Great North Road Solar and Biodiversity Park

Environmental Statement

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Contents

A14.1.1 Introduction 4
A14.1.1.1 Background 4
A14.1.1.2 The Site and Surrounding Area 4
A14.1.1.3 The Commission 4
A14.1.1.4 Purpose of this Report 5
A14.1.1.5 Scoping Discussions 5
A14.1.1.6 Report Structure 5
A14.1.2 Site Vision 6
A14.1.2.1 Introduction 6
A14.1.2.2 Sustainable Vision 6
A14.1.3 Policy Context 7
A14.1.3.1 Introduction 7
A14.1.3.2 National Planning Policy 7
A14.1.3.2.1 National Policy Statement for Energy (NPS EN-1) 7
A14.1.3.2.2 National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) 8
A14.1.3.2.3 National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) 8
A14.1.3.2.4 National Planning Policy Framework (NPPF, 2024) 8
A14.1.3.2.5 National Planning Practice Guidance 10
A14.1.3.2.6 The Strategic Road Network and the Delivery of Sustainable Development, DfT Circular 01/2022 11
A14.1.3.3 Local Planning Policy 11
A14.1.3.3.1 Nottinghamshire Local Transport Plan 2011-2026 11
A14.1.3.3.2 Newark & Sherwood Local Development Framework Core Strategy & Allocations (Adopted March 2019) 11
A14.1.3.4 Summary 12
A14.1.4 Site Baseline and Accessibility Audit 12
A14.1.4.1 Introduction 12
A14.1.4.2 Study Area 12
A14.1.4.3 Walking 12
A14.1.4.3.1 Sutton-On-Trent 13
A14.1.4.3.2 Carlton-on-Trent 13
A14.1.4.3.3 Caunton 13
A14.1.4.3.4 Kelham 13
A14.1.4.3.5 Maplebeck 13
A14.1.4.3.6 Summary 14
A14.1.4.4 Cycling 14
A14.1.4.5 Horse Riding 14

A14.1.4.6 Bus Travel 15
A14.1.4.7 Train Travel 16
A14.1.4.8 Description of Road Network 16
A14.1.4.9 Personal Injury Collisions (PIC) Review 18
A14.1.4.10 Summary 20
A14.1.5 The Development 20
A14.1.5.1 Introduction 20
A14.1.5.2 Development Description 20
A14.1.5.3 Rochdale Envelope 20
A14.1.5.4 Routes Hierarchy 21
A14.1.5.5 Site Access Arrangements 23
A14.1.5.6 Passing Places 27
A14.1.6 Trip Generation and Distribution 28
A14.1.6.1 Introduction 28
A14.1.6.2 Construction Phases 28
A14.1.6.3 Trip Generation 28
A14.1.7 Impact Assessment 32
A14.1.7.1 Introduction 32
A14.1.7.2 Construction Phase 32
A14.1.7.3 Operational Phase 35
A14.1.7.4 Abnormal Loads 35
A14.1.7.5 Summary 36
A14.1.8 Summary 37
A14.1.9 Appendix A – Figures 38
A14.1.10 Appendix B – Collision Data 39
A14.1.11 Appendix C – Traffic Data 40
A14.1.12 Appendix D – Site access drawings 41
A14.1.13 Appendix E – Passing place drawings 42
A14.1.14 Appendix F – Trip Generation Calculations 43
A14.1.15 Appendix G – Abnormal Load Reports 44

A14.1.1 INTRODUCTION

A14.1.1.1 BACKGROUND

1 Elements Green Trent Ltd (''the Applicant'') is bringing forward a Development Consent Order (DCO) application for the proposed development of the Great North Road (GNR) Solar and Biodiversity Park (''the Development'').

2 This Technical Appendix (TA) presents the Transport Statement and has been prepared as part of an Environmental Statement for a solar PV (the Development) located on land located to the northwest of Newark, in the Newark and Sherwood district, Nottinghamshire, East Midlands, which comprise the Order Limits.

A14.1.1.2 THE SITE AND SURROUNDING AREA

3 The Order Limits are shown on ES Figure 5.1 [EN010162/APP/6.3.5.1] as being to the west of the A1, north of the A617, east of Eakring, and south of Egmanton, to the north and north-west of Staythorpe.

4 The Development essentially consists of discrete land parcels proposed to be occupied by solar PV panels and connected by cable route areas. The eastern side of the Development runs from the north of North Muskham to Egmanton in the north. The western side of the Development runs north-west from National Grid Staythorpe Power Substation and then splits at Maplebeck, with spurs running to Eakring in the north-west and Kneesall to the north-northeast, then connecting with the eastern side of the Development.

A14.1.1.3 THE COMMISSION

5 SYSTRA Ltd has been commissioned to provide highways and transport advice in relation to the Development, including the preparation of this Transport Statement to accompany the application. A Transport Chapter (14 [EN010162/APP/6.2.14]) within the ES has also been prepared, as well as an outline Travel Plan (oTP) (ES Technical Appendix (TA) A14.2 [EN010162/APP/6.4.14.2]) and outline Construction Traffic Management Plan (oCTMP) (which is ES TA A5.2 [EN010162/APP/6.4.5.2]).

6 Transport Statements report the overall transport strategy to maximise accessibility for non-car modes of transport but also assess the traffic impact of the proposals based on an assessment of conditions on the highway network. Traffic and movement assessments for ES present the impact of traffic and movement on people and the environment.

7 Solar farms of over 50 MW comprise a 'Nationally Significant Infrastructure Project (NSIP) under Section 14(1)(a) and 15(2) of the Planning Act 2008 ('the Act') and require a Development Consent Order to allow permission for the Development to be constructed and operated.

8 The DCO submission is being made following the completion of extensive surveys, assessments, design iterations and consultation processes.

A14.1.1.4 PURPOSE OF THIS REPORT

9 This report is the Transport Statement (TS) for the Development. The report has been commissioned to help understand and analyse the effects of the Development from a transport perspective and to inform the proposals.

