

Great North Road Solar and Biodiversity Park

Environmental Statement

Volume 2 – Chapters

Chapter 14 – Traffic and Transport

Document reference – EN010162/APP/6.2.14A14B

Revision number 23

~~January~~March 2026

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

Contents

14.1—Introduction	3
14.2—Consultation	4
14.3—Policy Context	7
14.3.1—Introduction	7
14.3.2—National Planning Policy	8
14.3.3—Local Planning Policy	12
14.3.4—Summary	13
14.4—Assessment Methodology and Significance Criteria	13
14.4.1—Assessment Methodology	13
14.4.2—Study Area	13
14.4.3—Sensitive Receptors	15
14.4.4—Assessment of Environmental Impacts	15
14.4.5—Screening Process	15
14.4.6—Severance	16
14.4.7—Driver Stress and Delay	17
14.4.8—Pedestrian and Cyclist Delay	17
14.4.9—Non-motorised User Amenity	17
14.4.10—Fear and Intimidation	18
14.4.11—Highway Safety	19
14.4.12—Hazardous Loads / Large Loads	19
14.4.13—Link Sensitivity Criteria	19
14.4.14—Magnitude and Significance Criteria	20
14.4.15—Assumptions and Limitations	22
14.5—Baseline	23
14.5.1—Introduction	23
14.5.2—Walking	23
14.5.3—Cycling	24
14.5.4—Horse Riding	25
14.5.5—Bus Travel	25
14.5.6—Train Travel	26
14.5.7—Description of Road Network	26
14.5.8—Personal Injury Collisions Review	29
14.5.9—Baseline Traffic Flows	30
14.5.10—Sensitivity Rating	31
14.5.11—Future Baseline	36
14.6—Development Access and Traffic	36
14.6.1—Access Routes Hierarchy	36



- 14.6.2 Site Access Arrangements 38
- 14.6.3 Passing Places 40
- 14.6.4 Construction Phase Trip Calculation 41
- 14.6.5 Embedded Mitigation 44
- 14.7 Assessment of Effects 46
 - 14.7.1 Construction Phase 46
 - 14.7.2 Operational Phase 59
 - 14.7.3 Decommissioning Phase 59
- 14.8 Mitigation 59
 - 14.8.1 Construction Phase 59
 - 14.8.2 Operational Phase 60
 - 14.8.3 Decommissioning Phase 60
- 14.9 Residual Effects 60
- 14.10 Cumulative Effects 60
- 14.11 Statement of Significance 62
- 14.1 Introduction 4
- 14.2 Consultation 5
- 14.3 Policy Context 8
 - 14.3.1 Introduction 8
 - 14.3.2 National Planning Policy 9
 - 14.3.3 Local Planning Policy 13
 - 14.3.4 Summary 14
- 14.4 Assessment Methodology and Significance Criteria 14
 - 14.4.1 Assessment Methodology 14
 - 14.4.2 Study Area 14
 - 14.4.3 Sensitive Receptors 16
 - 14.4.4 Assessment of Environmental Impacts 16
 - 14.4.5 Screening Process 16
 - 14.4.6 Severance 17
 - 14.4.7 Driver Stress and Delay 18
 - 14.4.8 Pedestrian and Cyclist Delay 18
 - 14.4.9 Non-motorised User Amenity 18
 - 14.4.10 Fear and Intimidation 19
 - 14.4.11 Highway Safety 20
 - 14.4.12 Hazardous Loads / Large Loads 20
 - 14.4.13 Link Sensitivity Criteria 20
 - 14.4.14 Magnitude and Significance Criteria 21
 - 14.4.15 Assumptions and Limitations 23

<u>14.5</u>	<u>Baseline</u>	<u>24</u>
14.5.1	Introduction	24
14.5.2	Walking	24
14.5.3	Cycling	25
14.5.4	Horse Riding	26
14.5.5	Bus Travel	26
14.5.6	Train Travel	27
14.5.7	Description of Road Network	27
14.5.8	Personal Injury Collisions Review	30
14.5.9	Baseline Traffic Flows	31
14.5.10	Sensitivity Rating	32
14.5.11	Future Baseline	37
<u>14.6</u>	<u>Development Access and Traffic</u>	<u>37</u>
14.6.1	Access Routes Hierarchy	37
14.6.2	Site Access Arrangements	39
14.6.3	Passing Places	43
14.6.4	Construction Phase Trip Calculation	44
14.6.5	Embedded Mitigation	47
<u>14.7</u>	<u>Assessment of Effects</u>	<u>49</u>
14.7.1	Construction Phase	49
14.7.2	Operational Phase	62
14.7.3	Decommissioning Phase	62
<u>14.8</u>	<u>Mitigation</u>	<u>62</u>
14.8.1	Construction Phase	62
14.8.2	Operational Phase	63
14.8.3	Decommissioning Phase	63
<u>14.9</u>	<u>Residual Effects</u>	<u>63</u>
<u>14.10</u>	<u>Cumulative Effects</u>	<u>63</u>
<u>14.11</u>	<u>Statement of Significance</u>	<u>65</u>

14.1 INTRODUCTION

1. This chapter of the ES presents the approach and findings from the assessment of the potential transport related environmental effects of the Development arising during the construction, operation and decommissioning phases.
2. This chapter is not intended to be read as a standalone assessment and reference should be made to other chapters within the ES. In particular, effects on Public Rights of Way and their users are assessed in ES Chapter 18, Recreation [EN010162/APP/6.2.18].
3. The assessment reported in this Chapter assumes realistic worst-case scenarios from the range allowed by Chapter 5, Development Description [EN010162/APP/6.2.5]. Such assumptions include the upper limits on values such as the length of access tracks and fencing, and the maximum range for the total area of solar PV modules.
4. This chapter is supported by the following figures in Volume 3: Figures:
 - Figure 14.1: Traffic and Transport Study Area [EN010162/APP/6.3.14.1];
 - Figure 14.2: Link Identification Plan [EN010162/APP/6.3.14.2];
 - Figure 14.3: Traffic Survey Locations [EN010162/APP/6.3.14.3];
 - Figure 14.4: Site Access Locations [EN010162/APP/6.3.14.4];
 - Figure 14.5: Passing Place Locations [EN010162/APP/6.3.14.5];
 - Figure 14.6: Personal Injury Collision Locations [EN010162/APP/6.3.14.6]; and
 - Figure 14.7: Abnormal Load Routes [EN010162/APP/6.3.14.7].
5. In addition, this chapter is supported by the following Technical Appendices (TAs) in Volume 4:
 - TA A14.1: Transport Statement [EN010162/APP/6.4.14.1];
 - TA A14.2: Outline Travel Plan [EN010162/APP/6.4.14.2]; and
 - TA A5.2: Outline Construction Traffic Management Plan (oCTMP) [EN010162/APP/6.4.5.2].
6. Following this introduction and a review of relevant guidance and policy, the assessment methodology is described and the baseline conditions are reviewed. The likely significant effects on the environment are identified and mitigation measures required to prevent, reduce or offset any significant adverse effects are presented. Finally, the likely residual effects after these measures have been implemented are then determined.
7. It should be noted that solar farm developments do not typically generate significant traffic flows, either during construction or once operational. Typically, once operational, there will only be minimal trips per month by small vehicles (van, or similar) for maintenance purposes and the occasional panel replacement. The types of trips during operation will typically be in the order of 15 vehicles per day on average across the Development and will be negligible in significance. It is also anticipated that the effects associated with decommissioning will not be worse than those identified for the construction phase. Whilst all phases of the Development are considered within this chapter, the focus of assessment is on the construction phase.

14.2 CONSULTATION

8. This section presents a summary of the key themes raised from scoping responses and consultations undertaken to date with stakeholders and the public. This summary is provided in Table 14.1.
9. A large number of consultation responses related to matters relating to transport issues associated with areas that do not form part of the Order Limits as a consequence of the design evolution since the statutory consultation and are not included, specifically this included comments such as:
 - Cromwell - the interaction of HGVs coming off the A1 northbound;
 - North Muskham - the suitability of Vicarage Lane for two-way HGVs;
 - North Muskham and South Muskham - Traffic movements generally; and
 - Kelham - the route choice for vehicles accessing land to the north.

Table 14.1: Summary of Consultation

Consultee	Comments/Matters Raised	Response
Scoping Opinion		
Planning Inspectorate	An assessment of the operational phase can be scoped out of further assessment, subject to the number and type of vehicles, and frequency of maintenance visits, being confirmed within the ES.	A summary forecast of the type of vehicle, volume and frequency is outlined in paragraph 7, with further detail provided in the Transport Statement [EN010162/APP/6.4.14.1]
Planning Inspectorate	The ES should include an assessment of the decommissioning phase, or the information required to demonstrate the absence of a likely significant effect.	An evaluation of the decommissioning phase is included in the chapter at Section 14.7.3.
Planning Inspectorate	The Applicant is therefore advised to assess the impact on all PRoW within the Transport and Access chapter of the ES.	PRoW are assessed as part of the ES Chapter 13, Socio-economics and Recreation [EN010162/APP/6.2.13] and ES Chapter 18, Recreation [EN010162/APP/6.2.18].
Planning Inspectorate	The ES should provide a full methodology within the Transport and Access chapter, with appropriate cross references to the TA where required and clear signposting or description of	The assessment methodology has been set out within this chapter at Section 14.4.

Consultee	Comments/Matters Raised	Response
	which aspects are assessed within each document.	
Planning Inspectorate	The Inspectorate consider that NMU groups should be identified as sensitive receptors	These groups are now noted as sensitive receptors in Section 14.4.3.
Planning Inspectorate	The ES should detail whether any AIL movements are required (for example for the larger infrastructure such as the BESS and 400kv substation) and assess any potential effects of these	Details of the AIL movements considered in Section 14.7.1.8
Planning Inspectorate	The assessment should use a proportional increase in traffic flows based on the existing baseline traffic flows.	Baseline traffic flows have been obtained from traffic surveys on roads to be used for construction and are discussed in Section 14.5.
Planning Inspectorate	The ES should accurately represent all required access points and provide a description of why these are required.	The location of all required access points is identified and their rationale, including whether they utilise existing locations or are required to be newly formed. This is discussed in Section 14.6.2.
Averham, Kelham & Staythorpe Parish Council	Traffic surveys should include the A617 near Kelham Bridge	Traffic surveys have been undertaken at this location and informed the assessment as described in Section 14.5.
Averham, Kelham & Staythorpe Parish Council	Broadgate Lane from Kelham is not considered appropriate for construction vehicles	The routing strategy no-longer considers this route for construction traffic.
Canal & River Trust	Request that any routing should seek to utilise adopted roads where possible, with the avoidance of narrow bridges that could be damaged by larger HGV use	This suggested approach reflects the routing strategy adopted.
Canal & River Trust	Suggest that options for alternative non-road based construction transport to and from the site, including use of the river, should be considered	The Applicant is actively engaged in dialogue to explore all opportunities for non-road based transport, including the use of rivers and canals.

Consultee	Comments/Matters Raised	Response
Carlton on Trent Parish Council	Raised concern over the condition of the roads to be used and further defects arising from construction traffic	Section 14.6.5 outlines embedded mitigation measures that include road condition surveys.
Kneesall, Kersall & Ompton Parish Council	The council consider the A616 should be considered in this assessment.	The A616 is included within the assessment.
Section 42 Consultation		
Parish Councils and Nottinghamshire County Council	HGV traffic volumes - Requested information on the anticipated construction vehicle movements, including routing and volumes.	Traffic volumes, including HGVs, are considered in Section 14.6.4 and Figure 14.1 [EN010162/APP/6.3.14.1] shows the routes to site.
Egmanton Parish Council and Residents of Ossington and Moorhouse.	Routing through Ossington and Moorhouse - The road passing through the villages of Ossington and Moorhouse are narrow and not appropriate for HGV traffic.	The access strategy has been revised to take account of these responses and limit the traffic impact. The strategy now uses internal tracks to circumnavigate these areas, as described in Section 14.6.5. Passing places are now proposed along Moorhouse Road to ease traffic flows.
Norwell and Norwell Woodhouse Parish Council, and National Highways	Abnormal Indivisible Loads (AILs) - Further details of the routing for abnormal loads is required.	The routes to be used for AILs is presented in Figure 14.7 [EN010162/APP/6.3.14.7].
Egmanton Parish Council and Nottinghamshire County Council	Traffic Data - A broader coverage of traffic data collection required and validity of previous data to be confirmed.	Subsequent to PEIR, additional traffic data has been collected at 16 locations. This includes new locations and re-surveys in the vicinity of roads previously surveyed. This data has then been used for assessments and is discussed in Section 14.5.9.
Nottinghamshire County Council	Project Phasing - Clarity was sought over how many	The phasing for the construction phase is clarified in Section 14.6.4

Consultee	Comments/Matters Raised	Response
	phases will be used to deliver the Development.	
Feedback at consultation events	Timing of HGV deliveries – concern these may conflict with school buses and traffic.	The oCTMP (TA A5.2) [EN010162/APP/6.4.5.2] sets out that deliveries are scheduled to occur outside of sensitive periods, such as school opening and closing times.
Various local residents	Conflict with pedestrians – especially on roads with no pedestrian facilities and PRow.	The oCTMP (TA A5.2) [EN010162/APP/6.4.5.2] outlines measures that will be implemented to provide a safer environment in these locations, including reduced speeds, signage and separation from construction traffic.
Various local residents	Road Condition - A common theme of public consultation was the existing condition of the roads in the study area, particularly in relation to pot holes.	The oCTMP (TA A5.2) [EN010162/APP/6.4.5.2] outlines that remedial measures will be made to routes to be used for construction, if required. It also outlines that surveys will also be undertaken of the road condition before, during and after construction, with any Development related defects rectified.

14.3 POLICY CONTEXT

14.3.1 Introduction

10. Before considering the baseline conditions, it is important to understand the guidance and policies that underpin the assessment. This Chapter has been prepared with consideration to the guidance 'Travel Plans, Transport Assessments and Statements', published by the Ministry of Housing, Communities and Local Government¹, 'Guidelines for the Environmental Assessment for Road Traffic', Institute of Environmental Management and

¹ Ministry of Housing, Communities and Local Government (2014). Travel Plans, Transport Assessments and Statements. Available at: [<https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements>] [accessed on 09/05/2025].

Assessment (IEMA Guidelines)² and the ‘Design Manual for Roads and Bridges (DMRB)’³.

11. The Development has been considered in the context of the following policy documents:
 - National Policy Statement for Energy (NPS EN-1)⁴;
 - National Policy Statement for Renewable Energy Infrastructure (NPS EN-3)⁵;
 - National Policy Statement for Electricity Transmission Infrastructure (NPS EN-5)⁶;
 - National Planning Policy Framework (December 2024)⁷;
 - The Strategic Road Network and the Delivery of Sustainable Development, DfT Circular 01/2022⁸;
 - Nottinghamshire Local Transport Plan 2011-2026⁹; and
 - Newark & Sherwood Local Development Framework Core Strategy & Allocations (Adopted March 2019)¹⁰.

