

Tillbridge Solar

PEI Report Volume I Chapter 15: Transport and Access
April 2023

tillbridgesolar.com

@: info@tillbridgesolar.com T: 0800 046 9643

15. Transport and Access

15.1 Introduction

15.1.1 This chapter presents the preliminary findings of an assessment of the likely significant effects on Transport and Access as a result of the Scheme. For more details about the Scheme, refer to **PEI Report Volume I Chapter 3: Scheme Description**.

15.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects of the Scheme on Transport and Access, during the construction, operation, and decommissioning phases of the Scheme. The chapter assesses the Scheme based on a worst-case scenario in regard to the information available at the time of writing.

15.1.3 This chapter is supported by the following appendices in **PEI Report Volume II**:

- **Appendix 15-1:** Transport Assessment (TA); and
- **Appendix 15-2:** Framework Construction Traffic Management Plan (Framework CTMP).

15.1.4 This chapter is supported by the following figures in Volume III:

- **Figure 15-1:** Transport and Access Study Area;
- **Figure 15-2:** Local Highway Network;
- **Figure 15-3:** Local Public Rights of Way (PRoW) Network;
- **Figure 15-4:** Traffic Survey Locations;
- **Figure 15-5:** Personal Injury Collision (PIC) Study Area; and
- **Figure 15-6:** Site Access Plan – Principal Site.

15.2 Legislation and Planning Policy

15.2.1 There is no legislation pertinent to the assessment of transport and access.

15.2.2 There are a number of policies that relate to how traffic and transport-related impacts should be assessed, in terms of identifying both the level of impact of the Scheme and any necessary mitigation.

15.2.3 Planning policy, and guidance relating to Transport and Access, and pertinent to the Scheme comprises the following:

- National Planning Policy and Guidance
 - Overarching National Policy Statement for Energy (NPS EN-1) (2011) (Ref. 15-1);
 - Draft Overarching National Policy Statement for Energy (2023) (NPS EN-1) (Ref. 15-2);

- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2011) (Ref. 15-3);
 - Draft National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2023) (Ref. 15-4)
 - National Policy Statement for Electricity Networks Infrastructure (EN-5) (2011) (Ref. 15-5);
 - Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (2023) (Ref. 15-6)
 - National Planning Policy Framework (2021) (Ref. 15-7); and
 - Planning Practice Guidance (2014, updated regularly) (Ref. 15-8).
- Local Planning Policy
 - Lincoln Transport Strategy 2020 to 2036 (2022) (Ref. 15-9);
 - Central Lincolnshire Adopted Local Plan (2023) (Ref. 15-10);
 - Fourth Lincolnshire Local Transport Plan 2013/14 to 2022/23 (2013) (Ref. 15-11);
 - Fifth Lincolnshire Local Transport Plan (Consultation Draft, 2021) (Ref. 15-12);
 - Gainsborough Transport Strategy May 2022-2036 (2022) (Ref. 15-13);
 - Nottinghamshire Local Transport Plan 2011-2026 (2011) (Ref. 15-14);
 - Bassetlaw Local Plan 2020-2037 (Publication Version August 2021) (Ref. 15-15);
 - Bassetlaw Local Plan Schedule of Suggested Changes to the Local Plan Publication Version and Policies Maps (2022) (Ref. 15-16);
 - Corringham Neighbourhood Plan (Submission Version March 2021) (Ref. 15-17);
 - Sturton by Stow and Stow Neighbourhood Plan 2019-2036 (March 2022) (Ref. 15-18); and
 - Hemswell and Harpswell Neighbourhood Plan 2022-2036 (February 2022) (Ref. 15-19).
 - Industry Guidance
 - Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic (1993) (Ref. 15-20); and
 - Construction Logistics and Community Safety (CLOCS) Standard, Version 4 (August 2022) (Ref. 15-21).

National Planning Policy

15.2.4 The Overarching National Policy Statement for Energy (NPS EN-1) (2011) (Ref. 15-1) sets out the basis for decisions regarding nationally significant energy infrastructure. Section 5.13 outlines the planning policy for traffic and transport, including guidance on undertaking relevant parts of the EIA, with particular reference to sections 5.13.3 to 5.13.5 of the document which are outlined below:

- Paragraph 5.13.3 states if a project is likely to have significant transport implications, a Transport Assessment should be included with the Environmental Statement;
 - Paragraph 5.13.4 states where appropriate, a Travel Plan should be produced to include demand management measures to mitigate transport impacts; and,
 - Paragraph 5.13.5 states where additional transport infrastructure is proposed, discussions should be held with the relevant network providers (in terms of the possibility of co-funding by Government for any third-party benefits).
- 15.2.5 An updated draft NPS EN-1 (2023) (Ref. 15-2) was published in March 2023. This will be reviewed prior to completion of the Environmental Statement for the Scheme.
- 15.2.6 The National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2011) (Ref. 15-3) sets out the policies relating to electricity generation from renewable sources of energy, to be considered in conjunction with NPS EN-1. However, it is noted that the document does not explicitly refer to solar schemes, and any reference to transport is considered with reference to NPS EN-1.
- 15.2.7 An updated draft NPS EN-3 (2023) (Ref. 15-4) was published in March 2023. This will be reviewed prior to completion of the Environmental Statement for the Scheme.
- 15.2.8 National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (2011) (Ref. 15-5) sets out the policies relating to electricity networks infrastructure, any reference to transport is considered in conjunction with reference to NPS EN-1.
- 15.2.9 An updated draft NPS EN-5 (2023) (Ref. 15-6) was published in March 2023. This will be reviewed prior to completion of the Environmental Statement for the Scheme.
- 15.2.10 The National Planning Policy Framework (NPPF) (2021) (Ref. 15-7) was originally published in March 2012 and most recently revised in July 2021, outlining the Government's planning policies and how they are expected to be applied. The most relevant paragraphs in the context of transport are set out below:
- Paragraph 104 outlines that “*transport issues should be considered from the earliest of stages of plan-making and development proposals*”, in order to ensure;
 - “*The potential impacts of development on transport networks can be addressed;*
 - “*Opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;*

- *Opportunities to promote walking, cycling and public transport use are identified and pursued;*
 - *The environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for mitigation and for net gains in environmental quality; and*
 - *Patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places.”*
- Paragraph 110 outlines the key considerations when assessing sites to be allocated for development in plans or specific development applications, and these include:
 - *“Appropriate opportunities to promote sustainable transport modes can be (or have been) taken up, given the type of development and its location;*
 - *Safe and suitable access to the Order limits can be achieved for all users;*
 - *The design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance; and*
 - *Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.”*
 - Paragraph 111 states that development *“should only be prevented or refused on highways grounds where there would be an unacceptable impact on highway safety, or the residual cumulative impacts of development on the road network would be severe”*;
 - Paragraph 112 states that applications for development *“should give priority first to pedestrian and cyclist movements and then, as far as possible, to facilitating access to high quality public transport”*; and,
 - Paragraph 113 states that all developments that *“will generate significant amounts of movement should be required to provide a Travel Plan, and the application should be supported by a Transport Statement or Transport Assessment so that the likely impacts of the proposal can be assessed”*.

National Guidance

15.2.11 Planning Practice Guidance: ‘Travel Plans, Transport Assessments and Transport Statements in Decision Taking’ (2014) (Ref. 15-8) provides advice on when transport assessments and transport statements are required, and what they should contain. The most relevant paragraphs are summarised below:

- Paragraph 002 states: *“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: *“Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal” and “may propose mitigation measures where these are necessary to avoid unacceptable or “severe” impacts”;*
- Paragraph 006 states: *“Travel Plans, Transport Assessments and Statements can positively contribute to encouraging sustainable travel; lessening traffic generation and its 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: *“Travel Plans, Transport Assessments and Statements should be:*
 - *proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;*
 - *established at the earliest possible stage of a development proposal;*
 - *be tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally);*
 - *be brought forward through collaborative ongoing working between the local planning authority/transport authority, transport operators, rail network operators, Highways Agency where there may be implications for the strategic road network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in positively supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities).”*
- Paragraphs 013 to 015 provide further details of when Transport Assessments are required, how the need and scope of a Transport Assessment should be established and what information should be included.

Local Planning Policy

15.2.12 The new Lincoln Transport Strategy 2020-2036 (2022) (Ref. 15-9) has been developed by Lincolnshire County Council (LCC), City of Lincoln Council, North Kesteven District Council, and West Lindsey District Council. It aims to provide a clear vision for the future of transport across the Lincoln area up to 2036. The key strategies include:

- Enhancing connectivity across the network for all modes;
- Increasing the capacity of the network and supporting the reduction in traffic in the urban area; and
- Rebalance movement towards walking and cycling.

15.2.13 The Central Lincolnshire Local Plan was adopted in April 2023 (**Error! Reference source not found.**). Policy S47 relates to accessibility and transport and Objective 11 relates to minimising the effects of climate change through the development of renewable energy sources and objective 13 relates to promoting journeys by sustainable travel modes (public transport, walking and cycling).

15.2.14 The Fourth Lincolnshire Local Transport Plan (LTP4) 2013/14 – 2022/23 (2013) (Ref. 15-11) builds on the strategies and policies adopted by previous Local Plans. Section 5.17 to 5.23 relates to travel planning and sustainable travel within new developments whilst Section 14.33 relates to reducing the impact of traffic. The transport goals set out within this document include:

- *“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.”*

15.2.15 The Fifth Lincolnshire Local Transport Plan (Consultation Draft, 2021) (Ref. 15-12) has been approved by Lincolnshire and is currently pending adoption. The short-term horizon is for the period 2022-2026 but the plan also covers the medium and long-term future between 2026-2034 and 2034-2050. Chapter 4 of the document discusses the proposed themes related to the integrated transport strategy which include:

- Theme 1: Supporting economic growth;
- Theme 2: Future ready, green transport;
- Theme 3: Promoting thriving environments;
- Theme 4: Supporting safety, security and a healthy lifestyle;
- Theme 5: Promoting high aspirations; and
- Theme 6: Improve quality of life.

15.2.16 Policy Green 4 states, *“We will use the local and strategic development management processes to ensure that development is planned, delivered and managed to reduce the need to travel and support the delivery of sustainable transport modes. We will support the provision of improved walking, cycling and public transport services and facilities as part of new developments and actively encourage innovative solutions such as car clubs, mobility hubs, active travel plans and other sustainable solutions as opposed to single occupancy car use”*.

15.2.17 The Gainsborough Transport Strategy 2022 – 2036 (2022) (Ref. 15-13) has been developed in partnership with West Lindsey District Council and Lincolnshire County Council to provide a vision for the future of transport to 2036. The strategy was updated to reflect the need to adapt to ongoing challenges like climate change and recovering from the COVID-19 pandemic. The updated strategy aims to support and help transition towards a net zero

future and improve access to opportunities and services by improving travel choice through development of an inclusive, sustainable, and future-ready transport system. The strategy aims to promote how communities travel within Gainsborough in the promotion of future of mobility, walking and cycling, public transport and decarbonising transport. The objectives of the Strategy related to transport include:

- Sustainable Urban Extension delivery and sustainable travel;
- Active travel, natural environmental and open space;
- Reduce urban traffic;
- Future mobility;
- Reduce the need to travel;
- Rural accessibility; and
- Long distance connections.

15.2.18 The document looks to develop a sustainable transport strategy which will:

- Influence travel behaviour;
- Prioritise active modes;
- Promote shared and public transport; and
- Mitigate residual impacts of traffic.

15.2.19 Nottinghamshire Local Transport Plan 2011 – 2026 (LTP) (2011) (Ref. 15-14) sets out Nottinghamshire's transport strategy and outlines a programme of measures to be delivered over the short, medium and long-term. The strategy covers all types of transport including public transport, walking, cycling, cars and freight.

15.2.20 Policy DM13 (Sustainable Transport) of the adopted Bassetlaw Core Strategy and Development Management Policies Local Plan (2021) (Ref. 15-15) will be considered along with relevant policies from the emerging Bassetlaw Submission Local Plan (2022) including Policy ST54 (Transport Infrastructure) and Policy ST55 (Promoting Sustainable Transport and Active Travel). Suggested changes in the Bassetlaw Local Plan Schedule of Suggested Changes to the Local Plan Publication Version and Policies Maps (2022) (Ref. 15-16) have also been reviewed.

15.2.21 The following neighbourhood plans, which form part of the local planning policy have been reviewed in relation to transport and access:

- Corringham Neighbourhood Plan (Submission Version March 2021) (Ref. 15-17);
- Sturton by Stow and Stow Neighbourhood Plan 2019-2036 (2022) (Ref. 15-18); and
- Hemswell and Harpswell Neighbourhood Plan 2022-2036 (2022) (Ref. 15-19).

15.2.22 The main focus of these neighbourhood plans is to protect and enhance existing ProWs and to support provision of new routes to promote walking and cycling use.

Industry Guidance

15.2.23 Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic (1993) (Ref. 15-20), provides guidance on examining the environmental impacts of developments in terms of traffic and transportation. This guidance has been used to underpin the assessment methodology set out within section 15.4.30 onwards of this assessment.

Other Relevant Guidance

15.2.24 Construction Logistics and Community Safety (CLOCS) (2022) (Ref. 15-21) guidance draws upon evolving best practice, standards, policies and codes of practice, providing a standard which planning authorities, developers and contractors can implement and providing a coherent set of guidelines which can be adhered to, with the primary goals of achieving:

- Zero collisions between construction vehicles and the community;
- Improved air quality and reduced emissions;
- Fewer vehicle journeys; and,
- Reduced reputational risk.

15.3 Assessment Assumptions and Limitations

15.3.1 This chapter forms a preliminary assessment based on information available at the time of preparing the PEI Report prior to further refinement of the assessment being carried out in the preparation of the ES which will accompany the submission. The assessment is based on the construction phase only due to the limited number of trips expected to be associated with the operational phase and the fact that the decommissioning phase is considered to be too far into the future to be able to accurately predict traffic flows or network/junction layouts etc.

15.3.2 An initial assessment of the Principal Site has been undertaken as part of this PEI Report. Due to limited information regarding the Cable Route Corridor being available at this stage, an initial assessment of the Cable Route Corridor has not been undertaken as part of this PEI Report. The exact extent of the Scheme cannot be confirmed as the Cable Route Corridor (within the Scheme Boundary) has not been finalised and detailed discussions have not yet taken place with the respective Highway Authorities (LCC and Nottinghamshire County Council (NCC)). Details relating to the ProWs which are expected to fall within the boundary of the Cable Route Corridor and the proposed access points have been included where possible but not enough information is known at this stage to undertake an initial assessment of the construction phase impacts for the Cable Route Corridor.

- 15.3.3 A full assessment of the Scheme, which will include the assessment of both the Principal Site and the Cable Route Corridor (which will connect the Principal Site Substations to the National Grid via Cottam Substation), will be undertaken as part of the Environmental Statement (ES) Transport and Access Chapter that will form part of the DCO submission and will include the findings of the statutory consultation.
- 15.3.4 The Transport and Access Study Area proposed as part of this assessment, and seen in **PEI Report Volume III Figure 15-1**, has been determined by the Applicant's understanding of the road network and where the likely impacts will be. The Study Area was formally agreed with LCC and NCC during consultation on the 19 January 2023. Consultation with the Local Highway Authorities (LHAs) will be ongoing throughout the EIA process and any agreed changes will be assessed as part of the ES.
- 15.3.5 As confirmed by the project design team, there is expected to be a daily peak of 1,250 construction staff associated with the Scheme. This includes 1,125 construction staff associated with the Principal Site, a peak of 50 construction staff associated with each of the two on-site substations and a peak of 25 construction staff for the Cable Route Corridor. Typically there is expected to be an average daily number of 500 construction staff associated with the Scheme on-site during off peak periods in the 24 month construction period. The construction staff associated with the on-site substations (located within the Principal Site) will travel to Principal Site Access 1 on the A631 Harpswell Lane and Principal Site Access 4 on B1398 Middle Street (see **PEI Report Volume III Figure 15-6** for reference). At this stage of the Scheme's development, all construction staff, including those associated with the Cable Route Corridor, are expected to travel to/ from the Principal Site between 06:00-07:00 and 19:00-20:00 for the 12-hour working day between 07:00-19:00. All staff arriving/departing in one hour provides a worst-case assessment of the forecast vehicle trip generation of construction staff vehicles on the local highway network.
- 15.3.6 An internal shuttle service is anticipated to be utilised to transport construction staff from the Principal Site to the Cable Route Corridor (and vice-versa) to reduce vehicular trips on the surrounding highway network.
- 15.3.7 Existing tracks / routes within the Principal Site will be utilised to minimise the number of shuttle services on the local highway network when transporting construction staff around the Scheme. It is expected that smaller vehicles would be utilised for the internal shuttle service to transport construction staff around the Scheme when utilising existing internal tracks rather than the local highway network. It should however be noted that it won't be possible to access the whole Cable Route Corridor internally due to barriers such as the River Trent. The precise routes to be utilised along existing internal tracks have not been finalised at this stage and will be presented within the ES Transport and Access Chapter once the Scheme design has been confirmed.
- 15.3.8 An external shuttle service is anticipated to be utilised to transport staff to/from the local residential areas and the Principal Site. Currently it is expected each shuttle service vehicle will accommodate up to 50 construction staff. In addition, an internal shuttle service (expected to be smaller in size compared

to the external shuttle service vehicle) is assumed to be implemented to transport staff around the Principal Site utilising the existing tracks.

- 15.3.9 As confirmed by the project design team, in addition to the construction staff, there is expected to be an average of 65-70 HGVs per day associated with the Principal Site over the construction period and a daily peak of 120 HGVs. The HGVs are expected to use existing accesses via the A631 Harpswell Lane and B1398 Middle Street, with three Principal Site accesses located on the A631 Harpswell Lane and one access on the B1398 Middle Street. The HGV routes are expected to use primarily the A631, B1398 and A15 and are identified in Figure 6-1 in the TA. In relation to the Cable Route Corridor, although not confirmed at this stage, it is considered that a minimal number of vehicle trips (HGVs and LGVs) are expected to be generated by the Cable Route Corridor build out and therefore it would not be expected to have a material impact on the surrounding highway network (this element has been examined qualitatively at this stage, however we do not anticipate significant effects). The exact location of the Cable Route Corridor (within the red line boundary) has yet to be defined. An assessment of the Cable Route Corridor will be included as part of the ES once further Scheme design information is available.
- 15.3.10 In support of this assessment, a Framework Construction Traffic Management Plan (Framework CTMP) has been produced which includes a section on construction staff travel patterns and measures to encourage travel by alternative modes to single occupancy vehicle. A standalone Travel Plan is therefore not expected to be required at this stage of the Scheme, and a combined document has been prepared in support of this assessment and is attached within **PEI Report Volume II Appendix 15-2**. Typically, a Travel Plan also applies to the operational phase of a development, however, given the low level of operational staff forecast (10-12 staff on-site daily), it is proposed to exclude assessment of the operational phase (as agreed to be scoped out as per the Scoping Opinion feedback ID 3.10.1, reference paragraph 16.52).
- 15.3.11 The proposed working hours of the construction staff on weekdays are 07:00-19:00. The arrival and departure of construction staff via the local highway network will occur outside of the traditional network peak hours and will make use of the residual capacity of the local highway network between 06:00-07:00 and 19:00-20:00. Therefore, as a low level of trips is likely to be generated within the traditional morning and evening network peak hours, it is proposed to exclude a network peak hour assessment.
- 15.3.12 At this stage, it is proposed that the main construction phase for the Scheme will be a minimum of approximately 24 months between 2025 and 2027, with the construction peak expected to take place in 2026. It should be noted, whilst there is potential for the construction programme of the Scheme to extend beyond the proposed construction timescales, the approach taken in this assessment presents a reasonable worst-case assessment, based on the assessment of a rapid construction period that will result in the generation of the highest number of peak hour and daily trips on the local highway network. Should the construction period be longer, the impacts would be extended in duration but at a lower intensity than assessed in this chapter and therefore would not result in a higher level of significance of effects.