10 The purpose of the TS is to provide a systematic review and robust assessment of the transport impacts of the Development and identify any mitigation measures that could be implemented if necessary to alleviate the Development impact, both within the Order Limits and externally. The mitigation may include improvements to the travel planning, accessibility and safety for all modes of travel, including construction traffic and may also include some physical infrastructure improvements.

A14.1.1.5 SCOPING DISCUSSIONS

11 During the production of the DCO documents, SYSTRA has engaged in discussions with Nottinghamshire County Council (NCC) and National Highways through its pre-application advice process. The Development was presented to both parties with the general scope of assessment agreed in principle. The scope also reflects comments received by other consultees and the public as part of the consultation feedback on the Preliminary Environmental Impact Report.

A14.1.1.6 REPORT STRUCTURE

12 Following this introductory section, the remainder of this TS is structured as follows:

- A14.1.2: Site Vision
- A14.1.3: Policy Context
- A14.1.4: Baseline and Accessibility Audit
- A14.1.5: Proposed Development
- A14.1.6: Trip Generation and Distribution
- A14.1.7: Impact Assessment
- A14.1.8: Summary

13 This TS is supported by the following Figures in Appendix A:

- A14.1.1 – Order Limits
- A14.1.2 – Nearby Residential Settlements
- A14.1.3 – Cycle Routes
- A14.1.4 – Bus services
- A14.1.5 – Roads in Study Area
- A14.1.6 – Personal Injury Collision Locations
- A14.1.7 – Site Access Locations
- A14.1.8 – Traffic Survey Locations
- A14.1.9 – Passing Place Locations
- A14.1.10 – Land Parcel Site Access Assignment
- A14.1.11 – Link Identification Plan
- A14.1.12 – Abnormal Load Routes

A14.1.2 SITE VISION

A14.1.2.1 INTRODUCTION

14 This Section details the transport vision for the Development, including sustainable transport access, local workforce proximity and how the location of the Development is beneficial with regard to reducing residual car trips and would not create a significant constraint to the delivery of any planned improvements to the transport network.

15 Both within the Development and beyond its boundaries, successful development depends upon a movement network that ensures connections are sustainable for non-motorised users.

A14.1.2.2 SUSTAINABLE VISION

16 Beyond the construction phase of the Development, the level of operational traffic to and from the Development will be low and therefore the principles of sustainable development in the updated DfT Circular 01/2022 guidance will not apply, however it is noted that the Development has a role in achieving zero emission transport through its construction phase.

17 The Development occupies a large area across multiple land parcels, but its proximity to good standard A-class roads, including the A1 and wider Strategic Road Network (SRN) can be maximised for deliveries for infrastructure and will help construction phase traffic route to the Order Limits efficiently.

18 The construction hours outlined later in this report mean that the Development is likely to generate minimal operational traffic in the peak hours. Where HGV movements will be necessary during the construction phase of the site, appropriate scheduling outside of the peak hours has an important role to play in achieving a net zero maintenance in construction emissions by 2040.

19 The Transport Decarbonisation Plan[1] and the Future of Freight Plan[2] also recognise that local planning and highway authorities need help when planning for sustainable transport and developing innovative policies to reduce car dependency, and thus the locality of the Development to the SRN in particular is key to achieving this objective.

20 In the context of creating sustainable development, the Development would fit into this criterion, as the sole purpose of the Development is to create renewable energy.

[1] Department for Transport (updated 2023). Transport decarbonisation plan. Available at: https://www.gov.uk/government/publications/transport-decarbonisation-plan
[2] Department for Transport (published 2022). Future of freight plan. Available at: https://www.gov.uk/government/publications/future-of-freight-plan

A14.1.3 POLICY CONTEXT

A14.1.3.1 INTRODUCTION

21 Before considering the Development, it is important to examine the context of the Development and how this relates to relevant transport planning policies and guidelines. This section of the report sets out these elements, providing an overall spatial and planning context for the Development proposal in relation to transport.

22 A planning system which places greater emphasis on the link between transport and land use planning policies has also been adopted to encourage transport decisions at a local level that are compatible with environmental and community goals and best reflect local circumstances and requirements.

A14.1.3.2 NATIONAL PLANNING POLICY

23 Consultation drafts of the National Policy Statements (NPSs) have been issued (April 2025) in response to changing climate change policy, however, the content of these with respect to this Chapter is materially unchanged from the adopted versions, and hence the adopted versions are referred to below.

A14.1.3.2.1 National Policy Statement for Energy (NPS EN-1)

24 The NPS for Energy (EN-1)[3] was published in 2023 and provides the basis for decisions regarding nationally significant energy infrastructure. Section 5.14 outlines the planning policy for traffic and transport, including guidance on undertaking relevant parts of the EIA. The most relevant paragraphs for transport are 5.14.5 to 5.14.10 which are set out as follows:

- Paragraph 5.14.5 states that if a project is likely to have significant transport implications, a transport appraisal should be included with the ES;
- Paragraph .14.6 states that Applicants should consult with National Highways and Highways Authorities as appropriate on the assessment and mitigation to inform the application to be submitted;
- Paragraph 5.14.7 states that a Travel Plan should be prepared to include demand management measures to mitigate transport impacts;
- Paragraph 5.14.8 states that the assessment should consider any possible disruption to services and infrastructure (such as road, rail and airports);
- 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; and
- Paragraph 5.14.10 states that where additional transport infrastructure is proposed, this should be discussed with the relevant network providers

[3] DESNZ (2023). Overarching National Policy Statement for energy (EN-1). https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1 [accessed on 20/11/2024].

(in terms of the possibility of co-funding by Government for any third-party benefits).

