One Earth Solar Farm

Preliminary Environmental Information Report [EN010159]

Chapter 13: Transport and Access

May 2024

One Earth Solar Farm Ltd

Contents

13. Transport & Access

Summary of Preliminary Likely Significant Effects

13.1. This Chapter sets out our preliminary assessment which shows there are unlikely to be any likely significant environmental effects of our Project on the surrounding road and transport network during the construction, operation and decommissioning phases.

13.2. A series of measures incorporated into specific management plans have been proposed to help mitigate and offset the impacts of the construction and decommissioning phase traffic flows. It is proposed that these will be secured as part of consent being granted.

13.3. No link capacity issues are expected on any of the roads assessed due to the additional movements associated with our Project. The effects of construction traffic are temporary and transitory in nature.

13.4. As part of preparing our Environmental Statement (ES) additional modelling and ongoing design work will confirm where any significant effects are likely to occur. The results of this will be reported in our ES submitted as part of the DCO application.

Introduction

13.5. This Chapter of the PEIR has been prepared by Pell Frischmann and presents the preliminary likely significant transport and access environmental effects of our Project upon Transport and Access. The experience of the consultants that have prepared this chapter, who are competent experts for the purpose of the EIA Regulations, is set out in **Appendix 1-1** in **Chapters 1-6**. It is informed by the environmental information we have collected to date (which is detailed in this Chapter), as well as the current description of our Project as set out in **Chapter 4: Our Project**.

13.6. This Chapter is supported by more detailed information in**:**

- **Appendix 13-1**: Key Policy and Legislation
- **Appendix 13-2**: Transport Assessment
- **Appendix 13-3**: Outline Construction Traffic Management Plan

Current Conditions

Study Area

13.7. The Study Area has been based on those roads that are expected to experience increased traffic flows associated with the construction of the our Project. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans, initial discussion with highway officers and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

13.8. Bulk materials for use in our Site will be sourced from existing supply locations located to the south. It is proposed that access will be taken from either side of the River Trent for these materials, with western river bank quarries feeding the western development areas and those on the eastern bank feeding the eastern development areas.

13.9. Electrical component, plant and general deliveries are likely to originate along the A1(M) corridor and from Lincoln.

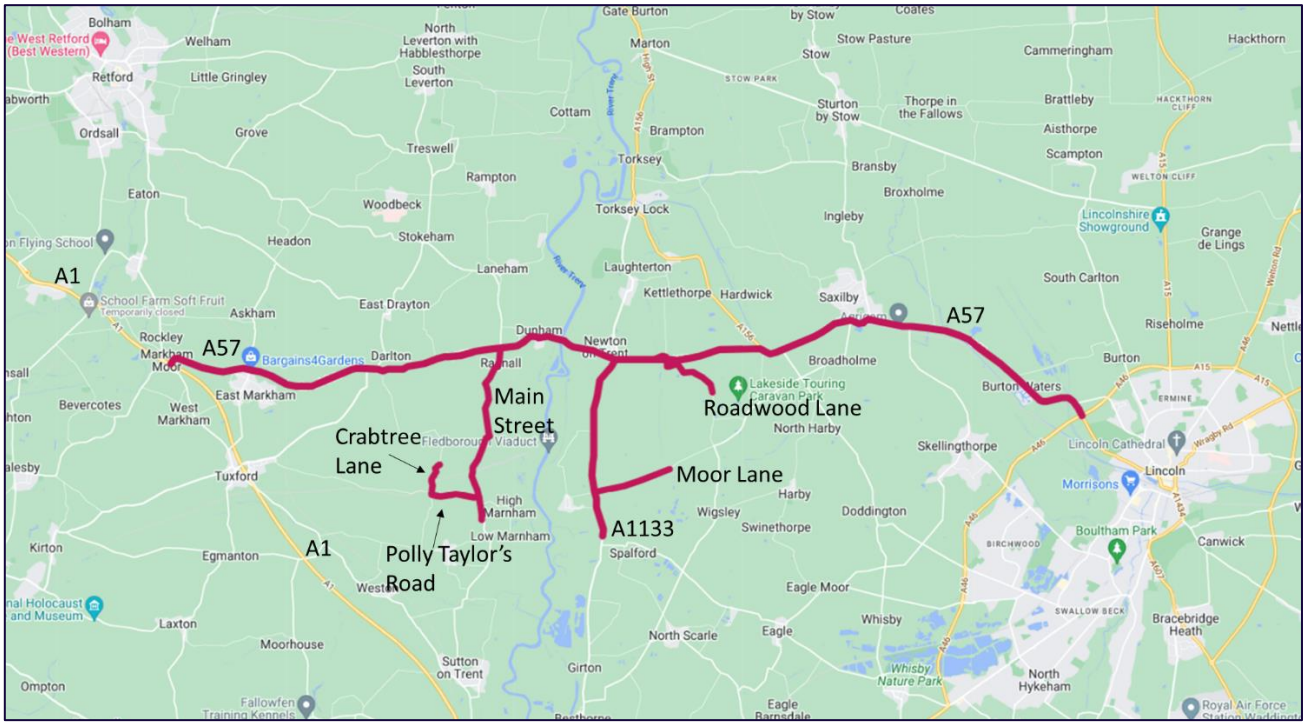
13.10. Staff engaged during the construction process will be based within the major urban areas located close to our Project during the construction and decommissioning phases.

13.11. The proposed Study Area therefore includes the road links most likely to be impacted by the proposed movements associated with our Project and includes:

- A57;
- A1133;
- Moor Lane;
- Roadwood Lane;
- Main Street;
- Polly Taylor's Road; and
- Crabtree Lane.

A plan illustrating the proposed Study Area is provided in **Figure 1**.

Figure 13-1 Scheme Study Area



13.12. The scheme is straddles is in the administrative boundaries of Nottinghamshire and Lincolnshire County Councils, the two local road highway authorities within the wider Study Area, with the large majority of our Project falling within Nottinghamshire.

13.13. For ease of reference, our Site can be subdivided into four sections; namely:

- The Western Development area (located to the west of the River Trent and accessed from the A57);
- The Southwestern Development area (located to the west of the River Trent and accessed from Polly Taylor's Road and Crabtree Lane);
- The Eastern Development area (located to the east of the River Trent and accessed directly from the A1133); and
- The Southeastern Development area (located to the east of the River Trent and located to the south of the disused Fledborough – Lincoln railway line).

13.14. Access around our Site would be taken from strategic points on the public road network, with access achieved via new access tracks and upgraded farm access tracks.

13.15. As detailed in **Chapter 4: Our Project**, to construct our Project, a variety of vehicles will be required. These will include, but not limited to:

- Cars, Light Goods Vehicles (LGV) and Vans;
- articulated Heavy Goods Vehicles (HGV) delivering plant, materials and electrical components;
- rigid HGV delivering bulk materials such as aggregate, ready mix concrete, etc for use on our Site;
- specialist machinery, usually delivered using a low loader style articulated HGV, including loads that may include loads such as directional drilling equipment and excavation plant (for the cable grossing under the River Trent); and
- Abnormal Indivisible Loads (AILs) carrying special oversized loads such as electrical grid transformers.

13.16. All scheme vehicle movements described in this report, unless specifically stated otherwise, are classed as trips and include an inbound and outbound flow from our Site. One-way flows are noted as movements.

Existing Transport Infrastructure

13.17. A full description of the Study Area is provided in **Appendix 13-2: Transport Assessment**.

Pedestrian & Cyclist Access

13.18. There are limited pedestrian facilities in the immediate vicinity of our Project, reflecting the rural nature of the location.

13.19. With the exception of a footway between the junction of the A57 / Main Street / Laneham Road, (to the west of Dunham) and the Dunham Toll Bridge and the west of Dunham on Trent, there are no pedestrian footways along the A57. No footways are provided on the A1133, Moor Lane, Polly Taylor's Road or Crabtree Lane.

13.20. There are Public Rights of Way (PRoW) leading through our Project that may be potentially affected. A full list is provided in **Chapter 12: Landscape and Visual**. The affected PRoW are:

- Lincolnshire CC PRoW 7023;
- Lincolnshire CC PRoW 4046;
- Lincolnshire CC PRoW 4048;
- Lincolnshire CC PRoW 4045;
- Nottinghamshire CC PRoW North Clifton FP3;
- Nottinghamshire CC PRoW North Clifton FP1;
- Nottinghamshire CC PRoW North Clifton FP2;
- Nottinghamshire CC PRoW North Clifton Byway Open to All Traffic (BOAT) BOAT12;
- Nottinghamshire CC PRoW North Clifton BW10;
- Nottinghamshire CC PRoW Thorney FP6;
- Nottinghamshire CC PRoW Ragnall FP4; and
- Nottinghamshire CC PRoW Ragnall BW3.

13.21. Located within our Site and approximately 500m south of its centre, is the Sustrans Cycle National Cycle Route (NCR) 647. This part of the NCR uses a disused railway line associated with the former Lancashire, Derbyshire and East Coast Railway, which ran east-west connecting Lincoln to the east with Tuxford to the west. Crossing over the River Trent, the Sustrans Route utilises the Fledborough Viaduct. The route is grade separated from our Project.

13.22. The NCR departs the former railway line alignment at Main Street, where the route bifurcates. To the north, a segregated spur passes through agricultural land and connects to Crabtree Lane. To the south, the route uses Main Street and Polly Taylor's Road to proceed westbound. The two routes join together and then proceed west towards Tuxford using a minor public road.

River Access

13.23. The River Trent is the United Kingdom's third longest river and flows from its source in Staffordshire to Trent Falls in Lincolnshire where it meets the River Humber. The river has historically been used for the movement of freight from the East Coast ports of Grimsby, Hull and Goole into the Midlands, however freight usage along the length of the river is reduced.

13.24. The navigation of the river is controlled by two agencies. The southern portion of the river is controlled by the Canal & River Trust (CRT) from Gainsborough to the south. The facilities in the northern section fall under Associated British Ports (ABP) who operate the principal quay facilities between Gainsborough and the Humber Estuary. These include Kings Ferry Wharf at Burton Stather, Flixborough Wharf and Gunness.

13.25. The river is tidal between the Humber Estuary and Cromwell Lock (approximately 5km north of Newark).

13.26. The Humber River is circa 66 kilometres (km) from the northernmost land parcel of our Project.

13.27. A review of the potential for access to our Project site using the river has been undertaken and is reported in **Appendix 13-1: Transport Assessment**. Our Project site does not feature any suitable river quay facilities to offload materials and it is considered that the movement of bulk materials is not feasible. The river will however be used for the movement of Abnormal Indivisible Loads (AIL) associated with our Project, wherever possible.

Road Access

13.29. The Study Area includes local roads that are likely to experience increased traffic flows resulting from our Project. The geographic scope was determined through a review of Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

13.30. As shown in **Figure 13-1**, access to our Site will be split across 11 gates labelled Gate A – Gate K. Gate A – Gate E will be located to the west of River Trent and Gate F – Gate K to the east. The access junctions will be constructed to suit our Project and the junction works will be agreed with NCC and LCC prior to works commencing via a road opening permit.

Figure 13-2 Scheme Access Points/ Gates

13.31. Access to the nearest trunk road is available at the A57 to the north of our Project. The A57 provides strategic road connections from Lincoln to Sheffield and is operated by NCC and LCC. The A57 also links onto the A1 at Markham Moor which is a direct link into Central London to the south and Edinburgh to the north.

13.32. The A57 features a private toll bridge at Dunham. The bridge is free at all times for pedestrians, cyclists, motorcyclists and three-wheeled invalid carriages. Tolls for motorised vehicles are regulated by the Department for Transport (DfT) and are set at £0.50 for cars and minibuses, £1.00 for LGV and coaches and £2.00 for HGV and farm traffic.

13.33. The A1133 provides connections from the A156 to Newark-on-Trent. The road is local distributor road and is operated by LCC and NCC. The road is approximately 7.5 – 8m in width and capable for regular HGV use. The road is mainly subject to a 60miles per hour (mph) speed limit, although the road is restricted to 30mph in Collingham to the south.

13.34. Main Street is a 40mph single carriageway road when surrounded primarily by residential properties, and otherwise operates a 60mph speed limit throughout more rural sections. Main Street provides a direct connection between the A57 to the north and Sutton on Trent to the south.

13.35. Polly Taylor's Road is a quiet 60mph single carriageway road, approximately 6m in width, off Main Street which connects directly onto Crabtree Lane. Crabtree Lane is a quiet and narrow 60mph road with passing places to allow for two way traffic.

13.36. Moor Lane, within the vicinity of our Site, is a quiet 60mph single carriageway road, approximately 6m in width and is accessible off the A1133.

13.37. Across the Study Area, a total of 32 accidents were recorded across the five-year period (2018-2022). Of these the majority were classed as being "slight" (69%) and resulted in damage only incidents. 10 accidents were noted as being "serious" resulting in an injury and one accident resulted in a fatality.

13.38. Of the recorded accidents, the following vehicles were involved:

- young drivers accounted for six "slight" accidents, one "serious" and one fatal accident;
- motorcyclists were involved in one "serious" and "one" serious accident;
- cyclists were involved in one "slight" accident;
- HGV traffic was involved in six "slight" and four "serious" accidents, all on the A57;
- six accidents were individual accidents with no other vehicles involved;
- eight accidents occurred during winter months;
- no child or pedestrian casualties were recorded; and
- no accidents involving a bus passengers or cyclist were recorded.

13.39. Accidents on the A57 tend to occur at junctions or on the approach to the Dunhan toll bridge booths. These suggest improved road signage and other features should be deployed by the relevant authorities.

