have a **negligible** impact on journey length and local travel patterns. Overall it is concluded that the proposed development and the associated highway mitigation works would have a **permanent adverse** impact of **minor significance** on amenity and severance for those categories of users.
- 12.9.6 It is concluded for impacts on vehicle drivers that the proposed development and associated highway mitigation works would have a **permanent beneficial** impact of **moderate significance** on driver stress and a **negligible** impact on view from the road.