14.3.2 National Planning Policy

14.3.2.1 National Policy Statement for Energy (NPS EN-1)

12. The NPS for Energy (EN-1) was published in November 2023 and provides the basis for decisions regarding nationally significant energy infrastructure. Section 5.14 outlines the planning policy for traffic and transport, including

² IEMA (2023). IEMA - New IEMA Guidance: Environmental Assessment of Traffic and Movement. Available at: <https://www.iema.net/resources/blogs/2023/07/12/iema-guidance-ea-of-traffic-and-movement/> [accessed on 09/05/2025].

³ National Highways (2020). Design Manual for Roads and Bridges. Available at: <https://www.standardsforhighways.co.uk/dmrb> [accessed on 09/05/2025].

⁴ Department for Energy Security and Net Zero (updated 2024). Overarching National Policy Statement for Energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>

⁵ Department for Energy Security and Net Zero (updated 2024). National Policy Statement for renewable energy infrastructure (EN-3). available at: <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3>

⁶ Department for Energy Security and Net Zero (2023). National Policy Statement for electricity networks infrastructure (EN-5). Available at: <https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf>

⁷ Ministry of Housing, Communities and Local Government (updated 2024). National Planning Policy Framework. available at: <https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf>

⁸ Department for Transport and National Highways (updated 2022). Strategic road network and the delivery of sustainable development available at: <https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development>

⁹ Nottinghamshire County Council (2011). Nottinghamshire Local Transport Plan available at: <https://www.nottinghamshire.gov.uk/policy-library/39018/nottinghamshire-local-transport-plan-2011-2026>

¹⁰Newark and Sherwood District Council (2019). Local Development Framework available at: <https://www.newark-sherwooddc.gov.uk/ldf/>

guidance on undertaking relevant parts of the EIA. The most relevant paragraphs with this section are as below:

13. Paragraph 5.14.1 states that the transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, for example through increased congestion. Impacts may include economic, social and environmental effects.
14. Paragraph 5.14.5 states that if a project is likely to have significant transport implications, the applicant's ES (see Section 4.3) should include a transport appraisal. The DfT's Transport Analysis Guidance (TAG) and Welsh Governments WelTAG provides guidance on modelling and assessing the impacts of transport schemes.
15. Paragraph 5.14.7 states that where appropriate, the applicant should prepare a travel plan including demand management and monitoring measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by active, public and shared transport to:
 - Reduce the need for parking associated with the proposal;
 - Contribute to decarbonisation of the transport network; and
 - Improve user travel options by offering genuine modal choice.
16. Paragraph 5.14.9 states that if additional transport infrastructure is needed or proposed, it should always include good quality walking, wheeling and cycle routes, and associated facilities (changing/storage etc.) needed to enhance active transport provision.
17. In addition, Section 5.14.14 states that the Secretary of State may attach requirements to a consent where there is likely to be substantial HGV traffic that:
 - Control numbers of HGV movements to and from the Development in a specified period during its construction and possibly on the routing of such movements;
 - Make sufficient provision for HGV parking, and associated high quality drive facilities either on the site or at dedicated facilities elsewhere, to support driver welfare, avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on-street HGV parking in normal operating conditions; and
 - Ensure satisfactory arrangements for reasonably foreseeable abnormal disruption, in consultation with network providers and the responsible police force.
18. Paragraph 5.14.21 states that the Secretary of State should only consider refusing development on highways grounds if there would be an unacceptable impact on highway safety, residual cumulative impacts on the road network would be severe, or it does not show how consideration has been given to the provision of adequate active public or shared transport access and provision.

14.3.2.2 National Policy Statement for Renewable Energy Infrastructure (NPS EN-3)

19. The NPS for Renewable Energy Infrastructure (EN-3) was published in 2023 and sets out the policies relating to electricity generation from renewable sources of energy, for consideration in conjunction with NPS EN-1. The 2023 version of this document includes solar photovoltaic generation impacts within Section 2.10. The most relevant paragraphs are set out as follows:
- Paragraph 2.10.123, which discusses the importance of assessing various potential routes to the site for the delivery of materials and components during the construction period;
 - Paragraph 2.10.124, which sets out that where there is uncertainty in delivery routes, worst-case assumptions should be made;
 - Paragraph 2.10.125, which states that any road or bridge modifications required for a development should be set out in the ES; and
 - Paragraph 2.10.126, which states that where a cumulative impact is likely because multiple energy infrastructure developments are proposing to use a common port and/or access route and pass through the same towns and villages, applicants should include a cumulative transport assessment as part of the ES.

14.3.2.3 National Policy Statement for Electricity Networks Infrastructure (NPS EN-5)

20. The NPS for Electricity Networks Infrastructure (EN-5) was published in 2023 and sets out the policies relating to the transmission of electricity around the country, for consideration in conjunction with NPS EN-1. Policies in EN-5 do not add substantially to those set out in EN-1 and EN-3 with respect to traffic and transport.
21. Consultation drafts of the NPSs have been issued (April 2025) in response to changing climate change policy, however, the content of these with respect to the topic covered in this Chapter is materially unchanged from the adopted versions, and hence the adopted versions are referred to elsewhere in this Chapter.

14.3.2.4 National Planning Policy Framework (December 2024)

22. The Government's National Planning Policy Framework (NPPF) was originally published in March 2012 and most recently revised in December 2024, outlining the Government's planning policies and how they are expected to be applied. The Transport Statement [EN010162/APP/6.4.14.1] sets out the key policies of relevance to this application.
23. The most relevant paragraphs in the context of transport are set out below.
24. Paragraph 109 states that "*Transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach to identify transport solutions that deliver well-designed, sustainable and popular places. This should involve:*
- *a) making transport considerations an important part of early engagement with local communities;*

- *b) ensuring patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places;*
 - *c) understanding and addressing the potential impacts of development on transport networks;*
 - *d) realising opportunities from existing or proposed transport infrastructure, and changing transport technology and usage – for example in relation to the scale, location or density of development that can be accommodated;*
 - *e) identifying and pursuing opportunities to promote walking, cycling and public transport use; and*
 - *f) identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains”.*
25. Paragraph 115 outlines the key considerations when assessing sites to be allocated for development in plans or specific development applications. It notes that the following should be ensured:
- *“a) sustainable transport modes are prioritised taking account of the vision for the site, the type of development and its location;*
 - *b) safe and suitable access to the site can be achieved for all users;*
 - *c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and*
 - *d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree through a vision-led approach.”*
26. Within this context, paragraph 117 states that applications for development should:
- Give priority first to pedestrian and cycle movements and then, as far as possible, facilitate access to high quality public transport;
 - Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
 - Create places that are safe, secure, and attractive, which minimise the scope for conflicts between pedestrians, cyclists, and vehicles;
 - Allow for the efficient delivery of goods, and access by service and emergency vehicles; and
 - Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible, and convenient locations.
27. As outlined in Paragraph 118, all developments that generate significant amounts of movement should be required to provide a Travel Plan, and the application should be supported by a Transport Statement or Transport Assessment so that the likely impacts of the proposal can be assessed.

14.3.25 The Strategic Road Network and the Delivery of Sustainable Development, DfT Circular 01/2022

28. The Strategic Road Network and the Delivery of Sustainable Development published by DfT is a document that sets out how Highways England (now “National Highways”) will interact with stakeholders and interested parties to maintain a fully functional Strategic Road Network (SRN), in regard to economic and sustainable growth.
29. The document provides ample guidance on how the SRN should be assessed when accompanying planning applications which may affect the SRN.
30. The document details that development proposals are likely to be accepted if the volume of traffic it is to generate are within the available capacity of the network, or if they do not increase the demand for a specific link or junction.
31. The Strategic Road Network: Planning for the future (A guide to working with Highways England on planning matters) expands further and updates the Government’s latest planning policies and outlines the willingness of National Highways to support economic growth. Indeed, the document details the eagerness of National Highways to support economic and sustainable growth, providing foundations for businesses to grow, and to develop further growth around prospective development, whilst enhancing trade relationships with developers.
32. Additional assessments are required when circular tests are not satisfied. These assessments will usually demonstrate how the proposals will reduce the need to travel by car; improve accessibility by sustainable modes of transport, influence travel behaviours and influence appropriate mitigation measures to ensure sustainable transport is promoted efficiently.

14.3.3 Local Planning Policy

14.3.3.1 Nottinghamshire Local Transport Plan 2011-2026

33. This policy document is the third Local Transport Plan (LTP3) to be produced by the County Council and replaces the second Local Transport Plans for Greater Nottingham (which was produced jointly with the city of Nottingham) and for North Nottinghamshire. LTP3 details the transport strategy for the whole of the county of Nottinghamshire for the fifteen-year period 1 April 2011 to 31 March 2026.
34. The LTP3 transport goals are to:
 - Provide a reliable, resilient transport system which supports a thriving economy and growth whilst encouraging sustainable and healthy travel;
 - Improve access to key services, particularly enabling employment and training opportunities; and
 - Minimise the impacts of transport on people’s lives, maximise opportunities to improve the environment and help tackle carbon emissions.

14.3.3.2 Newark & Sherwood Local Development Framework Core Strategy & Allocations (Adopted March 2019)

35. A vision for the area and strategic objectives for Newark and Sherwood District Council is proposed to guide development to 2033.
36. The following items are identified within the transport vision for the area:
 - Access will be improved; key transport improvements will have been secured and non-car use encouraged;
 - Development will be environmentally sound, energy and water efficient, minimise waste, and maximise opportunities for appropriate renewable energy, helping to reduce the impact of climate change;
 - To retain and improve accessibility for all, to employment, services, community, leisure, and cultural activities, through:
 - The integration of development and transport provision, ensuring that most new development will be located where it is accessible to use services and facilities by a range of means of transport;
 - The retention and upgrading of existing infrastructure, services and facilities relating to transport and communications; and
 - Encouraging the increased use of public transport, walking, and cycling.

14.3.4 Summary

37. In summary, there are a number of integrated land use and transport planning policies and policy guidance documents that support and underpin the Development. A Construction Phase Outline Travel Plan and a Transport Statement have also been produced, which supports and promotes the sustainable operation of the Development.

14.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

14.4.1 Assessment Methodology

38. The methodology adopted in this chapter follows the “Guidelines for the Environmental Assessment of Traffic and Movement” published by the Institute of Environmental Management and Assessment (IEMA) in July 2023², which sets out the methodology for assessing the traffic related environmental effects of a proposed development due to changes in traffic flows.
39. The IEMA guidelines set out the criteria against which the environmental impacts of development related traffic are assessed. However, where there are no established criteria, IEMA states that there is “*a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible.*” In these cases, professional judgement has been applied to assess whether the effects on access and transport are likely to be significant.

14.4.2 Study Area

40. The Study Area has been identified to cover the extent of the surrounding road network to be used by construction related vehicles travelling to and

from the Development. This is the area whereby significant transport and access effects could occur.

41. Figure 14.1 [EN010162/APP/6.3.14.1] provides a map of the Study Area along with names of key roads. Given the proximity of the Order Limits to the A1 road that passes to the immediate east, as a worst case, all vehicles are expected to route to the Development via the A1, in accordance with the permitted routes outlined in the oCTMP [EN010162/APP/6.4.5.2]. For the purposes of this assessment, these roads form the Study Area.
42. The A1 is included within the Study Area, but has not been assessed due to it being part of the strategic road network (SRN) and its inherent capability to accommodate high volume traffic.
43. Whilst some traffic may arrive from the west, along the A617, before pursuing the permitted routes, given the location of the Development in the context of the wider road network, such movements would represent a small percentage of the traffic volumes on this road and would not be significant. The oCTMP [EN010162/APP/6.4.5.2] ensures that construction traffic will only arrive at a site access from specified direction and via route that has been included within this assessment. The key construction routes for HGV and non-HGV traffic are shown in Figure 14.2 [EN010162/APP/6.3.14.2] along with the link identification numbers used within this assessment, which are also listed in Table 14.2.

Table 14.2: Highway Network Study Link IDs

Link ID	Name/Description
1	A46
2	A616 Great North Road
3	A617 (East)
4	A616 (East)
5	Caunton Road (South)
6	Caunton Road (North)
7	Maplebeck Road
8	Newark Road
9	Kersall Road
10	Main Street
11	Ossington Road (South)
12	Ossington Road (East)
13	Ossington Lane
14	Moorhouse Road
15	Weston Road
16	B1164 Great North Road

Link ID	Name/Description
17	Carlton Lane
18	Staythorpe Road
19	A1 (Northbound)
20	A1 (Southbound)
21	A616 (West)
22	A617 (West)

14.4.3 Sensitive Receptors

44. IEMA recognises that it is useful to identify groups of people or locations that may be sensitive to changes in traffic conditions. IEMA guidance details which groups or locations are considered sensitive, defined by the presence of sensitive receptors.
45. Following a review of the roads available leading to the Order Limits from the A1, the nearest trunk road, the routing strategy for construction traffic has sought to avoid, so far as practicable, sensitive areas such as residential settlements, schools and locations with higher volumes of non-motorised users. The following sensitive receptors have been identified:
 - Residential settlements of Moorhouse, Kelham and Ossington;
 - Non-motorised users (walkers, cyclists and horse riders).
46. Whilst the above residential settlements are identified as sensitive receptors, the routing strategy has been devised to avoid construction traffic passing through the settlement core.

14.4.4 Assessment of Environmental Impacts

47. IEMA guidelines form the basis for the assessment of environmental impacts within this chapter. These impacts will be:
 - Severance;
 - Driver stress and delay;
 - Pedestrian and cyclist (and equestrian) delay;
 - Non-motorised user amenity;
 - Fear and intimidation;
 - Highway safety; and
 - Hazardous / large loads.

14.4.5 Screening Process

48. The IEMA guidance sets out a methodology to determine the scale and extent of the assessment. An initial screening for severance, pedestrian and cyclist amenity and delay, fear and intimidation and highway safety should follow two rules:
 1. Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and

2. Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.
49. The screening analysis is set out in section 14.7.1.1, followed by the detailed assessment of highways links screened into the assessment.