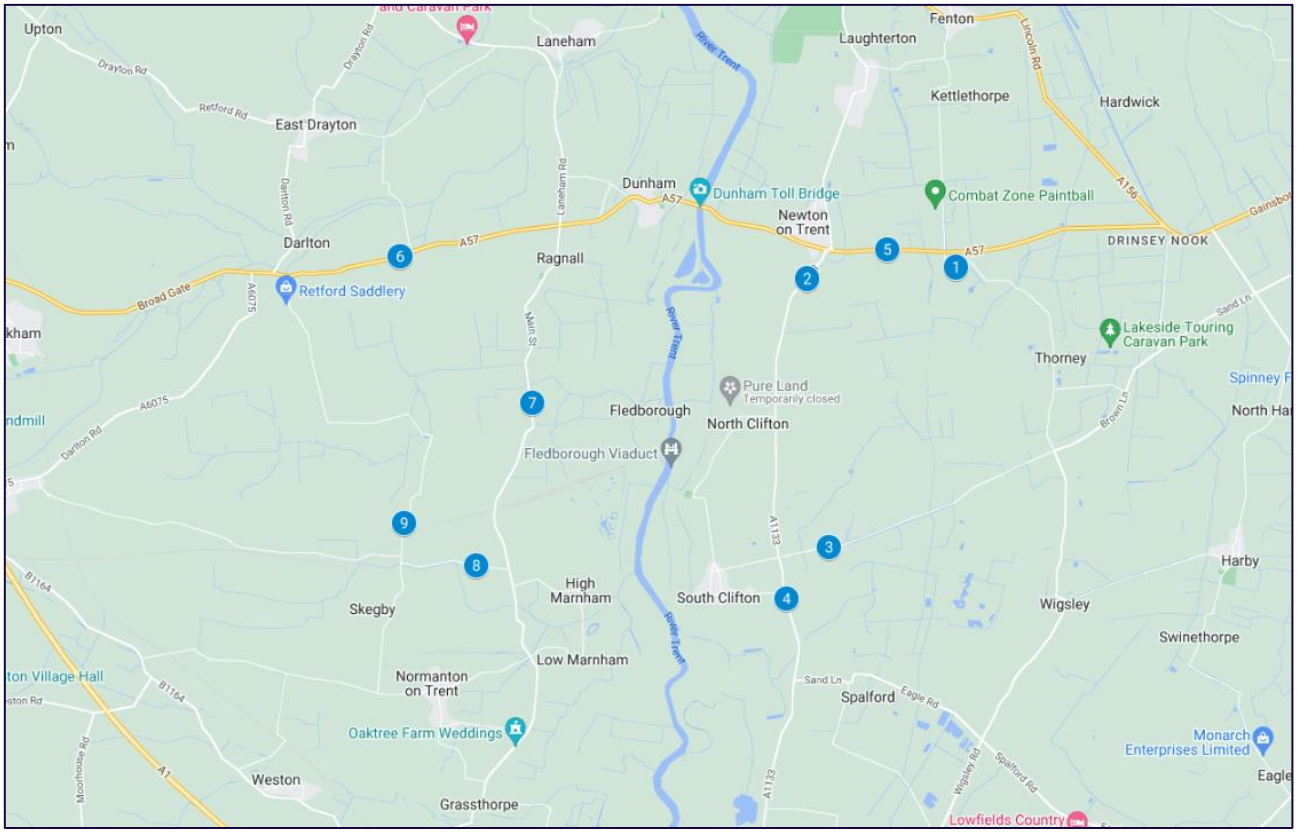
13.40. The more rural roads, Polly Taylor's Road, Crabtree Lane and Roadwood Lane have not had any reported Personal Injury Accident within the most recent five-year period.

Collection of Traffic Data

13.41. In order to assess the impact of construction traffic on the Study Area, Automatic Traffic Counts (ATCs) were undertaken throughout the Study Area between 12 March 2024 and 27 March 2024.

13.42. The locations of the ATC sites are illustrated in **Figure 13-3**.

Figure 13-3: ATC Survey Locations



Current Results

13.43. The existing traffic survey data for 2024 has been summarised in **Table 13-1**.

Table 13-1: 2024 Surveyed Vehicle Flow

Link	Car & LGV	HGV	Total Traffic
A57 west of Dunham	7237	2041	9278
A57 Dunham	7237	2041	9278
A57 east of Newton on Trent	7311	1622	8933
A1133 north of North Clifton	2896	985	3881
A1133 south of South Clifton	2320	1789	4109

Moor Lane	312	185	497
Roadwood Lane	165	77	242
Main Street south of Ragnall	888	259	1147
Polly Taylor's Road	287	89	376
Crabtree Lane	51	19	70

Further Data Collection

13.44. Once the AIL associated with our Project have been confirmed, a detailed review of their access options will be undertaken. This will include a review of all constraints on the proposed access route(s) leading from the port to our Project.

13.45. A review of committed development will be undertaken prior to the final submission of the EIA application and finalised TA. This will ensure that all committed development is included in the application assessment.

Future Transport Conditions

13.46. Construction of our Project is assumed- to commence in 2027 and completed in 2029.

13.47. To assess the likely effects during the construction, base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factor to the surveyed traffic flows.

13.48. The NRTF low growth factor for 2024 to 2027 is 1.019. These factors were applied to the 2024 survey data to estimate the baseline traffic conditions within the peak period of construction traffic deliveries, calculated to be April 2027.

13.49. This growth factor has been applied to the survey data to estimate the 2027 Base traffic flows, as shown in **Table 13-2**. This will be used in the traffic impact assessment.

Table 13-2: 2027 Future Baseline Daily Traffic Conditions

Link	Car & LGV	HGV	Total Traffic
A57 west of Dunham	7375	2080	9454
A57 Dunham	7375	2080	9454
A57 east of Newton on Trent	7450	1653	9103
A1133 north of North Clifton	2951	1004	3955

A1133 south of South Clifton	2364	1823	4187
Moor Lane	318	189	506
Roadwood Lane	168	78	247
Main Street south of Ragnall	905	264	1169
Polly Taylor's Road	292	91	383
Crabtree Lane	52	19	71

Environmental Measures

13.50. Our Project incorporates the adoption of an uutline Construction Traffic Management Plan (CTMP), outline Staff Travel Plan and outline Decommissioning Traffic Management Plan (DTMP) to minimise traffic movements during the construction and decommissioning works (see **Chapter 4: Our Project** for details relating to these management plans).

13.51. An outline CTMP is provided in **Appendix 13-3** and includes a variety of measures to address traffic management and includes outline path management proposals to assist PRoW and path users during the construction period. These measures will be further refined as our Project progresses, and will be reported within the ES.

Stakeholder Consultation

Table 13-1: Overview of Stakeholder Consultation

Stakeholder	Date of Consultation	Relevant Considerations for the PEIR
Lincolnshire & Nottinghamshire County Council officers	19th January 2024	A discussion on the methodology and traffic survey locations was held. The officers agreed to the general methodology and approach.

Potential Likely Significant Effects Scoped Out

13.52. **Table 13-3** presents the elements which we have scoped out as it is considered no likely significant effects will occur. This has been agreed by PINS as set out in the EIA Scoping Opinion.

Table 13-3: Matters Scoped Out of Assessment

Effects Scoped Out	Justification
Operational traffic effects	During the operational phase, up to 10 LGV trips per day are predicted to cater for cleaning of panels and general site maintenance. The traffic impact of the operational phase is considered to be minimal and below the trigger for an assessment.

Preliminary Environmental Assessment

Approach

13.53. The Institute of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Impact Assessment' (2005) notes that the separate IEMA Guidelines should be used for characterising the environmental traffic and transport effects (offsite effects) and the assessment of significance of major new developments. Recent guidance published by the IEMA, namely 'Environmental Assessment of Traffic and Movement' (2023) provides an update to the previously used guidance, 'Guidelines for the Environmental Assessment of Road Traffic' (1993) document, that should be used to characterise the environmental traffic and transport effects (offsite effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of competent experts.

13.54. In terms of traffic and transport impacts, the receptors are the users of the roads within the Study Area and the locations through which those roads pass.

13.55. The IEMA Guidelines includes guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations.

13.56. Methodology used for the PEIR and makes reference to published guidance where appropriate.

Receptors and Receptor Sensitivity

13.57. Receptor sensitivity is taken from the IEMA guidelines and is summarised in **Table 13-4**.

Table 13-4 Sensitivity Descriptions

Sensitivity	Description
High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures.

Sensitivity	Description
	Where a location is a large rural settlement containing a high number of community and public services and facilities.
Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or traffic management measures. Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures. Where a location is a small rural settlement, few community or public facilities or services.
Negligible	Where roads have no adjacent settlements. Includes new or existing strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads, and new strategic trunk road junctions capable of accommodating Abnormal Loads. Where a location includes individual dwellings or scattered settlements with no facilities.

13.58. Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or the location characteristics.

Magnitude

13.59. The magnitude of change has been assessed in accordance with the following rules which are outlined in the 2023 IEMA Guidelines, and are used to inform a screening exercise to determine which links within the Study Area are to be considered for detailed analysis in the assessment:

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles (HGVs) is predicted to increase by more than 30%).
- Rule 2: Include any other specifically sensitive areas where total traffic flows are predicted to increase by 10% or more.

13.60. The IEMA Guidelines identify the key impacts when assessing the magnitude of traffic effects from an individual development:

- Severance – the IEMA Guidance advises that, *"The Department for Transport has historically set out a range of indicators for determining the significance of severance. Changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law. However, caution needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic."* (Para 3.16). The Guidelines acknowledge that changes in traffic flows should be used cautiously, stating that *"the assessment of severance should pay full regard to specific local conditions, e.g. sensitivity of adjacent land uses, prevalence of vulnerable people, whether or not crossing facilities are provided, traffic signal settings, etc."* (Para 3.17).
- Driver delay – the IEMA Guidelines note that these delays are only likely to be *"significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system"* (Para 3.20).
- Pedestrian delay (incorporating delay to all non-motorised users) – the IEMA Guidance advises that *"pedestrian delay and severance are closely related effects and can be grouped together. Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility and general physical conditions of the development site."* (Para 3.24). Furthermore, the guidance advises *that "…it is not considered wise to set down definitive thresholds. Instead, it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect."* (Para 3.26).
- Non-motorised user amenity - the IEMA Guidance advises that, *"The 1993 Guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law."* (Para 3.30).
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30%, 60% and 90% are regarded as producing minor, moderate and substantial changes respectively in the guidelines. (Para 2.19). As such, this has been used to assess the potential impacts associated with construction activities around fear and intimidation on people near the Proposed Development.

- Road safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents. In line with the IEMA Guidance, those areas of collision clusters would be subject to detailed review.
- Road safety audits – It would be proposed to undertake any necessary Road Safety Audits (RSA) post consent and it is considered that this can be secured via a planning condition.
- Large loads – The movement of the AILs associated with the construction of the Proposed Development will be considered in full, within a separate route survey assessment, which identifies physical mitigation measures required to accommodate the predicted loads within the final planning submission. Additional mitigation in terms of addressing potential impacts on sensitive receptors are included as standard within the mitigation section.

13.61. While not specifically identified as more vulnerable road users, cyclists are considered in similar terms to pedestrians.

13.62. The four levels against which the magnitude of these impacts should be assessed – major, moderate, minor and negligible are discussed in **Table 13-5**.

Table 13-5 Magnitude of Effect

Magnitude	Description
Major	These effects are considered to be material in the decision-making process.
Moderate	These effects may be important but are not likely to be material factors in decision making. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a receptor.
Minor	These effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in improving the subsequent design of our Project.
Negligible	No effects or those that are imperceptible.

Significance

13.63. To determine the overall significance of effects, the results from the receptor sensitivity and magnitude of change assessments are correlated and classified using the scale illustrated in **Table 13-6**.

Table 13-6 Significance of Effect

Receptor Sensitivity	Magnitude of Impact			
	Major	**Moderate**	**Minor**	**Negligible**
High	Major	Major / Moderate	Moderate / Minor	Minor
Medium	Major / Moderate	Moderate	Minor	Minor / Negligible
Low	Moderate / Minor	Minor	Minor	Minor / Negligible
Negligible	Minor	Minor / Negligible	Minor / Negligible	Negligible

13.64. Significance is categorised as major, moderate, minor or negligible. Likely effects judged to be of Major or Moderate significance will be considered to be significant in accordance with the EIA Regulations whilst also considering the environmental measures that have been incorporated into our Project.

13.65. Where an effect could be one of major / moderate or moderate / minor significance, professional judgement will be used to determine which option should be applicable, as these effects can be classed as significant. Effects judged to be of minor or negligible significance will be considered not significant.

Sensitive Receptors

13.66. A review of sensitive receptors has been undertaken within the Study Area. **Table 13-7** details the receptors and their sensitivities for use within the following assessment. A justification for the sensitivity has been provided, based upon the details contained in **Table 13-4**.

Table 13-7 Receptor Sensitivity Summary

Receptor	Sensitivity	Reason
Users of the A57	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.
Users of the A1133	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.
Users of Moor Lane	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.

Receptor	Sensitivity	Reason
Users of Main Street	Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition.
Users of Roadwood Lane	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
Users of Polly Taylor's Road	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
Users of Crabtree Lane	High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.
Residents along the A57	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Dunham Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Residents along the A1133	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along Main Street	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Residents along Moor Lane	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities.
Users of NCR 647	High – on Polly Taylor's Road and Crabtree Lane only	Minor paths used by walkers, cyclists and horse riders, not constructed to accommodate HGV traffic flows.
PRoW Users	High	Minor paths used by walkers, cyclists and horse riders, not constructed to accommodate HGV traffic flows.

13.67. Based on the IEMA guidelines, the village of Dunham is classed as a sensitive receptor and would be subject to 'Rule 2' of the IEMA Guidelines which requires a full assessment of effects if the traffic count locations are anticipated to be subject to an increase in 10% of total traffic.

13.68. All other locations within the Study Area are subject to 'Rule 1' and are assessed if traffic flows (or HGV flows) on highway links are anticipated to increase by more than 30% as a result of the construction of our Project.

Preliminary Assessment: Construction Phase

13.69. The Transport Assessment contained in **Appendix 13-2** details the traffic generation associated with the peak of construction associated with our Project. The resulting traffic flows at this peak are summarised in **Table 13-8**.