- 15.3.13 It should be noted that it is considered that the conclusions set out within this PEI Report would not change if the start of construction is delayed by up to five years. For example, other cumulative schemes (solar and non-solar) may be completed by the time the Scheme construction begins, which would increase the trips on the local road network in the future baseline. As the assessment criteria are based on a percentage change of vehicle numbers, a higher baseline flow would reduce the proportional impact that the Scheme has on the road network. Consequently, this would reduce or maintain the levels of effect which are presented within this chapter. As a result, it is considered that assessment of 2026 reflects a worst-case approach, and the conclusions would remain valid if the commencement of the construction phase was delayed. As noted above, the likely impact of the Scheme is forecast to occur during the construction period due to construction staff travelling to/from the Scheme. This is set to occur during periods of lower traffic flows (06:00-07:00 and 19:00-20:00) on the network and as a result the percentage changes identified are higher than would be made against the morning and evening highway network peak hour traffic flows.
- 15.3.14 Although the Scheme is located close to a number of small villages/settlements including Harpswell, Glentworth, Fillingham and Willingham by Stow, there is not expected to be a significant proportion of trips to the Scheme from these villages during any of the proposed phases (construction, operation, or decommissioning). Whilst some staff may originate from larger settlements nearby (e.g. Gainsborough and Lincoln), walking, cycling and public transport are not expected to constitute a significant proportion of trips to the Principal Site due to the limited number of appropriate walking and cycling routes and public transport connections suiting the proposed working hours.
- 15.3.15 The potential to utilise forms of transportation other than road to transport materials to the Scheme, such as by rail and water, has been considered. The potential to utilise railway for deliveries during the construction phase has been considered and excluded on the basis that, whilst the existing Cottam Power Station is served by a rail station, it is understood that this section of track is no longer in use. Consequently, although it cannot be utilised as a potential form of transportation, this allows for safe movements across the track in relation to the Cable Route Corridor works if the opportunity arises (it should be noted that at the stage of writing this PEI Report, the alignment of the Cable Route Corridor has not been finalised). The use of the river to transport goods to the Scheme has also been excluded at this time, as the understanding is that it is unlikely that goods will be able to be transported along the river to an appropriate jetty to unload the goods from the river to land. As a result, the assessment does not rely upon any materials being transported to the Scheme via rail and water and relies entirely upon the highway network.
- 15.3.16 Further details relating to the assumptions that have been adopted in support of the assessment work e.g. relating to site access points, working hours, trip attraction, trip distribution and trip assignment are discussed in Section 15.4, Section 15.6 and also in the TA.

15.4 Assessment Methodology

Study Area

- 15.4.1 The Study Area includes extents of the highway network shown in **PEI Report Volume III Figure 15-2** and the ProW networks shown in **PEI Report Volume III Figure 15-3** which, based on professional judgement and experience of other Solar Farm DCO submissions, are considered to be potentially at risk from possible direct and indirect impacts arising from the Scheme.
- 15.4.2 The areas surrounding the Principal Site comprise several small rural villages, including Harpswell and Glentworth approximately 500m and 1km to the east of the Scheme Boundary respectively, and Springthorpe and Heapham approximately 500m and 1.5km to the west of the Scheme Boundary respectively.
- 15.4.3 The A631 (High Street/Harpswell Lane) and B1398 (Middle Street) run along the northern and eastern boundaries of the Principal Site respectively and the A15 (Ermine Street) also runs parallel to the eastern boundary of the Principal Site. Several minor roads cross the Principal Site, including Springthorpe Road/Hill Road, Common Lane, Kexby Road and Willingham Road.
- 15.4.4 The Principal Site is expected to have four points of access, three located along the A631 Harpswell Lane and one located on the B1398 Middle Street as shown in **PEI Report Volume III Figure 15-6**.
- 15.4.5 The Cable Route Corridor is expected to run in a southwest direction from the Principal Site to the Point of Connection into the National Grid Cottam Substation. At this stage, based on an initial review of access requirements, it is anticipated that the Cable Route Corridor will require seven additional site accesses along its route in addition to those at the Principal Site. However, this is subject to change as the Cable Route Corridor proposals are further developed. An assessment of the Cable Route Corridor will be included in the ES Transport and Access Chapter once the design and access arrangements have been finalised.
- 15.4.6 An overview of the Scheme Boundary, including the Cable Route Corridor, is shown in **PEI Report Volume III Figure 15-1**. The Cable Route Corridor is expected to cross Cow Lane, Glentworth Road and Fillingham Lane which are all narrow rural single lane roads. From east to west it will cross the B1241 (Normandy Road), the A1500 (Stow Park Road) and the A156 (High Street), which are single carriageway roads with a single lane in each direction, as well as the railway line running between Gainsborough and Lincoln. Within Nottinghamshire, the Cable Route Corridor is expected to cross agricultural land, a railway track to the northwest of Cottam Power Station, the River Trent and Town Road/Headstead Bank, Cottam Road/Outgang Lane and Torksey Ferry Road, before reaching existing Cottam Power Station at the proposed Point of Connection. Willingham Road (to the east of the A156 between Gate Burton and Marton), Marton Road, High Street (through Willingham by Stow) and Fillingham Lane have been included within the Scheme Boundary for the Cable Route Corridor. They are proposed as access roads and it is not expected that the Cable Route Corridor will actually cross them. These are all

narrow rural single lane roads, with the exception of High Street, which is a single carriageway road with a single lane in each direction.

15.4.7 Due to the nature of the Scheme, consideration is given to a number of locations within the surrounding highway network which could potentially be impacted due to an increase in traffic as a result of the Scheme, including both the network within the vicinity of the Principal Site as well as the Cable Route Corridor, as identified below:

- A631/B1398 Middle Street Roundabout;
- A631/A15 Roundabout;
- A631;
- A15;
- B1398 Middle Street;
- A1500 (Till Bridge Lane);
- B1241 (Willingham Road);
- A156;
- Pilham Lane;
- School Lane;
- Springthorpe Road;
- Common Lane;
- Kexby Road;
- Willingham Road;
- Headstead Bank;
- Cow Pasture Lane; and
- Cottam Road/Outgang Lane.

15.4.8 The Study Area related to the Principal Site and the Cable Route Corridor was subject to discussion and agreement with LCC and NCC, as the LHAs. This Study Area has been used for the assessment of the PIC data for the extent of the Scheme.

15.4.9 Given the relatively large distance of the Scheme from the strategic motorway and trunk road network managed by National Highways (approximately 20km, to the M180 to the north and A46 to the south of the Principal Site), and the fact there are multiple routes between the Scheme and the Strategic Road Network (SRN) over which traffic could disperse, professional judgement and experience of other solar farm projects has determined that the Scheme is not likely to result in significant effects on the SRN. Given the relatively large distance of the Scheme from nearby Ports, such as Immingham in the north and Felixstowe in the south, it has been concluded that the Scheme is not likely to result in significant effects on Ports.

15.4.10 A summary of National Highways' response within the EIA Scoping Opinion Report is provided as part of this chapter in Table 15-2.

15.4.11 The Study Area proposed as part of this PEI Report has been determined by the Applicant's understanding of the local highway network and where the impacts are likely to occur. If any additional junctions or parts of the network are requested for inclusion by the LHAs after further discussions and their review, this will be assessed as part of the ES.

Sources of Information

15.4.12 To inform the assessment of the Scheme, information has been collected from a number of sources including:

- Traffic surveys carried out for the surrounding highway network in July 2022 (see Section 4 of the TA in **PEI Report Volume II Appendix 15-1** for further information).
- Traffic growth has been identified using National Road Traffic Forecast (NRTF) growth factors, with National Transport Model (NTM) adjustments applied within the Trip Ends Model Program (TEMPRO) utilising National Trip Ends Model (NTEM) dataset v7.2 (see Section 8 of the TA in **PEI Report Volume II Appendix 15-1** of this document for further information).
- Local travel and network information from various sources including LCC (Ref. 15-22), NCC (Ref. 15-23) and local rail and bus operators.
- PIC data from the relevant LHAs (Lincolnshire and Nottinghamshire) for the highway network in the vicinity of the Principal Site and the Cable Route Corridor as identified within **PEI Report Volume III Figure 15-5**. This Study Area has been agreed with LCC and NCC and it has been noted that at this stage, no additional PIC data will be required as part of the ES.
- OS mapping and topographical survey (where available) to provide geographical representation of the areas in the vicinity of the Scheme.
- The latest Construction Industry Training Board (CITB) Construction Workforce Mobility Report (2018/19), which identifies that workers in the UK will travel a mean distance of 18 miles (29km) to work (Ref. 15-22).
- Population data within a 30km radius, approximately a 45-minute drive from the Principal Site has been identified from the Office for National Statistics (ONS), (2021) Mid-Year Population Estimates 2020 (Ref. 15-26) at Middle Layer Super Output Area (MSOA) level to identify the likely locations of residence of the construction staff. A further study will be undertaken by the Socio-economic team to identify the most suitable locations for temporary accommodation required to house non-local staff to refine distribution for ES stage.
- Route planning software was used to determine the most direct and functional routes to the site accesses for the Principal Site.

Traffic Survey Data

15.4.13 Traffic flows have been obtained from traffic surveys, including Automatic Traffic Counts (ATCs) and Manual Classified Counts (MCCs), which were carried out between 10 – 19 July 2022 (avoiding school holidays to ensure a representative period) within the Study Area. The traffic count locations were agreed with the LHAs during consultation on the 19 January 2023. The locations of the traffic surveys undertaken in July 2022 are listed below (those prefixed with an 'A' relate to the ATCs and those prefixed with an 'M' relate to the MCCs):

- A1: A631 (West of School Lane)
- A2: A631 (West of minor access south)
- A3: A631 (West of minor access south)
- A4: A631 (West of B1398 Middle Street)
- A5: B1398 Middle Street (North of A631)
- A6: A631 (East of B1398 Middle Street)
- A7: B1398 Middle Street (South of A631)
- A8: A631 (West of A15)
- A9: A15 (North of A631)
- A10: A631 (East of A15)
- A11: A15 (South of A631)
- A12: Kexby Road (East of Northlands Road)
- A13: Common Lane (South of A631)
- A14: School Lane (South of A631)
- A15: Common Lane (East of Heapham)
- A16: Cow Lane (East of Upton)
- A17: Glentworth Road (East of Kexby)
- A18: Fillingham Lane (East of South Lane)
- A19: High Street (East of B1241)
- A20: Gainsborough Road (North of High Street)
- A21: Marton Road (South of High Street)
- A22: B1241 (South of Cot Garth Lane)
- A23: B1241 (North of Fleets Road)
- A24: A1500 Tillbridge Road (West of Thorpe Lane)
- A25: Saxilby Road (South of Queensway)
- A26: A1500 Stow Park Road (East of Adams Way)
- A27: A156 High Street (South of Willingham Road)

- A28: A156 High Street (South of Wapping Lane)
- A29: B1241 Kexby Lane (East of Upton Road)
- A30: Cottam Road (East of Westbrecks Lane) (located in Nottinghamshire)
- A31: Headstead Bank (South of Broad Lane) (located in Nottinghamshire)
- M1: A631/B1398 Middle Street roundabout
- M2: A15/A631 roundabout
- M3: A1500 Marton Road/Tillbridge Road/B1241 High Street/Saxilby Road staggered junction (Sturton by Stow)
- M4: Gainsborough Road/Marton Road/High Street T-junction (Willingham by Stow)
- M5: A156/A1500 Stow Park Road/Littleborough Lane staggered junction (Marton)
- M6: Cottam Road/Power Station Access (located in Nottinghamshire)

PIC Data

15.4.14 PIC data has been analysed within this chapter with the Study Area identified in **PEI Report Volume III Figure 15-5** which includes parts of the highway network situated within Lincolnshire and Nottinghamshire around the Scheme Boundary. The PIC Study Area includes the main vehicle routes that are expected to be utilised to/ from the Scheme, including the Principal Site and the Cable Route Corridor.

15.4.15 The Study Area includes parts of the highway network within Lincolnshire which provide access to/ from Corringham and Harpswell to the north, Upton and Kexby to the west, Willingham by Stow and Fillingham to the south and Glentworth to the east. The Study Area also includes part of the network within Nottinghamshire, surrounding Cottam Power Station and areas proposed for the Cable Route Corridor.

Proposed Access Arrangements

15.4.16 The four proposed site accesses for the Principal Site are as follows, and are also shown in **PEI Report Volume III Figure 15-6**:

- Principal Site Access 1 – A631 Harpswell Lane/ School Lane T-junction;
- Principal Site Access 2 – A631 Harpswell Lane/ Unnamed road leading to Harpswell Low Farm (T-Junction);
- Principal Site Access 3 – A631 Harpswell Lane/ Unnamed road leading to Harpswell Grange (T-junction); and
- Principal Site Access 4 – B1398 Middle Street / Unnamed road T-Junction (located between Coachroad Hill and Harpswell).

15.4.17 At this stage, it is assumed that all four Principal Site Accesses used during the construction phase will remain open for operational access. The existing Cottam Power Station T-junction with Cottam Road will also be utilised to

access the National Grid Cottam Substation if required. During the operational phase, activity on-site will be minimal and would be restricted principally to vegetation management, equipment maintenance and servicing (including battery maintenance), replacement of any components that fail, and monitoring to ensure the continued effective operation of the Scheme. The majority of routine visits during the operational phase will be via vans and four-wheel drive vehicles. If larger vehicles are required, they are expected to utilise the existing site accesses from the A631.

15.4.18 Accesses for the Cable Route Corridor will be more defined and assessed at the ES stage.

Impact Assessment Methodology

Overview

15.4.19 This assessment has been based on the shortest expected construction programme of 24 months, which provides a worst-case in terms of monthly (and therefore daily) construction vehicle trips relating to construction staff and HGVs.

15.4.20 In order to ensure the EIA and the preliminary assessment presented in this PEI Report are robust in considering the likely significant effects of the Scheme, appropriate assessment scenarios and years have been identified and are discussed below. The scenarios considered appropriate for assessment are:

- Baseline (2022) – AM development peak hour (06:00-07:00), PM development peak hour (19:00-20:00) and Daily traffic flows (including total vehicles and total HGVs); and
- Peak Construction Year (2026) With and Without Development – AM development peak hour (06:00-07:00), PM development peak hour (19:00-20:00) and Daily traffic flows (including total vehicles and total HGVs).

15.4.21 The proposed working hours for the construction phase of the Scheme are between 07:00-19:00 Monday to Friday, 07:00-13:00 on Saturdays with no Sunday or Bank Holiday working.

15.4.22 It is also proposed that HGV movements will be distributed evenly across a 10-hour window, arriving and departing between 07:00-19:00. This is based on professional judgement and experience on other solar farm projects. This approach is considered reasonable to provide a robust forecast of the hourly HGVs throughout the day.

15.4.23 The peak construction year for the purpose of the EIA is anticipated to be 2026; this assumes commencement of construction in 2025, with completion in 2027. This assumes that the Scheme is built out in the shortest period achievable, which is the worst-case scenario from a traffic generation point of view due to the trip numbers being compressed into a shorter timeframe. This would therefore also be the worst-case in terms of effects on drivers, pedestrians and cyclists.

15.4.24 For the purposes of the EIA, the decommissioning assessment year is considered not to be earlier than 2067 (40 years from opening). This year is not considered in the TA in terms of the highway impact assessment or junction assessments as it is considered too far into the future to be able to accurately predict traffic flows or network/ junction layouts etc.

15.4.25 The operational phase is not included within the assessment due to the minimal number of permanent staff (10-12 persons) expected on a daily basis. In addition, it is anticipated that there could be an average of five visits per week (one trip per day) with four-wheel drive vehicles, HGVs or transit vans for maintenance purposes. Therefore, the daily vehicle movements during the operational phase are nominal and not considered to have a material impact on the local highway network.

15.4.26 A weekday assessment (Monday to Friday) will be carried out to provide a worst-case assessment of the peak construction phase based on the above (and it is not proposed to carry out a Saturday assessment given that both baseline traffic flows and construction traffic flows would be lower than weekday traffic flows i.e. the network will have more capacity to accommodate construction traffic at this time).

15.4.27 It is possible that some junction capacity analyses may be required, and this will be discussed and agreed with LCC and NCC where necessary. If it is deemed appropriate, the assessment will be undertaken as part of the ES.

15.4.28 In terms of construction staff vehicles, the following has been included as part of this assessment regarding the peak number of construction staff and HGVs across the four site accesses for the Principal Site:

- Principal Site Access 1 – A631 Harpswell Lane / School Lane T-junction: 150 construction staff vehicles and 35 HGVs (forecast daily distribution split, 30% of construction workers and HGVs);
- Principal Site Access 2 – A631 Harpswell Lane / Unnamed road leading to Harpswell Low Farm T-Junction: 100 construction staff vehicles and 25 HGVs (forecast daily distribution split, 20% of construction workers and HGVs);
- Principal Site Access 3 – A631 Harpswell Lane / Unnamed road leading to Harpswell Grange T-junction: 100 construction staff vehicles and 25 HGVs (forecast daily distribution split, 20% of construction workers and HGVs); and,
- Principal Site Access 4 – B1398 Middle Street / Unnamed road T-Junction (located between Coachroad Hill and Harpswell): 150 construction staff vehicles and 35 HGVs (forecast daily distribution split, 30% of construction workers and HGVs).

15.4.29 Parking areas within the on-site compounds will provide capacity based on the above forecast distribution of HGVs and construction staff vehicles and staff will be allocated to these parking areas accordingly.

15.4.30 Based on information provided by the project team and as agreed with the respective LHAs, during the construction peak, it is anticipated that 600 construction staff (48%) would be transferred to/ from the Principal Site by shuttle service (each with capacity for 50 staff) to/ from temporary accommodation and residential centres in the vicinity of the Scheme, considered likely to be Gainsborough (north), Scunthorpe (north), Doncaster (north), Lincoln (south), Retford (west) and Newark on Trent (south). A detailed assessment of the location of temporary accommodation (for non-local staff) and staff residential locations will be undertaken by the Socio-economic team to identify urban areas and locations where higher proportions of staff are based. Areas with the greatest concentration of staff will be targeted to maximise the number of staff being transferred by shuttle service. The exact pick-up/drop-off locations of construction staff will be confirmed once known prior to the beginning of construction. All shuttle services will be required to travel to/ from one of the site accesses at the Principal Site on the A631 Harpswell Lane or B1398 Middle Street.

15.4.31 It is assumed that during the construction peak, 650 construction staff (52%) would travel by private vehicle with an average occupancy of 1.3 staff per vehicle, resulting in 500 construction staff vehicles (1,000 daily movements) and 150 car passengers. This approach was agreed with the LHAs during consultation on 19 January 2023 and is based on previous large scale Solar Farm/ Energy Park experience and professional judgement. In accordance with the peak parking demand identified in the TA (**PEI Report Volume II Appendix 15-2**), the number of car parking spaces across the Principal Site is expected to be capped at 500 spaces for construction staff. Utilisation at each car park will be monitored and the potential to introduce additional parking during the peak construction period will be explored to ensure that parking does not occur outside of the Scheme Boundary. Car sharing will however be promoted through the Framework CTMP to help reduce the number of construction staff vehicles travelling to/ from the Scheme.

15.4.32 Further information regarding the distribution and assignment of the construction staff vehicle movements and HGV movements on the local highway network is provided within Section 6 of the TA.

Assessment Criteria

15.4.33 This preliminary assessment has been undertaken following relevant IEMA guidance (Ref. 15-20) for assessing the environmental impacts of road traffic. The guidelines outline the issues and the respective changes in volume and composition of traffic regarded as necessary before each issue results in traffic and transport impacts.

15.4.34 The following criteria have been considered in this assessment:

- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian and cyclist amenity;
- Fear and Intimidation;

- Accidents and safety; and
- Hazardous loads.

15.4.35 The IEMA guidelines set out two rules in identifying potential links for analysis:

- **Rule 1:** include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%); and
- **Rule 2:** include any other specifically sensitive areas (e.g. accident black spots, conservation areas, hospitals, links with high pedestrian flows etc) where traffic flows increase by 10% or more.

15.4.36 Based on this, links will be assessed where traffic flows are expected to increase by 30% or more during the peak hours of the peak construction phase (2026). Links have not been assessed where there is expected to be a less than 30% increase in traffic flows as a result of the Scheme, unless any specifically sensitive areas are identified as set out in Rule 2 above.

15.4.37 Based on the comments received in the EIA scoping opinion (**PEI Report Volume II Appendix 1-2**), the predicted percentage change from the baseline condition is identified, with a comment provided to justify the assignment of very low magnitude of change in these circumstances. In accordance with the Department for Transport's (DfT's) Guidance on Transport Assessments (2007) document (which is now superseded but still widely used for assessing the impact of new developments), where there are expected to be fewer than 30 additional vehicle trips per hour during each of the development peak hours as a result of the Scheme, a very low magnitude of change has been assigned, irrespective of the proportional increase in traffic flow, reflecting a general threshold of impact. .

15.4.38 The significance of effect has been determined through consideration of two elements; the sensitivity of the receptor and the magnitude of impact, which are discussed below.