14.4.6 Severance

50. The IEMA Guidelines define severance as: *“the perceived division that can occur within a community when it becomes separated by major transport infrastructure. The term is used to describe a complex series of factors that separate people from places and other people.”* (Paragraph 3.13).
51. There are no predictive formulae which give simple relationships between traffic factors and levels of significance. However, there are a range of indicators for determining significance of the relief from severance. The IEMA Guidelines suggest that *“changes in traffic flow of 30%, 60% and 90% are regarded as producing slight, moderate and substantial changes in severance respectively”* (paragraph 4.31). The guidance also suggests that *“marginal changes in traffic flows are, by themselves, unlikely to create or remove severance”*.
52. Whilst the IEMA guidelines are useful, they may not be appropriate for areas with low baseline traffic flows, such as the rural roads within the Study Area. Therefore, the Design Manual for Roads and Bridges (DMRB) thresholds for severance have been used and professional judgement applied to assess the effects on severance.
53. Severance is defined in the Design Manual for Roads and Bridges (DMRB)³ (Vol 11 Section 3 part 8) as *“...The extent to which members of communities are able (or not able) to move around their community and access services/facilities”*. The DMRB provides a set of measures for the identification of community severance, based on the level of two-way traffic flows on a link using Annual Average Daily Traffic (AADT) data. DMRB offers guidance as to the level of pedestrian diversion that may occur because of changes in the two-way traffic flow present on a link.
54. DMRB also defines quantitative traffic volumes resulting in defined categories of severance:
 - Low: In general, the current journey pattern is likely to be maintained, but there will probably be some hindrance to movement - typical on roads with at-grade crossings carrying less than 4,000 vehicles AADT;
 - Medium: Some residents, particularly children and elderly people, are likely to be dissuaded from making trips - typical on roads with at-grade crossings carrying between 4,000 – 8,000 vehicles AADT;
 - High: People are likely to be deterred from making trips to an extent sufficient to induce a re-organisation of their habits - typical on roads with at-grade crossings carrying between 8,000 - 16,000 vehicles AADT; and
 - Very High: complete severance between communities and their land/assets, with little/no accessibility provision - typical on roads with at-grade crossings over 16,000 vehicles AADT.

14.4.7 Driver Stress and Delay

55. Traffic delays to non-development traffic can occur at several points on the network, including:
 - At the site access locations where there will be additional turning movements;
 - On the roads leading to the Development where there is likely to be additional traffic and the flow might be affected by additional parked cars;
 - At other key intersections along the highway which might be affected by increased traffic; and
 - At side roads where the ability to find gaps in the traffic may be reduced, thereby lengthening delays.
56. The IEMA guidance recognises that significant traffic delays around a new development are likely when the surrounding network is already at or near full capacity. To estimate these delays, specialised software can be used to calculate vehicle time and delay at junctions. This allows for an assessment of the baseline traffic conditions to be undertaken and the impact of the Development on vehicle delays, which then allows consideration of how sensitive the traffic flow is to the Development.

14.4.8 Pedestrian and Cyclist Delay

57. The assessment of pedestrian and cyclist delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads.
58. It is therefore noted that pedestrian delay and severance are closely related effects and can be grouped together. IEMA guidance outlines that a significant change in the volume, composition or speed of traffic may affect the ability of people to cross a road. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility, and general physical conditions of the provisions.
59. No thresholds are set in the IEMA guidance, and it is suggested that assessors use professional judgement. IEMA guidance does not set any thresholds for delay suggesting that professional judgement is applied.

14.4.9 Non-motorised User Amenity

60. Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and is affected by traffic flow, traffic composition, footway width and separation from traffic.
61. The IEMA guidance recognises that the assessment of amenity should pay full regard to specific local conditions. Previous guidance suggested that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled. Although these thresholds no longer appear in IEMA guidance, they have not been superseded by subsequent changes to guidance and are still considered appropriate in the assessment process. However, applying a percentage change in traffic to determine the effect is not considered

appropriate when the baseline traffic flows are low, and in such instances professional judgement is used.

14.4.10 Fear and Intimidation

62. Pedestrians, cyclists and equestrians can experience fear and intimidation related to traffic. Fear and intimidation criteria are considered within IEMA guidance to be dependent on the volume of traffic, its HGV component and its proximity to people, or the lack of protection caused by such factors as narrow footway widths.
63. IEMA guidance sets out a weighting system to help assessors provide a first approximation of the likelihood of pedestrian fear and intimidation, presented in Table 14.3.

Table 14.3: Fear and intimidation degree of hazard

Average traffic flow over 18-hour day – all vehicles/hour 2-way (a)	Total 18-hour heavy vehicle flow (b)	Average vehicle speed over 18 hours (c)	Degree of hazard score
+1800	+3000	>40	30
1200 – 1800	2000 – 3000	30-40	20
600 – 1200	1000 – 2000	20-30	10
<600	<1000	<20	0

64. The total score from all three elements is combined to provide a 'level' of fear and intimidation for all three elements, shown in Table 14.4.

Table 14.4: Levels of fear and intimidation

Level of fear and intimidation	Total hazard score (a) + (b) + (c)
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

65. The magnitude of impact is approximated with reference to the changes in the level of fear and intimidation from baseline conditions, in accordance with Table 14.5.

Table 14.5: Fear and intimidation magnitude of impact

Magnitude of impact	Change in step/traffic flows (AADT) from baseline conditions
High	Two step changes in level
Medium	One step change in level, but with

Magnitude of impact	Change in step/traffic flows (AADT) from baseline conditions
	<ul style="list-style-type: none"> • >400 vehicle increase in average 18-hour all-vehicle two-way all vehicle flow; and/or • >500 heavy vehicle increase in total 18-hour heavy vehicle flow
Low	One step change in level, with <ul style="list-style-type: none"> • <400 vehicle increase in average 18-hour all-vehicle two-way all vehicle flow; and/or • <500 heavy vehicle increase in total 18-hour heavy vehicle flow
Negligible	No change in step changes

14.4.11 Highway Safety

66. Where a proposed development is expected to produce a change in the character of traffic, then data on existing collision levels may not be sufficient. Professional judgement is also required to assess the implications of a proposed development on highway safety. This assessment should include local considerations or factors, which may impact the risk of collisions.
67. IEMA guidance outlines that a review of existing collisions in the Study Area be undertaken. The purpose being, to establish if a pattern of collision types exists, by reviewing collision clusters. Cluster sites are sensitive receptors as they could potentially be impacted by changes in traffic flows.

14.4.12 Hazardous Loads / Large Loads

68. IEMA guidance outlines that the traffic and movement assessment needs to clearly outline the estimated number and composition of such loads. Where the number of movements is considered to be significant, the assessment should include a risk or catastrophe analysis to illustrate the potential for an accident to happen and the likely effect of such an event. The extent of such analysis should clearly reflect the nature of the load being transported. For instance, much more detail is required for a development that involves the transportation of nuclear products than for one that involves the delivery of petroleum.
69. Regarding hazardous and/or large loads in terms of traffic and movement, it is appropriate that routes for abnormal load movements and mitigation strategies to secure safe passage is considered throughout the assessment.

14.4.13 Link Sensitivity Criteria

70. The IEMA guidance acknowledges that the perception of changes in traffic by humans, and the impact of traffic changes on the various ecological systems will vary according to several factors, such as existing traffic levels, location, time of day, temporal and seasonal variation, design and layout of the road, land-use, and ambient conditions adjacent to the route.

71. Table 14.6 sets out the parameters used to determine the link sensitivity rating.

Table 14.6: Link Sensitivity Rating Criteria

Link Sensitivity Rating	Typical Characteristics
Low	Very few nearby sensitive receptors. High standard of highway with separation of vulnerable users and can accommodate frequent HGV use and changes in traffic volume.
Medium	Small number of sensitive receptors and less separation of vulnerable users from traffic. Relatively low traffic volumes and can accommodate some HGV use.
High	High number of sensitive receptors and little separation of vulnerable users from traffic. Narrow road with limited capacity to accommodate frequent HGV traffic.

14.4.14 Magnitude and Significance Criteria

72. The IEMA Guidance and DMRB establish thresholds for the magnitude of impact in relation to delay, pedestrian/cycle amenity and fear and intimidation as set out in Table 14.7: Magnitude of Effect

Table 14.7: Magnitude of Effect

Environmental Impact	Magnitude			
	Very Low	Low	Medium	High
Delay	Change in traffic. <30%	Change in traffic 30%-60%	Change in traffic 60%-90%	Change in traffic >90%
Pedestrian/Cycle/Equestrian Amenity	Changes in traffic (or HGV flows) <100%	Changes in traffic (or HGV flows) >100% Individual link to be assessed by review of vehicle volume, speeds, and pedestrian/cycle demands		
Fear & intimidation	Average traffic flows over 18 hours less than 600 vehicles per hour or 1,000 HGV over 18 hrs.	Average traffic flows over 18 hours between 600-1,200 vehicles per hour or 1,000–2,000	Average traffic flows over 18 hours > 1,200 vehicles per hour or > 2,000 HGV over 18 hours.	

Environmental Impact	Magnitude			
	Very Low	Low	Medium	High
			HGV over 18 hrs	

- 73. The magnitude of impact for severance has been informed by the DMRB thresholds of total flow, as set out in section 14.4.6, and professional judgement.
- 74. Impacts on pedestrian/cyclist/equestrian delay will be estimated following a review of crossing facilities and demand, and the forecast levels of traffic.
- 75. The significance of transport related environmental impacts is derived through a combination of the magnitude of the impact and the sensitivity of nearby receptors subject to the impact. Thus, a matrix can be established combining these two measures and quantifying the significance of the impact, this matrix is set out in Table 14.8.

Table 14.8: Significance Criteria

		Magnitude of Effect			
		High	Medium	Low	Very Low
Receptor Sensitivity	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible

- 76. The effect significance identified in Table 14.8 can be either adverse or beneficial. Table 14.9 sets out generic definitions for the impact significance categories.

Table 14.9: Effect Description

Category	Description
Major Adverse	Very large or large change in receptor condition, which is likely to be important at a regional or district level because it contributes to achieving national, regional, or local objectives, or could result in breaches of legislation.
Moderate Adverse	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor Adverse	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision-making process.
Negligible	No discernible change in receptor condition.
Minor Beneficial	The impact is of minor significance, but has been assessed as having some environmental benefit
Moderate Beneficial	The impact is assessed as providing a moderate gain to the environment
Major Beneficial	The impact is assessed as providing a significant positive gain to the environment with a large or very large change in receptor condition which is likely to be important at a regional or district level because it contributes to achieving national, regional, or local objectives, or could result in an exceedance of statutory objectives.

77. Major and Moderate effects have been reviewed further within this chapter and professional judgement has been used to confirm that this outcome is appropriate for the road link and determine whether it is considered significant. Minor effects will be reviewed to ascertain whether there are any likely cumulative combinations of minor effects which may warrant further assessment. Negligible effects will not be considered beyond the screening stage.

14.4.15 Assumptions and Limitations

78. The assessments within this chapter are based on assumptions regarding the trip generation and distribution of traffic associated with the Development construction phase, which are set out later in this chapter and within the Transport Statement (TA A14.1) [EN010162/APP/6.4.14.1]. As with any traffic assessments that seek to predict future conditions, there is inherent uncertainty in the forecasts. The forecast operations, while appropriately representing the complex factors involved in traffic movement, are subject to uncertainty. To compensate, robust, conservative assumptions are used throughout.

79. It is assumed when vehicles have left the public highway, internal haul roads will be used to facilitate the movement of vehicles associated with the construction of the Development.

14.5 BASELINE

14.5.1 Introduction

80. This section provides a general overview of the Study Area and the existing transport conditions, including a description of the local highway network and a commentary of the sustainable travel credentials for journeys to the Development. A review of the road safety history for the Study Area is also included.

14.5.2 Walking

81. Almost all journeys include an element of walking therefore pedestrian facilities should not be considered in isolation. Walking offers the connection between cycling, public transport and highway transport to destinations.
82. Due to the rural nature of the Development, there are limited footway provisions alongside the roads within the Order Limits, these are however described in this section. In addition, an overview of the pedestrian facilities in the villages surrounding the Order Limits are also detailed below to give context to the availability of the immediate wider area.

14.5.2.1 Sutton-On-Trent

83. The B1164 (Link ID 16) offers very limited provisions for pedestrians, with only a narrow footway (less than 1 m) provided along the eastern side of the road, with no separation from traffic or streetlighting.
84. Within Sutton-On-Trent village itself, there is a mix of pedestrian facilities, primarily concentrated in the centre of the village. There are footways along the main thoroughfares and near key areas such as the village hall, shops, and the school. The availability of designated crossing locations is limited. Street lighting is adequate in the village centre but becomes sparse towards the residential streets.

14.5.2.2 Carlton-on-Trent

85. Along the section of the B1164 (Link ID 16) between its junction with Ferry Lane and the A1, there are no footways. From the Ferry Lane junction both northwards and to the west, there is limited availability with only a narrow footway (less than 1 m) provided on one side of the road. Both of these sections include a bus stop.
86. Street lighting is generally limited to areas near the A1 and some key junctions. The village has basic signage present to assist with wayfinding.

14.5.2.3 Caunton

87. There are no footways on the A616 (Link ID 4) as it passes Caunton and as such, no pedestrian movements along this arterial route are expected.

88. Within Caunton, footways are primarily located along the main road and in the village centre, with few extending into residential streets. The quality of pedestrian footways varies within the village, with some areas being narrow or having uneven surfaces. Street lighting is not extensive, with most present near the village centre.

14.5.24 Kelham

89. As the A617 (Link ID 3) passes through Kelham from the east, there is a footway along the northern side which reduces in width as it leaves the village to the west. A short section of footway is introduced on the southern side of the road in the vicinity of Broadgate Lane and Home Farm Close.
90. Pedestrian crossing opportunities on the A617 are limited. Street lighting is present along the A617 which enhances pedestrian safety. Signage through the village is adequate, with some traffic calming measures near the main local amenities.

14.5.25 Maplebeck

91. Maplebeck is a small village with minimal pedestrian facilities. Footways are present along the Hollows and Church Lane, which are the two main residential streets in Maplebeck. Street lighting and signage is sparse and limited to a few key areas. The roads through the village are narrow and have no road markings, reflecting the low traffic volume.
92. Maplebeck Road (Link ID 8) bypasses the village to the north. This road has centreline markings but has grass verges and offers no footway provision or street lighting.

14.5.26 Summary

93. Overall, there are very limited pedestrian facilities alongside the links being used for construction traffic. Those that are present are typically characterised by being relatively narrow and with limited or no separation from traffic.
94. Within the villages, provisions are generally sufficient and suitable to meet local demand and need.

14.5.3 Cycling

95. Cycling provides the means to undertake numerous short-distance journeys typically under five kilometres, either as a standalone mode or in conjunction with other forms. Cycling levels are influenced by the condition of the routes, the volume of traffic and the availability of secure cycle storage at the destination.
96. Within the Study Area, cycling occurs on the local roads but dedicated cycling infrastructure is limited.