Table 13-8 Construction Peak Period Daily Traffic Flow

Link	Car & LGV	HGV	Total Traffic
A57 west of Dunham	100	314	414
A57 Dunham	40	14	54
A57 east of Newton on Trent	17	22	39
A1133 north of North Clifton	57	37	94
A1133 south of South Clifton	4	212	216
Moor Lane	3	9	12
Roadwood Lane	3	9	12
Main Street south of Ragnall	18	26	44
Polly Taylor's Road	6	9	15
Crabtree Lane	6	9	15

13.70. The application of this data to the future baseline year of 2027 illustrates the likely impact of traffic on the Study Area network. The impact is summarised in **Table 13-9**.

Table 13-9 Percentage Impact Summary

Link	Car & LGV	HGV	Total Traffic
A57 west of Dunham	1.4%	15.1%	4.4%
A57 Dunham	0.5%	0.7%	0.6%
A57 east of Newton on Trent	0.2%	1.3%	0.4%
A1133 north of North Clifton	1.9%	3.7%	2.4%
A1133 south of South Clifton	0.2%	11.6%	5.1%

Link	Car & LGV	HGV	Total Traffic
Moor Lane	0.9%	5.0%	2.4%
Roadwood Lane	1.8%	12.0%	5.0%
Main Street south of Ragnall	2.0%	9.7%	3.7%
Polly Taylor's Road	2.1%	9.4%	3.8%
Crabtree Lane	11.5%	43.9%	20.3%

13.71. The highest expected total traffic movement increase occurs on Crabtree Lane, with an overall increase in traffic of 20.3%. This is expected, due to the relatively low baseline traffic flow on the road at present.

13.72. None of the other links within the Study Area experience traffic impacts in excess of 5.1%. This is well below the accepted industry standard estimate of daily traffic flow variation of 10%.

13.73. HGV traffic increases on the A57 and A1133 vary between an increase of 3% and 15%. An increase of HGV traffic on Crabtree Lane of 43.9% is predicted. All other local roads experience HGV increases of less than 12%.

13.74. It should be noted the construction phase is transitory in nature and the peak of construction activities is short lived, occurring over a relatively short timeframe when taking account of the whole construction programme.

13.75. A review of existing theoretical road capacity has been undertaken using “The NESA Manual” formerly part of the Design Manual for Roads and Bridges. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the Study Area. The results are summarised in **Table 13-10.**

Table 13-10 Theoretical Road Capacity Review

Link	2027 Total Traffic – Baseline (vehs)	2027 Total Base + Development Traffic (vehs)	Theoretical 12 hour Capacity (vehs)	Spare road Capacity
A57 west of Dunham	9454	9868	28800	65.73%
A57 Dunham	9454	9508	19200	50.48%
A57 east of Newton on Trent	9103	9142	28800	68.26%
A1133 north of North Clifton	3955	4049	21600	81.26%

Link	2027 Total Traffic – Baseline (vehs)	2027 Total Base + Development Traffic (vehs)	Theoretical 12 hour Capacity (vehs)	Spare road Capacity
A1133 south of South Clifton	4187	4403	21600	79.62%
Moor Lane	506	519	19200	97.30%
Roadwood Lane	247	259	19200	98.65%
Main Street south of Ragnall	1169	1212	19200	93.69%
Polly Taylor's Road	383	398	19200	97.93%
Crabtree Lane	71	86	3360	97.45%

13.76. The results indicate there are no road capacity issues with the addition of construction traffic associated with our Project and ample spare capacity exists within the trunk and local road network to accommodate all construction phase traffic.

13.77. In line with the IEMA guidelines, only two potential receptors are considered to trigger the requirement for a detailed assessment. These are:

- Users of Crabtree Lane / Users of NCR 647 on Crabtree Lane; and
- PRoW Users.

13.78. PRoW users are automatically assumed to be impacted given that construction traffic may affect current routes.

13.79. It should be noted that the likely effects relate solely to the peak month of construction activities and that the construction period is temporary and the effects transitory in nature.

13.80. The significance of the potential effects on the above receptors has been determined using the rules and thresholds previously outlined in the Assessing Significance section. **Table 13-11** summarises the significance on the receptors for the construction phase prior to additional environmental measures being applied.

Table 13-11 Construction Phase Effects Summary (With the Additional Environmental Measures)

Receptors	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
Users of Crabtree Lane / Users of NCR 647 on Crabtree Lane (High Sensitivity)	Severance	Negligible	Negligible (Not Significant)	The road is minor and the proposed traffic volume would not sever links.
	Driver Delay	Minor	Minor (Not Significant)	There is spare capacity along the existing link road, therefore the effect on driver delay is considered minor.
	Pedestrian Delay	Minor	Minor (Not Significant)	There are no pedestrian facilities located along the road within the Study Area, therefore the effect on pedestrian delay is considered minor.
	Non-motorised User (NMU) Amenity	Minor	Moderate (Significant)	The total increase in traffic flow is minor, however an increase in HGV traffic is predicted which can be intimidating for NMU.
	Fear & Intimidation	Moderate	Moderate (Significant)	The total increase in traffic flow is minor, however an increase in HGV traffic is predicted.

Receptors	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
	Road Safety	Minor	Moderate (Significant)	There is potential to impact the safety of the users of the NCR interacting with construction delivery vehicles. The effect is therefore considered moderate.
	Large Loads	Negligible	Negligible	No AIL are using this section of the network.
PRoW Users (High Sensitivity)	Severance	Major	Major (Significant)	The presence of construction traffic within our Site where there was previously no traffic will lead to severance of some of the PRoW network.
	Driver Delay	Negligible	Negligible (Not Significant)	Negligible
	Pedestrian Delay	Moderate	Major / Moderate (Significant)	Pedestrians could experience delays if their movements interact with construction traffic along the PRoW network which would not be experienced prior to the construction period.

Receptors	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
	Non-motorised User Amenity	Moderate	Major / Moderate (Significant)	NMU could experience delays if their movements interact with construction traffic along the PRoW network which would not be experienced prior to the construction period.
	Fear & Intimidation	Major	Major (Significant)	The presence of traffic flows along a location, where there would have been no traffic prior to the construction phase could cause fear and intimidation of the PRoW network for users.
	Road Safety	Moderate	Major / Moderate (Significant)	There is potential to impact the safety of the PRoW users interacting with construction delivery vehicles.
	Large Loads	Major	Major / Moderate (Significant)	There is some potential to impact the safety of the PRoW users interacting with AIL delivery vehicles near the proposed substations locations only.

13.81. The assessment illustrated in **Table 13-11** assumes that an outline CTMP has not been applied as embedded mitigation.

13.82. An outline CTMP has been applied and the results in **Table 13-12** illustrate that no significant effects are predicted with the proposed measures.

Preliminary Assessment: Decommissioning Phase

13.83. Decommissioning will include the removal of all above ground infrastructure with the exception of the two project substations. Permissive paths would also be removed. Underground cables may remain in situ. Trees and hedgerows planted as part of our Project are assumed to remain in situ when the land is returned to the landowners The traffic generation associated with the decommissioning phase is therefore expected o be less than that associated with the construction phase.

13.84. It is therefore expected that the decommissioning phase would result in fewer trips on the road network than the construction phase.

13.85. The growth of background traffic created through wider development in the area, will increase the baseline traffic flows. With a larger baseline and smaller development traffic generation, the potential traffic impact is therefore considered to be significantly below that reported for the construction phase. As such no further assessment has been undertaken at this preliminary stage.

Potential Mitigation Measures – Construction and Decommissioning Phases

13.86. To address the potential impact on these users, potential mitigation is proposed. These measures are detailed in the CTMP, appended to the Transport Assessment contained in **Appendix 13-1**.

13.87. The CTMP includes a variety of measures to address traffic management and includes outline path management proposals to assist PRoW and path users during the construction period. These measures will be further refined as the mitigation schedule for our Project progresses.

13.88. For decommissioning, a similar document known as a Decommissioning Traffic Management Plan (DTMP) will be developed. This document will be similar to the CTMP, but will cater for the future road network conditions.

13.89. The CTMP and DTMP would be secured via the consent order our Project.

Potential Residual Effects

13.90. The identification of residual construction effects considers the assessment of traffic impacts following the incorporation of the proposed mitigation measures. An evaluation of the potential effects of the temporary increase in traffic on the Study Area roads used for the construction traffic has been undertaken. The **Table 13-12** summarises the mitigation and any residual effects.

Next Steps

13.91. An updates assessment including full details of cumulative development schemes will be undertaken as part of the DCO application. This will also include a sensitivity review of nearby significant planning and DCO applications traffic effects.

Conclusions

13.92. **Table 13-12** presents a summary of the preliminary likely significant effects, with the ongoing information that will be collected also outlined. It also details the next steps that will be undertaken to inform our Environmental Impact Assessment.

Table 13-12 Summary of Preliminary Effects

Element	Preliminary Likely Significant Effect	Further Information	Next Steps
Users of Crabtree Lane			
Non-motorised User (NMU) Amenity	Not significant	With the development of a CTMP, all issues can be addressed and no significant effects are predicted.	Confirm the details of the outline CTMP
Fear & Intimidation	Not significant	With the development of a CTMP, all issues can be addressed and no significant effects are predicted.	Confirm the details of the outline CTMP
Road Safety	Not significant	With the development of a CTMP, all issues can be addressed and no significant effects are predicted.	Confirm the details of the outline CTMP
PRoW Users			
Severance	Not significant	With the development of a suitable Path management Plan within the CTMP, all issues can be addressed and no significant effects are predicted.	Confirm the details of Path Management Plan in the outline CTMP
Pedestrian Delay	Not significant	With the development of a suitable Path management Plan within the CTMP, all issues can be addressed and no significant effects are predicted.	Confirm the details of Path Management Plan in the outline CTMP

Element	Preliminary Likely Significant Effect	Further Information	Next Steps
Non-motorised User Amenity	Not significant	With the development of a suitable Path management Plan within the CTMP, all issues can be addressed and no significant effects are predicted.	Confirm the details of Path Management Plan in the outline CTMP
Fear & Intimidation	Not significant	With the development of a suitable Path management Plan within the CTMP, all issues can be addressed and no significant effects are predicted.	Confirm the details of Path Management Plan in the outline CTMP
Road Safety	Not significant	With the development of a suitable Path management Plan within the CTMP, all issues can be addressed and no significant effects are predicted.	Confirm the details of Path Management Plan in the outline CTMP

Appendices

Appendix 13-1: Key Policy and Legislation

Appendix 13-2: Transport Assessment

Appendix 13-3: Outline Construction Traffic Management Plan

Appendix 13-1: Key Policy and Legislation

Review of Policy, Legislation and Relevant Guidance

Legislation, planning policy and guidance relating to transport and access, and pertinent to the Proposed Development comprises:

National Planning Policy

Overarching National Policy Statement for Energy (EN-1) (2024)

This provides overarching government policy on energy NSIPs and the way in which any impacts and mitigation measures will be considered. Specific extracts relating to this Proposed Development are as follows:

Paragraph 5.14.6 states that *"National Highways and Highways Authorities are statutory consultees on NSIP applications including energy infrastructure where it is expected to affect the strategic road network and / or have an impact on the local road network. Applicants should consult with National Highways and Highways Authorities as appropriate on the assessment and mitigation to inform the application to be submitted."*

Paragraph 5.14.7 states that *"The applicant should prepare a travel plan including demand management and monitoring measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by active, public and shared transport to:*

- *reduce the need for parking associated with the proposal;*
- *contribute to decarbonisation of the transport network; and*
- *improve user travel options by offering genuine modal choice."*

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

This provides specific policy on how renewable energy NSIPs should be assessed and determined, and the way in which any impacts and mitigation measures will be considered. Specific extracts relating to this Proposed Development are as follows:

Paragraphs 2.10.123 to 2.10.126 state that *"Applicants should assess the various potential routes to the site for delivery of materials and components where the source of the materials is known at the time of the application and select the route that is the most appropriate.*

Where the exact location of the source of construction materials, such as crushed stone or concrete is not be known at the time of the application, applicants should assess the worst-case impact of additional vehicles on the likely potential routes.

Applicants should ensure all sections of roads and bridges on the proposed delivery route can accommodate the weight and volume of the loads and width of vehicles. Although unlikely, where modifications to roads and/or bridges are required, these should be identified, and potential effects addressed in the ES.

Where a cumulative impact is likely because multiple energy infrastructure developments are proposing to use a common port and/or access route and pass through the same towns and villages, applicants should include a cumulative transport assessment as part of the ES. This should consider the impacts of abnormal traffic movements relating to the project in question in combination with those from any other relevant development. Consultation with the relevant local highways authorities is likely to be necessary."

National Planning Policy Framework (2023)

The National Planning Policy Framework (NPPF) is an overarching document which sets out government planning policy for development outside of the NSIP regime in England, and how this is expected to be applied by local authorities and developers. The NPPF can be an important and relevant consideration for NSIPs as well, but in the event of any conflict, the NPS policy prevails. The NPPF provides a framework for local sustainable development via local plans. Specific extracts relating to this Proposed Development are as follows:

Paragraph 108 states that *"Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:*

> *a) the potential impacts of development on transport networks can be addressed;*
>
> *b) 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;*
>
> *c) opportunities to promote walking, cycling and public transport use are identified and pursued;*
>
> *d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and*
>
> *e) patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places."*

Local Planning Policy

Local planning policy relevant to our Site is set out below. Local policies can be an important and relevant consideration for NSIPs as well, but in the event of any conflict, the NPS policy prevails.