Sensitivity of Receptors

15.4.39 The impacts of **Driver Delay** will be assessed at junction level. The sensitivity of these receptors is expressed in terms of Ratio of Flow to Capacity (RFC) or Degree of Saturation (DoS). The construction working hours are expected to be 07:00-19:00, resulting in the worst-case development peak hours occurring between 06:00-07:00 (AM development peak hour), associated with construction staff arriving at the Scheme, and 19:00-20:00 (PM development peak) associated with construction staff leaving the Scheme. The Scheme has been assessed with reference to the baseline traffic flows on the surrounding highway network at these times

15.4.40 As set out within the EIA Scoping Report (see **PEI Report Volume II: Appendix 1-1**), the thresholds for sensitivity of junctions have been defined as:

- **Low Sensitivity:** RFC / DoS below 90%;
- **Medium Sensitivity:** RFC / DoS between 90% and 95%; and
- **High Sensitivity:** RFC / DoS above 95%.

15.4.41 As mentioned above, the assessment of driver delay will not be carried out for any parts of the network where detailed junction capacity analysis is not required as part of the TA, as agreed with the highway authority.

15.4.42 In terms of **Severance, Pedestrian Delay, Pedestrian / Cycle Amenity and Fear and Intimidation**, the road links within easy walking/ cycling distance of the Principal Site will be used as receptors, as well as any road links which are expected to provide a main vehicular route to/ from the Principal Site accesses and contain pedestrian/ cycle facilities. A review of any internal routes and road links within easy walking/ cycling distance of the Cable Route Corridor will also be carried out as part of the assessment in the ES Transport and Access Chapter once these are confirmed, as the alignment of the Cable Route Corridor has not been finalised at PEI Report stage.

15.4.43 In terms of **Accidents and Safety** the impacts of the Scheme will be assessed based on the findings of the TA, in terms of whether any accident clusters or patterns have been identified across the Study Area. This analysis will be included in the TA and undertaken to highlight if there are any existing safety issues on the local highway network which may be exacerbated by the Scheme and in consideration with Rule 2 outlined above which identifies specifically sensitive areas such as accident black spots to be assessed where traffic flows increase by 10% or more.

15.4.44 For the construction impacts, the sensitivity of pedestrian routes and cyclist routes are based on a qualitative assessment of the 2022 baseline scenario, taking into consideration the importance and attractiveness of the routes and the destinations served. The thresholds have been defined based on professional judgement and experience of other Solar Farm DCO submissions and are as follows:

- **Very Low Sensitivity:** Rural road with no pedestrian/cycle facilities provided;
- **Low Sensitivity:** Strategic vehicular route in a rural setting with pedestrian/cycle facilities;
- **Medium Sensitivity:** Main vehicular route with pedestrian/ cycle facilities provided in built up area; and
- **High Sensitivity:** Lightly trafficked route provided in town/village centre setting e.g. including residential streets.

15.4.45 Using the methodology outlined above, the highway and Non-Motorised User (NMU) sensitivity for the links being assessed will be presented in the ES and in Section 15.9 below.

Magnitude of Impact

15.4.46 The overall effect will be determined by measuring the magnitude of the impact following implementation of embedded mitigation measures (where applicable) against criteria including the type and sensitivity of the receptor and the type of impact. Effects are defined as beneficial or adverse, with effects further defined using the following classifications:

- **Very Low** – very little change approximating to a no change situation;

- **Low** – slight, very short, or highly localised impact of no significant consequence;
- **Medium** – limited impact (by extent, duration or magnitude) which may be considered significant; and
- **High** – considerable impact (by extent, duration or magnitude) of more than local significance, or in breach of recognised acceptability, legislation, policy or standards.

15.4.47 Irrespective of the proportional increase in traffic flows, an increase of fewer than 30 additional vehicle trips per hour during each of the development peak hours (equivalent to one additional vehicle every two minutes) is to be categorised as a very low magnitude of impact. This threshold has been determined based on the DfT's Guidance on Transport Assessments (2007) document and previous experience with DCO and solar farm projects, as it is considered that an increase of less than one vehicle every two minutes would not result in any significant effects. It is also considered likely that this could lead to over representation of significance of effects when presented against a lower traffic flow baseline outside of the network peak hours, as the construction staff are expected to arrive and depart outside of the network peak hours. However, following the Planning Inspectorates comments within the EIA Scoping Opinion (**PEI Report Volume II Appendix 1-2**), the proportional increase in traffic flows based on the existing baseline traffic flows for the highway network will be identified and commentary is provided regarding the reclassification to very low magnitude of impact, where relevant.

15.4.48 The IEMA guidelines (Ref. 15-20) state that the magnitude of each impact should be determined as the predicted deviation from the baseline conditions. This will be completed for the construction phases only, on the assumption that the decommissioning phase will be no worse than the construction phase and the operational phase would have nominal impacts. As set out within the EIA Scoping Report (**PEI Report Volume II Appendix 1-1**).

15.4.49 IEMA (Ref. 15-20) sets out a number of criteria by which the magnitude of impact can be measured. These are outlined below. Where specific thresholds for measuring impacts are unavailable, impacts will be measured qualitatively.

15.4.50 **Severance** is defined in the IEMA (Ref. 15-20) as the *“perceived division that can occur with a community when it becomes separated by a major traffic artery”*. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities. IEMA guidelines suggest that 30%, 60% and 90% increases in traffic flows will result in low, medium and high changes in severance, respectively.

15.4.51 **Driver Delay** is typically measured in terms of change in delay per vehicle (in seconds) from the baseline situation. This criterion is considered to be applicable to all modes of transport using the public highway, namely cars, motorcycles, pedal cycles and buses. No junction capacity assessments are deemed to be required at this stage of the Scheme design, given the impact

is expected to be negligible for all junctions within the Study Area. However, a review of the forecast proportional increases in traffic flows at junctions has been carried out to support the expectation that no adverse impacts are envisaged in terms of additional delay to road users across the highway network.

15.4.52 **Pedestrian Delay** is considered to be affected by the changes in volume, composition or speed of traffic, in terms of their respective impacts on the ability of pedestrians to cross roads. In general, increases in traffic levels and/or traffic speeds are likely to lead to greater increases in pedestrian delay. IEMA guidelines (Ref. 15-20) suggest that a 30%, 60% and 90% increase in traffic flows will result in a low, medium and high change in pedestrian delay respectively.

15.4.53 **Pedestrian and Cyclist Amenity** is broadly defined as *“the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width / separation from traffic”*. The guidance suggests that a tentative threshold for judging the significance of impact on pedestrian and cyclist amenity would be where the traffic flow is halved or doubled. To be consistent with the pedestrian delay and the severance assessment, the 30%, 60% and 90% increase in traffic flows is proposed to be applied which will result in a low, medium and high change, with change less than 30% categorised as very low.

15.4.54 **Fear and Intimidation** is *“dependent on the volume of traffic, its HGV composition, and its proximity to people or the lack of protection caused by such factors as narrow pavement widths”*. To provide consistency with pedestrian delay, pedestrian and cyclist amenity criteria, it is proposed that a 30%, 60% and 90% increase in HGV flows would result in a low, medium and high change respectively, with change less than 30% categorised as very low, which is line with the other criteria thresholds. The assessment also qualitatively considers the changes of other relevant factors such as speed, proportion of vulnerable road users, footway widths, lighting and security measures (e.g. CCTV).

15.4.55 An assessment of **Accidents and Safety** has been carried out by examination of PIC data for the most recent five-year period available. The PEI Report includes an overview of the PIC data for the highway network in the vicinity of the Principal Site and the Cable Route Corridor extent of the Scheme within both Lincolnshire and Nottinghamshire see **PEI Report Volume III Figure 15-5**. The TA provides a review of the PIC data for the impacted sections of the highway network in the vicinity of the Scheme within the Study Area, highlighting any potential existing safety issues on the local highway network which may be exacerbated by the Scheme. The outcome of the assessment is presented in detail as part of the TA. To provide consistency with pedestrian delay, pedestrian and cyclist amenity and fear and intimidation criteria, it is proposed that a 30%, 60% and 90% increase in traffic flows would result in a low, medium and major change respectively, with change less than 30% categorised as very low, which is line with the other criteria thresholds.

15.4.56 With regard to **Hazardous and Dangerous Loads**, IEMA (Ref. 15-20) indicates that *“the Statement should include a risk or catastrophe analysis to*

illustrate the potential for an accident to happen and the likely effect of such an event". Analysis of the road network within the Study Area indicates that there are no particular features, such as a significant vertical drop immediately beyond the carriageway, which would suggest that the transfer of materials poses a particular risk beyond that which would be expected on the general highway network. In addition, there are not expected to be any Hazardous and Dangerous Loads associated with the Scheme. Nonetheless, the Framework CTMP and the ES will include details of measures that will be employed to ensure the safe vehicular transport of components to and from the Scheme.

15.4.57 In view of the above, it is concluded that the impacts of Hazardous and Dangerous Loads do not warrant further consideration in the preparation of the ES and will not then be assessed further beyond an estimation of the likely number and composition of loads required and the measures which will be implemented to safely transport components to and from the Principal Site or Cable Route Corridor. On the basis of the above, further assessment of hazardous and dangerous loads are **scoped out**. This is as set out within the EIA Scoping Report (**PEI Report Volume II Appendix 1-2**). Battery cells will be required for the on-site battery storage BESS, and an Outline Battery Fire Safety Management Plan will be produced which will address this.

Significance of Impact

15.4.58 In order to determine the effect on specific receptors, both the sensitivity of receptors and the magnitude of impact, as outlined above, are considered.

15.4.59 Table 15-1 identifies the matrix that will be used to determine the effect category.

15.4.60 Potential effects are therefore considered to be major, moderate, minor or negligible. Following the classification of an effect, a clear statement is then made as to whether that effect would be "significant" or "not significant". As a general rule, major and moderate effects are considered to be significant, whilst minor and negligible effects are considered not to be significant.

15.4.61 However, professional judgment will also be applied where necessary, including taking account of whether the effect is permanent or temporary and whether the classified sensitivity / magnitude meets the qualitative definition, both in terms of over- or under-statement. This is particularly important on links where there is a low baseline level of traffic, as small increases in traffic would result in a high percentage impact, meaning significance could be over-stated, which relates to the reference made above to the magnitude of impact of a change of less than 30 vehicles per hour (equivalent to one vehicle every two minutes).

Table 15-1: Matrix for Determining Effect Category

Sensitivity of Receptor	Magnitude of Potential Change/Impact			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very Low	Minor	Negligible	Negligible	Negligible

15.5 Stakeholder Engagement

15.5.1 A request for an EIA Scoping Opinion was sought from the SoS through the Planning Inspectorate in 2022 as part of the EIA Scoping Process. Consultation responses in relation to Transport and Access, to date, are presented in Table 15-2 below, with the full response provided in **PEI Report Volume II Appendix 1-2**. Table 15-2 includes responses from NCC, Bassetlaw District Council, LCC, West Lindsey District Council and Network Rail and includes the comments made in relation to Transport and Access. Consultation with the Highway Authorities (LCC and NCC) will be ongoing throughout the EIA process.

Table 15-2: Planning Inspectorate Scoping Opinion

Consultee	Summary of Main Matter Raised	How Has the Matter Been Addressed?	Location of Response
Planning Inspectorate (ID 3.10.1)	<p>Operational transport effects Anticipated traffic generated includes 10-12 permanent staff on-site daily and infrequent four-wheel drive vehicles, vans, and HGV movements associated with the repair and replacement of on-site infrastructure.</p> <p>The Inspectorate has considered the characteristics of the operational phase of the Proposed Development and based on the low levels of anticipated traffic generation is content that this matter can be scoped out. The ES description of development should clearly set out the operational vehicle types and numbers to justify this position.</p>	No change in approach necessary.	Operational vehicle types and numbers are set out in Section 15.4 of this Chapter and Section 5 of the TA.
Planning Inspectorate (ID 3.10.2)	<p>Decommissioning Transport effects The Inspectorate is content that any potential impacts during decommissioning are not likely to be greater than the construction phase.</p> <p>On this basis the Inspectorate is content that a standalone assessment for the decommissioning phase is not required. However, where significant effects are likely to occur during the decommissioning phase these should be clearly reported within the ES.</p>	No change in approach necessary.	See Section 15.8 of this Chapter.
Planning Inspectorate (ID 3.10.3)	<p>Hazardous and dangerous Loads The Inspectorate has considered the nature and characteristics of the Proposed Development and agrees that significant effects are not likely to occur.</p> <p>On the basis that the number and composition of any hazardous loads and any safety measures would be described within the ES, an assessment of impacts associated with the transport of hazardous loads can be scoped out of the ES.</p>	No change in approach necessary and the assessment has been scoped out of the ES.	N/A.

Consultee	Summary of Main Matter Raised	How Has the Matter Been Addressed?	Location of Response
Planning Inspectorate (ID 3.10.4)	<p>Travel Plan</p> <p>The Inspectorate is content that a standalone Travel Plan is not required and that the travel patterns associated with the construction workforce can be appropriately described within the Framework CTMP.</p>	<p>No change in approach necessary and the Travel Plan has been scoped out.</p>	<p>See PEI Report Volume II Appendix 15-2 for the combined Framework CTMP and TP.</p>
Planning Inspectorate (ID 3.10.5)	<p>Abnormal Loads</p> <p>The Inspectorate recommends the consideration of water-borne or rail transportation over road transport in line with the Overarching National Policy Statement for Energy (EN-1). The Applicant’s attention is drawn to the consultation response from the Canal and River Trust (Appendix 2 of this Opinion) in this regard.</p>	<p>Number and type of AILs required is unknown at time of writing, however, based on professional judgement and experience of other Solar Farm DCO submissions, there are likely to be very few AILs during the construction phase.</p> <p>Details of the AILs will be included in the ES and their management will be included in the Framework CTMP.</p>	<p>See Section 15.3 of this Chapter and Section 5 of the TA.</p>
Planning Inspectorate (ID 3.10.6)	<p>Consultation with National Highways</p> <p>For the avoidance of doubt, the Inspectorate is of the opinion that there is potential for the Proposed Development to impact on the SRN through increased traffic during the construction and decommissioning phases and as such National Highways should be consulted. The Inspectorate refers the Applicant to National Highways’ response to the scoping consultation (Appendix 2 of this Opinion).</p>	<p>National Highways’ response to the scoping consultation has been addressed below.</p>	<p>See Section 15.3 of this Chapter and Section 5 of the TA.</p> <p>See PEI Report Volume II Appendix 15-2.</p>
Planning Inspectorate (ID 3.10.7)	<p>Personal Injury Collision (PIC) data</p> <p>The Scoping Report states that further assessment of parts of the highway network may be required when the cable route is confirmed. Figure 16.6 shows the PIC Study Area of the Principal Site however does not show the study area for the Cable Route Corridor.</p> <p>It is unclear when confirmation of the cable route will occur and how this relates to the timeline for the production of the ES. The ES should ensure that the assessment is supported by a</p>	<p>The PIC Study Area analysed in the PEI Report and TA covers the extent of the Scheme, including the Principal Site and Cable Route Corridor. The Cable Route Corridor provided at ES stage should not exceed the PIC Study Area as shown in this PEI Report so the worst case scenario has therefore been considered.</p>	<p>See Section 15.4 of this Chapter and Section 4 of the TA.</p>

Consultee	Summary of Main Matter Raised	How Has the Matter Been Addressed?	Location of Response
	<p>robust baseline. Where there is flexibility within the project design a worst-case scenario should be assessed.</p>		
<p>Planning Inspectorate (ID 3.10.8)</p>	<p>Magnitude of impact The Inspectorate is of the opinion that the assessment should use a proportional increase in traffic flows based on the existing baseline traffic flows for the highway network. In the absence of the baseline data, it is currently unknown what level of change the increase of 30 additional vehicles represents. The Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Assessment of Road Traffic (GEART) (1993) (as referenced in paragraph 16.79 of the Scoping Report) states that the magnitude of impacts should be determined as a predicted deviation from the baseline condition. Furthermore, the types of vehicles are not specified within the 30 additional vehicle increase identified in paragraph 16.78 and therefore it is unknown whether HGV movements are captured in these absolute levels. The GEART states that HGV movement estimates should be provided separately.</p>	<p>The predicted deviation from the baseline condition is identified, alongside comments to justify the assignment of very low magnitude of change where this has been applied, taking into consideration the vehicle types and receptor sensitivity.</p>	<p>See Section 15.4 and Section 15.8 of this Chapter.</p>
<p>Planning Inspectorate (ID 3.10.9)</p>	<p>Cumulative Impacts The ES should assess the cumulative impact of construction traffic on the SRN associated with other nearby solar developments as well as committed developments and highway improvement schemes.</p>	<p>Cumulative effects of other nearby solar developments have been discussed in both the PEI Report and TA and will be assessed as part of the ES.</p>	<p>See PEI Report Volume I Chapter 17: Cumulative Effects.</p>
<p>Nottinghamshire County Council (NCC)</p>	<p>NCC expect that the DCO submission is <i>“supported by a Transport Assessment prepared in accordance with Planning Practice Guidance with a chapter specifically dealing with the cable routing corridor in Nottinghamshire and would also expect the proposed Construction Environmental Management Plan to include the cable route corridor. The opportunity to</i></p>	<p>National Planning Practice Guidance has been consulted in production of the TA and the Cable Route Corridor within Nottinghamshire has been considered.</p>	<p>See Section 3 of the TA for the Planning Practice Guidance reference and Section 7 of the TA for detail on the potential for sharing cabling infrastructure. Reference</p>

Consultee	Summary of Main Matter Raised	How Has the Matter Been Addressed?	Location of Response
	<i>share cabling infrastructure with the other DCO solar schemes in the area should be explored.</i>		to the Cable Route Corridor within Nottinghamshire is made throughout the TA.
Bassetlaw District Council	Refer to the response from NCC (detailed above) and state the following: <i>“it is difficult to comment in more detail until the specific details of the cable routing are known.”</i>	Specific details regarding the Cable Route Corridor are not yet known. An assessment of the Cable Route Corridor will be undertaken as part of the ES Transport Chapter.	Section 15.3 of this Chapter states that an assessment of the Cable Route Corridor will be undertaken as part of the ES Transport and Access Chapter.
Nottinghamshire Fire and Rescue	The Fire and Rescue Service expect the transport strategy to minimise the impact of increased traffic movements during the construction phase and prevent an increase in the number of potential road traffic incidents. They state that <i>“any development should not negatively impact on the Service’s ability to respond to an incident in the local area.”</i>	Collision data has been reviewed in detail within the TA and the impact of the development on accidents and safety in the local area has been outlined within this Chapter.	See Section 15.8 of this Chapter and Section 4 of the TA.
Lincolnshire County Council (LCC)	LCC state that Section 16 (Transport and Access) of the Scoping Report <i>“proposes the correct methodology for assessment of impacts related to transport and access.”</i>	Impact methodology outlined in the EIA Scoping Report has been used within this Chapter.	See Section 15.4 and Section 15.8 of this Chapter.
West Lindsey District Council	West Lindsey District Council states since they are not the Local Highway Authority, they therefore defer any response to LCC.	Refer to response from LCC (table above).	Refer to response from LCC (table above).
Canal and River Trust	The Canal and River Trust state that <i>“the use of the River Trent should be included within the Transport and Access chapter of the Environmental Statement, so as to ensure that every possibility to reduce the impact on the highway network is considered.”</i>	The potential to utilise forms of transportation other than road, such as water, has been considered. However, in order to be robust and provide a worst-case assessment, it has been assumed all travel will be by road.	See Section 15.3 of this Chapter.

Consultee	Summary of Main Matter Raised	How Has the Matter Been Addressed?	Location of Response
Network Rail	<p>Network Rail identify that the Environmental Statement should <i>“include a Transport Assessment to identify any HGV traffic/haulage routes associated with the construction and operation of the site that may utilise railway assets such as bridges and level crossings during the construction and operation of the site.”</i></p>	<p>An HGV routing strategy has been outlined within the TA.</p>	<p>See Section 15.3 of this Chapter and Section 5 of the TA.</p>
National Highways	<p>National Highways stated the following: <i>“Consequently, we have no comments regarding site access or boundary matters.”</i></p> <p>In addition, National Highways outlined that information would be required on the number of HGVs that will be travelling on the SRN, route and time of day they will likely be arriving and leaving, the provision of the trip generation and assignment of HGVs and staff trips.</p> <p>Also identified in National Highways’ response is <i>“a separate Travel Plan should also be produced setting out how staff trips by private vehicle will be minimised as far as possible.”</i></p>	<p>Details relating to the peak trip attraction, distribution and assignment of construction staff vehicles and forecast peak number of HGVs have been included in this Chapter and within the TA.</p> <p>An HGV routing strategy has been outlined within the TA.</p> <p>A combined Framework CTMP and Travel Plan has been produced which identifies measures on how staff trips will be minimised as far as possible.</p>	<p>See Section 15.3 of this Chapter and Section 5 of the TA.</p> <p>See PEI Report Volume II Appendix 15-2.</p>

15.5.2 Details in relation to consultation/ engagement held with the local highway and planning authorities to date are set out below (Table 15-3). Further discussions will be held during preparation of the ES to be submitted with the DCO submission.