A14.1.3.2.2 National Policy Statement for Renewable Energy Infrastructure (NPS EN-3)

25 The NPS for Renewable Energy Infrastructure (EN-3)[4] 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.

A14.1.3.2.3 National Policy Statement for Electricity Networks Infrastructure (NPS EN-5)

26 The NPS for Electricity Networks Infrastructure (EN-5)[5] was published in 2023 and is a legal document that outlines the government's policy for electricity networks infrastructure projects in the UK. It provides a framework for decision-making on these projects, particularly for those that are considered Nationally Significant Infrastructure Projects.

A14.1.3.2.4 National Planning Policy Framework (NPPF, 2024)

27 The Government's National Planning Policy Framework (NPPF)[6] 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.

28 The most relevant paragraphs in the context of transport are set out below.

29 Paragraph 109 states that "*Transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-*

[4] DESNZ (2023). National Policy Statement for renewable energy infrastructure (EN-3). https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3 [accessed on 20/11/2024].
[5] https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5 [accessed on 12/06/2025].
[6] 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

led approach to identify transport solutions that deliver well-designed, sustainable and popular places. This should involve:

30 *a) making transport considerations an important part of early engagement with local communities;*

31 *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;*

32 *c) understanding and addressing the potential impacts of development on transport networks;*

33 *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;*

34 *e) identifying and pursuing opportunities to promote walking, cycling and public transport use; and*

35 *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".*

36 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:

37 *"a) sustainable transport modes are prioritised taking account of the vision for the site, the type of development and its location;*

38 *b) safe and suitable access to the site can be achieved for all users;*

39 *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*

40 *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."*

41 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.

42 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.

A14.1.3.2.5 National Planning Practice Guidance

43 The Government's Planning Practice Guidance; Travel Plans, Transport Assessments and Transport Statements in Decision Taking (2014)[7] provides advice on when Transport Assessments and Transport Statements are required, and what they should contain. The most relevant paragraphs are set out below:

- Paragraph 002 states that Travel Plans, Transport Assessments and Transport Statements are all ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements;
- Paragraphs 004 and 005 state that Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal and may propose mitigation measures to promote sustainable development and in order to avoid unacceptable or "severe" impacts where necessary;
- Paragraph 006 states that Transport Assessments and Transport Statements support national planning policy and can positively contribute to encouraging sustainable travel, reducing traffic generation and detrimental impacts, reducing carbon emissions and climate impacts, creating accessible, connected and inclusive communities, improving health outcomes and quality of life, improving road safety and reducing the need for new development to increase existing road capacity of provide new roads;
- Paragraph 007 states that Transport Assessments and Transport Statements should be established at an early stage and tailored to local circumstances, as well as proportionate to the size and scope of the proposed development. In addition, they should be brought forward through collaborative ongoing working between the local planning authority/ transport authority, transport operators, rail network operators, as well as National Highways where there may be implications for the strategic road network and other relevant bodies; and
- Paragraphs 013 to 015 provide further details of when Transport Assessments and Transport Statements are required, how the need and scope should be established and what information should be included.

[7] 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].

A14.1.3.2.6 The Strategic Road Network and the Delivery of Sustainable Development, DfT Circular 01/2022

44 The Strategic Road Network and the Delivery of Sustainable Development[8] 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.

45 The document provides ample guidance on how the SRN should be assessed when accompanying planning applications which may affect the SRN.

46 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.

A14.1.3.3 LOCAL PLANNING POLICY

A14.1.3.3.1 Nottinghamshire Local Transport Plan 2011-2026

47 This policy document is the third Local Transport Plan (LTP3)[9] to be produced by Nottinghamshire 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.

48 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.

A14.1.3.3.2 Newark & Sherwood Local Development Framework Core Strategy & Allocations (Adopted March 2019)

49 The Newark & Sherwood Local Development Framework Core Strategy & Allocations[10] is a vision for the area and strategic objectives for Newark and Sherwood District Council is proposed to guide development to 2033.

50 The transport vision for the area includes the following objectives:

- Access will be improved; key transport improvements will have been secured and non-car use encouraged.

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

- 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.

A14.1.3.4 SUMMARY

51 In summary, there are a number of integrated land use and transport planning policies and policy guidance documents that support and underpin the Development.

A14.1.4 SITE BASELINE AND ACCESSIBILITY AUDIT

A14.1.4.1 INTRODUCTION

52 This section provides a general overview of the existing transport conditions in the Study Area, including a description of the local highway network. A review of the road safety history is also considered in this chapter.

A14.1.4.2 STUDY AREA

53 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.

54 Figure 14.1 provides a map of the Study Area along with names of key roads which represent the Study Area.

A14.1.4.3 WALKING

55 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.

56 Due to the rural nature of the Order Limits, there are limited footway provisions alongside the roads in the area, 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.

57 To provide context to the locations, some of the main residential villages are identified in Figure A14.1.2 within Appendix A.

A14.1.4.3.1 Sutton-On-Trent

58 The B1164 which passes Sutton-on-Trent to the west 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.

59 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.

A14.1.4.3.2 Carlton-on-Trent

60 The B1164 which passes Carlton-on-Trent to the west has no footways between its junction with Ferry Lane and the A1. 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.

61 Street lighting is generally limited to areas near the A1 and some key junctions. The village has basic signage present to assist with wayfinding.

A14.1.4.3.3 Caunton

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

63 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.

A14.1.4.3.4 Kelham

64 As the A617 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.

65 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.

A14.1.4.3.5 Maplebeck

66 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.

67 Maplebeck Road bypasses the village to the north. This road has centreline markings but has grass verges and offers no footway provision or street lighting.

A14.1.4.3.6 Summary

68 Overall, there are very limited pedestrian facilities alongside the routes being used for construction traffic. Those that are present are typically characterised by being relatively narrow and with limited or no separation from traffic.

69 Within the villages, provisions are generally sufficient and suitable to meet local demand and need.

A14.1.4.4 CYCLING

70 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.

71 Within the Study Area, cycling occurs on the local roads but dedicated cycling infrastructure is limited.

72 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 South Muskham, North Muskham and Norwell, and continues to Southwell. The route passes through Egmanton and Tuxford where it intersects with National Cycle Route 647.