Newark and Sherwood District Council (2023), Local Development Framework, Allocations and Development Management, Development Plan Document (AADMDPD), Submission Version, January 2024

This amended local Development Plan Document (DPD) has been compiled to ensure that the wider development framework within Newark and Sherwood District Council sufficiently allocates land for development to meet the needs of the area, up until 2033. The document includes *"new and amended Housing and Affordable Housing Policies which replace those included in the Amended Core Strategy and new Gypsy Roma Traveller policies and allocations. The document also sets out amendments to urban boundaries and village envelopes, retail boundaries as well as sites requiring continued protection from development (open space and green infrastructure designations). It also includes a suite of Development Management policies to provide greater direction, help deliver specific allocations and assist in the day-to-day assessment of planning applications."* This DPD is currently under examination via the Secretary of State with an independent planning inspector.

Specific policies within the AADMDPD relevant to the Proposed Development include Policy DM5(b) "*Design*" states that *"In accordance with the requirements of Core Policy 9 of the Amended Core Strategy, having addressed the design principles set out in the National Design Guide and any local Design Codes, all proposals for new development shall be assessed against the following criteria:*

Access

Provision should be made for safe and inclusive access to new development. Integration of sustainable and active modes of travel is encouraged and, where practicable, developments should include dedicated walking and cycling corridors, connecting to existing defined routes in the surrounding area, making use of multifunctional Green Infrastructure.

Parking

Parking provision for vehicles and cycles should be based on the scale and specific location of the development. Parking for vehicles and cycles in new residential development should be appropriate in terms of amount, design and layout, in accordance with the adopted Residential Cycle and Car Parking Design Guide SPD, Development resulting in the loss of parking provision will require justification. Proposals should give careful consideration to the location of vehicle and cycle parking in relation to public transport provision in order to maximise opportunities for multimodal travel.

Central Lincolnshire Local Plan (2023) – specifically Policy S47: Accessibility and Transport

The Local Plan for the central Lincolnshire area sets out the approach to planning policy and overarching development allocations to drive growth in the area over a 20-year period. The Local Plan is contextualised into a wider vision, series of objectives and core policies toward delivery.

Specific policies detailed in the Local Plan and are relevant to the Proposed Development, as below.

Policy S47 "*Accessibility and Transport*" states that:

"Development proposals which contribute towards an efficient and safe transport network that offers a range of transport choices for the movement of people and goods will be supported. All developments should demonstrate, where appropriate, that they have had regard to the following criteria:

a) Located where travel can be minimised and the use of sustainable transport modes maximised;

b) Minimise additional travel demand through the use of measures such as travel planning, safe and convenient public transport, car clubs, walking and cycling links and integration with existing infrastructure;

c) Making allowance for low and ultra-low emission vehicle refuelling infrastructure.

Delivering Transport Related Infrastructure

All development proposals should have regard to the IDP, and, where necessary contribute to the delivery of the following transport objectives, either directly where appropriate (such as the provision of infrastructure or through the contribution of land to enable a scheme to occur) or indirectly (such as through developer contributions as set out in Policy S45).

For Strategic Transport Infrastructure:

d) Improve and manage the strategic highway infrastructure for a range of users and increased capacity where appropriate and viable;

e) Improve and manage the wider road infrastructure to benefit local communities including through the use of traffic management and calming initiatives where appropriate on rural roads, and key transport links in the towns and villages;

f) Deliver opportunities for improved road and rail interaction, and avoiding impacts upon level crossings;

g) Improve, extend and manage the strategic cycling network for a range of users;

h) Support the enhancement of existing or proposed transport interchanges;

i) Improve and manage the strategic highway infrastructure, wider road infrastructure and public rights of way network to deliver biodiversity net gain, including improved connectivity and extent of green infrastructure guided by local nature recovery strategy; and

j) Explore opportunities to utilise waterways for transport, particularly freight.

For Public and Community Transport Infrastructure and Services:

k) Assist in the implementation of infrastructure which will help all communities in Central Lincolnshire, including people living in villages and small settlements, to have opportunities to travel without a car for essential journeys;

l) Improve the integration, efficiency, accessibility, safety, convenience and comfort of public transport stations, including both rail and buses;

m) Deliver flexible transport services that combine public and community transport, ensuring that locally based approaches are delivered to meet the needs of communities;

n) Assist in bringing forward one or more mobility hubs in the Lincoln area.

To demonstrate that developers have considered and taken into account the requirements of this policy, an appropriate Transport Statement/ Assessment and/ or Travel Plan should be submitted with proposals, with the precise form dependent on the scale and nature of development and agreed through early discussion with the local planning or highway authority and external bodies where relevant.

Any development that has severe transport implications will not be granted planning permission unless deliverable mitigation measures have been identified, and arrangements secured for their implementation, which will make the development acceptable in transport terms."

Bassetlaw District Council (2010) Local Development Framework, Publication Core Strategy and Development Management Policies

The Core Strategy for the Bassetlaw District sets out the overarching vision for the area up until 2026, including the policy approach to deliver this.

Policy DM13 "Sustainable Transport" is relevant to the Proposed Development and states that:

"Development proposals will be expected to:

- *Minimise the need to travel by private car;*
- *Provide linkages to, or develop new, footways, cycle paths and bridleways giving access to key local facilities (especially town centres).*

Optimisation of the highway network and highway capacity improvements should only be considered once the above criteria have been addressed.

Development proposals will be accompanied by a Transport Statement or Assessment, as appropriate, in line with the trigger points contained within Guidance on Transport Assessment (DfT 2007) or subsequent Highways guidance.

Nottinghamshire Local Transport Plan

Development proposals will be required to be consistent with, and contribute to the implementation of, the Nottinghamshire Local Transport Plan. Proposals will not be supported where they will prevent the implementation of schemes identified in the Nottinghamshire Local Transport Plan. Reference should be made to this Plan when considering new proposals.

Parking Standards

Residential development proposals will be expected to demonstrate accordance with local parking standards through the provision of the necessary levels of cycle, motorcycle, and car parking facilities. Non-residential parking should be provided in line with the 6Cs Highway Design Guide adopted by Nottinghamshire County Council on 1 April 2009.

A reduction in parking provision will be considered where it is demonstrated that this will not impact adversely on the surrounding area (notably in relation to an increase in on-street parking) and is in the interest of sustainable development, especially in terms of encouraging the use of walking, cycling, and/or public transport. Further information on parking standards will be provided in a Supplementary Planning Document."

Draft Bassetlaw Local Plan (2023) 2020-2038: Main Modifications Version, August 2023

This Local Plan sets out Bassetlaw District's planning and policy framework, development strategy and site allocations to inform effective delivery of the overall vision up until 2038.

Policies set out in the Local Plan are relevant to the Proposed Development.

Policy ST51 "*Renewable Energy Generation*" states that:

"Development that generates, shares, transmits and/or stores zero carbon and/or low carbon renewable energy including community energy schemes will be supported subject to the satisfactory resolution of all relevant site specific and cumulative impacts upon:

a) *Location, setting and position in the wider landscape, resulting from its siting and scale;*
b) *Natural and heritage assets and their settings;*
c) *Air and water quality;*
d) *Hydrology and hydrogeology;*
e) *The best and most versatile agricultural land;*
f) *Existing highway capacity and highway safety;*
g) *Noise, light, glare, smell, dust, emissions or flicker;*
h) *Aviation and radar; and*
i) *Recreation and local amenity.*

Proposals must take into account operational and approved developments, as well as any proposed intensification to operational or approved proposals. Proposals involving one or more wind turbines will be supported where:

a) *the site is located within an area defined as being suitable for wind energy in a made neighbourhood plan or development plan document; and*
b) *following consultation, it can be satisfactorily demonstrated that all potential adverse planning impacts identified by affected local communities have been fully addressed, including cumulative impacts identified in Part 1 above.*

All renewable energy development will be expected to provide details of the expected power generation based upon expected yield or local self-consumption to enable effective monitoring of the district's contribution to the national zero carbon targets.

A decommissioning programme applied by a Condition to any planning permission granted will be required to demonstrate that the site can be returned to an acceptable state, three years after cessation of operations.

Lincolnshire County Council (2021) Local Transport Plan 5.

This document sets out the overarching transport and highways strategy for Lincolnshire. In the short term, this plan looks at immediate needs in terms of supporting the Lincolnshire growth agenda from 2022-2026. In the medium term, the plan looks at supporting other local plans toward 2034, and in the longer term, a vision for trends and opportunities up until 2050. The main focus of the report is the integrated transport strategy which is seen as a policy bridge between these transport aims and other elements of local plans in the area. The implementation plan and local transport boards & strategies detail the way in which the strategy will be implemented.

Nottinghamshire County Council (2011) Nottinghamshire Local Transport Plan 2011 – 2026

This local transport plan details a strategy on delivering transport improvements within Nottinghamshire, and separately how this plan will be implemented in practice through different investment measures and prioritisation. Review periods are embedded into the implementation plan to ensure its effectiveness as well as ensuring the plan is still in line with the area's needs. This plan also sets out key goals, which are to:

- *"Provide a reliable, resilient transport system which supports a thriving economy and growth whilst encouraging sustainable and healthy travel;*
- *improve access to key services, particularly enabling employment and training opportunities; and*
- *minimise the impacts of transport on people's lives, maximise opportunities to improve the environment and help tackle carbon emissions."*

National Guidance

National Highways (2020) Design Manual for Roads & Bridges (DMRB)

The DMRB is a suite of documents which acts as a manual to define design parameters and other requirements for all road infrastructure under the jurisdiction of National Highways. These documents contain current design standards, assessments and operational information, further acting as a guide for practitioners to utilise when undertaking transport assessment and other environmental assessments through a highways project lifecycle.

Planning Practice Guidance (2014) “Travel Plans, Transport Assessments and Statements”

As part of the PPG, this guidance details the principles of undertaking transport assessment, when certain assessments are required, and the detail needed to ensure effective delivery. This guidance gives information on why this assessment is important, the information to include and the principles to abide by when completing effective assessment.

Institute of Environmental Assessment (IEA) (1993), The Guidelines for the Environmental Assessment of Road Traffic

Building on legislation and guidance from the European Commission, this guideline document provides practitioners with a consistent approach to the appraisal of traffic issues for a range of developments. Furthermore, the approach to early assessment and identification of issues is embedded into this guidance to promote better development going forward.

Institute of Environmental Management and Assessment (IEMA) (2023) Environmental Assessment of Traffic and Movement.

These assessment guidelines build upon the previous document (above) and remains as an advice document to advise practitioners on undertaking an appraisal of traffic impacts as part of other environmental assessments. Further guidance has also been incorporated into this document from other environment disciplines which have interactions with traffic and transport.

Local Guidance

Nottinghamshire County Council (2021) The Nottinghamshire Highway Design Guide.

This guide provides users with design specifications regarding general street works, including SuDS and other drainage. The document promotes design interventions which contribute towards low-speed neighbourhoods and general modal shift from private vehicles. The guide updates previous guidance and clearly sets out the level of assessment required as part of development applications, residential geometric requirements, as well as definitions regarding traffic and transport.

Appendix 13-2: Transport Assessment

One Earth Solar Farm

Appendix 13-2: Transport Assessment

May 2024

One Earth Solar Farm Ltd

Contents

Introduction

Report Purpose

Pell Frischmann has been instructed by One Earth Solar Farm Limited (the Applicant) to produce a Transport Assessment (TA) to support the application for development consent for the Project, located either side of the River Trent, to the southwest and southeast of the village of Dunham, Nottinghamshire.

The Project comprises of a large-scale solar generation plant and battery storage facility located on areas of agricultural farmland. The site straddles the administrative boundaries of Nottinghamshire and Lincolnshire County Councils.

This TA provides an overview of the identifies the key transport and access issues associated with the Project. It should be read in conjunction with the outline Construction Traffic Management Plan (CTMP).

Report Structure

The Following this introduction, the TA report is structured as follows:

- section two describes the Project;
- section three reviews the relevant transport and planning policies;
- section four sets out the methodology used within this assessment;
- section five describes the baseline transport conditions;
- section six describes the trip generation and distribution of traffic in the Study Area;
- section seven summarises the traffic impact assessment;
- section eight considers mitigation proposals for development related traffic within the Study Area; and
- section nine summarises the findings of the TA and outlines the key conclusions.

Relevant Transport Planning Policy

Consideration has been taken within this assessment to national and local policy and guidance relevant to this assessment. The policy and guidance documents considered within this chapter are as follows:

- National Policy Statement (NPS) for Energy (EN-1);
- Design Manual for Roads & Bridges (DMRB);
- Planning Practice Guidance “Travel Plans, Transport Assessments and Statements”
- Institute of Environmental Assessment (IEA), The Guidelines for the Environmental Assessment of Road Traffic (1993);
- Institute of Environmental Management and Assessment (IEMA) Environmental Assessment of Traffic and Movement (2023);

- Bassetlaw Local Plan 2020 – 2037: Publication Version August 2021;
- Nottinghamshire County Council Local Transport Plan 2011 – 2026;
- Central Lincolnshire Local Plan, 2023;
- Lincolnshire County Council Local Transport Plan 5; and
- The Nottinghamshire Highway Design Guide.