14.5.3.1 Cycle Routes

97. Designated cycle route availability in the area is generally limited. There are however two National Cycle Routes (NCR) that pass close to the Study Area – NCR 645 terminates at Southwell, approximately 2.4 km south of

Hockerton and NCR 64 runs from Newark in a north-east direction. From Newark town centre, access is also provided to the Southwell Loop on the regional cycle route, which travels through Muskham and Norwell, and continues to Southwell. The route passes through Egmonton and Tuxford where it intersects with National Cycle Route 647. Cycle routes are shown on Figure A14.1.13 of the Transport Statement [EN010162/APP/6.4.14.1].

98. Across the Study Area, cyclists often share the road with general traffic, although cycling trips along A class roads with high volumes of traffic and fast-moving vehicles are likely to be limited.
99. Elsewhere, the rural local roads provide quieter and safer alternatives for cycling although they lack dedicated cycle infrastructure. The lower traffic volumes however make the rural roads a more attractive proposition compared to the 'A' roads.
100. In summary, although the Study Area does not have an extensive network of dedicated cycling infrastructure, cyclists may be present on less busy roads and routes away from heavy and fast-moving traffic.

14.5.4 Horse Riding

101. Formal equestrian routes in the Study Area exist but are relatively limited, although equestrian facilities such as stables, liveries and grazing areas are noted as being near Caunton and Bathley, and Averham Park Farm.
102. Whilst there are unlikely to be many horse-riding journeys on A and B class roads, except where a bridleway crosses them, on minor roads, horse riding may be more regular. Indeed, it is noted that looking at rights of way in isolation understates the equestrian access resource as it may be possible to link up public rights of way using minor roads and other access resources.

14.5.5 Bus Travel

103. The bus is generally considered a viable mode of travel over short and medium distances although some routes and services with limited stops make longer distances less? viable.
104. Kersall Road bus stop is located to the north of Kersall on the A616, where the service 733 operates. The 733 bus operates two services per day and serves the nearby villages of Norwell and Moorhouse.
105. Newark Castle Railway station bus stop is located to the south of the A46/A616/A617/B6326 roundabout in Newark-on-Trent, approximately 4km from the BESS and 400kV Substation. Seven bus services operate from this stop; the services 28, 29, 37, 38, 300, X22 and the X37.
106. A pair of bus stops are located on the A617 at Hockerton, near the junction with Caunton Road. Bus service 964 operates from these stops.
107. Table 14.10 summarises bus services locally.

Table 14.10: Bus Services

Bus Number	Service	Frequency
28	Mansfield Bus Station-Farndon Long Lane	8 services per day
29	Mansfield Bus Station-Newark Bus Station	4 services per day
37	Retford-Newark	Hourly between 9am and 6pm
40	Tuxford – South Muskham	1 service per day
300	Lowdham to Newark	2 services per day
X22	Sutton on Trent- Grantham	1 service per day
X37	Tuxford-Newark (southbound)	1 service per day
339	North Muskham - Tuxford	4 services per day
733	Kneesall - Tuxford	2 Services per day

108. Bus services in rural villages are typically less frequent compared to urban areas, with some routes operating only a few times per day, especially outside of peak hours. The primary function of the bus services is to connect these rural communities with Newark-on-Trent, which serves as a local hub for shopping, healthcare, and other services.
109. In addition to the scheduled services in Table 14.10 it is also noted that Nottsbus On Demand services operate in the area and do not follow a fixed timetable but instead operate on a flexible, on demand basis, allowing users to travel between bus stops and designated points with the travel zone, where there are currently no local bus routes.
110. Bus stops in these villages are usually basic, often consisting of a simple pole with a timetable, and occasionally a shelter. Due to the rural nature of these villages, the infrastructure is generally minimal.
111. In summary, while public transport services operate in the area, they are limited and infrequent.

14.5.6 Train Travel

112. The nearest station to the Development is Newark Castle train station, which operates regular services to destinations such as Nottingham, Leicester, Lincoln and Grimsby.
113. Newark Northgate station is situated slightly further away and operates regular services to destinations that include London, Doncaster and York.

14.5.7 Description of Road Network

114. Figure 14.1 [EN010162/APP/6.3.14.1] shows the location of the Order Limits in the context of the road network within the Study Area and the text below provides a brief overview of key roads.

14.5.7.1 A1

115. The A1 is a major trunk road that is operated and maintained by National Highways. As it passes the Order Limits to the east, the A1 operates as a dual carriageway, with two lanes in each direction. Within proximity to the Order Limits there are junctions at Tuxford, Carlton-on-Trent, Cromwell, North Muskham and Newark-on-Trent:

- Tuxford – for southbound traffic, an off-slip and on-slip are available at Tuxford. For northbound traffic on the A1, an off-slip is provided, but access to the A1 northbound cannot be achieved at Tuxford.
- Carlton-On-Trent – both northbound and southbound slip roads are available at the grade-separated junction at Carlton-on-Trent.
- Cromwell – to the north of Cromwell a southbound off-slip and on-slip is available for southbound traffic, which provides access to a HGV parking area or continued southbound journeys into Cromwell. A short distance further south, another southbound off-slip and on-slip provision is available via a grade-separated junction. For northbound traffic an off-slip is provided to the south of the village and another to the north of the village, from where a northbound on-slip is also available.
- North Muskham – to the north of North Muskham, at-grade junctions provide for both southbound and northbound movements. Approximately 700 metres further south, the A1 continues over a grade-separated roundabout beneath, which accommodates all movements.
- Newark-on-Trent – to the north of Newark-on-Trent, a grade-separated junction for all movements provides access to the A46, A17 and the B6166.

14.5.7.2 A617

116. The A617 (Link ID 3 and 22) runs in an east-west direction to the south of the Order Limits (except some areas of Work no. 2, cables, and Work no. 8, access, and the whole of Work no. 6, Consented Staythorpe BESS, Work no. 7, National Grid Staythorpe Substation, which lie south of the A617). The A617 is a single carriageway road which is in good condition and is characterised by bends and typically has a speed limit of 50 mph which reduces to 30 mph through the villages of Kelham, Hockerton and Kirklington. As it passes through the villages, some sections have a footway and street lighting; outside of these areas the road is typically unlit with only grass verges on either side of the road.

14.5.7.3 A616

117. The A616 (Link ID 4 and 21) is a single carriageway road that runs in a north westerly direction, connecting Newark-On-Trent with Ollerton and is a single carriageway road. The road is maintained to a generally good standard and has centre line and road edge markings with grass verges and no street lighting. As the road passes Little Carlton and through Kneesall there is localised active frontage and footways are present.

14.5.7.4 A614

118. The A614 runs in a north-south direction to the west of the Order Limits from the north of Nottingham directly to Apleyhead Interchange, a major junction on the A1. The A614 is a single carriageway road with a national speed limit northwards from its junction with the A616 near Ollerton and 50 mph to the south, with a good road surface.

14.5.7.5 B6325

119. The B6325 runs between North Muskham and South Muskham, north of Newark-on-Trent, and it is also referred to as Great North Road; the road name also used for other roads in the area, including the B1164. The road starts at a large grade-separated roundabout with full access to the A1 just outside of North Muskham and, after bridging the East Coast Main Line railway, continues to the South Muskham bypass. The road ends on the west side of South Muskham at a mini-roundabout junction with the A616.
120. The road is single carriageway and subject to the national speed limit at its northern end, which reduces to 30 mph as it enters South Muskham. The road surface in reasonable condition and has centreline and road edge markings.

14.5.7.6 Carlton Lane

121. Carlton Lane (Link ID 17) runs from north to south between Ossington Road and Main Street in Norwell. The road is relatively narrow with grass verges on both sides and has no pedestrian facilities.

14.5.7.7 Ossington Road

122. Ossington Road (Link ID 12) runs from east to west, providing a connection between Carlton-on-Trent, Ossington and Kneesall. The road is a single carriageway subject to the national speed limit as it approaches Ossington from the east, before reducing to 30 mph as it approaches the village. The road has grass verges and no pedestrian facilities on its section subject to the national speed limit, but a narrow footway is available as it enters the village.

14.5.7.8 Kersall Road

123. Kersall Road (Link ID 9) runs from north to south between Ossington Road and the A616. It provides a connection between Kneesall and Ossington. The road is a single carriageway with centre line road markings, subject to the national speed limit, with grass verges and no pedestrian facilities on either side of the carriageway.

14.5.7.9 Maplebeck Road / Newark Road

124. Maplebeck Road (Link ID 7) runs in the northwestern direction providing a connection between Caunton and Eakring, where it is then referred to as Newark Road (Link ID 8). The road is a single carriageway with centre line road markings and is subject to the national speed limit. It has no street lighting and has grass verges, with no pedestrian facilities on either side of the carriageway.

14.5.7.10 Caunton Road

125. Caunton Road (Link ID 5 and 6) runs from north to south between the A616 and the A617. It provides a connection between Caunton and Hockerton. The road is a single carriageway subject to the national speed limit, with no pedestrian facilities provided on either side of the carriageway.

14.5.7.11 Ossington Lane

126. Ossington Lane (Link ID 13) is a rural, single carriageway with a width suitable to allow two-way traffic for cars. It links the B1164 at Sutton-on-Trent with the village of Ossington via Ossington Road. There is no street lighting or road markings along this link and each side of the road is abutted by grass verges with no pedestrian facilities.

14.5.7.12 Moorhouse Road

127. Moorhouse Road (Link ID 14) serves local traffic and runs northwards from the village of Moorhouse, linking onto Weston Road between Egmanton and the A1. The road is single carriageway and subject to the national speed limit, with grass verges. No street lighting is present and there are no pedestrian facilities.

14.5.7.13 Weston Road

128. Weston Road (Link ID 15) connects the B1164 in the east with the village of Egmanton in the west via a bridge over the A1. The road has no street lighting or pedestrian facilities, with grass verges on either side of the road. The road is of sufficient width for two-way car traffic.

14.5.7.14 Staythorpe Road

129. Staythorpe Road (Link ID 18) connects the towns of Staythorpe and Rolleston to the A617 and runs in a north – south direction. It has centre line markings and operates at a 50mph speed limit except at the built-up areas where the speed limit reduces to 30mph.

14.5.8 Personal Injury Collisions Review

130. A review of personal injury collision (PIC) data has been undertaken for all construction phase traffic routes within the study area. The review of the collision records has been undertaken to identify patterns of collision types that may be attributed to issues arising from the existing road design or layout and identify any trends that could be exacerbated by Development related traffic.
131. Data was obtained from Nottingham County Council for the most recent full 3-year period, 01 January 2022 to 31 December 2024, which allows consideration of comparable post-COVID19 data. PICs are classified as 'slight', 'serious' and 'fatal' depending on the severity of the injuries sustained. Table 14.11 provides a total summary for the study area and Figure 14.3 [EN010162/APP/6.3.14.3] presents their location. Further analysis of collisions is provided within the Transport Statement (TA A14.1 [EN010162/APP/6.4.14.1]).

Table 14.11: PIC Severity Summary

Year	Severity			Total
	Slight	Serious	Fatal	
2022	18	6	0	24
2023	17	4	1	22
2024	17	9	1	27
Total	52	19	2	73

132. The presentation of collision locations shown in Figure 14.6 [EN010162/APP/6.3.14.6] clearly shows that the majority of collisions in the Study Area have occurred along the A617 and A46 and to a lesser degree, the A616. The data does not present any other particular trend in collisions.
133. It is noted that a fatality was reported on Moorhouse Road. The collision occurred on the morning of Sunday 29 December 2024 and involved a car and pedal cycle that were both travelling in the same southbound direction. The weather was reported as being fine but the road surface wet.
134. Another fatal collision is reported on the A617, which occurred on the morning of Tuesday 11 July 2023. The collision involved two cars.

14.5.9 Baseline Traffic Flows

135. To provide a baseline of existing traffic levels within the Study Area and inform the assessments, traffic surveys were conducted. Surveys were conducted in April 2024, February 2025 and March 2025 to reflect neutral periods representative of the typical flow conditions on the network, avoiding for example, school holiday periods. Data was collected at locations along the key routes to be used by construction traffic and in the vicinity of site access locations. The surveys provided continuous traffic counts over a 7-day period and included details of vehicle classification, direction and speed. Figure 14.4 [EN010162/APP/6.3.14.4] provides the location of the traffic surveys and a summary of the baseline traffic volumes used to inform assessments is presented in Table 14.12. The raw traffic surveys data is contained within the appendices of the Transport Statement (TA A14.1 [EN010162/APP/6.4.14.1]).
136. Baseline traffic flow data for Staythorpe Road (Link ID 18) has been sourced from the Applicant’s planning application for the Staythorpe BESS located off Staythorpe Road¹¹.
137. Traffic flow data for the A1 has been obtained from WebTRIS, the National Highways web-based system for accessing historic traffic data from the Strategic Road Network, specifically, Site ID 30360804 and 30360804.

¹¹ Newark and Sherwood District Council planning application ref: 22/01840/FULM

These sites are located on the A1 northbound and southbound respectively, to the north of Cromwell, between the B6325 and B1164.

138. For Link IDs 21 and 22, traffic data has been obtained from the Department for Transport's road traffic statistics website¹², which provides online traffic data for roads in Great Britain. Specifically, count points 91065 and 91064 for the A616 and A617 respectively. The data includes recorded flows from 2024 and provides AADT, including HGVs.

~~139.~~

14.5.10 Sensitivity Rating

~~140-139.~~ Through a combination of site visits and desktop studies, a sensitivity rating has been applied to each link within the Study Area. Table 14.6 sets out the parameters used to determine the link sensitivity rating and Table 14.12 sets out the sensitivity rating applied to each link within the Study Area, along with the respective justification.

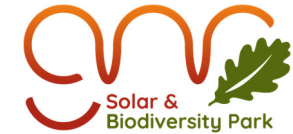
¹² <https://roadtraffic.dft.gov.uk/>

Table 14.12: Link Sensitivity Rating

Link ID	Road Name	Description	Baseline AADT	Sensitivity	Justification
1	A46	Link assessed between the A1 and the junction with A161 Great North Road	28,247	Low	High standard road functioning as a key link on the Strategic Road Network. No pedestrian desire lines or facilities. No dedicated cycle facilities and cycle usage expected to be low given the traffic volumes and speeds.
2	A616 Great North Road	Link assessed between A46 and Ollerton Road /Main Street located at South Muskham	9,766	Low	A good standard single carriageway road with grass verges and no street lighting. Some commercial use and shared footway/cycleway adjacent the road.
3	A617 (East)	Link assessed between A46 and Caunton Road	15,077	Low	A single carriageway road in good condition. Some sections have a footway and street lighting as it passes through villages, but outside of these areas the road is typically unlit with no footway.
4	A616 (East)	Link assessed between South Muskham and Kneesall	5,353	Low	A good standard single carriageway road with grass verges and no street lighting. Localised active frontage and footways as it passes through villages.
5	Caunton Road (South)	Link assessed between Hockerton and approx. mid-point	1,642	Medium	The road is a single carriageway subject to the national speed limit, with no pedestrian facilities but low usage expected.