73 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.

74 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.

75 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.

76 The formally recognised cycle routes that pass through, or within close proximity, to the Order Limits are indicated on Figure A14.1.3.

A14.1.4.5 HORSE RIDING

77 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.

78 Whilst there is 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.

A14.1.4.6 BUS TRAVEL

79 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 viable.

80 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.

81 Newark Castle train station bus stop is located to the south of the A46/ A616/A617/B6326 roundabout in Newark-on-Trent, approximately 4 km from the proposed Work no. 5a, BESS, and Work no. 5b, 400 kV Compound. Seven bus services operate from this stop; the services 28, 29, 37, 38, 300, X22 and the X37.

82 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.

83 Table A14.1.1 summarises bus services locally and these are also presented on Figure A14.1.4. The figure demonstrates the routes and services within the area, with several routes overlapping on the same roads.

Table A14.1.1. 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

84 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.

85 In addition to the scheduled services in Table A14.1.1 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.

86 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.

87 In summary, while public transport services operate in the area, they are limited and infrequent.

A14.1.4.7 TRAIN TRAVEL

88 The nearest station to the Development is Newark Castle train station, which operates regular services to destinations such as Nottingham, Leicester, Lincoln and Grimsby.

89 Newark Northgate station is situated slightly further away and operates regular services to destinations that include London, Doncaster and York.

A14.1.4.8 DESCRIPTION OF ROAD NETWORK

90 The road network within and around the Order Limits are described below and are shown in the wider context on Figure A14.1.5.

A14.1.4.8.1.1 A1

91 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 an 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.

A14.1.4.8.1.2 A617

92 The A617 runs in an east-west direction to the south of the Order Limits. 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 soft verges on either side of the road.

A14.1.4.8.1.3 A616

93 The A616 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 to a generally good standard and has centre line and road edge markings with soft verges and no street lighting. As the road passes Little Carlton and through Kneesall there is localised active frontage and footways are present.

A14.1.4.8.1.4 A614

94 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.

A14.1.4.8.1.5 B6325

95 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 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.

96 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.

A14.1.4.8.1.6 Carlton Lane

97 Carlton Lane runs from north to south between Ossington Road and Main Street in Norwell. The road is relatively narrow with soft verges on both sides and has no pedestrian facilities.

A14.1.4.8.1.7 Ossington Road

98 Ossington Road 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.

A14.1.4.8.1.8 Kersall Road

99 Kersall Road 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 soft verges and no pedestrian facilities on either side of the carriageway.

A14.1.4.8.1.9 Maplebeck Road / Newark Road

100 Maplebeck Road runs in the northwestern direction providing a connection between Caunton and Eakring, where it is then referred to as Newark Road. 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 soft verges, with no pedestrian facilities on either side of the carriageway.

A14.1.4.8.1.10 Caunton Road

101 Caunton Road 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.

A14.1.4.8.1.11 Ossington Lane

102 The road 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 soft verge with no pedestrian facilities.

A14.1.4.8.1.12 Moorhouse Road

103 Moorhouse Road serves local traffic and runs northwards from the village of Moorhouse, linking onto Weston Road. The road is single carriageway and subject to the national speed limit, with soft verges. No street lighting is present and there are no pedestrian facilities.

A14.1.4.8.1.13 Weston Road

104 Weston Road 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 soft verges on either side of the road. The road is of sufficient width for two-way car traffic.

A14.1.4.8.1.14 Staythorpe Road

105 Staythorpe Road 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.

A14.1.4.9 PERSONAL INJURY COLLISIONS (PIC) REVIEW

106 A review of personal injury collision (PIC) data has been undertaken for all construction phase traffic routes shown on Figure A14.1.5 in Appendix A. 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.

107 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 14.1.2 provides a total summary for the Study Area and Figure 14.1.6 presents their location.

Table 14.1.2: 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

108 The presentation of collision locations shown in Figure A14.1.6 in Appendix A and 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.

109 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 direction. The weather was reported as being fine but the road surface wet.

110 Another fatal collision is also reported on the A617, which occurred on the morning of Tuesday 11 July 2023. The collision involved two cars.

111 The largest number of collisions observed was along the A617 with 15 slight collisions, seven serious and one fatal collision recorded during this period. Six slight collisions and six serious collisions were recorded along the A616 during this period. There were 10 slight collisions recorded at the A614/A46/Great North Road junction, while eight slight collisions and one serious collision were reported at the A1/A46/A17 junction.

112 During consultation, members of the public have raised comment on the perceived safety concerns of construction traffic using the Weston Road junction with the B1164 Great North Road with issued associated with the visibility of turning vehicles at this junction. A closer examination of this junction shows that there have been zero injury-related collisions at this junction within the study period. To provide a greater insight to the junction safety record, data for the past 25 years, from 1999 to 2023 inclusive has been reviewed. This shows that in the past 25 years, there have been a total of four collisions recorded, including a single vehicle accident in July 2008 resulting in slight injury. The other collisions at this junction occurred were all two vehicle collisions, including a serious collision in 1999, a slight injury collision in 2001 and a slightly injury collision in 2013. The recorded collision history at this junction does not present a concern. It should be noted that the construction vehicles using this junction will predominantly be HGVs, with drivers having an elevated view of oncoming traffic and similarly,

the larger vehicle heights will make their presence more conspicuous for approaching vehicles.

A14.1.4.10 SUMMARY

113 An accessibility audit has been undertaken, including a review of the local highway network, sustainable transport accessibility by public transport, and walking and cycling accessibility. The review indicates that the Development site is well served by the strategic and local road network whilst sustainable transport accessibility is reasonable given the relatively rural location of the Order Limits.

114 Having reviewed the collision data provided for the study period, the above analysis shows that the majority of collisions in the Study Area have occurred along the A617 and A46 which are already designed for higher volumes of traffic and greater speeds. Elsewhere on the network, there is insufficient collisions to draw any trends in collision cause.