Table 15-3: Engagement Undertaken

Consultee	Summary of Main Matters Raised	How Have the Matters Been Addressed?	Location of Response
Scoping Opinion Feedback from the Planning Inspectorate	<ul style="list-style-type: none"> • Operational transport effects; • Decommissioning transport effects; • Hazardous and dangerous loads; • Need for a Travel Plan; • Abnormal loads; • Need for consultation with National Highways; • PIC data; • Magnitude of impact; and • Cumulative impacts. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.
Scoping Opinion Feedback from NCC	<ul style="list-style-type: none"> • Need for a TA prepared in accordance with Planning Practice Guidance to support the DCO submission; and • Exploration of sharing cabling infrastructure with other nearby DCO solar schemes. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.
Scoping Opinion Feedback from Bassetlaw District Council	<ul style="list-style-type: none"> • Referred to NCC feedback. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.

Consultee	Summary of Main Matters Raised	How Have the Matters Been Addressed?	Location of Response
Scoping Opinion Feedback from Nottinghamshire Fire and Rescue	<ul style="list-style-type: none"> • Need to prevent an increase in the potential number of road traffic incidents. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.
Scoping Opinion Feedback from LCC	<ul style="list-style-type: none"> • The correct methodology for the assessment of transport and access related impacts has been proposed. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.
Scoping Opinion Feedback from West Lindsey District Council	<ul style="list-style-type: none"> • Deferred response to LCC as they are not the LHA. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.
Scoping Opinion Feedback from Canal and River Trust	<ul style="list-style-type: none"> • Need to consider the River Trent's potential to reduce the impact on the highway network. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.
Scoping Opinion Feedback from Network Rail	<ul style="list-style-type: none"> • TA should include details of traffic routes proposed to utilise railway assets. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.
Scoping Opinion Feedback from National Highways	<ul style="list-style-type: none"> • Requirement for the number of HGVs travelling on the SRN and the time of day to be detailed; • Requirement for the provision of HGV and staff trip generation and assignment; and • Need for a Travel Plan. 	<ul style="list-style-type: none"> • See Table 15-2 above for details of how the measures have been addressed; and • Further consultation with National Highways may be necessary. 	<ul style="list-style-type: none"> • See Table 15-2 above for the location of responses.

Consultee	Summary of Main Matters Raised	How Have the Matters Been Addressed?	Location of Response
<p>Consultation with LCC and NCC on 19 January 2023</p>	<ul style="list-style-type: none"> • Request for the inclusion of vehicle swept path analysis and visibility splays for all Site Accesses; • Request for Stage 1 Road Safety Audits (RSAs) for Site Accesses that will be newly developed or significantly changed; • Consideration of HGV distribution from the west via Gainsborough; • Potential to provide new permissive paths throughout the Scheme; • If another DCO Solar Scheme in the area gets consent, it should be treated as committed in the assessment; • Requirement to investigate the details of the collisions outside Principal Site Access 3; and • Need for the Framework CTMP to include a clear approach on shuttle services and car parking caps. 	<ul style="list-style-type: none"> • Swept path analysis and visibility splays will be included at ES stage; • RSAs will be undertaken once the Cable Route Corridor accesses have been confirmed and following completion of Abnormal Load vehicle tracking; • Justification for the adopted HGV routing strategy has been detailed in the TA; • The potential for new permissive paths has been discussed with the client and it was confirmed that details of proposed permissive paths would be provided at ES stage; • An initial cumulative impact assessment has been carried out in PEI Report Volume I Chapter 17: Cumulative Effects, and a full cumulative 	<ul style="list-style-type: none"> • See Section 8 of the TA and Section 5 of the Framework CTMP; • See Section 8 of the TA and Section 6 of the Framework CTMP; • See Section 6 of the TA and Section 4 of the Framework CTMP; • See Section 7 of the Framework CTMP; • See PEI Report Volume I Chapter 17: Cumulative Effects; • See Section 4 of the TA; • See Section 4 and 5 of the Framework CTMP.

Consultee

Summary of Main Matters Raised

How Have the Matters Been Addressed?

Location of Response

impact assessment will be carried out at ES stage;

- The collision rate at Principal Site Access 3 has been analysed in the TA; and
- The Framework CTMP outlines the shuttle service and car park capping methodology.

15.6 Baseline Conditions

Existing Baseline (2022)

- 15.6.1 This section describes the baseline environmental characteristics for the Scheme and surrounding areas with specific reference to Transport and Access relating to the highway network, including baseline traffic flows and PIC data.

Highway Network

- 15.6.2 The strategic and local highway network is discussed below and shown in **PEI Report Volume III Figure 15-2**.
- 15.6.3 The A631 is a single-carriageway road which links with the A15 in the east and the A638 past Gainsborough in the west. To the west the A631 provides a connection to the A159 and the A156 which are both routes through Gainsborough to the north and south respectively.
- 15.6.4 The A15 is a key route located to the east of the Principal Site running in a north to south direction. To the north the A15 provides a connection to the M180 and the A46 to the south. The A15 provides a key route to/from Lincoln to the south of the Principal Site.
- 15.6.5 The A57 is a single carriageway road which links the A1(M) to the A46 to the west of Lincoln. The A57 is classified by the DfT as part of the SRN and provides access to the A15 from the south. The A57 also provides access to Laneham Road, which joins with Rampton Road and provides access to Cottam Road from the west.

Principal Site Access

- 15.6.6 The A631 is a key route that runs along the northern boundary of the Principal Site in an east-west direction. Three access points into the Principal Site are proposed along the A631. The road does not contain footways or street lighting provision within the vicinity of the Principal Site and is rural in character.
- 15.6.7 The B1398 Middle Street is a local route that runs along the eastern extent of the Principal Site. A small section of the Scheme Boundary fronts the B1398 between the villages of Harpswell and Glentworth and includes an existing farm track access road into the Principal Site. The B1398 connects with A631 to the north and the A1500 (Till Bridge Lane) to the south. The B1398 provides connections to local villages including Harpswell, Glentworth and Fillingham. The road does not contain footways or street lighting provision within the vicinity of the Principal Site and is rural in character.
- 15.6.8 The A1500 (Till Bridge Lane) is located to the south of the Principal Site and runs in an east-west direction through Sturton by Stow and connects to the A156 to the west and the A15 in the east. The A1500 also runs within the vicinity of the Cable Route Corridor, and it is expected that the Cable Route Corridor will cross the A1500 Stow Park Road between Marton and Sturton by Stow.

- 15.6.9 The B1241 (Willingham Road) runs in a north-south direction along the western extent of the Principal Site through Normanby by Stow, Willingham by Stow, Kexby and Upton. It is known by several different names including Gainsborough Road, Stow Road, Normanby Road, Sturton Road and High Street. It connects to Kexby Lane and Fillingham Lane. Where the B1241 runs through a number of villages the speed limit is 30mph and outside these areas the national speed limit applies.
- 15.6.10 Common Lane is a narrow rural road which runs in an east-west direction towards Heapham to the west and Harpswell to the east. Common Lane is located within the Principal Site, providing access to the A631 in the east and the B1241 in the west.
- 15.6.11 Kexby Road is a narrow rural road which runs in an east-west direction towards Upton to the west and Glenworth to the east. Kexby Road is located within the Principal Site, providing access to the B1398 (Middle Street).
- 15.6.12 Willingham Road is a narrow rural road which runs in an east-west direction towards Willingham by Stow to the west and Fillingham to the east. Willingham Road is located within the Principal Site.
- 15.6.13 All of the above routes are single carriageway roads with a single lane in each direction. Speed limits on the routes vary from 30mph to 40mph, where they pass through residential areas, up to the national speed limit (60mph) outside towns/villages.
- 15.6.14 Within the Study Area there are a number of other local roads which run through, alongside, or in close proximity to the Principal Site. These include:
- Springthorpe Road/Hill Road is a single carriageway road with one lane in each direction but no road markings. It runs north-south through Springthorpe in close proximity (500m) to the north-western border of the Principal Site and provides a link to the A631 in the north and the B1241 in the south; and
 - High Street/ Willingham Road runs from the B1398 (Middle Street) through Fillingham village. The road has a single lane in each direction but no road markings and narrows to a single-track road. The road runs east-west across the south of the site, providing access to the B1398 in the east and Willingham by Stow in the west.

Cable Route Corridor

- 15.6.15 The Cable Route Corridor is to run in a south-westerly direction from the Principal Site to connect with the National Grid at Cottam Substation. The Cable Route Corridor will cross Cow Lane, Glentworth Road and Fillingham Lane which are all narrow rural single lane roads within the vicinity of the Principal Site. From east to west the Cable Route Corridor will cross the B1241 (Normandy Road), the A1500 (Stow Park Road) and the A156 (High Street), which are single carriageway roads with a single lane in each direction, as well as the railway line running between Gainsborough and Lincoln. Willingham Road (to the east of the A156 between Gate Burton and Marton), Marton Road, High Street (through Willingham by Stow) and Fillingham Lane have been included within the Scheme Boundary for the Cable Route Corridor. They

are proposed as access roads and it is not expected that the Cable Route Corridor will actually cross them. These are all narrow rural single lane roads, with the exception of High Street, which is a single carriageway road with a single lane in each direction.

- 15.6.16 Within Nottinghamshire, the Cable Route Corridor is expected to cross agricultural land, the disused railway track to the north of Cottam, the River Trent and Town Road/Headstead Bank, Cottam Road/Outgang Lane and Torksey Ferry Road, before reaching the Point of Connection at Cottam Power Station.
- 15.6.17 Cottam Road and Outgang Lane are located in Nottinghamshire to the north of the existing Cottam Power Station and run in an east-west direction providing access to Cottam Power Station and on to Cottam. The Cable Route Corridor is expected to cross Cottam Road/ Outgang Lane at some point as the Cable Route Corridor is proposed to run north-south across the road to the west of Cottam Power Station into the adjoining fields.
- 15.6.18 Town Street/Headstead Bank to the northeast of Cottam runs in a north-south direction and is expected to be in close proximity to the Cable Route Corridor, as the Cable Route is proposed to run east-west across Headstead Bank. Similarly, the Cable Route crosses Cow Pasture Lane and the disused railway track to the north of Cottam. Both Headstead Bank and Cow Pasture Lane are narrow, minor, very low trafficked single-track roads with no pedestrian facilities/ street lighting, etc.
- 15.6.19 Rampton Road is a single carriageway road which connects to Cottam Road and Green Lane at a junction in the north and to Laneham Road to the south. Laneham Road connects to Rampton Road in the north and A57 in the south. Both of the roads are subject to the National Speed Limit (60mph) and do not feature footways or street lighting, which is in keeping with their rural character.
- 15.6.20 Within Lincolnshire, the Cable Route Corridor will cross the A156 High Road in an east-west direction to the south of Marton. The A156 High Street/Gainsborough Road is a single carriageway road connecting with the A57 to the west of Saxilby in the south and with the A631/ A159 in Gainsborough to the north. The road is subject to the national speed limit (60mph) and does not include pedestrian footways or street lighting provision for the majority of its length, which is in keeping with its rural character. In the vicinity of Marton, the A156 High Street is restricted to a 30mph speed limit, and some pedestrian footways and street lighting provision is made in the urban area.
- 15.6.21 Along the A1500 Stow Park Road the Cable Route Corridor will cross the road in a north-south direction to the east of Marton. In the vicinity of Marton to the west and Sturton by Stow to the east, the A1500 is subject to a 30mph speed limit; in the more rural sections it is subject to the national speed limit in keeping with its rural character.
- 15.6.22 The Cable Route Corridor is expected to cross the B1241 rural single carriageway to the south of Normanby by Stow in an east-west direction. The road is subject to the national speed limit (60mph) along its rural stretches

(outside villages) and does not include footways or street lighting on these sections. All of the above routes are single carriageway roads with a single lane in each direction. Speed limits on the routes vary from 30mph to 40mph, where they pass through residential areas, up to the national speed limit (60mph) in rural areas.

15.6.23 In order to provide access, the Scheme Boundary for the Cable Route Corridor is also expected to run in an east-west direction along Willingham Road off the A156 Gainsborough Road between Gate Burton (to the north) and Marton (to the south). The road is a narrow rural single lane road subject to the national speed limit (60mph). The Scheme Boundary is then expected to run in a north-south direction along Marton Road, which is a narrow rural 60mph single lane road, reducing to 30mph and widening as it reaches Willingham by Stow village. The Scheme Boundary will run through Willingham by Stow, along High Street and Fillingham Lane, in an east-west direction before running north towards Glentworth Road and south towards South Lane. High Street is a 30mph single carriageway road with a single lane in each direction which then narrows to become Fillingham Lane, which is subject to the national speed limit of 60mph. This section of the Scheme Boundary will be used to provide access, rather than being part of the Cable Route Corridor itself.

Baseline Traffic Flows

15.6.24 The following time periods have been reviewed to inform the assessment, based on the construction working hours of 07:00-19:00:

- 06:00-07:00 – construction staff AM peak hour;
- 19:00-20:00 – construction staff PM peak hour; and
- Daily (24 hours).

15.6.25 A summary of the baseline traffic data within the Study Area is set out in Table 15-4 and Table 15-5 below which identifies the total vehicles, total HGVs and HGV percentage, based on the traffic surveys carried out between 10 – 19 July 2022, with the data provided in Annex B of the TA.

Table 15-4: Baseline Traffic Survey data (2022) – Average Weekday – Total Vehicles – Links (Two-way Link Flows)

Location		AM Dev Peak (06:00-07:00)			PM Dev Peak (19:00-20:00)			Daily (24 Hours)		
Ref	Link	Total	HGVs	HGVs %	Total	HGVs	HGVs %	Total	HGVs	HGVs %
ATC1	A631, West of School Lane	268	33	12%	245	12	5%	7,502	825	11%
ATC2	A631, West of Minor Access South	231	29	13%	218	10	5%	6,472	713	11%
ATC3	A631, West of Minor Access South	241	26	11%	218	13	6%	6,527	719	11%
ATC4	A631, West of B1398 Middle Street	228	30	13%	212	14	7%	6,417	749	12%
ATC5	B1398 Middle Street, North of A631	148	14	10%	139	6	4%	3,395	360	11%
ATC6	A631, East of B1398 Middle Street	241	34	14%	257	14	5%	6,581	731	11%
ATC7	B1398 Middle Street, South of A631	130	8	6%	95	2	3%	3,072	219	7%
ATC8	A631, West of A15	222	39	18%	196	12	6%	5,357	700	13%
ATC9	A15, North of A631	665	181	27%	438	75	17%	13,236	3221	24%
ATC10	A631, East of A15	226	37	16%	193	10	5%	5,669	685	12%
ATC11	A15, South of A631	760	159	21%	450	65	14%	14,682	2877	20%
ATC12	Kexby Road, East of Northlands Road	7	1	9%	10	1	10%	191	19	10%
ATC13	Common Lane, South of A631	4	0	11%	4	1	21%	88	13	15%
ATC14	School Lane, South of A631	0	0	0%	1	0	14%	43	4	8%
ATC15	Common Lane, East of Heapham	2	0	0%	3	1	29%	103	19	19%
ATC16	Cow Lane, East of Upton	1	0	17%	5	0	0%	89	8	9%
ATC17	Glentworth Road, East of Kexby	3	0	0%	5	0	0%	83	5	6%
ATC18	Fillingham Lane, East of South Lane	6	1	14%	8	1	8%	169	18	11%
ATC19	High Street, East of B1241	55	8	15%	111	6	6%	2,592	233	9%
ATC20	Gainsborough Road, North of High Street	65	4	6%	115	4	3%	2,826	195	7%

Location		AM Dev Peak (06:00-07:00)			PM Dev Peak (19:00-20:00)			Daily (24 Hours)		
Ref	Link	Total	HGVs	HGVs %	Total	HGVs	HGVs %	Total	HGVs	HGVs %
ATC21	Marton Road, South of High Street	11	0	0%	24	0	1%	382	25	6%
ATC22	B1241, South of Cot Garth Lane	62	5	7%	110	3	3%	2,524	177	7%
ATC23	B1241, North of Fleets Road	90	6	7%	145	4	3%	3,424	194	6%
ATC24	A1500 Tillbridge Road, West of Thorpe Lane	202	13	7%	178	6	3%	5,080	380	7%
ATC25	Saxilby Road, South of Queensway	99	7	7%	145	7	5%	3,699	253	7%
ATC26	A1500 Stow Park Road, East of Adams Way	167	8	5%	140	8	5%	4,115	302	7%
ATC27	A156 High Street, South of Willingham Road	379	36	9%	287	15	5%	8,379	725	9%
ATC28	A156 High Street, South of Wapping Lane	247	27	11%	186	8	4%	5,825	544	9%
ATC29	B1241 Kexby Lane, East of Upton Road	17	2	12%	32	1	2%	728	41	6%
ATC30	Cottam Road, East of Westbrecks Lane (located in Nottinghamshire)	95	5	5%	34	1	2%	1,082	106	10%
ATC31	Headstead Bank, South of Broad Lane (located in Nottinghamshire)	4	0	6%	7	1	12%	175	26	15%

Table 15-5: Baseline Traffic Survey Data (2022) – Average Weekday – Total Vehicles - Junctions (Two-Way Traffic Flows on all Approaches)

Location		AM Dev Peak (06:00-07:00)			PM Dev Peak (19:00-20:00)		
Ref	Link	Total	HGVs	HGVs %	Total	HGVs	HGVs %
MCC1	A631/B1398 Middle Street Roundabout	384	48	13%	334	11	3%
MCC2	A15/A631 Roundabout	913	263	29%	609	92	15%
MCC3	A1500 Marton Road/Tillbridge Road/B1241 High Street/Saxilby Road staggered junction (Sturton by Stow)	292	13	4%	364	6	2%
MCC4	Gainsborough Road/Marton Road/High Street T-junction (Willingham by Stow)	72	3	4%	145	5	3%
MCC5	A156/A1500 Stow Park Road/Littleborough Lane staggered junction (Marton)	418	31	7%	368	15	4%
MCC6	Cottam Road/Power Station Access (located in Nottinghamshire)	103	6	6%	35	0	0%

Collision Data Review

15.6.26 This section provides a high-level review of PIC data obtained from LHAs for the highway network in the vicinity of the Scheme. A more detailed review of the PIC data is provided within the TA (**PEI Report Volume II Appendix 15-1**).

15.6.27 The PIC data covers the most recent five-year period available:

- Lincolnshire: 01/10/2017 to 30/09/2022 (five years); and
- Nottinghamshire: 01/08/2017 to 31/07/2022 (five years).

15.6.28 A total of 124 collisions (85 slight, 33 serious and 6 fatal) have occurred within the Study Area, for the most recent five-year period. A summary of these collisions by location and severity is set out in Table 15-6 below (areas with five or more collisions have been highlighted in bold).