Link ID	Road Name	Description	Baseline AADT	Sensitivity	Justification
6	Caunton Road (North)	Link assessed between Hockerton and approx. mid-point	1,642	Medium	The road is a single carriageway subject to the national speed limit, with no pedestrian facilities but low usage expected.
7	Maplebeck Road	Link assessed between A616 and Maplebeck	654	Medium	Road is of reasonable standard with centre line road markings. It has grass verges with no pedestrian facilities.
8	Newark Road	Link assessed between Maplebeck and Eakring	1,035	Medium	Road is of reasonable standard with centre line road markings. It has grass verges with no pedestrian facilities.
9	Kersall Road	Link assessed between A616 and Ossington Road	602	Medium	Road is of reasonable standard with centre line road markings. It has grass verges with no pedestrian facilities
10	Main Street	Link assessed between Moorhouse Road and the former Ossington Airfield	603	Medium	Passes through Ossington village where pedestrians movements may occur. A footway is present on the northern side of the road. Relatively low traffic volume.
11	Ossington Road (South)	Link assessed between Ossington and approx. mid-length	129	High	A narrow rural road with vegetation close to the road edge. No pedestrian facilities. Width unsuitable for two-way HGV movements.
12	Ossington Road (East)	Link assessed between the A1 and Moorhouse Road	662 100	Low	Good standard road with intermittent field accesses, farm properties and a few private properties. Accommodates existing HGV usage. The road has grass verges and no pedestrian facilities.

Link ID	Road Name	Description	Baseline AADT	Sensitivity	Justification
13	Ossington Lane	Link assessed between B1164 and track to Crow Park Farm	378	Medium	The road width is suitable to allow two-way traffic for cars. It links the B1164 at Sutton-on-Trent with the village of Ossington via Ossington Road. There is no street lighting or road markings along this link and each side of the road is abutted by grass verges with no pedestrian facilities.
14	Moorhouse Road	Link assessed between Weston Road and approx. mid-length.	289	High	A rural road with occasional access adjacent fields, tracks and private properties. Grass verges and no pedestrian facilities. Width unsuitable for two-way HGV movements.
15	Weston Road	Link assessed between Moorhouse Road and the B1164	747	Medium	A rural road with grass verges and no pedestrian facilities. One private property fronts the road and an access track to an electric substation is also gained from this link. As the road continues west of Moorhouse Road, access is provided to the Egmanton Solar Farm to the north.
16	B1164 Great North Road	Link assessed between Tuxford and Carlton-on-Trent	1,873	Low	A single carriageway road with expected pedestrian activity as it passes through built up areas. Footways are present in the vicinity of settlements, along with street lighting. The road is subject to a derestricted speed limit which is reduced to 40 mph in the vicinity of the settlements.



Link ID	Road Name	Description	Baseline AADT	Sensitivity	Justification
17	Carlton Lane	Link assessed between Ossington Road and 500 m south	208	High	A rural road with occasional access adjacent fields. Grass verges and no pedestrian facilities. Width unsuitable for two-way HGV movements. A low volume of base traffic is noted.
18	Staythorpe Road	Link assessed between A617 and Pingley Lane	2,026	Low	Good standard road with limited side road junctions. Accommodates existing HGV usage. The road has grass verges and only a narrow pedestrian footway at its western end, which is separated from the road by grass verge.
19	A1 (Northbound)	Link assessed between A46 and Tuxford	24,508	Low	High standard road forming part of the Strategic Road Network and carrying large volumes of traffic. No pedestrian or cycle use.
20	A1 (Southbound)	Link assessed between Tuxford and A46	24,490	Low	High standard road forming part of the Strategic Road Network and carrying large volumes of traffic. No pedestrian or cycle use.
21	A617 (West)	Link assessed between Caunton Road and Kirklington	10,148	Low	A single carriageway road in good condition. There is no footway or street lighting until it approaches Kirklington.
22	A616 (West)	Link assessed between Kneesall and Wellow	5,600	Low	A good standard single carriageway road with grass verges and no street lighting. Localised active frontage and footways as it passes through Ompton and approaches Wellow.

14.5.11 Future Baseline

~~144-140.~~ National Highways propose to improve the A46 Newark Bypass by widening 6.5 km of the existing single carriageway to provide two lanes in each direction between Farndon and Winthorpe roundabouts near Newark-on-Trent. In May 2024, the Planning Inspectorate confirmed it had accepted the application for a Development Consent Order for examination. A key aim of this scheme is to increase capacity, reduce delays and incidents, and improve journey times. It is not envisaged that this scheme will impact the baseline conditions reported within this chapter.

~~142-141.~~ There are no other known planned highway works within the Study Area beyond routine maintenance.

~~143-142.~~ It is considered that traffic levels are unlikely to change significantly from those presented in the baseline given the predominantly rural nature of the Study Area and no significant developments identified in TA A2.1 [EN010162/APP/6.4.2.1] that would notably influence baseline traffic flows. Following the completion of the Development construction phase, baseline traffic levels will likely be less than those reported in this chapter due to temporary change of use of the agricultural land and its associated farm vehicle movements. For the assessment of the construction phase, local growth factors have been applied to the base flows using factors derived from TEMPro Version 8.1, the Trip End Model Presentation Program used to access and analyse data from the National Trip End Model (NTM). The following factors have been determined from the 'Region of Newark and Sherwood: Average Day' dataset from TEMPro and used to adjust the baseline traffic flows from 2024 to 2028, which is assumed to be the approximate mid-point of the construction period:

- Trunk Road: 1.0477;
- A Road: 1.0328; and
- Minor Road: 1.0317.

14.6 DEVELOPMENT ACCESS AND TRAFFIC

14.6.1 Access Routes Hierarchy

~~144-143.~~ Access to the Development has been ascertained by a methodology using a hierarchy of routes to the access locations to be used for the Works Areas shown on Figure 5.1: Works Areas [EN010162/APP/6.3.5.1] during the construction phase. These routes will be secured through the oCTMP [EN01062/APP/6.4.5.2] and then the CTMP secured by a Requirement in the DCO. The oCTMP will be used as a basis for the final CTMP to be submitted for approval to NSDC in consultation with NCC and National Highways.

~~145-144.~~ The overarching construction access route strategy for the Development uses a preference hierarchy of:

1. Trunk Roads;
2. 'A' Roads;
3. 'B' Roads; and

4. Classified and unclassified roads.

~~146-145.~~ For determining the most appropriate construction route, the land parcels that comprise the Development have been grouped into distinct areas that will each be served by a designated site access. The most appropriate route to that site access from the A1 trunk road has then been considered, whilst acknowledging that some traffic may possibly also route from the west. Using the above hierarchy as the guiding principle, the route to each site access also considers:

- The shortest route;
- Seeks to avoid sensitive areas so far as possible, such as schools and villages;
- Uses roads of appropriate width and alignment; and
- Utilises internal haul roads where suitable and convenient.

~~147-146.~~ When it is not viable to achieve the above, additional mitigation measures will be implemented and these are discussed in the “oCTMP” (TA A5.2 [EN01062/APP/6.4.5.2]).

~~148-147.~~ The route hierarchy above has been adopted to ensure that construction traffic avoids sensitive receptors in nearby towns, villages and hamlets as far as practicable. There are also other wider key benefits, including:

- **Traffic Management:** the SRN and A-roads are designed to handle higher volumes of traffic, including HGVs, and by directing construction traffic to these roads, congestion on smaller localised roads is minimised, ensuring a smoother traffic flow;
- **Safety:** A-roads are designed with better safety features, such as wider lanes, clearer signage and more frequent maintenance. This reduces the risk of collisions involving construction vehicles;
- **Efficiency:** Using A-roads for construction routes can significantly reduce travel time. These roads often have higher speed limits and fewer restrictions, allowing for quicker and more predictable transportation of materials and equipment; and
- **Economic Benefits:** Efficient transportation routes reduce fuel consumption and vehicle wear and tear, minimising road damage and the need for repairs.

~~149-148.~~ The routing principles enhance traffic management between private motor vehicles and construction traffic, and maximise safety, efficiency and economic benefits of the Development. Figures 14.1 and 14.2 [EN010162/APP/6.3.14.1 and 2] present the construction traffic routes that will be utilised whilst constructing the Development.

~~150-149.~~ Due to the layout and scale of the Development, it is dissected by several public roads and as such, numerous site access locations are required from these roads. Site access locations have been carefully selected to ensure they are appropriately located in relation to visibility and overall suitability. Where appropriate, preference has been to use already established access locations, which will be upgraded as required to meet design requirements.

14.6.2 Site Access Arrangements

~~144-149.~~ Detailed consideration has been given to the access arrangements for the Works Areas shown on Figure 5.1: Works Areas [EN010162/APP/6.3.5.1] to ensure that they are appropriate to meet the needs of the Development, whilst also giving due consideration to operational safety, environmental impact and minimising disruption to other road users.

~~145-151.~~ When defining site access arrangements, the utilisation of existing accesses have been prioritised when seeking suitable locations into the Development from the public highway. Where existing accesses cannot be utilised, or if no existing access is conveniently located to access the areas, new accesses have been proposed. An overview of the site access locations can be seen in Figure 14.4 [EN010162/APP/6.3.14.5], presenting the location of the existing (to be upgraded) and new accesses proposed.

~~146-152.~~ The site accesses have been separated into three categories, these being:

- Primary Access – these accesses form the main access into the Development from the public highway. They will typically serve as a site compound area. They have been designed to accommodate the turning movements of all sizes of vehicle, including HGV, and will operate under free-flow conditions;
- Secondary Access – the function of these accesses is to supplement the primary access and will typically facilitate cross-over movements of the public highway between Works Areas on either side. Traffic egress movements out of these locations will operate under the supervision of a banksman during the construction phase. They have typically been designed to accommodate the turning movements of Cars and LGVs and only the cross-over movements of HGVs; and
- Cable Drum Access – in addition to their function of performing as a primary access, an over-run provision is included to accommodate the turning movement of the AIL vehicle transporting the cable drum. All AIL movements will be undertaken under appropriate supervision measures.

~~147-153.~~ A total of 43 access locations are proposed, of which ~~2523~~ are existing access locations, many of which will require upgrading to ensure they have appropriate visibility, geometry and surfacing. There are ~~1820~~ new access locations proposed, which have been located to best suit the development needs, visibility and limit environmental/ecological impact, i.e., reduce the need to remove hedgerow, trees and general vegetation.

~~148-154.~~ Site access locations have sought to be located on minor roads, however this has not been viable in 3 locations, with 2 accesses being located on the A616 and 1 access on the A617. All 3 of these access locations are existing field accesses that are currently used by agricultural vehicles. No access is taken directly to, or from the A1 or A46.

~~149-155.~~ There are three secondary accesses that will be temporary and only used by the Development during the construction phase. All other access locations will be permanent and retained for continued use during the operational phase. A summary of each primary and secondary access is

listed in Table 14.13 which sets out a brief rationale for their location and whether they are existing/upgraded, or new.

Table 14.13: Primary Access Locations

Access ID	Location	Description Existing or New	Permanent or Temporary
PA1	A617 – 100 m east of Main Road junction	An existing hard surfaced field access to be upgraded and used to access BESS site. Existing	Permanent
PA2	Private access off Caunton Road – approx. mid-length of road	An existing hard surfaced site access off the public road onto private access and then into field via new access to the south. Existing	Permanent
PA3	Caunton Road – approx. mid-length of road	A new site access to be formed at location of gap in hedgerow to gain access to land to the west. New	Permanent
PA4	Maplebeck Road – 2 km west of A616 junction	An existing hard surfaced field access to be upgraded to gain access to land to the south. Existing	Permanent
PA5	Newark Road – 590 m east of Sandy Lane Public Footpath	A new site access to be formed to gain access to land to the south. New	Permanent
PA6	Newark Road – 720920 m east of Sandy Lane Public Footpath	A new site access to be formed to gain access to land to the south. New	Permanent
PA7	A616 – 1.08 km south-east of Kersall Road	An existing hard surfaced field access to be upgraded to gain access to land to the west. Existing	Permanent
PA8	A616 – 1.03 km south-east of Kersall Road	An existing hard surfaced field access to be upgraded to	Permanent

Access ID	Location	Description Existing or New	Permanent or Temporary
		gain access to land to the east. Existing	
PA9	Kersall Road - 240185 m north-east of A616 junction	An existing hard surfaced field access to be upgraded to gain access to land to the south. New	Permanent
PA10	Kersall Road - 375 m south of Ossington Road junction	An existing grass field access to be upgraded to gain access to land to the west. Existing	Permanent
PA11	Ossington Road - 500 m north of Main Street junction	A new site access to be formed across grassed verge to gain access to land to the west. New	Permanent
PA12	Moorhouse Road – 150 m south of Hagg Lane.	An existing hard surfaced field access to be upgraded to gain access to land to the east. Existing	Permanent
PA13	Ossington Lane – 250 m west of Brimblebeck Lane.	An existing field access to be upgraded to gain access to land to the west and onwards. Existing	Permanent
PA14	Ossington Road – 1.95 km west of Carlton Lane	A new site access to be formed to gain access to land to the north. New	Permanent
PA15	Ossington Road – 1.4 km west of Carlton Lane	An existing hard surfaced access track to be upgraded to gain access to land to the south. Existing	Permanent
PA16	Ossington Road – 1.35 km west of Carlton Lane	A new site access to be formed to gain access to land to the north. New	Permanent

Access ID	Location	Description Existing or New	Permanent or Temporary
PA17	Carlton Lane – 300 m south of Ossington Road junction.	A new site access to be formed to gain access to land to the west. <u>New</u>	<u>Permanent</u>
PA18	Staythorpe Road – 395 m east of Pingley Lane	An existing hard surfaced access to be used in its current form to gain access to the cable route to the north. <u>Existing</u>	<u>Permanent</u>
PA19	Staythorpe Road – 190 m east of Pingley Lane	An existing field access to be used with localised removal or hedgerow. <u>Existing</u>	<u>Permanent</u>
<u>SA1</u>	<u>Private access off Cold Harbour Lane – approx. 1.18km south of A616 junction</u>	<u>New</u>	<u>Permanent</u>
<u>SA2</u>	<u>Unnamed single lane no-through road – approx. 990 m west of Broadgate Lane</u>	<u>New</u>	<u>Permanent</u>
<u>SA3</u>	<u>Unnamed single lane no-through road – approx. 990 m west of Broadgate Lane</u>	<u>Existing</u>	<u>Permanent</u>
<u>SA4</u>	<u>Winkburn Road – 680 m south of The Hollows</u>	<u>Existing</u>	<u>Permanent</u>
<u>SA5</u>	<u>Winkburn Road – 680 m south of The Hollows</u>	<u>Existing</u>	<u>Permanent</u>
<u>SA6</u>	<u>Private Access of The Hollows</u>	<u>New</u>	<u>Permanent</u>
<u>SA7</u>	<u>Private Access of The Hollows</u>	<u>New</u>	<u>Permanent</u>
<u>SA8</u>	<u>Newark Road – 590 m east of Sandy Lane Public Footpath</u>	<u>New</u>	<u>Permanent</u>
<u>SA9</u>	<u>Newark Road – 920 m east of Sandy Lane Public Footpath</u>	<u>New</u>	<u>Permanent</u>
<u>SA10</u>	<u>Norwell Woodhouse Road – 315 m north of A616</u>	<u>Existing</u>	<u>Permanent</u>