A14.1.5 THE DEVELOPMENT

A14.1.5.1 INTRODUCTION

115 This Section presents an overview of the Development proposals, including the site access arrangements, staff numbers and shift patterns associated with the construction phase of the Development.

A14.1.5.2 DEVELOPMENT DESCRIPTION

116 The Development would be located to the northwest of Newark, in the Newark and Sherwood district of Nottinghamshire, East Midlands. The Development would be within an area bound by the Order Limits. The Order Limits are to the west of the A1, north of the A617, east of Eakring, and south of Egmanton, to the north and northwest of Staythorpe.

117 The Development is described by ES Chapter 5, Development Description, [EN010162/APP/6.2.5], and briefly summarised here. The Development essentially consists of discrete land parcels proposed to be occupied by solar PV panels and associated infrastructure, connected by cable route areas. Up to 4 intermediate substations will be spaced around the solar areas, and a Battery Energy Storage System (BESS) and 400 kV Compound will collate the electrical energy and step up the voltage before cabling it to the National Grid Staythorpe Substation, possibly via the Consented Staythorpe BESS.

118 The wider area within and surrounding the Order Limits are generally composed of agricultural land, interspersed by occasional woodlands. Surrounding villages and hamlets are connected by rural roads and public rights of way.

A14.1.5.3 ROCHDALE ENVELOPE

119 It is important to provide development flexibility within the DCO and to allow for this, a Rochdale Envelope approach has been used, with parameters

given values within ranges set out in ES Chapter 5, Development Description [EN010162/APP/6.2.5].

120 For transport assessment purposes, values within the parameter range (where relevant to the assessment) have been used that represent the realistic worst-case in the context of this assessment. These are outlined further in this report and their use ensures the final design of the Development as-built, will be no worse than predicted. Such parameters 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.

A14.1.5.4 ROUTES HIERARCHY

121 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 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.

122 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.

123 For determining the most appropriate construction route, the land parcels within the Order Limits 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.

124 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 available and convenient.

125 When it is not viable to achieve the above, additional mitigation measures will be implemented and these are discussed in the Outline CTMP (ES TA A5.2 [EN010162/APP/6.4.5.2]).

126 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.

127 The routing principles enhance traffic management between private motor vehicles and construction traffic, and maximise safety, efficiency and economic benefits of the Development. The Figure A14.1.5 in Appendix A presents the construction traffic routes that will be utilised whilst constructing the Development.

128 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.

129 Where appropriate, any unsurfaced access tracks that run through the Development would be utilised in preference to the installation of new access tracks, to minimise land disturbance and environmental effects.

130 Internal construction haul routes will be used to facilitate movement between fields and minimise traffic impact on the local road network. 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, HGV construction related traffic will not pass through the village of Ossington.
- Near Maplebeck - 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.

131 Access to the majority of the solar arrays during operation will be via grassed tracks. The intermediate substations would require accesses to be constructed of tarmac. Access to construction compounds would be made of compacted stone that can readily be taken up and the land reinstated following completion of the construction stage.

132 Figure A14.1.5 presents the construction traffic routes that are to be utilised whilst constructing the Development.

A14.1.5.5 SITE ACCESS ARRANGEMENTS

133 Detailed consideration has been given to site access arrangements for the developable solar areas, cable route, compounds and BESS area 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.

134 When defining site access arrangements, the utilisation of existing accesses have been prioritised when seeking suitable locations into the site 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 14.7, presenting the location of the existing (to be upgraded) and new accesses proposed.

135 The site accesses have been separated into three categories, these being:

- Primary Access – these accesses form the main access into the site from the public highway. They will typically serve 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 land parcels of solar development 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
- AIL 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 to site. All AIL movements will be undertaken under appropriate supervision measures.

136 A total of 41 access locations are proposed, of which 23 are existing access locations, many of which will require upgrading to ensure they have appropriate visibility, geometry and surfacing. There are 18 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.

137 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.

138 All access locations will be retained for continued use during the operational phase. A summary of each primary access is listed in Table A14.1.3 which sets out a brief rationale for their location and whether they are existing/upgraded, or new. Access locations are shown in Figure A14.1.7.

139 The implementation of new access junctions is essential for ensuring materials can be delivered to the Development site safely and efficiently. A detailed exercise has been undertaken to find suitable locations for the new

access points involving site visits and a review of the existing roads from which access will be taken. Suitable access junction locations were then selected based on the ability to achieve an appropriate geometric layout and to achieve visibility splay standards.

140 In the assessment of visibility splays at each access location, a robust methodology is adopted that integrates data collection, established standards, and professional judgement to ensure accurate evaluations. This approach ensured that all assessments were consistent with best practices and applicable guidance.

Table A14.1.3: Primary Access Locations

Access ID	Location	Description
PA1	A617 – 100 m east of Main Road junction	An **existing** hard surfaced field access to be upgraded and used to access BESS site.
PA2	Caunton Road – approx. mid-length of road	An **existing** hard surfaced site access of the public road onto private access and then into field via new access to the south.
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.
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.
PA5	Newark Road – 590 m east of Sandy Lane Public Footpath	A **new** site access to be formed to gain access land to the south.
PA6	Newark Road – 720 m east of Sandy Lane Public Footpath	A **new** site access to be formed to gain access to land to the south.
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.
PA8	A616 – 1.03 km south-east of Kersall Road	An **existing** hard surfaced field access to be upgraded to gain access to land to the east.
PA9	Kersall Road - 240 m north-east of A616 junction	An **existing** hard surfaced field access to be upgraded to gain access to land to the south.
PA10	Kersall Road - 375 m south of	An **existing** soft standing field access to be upgraded to gain access to land to the west.