Project

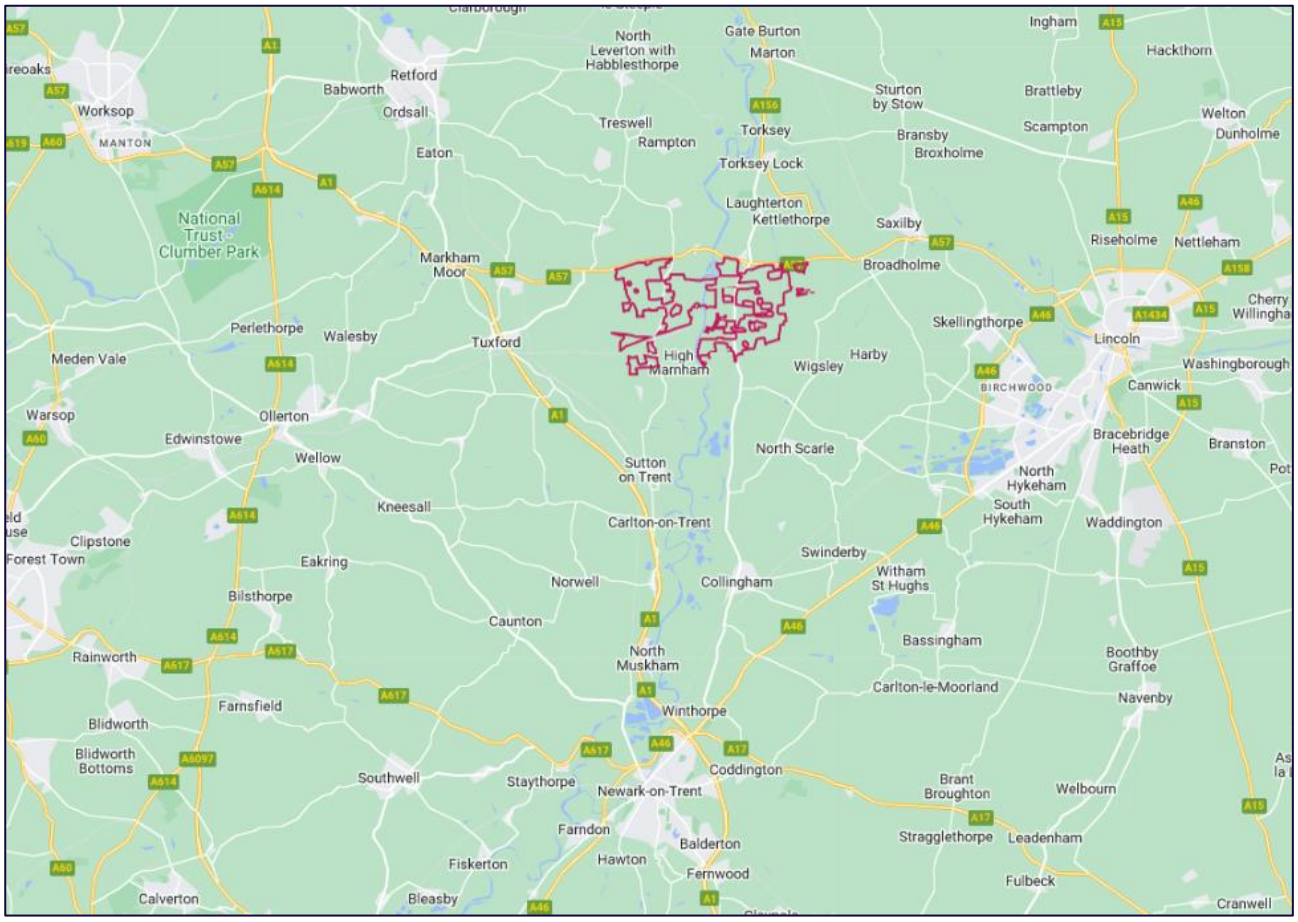
Site Location

One Earth Solar Farm (the Scheme) is located on land on either side of the River Trent, extending broadly to the A57 to the north, South Clifton to the south, Skegby to the west and Thorney to the east.

The scheme is straddles the administrative boundaries of Nottinghamshire and Lincolnshire County Councils, the two local road authorities within the wider study area.

The scheme location is illustrated in Figure 1 (plots outlined in red).

Figure 1 Scheme Location



Project Overview

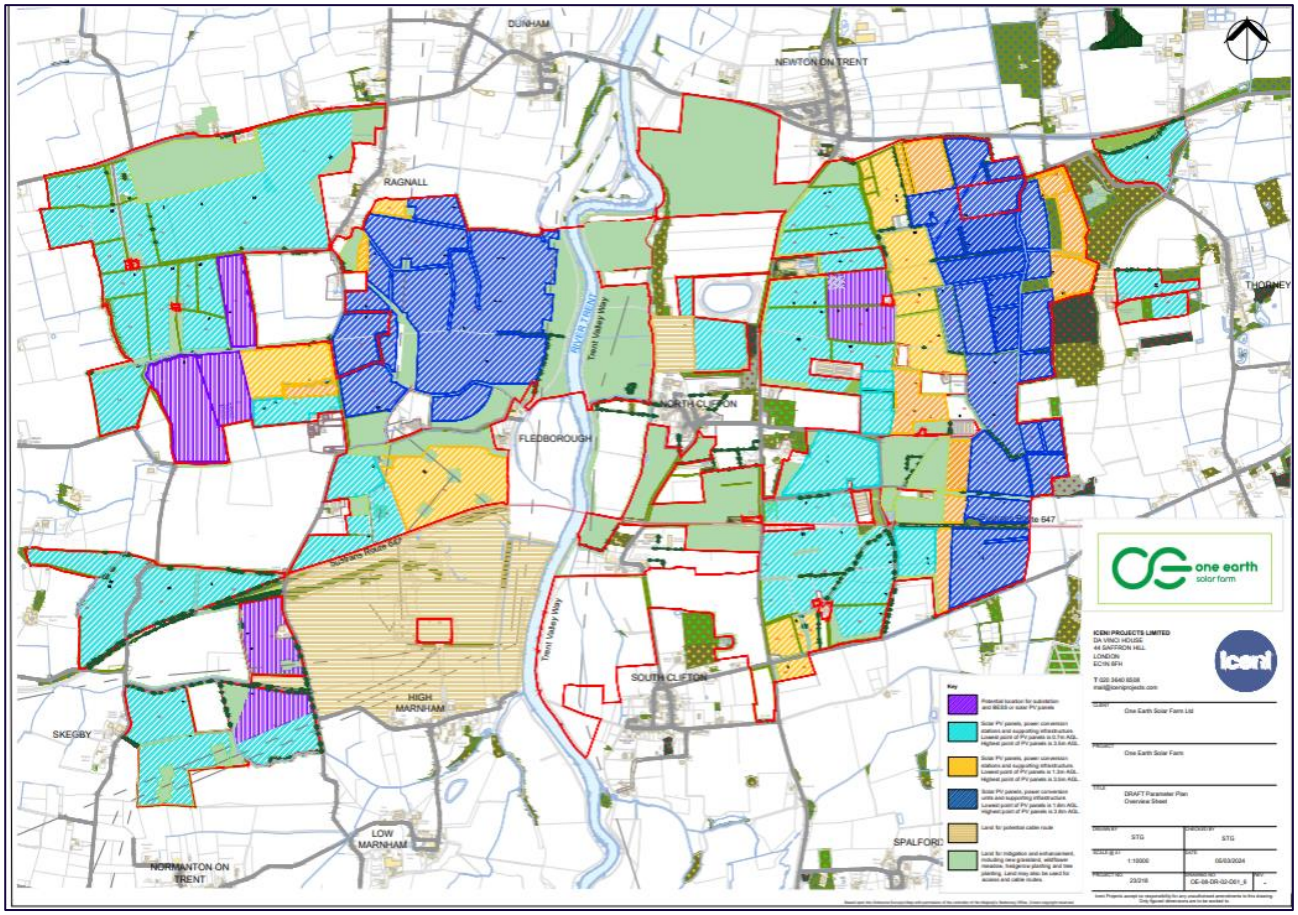
The Project comprises the construction of a Solar Farm and collated Battery Energy Storage System (BESS) that would allow for the generation, export and storage of electricity exceeding 50 MW.

The project includes works to facilitate the construction, operation, maintenance and decommissioning of a solar photovoltaic (PV) array electricity generating facility and BESS including PV modules and mounting structures, on-site supporting equipment including inverters, transformers and switchgears, on-site substations and underground cabling to connect to the National Grid substation, associated infrastructure including fencing, drainage and storage containers and biodiversity and landscaping enhancement measures, together with temporary development during the construction phase.

Project Layout

The Project layout is illustrated in Figure 2.

Figure 2 Scheme Layout



For ease of reference, the site can be subdivided into four sections; namely:

- the Western Development area (located to the west of the River Trent and accessed from the A57);
- the Southwestern Development area (located to the west of the River Trent and accessed from Polly Taylor's Road and Crabtree Lane);
- the Eastern Development area (located to the east of the River Trent and accessed directly from the A1133); and
- the Southeastern Development area (located to the east of the River Trent and located to the south of the disused Fledborough – Lincoln railway line).

Access around the site would be taken from strategic points on the public road network, with access achieved via new access tracks and upgraded farm access tracks. For ease of description, the main access gates have been given an identification letter and these are illustrated in Figure 3.

Figure 3 Scheme Access Points / Gates

To construct the solar farm and BESS, a variety of vehicles will be required. These will include, but not limited to:

- cars and Light Goods Vehicles (LGV) / Vans;
- articulated Heavy Goods Vehicles (HGV) delivering plant, materials and electrical components;
- rigid HGV delivering bulk materials such as aggregate, ready mix concrete, etc. for use on the site;
- specialist machinery, usually delivered using a low loader style articulated HGV, including loads that may include loads such as directional drilling equipment and excavation plant (for the cable grossing under the River Trent); and
- Abnormal Indivisible Loads (AIL) carrying special oversized loads such as electrical grid transformers.

All scheme vehicle movements described in this report, unless specifically stated otherwise, are classed as trips and include an inbound and outbound flow from the site. One-way flows are noted as movements.

Study Methodology

Introduction

There are three phases of the Project, which have been considered in this assessment and are as follows:

- the construction phase;
- the operational phase; and
- the decommissioning phase.

Project Phases

Of the three phases, the construction phase is considered to have the greatest impact in terms of transport and potential impacts on the road network and sensitive receptors. Construction plant, bulk materials and electrical components will be transported to site, potentially resulting in temporary significant increases in traffic on the study network.

The operational phase is restricted to occasional maintenance operations which generate significantly lower volumes of traffic that are not considered to be in excess of daily traffic variation levels on the road network.

The decommissioning phase involves fewer trips on the road network than the construction phase, as minor elements of infrastructure are likely to be left in place, adding to local infrastructure that can potentially be used for future agricultural or leisure uses in the future.

Scoping Discussions

The Applicant submitted a request for Scoping Direction to the Planning Inspectorate (PINS) in respect of the Environmental Impact Assessment (EIA) which included a section considering traffic and transport.

Further consultation with officers from both Lincolnshire County Council (LCC) and Nottinghamshire County Council (NCC) has been held and the Applicant is grateful for the input of officers from both authorities.

Baseline Conditions

Water-based Access

Background

The River Trent is the United Kingdom's third longest river and flows from its source in Staffordshire to Trent Falls in Lincolnshire where it meets the River Humber. The river has historically been used for the movement of freight from the East Coast ports of Grimsby, Hull and Goole into the Midlands, however freight usage along the length of the river is now rare.

The navigation of the river is controlled by two agencies. The southern portion of the river is controlled by the Canal & Rivers Trust (CRT) from Gainsborough to the south. The facilities in the northern section fall under Associated British Ports (ABP) who operate the principal quay facilities between Gainsborough and the Humber Estuary. These include Kings Ferry Wharf at Burton Stather, Flixborough Wharf and Gunness.

The river is tidal between the Humber Estuary and Cromwell Lock (approximately 5 kilometres (km) north of Newark).

The Humber River is circa 66 km from the northernmost land parcel of the Project.

The river was popular for the movement of freight, with a peak of 1,020,000 tons in 1964. Since then, commercial traffic has significantly diminished, along the whole length of the river.

The northern section between Trent Falls and Gunness Grove is regularly used by freight vessels with connections to other UK ports and Europe. The section to the south is less well used and the section operated by the CRT is mainly used by leisure craft.

Quarry operator LaFarge has used barges to transport gravel and aggregates from their Besthorpe Quarry. These regular bulk delivery operations appear to have ceased in 2015 / 2016.

River Transport Restrictions

The CRT advises that the maximum vessel sizes between Cromwell Lock (to the south of the One Earth site) and Gainsborough are as follows:

- Maximum Length: 45.57 metres (m)
- Beam: 7.06m
- Draught: 2.13m
- Headroom: 4.27m

The majority of structures on the river are fixed and as the river is tidal, progress along it for high loads may be influenced by the clear head height available under structures.

The Inland Waterways Association indicate that a transit of the river between Cromwell Lock and Keadby (located close to the Humber Estuary) is recommended as a two day transit. Access from the scheme site to the Humber is estimated as being circa 1¾ days for a one-way transit, with average speeds of circa 4 miles per hour (mph).

River Transport Facilities at the Site

The Site has no freight mooring facilities within the development area. The closest commercial facility is the disused facility at Gainsborough located approximately 16km to the north of the site.

There is a disused facility associated with the former High Marnham Power Station located to the south of the Site, adjacent to the former pump house, however this appears to be in a state of disrepair and is not considered suitable without extensive reconstruction works.

For river access to be used, a mooring and offloading facility would be required. This could take the form of mooring pylons in the river and a hard standing on the riverbank to support a crane / grab or could be a fully formed wharf on the river. Given the site straddles both sides of the River Trent however, either duplicate facilities would need to be provided or transhipping from the mooring facility to opposite side of the river would be required.

The creation of a new facility would not eliminate traffic movement within the local area of the development as transhipping would still be required from one side of the river to the other and from that point to the construction areas, using public roads and interfacing with other road users.

Potential River Access

The construction activities where river access would be most suited would be the import of aggregate and the movement of AIL. Movement of construction staff and non-bulk materials would not be feasible or economic for river transport.

The movement of gravel and aggregate from quarries to the site could only be undertaken where quarries had suitable river facilities to allow transport by barge. Of these Besthorpe Quarry, located to the north of Newark, has the infrastructure to accommodate this.

The quarry previously shipped aggregate by river but suspended this service in 2015 / 2016. The volume required to make this bulk material shipping economical is significantly higher than what could be realistically required at the scheme.

The journey distance from Besthorpe Quarry to site by river is 14.9km (9.3 miles). By road (to the far bank of the One Earth site) is 19.3km (12 miles). The time taken by barge, including loading, travelling and discharging would be approximately 4-5 hours for 350 tonnes of aggregate. In comparison, single HGV with a 35 tonne capacity can undertake the journey in 18 minutes and can transport a higher volume of material in the same time.