Access ID	Location	Description Existing or New	Permanent or Temporary
<u>SA11</u>	<u>Norwell Woodhouse Road – 315 m north of A616</u>	<u>Existing</u>	<u>Permanent</u>
<u>SA12</u>	<u>Kersall Road - 185 m north-east of A616 junction</u>	<u>New</u>	<u>Permanent</u>
<u>SA13</u>	<u>Kersall Road – 130 m south of Norwell Woodhouse</u>	<u>New</u>	<u>Permanent</u>
<u>SA14</u>	<u>Kersall Road – 130 m south of Norwell Woodhouse</u>	<u>Existing</u>	<u>Permanent</u>
<u>SA15</u>	<u>Kersall Road – 340 m north of Norwell Woodhouse</u>	<u>New</u>	<u>Permanent</u>
<u>SA16</u>	<u>Kersall Road – 340 m north of Norwell Woodhouse</u>	<u>New</u>	<u>Permanent</u>
<u>SA17</u>	<u>Kneesall Road – directly opposite Loverose Way junction</u>	<u>Existing</u>	<u>Temporary</u>
<u>SA18</u>	<u>Loverose Way junction with Kneesall Road</u>	<u>Existing</u>	<u>Temporary</u>
<u>SA19</u>	<u>Kneesall Road – existing access to Ossington Airfield</u>	<u>Existing</u>	<u>Temporary</u>
<u>SA20</u>	<u>Ossington Road – 1.3 km north of Main Street</u>	<u>New</u>	<u>Permanent</u>
<u>SA21</u>	<u>Ossington Road – 1.3 km north of Main Street</u>	<u>New</u>	<u>Permanent</u>
<u>SA22</u>	<u>Carlton Lane – 300 m south of Ossington Road junction</u>	<u>Existing</u>	<u>Permanent</u>
<u>SA23</u>	<u>Private access off Carlton Lane</u>	<u>Existing</u>	<u>Permanent</u>
<u>SA24</u>	<u>Private access off Carlton Lane</u>	<u>Existing</u>	<u>Permanent</u>

^{457-156.} It will also be necessary for vehicles to access land identified for mitigation (Works Area 3). Access to these areas will continue to be gained as per their current arrangements. Traffic volumes and frequency of trips to this land is expected to be not greater than current baseline levels.

14.6.3 Passing Places

^{458-157.} Due to the rural location of the Development and some of the roads to be used for construction being of a width not sufficient for two vehicles to pass comfortably, it is proposed for passing places to be constructed, within the Order Limits, along relevant sections of the construction traffic route to

enable the safe passing of two vehicles. The selection of passing place locations along the access routes has been informed by several practical considerations to ensure road safety and efficiency. The primary method in this process has been undertaking of swept path analysis and site visits. The swept path analytical tool allows the simulation of vehicle movements along the route, enables pinch-points to be identified and ensures that the passing places are strategically positioned, so as to limit areas of vehicle conflict and facilitate continued two-way traffic flow. Figure 14.5 [EN010162/APP/6.3.14.5] shows the proposed location of passing places, all of which are within the adopted highway and Order Limits.

~~459-158.~~ Forward visibility is another factor in the placement of passing places, ensuring that drivers have clear sightlines to these areas is important for safety. An assessment of forward visibility has informed the location of inter-visible passing places and thereby reducing the likelihood of vehicles meeting on a section unsuitable for two vehicles to pass. It must however be noted that the Study Area is rural, and routes frequently used by large, slow moving agricultural vehicles and as such, these instances are already occurring to some degree, although these movements typically result in vehicle over-run of the verges.

~~460-159.~~ Wherever possible, the utilisation of existing passing places or areas suitable for vehicles to wait for a short period have been assumed. This minimises environmental disruption and maximises the use of already established locations, which is more efficient. Use of these existing locations assists with continuity and familiarity for regular road users, further promoting safety and ease of use.

~~464-160.~~ In instances where existing passing places and/or areas are insufficient, new places have been strategically proposed. The locations of these new passing places have been informed by the availability of roadside verge, allowing for the expansion of the road width whilst reducing the removal of vegetation. In some instances, where verge space is limited or reduced, the creation of passing places have been established by localised widening on both sides of the road to create a 'bulb' effect.

~~462-161.~~ Through continued liaison with the Local Highway Authority, the long-term status of the installed passing places will be agreed on a location-by-location basis whether the passing places will be removed post construction and the verge reinstated or retained thereafter for community benefit and the decommissioning phase.

14.6.4 Construction Phase Trip Calculation

~~463-162.~~ To inform the assessment of the construction phase effects, trip generation calculations for the most concentrated phase for traffic generation have been undertaken using the details contained in Chapter 5, Development Description [EN010162/APP/6.2.5].

~~464-163.~~ The construction of the Development is anticipated to take approximately 24 months. The associated traffic flows and 'worst case' will vary over that time as different elements and phases of the Development are constructed, possibly simultaneously, or at least with a degree of overlap. It should be noted that although 5 phases are presented in the outline

construction programme in Table 14.14, this is a spatial separation, but not necessarily temporal, with phases 1 and 3 being concurrent and 2, 4 and 5 being concurrent. This is equivalent, therefore, to two temporal phases with two or three construction teams operating concurrently.

~~165-164.~~ For assessment purposes and as a worst-case scenario, it is assumed that the phases with highest level of peak traffic movement on the network are constructed simultaneously and as such, the peak flows from these respective months have been added together. ▽

~~166-165.~~ The detailed calculations of traffic generation are set out within Section A14.1.6 of the Transport Statement (TA A14.1 [EN010162/APP/6.4.14.1]). The outline construction programme below in Table 14.14 provides a summary of the forecast traffic generation over each month and phase (HGV, LGV and car/van). As can be seen, traffic levels are expected to peak during the fourth month of each phase and shows there are two 'worst case' period months (highlighted in green in Table 14.14) when traffic levels are expected to peak, each occurring on different parts of the network relevant to their phase in the programme. The assessment however considers the combination of the respective worst-case flows for two phases. It is reminded that flows also include further layers of robustness, such as a 20% uplift to account for fluctuations in activity and uncertainty – this is explained further in the Transport Statement. Also highlighted in green on Table 14.14 are the AIL deliveries of cables.

~~167-166.~~ As also outlined in the Transport Statement, when forecasting construction worker trips, it is assumed that 30% will travel via shuttle bus and car share ratio of 1.3 is used for non-shuttle bus users. This is considered robust when compared to other similar projects that assume a 50% shuttle bus usage and 1.5 car share ratio.

~~168-167.~~ It is important to note that the Applicant has agreed a partnership that expects to see the mounting frames constructed using only British steel and onsite manufacturing, which is estimated to result in 650 fewer HGV movements overall. In simple terms for transport, this process means that steel for the mounting frames would be delivered to site as flat sheets rather than pre-fabricated frames, thereby reducing the number of vehicles required due to space-savings. However, no consideration has been given to this reduction in construction trips when forecasting traffic movements and as such adopts a robust and worst-case assumption has been assumed for assessment purposes.

Table 14.14: Construction Vehicles per Month and Programme

Construction Activity		Month																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Phase One	Site access points	8	8	8																						
	Roads and tracks		328	164	55																					
	Construction compounds			324	486																					
	Fencing and CCTV				14	27	41	42	42	42	41	27	14													
	Solar PV poles, modules, inverters and transformers				50	100	152	155	155	155	152	100	50													
	Cabling				28	56	85	87	87	87	85	56	28													
	Intermediate substation									20	20	20	20	20										20	20	
	BESS/400 kV compound									211	211	211	211	211	5	5	5	5	5	5	5	5	25	25	25	25
	Connection to the transmission network at the existing National Grid Staythorpe Substation																							10	10	
	Mitigation/enhancement planting				2	2	2	2	2	2	2	2	2	2										2	2	
Phase Two	Site access points													20	20	20										
	Roads and tracks														364	182										
	Construction compounds															540	810									
	Fencing and CCTV																15	30	46	47	47	47	46	30	15	
	Solar PV poles, modules, inverters and transformers																55	111	168	172	172	172	168	111	55	
	Cabling																31	62	95	96	96	96	95	62	31	
	Intermediate substation																				20	20	20	20	20	
	Mitigation/enhancement planting																2	2	2	2	2	2	2	2	2	
Phase Three	Site access points	15	15	15																						
	Roads and tracks		334	167	56																					
	Construction compounds			324	486																					
	Fencing and CCTV				14	28	42	43	43	43	42	28	14													
	Solar PV poles, modules, inverters and transformers				51	102	155	158	158	158	155	102	51													
	Cabling				29	57	87	88	88	88	87	57	29													
	Intermediate substation									20	20	20	20	20									20	20		
	Mitigation/enhancement planting				2	2	2	2	2	2	2	2	2	2										2	2	
Phase Four	Site access points													23	23	23										
	Roads and tracks														616	308	103									
	Construction compounds															864	1296									
	Fencing and CCTV																26	51	78	79	79	79	78	51	26	
	Solar PV poles, modules, inverters and transformers																94	188	285	291	291	291	285	188	94	
	Cabling																31	62	95	96	96	96	95	62	31	
	Intermediate substation																				20	20	20	20	20	
	Mitigation/enhancement planting																2	2	2	2	2	2	2	2	2	
Phase Five	Battery installation													5	5	5	5	5	10	10	10	10	10			
		23	685	1002	1272	374	566	578	829	829	817	625	441	53	1033	1947	2536	519	786	801	841	861	846	629	376	

14.6.5 Embedded Mitigation

~~169-168.~~ Embedded mitigation measures will be implemented during the construction period.

~~170-169.~~ An Outline Construction Traffic Management Plan (“oCTMP”) has been prepared and the CTMP will be secured through a Requirement of the DCO. The oCTMP is located in TA A5.2 [EN010162/APP/6.4.5.2].

~~171-170.~~ The oCTMP provides a framework for the management of construction vehicle movements to and from the Development, to ensure that the effects of the temporary construction phase on the local highway network are minimised. The oCTMP sets out construction access arrangements, construction vehicle routing, construction vehicle trip generation, and the management/mitigation measures. It also summarises the requirements for vehicles to transport abnormal loads.

~~172-171.~~ A number of embedded mitigation/management measures are set out within the oCTMP for the control of vehicles associated with the construction phase. These include, but are not limited to the following:

- A detailed version of the Outline Travel Plan, included in TA A14.2 [EN010162/APP/6.4.14.2] is to be finalised at detailed design stage. This will set out separate travel-planning measures to reduce vehicle trips to the Development;
- Construction of site access locations, with appropriate geometry and visibility splays;
- A pre-commencement condition survey of the routes to be used for construction, to identify any defects in the road surface that require remedial measures prior to works commencing. This will include remedial measures to defects such as potholes, with particular focus on those located close to residential properties. At an intermediate period of the construction works and also following the completion, an inspection survey will again be conducted in conjunction with the local highway authority to agree further remedial measures required to rectify defects likely attributable to construction traffic;
- Construction of passing places on narrow sections of roads to facilitate easier movement of two-way traffic;
- Advanced warning signage to advise other road users of the presence of construction traffic during the construction phase, with a particular focus on areas where HGV turning movements are expected;
- Traffic marshals / banksmen to be utilised to ensure the safe passage of construction vehicles at sensitive locations, secondary accesses and during the movement of AILs;
- Speed restrictions for construction related traffic at locations where pedestrian interaction is likely to be relatively higher, such as where Public Rights of Way intersect the route in locations such as Ossington Lane. The appointed contractor will be required to ensure that all construction traffic obey a reduced speed limit;
- Whilst construction related traffic will be advised of their permitted route to site in advance, site construction related signage will be deployed at key locations, in agreement with the highway authority.

- Advisory signs informing contractors and visitors that parking is not permitted on the public roads in the vicinity of the site accesses;
- Deliveries to avoid school drop off and collection periods and other sensitive times.
- Restrictions on construction vehicle movements during periods of the road network that are experiencing abnormal conditions – such as road closures on the A1 due to incident management measures.
- A wheel wash facility will be provided ahead of entering the public highway, allowing vehicles to be hosed down so that no construction vehicles will take mud or debris onto the local highway network;
- A road sweeper will be provided for surrounding local roads along the designated route to alleviate any residual debris generated during the construction phase, as required;
- Vehicles carrying waste material off-site to be sheeted;
- All residents in the vicinity of the Development and along the designated routes will be provided with contact details of the Site Manager, which will also be provided on a site-board at the site access and egress junctions; and
- As part of the CTMP, a Stage 1 Road Safety Audit will be conducted at site access junctions to identify any additional road safety measures.

173-172. A further embedded mitigation is the use of internal construction tracks, these will not only facilitate internal movements within the Order Limits and Works Areas but importantly, will minimise use of the public roads. Two noteworthy examples of the use of these tracks to alleviate traffic impact during construction are:

- Near Ossington – an internal construction track will route from Ossington Road to the east of the village and traverse within the Order Limits to the north and then west to meet Moorhouse Road. As a result, general HGV construction-related traffic will not pass through the village of Ossington. This route is however identified for the occasional use to transport abnormal loads associated with the cable drums, which is expected to be in the order of 25 vehicles trips and will follow the specific requirements for AIL movements.
- Near Mablebeck - an internal construction track will route from Maplebeck Road to the east of the village and traverse within the Order Limits to the south and then west to provide access to solar areas to the south and west of Maplebeck. As a result, HGV construction related traffic will not pass through the village of Maplebeck.

174-173. New permissive paths have also been introduced as part of the Development as embedded mitigation. In addition to providing new routes for walkers, they will provide separation from vehicles by avoiding the need to walk alongside roads.

14.7 ASSESSMENT OF EFFECTS

14.7.1 Construction Phase

14.7.1.1 Screening

~~175-174.~~ The IEMA Guidelines thresholds set out in section 14.4.5 have been used to screen potential effects.

~~176-175.~~ Table 14.15 sets out the results of the screening exercise. The cells highlighted indicate links where the predicted change in traffic flows will exceed the thresholds.