Access ID	Location	Description
	Ossington Road junction	
PA11	Ossington Road - 500 m north of Main Street junction	A **new** site access to be formed across grassed soft verge to gain access to land to the west.
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.
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.
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.
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
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.
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.
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.
PA19	Staythorpe Road – 190 m east of Pingley Lane	An **existing** field access to be used with localised removal or hedgerow. Approval for use by HGV received as part of planning application 24/01261/FULM.

141 The visibility requirements for the primary site accesses are related to the stopping sight distance (SSD). The SSD is the distance within which drivers need to be able to see ahead and stop from a given speed. For existing roads, the 85th percentile speed is used to determine the SSD.

142 A third-party survey company were appointed to undertake traffic volume and speed surveys in the proximity of the proposed new site access locations. The traffic surveys were undertaken using Automatic Traffic

Count (ATC) loops, which collected continuous data for a 7-day period on the following neutral dates that are considered representative of typical conditions:

- 17 April to 23 April 2024;
- 25 February to 03 March 2025; and
- 14 March to 20 March 2025

143 Figure A14.1.7 shows a location plan of the ATC loops. All traffic survey data collected was shared with NCC and full set of data is provided in Appendix C.

144 The SSD is calculated from the speed of the vehicle, the time required for a driver to identify a hazard and then begin to brake (the perception–reaction time), and the vehicle's rate of deceleration.

145 The basic formula for calculating safe stopping distance (in metres) is:

$$SSD = vt + \frac{v^2}{2d}$$

where:
v = speed (m/s)
t = driver perception reaction time (seconds)
d = deceleration (m/s2)

146 This formula is used in the Design Manual for Roads and Bridges (DMRB)[11], Manual for Streets (MfS)[12] and the Highway Code[13] to calculate stopping distances. All of these documents assume different values for the driver perception reaction time (t), and the deceleration (d).

147 To inform interpretation of the SSDs, it is relevant to note some of the summary findings of reviewed research into SSD undertaken during the production of the Manual for Streets (2007). This research into SSD found that:

- The desirable minimum SSDs used in the Design Manual for Roads and Bridges are based on a driver perception–reaction time of 2 seconds and a deceleration rate of 2.45 m/s2 (equivalent to 0.25g where g is acceleration due to gravity (9.81 m/s2)). Drivers are normally able to stop much more quickly than this in response to an emergency;
- The stopping distances given in the Highway Code assume a driver reaction time of 0.67 seconds, and a deceleration rate of 6.57 m/s;
- While it is not appropriate to design street geometry based on braking in an emergency, there is scope for using lower SSDs; and
- Research shows that the 90th percentile reaction time for drivers confronted with a side-road hazard in a driving simulator is 0.9 seconds.

[11] National Highways (2020). Design Manual for Roads and Bridges. Available at: https://www.standardsforhighways.co.uk/dmrb [accessed on 09/05/2025].
[12] Department for Transport (2007). Manual for Streets. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/341513/pdfmanforstreets.pdf
[13] Department for Transport (2025). The High Code. Available at: https://www.gov.uk/guidance/the-highway-code

148 Carriageway surfaces are normally able to develop a skidding resistance of at least 0.45 g in wet weather conditions. Deceleration rates of 0.25 g (assumed value adopted in DMRB) are more typically associated with snow-covered roads.

149 While it is not appropriate to design road geometry based on braking in an emergency, the DMRB values are clearly based on conservative values. It is the DMRB standards that have been used to inform the visibility requirements for the proposed site accesses.

150 A set of site access drawings are provided in Appendix D, which note the recorded 85th percentile speed and corresponding visibility splay. All land required to deliver the site accesses are contained within the Order Limits.

151 It will also be necessary for vehicles to access land identified for mitigation. 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.

A14.1.5.6 PASSING PLACES

152 Due to the rural location of the Order Limits and many 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 along several 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.

153 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.

154 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.

155 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.

156 Through continued liaison with the Local Highway Authority, the long-term status of the installed passing places will be established on a location-by-location basis. This will inform decisions on whether the passing places will be removed, and the verge reinstated or retained thereafter for community benefit.

157 Figure A14.1.9 shows the proposed location of passing places with their outline designs included in Appendix E. It should be noted the passing place references and drawing numbers may not run consecutively, this is due to varies design iterations adding and removing places, and the original references retained for continuity between versions.

A14.1.6 TRIP GENERATION AND DISTRIBUTION

A14.1.6.1 INTRODUCTION

158 This section sets out the trip generation for the Development and the distribution of these trips onto the highway network.

A14.1.6.2 CONSTRUCTION PHASES

159 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, 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.

160 For assessment purposes and as a worst-case scenario, it is assumed that the Development will be constructed with the two southern phases being built concurrently, followed by the two northern phases.

A14.1.6.3 TRIP GENERATION

161 The construction of the Development will involve a phased approach to manage the traffic generated during the construction period effectively. This phased approach ensures that the impact on the local highway network is minimised and that construction activities are carried out efficiently.

162 To inform the assessment of the construction phase, the most intense phase for traffic generation, a series of trip generation calculations have been undertaken using details contained in ES Chapter 5, Development Description [EN010162/APP/6.2.5]. The inputs and assumptions used in the trip generation calculation are presented in Table A14.1.4.

Table A14.1.4: Calculation Inputs and Assumptions

Item	Value
Total area of solar PV modules	550 ha
Total length of access tracks (Tarmac)	3 km
Total length of access tracks (Stone)	50 km
Area of compound areas	2 ha each
Total length of fencing	145 km
Site accesses to construct	41 No.
Construction vehicles required per access	5 HGV
Solar modules size range	3 sqm
Solar modules per container	620 No.
Frames per module factor	0.1
Storage units per substation	1 each
Vehicles required per storage unit	300
Number of intermediate substations	4 No.
Number of battery containers	754
Number of passing places to construct	40 No.
Internal stone track width]	4 m
Internal stone track depth	0.15 m
Internal tarmac track width	5 m
Internal tarmac track depth	0.02m
Density tarmac	2.3 t/m3
Density stone	1.8 t/m3
Truck capacity	20 t
Compound Areas	19
Length of fencing per HGV load	10 m
Number of construction workers per phase	500
% of workers travelling to site by shuttle bus	50 %
Number of workers per bus	20
Workers' car share ratio	1.5
Contingency	20%

163 The above assumptions were then used to forecast the total trip generation, which were then apportioned by total area of solar PV within each phase and activity (a shown in Table A14.1.15). Following that calculation, trips were

then presented to allow identification of the worst-case month for peak construction activity.