Transport of aggregate by barge would require triple handling of material. Barges would need to be loaded at the quarry, transport the material to the site, be offloaded to a stockpile area and then material then transported by HGV within the site to where it would be required. This triple handling adds cost and potential delay to the project. HGV delivery can be made direct to where it is required within the site, saving time and ultimately cost.

Barge access is considered not suitable for bulk material deliveries for this project for economic, practical, programme and risk issues. Barge deliveries however may be suitable for the transport of AIL components.

AIL movements across the UK are undertaken in line with the Department for Transport (DfT) “Water Preferred Policy”. This policy seeks to ensure that marine access is used to transport abnormal loads are far as possible to their destination to reduce traffic impacts on road and for environmental benefits.

The policy requires deliveries to be made as far as is “*practical, economic and environmentally desirable*” by sea or inland waterways.

Consideration is therefore being given to transporting transformer loads, as the largest AIL, to site using the river in part. This may include access direct to the site (if a suitable crane pad can be constructed and a suitable crane can be found to lift the loads from a barge stopped on the river) or to an existing wharf such as Gunness Grove.

The key issues for transport by barge for AIL would be the physical size of the transformers and the availability of suitable barges to transport such a load down the river.

Access Arrangements

Construction traffic will be split between the west and east development areas.

All construction access for the west development area will be taken from the A57 to the west of Dunham. Traffic will access land parcels from a set of private access roads that bypass the village of Ragnall. Access to other sections of the western development area will be taken from new access junctions located on the public road network to the south of Ragnall.

Bulk materials for the western area will be sourced from local quarries and suppliers located to the south and would access the construction site via the A1 corridor and A57.

The majority of the eastern development area will be accessed from the A1133 at a new access junction located to the south of Newton on Trent. A further access on Moor Lane provides access to the development area to the south of the disused Fledborough – Lincoln railway line.

Bulk materials for the eastern area will be sourced from local quarries and suppliers located to the south and would access the construction Site via the A1133 corridor.

The majority of construction staff will be located in the local area and will access the Scheme from the A57 and A1133. No designated route or time restrictions are proposed for these types of vehicles (non-HGV), although travel planning measures will be taken to ensure that the increase in traffic associated with the construction workers is minimised.

Drawings of the proposed access junctions will be presented in the final submission TA, appended to the full EIA submission. The drawings will include all key dimensions and visibility splay details.

The access junctions will be metalled for the initial section to prevent debris being brought out onto the public road network. Access control gates will be set back by at least 15m to prevent traffic from blocking back onto the public road during construction.

Study Area Determination

The Study Area has been based on those roads that are expected to experience increased traffic flows associated with the construction of the Project. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

Bulk materials for use in the site will be sourced from existing supply locations located to the south. It is proposed that access will be taken from either side of the River Trent for these materials, with western river bank quarries feeding the western development areas and those on the eastern bank feeding the eastern development areas.

Electrical component, plant and general deliveries are likely to originate along the A1(M) corridor and from Lincoln.

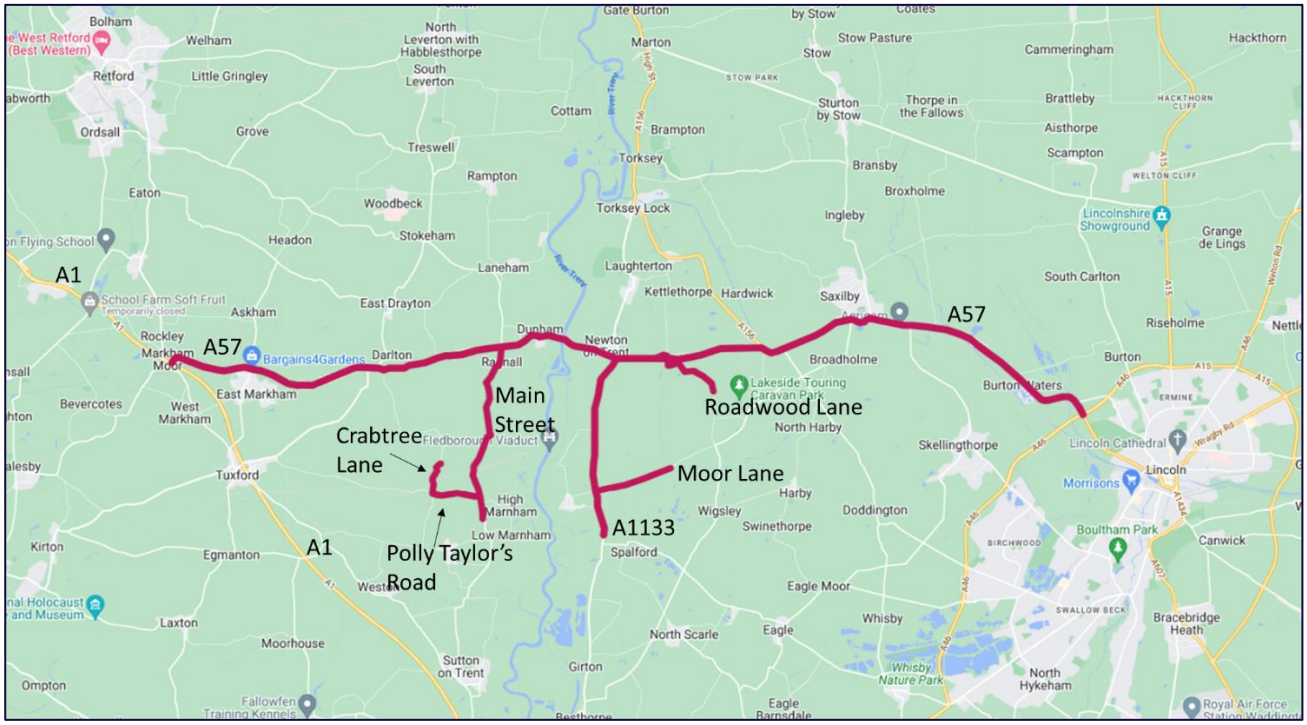
Staff engaged during the construction process will be based within the major urban areas located close to the scheme during the construction and decommissioning phases.

The proposed study area therefore includes the road links most likely to be impacted by the proposed movements associated with the scheme and includes:

- A57;
- A1133;
- Moor Lane;
- Roadwood Lane;
- Main Street; and
- Polly Taylor's Road; and
- Crabtree Lane.

A plan illustrating the proposed study area is provided in Figure 4.

Figure 4 Scheme Study Area



Effects associated with construction traffic generated by the scheme would be most pronounced in close proximity to the scheme access junctions and on the final approaches to these locations. As vehicles travel away from the Project, they would disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to construction traffic are unlikely to be significant beyond the Study Area identified above.

Pedestrian & Cyclist Links

There are limited pedestrian facilities in the immediate vicinity of the scheme, reflecting the rural nature of the location.

With the exception of a footway between the junction of the A57 / Main Street / Laneham Road, (to the west of Dunham) and the Dunham Toll Bridge Trent, there are no pedestrian footways along the A57. No footways are provided on the A1133, Moor Lane, Polly Taylor's Road or Crabtree Lane.

There are Public Rights of Way (PRoW) leading through the scheme development area. These are considered in detail in the Landscape and Visual Impact review of the site and include the following:

- Lincolnshire CC PRoW 7023;
- Lincolnshire CC PRoW 4046;
- Lincolnshire CC PRoW 4048;
- Lincolnshire CC PRoW 4045;
- Nottinghamshire CC PRoW North Clifton FP3;

- Nottinghamshire CC PRoW North Clifton FP1;
- Nottinghamshire CC PRoW North Clifton FP2;
- Nottinghamshire CC PRoW North Clifton Byway Open to All Traffic (BOAT) BOAT12;
- Nottinghamshire CC PRoW North Clifton BW10;
- Nottinghamshire CC PRoW Thorney FP6;
- Nottinghamshire CC PRoW Ragnall FP4; and
- Nottinghamshire CC PRoW Ragnall BW3.

Located within the Site and approximately 500m south of its centre, is the Sustrans Cycle National Cycle Route (NCR) 647. This part of the NCR uses a disused railway line associated with the former Lancashire, Derbyshire and East Coast Railway, which ran east-west connecting Lincoln to the east with Tuxford to the west. Crossing over the River Trent, the Sustrans Route utilises the Fledborough Viaduct.

The NCR departs the former railway line alignment at Main Street, where the route bifurcates. To the north, a segregated spur passes through agricultural land and connects to Crabtree Lane. To the south, the route uses Main Street and Polly Taylor's Road to proceed westbound. The two routes join together and then proceed west towards Tuxford using a minor public road.

Road Access

Access to the site will be split across 11 gates labelled Gate A – Gate K. Gate A – Gate E will be located to the west of River Trent and Gate F – Gate K to the east. The access junctions will be constructed to suit the Project and the junction works will be agreed with NCC and LCC prior to works commencing via a road opening permit.

Access to the nearest trunk road is available at the A57 to the north of the scheme site. The A57 provides strategic road connections from Lincoln to Sheffield and is operated by NCC and LCC. The A57 also links onto the A1 at Markham Moor which is a direct link into Central London to the south and Edinburgh to the north.

The A57 features a private toll bridge at Dunham. The bridge is free at all times for pedestrians, cyclists, motorcyclists and three-wheeled invalid carriages. Tolls for motorised vehicles are regulated by the DfT and are set at £0.50 for cars and minibuses, £1.00 for LGV and coaches and £2.00 for HGV and farm traffic.

The A1133 provides connections from the A156 to Newark-on-Trent. The road is local distributor road and is operated by LCC and NCC. The road is approximately 7.5 – 8m in width and capable for regular HGV use. The road is mainly subject to a 60mph speed limit, although the road is restricted to 30mph in Collingham to the south.

Main Street is a 40mph single carriageway road, surrounded primarily by residential properties, and otherwise operates a 60mph speed limit throughout more rural sections. Main Street provides a direct connection between the A57 to the north and Sutton on Trent to the south.

Polly Taylor's Road is a quiet 60mph single carriageway road, approximately 6m in width, off Main Street which connects directly onto Crabtree Lane. Crabtree Lane is a quiet and narrow 60mph road with passing places to allow for two way traffic.

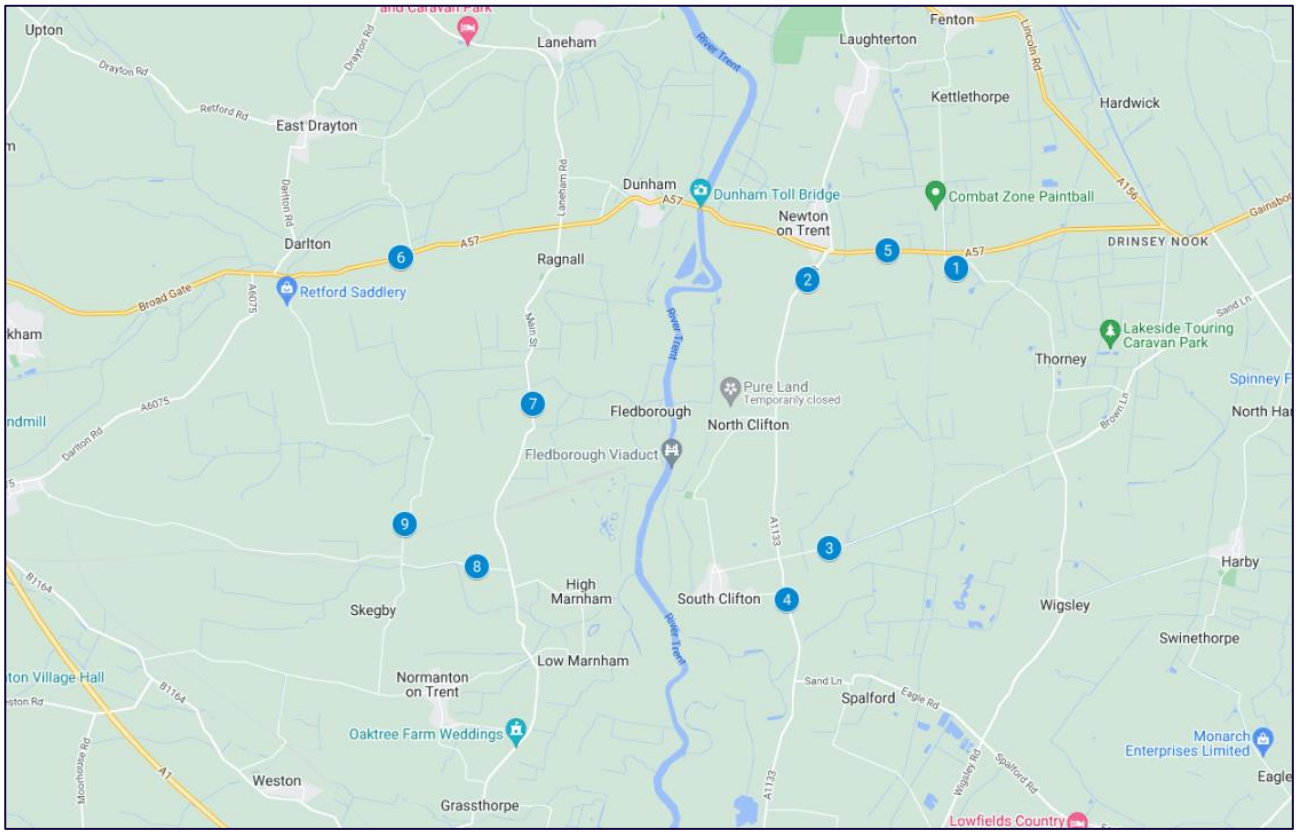
Moor Lane, within the vicinity of the site, is a quiet 60mph single carriageway road, approximately 6m in width and is accessible off the A1133.

Existing Traffic Conditions

In order to assess the impact of construction traffic on the Study Area, Automatic Traffic Counts (ATCs) were undertaken throughout the study area between 12th March and 27th March 2024.