Table 14.15: Construction Impact - Screening Assessment

Link ID	Description	Sensitivity	2028 Future Base AADT		2028 Future Base + Construction AADT		Increase from Development Construction AADT	
			Total	HGV	Total	HGV	Total	HGV
1	A46	Low	29,174	2,811	31,108 <u>30,359</u>	2,946 <u>986</u>	34 %	556 %
2	A616 Great North Road	Low	10,076	475	11,010	610	9 %	28 %
3	A617 Kelham Road	Low	15,668	731	16,280 <u>15,919</u>	741	42 %	1 %
4	A616 (West)	Low	5,529	177	5,881 <u>6,463</u>	218 <u>312</u>	617 %	2476 %
5	Caunton Road (South)	Medium	1,694	0	1,894	51	12 %	0 %
6	Caunton Road (North)	Medium	1,694	51	2,147	104	27 %	105 %
7	Maplebeck Road	Medium	675	9	1,156	91	71 %	881 %
8	Newark Road	Medium	1,068	14	1,189	35	11 %	143 %
9	Kersall Road	Medium	621	15	797 <u>715</u>	36	2130 %	140134 %
10	Main Street	Medium	622	8	667	8	7 %	60 %
11	Ossington Road (South)	High	133	0	173	0	30 %	0 %
12	Ossington Road (East)	Low	683 <u>103</u>	822	961 <u>236</u>	150 <u>35</u>	41129 %	841,585 %
13	Ossington Lane	Medium	390	1	647	51	66 %	6,0654,879 %
14	Moorhouse Road	High	298	2	393	25	32 %	4,87911,133 %
15	Weston Road	Medium	771	7	866	31	12 %	324 %
16	B1164 Great North Road	Low	1,932	63	2,190	113	13 %	80 %

Link ID	Description	Sensitivity	2028 Future Base AADT		2028 Future Base + Construction AADT		Increase from Development Construction AADT	
			Total	HGV	Total	HGV	Total	HGV
17	Carlton Lane	High	215	2	360	38	68 %	1,730 %
18	Staythorpe Road	Low	2,026	26	2,302	33	14 %	27 %
19	A1 (Northbound)	Low	25,677	4,237	26,089	4,291	2 %	1 %
20	A1 (Southbound)	Low	25,658	4,234	26,070	4,288	2 %	1 %
21	A616 (East)	Low	5784	164	6196	218	78 %	2527 %
22	A617 (West)	Low	10481 10,481	890	10893	944	4 %	6 %

~~477-176.~~ Links 1, 3, 5, 10, 11, 18, 19, 20, 21 and 22 have been screened out and do not require further assessment as the change in construction traffic will be below the IEMA thresholds.

~~478-177.~~ All other links have been assessed using the IEMA guidance considering the following categories:

- Severance of communities;
- Road vehicle driver and passenger delay;
- Non-motorised user delay;
- Non-motorised amenity;
- Fear and intimidation on and by road users;
- Road user and pedestrian safety; and
- Hazardous/large loads.

~~479-178.~~ It should be noted that high percentage changes can be associated with a result of low baseline traffic flows rather than an indicator of the intensity of the construction traffic ~~flows~~. When spread over a working day this is not considered to be as significant as the percentage increase suggests. This is particularly the case when considering the increases in HGV traffic on a link, where in most cases, the changes in the proportion of traffic comprising HGVs (rather than changes in the number of HGVs) is minimal - for example, on Link 4 (the A616), the proportion of traffic comprising HGVs increases by just 1.6%, whereas the number of HGVs increases by 24%, as 76%, which is a result of the large number proportion of non-HGV vehicles using the road. To ensure a robust assessment links such as this will still be included in the assessment.

~~480-179.~~ It is reiterated that the construction period is forecast to last approximately 24 months, with the longest period of time that any one route is used being estimated at 16 months (for the BESS/400 kV substation), which would occur on the A617 (Link ID 3), and so any adverse effects will be temporary in nature. The construction program and phasing also mean that different parts of the network will be impacted at different times.

14.7.1.2 Severance of Communities

~~484-180.~~ As outlined in Section 14.4.6, in areas with low baseline traffic flows, considering a percentage change may not be appropriate as this may not be representative of the impact experienced. For instance, on Link 17, there is a 68% increase in traffic flow during the peak construction phase, equating to 145 movements over a 10-hour period. When this is added to the baseline, this results in a negligible effect on severance, because there is plenty of time between vehicles for people to cross the road. Therefore, professional judgment is also applied to assess the effects on severance.

In cases where links within the Study Area are connected to public rights of way or pass through communities, it could be argued that an increase in traffic due to the construction phase might make it more difficult to cross the road. For some of these, permissive routes are proposed for non-road users that would avoid them having to use sections of road. These are shown on Figure 18.3, Proposed Recreation Changes [EN01062/APP/6.3.18.3].

Table 14.16: Severance Assessment

Link ID	Description	Sensitivity	2028 Future Base Severance Rating	2028 Construction Severance Rating	Significance of Effect
2	A616 Great North Road	Low	High	High	Negligible
4	A616	Low	Medium	Medium	Negligible
6	Caunton Road (North)	Medium	Low	Low	Negligible
7	Maplebeck Road	Medium	Low	Low	Negligible
8	Newark Road	Medium	Low	Low	Negligible
9	Kersall Road	Medium	Low	Low	Negligible
12	Ossington Road (East)	Low	Low	Low	Negligible
13	Ossington Lane	Medium	Low	Low	Negligible
14	Moorhouse Road	High	Low	Low	Negligible
15	Weston Road	Medium	Low	Low	Negligible
16	B1164 Great North Road	Low	Low	Low	Negligible
17	Carlton Lane	High	Low	Low	Negligible

~~182~~-181. Although some construction routes run through communities, none of the roads to be used are considered to act as barriers. The temporary addition of construction traffic will not alter this status. The change in traffic flows as a result of construction activities will not increase the category of severance on any link set out in the DMRB and all effects will be negligible and **not significant**.

14.7.1.3 Driver Stress and Delay

~~183~~-182. The IEMA Guidelines indicate that delays are likely to be significant only when the traffic on the network is already at or near its capacity. For this assessment, capacity evaluations of local junctions have not been conducted due to construction vehicles being scheduled to avoid peak hour travel, when congestion and traffic levels are reduced, thereby mitigating potential capacity constraints. This requirement is outlined in TA A5.2, Outline Construction Traffic Management Plan (oCTMP) [EN010162/APP/6.4.5.2], which states:

~~184~~-183. *“Core working hours are proposed to be between 07.00 and 19.00, Monday to Friday, and 07.00 and 13.00 on a Saturday (unless in exceptional circumstances where the need arises to protect plant, personnel or the environment). In addition to this, a start-up and close-down period of up to an hour before and after the core working hours is proposed, which does not include the operation of plant or machinery likely to cause a disturbance.”* and

~~185~~-184. *“Deliveries by HGV will be coordinated through a booking system to avoid travel during the network peak hours, where possible. Therefore, deliveries will be scheduled for between 09:30 and 16:30 where possible. Additionally, to avoid unnecessary interaction with school users, deliveries utilising large vehicles will be timed as such that they do not arrive between 08:00 – 09:30 and 14:30 – 15:30 if they pass schools; large delivery vehicles will also not be allowed to leave the site during these time periods.”*

~~186~~-185. Other practices within the oCTMP, such as HGV deliveries being scheduled to avoid school drop off and collection times, result in the construction phase adding very little traffic to peak hour network flows.

~~187~~-186. Similar to the issue of severance, using a percentage change in traffic to assess the impact on driver delay is deemed inappropriate when baseline traffic volumes are low. Table 14.15 shows that although many rural links in the network experience high percentage changes in traffic flows during the construction phase, these changes originate from a low baseline and will not result in increased driver stress or delay.

~~188~~-187. Therefore, the anticipated impact of construction traffic on driver delay within the Study Area is assessed as temporary in nature, with negligible significance, and therefore **not significant**.

14.7.1.4 Pedestrian and Cyclist Delay

~~189~~-188. The IEMA Guidelines do not prescribe specific thresholds for assessing the significance of changes in pedestrian delay. Instead, they recommend that assessors use their professional judgment to determine whether such delays constitute a significant impact.

^{490-189.} When considering the impact on delay, consideration has been given to the ease at which a pedestrian or cyclist will be able to cross the road due to the availability of gaps in traffic flow. This is intrinsically linked with the volume of Development traffic on the link and the Severance levels previously assessed.

Table 14.17: NMU Delay Assessment

Link ID	Description	Sensitivity	Magnitude	Significance of Effect
2	A616 Great North Road	Low	High	Moderate
4	A616	Low	Medium	Minor
6	Caunton Road (North)	Medium	Low	Minor
7	Maplebeck Road	Medium	Low	Minor
8	Newark Road	Medium	Low	Minor
9	Kersall Road	Medium	Low	Minor
12	Ossington Road (East)	Low	Low	Negligible
13	Ossington Lane	Medium	Low	Minor
14	Moorhouse Road	High	Low	Moderate
15	Weston Road	Medium	Low	Minor
16	B1164 Great North Road	Low	Low	Negligible
17	Carlton Lane	High	Low	Moderate

^{494-190.} The anticipated effects on pedestrian delay during the construction phase are detailed in Table 14.17 all of which will be temporary in nature. It can be seen that Link 2, Link 14 and Link 17 are expected to have a Moderate effect.

^{492-191.} Link 2 is an A road with a shared use footway/cycleway along its eastern side. There are very limited pedestrian crossing desire lines. Applying professional judgement in this circumstance, it is concluded that the effect on pedestrian delay is not significant.

^{493-192.} Link 14 has no pedestrian facilities and has limited access points along its length. A public bridleway and footpath are present along this link, however, the total traffic volumes on this link, including construction vehicles, is forecast to be in the order of 1 vehicle every 2 minutes, on average. Link 17 has similar characteristics to Link 14 but with lower traffic levels and so again applying professional judgement, the effect on pedestrian delay is assessed as **not significant**.

^{494-193.} In summary, overall, the effects on pedestrian delay, including those affecting cyclists and equestrians, are considered not significant.

14.7.1.5 Non-Motorised User Amenity

^{495-194.} It is acknowledged that the addition of HGVs to the network will reduce the amenity value of any pedestrian and cyclist journeys on the construction

routes. It is also acknowledged that a number of Public Rights of Way operate through the Order Limits and indeed routes used for construction and there will be some effect on the relevant pleasantness of pedestrian journeys in these locations. However, the links being considered for assessment following the initial screening are either A roads already subject to reasonable base levels of traffic volume, or rural roads with limited provisions for non-motorised users.

~~496-195.~~ The likely effects on non-motorised user amenity during the construction phase will be temporary in nature and are set out in Table 14.18. For the reasons outlined above, the magnitude of the effects are considered to be low and overall the effect on non-motorised user amenity is considered to be minor or negligible and **not significant**.

Table 14.18: NMU Amenity Assessment

Link ID	Description	Sensitivity	Magnitude	Significance of Effect
2	A616 Great North Road	Low	Low	Negligible
4	A616	Low	Low	Negligible
6	Caunton Road (North)	Medium	Low	Minor
7	Maplebeck Road	Medium	Low	Minor
8	Newark Road	Medium	Low	Minor
9	Kersall Road	Medium	Low	Minor
12	Ossington Road (East)	Low	Low	Negligible
13	Ossington Lane	Medium	Low	Minor
14	Moorhouse Road	High	Low	Moderate
15	Weston Road	Medium	Low	Minor
16	B1164 Great North Road	Low	Low	Negligible
17	Carlton Lane	High	Low	Moderate

14.7.1.6 Fear and Intimidation on and by Road Users

~~497-196.~~ The IEMA Guidelines state that the extent of fear and intimidation is dependent on *“the total volume of traffic, the heavy vehicle composition, the speed these vehicles are passing and the proximity of traffic to people.”*

~~498-197.~~ The guidance also suggests that *“the inherent lack of protection created by factors such as a narrow pavement median, a narrow path or a constraint (such as a wall or fence) preventing people stepping further away from moving vehicles”* should be given additional consideration. There are several such sections within the study area network.

~~499-198.~~ It is acknowledged that the addition of HGVs to the network will affect the relative level of fear and intimidation of any pedestrian and cyclist journeys in the area. It is also acknowledged that a number of Public Rights

of Way operate through the Order Limits. There will, therefore, be some effect on pedestrian journeys in these locations.

~~200-199.~~ Table 14.19 sets out the baseline assessment of the degree of hazard score and the exercise repeated in Table 14.20 for the construction period. Table 14.21 then compares these two scores to determine is any change has occurred.

Table 14.19: Fear and intimidation Assessment – Future Baseline

Link ID	Description	18-hour AADT	18-hour AADT HGV	Average 18-hour Speed	Degree of hazard score
2	A616 Great North Road	8,060	219	45	60 - Great
4	A616	4,537	53	54	60 - Great
6	Caunton Road (North)	1,471	28	43	50 - Great
7	Maplebeck Road	580	4	43	30 - Moderate
8	Newark Road	903	13	44	40 - Moderate
9	Kersall Road	533	6	44	30 - Moderate
12	Ossington Road (East)	556 <u>98</u>	5 <u>2</u>	44	30 - Moderate
13	Ossington Lane	317	1	44	30 - Moderate
14	Moorhouse Road	255	2	34	20 - Small
15	Weston Road	618	6	37	30 - Moderate
16	B1164 Great North Road	1,604	27	52	50 - Great
17	Carlton Lane	186	0	34	20 - Small

Table 14.20: Fear and intimidation Assessment – Construction

Link ID	Description	18-hour AADT	18-hour AADT HGV	Average 18-hour Speed	Degree of hazard score
2	A616 Great North Road	8,966 <u>99</u> <u>4</u>	540 <u>354</u>	45	60 - Great
4	A616	4,911 <u>5,471</u>	117 <u>188</u>	54	60 - Great
6	Caunton Road (North)	1,924	81	43	50 - Great
7	Maplebeck Road	1,033 <u>306</u> <u>1</u>	8 <u>6</u>	43	30 - Moderate
8	Newark Road	1,017 <u>02</u> <u>4</u>	26 <u>34</u>	44	40 - Moderate
9	Kersall I Road	720	38 <u>27</u>	44	30 - Moderate
12	Ossington Road (East)	834 <u>231</u>	73 <u>35</u>	44	30 - Moderate

Link ID	Description	18-hour AADT	18-hour AADT HGV	Average 18-hour Speed	Degree of hazard score
13	Ossington Lane	584574	5751	44	30 - Moderate
14	Moorhouse Road	350	25	34	20 - Small
15	Weston Road	713	29	37	30 - Moderate
16	B1164 Great North Road	1,86886 1	8477	52	50 - Great
17	Carlton Lane	331	36	34	20 - Small

Table 14.21: Fear and intimidation Assessment – Magnitude of Impact

Link	Description	Level of fear and intimidation		Magnitude of impact
		Future Baseline	Construction	
2	A616 Great North Road	Great	Great	Very Low
4	A616	Great	Great	Very Low
6	Caunton Road (North)	Great	Great	Very Low
7	Maplebeck Road	Moderate	Moderate	Very Low
8	Newark Road	Moderate	Moderate	Very Low
9	Kersall Road	Moderate	Moderate	Very Low
12	Ossington Road (East)	Moderate	Moderate	Very Low
13	Ossington Lane	Moderate	Moderate	Very Low
14	Moorhouse Road	Small	Small	Very Low
15	Weston Road	Moderate	Moderate	Very Low
16	B1164 Great North Road	Great	Great	Very Low
17	Carlton Lane	Small	Small	Very Low

201-200. As shown in Table 14.21 the resulting magnitude of impact on fear and intimidation on and by road users is very low and so effects on all links are assessed as negligible and **not significant**.