164 With the peak construction traffic forecast for each phase, activity and element of the project, these were then apportioned in accordance with the area being served by each primary access. This then allowed the peak construction trips on each road link to be forecast.

165 The assessment considers the respective worst-case flows, which also include further layers of robustness, such as a 20% uplift in traffic forecasts to account for fluctuations in activity and uncertainty.

166 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 the Order Limits as flat sheets rather than prefabricated frames, thereby reducing the number of vehicles required due to space-savings.

167 Appendix F provides the calculations of trip generation described above and Figure A14.1.10 identifies the areas being served by each primary site access.

168 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 site are developed and constructed, possibly simultaneously, or not least, with a degree of overlap. The peak traffic generation in the month has been identified and used for assessment purposes.

169 The outline construction programme below in Table A14.1.15 provides a summary of the forecast traffic generation over each month and phase (HGV, LGV and car/van). As can be seen there are two 'worst case' period months when traffic levels are expected to peak, each occurring on different parts of the network.

Table A14.1.15 Monthly Construction Traffic 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								17	17	17	17	17	5	5	5	5	5	5	5	5	5	5	5	5
	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
Phase two	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
	Mitigation/enhancement planting																2	2	2	2	2	2	2	2	2
Phase three	Site access points	20	20	20																					
	Roads and tracks		364	182	61																				
	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											20	20
	Mitigation/enhancement planting				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		
		28	720	1238	1609	391	592	604	661	661	649	448	255	48	997	1711	2199	502	761	775	815	815	801	592	348

A14.1.7 IMPACT ASSESSMENT

A14.1.7.1 INTRODUCTION

170 This section summarises the effect of the Development on the local highway network.

171 The traffic impact assessment has been informed by separating the road network into links. These links are those sections of road to be used for construction traffic, with each section being assigned a Link ID, which is given in Table A14.1.6. Assigning a Link ID allows for ease of reference and enables different sections of the same road to be considered and discussed.

A14.1.7.2 CONSTRUCTION PHASE

172 The construction phase of the Development is expected to last approximately 24 months. The assessment of the effects of the construction phase is based on peak construction vehicle movements.

173 The construction phase for the Development includes the preparation of the land and construction compounds, installing the access tracks, erection of security fencing, assembly and erection of the PV strings, installation of the inverters/transformers and the grid connection.

174 A Construction Traffic Management Plan (CTMP) will be implemented during the construction phase of the Proposed Development. The aim of the CTMP is to manage and minimise the effects of the construction phase on the highway network and on local residents. An outline of the CTMP is provided as ES TA A5.2 [EN010162/APP/6.4.5.2].

175 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). These core working hours will be secured through the Construction Environmental Management Plan. 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. Also, deliveries will be scheduled to avoid school drop off and collection periods and other sensitive times. Restrictions will also be made 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.

176 Pedestrian and cycling activity on the rural roads will be low but still presents some risk when construction traffic is present. To mitigate this, the Outline CTMP sets out measures such as the route hierarchy and presents reduction in speed limits and signage to safely manage the passage of non-motorised users on the local network in proximity to the site accesses.

177 The traffic surveys identified previously provided sufficient coverage of road network locations along the proposed construction routes.

178 Following the completion of the Development construction phase, baseline traffic levels will likely be less than those reported in this TS due to the temporary change of use of the agricultural land and it 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, the Trip End Model Presentation Program used to access and analyse data from the National Trip End Model (NTM). The following factors have been used to adjust the baseline traffic flows from 2024 to 2028, which is the assumed mid-point of the construction period:

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

179 The 2028 future baseline traffic flows are shown in Table A14.1.6 which should be read in conjunction with Link ID plan given in Figure A14.1.11.

Table A14.1.2. Construction Baseline and Future Traffic

Link	Description	2024 BASELINE AADT	
		Total Vehicles	HGV
1	A46	29,174	2,811
2	A616 Great North Road	10,076	475
3	A617 Kelham Road	15,668	731
4	A616	5,529	177
5	Caunton Road (South)	1,694	0
6	Caunton Road (North)	1,694	51
7	Maplebeck Road	675	9
8	Newark Road	1,068	14
9	Kersall Road	621	15
10	Main Street	622	8
11	Ossington Road (South)	133	0
12	Ossington Road (East)	683	82
13	Ossington Lane	390	1
14	Moorhouse Road	298	2
15	Weston Road	771	7
16	B1164 Great North Road	1,932	63
17	Carlton Lane	215	2
18	Staythorpe Road	1,925	26

180 Daily construction traffic flows have been added onto 2024 base to show the change in vehicles. This is summarised in Table A14.1.17.

Table A14.1.3. 2028 Future Base with Construction Traffic

Link	Construction Traffic		2028 Plus Construction Traffic		Percentage Change
	Total Vehicles	HGV	Total Vehicles	HGV	Total Vehicles (%)
1	823	107	29,997	2,918	3 %
2	823	107	10,899	581	8 %
3	10	10	15,678	741	0 %
4	342	64	5,871	240	6 %
5	179	0	1,873	51	11 %
6	412	53	2,106	104	24 %
7	412	53	1,087	63	61 %
8	104	13	1,171	28	10 %
9	171	32	792	47	28 %
10	40	0	662	8	6 %
11	40	0	173	0	30 %
12	257	68	940	150	38 %
13	242	57	632	58	62 %
14	88	23	386	25	29 %
15	88	23	858	31	11 %
16	242	57	2,175	120	13 %
17	134	36	348	38	62 %
18	250	5	2175	31	13 %

181 This Table provides data on traffic changes associated with construction activities from a 2028 future base level. It is important to note that larger increases in traffic volume change are typically associated with a low baseline level.