Traffic flows were observed at nine locations, noting the numbers and directions of Cars & LGVs and HGV traffic. The locations of the ATC sites are illustrated in Figure 5.

Figure 5 ATC Survey Locations



The existing traffic survey data for 2024 has been summarised in Table 1.

Table 1 2024 Surveyed Vehicle Flow

Link	Car & LGV	HGV	Total Traffic
A57 west of Dunham	7237	2041	9278
A57 Dunham	7237	2041	9278
A57 east of Newton on Trent	7311	1622	8933
A1133 north of North Clifton	2896	985	3881
A1133 south of South Clifton	2320	1789	4109
Moor Lane	312	185	497
Roadwood Lane	165	77	242
Main Street south of Ragnall	888	259	1147
Polly Taylor's Road	287	89	376
Crabtree Lane	51	19	70

Road Accident Review

Personal Injury Accident (PIA) data for the five-year period covering 2018 to 2022 for the roads within the Study Area, was obtained from the online resource CrashMap which uses data collected by the Police about road traffic crashes occurring on roads, where someone is injured.

Analysis of the PIA data on the road network in the vicinity of the Project has been undertaken for the key road links outlined within the Study Area.

The statistics are categorised into three categories, namely “Slight”, “Serious” and “Fatal”, for those accidents that result in a death. The general locations and severity of the recorded accidents within the Study Area are summarised in Table 2.

Table 2 PIA Data Within the Vicinity of the Site

Link	Slight	Serious	Fatal
A57	18	6	0
A1133	1	2	1
Main Street	1	1	0
Moor Lane	2	0	0

A total of 32 accidents were recorded across the five-year period. Of these the majority were classed as being “slight” (69%) and resulted in damage only incidents. 10 accidents were noted as being “serious” resulting in an injury and one accident resulted in a fatality.

Of the recorded accidents, the following vehicles were involved:

- young drivers accounted for six “slight” accidents, one “serious” and one fatal accident;
- motorcyclists were involved in one “serious” and “one” serious accident;
- cyclists were involved in one “slight” accident;
- HGV traffic was involved in six “slight” and four “serious” accidents, all on the A57;
- six accidents were individual accidents with no other vehicles involved;
- eight accidents occurred during winter months;
- no child or pedestrian casualties were recorded; and
- no accidents involving a bus passengers or cyclist were recorded.

Accidents on the A57 tend to occur at junctions or on the approach to the Dunhan toll bridge booths. These suggest improved road signage and other features be deployed.

The more rural roads, Polly Taylor’s Road, Crabtree Lane and Roadwood Lane have not seen any PIAs within the most recent five-year period.

Future Year Traffic Conditions

Construction of our Project is assumed to commence in 2027 and will be completed in 2029.

To assess the likely effects during the construction, base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factor to the surveyed traffic flows.

The NRTF low growth factor for 2024 to 2027 is 1.019. These factors were applied to the 2024 survey data to estimate the baseline traffic conditions within the peak period of construction, calculated to be April 2027.

This growth factor has been applied to the survey data to estimate the 2027 Base traffic flows, as shown in Table 3. This will be used in the Traffic Impact Assessment.

Table 3 2027 Future Baseline Daily Traffic Conditions

Link	Car & LGV	HGV	Total Traffic
A57 west of Dunham	7375	2080	9454
A57 Dunham	7375	2080	9454
A57 east of Newton on Trent	7450	1653	9103
A1133 north of North Clifton	2951	1004	3955
A1133 south of South Clifton	2364	1823	4187
Moor Lane	318	189	506
Roadwood Lane	168	78	247
Main Street south of Ragnall	905	264	1169
Polly Taylor's Road	292	91	383
Crabtree Lane	52	19	71

Committed Developments

A review of committed development will be undertaken prior to the final submission of the EIA application and finalised TA. This will ensure that all committed development is included in the application assessment.

In line with agreed transport planning guidance, only committed developments will be included in the assessment. These will be included in the baseline traffic flows, should the Project be complete or likely to be complete by 2027.

Committed developments to be included in the assessment will be those of a significant scale, i.e. where their development impact exceeds a 10% increase in traffic flows on a link within the study area network.

Planning applications that are in development, scoping or are undetermined are not committed and as such will not be included in the final assessment.

A sensitivity review of link capacity will be undertaken for nearby schemes that are not determined, have publicly available traffic flow data and where their estimated traffic impact exceeds 10% on this scheme's study area network will be undertaken for the finalised application assessment.

Committed development assessments for the decommissioning phase will not be undertaken as the future baseline and traffic conditions are impossible to estimate.

Trip Generation and Distribution

Construction Phase – Trip Derivation

During the 26 month construction period, the following traffic will require access to the Site:

- staff transport, in either cars or staff minibuses;
- construction equipment and materials, deliveries of machinery and supplies such as ready-mix concrete and aggregate;
- solar panels and their mounting frames;
- components relating to the battery storage element and associated grid connection infrastructure; and
- AILs consisting of the transformers and a heavy lift crane.

A construction programme has been developed to help estimate peak in construction activities. A copy of this is provided in Appendix A.

Average monthly traffic flow data was used to establish the construction trips associated with the Project, based on the assumptions detailed in the following sections.

Construction Staff

Staff would arrive in cars, LGV and minibus vehicles. To promote sustainable travel, a Staff Travel Plan will be implemented to ensure the following to help reduce single occupancy car journeys:

- 80% of staff will arrive by minibus (a minimum of an 8 seat vehicle);
- 10% will arrive by LGV (expected to provide for three staff); and
- 10% will arrive by car.

The workforce will depend on the activities undertaken but based on previous solar farm construction site experience for a project of this scale, an estimate of staff requirements has been made based against the construction programme.

Based on these assumptions, staff transport cars and light vehicles would account for a maximum of 220 vehicle trips (110 inbound and 110 outbound) per day during the peak of staff requirements.

General Deliveries

Throughout the construction phase, general deliveries will be made to construction areas via HGV. These would include fuel, site office supplies, generic construction materials and staff welfare etc. At the height of construction, it is assumed that up to 616 trips to Site are made (308 in and 308 out) per month.

Material Deliveries

Various materials will need to be delivered to the construction site to construct the scheme. At the outset of the construction works, HGV deliveries will deliver plant and initial material deliveries to the site to enable the formation of the site compound and to deliver construction machinery.

The site will require bulk material deliveries of aggregate, ready-mix concrete, geotextile, road surfacing materials, etc. During the construction programme, some of these materials that are used for temporary works will need to be removed from Site (such as temporary compound hardstands).

The estimated materials required on Site have been reviewed from the scheme design team. The following assumptions have been made to estimate the traffic volumes:

- All bulk aggregate and road building materials will be delivered by HGV with a 20tonne capacity;
- Foundation steel will be delivered via HGV in 30tonne deliveries;
- Ready-mix deliveries will be made by vehicles with a $6m^3$ capacity;
- 800 panels will be delivered by shipping container;
- BESS battery units will be delivered in shipping container format, one per HGV;
- Panel frame components can be delivered in component form by shipping container;
- Large invertor units are containerised and delivered individually;
- Cabling sand is delivered in 20tonne capacity HGV;
- Cabling is delivered in drums, none of which are considered AILs in dimension or weight;
- Transformers are considered as AIL and delivered as one delivery each; and
- Commissioning will be undertaken by staff specifically travelling to site by LGV.

The resulting traffic generation estimates have been plotted onto the indicative construction programme to illustrate the peak journeys on the network. Appendix A illustrates the trip generation throughout the construction programme.

The peak of construction in terms of vehicular movements will be 664 daily trips (120 Car/Lights and 544 HGV journeys).

Distribution of Construction Trips

The distribution of Project construction traffic on the network would vary depending on the types of loads being transported.

Construction traffic will be split between the west and east development areas, separated by the River Trent.

All construction access for the west development areas will be taken from the A57 to the west of Dunham. Traffic will access land parcels from a set of private access roads that bypass the village of Ragnall. Access to other sections of the western development area will be taken from new access junctions located on the public road network to the south of Ragnall.

Bulk materials for the western development areas will be sourced from local quarries and suppliers located to the south and would access the construction site via the A1 corridor and A57.

The majority of the eastern development areas will be accessed from the A1133 at a new access junction located to the south of Newton on Trent. A further access on Moor Lane provides access to the development area to the south of the disused Fledborough – Lincoln railway line.

Bulk materials for the eastern areas will be sourced from local quarries and suppliers located to the south and would access the Site via the A1133 corridor.

The majority of construction staff will be located in the local area and will access the Scheme from the A57 and A1133. A gravity model based upon a one hour drive time has been undertaken to estimate where the wider workforce will be based during the construction period. The population of each urban area was then used to determine a weighting of the number of workers from each given origin and professional judgement used to determine which origins would route to which construction access.

Following the distribution and assignment of traffic flows to the Study Area network, the resultant daily traffic during the peak of construction is summarised in Table 5.

Table 4 Construction Peak Period Daily Traffic Flow

Link	Car & LGV	HGV	Total Traffic
A57 west of Dunham	100	314	414
A57 Dunham	40	14	54
A57 east of Newton on Trent	17	22	39
A1133 north of North Clifton	57	37	94
A1133 south of South Clifton	4	212	216
Moor Lane	3	9	12
Roadwood Lane	3	9	12
Main Street south of Ragnall	18	26	44
Polly Taylor's Road	6	9	15
Crabtree Lane	6	9	15

Operational Phase

During the operational phase, up to ten LGV trips per day are predicted to cater for cleaning of panels and general site maintenance.

Decommissioning Phase

During decommissioning, the cabling, solar panels, High Voltage (HV) equipment, foundations, etc comprising the surface elements of the scheme will be removed. Other elements such as sections of access tracks, access junctions, the grid connection ducting under the River Trent, landscaping, areas of ecological enhancement may be retained.

The traffic generation associated with the decommissioning phase is therefore less than that associated with the construction phase.

Traffic Impact Assessment

Construction Impact

The peak month traffic data was combined with the future year (2027) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in Table 5.

Table 5 Percentage Impact Summary

Link	Car & LGV	HGV	Total Traffic
A57 west of Dunham	1.4%	15.1%	4.4%
A57 Dunham	0.5%	0.7%	0.6%
A57 east of Newton on Trent	0.2%	1.3%	0.4%
A1133 north of North Clifton	1.9%	3.7%	2.4%
A1133 south of South Clifton	0.2%	11.6%	5.1%
Moor Lane	0.9%	5.0%	2.4%
Roadwood Lane	1.8%	12.0%	5.0%
Main Street south of Ragnall	2.0%	9.7%	3.7%
Polly Taylor's Road	2.1%	9.4%	3.8%
Crabtree Lane	11.5%	43.9%	20.3%

The highest total traffic movement increase occurs on Crabtree Lane, with an overall increase in traffic of 20.3%. This is expected, due to the relatively low baseline traffic flow on the road at present.

None of the other links within the study area experience traffic impacts in excess of 5.1%. This is well below the accepted industry standard estimate of daily traffic flow variation of 10%.

HGV traffic increases on the A57 and A1133 vary between an increase of 3% and 15%. An increase of HGV traffic on Crabtree Lane of 43.9% is predicted. All other local roads experience HGV increases of less than 12%.

It should be noted the construction phase is transitory in nature and the peak of construction activities is short lived, occurring over a relatively short timeframe when taking account of the whole construction programme.

A review of existing theoretical road capacity has been undertaken using “The NESA Manual” formerly part of the Design Manual for Roads and Bridges. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the Study Area. The results are summarised in Table 6.

Table 6 Theoretical Road Capacity Review

Link	2027 Total Traffic – Baseline (vehs)	2027 Total Base + Development Traffic (vehs)	Theoretical 12 hour Capacity (vehs)	Spare road Capacity
A57 west of Dunham	9454	9868	28800	65.73%
A57 Dunham	9454	9508	19200	50.48%
A57 east of Newton on Trent	9103	9142	28800	68.26%
A1133 north of North Clifton	3955	4049	21600	81.26%
A1133 south of South Clifton	4187	4403	21600	79.62%
Moor Lane	506	519	19200	97.30%
Roadwood Lane	247	259	19200	98.65%
Main Street south of Ragnall	1169	1212	19200	93.69%
Polly Taylor's Road	383	398	19200	97.93%
Crabtree Lane	71	86	3360	97.45%

The results indicate there are no road capacity issues with the addition of construction traffic associated with the scheme and ample spare capacity exists within the trunk and local road network to accommodate all construction phase traffic.

Operational Impact

The traffic impact of the operational phase is minimal and below the trigger for an assessment.

Decommissioning Impact

Prior to decommissioning of the scheme, a traffic assessment would be undertaken, and appropriate traffic management procedures followed.

The decommissioning phase would result in fewer trips on the road network than the construction as it is considered likely that elements of infrastructure such as access tracks would be left in place and structures may be broken up onsite to allow transport by a reduced number of HGV trips.

The growth of background traffic created through wider development in the area, will increase the baseline traffic flows. With a larger baseline and smaller development traffic generation, the potential traffic impact is therefore considered to be significantly below that reported for the construction phase.

Proposed Mitigation

Construction Mitigation

Given the importance of effective traffic management with construction projects, an outline Construction Traffic Management Plan (CTMP) has been prepared and is provided in Appendix 10-3.

The proposed mitigation package would be delivered by the Applicant through a suitably worded planning condition.

Operational Mitigation

Scheme access junctions and tacks will be well maintained and monitored during the operational life of the Project. Regular maintenance will be undertaken to keep the scheme access track drainage systems fully operation and to ensure there are no run-off issues onto the public road network.

Due to the level of traffic associated with the operational phase, being less than 10 LGV trips per day, no physical traffic management measures are considered necessary.

In line with best practice, car / LGV sharing during the operation phase will be undertaken to reduce single occupancy trips as far as is practical.

Decommissioning Mitigation

Mitigation during the decommissioning stage will be similar to that proposed in the outline CTMP, albeit with reduce traffic generation as some elements of the scheme are likely to be retained, including sections of access tracks, access junctions, landscaping, areas of ecological enhancement, etc.