Table 15-6: Summary of LCC and NCC PIC Record

Location	Number of Collisions			Total
	Slight	Serious	Fatal	
Links (Lincolnshire)				
Pilham Lane (circa 2.9km west of site access one)	2	3	0	5
A631 Harpswell Lane – area surrounding site access one (circa 1.7km between East Lane and Templefield Lane)	5	0	0	5
A631 Harpswell Lane – area surrounding site access two (circa 1km between Templefield Lane and the first set of S bends)	1	0	0	1
A631 Harpswell Lane – area surrounding site access three (circa 100m of Grange Farm access road)	3	0	0	3
A631 Link – circa 2.5km between site access three and the A631/ B1398 Middle Street roundabout	4	1	0	5
A631 Link – circa 2km between Gibson Road junction and A631/ A15 roundabout	2	1	0	3
A15 Link – circa 1.5km between A631/ A15 roundabout and Normanby Cliff Road	3	0	1	4
A15 Link – circa 10.2km between Normanby Cliff Road and the A15/ A1500 roundabout	14	2	2	18
A1500 Link – circa 8.5km between the A15/ A1500 roundabout and the A1500/ B1241 Sturton by Stow junction	4	1	0	5
A1500 Link – circa 5.3km between the A1500/ B1241 Sturton by Stow junction and the A156/ A1500 junction	2	0	0	2
A156 Link – circa 3km between the A156/ A1500 junction and the A156/ Station Road junction in Torksey	3	0	0	3

Location	Number of Collisions			Total
	Slight	Serious	Fatal	
A156 Link – circa 5km between the A156/ A1500 junction and the A156/ B1241 Willingham Road junction in Lea	5	1	1	7
B1241 Link – circa 600m between the A156/ B1241 Willingham Road junction and The Grove cul-de-sac	2	0	0	2
Minor roads within the vicinity of the Principal Site (east of Lea)	5	3	0	8
Ingham Road Link – circa 6.7km between B1241 Sturton Road junction and Lincoln Road junction	2	1	0	3
B1398 Middle Street Link – circa 4.4km between A1500 junction and Cammeringham Hill junction	2	2	0	4
B1398 Middle Street Link – circa 5km between Church Hill junction (Ingham) and St George’s Hill junction (Glentworth)	3	2	0	5
Junctions (Lincolnshire)				
A631/ B1398 Middle Street Roundabout – area surrounding site access four (circa 550m between the roundabout and site access four)	1	2	0	3
A631/ A15 Roundabout - including the access junction to the BP Petrol Station	4	3	0	7
A15/ A1500 Roundabout	2	2	0	4
A1500/ B1398 Middle Street Junction	3	1	0	4
A1500/ B1241 Sturton by Stow Junction	4	1	0	5
A156/ A1500 Marton Junction	1	1	0	2

Location	Number of Collisions			Total
	Slight	Serious	Fatal	
A156/ B1241 Willingham Road Junction	4	0	0	4
B1398 Middle Street/ Ingham Lane Junction	1	3	0	4
Links (Nottinghamshire)				
Westbrecks Lane Link – circa 1.2km between Broad Lane (north) and Cottam Road (south)	0	1	0	1
Leverton Road Link – circa 500m between Beckingham Lane (north) and Town Street (south)	1	0	0	1
Cocking Lane Link – circa 650m between Town Street (north) and Laneham Road (south)	1	0	0	1
Retford Road Link – circa 1.6km between Laneham Road (west) and Main Street (east)	1	1	0	2
Junctions (Nottinghamshire)				
Town Street/ Leverton Road Junction	0	1	0	1
Laneham Road/ Cocking Lane Junction	0	0	1	1
Laneham Road/ Retford Road Junction	0	0	1	1

15.6.29 As per the summary table above, a more detailed reviewed of the PIC data is included within Section 4 of the TA which includes reference to potential collision clusters within the Study Area.

15.6.30 One collision cluster was identified at the A1500/ B1241 Sturton by Stow junction, where five collisions occurred over the five-year study period equating to one collision per year. This junction has therefore been assigned a **Medium** level of sensitivity in terms of accidents and safety (others assigned a Low level of sensitivity) and the assessment of likely impacts and effects is discussed further in Section 15.9 of this PEI Report.

Walking Facilities

Principal Site

15.6.31 Due to the location of the Principal Site in rural Lincolnshire, there is limited footway provision in the surrounding area. Footways are limited to parts of the A631 with the following:

- Along the northern boundary of the Principal Site, a narrow footway is provided along the northern side of the A631 from Pilham Lane through Corringham, where the footway widens, until the junction with Springthorpe Lane (approximately 850m).
- A footway is provided along the south side of the A631 through Corringham, ending at the Beckett Arms bus stop. Just after the Caravan Park homes off the northern side of the A631, a footway is provided until the sign for Harpswell, where provision changes to the southern side of the carriageway until the junction with Common Lane (approximately 500m).
- To the west of the Principal Site, the junction between the A631 and Springthorpe Road provides access to Springthorpe where approximately 450m of footway fronts onto residential properties on the eastern side of the carriageway, providing access to the Church and New Inn bus stops in Springthorpe.
- To the east of the Principal Site, the junction between the A631 and Common Lane provides access to Harpswell where approximately 150m of footway is provided on the eastern side of the carriageway fronting onto residential properties and providing access to St Chad's Church.
- To the east of the Principal Site, the junction between the B1398 (Middle Street) and Hanover Hill provides access to Glentworth where approximately 650m of footway is provided along the northern side of the carriageway until it becomes a narrow single lane track after the village. The footway widens when fronting residential properties through Glentworth.
- To the east of the Principal Site along the B1398 (Middle Street), approximately 600m of narrow unkept footways varying between the eastern and western sides of the road exist between the junction with Hanover Hill providing access into Glentworth and residential buildings to

the south. The footway widens on the eastern side of the carriageway when fronting the residential properties. Approximately 400m of narrow footway is also provided on the eastern side of the carriageway located north of the junction with the B1398 and Ingham Lane.

- To the east of the Principal Site, the junction between the B1398 (Middle Street) and High Street provides access to Fillingham where approximately 1km of footway is provided along the northern side of the road until it becomes a narrow single lane track after the village.

15.6.32 There is one PRow within the Principal Site, as discussed below and displayed in **PEI Report Volume III Figure 15-3**:

- **PRow Gltw/85/1** – a bridleway which runs through the southern extent of the Principal Site, running in a north-south direction for approximately 500m from Kexby Road, west of Glentworth Grange before linking within PRow Fill/85/1 to the south.

15.6.33 It should be noted that the existing PRow is located within an area of the Principal Site designated as a potential area of ecological enhancement, therefore, it is not expected that any works related to the construction of the Scheme will have an impact on the PRow.

Cable Route Corridor

15.6.34 As above, due to the rural location of the Cable Route Corridor, there is limited footway provision in the surrounding area. Footways are limited to the northern side of Cottam Road and the western side of Town Street both near and through the village of Cottam, as well as both sides of Torksey Ferry Road within the village of Rampton.

15.6.35 All PRow which could be potentially impacted by the proposed cable works within the Cable Route Corridor (both in Lincolnshire and Nottinghamshire) are shown in **PEI Report Volume III Figure 15-3**. These include (listed in a north-south direction):

- **PRow Stow/70/1** – a bridleway which runs through the eastern extents of the Cable Route Corridor (within Lincolnshire), running in a north-south direction for approximately 500m to the south of Marton Road and to the west of Normanby by Stow.
- **PRow Mton/68/1** - a footpath which runs through the eastern extents of the Cable Route Corridor (within Lincolnshire), running in an east-west direction for approximately 800m between A156 High Street (running into the fields to the east of the carriageway) and A1500 Stow Park Road (to the south of the carriageway, within the vicinity of Marton).
- **PRow Mton/824/3** - a byway which runs along the boundary of the eastern extents of the Cable Route Corridor (within Lincolnshire), running in an east-west direction for approximately 50m to the east of the River Trent (along Trent Port Road) and linking within PRow Bram/66/4 in the south and PRow Mton/66/3 in the north (not within the boundary).
- **PRow Mton/66/4** - a footpath which runs through the eastern extents of the Cable Route Corridor (within Lincolnshire), running in a north-south

direction for approximately 550m to the east of the River Trent and linking within PRow Bram/66/1 in the south and PRow Mton/824/1 in the north.

- **PRow Bram/66/1** - a footpath which runs through the eastern extents of the Cable Route Corridor (within Lincolnshire), running in a north-south direction for approximately 200m and in an east-west direction for approximately 400m to the east of the River Trent and linking within PRow Mton/66/4 in the north.
- **PRow Cottam FP1** - a footpath which runs within the vicinity of the western extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 900m along the western bank of the River Trent and linking within PRow Cottam FP3 in the north and PRow Treswell FP7 in the south.
- **PRow Cottam FP3** – a footpath which runs within the vicinity of the western extent of the Cable Route Corridor (within Nottinghamshire), running in an east-west direction for approximately 1km between Headstead Bank and the River Trent and linking within PRow Cottam FP1 in the east.
- **PRow Cottam RB4** – a restricted byway which runs within the vicinity of the western extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 1.1km between Cottam Road and Broad Lane and linking within PRow Cottam RB6 in the middle.
- **PRow Cottam RB6** - a restricted byway which runs within the vicinity of the western extent of the Cable Route Corridor (within Nottinghamshire), running in an east-west direction for approximately 180m and linking within PRow Cottam RB4 in the west.
- **PRow South Leverton BOAT16** - a byway open to all traffic which runs within the vicinity of the western extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 1.1km along Cow Pasture Lane to the north west of Cottam Power Station.
- **PRow Treswell FP4** - a footpath which runs within the vicinity of the southwestern extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 250m to the west of Cottam Power Station, linking with PRow Rampton FP5 to the south of Rampton Thorns and the east with Treswell PF5.
- **PRow Rampton FP5** - a footpath which runs within the vicinity of the southwestern extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 800m to the west of Cottam Power Station, through the fields to the north of Torksey Ferry Road and linking PRow Treswell FP4 to the south of Rampton Thorns.
- **PRow Treswell FP5** - a footpath which runs within the vicinity of the southwestern extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 600m, south of Cottam Road to the west of Cottam Power Station and linking within PRow Rampton FP6 and Treswell FP4 in the south.

- **PRoW Rampton FP6** - a footpath which runs within the vicinity of the southwestern extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 500m, north of Torksey Ferry Road to the west of Cottam Power Station and linking within PRoW Treswell FP5 in the north and PRoW Rampton BOAT13 in the south.
- **PRoW Rampton BOAT13** – a byway open to all traffic which runs within the vicinity of the southern extent of the Cable Route Corridor (within Nottinghamshire), running in an east-west direction for approximately 2.6km along the southern border of Cottam Power Station along Torksey Ferry Road and linking with PRoW Rampton BW8 and FP7 in the east and PRoWs Rampton BOAT12, FP20 and FP6 in the west.
- **PRoW Rampton FP20** - a footpath which runs within the vicinity of the southern extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 380m along Nightleys Road and linking within PRoW Rampton FP9 in the south and PRoW Rampton BOAT13 in the north along Torksey Ferry Road.
- **PRoW Rampton BOAT12** – a byway open to all traffic which runs within the vicinity of the southern extent of the Cable Route Corridor (within Nottinghamshire), running in a north-south direction for approximately 600m along Shortleys Road and linking within PRoW Rampton BOAT13 along Torksey Ferry Road in the north and PRoW Rampton FP9 in the south.

15.6.36 In addition, there are several PRoW which run close to the Scheme but currently do not cross it. The ES Transport and Access Chapter will provide a refined list of PRoW that are likely to be impacted by the Scheme once the final extent of the Cable Route Corridor has been confirmed.

15.6.37 As the final extent of the Cable Route Corridor is not known at this stage, an assessment of the construction phase impact on the PRoW within the Cable Route Corridor has not been undertaken. This assessment will be included as part of the ES Transport and Access Chapter once the final extent has been confirmed.

Cycling Facilities

Principal Site

15.6.38 There are no on- or off-road dedicated/ marked cycling facilities within the immediate vicinity of the Principal Site and whilst relatively fast vehicle speeds and high traffic flows on the A631 and A15 may deter cyclists, the B1241 (Willingham Road) to the west of the Site, the B1398 (Middle Street) to the east of the site and the smaller roads within the Scheme Boundary itself are likely to be attractive to leisure cycling.

15.6.39 The nearest National Cycle Network route (between Harby and Lincoln) is located approximately 25km to the south of the Principal Site. There is also a narrow footway/cycle path on the eastern side of the A15 running for approximately 5.1km between RAF Scampton and Lincoln, to the south of the Principal Site.

15.6.40 The Principal Site could potentially be accessed by cyclists from Corringham, Hemswell and Springthorpe as all are located within an approximate 3km-4km cycle distance (10 minutes' cycle) of one of the proposed accesses along the A631.

Cable Route Corridor

15.6.41 There are no on or off-road dedicated/ marked cycling facilities within the immediate vicinity of the Cable Route Corridor. The eastern extent of the Cable Route Corridor connects to the Principal Site and therefore as previously mentioned above, the relatively fast vehicle speeds and high traffic flows on the A631 and A15 may deter cyclists within the vicinity of the Cable Route Corridor in Lincolnshire.

15.6.42 There are a number of minor roads within the western extents of the Cable Route Corridor in Nottinghamshire which are likely to be attractive to leisure cyclists, including Cottam Road which is relatively lightly trafficked. Additionally, this area could potentially be accessed by cyclists from Coates, South Leverton, Rampton and Treswell, all within a 2.5km cycle distance.

15.6.43 Approximately 2.6km (circa 9 minutes' cycle) to the west of Cottam Power Station, which is within the Cable Route Corridor, the National Byway (a leisure cycling route covering parts of England, Scotland and Wales) runs in a north-south direction through Gainsborough and Treswell. The route includes some off-carriageway facilities.

Equestrian Facilities

Principal Site

15.6.44 There is one formal equestrian facility (i.e. bridleway) within the Principal Site as mentioned earlier in section 15.7. Some of the roads within and surrounding the Principal Site are generally lightly trafficked and therefore it is considered that they could be used by equestrians on this basis.

15.6.45 There are several equestrian facilities in the local area, including Laughton Wood Equestrian Centre which is located approximately 11km (circa 12 minutes' drive) from the Principal Site to the north of Gainsborough. There are also two liveries located to the south of the Principal Site in the villages of Ingleby and South Carlton approximately 16km and 25km from the Principal Site respectively.

Cable Route Corridor

15.6.46 There are several formal equestrian facilities in the western part of the Cable Route Corridor within Nottinghamshire, including Bridleways, Restricted Byways and Byways Open to All Traffic (BOAT). These are listed above. There are also a number of narrow single-track roads to the north of Cottam near to Headstead Bank which appear to be very lightly trafficked and therefore may be appealing to equestrians.

Public Transport Facilities

15.6.47 A summary of the local bus and rail facilities in the vicinity of the Scheme is provided below. The frequency of the bus and rail services within the likely arrival and departure hours of the construction staff, and the likelihood of rail

as a potential travel mode for construction staff, will be discussed further within the TA. The selected bus stops closest to the Scheme and local railway stations are discussed below and the locations identified in Figure 4-1 and Figure 4-2 within the TA.

Bus

Principal Site

15.6.48 Bus services 100, 103, 106 and 354 serve the Principal Site and are in close proximity to the Cable Route Corridor within Lincolnshire. Bus stops are located on the A631, B1398 (Middle Street) and B1241 (Willingham Road) which are in close proximity to the Scheme Boundary. The bus stops closest to the Principal Site access points are listed in Table 15-7 below with key information regarding service frequency provided.

Table 15-7: Bus Services Within the Vicinity of the Principal Site (within Lincolnshire)

Bus Service	Bus Stop	Route	Service Frequency
100	Kexby Corner (B1241 Kexby Lane)	Scunthorpe/ Gainsborough to Lincoln	Approximately an hourly service between 10:00-16:00 (Mon-Sat excluding Sun)
103	Post Office (A631 Hemswell) St George's Hill (B1398 Middle Street - Glentworth) Hannover Hill (B1398 Middle Street – Glentworth)	Scunthorpe to Lincoln	Approximately a service every 2 hours between 10:00-16:00 (Mon-Sat excluding Sun)
106	Beckett Arms PH (A631 Corringham) New Inn (Hill Road)	Gainsborough to Lincoln (via Springthorpe)	One daily service in each direction (Mon-Sat excluding Sun)
354	Yawthorpe Lane End (A613 Harpswell Lane) Harpswell Grange (A631 Harpswell Lane) Hill Top Lodge (B1398 Middle Street/ A631 Roundabout) St George's Hill (B1398 Middle Street - Glentworth) Church Street (Kexby Road)	Gainsborough Queen Elizabeth School to Lincoln (via Corringham)	One daily service in each direction (School Days Only)

Bus Service	Bus Stop	Route	Service Frequency
			<i>(The Stagecoach website (Ref. 15-25) confirms that all stops are in operation)</i>

Cable Route Corridor

15.6.49 In addition to the bus routes identified above, bus service 190 (bus stops on Cottam Lane) serve the western extent of the Cable Route Corridor within Nottinghamshire. The service frequency is provided in Table 15-8 below.

Table 15-8: Bus Services Within the Vicinity of the Cable Route Corridor (within Nottinghamshire)

Bus Service	Bus Stop	Route	Service Frequency
190	Cottam Lane (Treswell)	Retford to Tuxford	The service is demand responsive through Nottsbus on Demand (Ref. 15-27).

15.6.50 There are a limited number of bus services before 07:00 and after 19:00. It is therefore considered unlikely that the bus services in the vicinity of the Scheme will provide a viable option for construction staff to travel to and from the Scheme given the proposed construction working hours of 07:00-19:00.

Rail

Principal Site

15.6.51 Gainsborough is located to the west of the Principal Site and has two railway stations, Gainsborough Central and Gainsborough Lea Road (located circa 10km from the Principal Site). These stations could be used as locations to pick-up/drop-off construction staff via a shuttle service.

Cable Route Corridor

15.6.52 Retford Station and Saxilby Station are located to the west and south of the Cable Route Corridor (circa 10km from the Cable Route Corridor). These stations could be used as locations to pick-up/drop-off construction staff via a shuttle service.

15.6.53 Table 15-9 lists the rail services operating from the stations within the vicinity of the Scheme, and more in-depth detail is presented within the TA.

Table 15-9: Rail Services Operating Within the Vicinity of the Scheme

Train Station	Route	Service Frequency
Gainsborough Central Station	Sheffield to Gainsborough to Lincoln/ Cleethorpes	One morning and evening service in each direction only
Gainsborough Lea Road Station	Leeds/ Sheffield to Lincoln/ Cleethorpes	9 two-way AM services and 9 two-way PM services

Train Station	Route	Service Frequency
	Peterborough to Doncaster	2 two-way AM services and 3 two-way PM services
Saxilby Station	Leeds/ Sheffield to Lincoln/ Cleethorpes	10 two-way AM services and 9 two-way PM services
	Peterborough to Doncaster	2 two-way AM services and 4 two-way PM services
Retford Station (Nottinghamshire)	Leeds/ Sheffield to Lincoln/ Cleethorpes	13 two-way AM services and 7 two-way PM services
	London Kings Cross to Edinburgh/ York/ Leeds	5 two-way AM services and 4 two-way PM services
	London Kings Cross to Hull/ Beverley	4 two-way AM services and 4 two-way PM services

15.6.54 There are a limited number of rail services before 07:00 and after 19:00. It is therefore considered unlikely that the existing rail services in the vicinity of the Scheme will provide a viable option for construction staff to travel to and from the Scheme during the construction working hours of 07:00-19:00.

15.6.55 In terms of potentially utilising the railway for deliveries during the construction phase, whilst the existing Cottam Power Station is served by a rail station, it is understood that this station and section of track is no longer in use.

Future Baseline (2026)

15.6.56 In the absence of the Scheme, traffic flows on the surrounding highway network would be expected to increase as a result of housing and employment growth. Therefore, projected background traffic growth has been applied to the traffic flows derived from the traffic surveys (July 2022) to represent conditions during the future baseline for the construction peak assessment year of 2026.

15.6.57 Projected background traffic growth has been applied to the surveyed traffic flows to represent conditions during the future construction peak assessment year of 2026.

15.6.58 Traffic growth has been calculated using National Transport Model (NTM) adjustments applied within the Trip Ends Model Program (TEMPro). This utilised National Trip Ends Model (NTEM) dataset v7.2 and 2018 RTF – Scenario 1 (Reference Case) to reflect local factors in West Lindsey and to determine the forecast increases in future baseline car driver trips during each weekday peak period. These represent the latest datasets available, covering the period up to 2050.

15.6.59 A summary of the TEMPro growth factors are set out in Table 15-10.

Table 15-10: TEMPro Traffic Growth Factors

Growth Period	Road Type	Traffic Growth Factor (West Lindsey)		
		AM Peak	PM Peak	Average Weekday
2022 to 2026 (Construction)	Principal	1.030	1.031	1.033
	Minor	1.029	1.030	1.032
	All Roads	1.034	1.035	1.037

15.6.60 Growth factors for 'All Roads' as presented above have been applied to the 2022 baseline traffic flows.

15.6.61 Applying the TEMPro traffic growth factors above to the 2022 baseline traffic flows, the anticipated future baseline flows for 2026 on the surrounding highway network are set out in Table 15-11 and Table 15-12 below.