14.7.17 Road User and Pedestrian Safety

202-201. A review of current road safety has been undertaken in section 14.5.8. This concluded that there is no pre-existing pattern of collisions which would be exacerbated by the increase in traffic caused by the Development.

203-202. During construction, additional traffic will be present on the network, but this represents a relatively small percentage of the total volume of traffic

already present on the overall network, although this percentage is larger in areas of low baseline traffic levels. Traffic associated with the construction of the Development will result in no more than a marginal increase in the risk of collisions.

204-203. Following the completion of the Development, traffic levels will reduce to extant levels and will therefore not influence any change in safety levels.

205-204. It is also accepted that several links have no pedestrian or cycling facilities meaning pedestrians are forced to walk along the side of the carriageway, indeed a fatality was reported on Moorhouse Road (Link 14) in December 2024 which involved a cyclist. Specific measures within the oCTMP seek to address such issues by reducing permitted construction traffic speeds and increased signage to raise driver awareness. The increase in traffic and specifically HGVs does increase the risk of a collision. At these locations the effect is assessed as 'Minor Adverse'.

206-205. At all other locations the magnitude of impact on road safety is considered as being very low. The overall significance of the effect on these links is assessed as Negligible and **not significant**.

14.7.1.8 Hazardous / Large Loads

207-206. Some deliveries to the site during the construction phase may be regarded as hazardous loads, such as oil for the transformers. The movement of hazardous loads would be undertaken in accordance with the appropriate regulations and documentation.

208-207. There will be AILs to transport various key pieces of equipment to the site, such as the cable drums and transformers, for example. An AIL is one where the vehicle exceeds 44 tonnes, the width is over 2.9 m or the length is more than 18.65 m.

209-208. These AILs will be delivered under Special Types General Order (STGO) Regulations and access will be from the nearest known heavy load routes (the A1, A617 and A616). Further detail regarding the routing of AILs from their point of entry to the Study Area using previously confirmed routes is given in Appendix G of the Transport Statement [EN010162/APP/6.4.14.1]. Figure 14.7 [EN010162/APP/6.3.14.7] presents the routes to be used for abnormal load deliveries associated with the transformers and delivery of cable drums.

210-209. These movements will be managed so that the potential effects are mitigated appropriately, this may include a police escort, temporary localised road closures and plating and packing of the kerbs to avoid damage. Whilst these movements will cause localised traffic disruption during their occurrence, the volume of movements will typically be in the order of 25 deliveries at the receiving accesses over a period of a few months (as shown in green on Table 14.14) and as such, will not influence the assessment outcomes included within this chapter. A specialist contractor has been appointed for assessment of the transportation of abnormal loads and additional details are set out in the oCTMP (TA A5.2 [EN010162/APP/6.4.5.2]).

244-210. Overall, it is considered that the likely effects of the construction related hazardous loads / large loads will be negligible and temporary and therefore **not significant**.

14.7.1.9 Summary of Construction Phase Effects

242-211. A summary of the effects during the construction phase are presented in Table 14.22.

243-212. It can be seen that NMUs on Link 2 (A616 Great North Road), Link 14 (Moorhouse Road) and Link 17 (Carlton Lane) are forecast to experience Moderate effects in relation to delay and amenity, as assessed above. It should however be noted that these links have very few properties adjacent to the construction route. Furthermore, the section of Link 17 to be used by construction vehicles is just 300 m in length. Further consideration of these effects has been given and using professional judgement, they are considered to be **not significant**. In conjunction with the measures in the oCTMP, the interaction of NMUs with construction vehicles presents a low frequency of occurrence.

Table 14.22: Summary of Effects

Link ID	Description	Sensitivity	Nature of Effect	Severance	NMU delay	NMU amenity	Fear and intimidation	Road user Safety	Hazardous/ large loads
2	A616 Great North Road	Low	Temporary	Negligible	Moderate	Negligible	Negligible	Negligible	Negligible
4	A616	Low	Temporary	Negligible	Minor	Negligible	Negligible	Negligible	Negligible
6	Caunton Road (North)	Medium	Temporary	Negligible	Minor	Minor	Negligible	Minor	Negligible
7	Maplebeck Road	Medium	Temporary	Negligible	Minor	Minor	Negligible	Minor	Negligible
8	Newark Road	Medium	Temporary	Negligible	Minor	Minor	Negligible	Minor	Negligible
9	Kersall Road	Medium	Temporary	Negligible	Minor	Minor	Negligible	Minor	Negligible
12	Ossington Road (East)	Low	Temporary	Negligible	Negligible	Negligible	Negligible	Minor	Negligible
13	Ossington Lane	Medium	Temporary	Negligible	Minor	Minor	Negligible	Minor	Negligible
14	Moorhouse Road	High	Temporary	Negligible	Moderate	Moderate	Negligible	Minor	Negligible
15	Weston Road	Medium	Temporary	Negligible	Minor	Minor	Negligible	Minor	Negligible
16	B1164 Great North Road	Low	Temporary	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
17	Carlton Lane	High	Temporary	Negligible	Moderate	Moderate	Negligible	Minor	Negligible

14.7.2 Operational Phase

214-213. During the operational phase, there are anticipated to be around 15 vehicles per day across the whole site for maintenance purposes. These would typically be made by light van or 4x4 type vehicles. Whilst each construction compound will have been removed at the end of the construction phase, internal tracks and space will remain for vehicles to turn around to ensure that reversing will not occur onto the highway.

215-214. There will be no transport operational effects associated with the installed grid connection cables as they will be located underground. Access may be required for maintenance, but this is only likely once or twice a year.

216-215. The BESS components are assumed to be replaced on average less than twice over the 40-year lifetime. Solar PV modules typically have a design life of over 40 years and so are not expected to be replaced in bulk, though some may be during normal maintenance.

217-216. Traffic levels during the operational phase will be fewer than those outlined and assessed for the construction phase and as such, effects on collisions and safety, severance, driver delay, pedestrian delay and amenity and hazardous loads during the operational phases are considered to be negligible and **not significant**.

14.7.3 Decommissioning Phase

218-217. At the end of the 40-year operational phase, equipment will be decommissioned in accordance with the Decommissioning and Restoration Plan (DRP), an outline of which is included as TA A5.6 [EN010162/APP/6.4.5.6]. The number of vehicles associated with the decommissioning phase are not anticipated to exceed the number set out for the construction phase, as set out in Table 14.14.

219-218. The Outline DRP includes provision for the final DRP to include a Decommissioning Traffic Management Plan (DTMP). The DTMP will include similar measures to those included in the oCTMP [EN010162/APP/6.4.5.2], covering issues such as transportation methods, pollution prevention, and noise management.

220-219. In light of this, effects on accidents and safety, severance, driver delay, pedestrian delay and amenity and hazardous loads are considered to be the same as shown in Table 14.22, as a reasonable worst-case assessment. As with the construction phase, any effects will also be short term and temporary and are overall, considered to be negligible and **not significant**.

14.8 MITIGATION

14.8.1 Construction Phase

221-220. A key mitigation will be the production of the detailed CTMP that will be based on the Outline CTMP (TA A5.2 [EN010162/APP/6.4.5.2]). The oCTMP has been considered as embedded mitigation (see Section 14.6.5) and has been taken into account in the assessments above.

14.8.2 Operational Phase

222-221. During the operational phase, there may, on occasion, be a requirement for vehicles to access a solar area only served by a secondary access from the public highway. In most instances, these movements can occur under normal traffic conditions and will typically be less than the agricultural use in their current form for existing field accesses. However, the final Operational Environmental Management Plan (TA A5.5 [EN010162/APP/5.5]) will identify any locations where site-specific activities may require localised temporary traffic management measures to be agreed in advance with the Local Highway Authority – such as the use of banksmen. The temporary traffic management measures will be proportionate to the nature and duration of activity and the expected volume and type of traffic movements. Transport arrangements for any AIL and appropriate mitigation would be agreed with the local authorities in advance.

14.8.3 Decommissioning Phase

223-222. The mitigation associated with this stage will be similar to the measures outlined for the construction phase. A DTMP will be implemented (as set out in the Outline DRP and secured by DCO Requirement) with appropriate revisions agreed with the local highways authority to reflect any changes in conditions. Transport arrangements for any abnormal loads and appropriate mitigation would be agreed with Nottinghamshire County Council and National Highways in advance.

14.9 RESIDUAL EFFECTS

224-223. As no mitigation is proposed over and above the embedded mitigation, residual effects are assessed as being the same as those set out in Section 14.7.

14.10 CUMULATIVE EFFECTS

225-224. The approach to assessing cumulative effects is outlined in Chapter 2, Environmental Impact Assessment [EN010162/APP/6.2.2]. Cumulative developments to be taken forward to Stages 3 and 4 (assessment) are set out in TA A2.1 [EN010162/APP/6.4.2.1].

226-225. For the developments identified, their respective Transport Assessments have been reviewed, where available, and their forecast traffic generation and distribution identified. Where information is not available, this is typically because the increase in flows is not significant. A summary of this review is presented in Table 14.23.

Table 14.23: Cumulative Developments Traffic Generation Review

Scheme Name and Planning Reference	Details and commentary of traffic generation
A46 Bypass - TR010065	The oCTMP does not provide details of forecast construction traffic.

Scheme Name and Planning Reference	Details and commentary of traffic generation
One Earth Solar Fram - EN010159	Traffic generation levels not significant enough to warrant specific traffic report.
Fosse Green Solar Farm - EN010154	Development located near North Hykeham and traffic study area does not overlap with the Development Study Area.
Staythorpe BESS - 22/01840/FULM	Paragraph 4.5.1 of the Transport Statement outlines there will be 32 two-way HGV trips on average per day.
BESS Connection - 24/01261/FULM	Paragraph 3.6.4 of the revised oCTMP states there will be 16 deliveries per day – equating to 32 HGV two-way trips.
SSE BESS - 23/00317/FULM	Paragraph 6.6 of the CTMP states a maximum of four vehicles per hour. Equating to 40 trips daily is assuming 10 hr day.
SSE BESS Cable Route - 23/00810/FULM	Traffic generation levels not significant enough to warrant specific traffic report.
Winkburn Solar Farm - 20/02501/FULM	Paragraph 4.8 of the Transport Statement states 30 two-way HGV trips per day.
Knapthorpe Solar - 22/00975/FULM	Paragraph 5.12 of the CTMP states that there are 14 two-way trips per day.
Kelham Solar - 23/01837/FULM	Paragraph 4.6.4 of the Transport Statement states that there are approximately 5 deliveries per day, equating to 10 two-way trips per day.
Foxholes Solar - 22/01983/FULM	Paragraph 5.12 of the CTMP states that there are a maximum of 14 two-way trips per day during the construction period. These trips fall outside the Development Study Area.
Tuxford Road Solar Farm - 21/01577/FULM	Paragraph 4.9 of the Transport Statement states no more than 20 HGV movements per day and vehicles likely to use B1164
A46 Newark Roundabout Junction - 22/01249/FULM	The Transport Statement does not provide details of forecast construction traffic.
Ness Farm 1 - ES/4441	Paragraph 5.2 of Transport Assessment states that there are 110 two way movements per day. These trips fall outside of the Development Study Area.
Ness Farm 2 - ES/4690	Paragraph 5.2 of Transport Assessment states that there are 110 two way movements per day. These trips fall outside of the Development Study Area.
Ness Farm 3 - V/4462	Traffic generation levels not significant enough to warrant specific traffic report.

Scheme Name and Planning Reference	Details and commentary of traffic generation
Proposed Relocation of Existing Mineral Processing Plant - F/4395	Traffic generation levels not significant enough to warrant specific traffic report.

227-226. Due to the predominantly rural nature of the Development location and construction routes, very few of the links are expected to experience cumulative effects. Those links that are impacted are limited to the A1, A46, A617, B1164 and Caunton Road.

228-227. For most of the cumulative developments, the resultant difference in traffic movements on the links stated above is expected to be within the typical daily fluctuations in traffic levels and unnoticeable in the road operations or performance.

229-228. The construction route for Knapthorpe Solar Park¹³ includes the use of Caunton Road from the north and is forecast to add 14 two-way daily trips onto this link during the construction period. The traffic related environmental effects on Caunton Road (Link 6) resulting from the Development have been assessed in detail within Section 14.7 and the level of traffic increase from cumulative development will not influence the summary outcomes.

230-229. The most notable cumulative development is the A46 Newark Bypass, which proposes to widen 6.5 km of the existing single carriageway to a dual carriageway, to provide two lanes in each direction between Farndon and Winthorpe roundabouts near Newark-on-Trent. A final decision on the DCO for the A46 Newark Bypass scheme is expected to be announced in October 2025 and construction activities for this scheme and the Development may overlap. It should however be noted that the Transport Secretary has commissioned a review of the Department for Transport's spending portfolio, including current and future road schemes, the outcome of which may influence delivery timescales. Any cumulative traffic impacts would predominantly focus on the use of A roads and would be subject to appropriate traffic management measures implemented to minimise disruption and maintain free-flow operations. Cumulative traffic effects are therefore assessed as being **not significant**.

14.11 STATEMENT OF SIGNIFICANCE

231-230. Effects have been avoided where possible and otherwise minimised by careful design of the Development and the construction routes and access points. Mitigation is embedded in the form of an Outline CTMP (TA A5.2 [EN010162/APP/6.4.5.2]), a decommissioning-stage equivalent of which will

¹³ Newark and Sherwood District Council planning application ref: 22/00976/FULM & 22/00976/FULM

be prepared near the time of decommissioning. A final CTMP will be developed and agreed with the relevant stakeholders prior to construction, in order to control and mitigate effects associated with vehicle movements.

232-231. This assessment has demonstrated that none of the effects associated with traffic movements during the life of the Development are considered to lead to significant effects on environmental receptors.

233-232. The main traffic effects are associated with the increase in vehicle movements along the local roads leading to the Development during the construction phase. Whilst the percentage increases are likely to be high on the local roads, this is as a result of the low base traffic flow numbers along these roads.

234-233. Consideration has been given to the effect the increase traffic flow would have on severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation, and accidents and safety, and all effects upon these issues are considered **not significant**.