182 It is worth noting that the numbers presented are total daily flows and demonstrate a maximum number over the course of a 24-hour period. Overall, the table underscores the varying degrees of traffic impact across different links, with most experiencing unnoteworthy increases on the local highway network. It is important to highlight that links reporting high percentage increases are those that typically have a low baseline level of traffic and so more sensitive to changes in traffic volume.

183 With the implementation of passing places, where appropriate, the proposed construction traffic routes are suitable for use by the relatively low number of HGVs associated with the construction period. The likelihood of background traffic being delayed is low.

184 The low level of daily construction vehicle movements and their occurrence outside of the road network peak periods means that there will not be a material effect on the highway network during the construction period.

A14.1.7.3 OPERATIONAL PHASE

185 Once solar parks are operational, they generate very few traffic movements on a day-to-day basis.

186 During the operational phase, there are anticipated to be around 15 vehicle trips 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.

187 It should be noted that two Electric Vehicle charging points for site workers/visitors will be installed at each intermediate substation and the 400 kV compound.

188 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.

189 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, with only occasional need for replacements as part of routine maintenance.

190 Traffic levels during the operational phase will be far fewer than those outlined and assessed for the construction phase.

A14.1.7.4 ABNORMAL LOADS

191 Transporting abnormal loads to a new development is a complex but essential task that requires meticulous planning and execution. Abnormal loads for the Development will include transformers and cable drums.

192 To assist in the planning of abnormal loads transportation, Wynns, a specialist abnormal load transportation specialist has been engaged from an early phase of the project.

193 Wynns are well placed to provide specialist advice given their extensive experience, which includes other projects in the area that have used much of the same road network.

194 Appendix G provides a copy of the abnormal load assessments undertaken to the substation areas and confirms that it is reasonable to consider the routes to all of the proposed substation sites to be feasible in terms of heavy load AIL requirements based on historical movement requirements at heavier weights in the area.

195 Wynns were also commissioned to consider the viability of transporting Abnormal Indivisible Loads (AILs) to the proposed access points. The report, which is included in Appendix G, considers access in respect to AIL access for cable drums to various sites within the proposed construction corridors. The report was informed by a physical route survey and highlighted the preferred AIL access routes via the public road network and

advised on their viability. Following this assessment, a Red, Amber, Green rating was assigned.

- Green – Proposed site access considered negotiable for AILs;
- Amber – Some remedial works will be required to secure site access for AILs. Further surveys and Swept Path Assessments (SPA) to be undertaken to clarify requirements but access is considered feasible with additional works; and
- Red – Proposed site access not considered negotiable for AILs and alternative access point required/suggested via internal haul roads along cable route.

196 Only the accesses considered to be 'Green' have been taken forward.

197 Figure A14.1.12 shows the routes considered for the transportation of AILs for the substations and cable drum access.

198 The AILs will be delivered under Special Types General Order (STGO) Regulations and will not be limited to the nearest potential port of delivery and access is considered from the nearest known heavy load routes, the A1, A617 and A616 which have been historically used for access to Staythorpe Power Station for much larger heavy electrical plant.

199 The review of the routes is based on the preferred route for negotiability. There are structures belonging to authorities including Nottinghamshire County Council and Network Rail that would require confirmation of their suitability for STGO AILs prior to movement. However, no specific structural restrictions were identified and there are no weak structures (which cannot accommodate standard 44te Construction and Use traffic) on the preferred routes.

200 Further discussions with Nottinghamshire County Council and the police would be necessary to confirm access requirements in terms of escorting of the AILs. The AIL movements will likely take place during quieter periods on the local highway network. Therefore, the effect on the local highway network will be temporary and reduced.

A14.1.7.5 SUMMARY

201 The effect of the temporary changes in traffic flows on the local highway network associated with the construction phase of the scheme are not anticipated to be significant in nature, and therefore the impact on each link will not be significant in terms of road capacity and the impact on existing users.

202 The potential environmental effects associated with the increase in traffic level is assessed separately within the ES Chapter 14 Traffic and Transport [EN010162/APP/6.2.14]. The CTMP will be the key mitigation measure to ensure that the access strategy is followed, and the effects of construction traffic are managed and minimised (see the Outline CTMP, TA A5.2 [EN010162/APP/5.2].

A14.1.8 SUMMARY

203 This report is the Transport Statement to support the development of the Great North Road (GNR) Solar and Biodiversity Park, a solar photovoltaic (PV) electricity generating facility northwest of Newark-on-Trent, Nottinghamshire.

204 The Transport Statement provides systematic review and assesses the transport impacts of the Development, proposing mitigation measures to alleviate any negative effects.

205 The report outlines the transport vision of the site in relation to sustainable transport.

206 The policy context includes national and local planning policies supporting sustainable development and transport. An accessibility audit reviews existing transport conditions, including walking, cycling, bus, and train travel. A commentary of the surrounding road network is also considered along with a review of recent road safety data.

207 The road safety review did not identify any areas where the road safety history would imply that development related traffic would exacerbate conditions. Measures are included to reduce the impact of traffic, including scheduled timing for deliveries to be outside of peak periods and passing places.

208 The Development includes multiple access points, using existing and new access locations. A hierarchy of construction routes has been deployed in the access strategy to minimise the traffic impact on local roads. The construction phase is expected to last 24 months, with minimal operational traffic post-construction. The impact assessment indicates that the construction traffic will not significantly affect the local highway network, and abnormal loads will be managed to minimise disruption.

209 Overall, the report concludes that the traffic impact of the Development is manageable and that with the proposed mitigation measures in place, it can be delivered in a safe and efficient manner that minimises disruption to the local transport network.