Table 15-11: Future Baseline Traffic (2026) – Two-way Link Flows

Location		AM Dev Peak (06:00-07:00)			PM Dev Peak (19:00-20:00)			Daily (24 Hours)		
Ref	Link	Total	HGVs	% HGVs	Total	HGVs	% HGVs	Total	HGVs	% HGVs
ATC1	A631, West of School Lane	277	35	12%	254	12	5%	7,780	855	11%
ATC2	A631, West of Minor Access South	239	30	13%	226	11	5%	6,712	740	11%
ATC3	A631, West of Minor Access South	249	27	11%	226	13	6%	6,769	745	11%
ATC4	A631, West of B1398 Middle Street	236	31	13%	219	14	7%	6,655	776	12%
ATC5	B1398 Middle Street, North of A631	153	15	10%	144	6	4%	3,521	373	11%
ATC6	A631, East of B1398 Middle Street	250	35	14%	266	14	5%	6,825	758	11%
ATC7	B1398 Middle Street, South of A631	135	8	6%	99	2	3%	3,186	227	7%
ATC8	A631, West of A15	229	40	18%	203	13	6%	5,555	726	13%
ATC9	A15, North of Spital Lane	688	187	27%	453	78	17%	13,726	3,341	24%
ATC10	A631, East of A15	234	38	16%	199	10	5%	5,879	711	12%
ATC11	A15, South of A631	786	164	21%	466	67	14%	15,225	2,984	20%
ATC12	Kexby Road, East of Northlands Road	7	1	9%	10	1	10%	198	19	10%
ATC13	Common Lane, South of A631	4	0	11%	4	1	21%	91	14	15%
ATC14	School Lane, South of A631	0	0	0%	1	0	14%	45	4	8%
ATC15	Common Lane, East of Heapham	2	0	0%	4	1	29%	107	20	19%
ATC16	Cow Lane, East of Upton	1	0	17%	5	0	0%	93	9	9%
ATC17	Glentworth Road, East of Kexby	3	0	0%	5	0	0%	86	5	6%
ATC18	Fillingham Lane, East of South Lane	6	1	14%	8	1	8%	175	19	11%
ATC19	High Street, East of B1241	57	8	15%	114	6	6%	2,688	241	9%
ATC20	Gainsborough Road, North of High Street	67	4	6%	119	4	3%	2,931	202	7%
ATC21	Marton Road, South of High Street	11	0	0%	25	0	1%	397	26	6%

Location		AM Dev Peak (06:00-07:00)			PM Dev Peak (19:00-20:00)			Daily (24 Hours)		
Ref	Link	Total	HGVs	% HGVs	Total	HGVs	% HGVs	Total	HGVs	% HGVs
ATC22	B1241, South of Cot Garth Lane	64	5	7%	114	4	3%	2,617	183	7%
ATC23	B1241, North of Fleets Road	93	7	7%	150	4	3%	3,551	202	6%
ATC24	A1500 Tillbridge Road, West of Thorpe Lane	209	14	7%	184	6	3%	5,269	394	7%
ATC25	Saxilby Road, South of Queensway	102	7	7%	150	7	5%	3,836	262	7%
ATC26	A1500 Stow Park Road, East of Adams Way	173	9	5%	145	8	5%	4,268	313	7%
ATC27	A156 High Street, South of Willingham Road	392	37	9%	297	16	5%	8,689	752	9%
ATC28	A156 High Street, South of Wapping Lane	255	28	11%	192	8	4%	6,041	564	9%
ATC29	B1241 Kexby Lane, East of Upton Road	17	2	12%	33	1	2%	755	43	6%
ATC30	Cottam Road, East of Westbrecks Lane (located in Nottinghamshire)	98	5	5%	35	1	2%	1,122	110	10%
ATC31	Headstead Bank, South of Broad Lane (located in Nottinghamshire)	4	0	6%	7	1	12%	181	27	15%

Table 15-12: Future Baseline Traffic Flows (2026) - Junctions (two-way traffic flow movements across all approaches at the junction)

Location		AM Dev Peak (06:00-07:00)			PM Dev Peak (19:00-20:00)		
Ref	Link	Total	HGVs	% HGVs	Total	HGVs	% HGVs
MCC1	A631/B1398 Middle Street Roundabout	397	50	13%	346	11	3%
MCC2	A15/A631 Roundabout	944	272	29%	630	95	15%
MCC3	A1500 Marton Road/Tillbridge Road/B1241 High Street/Saxilby Road staggered junction (Sturton by Stow)	302	13	4%	377	6	2%
MCC4	Gainsborough Road/Marton Road/High Street T-junction (Willingham by Stow)	74	3	4%	150	5	3%
MCC5	A156/A1500 Stow Park Road/Littleborough Lane staggered junction (Marton)	432	32	7%	381	16	4%
MCC6	Cottam Road/Power Station Access T-Junction (located in Nottinghamshire)	107	6	6%	36	0	0%

15.6.62 The consideration of cumulative effects as a result of committed developments is set out within **PEI Report Volume I Chapter 17: Cumulative Effects**.

15.7 Embedded Design Mitigation

15.7.1 This section contains the mitigation measures relevant to this chapter that are already incorporated into the Scheme design, as described in **PEI Report Volume I Chapter 3: Scheme Description**. It forms part of the Framework Construction Traffic Management Plan (CTMP) (**PEI Report Volume II Appendix 15-2**).

Construction and Decommissioning

15.7.2 Below is a list of embedded mitigation during the construction phase which forms an integral, committed and deliverable part of the scheme design or standard construction practices and will be included within the Scheme:

- Working hours of 07:00-19:00 resulting in construction staff travelling to/ from the site outside of the network peak hours, which makes use of the spare capacity on the highway network outside of the peak times.
- Implementation of a Framework CTMP for construction vehicles and construction staff.
- A Framework Decommissioning Environmental Management Plan (DEMP).
- Utilising existing site accesses along the A631 and B1398 Middle Street for the Principal Site.
- Utilising the existing access arrangements for Cottam Power Station to access the National Grid Cottam Substation via Cottam Road.
- Providing sufficient, but capped, on-site car parking within four of the five Principal Site compounds to accommodate the expected peak parking demand of construction staff within the Principal Site. During the construction phase, staff car parking spaces will be capped at 500, with 150 spaces provided within Principal Site Access 1 and 4 and 100 spaces provided within Principal Site Access 2 and 3.
- Construction staff are expected to be able to access other areas of the Scheme using the internal shuttle service if required.
- Encouraging construction staff to car share to reduce single occupancy car trips, by promoting the benefits of car sharing such as reduced fuel costs and by providing dedicated parking spaces for those car sharing within the compounds. A Car Share Scheme will be implemented to match potential sharers and to help staff identify any colleagues who could potentially be collected along their route to/ from site.
- Implementing a shuttle service to transfer staff to/ from nearby catchment areas to reduce vehicle trips on the surrounding highway network. At this stage it is expected that shuttle services would follow the same distribution as the construction staff vehicle trips, as outlined in Section 6 of the TA in **PEI Report Volume II Appendix 15-1**.

- Implementing shuttle services to transfer staff internally within the Principal Site as required to minimise external trips on the surrounding highway network.
- Implementing an internal shuttle service to transport staff directly from the Principal Site to the access points along the Cable Route Corridor. It should however be noted that it won't be possible to access the whole Cable Route Corridor internally due to barriers such as the River Trent. Further details of the routing between the Principal Site and the Cable Route Corridor will be included within the ES Transport and Access Chapter.
- Restricting HGV movements to certain routes as outlined in Figure 6-1 in the TA and times of the day (avoiding the network AM and PM peak hours).
- Implementing a Delivery Management System to control the bookings of HGV deliveries from the start of the construction period. This will be used to regulate the arrival times of HGVs via timed delivery slots, as well as to monitor compliance with HGV routing.
- Implementing a monitoring system to record HGVs travelling to and from the Scheme, to record any non-compliance with the agreed routing plan/ delivery hours and to communicate any issues to the relevant suppliers to ensure the correct routes are followed.
- Developing a communications strategy including regular meetings with sub-contractors to review and address any issues associated with travel to/ from the Scheme, as well as to relay information including any restrictions and requirements which should be followed.
- Implementing Temporary Traffic Management (TTM) where required during the period when the cable is installed to connect Cottam Substation with the Principal Site. TTM will be included within the DCO submission. Further details with respect to any TTM arrangements and timeframes for installing the cables will be set out within the Framework CTMP and the ES Transport and Access Chapter once known, in relation to the proposed management of the Cable Route Corridor crossing the highway.
- Positioning of suitably qualified Marshals/ banksmen at the proposed accesses for the Principal Site, to allow all vehicle arrivals and departures to be safely controlled during the construction period.
- Vegetation clearance at the proposed site access points where required to achieve appropriate levels of visibility at these locations.
- As required, to implement local off-site highway improvements to accommodate AILs travelling to the Principal Site e.g. pavement protection, temporary removal of street furniture, vegetation clearance including overhanging trees and lifting overhead cables, if required (**PEI Report Volume II Appendix 15-2**).
- Implementing highway improvements to accommodate construction vehicles at the site accesses across the Scheme e.g. carriageway widening and vegetation clearance, if required (**PEI Report Volume II Appendix 15-2**).

- Should emergency access be required, the four site accesses located across the Principal Site and the site accesses along the Cable Route Corridor can be utilised.
- Maintaining access to/ along PRow, or otherwise providing temporary PRow diversion routes where necessary to avoid any PRow closures or potential conflicts with the Scheme (i.e. for the one PRow within the Principal Site and those PRow impacted throughout the Cable Route Corridor), where possible. Any diversion routes would be agreed with the LHAs prior to construction.
- Providing 12 cycle parking spaces (1% of the peak construction staff) within the Principal Site to encourage construction staff to travel by bicycle where viable. There is no specific cycle parking standard for the land use of the Scheme but based on professional judgement and the location of the Scheme in a rural setting, we believe this to be an appropriate number of spaces. Depending on the compound design during the construction phase of the Scheme, there may be an opportunity to provide more. This will be explored further at the ES stage.
- Overseeing the management of AILs travelling to and from the Scheme. A specialised haulage service is anticipated to be employed to allow AILs to transport components with the necessary escort, permits and traffic management, with the contractor consulting with the relevant highway authorities to ensure the correct permits are obtained. The police will also be given advanced notification under the Road Vehicle Authorisation of Special Types Order 2003. AILs are currently forecast for the transportation of the two substations to be located on-site within the Principal Site.
- The opportunity to combine mitigation (including some of the above measures) for the West Burton Solar Farm, Cottam Solar Farm and Gate Burton Solar Farm schemes (See **PEI Report Volume I Chapter 17: Cumulative Effects**) will be explored in order to reduce cumulative impacts during the construction phase. This could include sharing the shuttle services to transport construction staff to/ from multiple sites, sharing construction compounds to consolidate trips or sharing the access points to install and maintain the Cable Route Corridor. Final details will be set out as the Scheme proposals are developed further and once further details in relation to the other solar farm schemes are known.

Operation

15.7.3 Below includes a list of embedded mitigation during the operational phase which form an integral, committed and deliverable part of the Scheme design:

- Providing suitable access points for operational vehicles, these are expected to remain the same as the four construction access points into the Principal Site.
- Converting the internal construction routes to maintenance routes, to allow operational vehicles to access all areas of the Principal Site via the proposed access points during the operational phase.

- Maintaining access to all existing PRow within the Scheme, with no diversions or closures.
- Controlling areas where the internal maintenance routes cross any existing PRow or local access roads (such as providing gates), permitting only operational traffic to utilise these internal routes within the Principal Site. Operational traffic should give-way to other users (pedestrians and road users) when utilising the crossing points. Visibility will be maximised between operational vehicles and other users, with warning signage provided if required.

15.8 Assessment of Likely Impacts and Effects

15.8.1 The Scheme as outlined in **PEI Report Volume I Chapter 3: Scheme Description** has been considered in assessing the likely impacts and effects of the Scheme, taking into consideration the embedded mitigation described in the previous section.

15.8.2 The likely impacts would be due to the following:

- Increase in HGV movements (examples include increasing severance, congestion, as well as fear & intimidation to pedestrians and cyclists);
- Abnormal Indivisible Loads (AILs) (examples include the potential to create disruption to the surrounding highway network unless carefully managed by, for example, Police escort and coordination with the LHA);
- Travel to and from site by construction staff (example includes increase in congestion and driver delay);
- Increase in delay to vehicles, pedestrians, cyclists and equestrians due to increase in vehicle movements (as above), as well as reduction in pedestrian/ cycle amenity;
- Change in route connections and amenity for pedestrians, cyclists and equestrians due to the Scheme (potential PRow and/ or road diversions during the construction phase);
- Impacts on operational road or rail safety due to glint and glare impacts, and/ or rail assets such as bridges and level crossings due to solar panels. The glint and glare assessment is provided in **PEI Report Volume II Appendix 16-1** and a summary of the conclusion is also provided within the TA in **PEI Report Volume II Appendix 15-1**; and
- Consideration to be given to those users of local facilities which could be impacted by the Scheme through PRows requiring to be temporarily diverted or temporarily closed during the construction of the Cable Route Corridor to ensure safety for members of the public during construction.

Construction (2025 to 2027)

Overview

15.8.3 The full methodology calculating the forecast number of construction staff vehicles and HGVs is set out within **PEI Report Volume II Appendix 15-1**.

This includes the trip attraction, trip distribution and trip assignment of vehicles onto the local highway network which has been used to identify the likely impact and effects of the Scheme.

Initial Highway Impact Assessment of Vehicle Movements Associated with the Principal Site

15.8.4 Table 15-13 below displays the forecast increases in vehicle movements during the forecast weekday development peak hours and across the day (24 hours), both in terms of actual increases and percentage increases. The 2026 base year flows represent the two-way traffic flows on the links and on the approaches to the junctions.

15.8.5 Table 15-14 displays the existing baseline (2022) overall highway network peak across the Study Area and compares this to the total trips forecast to occur during the AM and PM development peak hours. The highway network peak hours analysed are specific to each junction, for example the peak hour identified at ATC 1 is 16:30-17:30 and the peak hour identified at ATC 5 is 07:30-08:30.

Table 15-13: 2026 Construction Traffic Impact – Link and Junction Flows

Location		AM Development Peak Hour (06:00-07:00)				PM Development Peak Hour (19:00-20:00)				Daily (24 Hours)			
Ref	Link	Base	Dev	Base + Dev	% Change	Base	Dev	Base + Dev	% Change	Base	Dev	Base + Dev	% Change
ATC1	A631, West of School Lane	277	205	482	74%	254	205	459	81%	7,780	411	8,191	5%
ATC2	A631, West of Minor Access South	239	56	295	24%	226	56	282	25%	6,712	112	6,824	2%
ATC3	A631, West of Minor Access South	249	166	416	67%	226	166	392	74%	6,769	333	7,102	5%
ATC4	A631, West of B1398 Middle Street	236	277	513	117%	219	277	496	126%	6,655	553	7,208	8%
ATC5	B1398 Middle Street, North of A631	153	85	238	55%	144	85	228	59%	3,521	169	3,690	5%
ATC6	A631, East of B1398 Middle Street	250	132	382	53%	266	132	398	50%	6,825	264	7,089	4%
ATC7	B1398 Middle Street, South of A631	135	152	286	113%	99	152	250	154%	3,186	303	3,489	10%
ATC8	A631, West of A15	229	132	361	58%	203	132	335	65%	5,555	264	5,819	5%
ATC9	A15, North of A631	688	38	726	6%	453	38	492	8%	13,726	77	13,803	1%
ATC10	A631, East of A15	234	30	264	13%	199	30	229	15%	5,879	60	5,938	1%
ATC11	A15, South of A631	786	64	850	8%	466	64	530	14%	15,225	128	15,353	1%
ATC12	Kexby Road, East of Northlands Road	7	0	7	0%	10	0	10	0%	198	0	198	0%
ATC13	Common Lane, South of A631	4	0	4	0%	4	0	4	0%	91	0	91	0%

Location		AM Development Peak Hour (06:00-07:00)				PM Development Peak Hour (19:00-20:00)				Daily (24 Hours)			
Ref	Link	Base	Dev	Base + Dev	% Change	Base	Dev	Base + Dev	% Change	Base	Dev	Base + Dev	% Change
ATC14	School Lane, South of A631	0	0	0	0%	1	0	1	0%	45	0	45	0%
ATC15	Common Lane, East of Heapham	2	0	2	0%	4	0	4	0%	107	0	107	0%
ATC16	Cow Lane, East of Upton	1	0	1	0%	5	0	5	0%	93	0	93	0%
ATC17	Glentworth Road, East of Kexby	3	0	3	0%	5	0	5	0%	86	0	86	0%
ATC18	Fillingham Lane, East of South Lane	6	0	6	0%	8	0	8	0%	175	0	175	0%
ATC19	High Street, East of B1241	57	0	57	0%	114	0	114	0%	2,688	0	2,688	0%
ATC20	Gainsborough Road, North of High Street	67	0	67	0%	119	0	119	0%	2,931	0	2,931	0%
ATC21	Marton Road, South of High Street	11	0	11	0%	25	0	25	0%	397	0	397	0%
ATC22	B1241, South of Cot Garth Lane	64	0	64	0%	114	0	114	0%	2,617	0	2,617	0%
ATC23	B1241, North of Fleets Road	93	0	93	0%	150	0	150	0%	3,551	0	3,551	0%
ATC24	A1500 Tillbridge Road, West of Thorpe Lane	209	8	216	4%	184	8	192	4%	5,269	16	5,284	0%

Location		AM Development Peak Hour (06:00-07:00)				PM Development Peak Hour (19:00-20:00)				Daily (24 Hours)			
Ref	Link	Base	Dev	Base + Dev	% Change	Base	Dev	Base + Dev	% Change	Base	Dev	Base + Dev	% Change
ATC25	Saxilby Road, South of Queensway	102	0	102	0%	150	0	150	0%	3,836	0	3,836	0%
ATC26	A1500 Stow Park Road, East of Adams Way	173	8	181	4%	145	8	152	5%	4,268	16	4,283	0%
ATC27	A156 High Street, South of Willingham Road	392	18	410	5%	297	18	315	6%	8,689	36	8,725	0%
ATC28	A156 High Street, South of Wapping Lane	255	26	281	10%	192	25	218	13%	6,041	51	6,092	1%
ATC29	B1241 Kexby Lane, East of Upton Road	17	0	17	0%	33	0	33	0%	755	0	755	0%
ATC30	Cottam Road, East of Westbrecks Lane (located in Nottinghamshire)	98	0	98	0%	35	0	35	0%	1,122	0	1,122	0%
ATC31	Headstead Bank, South of Broad Lane (located in Nottinghamshire)	4	0	4	0%	7	0	7	0%	181	0	181	0%
MCC1	A631/B1398 Middle Street Roundabout	397	322	719	81%	346	322	668	93%	-	-	-	-
MCC2	A15/A631 Roundabout	944	132	1,076	14%	630	132	762	21%	-	-	-	-

Location		AM Development Peak Hour (06:00-07:00)				PM Development Peak Hour (19:00-20:00)				Daily (24 Hours)			
Ref	Link	Base	Dev	Base + Dev	% Change	Base	Dev	Base + Dev	% Change	Base	Dev	Base + Dev	% Change
MCC3	A1500 Marton Road/Tillbridge Road/B1241 High Street/Saxilby Road staggered junction (Sturton by Stow)	302	8	310	3%	377	8	384	2%	-	-	-	-
MCC4	Gainsborough Road/Marton Road/High Street T-junction (Willingham by Stow)	74	0	74	0%	150	0	150	0%	-	-	-	-
MCC5	A156/A1500 Stow Park Road/Littleborough Lane staggered junction (Marton)	432	26	458	6%	381	25	406	7%	-	-	-	-
MCC6	Cottam Road/Power Station Access (located in Nottinghamshire)	107	0	107	0%	36	0	36	0%	-	-	-	-

Table 15-14: 2022 Overall Highway Network Peak and 2026 Development Peak Hour Comparison – Link and Junction Flows

Location		AM Development Peak Hour (06:00-07:00)	PM Development Peak Hour (19:00-20:00)	Existing Baseline Highway Network Peak Hour (2022)	Difference Between Development Peak Hours and Highway Network Peak	
Ref	Link	Base + Dev Total Trips	Base + Dev Total Trips	Overall Highway Network Peak Total Trips	AM Difference	PM Difference
ATC1	A631, West of School Lane	482	459	661	-179	-202
ATC2	A631, West of Minor Access South	295	282	573	-278	-291
ATC3	A631, West of Minor Access South	416	392	577	-161	-185
ATC4	A631, West of B1398 Middle Street	513	496	570	-58	-75
ATC5	B1398 Middle Street, North of A631	238	228	339	-101	-111
ATC6	A631, East of B1398 Middle Street	382	398	599	-217	-201
ATC7	B1398 Middle Street, South of A631	286	250	322	-35	-71
ATC8	A631, West of A15	361	335	474	-113	-139
ATC9	A15, North of A631	726	492	1,007	-280	-515
ATC10	A631, East of A15	264	229	504	-240	-274
ATC11	A15, South of A631	850	530	1,168	-318	-639
ATC12	Kexby Road, East of Northlands Road	7	10	20	-13	-10
ATC13	Common Lane, South of A631	4	4	10	-6	-6
ATC14	School Lane, South of A631	0	1	5	-5	-4

Location		AM Development Peak Hour (06:00-07:00)	PM Development Peak Hour (19:00-20:00)	Existing Baseline Highway Network Peak Hour (2022)	Difference Between Development Peak Hours and Highway Network Peak	
Ref	Link	Base + Dev Total Trips	Base + Dev Total Trips	Overall Highway Network Peak Total Trips	AM Difference	PM Difference
ATC15	Common Lane, East of Heapham	2	4	13	-12	-10
ATC16	Cow Lane, East of Upton	1	5	11	-10	-6
ATC17	Glentworth Road, East of Kexby	3	5	9	-5	-3
ATC18	Fillingham Lane, East of South Lane	6	8	16	-10	-8
ATC19	High Street, East of B1241	57	114	266	-209	-151
ATC20	Gainsborough Road, North of High Street	67	119	265	-197	-146
ATC21	Marion Road, South of High Street	11	25	38	-27	-13
ATC22	B1241, South of Cot Garth Lane	64	114	236	-172	-122
ATC23	B1241, North of Fleets Road	93	150	347	-254	-197
ATC24	A1500 Tillbridge Road, West of Thorpe Lane	216	192	513	-296	-321
ATC25	Saxilby Road, South of Queensway	102	150	352	-250	-202
ATC26	A1500 Stow Park Road, East of Adams Way	181	152	404	-223	-252
ATC27	A156 High Street, South of Willingham Road	410	315	845	-435	-530

Location		AM Development Peak Hour (06:00-07:00)	PM Development Peak Hour (19:00-20:00)	Existing Baseline Highway Network Peak Hour (2022)	Difference Between Development Peak Hours and Highway Network Peak	
Ref	Link	Base + Dev Total Trips	Base + Dev Total Trips	Overall Highway Network Peak Total Trips	AM Difference	PM Difference
ATC28	A156 High Street, South of Wapping Lane	281	218	532	-250	-314
ATC29	B1241 Kexby Lane, East of Upton Road	17	33	61	-44	-28
ATC30	Cottam Road, East of Westbrecks Lane (located in Nottinghamshire)	98	35	188	-90	-152
ATC31	Headstead Bank, South of Broad Lane (located in Nottinghamshire)	4	7	18	-14	-11
MCC1	A631/B1398 Middle Street Roundabout	719	668	1,082	-363	-414
MCC2	A15/A631 Roundabout	1,076	762	1,759	-683	-997
MCC3	A1500 Marton Road/Tillbridge Road/B1241 High Street/Saxilby Road staggered junction (Sturton by Stow)	310	384	1,092	-782	-708
MCC4	Gainsborough Road/Marton Road/High Street T-junction (Willingham by Stow)	74	150	320	-246	-170
MCC5	A156/A1500 Stow Park Road/Littleborough Lane staggered junction (Marton)	458	406	1,199	-741	-793

Location		AM Development Peak Hour (06:00-07:00)	PM Development Peak Hour (19:00-20:00)	Existing Baseline Highway Network Peak Hour (2022)	Difference Between Development Peak Hours and Highway Network Peak	
Ref	Link	Base + Dev Total Trips	Base + Dev Total Trips	Overall Highway Network Peak Total Trips	AM Difference	PM Difference
MCC6	Cottam Road/Power Station Access (located in Nottinghamshire)	107	36	330	-223	-294

15.8.6 The results shown in Table 15-13 and Table 15-14 indicate that the following parts of the network are anticipated to experience increases in hourly traffic flows of at least 30 additional vehicles and a change of at least 10% compared to baseline flows during the development peak hours.

15.8.7 Thresholds of a change of 10%, 30%, 60% and 90% have been adopted for consistency with assessment criteria:

- ATC1, ATC2, ATC3, ATC4, ATC6, ATC8 and ATC10 – A631 Harpswell Lane:
 - 969 additional two-way vehicle trips are expected to utilise the A631 during each of the AM and PM development peak hours.
 - In the AM peak, the increase from the future baseline traffic flows ranges from 24%-117% and in the PM peak it ranges from 25%-126%.
 - Both the AM and PM future baseline flows with development traffic remain below the existing baseline highway network peak hour flows.
 - Therefore, the Principal Site is not anticipated to generate traffic flows above the highway capacity on this part of the network during the AM and PM development peak hours.
- ATC5 – B1398 Middle Street north of A631:
 - 85 additional two-way vehicle trips are expected to utilise the B1398 Middle Street north during each of the AM and PM development peak hours.
 - In the AM peak, the increase from future baseline traffic flows is 55% and 59% in the PM peak hour.
 - Both the AM and PM future baseline flows with development traffic remain below the existing baseline highway network peak hour flows.
 - Therefore, the Principal Site is not anticipated to generate traffic flows above the highway capacity on this part of the network during the AM and PM development peak hours.
- ATC7 – B1398 Middle Street south of A631:
 - 152 additional two-way vehicle trips are expected to utilise the B1398 Middle Street south during each of the AM and PM development peak hours.
 - Traffic flows increase by 113% in the AM peak and 154% in the PM peak but this still equates to 35 fewer two-way trips in the AM peak and 71 fewer two-way trips in the PM peak than are recorded on the road during the existing baseline highway network peak hour.
 - Therefore, the Principal Site is not anticipated to generate traffic flows above the highway capacity on this part of the network during the AM and PM development peak hours.
- ATC11 – A15 South of A631:
 - 64 additional two-way vehicle trips are expected to utilise the A15 south during both the AM and PM development peak hours.
 - The increase in traffic flows is less than 10% during the AM peak but 14% during the PM peak due to lower baseline traffic flows.

- The PM future baseline flows with development traffic remain below the existing baseline flows without development traffic during the highway network peak hour.
- Therefore, the Principal Site is not anticipated to generate traffic flows above the highway capacity on this part of the network during the PM development peak hour.
- ATC28 – A156 High Street, South of Wapping Lane:
 - 26 additional two-way vehicle trips are expected to utilise the A156, resulting in a 10% increase in AM peak traffic flows and a 13% increase in PM peak traffic flows.
 - Fewer than 30 additional two-way vehicle trips during both the AM and PM development peak hours is considered not to be significant, as an increase of less than one vehicle every two minutes would be unlikely to cause any significant impacts.
- MCC1 – A631/ B1398 Roundabout:
 - 322 additional two-way vehicle trips are expected to utilise the A631/ B1398 Middle Street roundabout during both the AM and PM development peak hours.
 - Traffic flows increase by 81% in the AM peak and 93% in the PM peak, but this still equates to 363 fewer two-way trips in the AM and 414 fewer two-way trips in the PM than are recorded at the roundabout during the existing baseline highway network peak hour.
 - Therefore, the Principal Site is not anticipated to generate traffic flows above the highway capacity on this part of the network during the PM development peak hour.
- MCC2 – A15/ A631 Roundabout:
 - 132 additional two-way vehicle trips are expected to utilise the A631/ A15 roundabout during both the AM and PM development peak hours.
 - In the AM peak, the increase from future baseline traffic flows is 14% and in the PM peak the increase is 21%.
 - Both the AM and PM future baseline flows with development traffic remain below the existing baseline flows without development traffic during the highway network peak hour.
 - Therefore, the Principal Site is not anticipated to generate traffic flows above the highway capacity on this part of the network during the AM and PM development peak hours.

15.8.8 The above analysis demonstrates that additional traffic movements to the Principal Site are within the overall capacity of the highway network and consequently, it is not anticipated that any junction modelling will be required in support of the TA and ES.

15.8.9 Following the above, the anticipated impacts for each of the assessment criteria is set out below.

15.8.10 Impacts on road link receptors during construction of the Principal Site could include:

- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian and cyclist amenity;
- Fear and intimidation; and
- Accidents and safety.

15.8.11 Impacts on PRoW receptors during construction of the Principal Site could include:

- Severance;
- Pedestrian delay;
- Pedestrian and cyclist amenity; and
- Fear and intimidation.

Driver Delay

15.8.12 As demonstrated in Table 15-13 the following links and junctions are expected to experience a greater than 10% increase in traffic flows during both the AM and PM development peak hours as a result of construction traffic associated with the Principal Site:

- ATC1 – A631, West of School Lane;
- ATC2 – A631, West of Minor Access South;
- ATC3 – A631, West of Minor Access South;
- ATC4 – A631, West of B1398 Middle Street;
- ATC5 – B1398 Middle Street, North of A631;
- ATC6 – A631, East of B1398 Middle Street;
- ATC7 – B1398 Middle Street, South of A631;
- ATC8 – A631, West of A15;
- ATC10 – A631, East of A15;
- ATC11 – A15, South of A631;
- ATC28 – A156 High Street, South of Wapping Lane;
- MCC1 – A631/ B1398 Roundabout; and
- MCC2 – A15/ A631 Roundabout.

15.8.13 However, Table 15-14 demonstrates that with development traffic included, the total two-way vehicle trips will remain below the existing baseline flows without development traffic during the highway network peak hour, when the peak traffic is expected. The remaining links and junctions within the Study Area are anticipated to experience a less than 10% increase in traffic flows during all periods. Additional traffic movements as a result of the Scheme are therefore considered within the overall capacity of the highway network. Based on the consultation with LCC and NCC, it has been agreed there will be no

need to undertake junction modelling and a subsequent driver delay assessment in the TA and/or ES. Should further consultation with LCC and NCC lead to a requirement for Junction modelling to be undertaken, an assessment of driver delay will be undertaken as part of the ES Transport and Access Chapter.

Severance, Pedestrian Delay, Pedestrian and Cyclist Amenity and Fear and Intimidation

- 15.8.14 As a reasonable worst-case scenario during the eight-hours HGV delivery window, it is forecast that there would be up to 120 HGVs travelling to and from the Principal Site per day, representing 240 movements per day. In addition, during the peak construction period, there will be up to 500 construction staff vehicles (1,000 daily movements) and 14 shuttle bus services (28 daily movements) associated with staff for the Principal Site, representing 1,268 daily movements. This excludes internal shuttle services used to transport construction workers around the Scheme utilising existing internal tracks.
- 15.8.15 All road link receptors which were included in the ATC surveys have been examined for the assessment of severance, pedestrian delay, pedestrian and cyclist amenity and fear and intimidation.
- 15.8.16 Although there is one PRow (Gltw/85/1) located within the Principal Site, it should be noted that it is located within an area potentially designated for ecological and/or landscape mitigation (i.e. not land developed for solar PV panels). Therefore, it is not expected that any works relating to the construction of the Principal Site will impact the operation of the PRow. **PEI Report Volume I Chapter 14: Socio-economics and Land Use** concludes that construction of the Principal Site will have **no effect** on users of PRow Gltw/85/1 as no closures or diversions are expected at this stage and woodland screening measures are proposed to mitigate against any potential amenity impacts. As a result of this, no PRow receptors have been examined for the assessment of severance, pedestrian delay, pedestrian and cyclist amenity and fear and intimidation.
- 15.8.17 Receptor sensitivity is outlined in Table 15-15 below. The same receptor sensitivities have been adopted for the assessment of severance, pedestrian delay, pedestrian and cyclist amenity and fear and intimidation.

Table 15-15: Receptor Sensitivity (Severance, Pedestrian Delay, Pedestrian and Cyclist Amenity and Fear and Intimidation)

ATC Ref.	Receptor	Sensitivity	Justification
A631 (Harpwell Lane)			
ATC1	A631, West of School Lane	Low Sensitivity	Rural setting with limited pedestrian/ cycle facilities
ATC2	A631, West of Minor Access South		
ATC3	A631, West of Minor Access South		
ATC4	A631, West of B1398 Middle Street		
ATC6	A631, East of B1398 Middle Street		
ATC8	A631, West of A15		
ATC10	A631, East of A15		
B1398 Middle Street (Hemswell Roundabout)			
ATC5	B1398 Middle Street, North of A631	Low Sensitivity	Rural setting with limited pedestrian/ cycle facilities
ATC7	B1398 Middle Street, South of A631		
A15 (Caenby Corner Roundabout)			
ATC9	A15, North of A631	Low Sensitivity	Rural setting with limited pedestrian/ cycle facilities
ATC11	A15, South of A631		
School Lane (leading to Principal Site Access 1)		Very Low Sensitivity	Rural setting with no pedestrian/ cycle facilities
ATC14	School Lane, South of A631		
Common Lane (within Principal Site)			
ATC13	Common Lane, South of A631	Very Low Sensitivity	Rural setting with no pedestrian/ cycle facilities
ATC15	Common Lane, East of Heapham		

ATC Ref.	Receptor	Sensitivity	Justification
Cow Lane (off B1241)			
ATC16	Cow Lane, East of Upton	Very Low Sensitivity	Rural setting with no pedestrian/ cycle facilities
Kexby Road (within Principal Site)			
ATC12	Kexby Road, East of Northlands Road	Very Low Sensitivity	Rural setting with no pedestrian/ cycle facilities
ATC17	Glentworth Road, East of Kexby		
ATC29	B1241 Kexby Lane, East of Upton Road		
Fillingham Lane			
ATC18	Fillingham Lane, East of South Lane	Very Low Sensitivity	Rural setting with no pedestrian/ cycle facilities
ATC19	High Street, East of B1241		
B1241 (south of Kexby)			
ATC20	Gainsborough Road, North of High Street	Medium Sensitivity	Main vehicular route in built-up area with pedestrian/ cycle facilities
ATC22	B1241, South of Cot Garth Lane		
ATC23	B1241, North of Fleets Road		
ATC25	Saxilby Road, South of Queensway		
Marton Road (Willingham by Stow)			
ATC21	Marton Road, South of High Street	Low Sensitivity	Rural setting with limited pedestrian/ cycle facilities
A1500 (east of Saxilby Road)			
ATC24	A1500 Tillbridge Road, West of Thorpe Lane	Low Sensitivity	Rural setting with limited pedestrian/ cycle facilities
A1500 Stow Park Road			
ATC26	A1500 Stow Park Road, East of Adams Way	Very Low Sensitivity	Rural setting with no pedestrian/ cycle facilities

ATC Ref.	Receptor	Sensitivity	Justification
A156 (north of Marton)		Low Sensitivity	Rural setting with limited pedestrian/ cycle facilities
ATC27	A156 High Street, South of Willingham Road		
A156 (south of Marton)		Low Sensitivity	Rural setting with limited pedestrian/ cycle facilities
ATC28	A156 High Street, South of Wapping Lane		
Cottam Road		Very Low Sensitivity	Rural setting with no pedestrian/ cycle facilities
ATC30	Cottam Road, East of Westbrecks Lane (located in Nottinghamshire)		
Headstead Bank		Low Sensitivity	Rural setting with limited pedestrian/ cycle facilities
ATC31	Headstead Bank, South of Broad Lane (located in Nottinghamshire)		

15.8.18 With respect to severance, pedestrian delay and pedestrian and cyclist amenity, the thresholds of 30%, 60% and 90% increases in traffic flows are applied to result in low, medium and high magnitudes of change respectively. Based on the initial construction traffic impact assessment, there is expected to be less than a 30% increase in traffic flows across the majority of road link receptors within the Study Area, except for the following:

- ATC1 – A631, West of School Lane:
 - +74% increase during AM development peak hour (205 additional trips resulting from construction staff traffic)
 - +81% increase during PM development peak hour (205 additional trips resulting from construction staff traffic)
 - On the basis of the above, as the sensitivity of the receptor is classified as **Low** (as outlined in Table 15-15 above) and the magnitude of change is considered to be **Medium**, this is assessed to result in a **Minor Adverse (not significant) effect**.
- ATC3 – A631, West of Minor Access South:
 - +67% increase during AM development peak hour (166 additional trips resulting from construction staff)
 - +74% increase during PM development peak hour (166 additional trips resulting from construction staff traffic)
 - On the basis of the above, as the sensitivity of the receptor is classified as **Low** (as outlined in Table 15-15 above) and the magnitude of change is considered to be **Medium**, this is assessed to result in a **Minor Adverse (not significant) effect**.
- ATC4 – A631, West of B1398 Middle Street:
 - +117% increase during AM development peak hour (277 additional trips resulting from construction staff traffic)
 - +126% increase during PM development peak hour (277 additional trips resulting from construction staff traffic)
 - On the basis of the above, as the sensitivity of the receptor is classified as **Low** (as outlined in Table 15-15 above) and the magnitude of change is considered to be **High**, this is assessed to result in a **Moderate Adverse (significant) effect**.
 - Although the traffic flows increase by over 100% in both the AM and PM peaks, Table 15-14 shows that this represents 58 fewer two-way trips in the AM and 75 fewer two-way trips in the PM than are recorded during the existing baseline highway network peak hour. The Principal Site is therefore not anticipated to generate traffic flows above the existing baseline highway capacity on this part of the network during the AM and PM development peak hours. In addition, Table 15-13 demonstrates that the daily (24 hour) increase in traffic flows resulting from construction staff is minor at 8%.
 - Considering the embedded mitigation within the Scheme, in particular making use of the spare capacity on the highway outside of the network peak hour, it is deemed reasonable to reduce the magnitude of change from high to medium resulting in a **Minor Adverse (not significant) effect** rather than a **Moderate Adverse (significant)**

effect. This effect is forecast for a short-term temporary period which is associated with the peak period of the construction phase.

- ATC5 – B1398 Middle Street, North of A631:
 - +55% increase during AM development peak hour (85 additional trips resulting from construction staff traffic)
 - +59% increase during PM development peak hour (85 additional trips resulting from construction staff traffic)
 - On the basis of the above, as the sensitivity of the receptor is classified as **Low** (as outlined in Table 15-15 above) and the magnitude of change is considered to be **Low**, this is assessed to result in a **Minor Adverse (not significant) effect**.
- ATC6 – A631, East of B1398 Middle Street:
 - +53% increase during AM development peak hour (132 additional trips resulting from construction staff traffic)
 - +50% increase during PM development peak hour (132 additional trips resulting from construction staff traffic)
 - On the basis of the above, as the sensitivity of the receptor is classified as **Low** (as outlined in Table 15-15 above) and the magnitude of change is considered to be **Low**, this is assessed to result in a **Minor Adverse (not significant) effect**.
- ATC7 – B1398 Middle Street, South of A631:
 - +113% increase during AM development peak hour (152 additional trips resulting from construction staff traffic)
 - +154% increase during PM development peak hour (152 additional trips resulting from construction staff traffic)
 - On the basis of the above, as the sensitivity of the receptor is classified as **Low** (as outlined in Table 15-15 above) and the magnitude of change is considered to be **High**, this is assessed to result in a **Moderate Adverse (significant) effect**.
 - Although the traffic flows increase by over 100% in both the AM and PM peaks, Table 15-14 shows that this represents 35 fewer two-way trips in the AM and 71 fewer two-way trips in the PM development peak hours than are recorded during the existing baseline highway network peak hour. The Principal Site is therefore not anticipated to generate traffic flows above the existing baseline highway capacity on this part of the network during the AM and PM development peak hours. In addition, Table 15-13 demonstrates that the daily (24 hour) increase in traffic flows resulting from construction staff is minor at 10%.
 - Considering the embedded mitigation within the Scheme, in particular making use of the spare capacity on the highway outside of the network peak hour, it is deemed reasonable to reduce the magnitude of change from high to medium resulting in a **Minor Adverse (not significant) effect** rather than a **Moderate Adverse (significant) effect**. This effect is forecast for a short-term temporary period during the peak construction phase.

- ATC8 – A631, West of A15:
 - +58% increase during AM development peak hour (132 additional trips resulting from construction staff traffic)
 - +65% increase during PM development peak hour (132 additional trips resulting from construction staff traffic)
 - On the basis of the above, as the sensitivity of the receptor is classified as **Low** (as outlined in Table 15-15 above) and the magnitude of change is considered to be **Low** in the AM and **Medium** in the PM, this is assessed to result in a **Minor Adverse (not significant) effect**.

15.8.19 On the remaining road link receptors, the Scheme is expected to result in a **Very Low** magnitude of change and a **Negligible (not significant) effect** in terms of severance, pedestrian delay and pedestrian and cyclist amenity during the construction phase.

15.8.20 The impact of severance, pedestrian delay and pedestrian and cyclist amenity on road link receptors has been assessed as **Minor Adverse** (ATC1, ATC3, ATC4, ATC5, ATC6, ATC7 and ATC8) or **Negligible** (all other receptors) and is considered not to be significant. It should also be noted that significance of effect is forecast during the peak period of construction which is short-term and temporary.

15.8.21 The impact of severance, pedestrian delay and pedestrian and cyclist amenity for PRow has been assessed as **Negligible** and not significant. A summary of the results is set out within Table 15-16 below.

Table 15-16: Summary of Significance of Effect

ATC Ref.	Receptor	Sensitivity Value	AM Development Peak Hour (06:00-07:00)		PM Development Peak Hour (19:00-20:00)	
			Magnitude of Impact	Significance of Effect	Magnitude of Impact	Significance of Effect
A631 (Harpwell Lane)						
ATC1	A631, West of School Lane	Low	Moderate Adverse	Minor Adverse	Moderate Adverse	Minor Adverse
ATC2	A631, West of Minor Access South	Low	Negligible	Negligible	Negligible	Negligible
ATC3	A631, West of Minor Access South	Low	Moderate Adverse	Minor Adverse	Moderate Adverse	Minor Adverse
ATC4	A631, West of B1398 Middle Street	Low	Major Adverse	Minor Adverse	Major Adverse	Minor Adverse
ATC6	A631, East of B1398 Middle Street	Low	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse
ATC8	A631, West of A15	Low	Minor Adverse	Minor Adverse	Moderate Adverse	Minor Adverse
ATC10	A631, East of A15	Low	Negligible	Negligible	Negligible	Negligible
B1398 Middle Street (Hemswell Roundabout)						
ATC5	B1398 Middle Street, North of A631	Low	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse
ATC7	B1398 Middle Street, South of A631	Low	Major Adverse	Minor Adverse	Major Adverse	Minor Adverse
A15 (Caenby Corner Roundabout)						
ATC9	A15, North of A631	Low	Negligible	Negligible	Negligible	Negligible
ATC11	A15, South of A631	Low	Negligible	Negligible	Negligible	Negligible
School Lane (leading to Principal Site Access 1)						
ATC14	School Lane, South of A631	Very Low	Negligible	Negligible	Negligible	Negligible

ATC Ref.	Receptor	Sensitivity Value	AM Development Peak Hour (06:00-07:00)		PM Development Peak Hour (19:00-20:00)	
			Magnitude of Impact	Significance of Effect	Magnitude of Impact	Significance of Effect
Common Lane (within Principal Site)						
ATC13	Common Lane, South of A631	Very Low	Negligible	Negligible	Negligible	Negligible
ATC15	Common Lane, East of Heapham	Very Low	Negligible	Negligible	Negligible	Negligible
Cow Lane (off B1241)						
ATC16	Cow Lane, East of Upton	Very Low	Negligible	Negligible	Negligible	Negligible
Kexby Road (within Principal Site)						
ATC12	Kexby Road, East of Northlands Road	Very Low	Negligible	Negligible	Negligible	Negligible
ATC17	Glentworth Road, East of Kexby	Very Low	Negligible	Negligible	Negligible	Negligible
ATC29	B1241 Kexby Lane, East of Upton Road	Very Low	Negligible	Negligible	Negligible	Negligible
Fillingham Lane						
ATC18	Fillingham Lane, East of South Lane	Very Low	Negligible	Negligible	Negligible	Negligible
ATC19	High Street, East of B1241	Very Low	Negligible	Negligible	Negligible	Negligible
B1241 (south of Kexby)						
ATC20	Gainsborough Road, North of High Street	Medium	Negligible	Negligible	Negligible	Negligible
ATC22	B1241, South of Cot Garth Lane	Medium	Negligible	Negligible	Negligible	Negligible
ATC23	B1241, North of Fleets Road	Medium	Negligible	Negligible	Negligible	Negligible
ATC25	Saxilby Road, South of Queensway	Medium	Negligible	Negligible	Negligible	Negligible

ATC Ref.	Receptor	Sensitivity Value	AM Development Peak Hour (06:00-07:00)		PM Development Peak Hour (19:00-20:00)	
			Magnitude of Impact	Significance of Effect	Magnitude of Impact	Significance of Effect
Marton Road (Willingham by Stow)						
ATC21	Marton Road, South of High Street	Low	Negligible	Negligible	Negligible	Negligible
A1500 (east of Saxilby Road)						
ATC24	A1500 Tillbridge Road, West of Thorpe Lane	Low	Negligible	Negligible	Negligible	Negligible
A1500 Stow Park Road						
ATC26	A1500 Stow Park Road, East of Adams Way	Very Low	Negligible	Negligible	Negligible	Negligible
A156 (north of Marton)						
ATC27	A156 High Street, South of Willingham Road	Low	Negligible	Negligible	Negligible	Negligible
A156 (south of Marton)						
ATC28	A156 High Street, South of Wapping Lane	Very Low	Negligible	Negligible	Negligible	Negligible
Cottam Road						
ATC30	Cottam Road, East of Westbrecks Lane (located in Nottinghamshire)	Very Low	Negligible	Negligible	Negligible	Negligible
Headstead Bank						
ATC31	Headstead Bank, South of Broad Lane (located in Nottinghamshire)	Low	Negligible	Negligible	Negligible	Negligible

Fear and Intimidation

- 15.8.22 The road link receptors and receptor sensitivities have been determined using the same criteria as severance, pedestrian delay and pedestrian and cyclist amenity and are outlined in Table 15-15.
- 15.8.23 Although there is one PRow (Gltw/85/1) located within the Principal Site, it should be noted that it is located within an area potentially designated for ecological enhancement. Therefore, it is not expected that any works relating to the construction of the Principal Site will impact the operation of the PRow. **PEI Report Volume I Chapter 14: Socio-economics and Land Use** concludes that construction of the Principal Site will have **no effect** on users of PRow Gltw/85/1 as it will both remain accessible and woodland screening measures are proposed to mitigate against any potential amenity impacts. As a result of this, no PRow receptors have been examined for the assessment of fear and intimidation.
- 15.8.24 Fear and intimidation is dependent on the volume of traffic, its HGV composition, and its proximity to people, or the lack of protection caused by factors such as narrow pavement widths. To ensure consistency with severance, pedestrian delay and pedestrian and cyclist amenity criteria, it is proposed that a 30%, 60% and 90% increase in HGV flows would result in a low, medium and high magnitudes of change respectively. The assessment of 30%, 60% and 90% change in all traffic flows is identified above in relation to severance, pedestrian delay and pedestrian and cyclist amenity.
- 15.8.25 It is expected that up to 120 HGVs will travel to and from the Principal Site per day during the eight-hours HGV delivery window (240 movements). This equates to a peak of 15 HGVs an hour (30 movements), travelling in a single direction on the highway network.
- 15.8.26 Table 15-17 below demonstrates that on all road link receptors during the peak period of the construction period and subsequently throughout the entire construction period, the increase in the average number of HGVs does not exceed 30%. HGV management measures outlined in the Framework CTMP are aimed to minimise the impacts HGVs generated by the Principal Site have on the local highway network.

Table 15-17: 2026 HGV Impact – 18-Hours Link Flows (Two-Way Vehicle Movements)

Location		Total HGVs (18 hours Average Weekday)		
Ref	Link	Base	Development	% Change
ATC1	A631, West of School Lane	814	0	0%
ATC2	A631, West of Minor Access South	705	70	9%
ATC3	A631, West of Minor Access South	711	120	14%
ATC4	A631, West of B1398 Middle Street	741	170	19%
ATC5	B1398 Middle Street, North of A631	356	0	0%
ATC6	A631, East of B1398 Middle Street	722	240	25%
ATC7	B1398 Middle Street, South of A631	221	70	24%
ATC8	A631, West of A15	685	240	26%
ATC9	A15, North of Spital Lane	3,006	120	4%
ATC10	A631, East of A15	674	0	0%
ATC11	A15, South of A631	2,689	120	4%
ATC12	Kexby Road, East of Northlands Road	19	0	0%
ATC13	Common Lane, South of A631	14	0	0%
ATC14	School Lane, South of A631	4	0	0%
ATC15	Common Lane, East of Heapham	20	0	0%
ATC16	Cow Lane, East of Upton	9	0	0%
ATC17	Glentworth Road, East of Kexby	5	0	0%
ATC18	Fillingham Lane, East of South Lane	18	0	0%
ATC19	High Street, East of B1241	238	0	0%
ATC20	Gainsborough Road, North of High Street	199	0	0%
ATC21	Marion Road, South of High Street	26	0	0%
ATC22	A631, Hanover Hill, West of Spital Lane	180	0	0%
ATC23	B1241, North of Fleets Road	197	0	0%
ATC24	A1500 Tillbridge Road, West of Thorpe Lane	381	0	0%
ATC25	Saxilby Road, South of Queensway	257	0	0%
ATC26	A1500 Stow Park Road, East of Adams Way	300	0	0%
ATC27	A156 High Street, South of Willingham Road	710	0	0%
ATC28	A156 High Street, South of Wapping Lane	532	0	0%
ATC29	B1241 Kexby Lane, East of Upton Road	42	0	0%
ATC30	Cottam Road, East of Westbrecks Lane (located in Nottinghamshire)	107	0	0%
ATC31	Headstead Bank, South of Broad Lane (located in Nottinghamshire)	26	0	0%

15.8.27 The Principal Site is therefore expected to result in a **Very Low** magnitude of change and a **Negligible (not significant) effect** in terms of fear and intimidation during the construction phase.

15.8.28 The impact of fear and intimidation on PRoW has been assessed as **Negligible** and not significant.

Accidents and Safety

15.8.29 An assessment of accidents and safety has been carried out as part of the TA for the PIC Study Area shown in **PEI Report Volume III Figure 15-5**.

15.8.30 A total of 10 locations were identified as potential collision clusters, where five or more collisions occurred over the five-year study period, equating to more than one collision per year.

15.8.31 A total of five collisions, four slight and one serious, were recorded in the vicinity of the A1500/ B1241 Sturton by Stow junction during the five-year study period, equivalent to one collision per year. All five collisions occurred at similar locations and as such, this part of the network has been assigned a **Medium** level of sensitivity in terms of accidents and safety.

15.8.32 At the remaining nine junctions or links where five or more collisions occurred, the detailed review within Section 4 of the TA (**PEI Report Volume II Appendix 15-1**) indicates that due to the collisions occurring in different locations and having different contributory factors, no additional cluster locations or patterns, other than the A1500/ B1241 Sturton by Stow Junction, were identified. As such, these parts of the network have been assigned a **Very Low** level of sensitivity.

15.8.33 For the remainder of the network within the Study Area, fewer than five collisions occurred at any junction or link between junctions within the five-year study period, equivalent to less than one collision per year. As such, the remainder of the network has been assigned a **Very Low** level of sensitivity in terms of accidents and safety.

15.8.34 As identified in Table 15-13, there is forecast to be a total of eight construction staff vehicle movements through the A1500/ B1241 Sturton by Stow junction in both the AM and PM development peak hours, equating to a less than 10% increase in traffic flows. Therefore, despite the **Medium** level of sensitivity assigned to this junction, the Scheme is expected to result in a **Very Low** magnitude of change and a **Negligible (not significant) effect** in terms of accidents and safety during the construction phase.

15.8.35 The impact of accidents and safety on road link and junction receptors has been assessed as **Negligible** and is considered not to be significant.

15.8.36 The impact of accidents and safety on PRoW has been assessed as **Negligible** and not significant.

Cable Route Corridor

15.8.37 As confirmed by the project design team, it is anticipated that at the peak of the construction of the Cable Route Corridor 10-25 staff per day will be required. The Cable Route Corridor is forecast to be constructed over a six-month period.

15.8.38 At this stage of the Scheme, we do not have sufficient information on the proposed Cable Route Corridor access points to understand how materials will be transported and distributed via HGVs. In order to cover the worst-case scenario, it has therefore been assumed that all construction staff travel to the Principal Site and will be transported to the Cable Route Corridor via an internal shuttle service to the most appropriate site access along the Cable Route Corridor. Further details of the routing between the Principal Site and the Cable Route Corridor will be included within the ES Transport and Access Chapter. The peak number of construction staff associated with the Cable Route Corridor (25 persons) has therefore been considered as part of the assessment above, which considered the peak number of construction staff (1,250 person).

15.8.39 Further assessment of the impacts associated with the construction of the Cable Route Corridor, including an assessment of the PRowS located within the Cable Route Corridor will be carried out within the ES Transport and Access Chapter.

Operation

15.8.40 During the operational phase, activity on-site will be minimal and would be restricted principally to vegetation management, equipment maintenance and servicing (including battery maintenance), replacement of any components that fail, and monitoring to ensure the continued effective operation of the Scheme.

15.8.41 The Scheme is expected to generate a low level of vehicle trips during the operational phase. As a reasonable worst-case, there will be 10-12 staff on-site daily which as a worst-case scenario would generate up to 12 vehicles (24 movements) per day.

15.8.42 In addition, there is forecast to be an average of five visits per week (one trip per day) from four-wheel drive vehicles, HGVs or transit vans for maintenance. Operational phase effects will also be excluded from the EIA and this has been agreed in the EIA Scoping Opinion (**PEI Report Volume II Appendix 1-2**). Further details of the operational stage transport arrangements will be set out in the ES and TA to support this approach.

15.8.43 Notwithstanding the above, solar panels typically have a lifespan of 30-40 years and may therefore need to be replaced during the operational life of the Scheme. Even in the instance that full panel replacement is required, this would be programmed in stages over a much longer period than the construction phase (when the panels will be rapidly installed). This would be done in order to maximise the number of panels which are kept 'live' at any given time and avoid compromising the electricity generating capacity of the site. It should be noted that trips associated with this activity are included in the movements detailed in Section 15.8.41 and 15.8.42 above. Otherwise, components would be replaced as and when required throughout the operational lifetime of the scheme (circa. 40 to 60 year period). At this stage, five trips per week (one trip per day) are expected to be associated with component replacement (e.g. batteries and panels) and it is not anticipated that any AILs will be required. This is therefore considerably lower than the

level of vehicle trips generated during the peak construction phase. As such, the above approach is considered to be appropriate for assessing the operational effects of the Scheme, including in the instance that any components need to be replaced. Further details are provided within **PEI Report Volume I Chapter 15: Other Environmental Topics** (which includes waste) and will also be set out within the Framework Decommissioning Environmental Management Plan (DEMP).

15.8.44 It should be noted that the TA and ES will consider the operational scenario on the same basis as the above, in line with the EIA scoping discussions held with the local authorities (**PEI Report Volume II Appendix 13-1**).

15.8.45 The above meets the requirements of ID 3.8.3 of the EIA Scoping Opinion (**PEI Report Volume II Appendix 1-2**) which states the following “*The Inspectorate accepts that a full assessment of traffic impacts may not be possible at the current time, however, the ES should provide commentary on the likely transport impacts of the decommissioning process in light of comments in section 3.10 of this Opinion regarding component refurbishment, where possible*”, as well as ID 3.8.10 which states “*there is a potential need for substantial removal of panel waste prior to the end of the stated operational period that should be addressed within the ES and/ or Framework DEMP.*”

15.8.46 In terms of operational access, it is assumed at this stage that all four Principal Site Accesses used during the construction phase will remain open.

15.8.47 A Glint and Glare Assessment has been carried out and is available in **PEI Report Volume II Appendix 16-1**. A summary of the findings is provided within the TA in **PEI Report Volume II Appendix 15-1**.

Decommissioning

15.8.48 For the purposes of the EIA, the decommissioning assessment year is assumed to be no earlier than 2067 (at least 40 years from opening) which will be addressed through a Framework DEMP. As the consent is not time limited, the decommissioning year could be later than this but the conclusions are expected to remain the same. The decommissioning period is expected to be similar in duration and nature to the construction phase, albeit with fewer vehicle trips over a slightly shorter duration. In addition, this scenario is considered to be too far into the future to be able to accurately predict traffic flows or road/ junction layouts at that time. It is therefore considered reasonable to assume that the impacts will be the same as, or not greater than, the construction phase. This may overestimate the actual impacts slightly, but it is considered broadly accurate.

Summary of Effects

15.8.49 Following the above assessment, no significant effects on transport and access during the construction, decommissioning or operational phases have been identified as a result of the Principal Site as all effects have been categorised as either **Minor Adverse** or **Negligible**. Some additional mitigation may be necessary during the construction phase, but this is subject to confirmation at ES stage. More detail of potential mitigation required is provided below.

15.8.50 As part of the ES Transport and Access Chapter, an assessment of the impacts associated with the construction of the Cable Route Corridor will be provided when these details are available.

15.9 Additional Mitigation and Enhancements

Additional Mitigation

15.9.1 The following additional mitigation measures may be required to be implemented for the construction phase, with more detail to confirm this provided in the ES Transport and Access Chapter:

- If required, local carriageway widening and/or vegetation clearance will be proposed to accommodate vehicle swept paths and visibility splays for the site accesses for the Principal Site;
- If required, local carriageway widening and/or vegetation clearance will be proposed as part of the AIL route review to accommodate the movement of the AILs to/from the Scheme. The ES may include an AIL Assessment once details are known, and any additional mitigation required will be included in the ES;
- If required, undertake a Stage 1 Road Safety Audit (RSA) on the preliminary design of access points into the Scheme (to be secured as part of the Framework CTMP). A Designer's Response will then be prepared so that any road safety concerns are addressed as part of the final design. The approach for the Stage 1 RSA will be reviewed at ES stage to determine whether this will form part of the DCO submission or will be conducted post-submission.

Enhancements

15.9.2 No enhancement measures have been identified at this stage. Discussions in relation to the creation of new permissive paths to be provided during the operational phase are currently ongoing and proposals will be finalised at the ES stage.

15.9.3 Liaison with the local councils will take place to see if contributions to any enhancements locally are appropriate.

15.10 Residual Effects

15.10.1 Following the above assessment for the Principal Site, no significant effects and therefore no significant residual effects on transport and access during the construction, decommissioning or operational phases have been identified as a result of the Principal Site.

15.11 Cumulative Effects

15.11.1 An assessment of cumulative effects is provided in **PEI Report Volume I Chapter 17: Cumulative Effects**.

15.12 References

- Ref. 15-1. Department of Energy and Climate Change (DECC) (2011) National Policy Statement for Energy (EN-1)
- Ref. 15-2. Department of Energy Security and Net Zero (2023) Draft Overarching National Policy Statement for Energy (EN-1)
- Ref. 15-3. DECC (2011) National Policy Statement for Renewable Energy Infrastructure (EN-3)
- Ref. 15-4. Department of Energy Security and Net Zero (2023) Draft National Policy Statement for Renewable Energy (EN-3)
- Ref. 15-5. DECC (2011) National Policy Statement for Electricity Networks Infrastructure (EN-5)
- Ref. 15-6. Department of Energy Security and Net Zero (2023) Draft National Policy Statement for Electricity Networks Infrastructure (EN-5)
- Ref. 15-7. Ministry of Housing, Communities and Local Government (MHCLG) (2021) National Planning Policy Framework (NPPF).
- Ref. 15-8. MHCLG (2014, updated regularly) Planning Practice Guidance: Travel plans transport assessments and statements.
- Ref. 15-9. Lincolnshire County Council (LCC) (2022) Lincoln Transport Strategy 2020-2036
- Ref. 15-10. Central Lincolnshire Joint Strategic Planning Committee (CLJSPC) (2023) Central Lincolnshire Local Plan
- Ref. 15-11. LCC (2013) Fourth Lincolnshire Local Transport Plan 2013/14 – 2022/23
- Ref. 15-12. LCC (2021) Fifth Lincolnshire Local Transport Plan (Consultation Draft)
- Ref. 15-13. LCC (2022) Gainsborough Transport Strategy 2022-2036
- Ref. 15-14. Nottinghamshire County Council (NCC) (2011) Nottinghamshire Local Transport Plan 2011-2026
- Ref. 15-15. Bassetlaw District Council (2021) Bassetlaw Local Plan 2020-2037: Publication Version August 2021
- Ref. 15-16. Bassetlaw Local Plan Schedule of Suggested Changes to the Local Plan Publication Version and Policies Maps (2022)
- Ref. 15-17. Corringham Neighbourhood Plan: Submission Version March 2021
- Ref. 15-18. Sturton by Stow and Stow Neighbourhood Plan 2019-2036: Final Approved Version March 2022
- Ref. 15-19. Hemswell and Harpswell Neighbourhood Plan 2022-2036: Final Published Plan 07 February 2022
- Ref. 15-20. Institute of Environmental Management and Assessment (IEMA) (1993) Guidelines for Environmental Assessment of Road Traffic. Lincoln: IEMA.
- Ref. 15-21. Construction Logistics and Community Safety (CLOCS) (2022) CLOCS Standard Version 4; Ensuring the Safest, Leanest and Greenest Construction Vehicle Journeys.
- Ref. 15-22. LCC (n.d.) Rights of Way; Electronic Working Copy Definitive Map
- Ref. 15-23. RowMaps (n.d.) Rights of Way Mapping England and Wales.
- Ref. 15-24. Construction Industry Training Board (CITB) Workforce Mobility and Skills in the UK Construction Sector 2018-2019 UK-wide (April 2019).
- Ref. 15-25. Stagecoach (n.d.) 354 Bus Route and Timetable: Lincoln to Gainsborough.
- Ref. 15-26. ONS (2021) ONS Middle Super Output Area Mid-Year Population Estimates (2020).
- Ref. 15-27. Nottinghamshire County Council (NCC) (2022) Nottsbus On Demand.

- Ref. 15-28. West Burton Solar Project Limited (2022) West Burton Solar Farm Preliminary Environmental Information Report
- Ref. 15-29. Cottam Solar Project Limited (2022) Cottam Solar Farm Preliminary Environmental Information Report
- Ref. 15-30. Gate Burton Energy Park Limited (2022) Gate Burton Energy Park Preliminary Environmental Information Report