A Decommissioning Traffic Management Plan (DTMP) would be prepared prior to the decommissioning stage being commenced. This will ensure that all relevant transport receptors and issues are accounted for in preparing the traffic management measures at that stage, likely to undertaken up to 60 years following installation.

The DTMP would be secured within the DCO.

Summary & Conclusions

Pell Frischmann has been instructed by One Earth Solar Farm Limited (the Applicant) to produce a Transport Assessment (TA) for a solar energy development located to the either side of the River Trent, to the southwest and southeast of the village of Dunham, Nottinghamshire.

Baseline traffic data established a base point for determining the impact during the construction phase and was factored to future levels to help determine the effect of construction traffic on the local road network.

The construction traffic would result in a temporary increase in traffic flows on the road network surrounding the scheme. The peak of construction in terms of vehicular movements will be 664 daily journeys (120 Car / Lights and 544 HGV journeys). Over the course of a typical 12 hour working day on the site, this would equate to approximately 20 two-way HGV movements per hour for the eastern side of the River Trent and approximately 25 two-way HGV movements per hour for the western side.

A series of mitigation measures and management plans have been proposed to help mitigate and offset the impacts of the construction, operational and decommissioning phase traffic flows. It is proposed that these can be secured by condition with the local planning authorities.

No link capacity issues are expected on any of the roads assessed due to the additional movements associated with the Project. The effects of construction traffic are temporary in nature and are transitory.

Appendix A: Construction Programme

Construction Programme

Traffic Delivery Programme

	2027												2028												2029		
Element	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
East Cluster																											
Site Establishment	0	117	117	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	117	117	117	0
General Deliveries	0	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	0
Compound	0	2581	2581	2581	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site Tracks	0	0	0	2055	2055	2055	2055	2055	2055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextiles	0	12	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Substation Platform	0	0	0	0	0	0	282	282	282	282	282	282	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cabling Works	0	0	0	0	0	0	0	0	0	0	0	0	120	120	120	120	120	0	0	0	0	0	0	0	0	0	0
Substation Concrete	0	0	0	0	0	0	0	0	0	0	0	0	0	73	73	0	0	0	0	0	0	0	0	0	0	0	0
Substation HV Deliveries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
Internal HV Works & Buildings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	30	30	0	0	0	0	0	0	0
Solar Array Works	0	0	0	0	0	0	0	0	0	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	0	0
Cabling & Cabling Sand	0	0	0	0	0	0	0	399	399	399	399	399	399	399	399	399	399	399	399	399	399	399	399	0	0	0	0
Battery Platform	0	0	0	0	0	0	0	0	0	0	0	0	1467	1467	1467	1467	1467	1467	0	0	0	0	0	0	0	0	0
Battery Foundations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Battery Cabling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	515	515	515	515	515	0	0	0	0	0	0	0	0
Site Restoration & Fencing	0	29	29	29	29	0	0	0	0	8	8	8	8	8	0	0	0	0	0	1106	1106	1106	1106	1106	1106	1106	0
Commissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82	82	0	0	82	82	0
Final Connection	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	704	704	0	0	0	0	0	0	704
Staff Movements	0	352	704	1320	1320	1672	1936	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	2156	1936	1672	1672	1320	968	704	704
Total Car & LGV / Month	0	352	704	1320	1320	1672	1936	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	3124	2860	1936	1672	1672	1320	968	704	1408
Total HGV / Month	0	3355	3343	5410	2700	2683	2952	3351	3351	1496	1496	1496	2801	2874	3381	3309	3310	3220	1754	2343	2394	2394	2313	2031	2112	1921	0
Total Vehicles / Month	0	3707	4047	6730	4020	4355	4888	5771	5771	3916	3916	3916	5221	5294	5801	5729	5730	5640	4878	5203	4330	4066	3985	3351	3080	2625	1408
East																											
Total Car & LGV / Day	0	16	32	60	60	76	88	110	110	110	110	110	110	110	110	110	110	110	142	130	88	76	76	60	44	32	64
Total HGV / Day	0	152	152	246	123	122	134	152	152	68	68	68	127	131	154	150	150	146	80	107	109	109	105	92	96	87	0
Total Vehicles / Day	0	168	184	306	183	198	222	262	262	178	178	178	237	241	264	260	260	256	222	237	197	185	181	152	140	119	64
West Cluster																											
Site Establishment	0	130	130	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130	130	130	0
General Deliveries	0	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	616	0
Compound	0	3887	3887	3887	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site Tracks	0	0	0	1870	1870	1870	1870	1870	1870	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextiles	0	10	0	10	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Substation Platform	0	0	0	0	0	0	733	733	733	733	733	733	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cabling Works	0	0	0	0	0	0	0	0	0	0	0	0	100	100	100	100	100	0	0	0	0	0	0	0	0	0	0
Substation Concrete	0	0	0	0	0	0	0	0	0	0	0	0	0	328	328	0	0	0	0	0	0	0	0	0	0	0	0
Substation HV Deliveries	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0
Internal HV Works & Buildings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	41	41	0	0	0	0	0	0	0
Solar Array Works	0	0	0	0	0	0	0	0	0	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	0	0
Cabling & Cabling Sand	0	0	0	0	0	0	0	246	246	246	246	246	246	246	246	246	246	246	246	246	246	246	246	0	0	0	0
Battery Platform	0	0	0	0	0	0	0	0	0	0	0	0	1467	1467	1467	1467	1467	1467	0	0	0	0	0	0	0	0	0
Battery Foundations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	293	293	293	293	293	0	0	0	0	0	0	0
Battery Cabling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	625	625	625	625	625	0	0	0	0	0	0	0	0
Site Restoration & Fencing	0	35	35	35	35	0	0	0	0	10	10	10	10	10	0	0	0	0	0	0	1666	1666	1666	1666	1666	1666	0
Nat Grid Connection Cabling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	760	760	0	0	760	760	0
Commissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	792	792	0	0	0	0	0	0	792
Staff Movements	0	352	704	1320	1320	1672	1936	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	2156	1936	1672	1672	1320	968	704	704
West																											
Total Car & LGV / Month	0	352	704	1320	1320	1672	1936	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	2420	3212	2948	1936	1672	1672	1320	968	704	1496
Total HGV / Month	0	4678	4668	6548	2521	2496	3219	3466	3466	1821	1821	1821	2654	2982	3596	3562	3564	3505	2039	3077	3503	3503	2743	2626	3386	3172	0
Total Vehicles / Month	0	5030	5372	7868	3841	4168	5155	5886	5886	4241	4241	4241	5074	5402	6016	5982	5984	5925	5251	6025	5439	5175	4415	3946	4354	3876	1496
Total Car & LGV / Day	0	16	32	60	60	76	88	110	110	110	110	110	110	110	110	110	110	110	146	134	88	76	76	60	44	32	68
Total HGV / Day	0	213	212	298	115	113	146	158	158	83	83	83	121	136	163	162	162	159	93	140	159	159	125	119	154	144	0
Total Vehicles / Day	0	229	244	358	175	189	234	268	268	193	193	193	231	246	273	272	272	269	239	274	247	235	201	179	198	176	68
Total Project																											
Total Car & LGV / Day	*0*	*32*	*64*	*120*	*120*	*152*	*176*	*220*	*220*	*220*	*220*	*220*	*220*	*220*	*220*	*220*	*220*	*220*	*288*	*264*	*176*	*152*	*152*	*120*	*88*	*64*	*132*
Total HGV / Day	*0*	*365*	*364*	*544*	*237*	*235*	*281*	*310*	*310*	*151*	*151*	*151*	*248*	*266*	*317*	*312*	*312*	*306*	*172*	*246*	*268*	*268*	*230*	*212*	*250*	*231*	*0*
Total Vehicles / Day	*0*	*397*	*428*	*664*	*357*	*387*	*457*	*530*	*530*	*371*	*371*	*371*	*468*	*486*	*537*	*532*	*532*	*526*	*460*	*510*	*444*	*420*	*382*	*332*	*338*	*295*	*132*

Appendix 13-3: Outline Construction Traffic Management Plan

One Earth Solar Farm

Appendix 10-3: Outline Construction Traffic Management Plan (CTMP)

May 2024

One Earth Solar Farm Ltd

Contents

Introduction

Report Purpose

Pell Frischmann has been instructed by One Earth Solar Farm Limited (the Applicant) to produce an outline Construction Traffic Management Plan (CTMP) to support the application for development consent for the Project, located either side of the River Trent, to the southwest and southeast of the village of Dunham, Nottinghamshire.

The Project comprises of a large-scale solar generation plant and battery storage facility located on areas of agricultural farmland. The site straddles the administrative boundaries of Nottinghamshire and Lincolnshire County Councils.

This CTMP provides an overview of the Project in relation to construction traffic and considers the proposed mitigation measures for use at the Site to offset the impact of construction traffic.

Project Overview

One Earth Solar Farm is a proposed solar farm with energy storage which will generate and store renewable electricity for export to the National Grid.

The Scheme will comprise the construction, operation and maintenance, andl decommissioning of a solar photovoltaic (PV) electricity generating, an energy storage facility and an export/import connection to the National Grid.

Access Strategy

Construction Traffic

Construction traffic will be split between the west and east development areas.

All construction access for the west development area will be taken from the A57 to the west of Dunham. Traffic will access land parcels from a set of private access roads that bypass the village of Ragnall. Access to other sections of the western development area will be taken from new access junctions located on the public road network to the south of Ragnall.

Bulk materials for the western area will be sourced from local quarries and suppliers located to the south and would access the construction site via the A1 corridor and A57.

The majority of the eastern development area will be accessed from the A1133 at a new access junction located to the south of Newton on Trent. A further access on Moor Lane provides access to the development area to the south of the disused Fledborough – Lincoln railway line.

Bulk materials for the eastern area will be sourced from local quarries and suppliers located to the south and would access the construction site via the A1133 corridor.

The majority of construction staff will be located in the local area and will access the Scheme from the A57 and A1133. No designated route or time restrictions are proposed for these types of vehicles (non-heavy goods vehicles (HGV)), although travel planning measures will be taken to ensure that the increase in traffic associated with the construction workers is minimised. A Staff Travel Plan would be prepared by the Principal Contractor to help reduce the number of single occupancy journeys to and from the site.

Abnormal Loads

A detailed Abnormal Indivisible Load (AIL) assessment is being prepared to review access for transformer and other similar sized loads.

It is expected that AIL associated with the transport of transformer components will commence from the quay at Gunness on the River Trent and would proceed to the Scheme via the following routes:

- AIL loads to the west will use the M181, M180, M18, A1(M) and A57 to access the site; and
- AIL to the east will use the M181, M180, A15, A57 and A1133 to access that portion of the site.

A detailed Route Survey of the access routes will be undertaken and mitigation measures to allow access for these loads between the port and site access junctions will be identified.

The detailed design of these works would be secured by a requirement to the DCO and would be subject to a technical approval process, reviewed and approved by the relevant local planning authorities.

Barred Routes

HGV traffic will not be allowed to travel through or access the Scheme passing through the following settlements:

- Ragnall;
- Newton on Trent;
- North Clifton;
- South Clifton;
- Thorney;
- High Marnham; and
- Skegby.

The routes through these settlements are not considered suitable for construction traffic and traffic will be regulated and controlled to ensure that these routes are not used. Further details of the control measures are provided in later sections of this report.

AIL traffic can only proceed on the route set in the BE16 Special Order and Movement Orders issued by National Highways. In addition, all AIL loads are escorted by the Police and a civilian escort.

Proposed Operational and Maintenance Access Strategy

During the operational phase of the Project, it is anticipated that the trip generation associated with the maintenance of the Project will be minimal and that occasional access by light goods vehicles (LGV) or 4x4 vehicles would be required.

Proposed Decommissioning Access Strategy

At the end of the operational life of the Scheme, the arrays, batteries and all associated above ground equipment will be completely removed in line with a decommissioning plan. At this stage, it is not possible to accurately forecast the traffic impacts during the decommissioning phase, as projections of the baseline data into the future would not be accurate. Prior to decommissioning of the Scheme, a further traffic assessment will be undertaken and traffic management procedures agreed with the local authority as required.

The levels of traffic associated with the decommissioning of the Scheme will be less than that during construction since some of the below ground elements will be left in situ and the access tracks may be retained for use by the landowners, as detailed in the Decommissioning Statement.

Access Arrangements and Permits

Access Junctions

The access junction bellmouths and initial track section from the public road will feature a metalled road surface to reduce the opportunity for debris and mud to be deposited on the public road. Vegetation within the visibility splays will be trimmed to ensure sufficient sight lines for vehicles using the access junctions.

The access junctions will be signed to clearly indicate the point of access to the site. Signage will also be located on the site access roads directing all traffic to proceed back using the routes that they have used to access the Scheme.

The access junctions will be constructed to ensure that access along the public roads is not curtailed during the construction of the access junctions. The site will provide adequate features to ensure that there will be no verge parking by staff working at the site.

Timing and Permitting

The indicative construction traffic programme indicates that construction would occur for a 26-month construction period. Construction deliveries and loading / unloading during this period will be restricted to between the hours of 07:00-19:00.

Wherever possible, HGV deliveries will avoid school opening and closing times during term time so not to disrupt journeys to and from school. Term times and hours for Dunham on Trent C of E Primary School, Newton on Trent C of E Primary School and North Clifton Primary School will be obtained and advised to the Principal Contractor.

The timing of AIL convoy movements will be confirmed with the Police prior to deliveries commencing. The Police have previously advised for other projects that their preference is for loads to depart ports in the early evening to avoid peak traffic flows.

The Principal Contractor will liaise with both Nottinghamshire and Lincolnshire County Council's Road officers to prepare a diary for local community events such as village fetes, farmer's markets, etc. Where possible, HGV traffic flows would avoid moving on these days.

The implementation of the access junction works and any associated mitigation works on the public road network required to allow access for the AIL and HGV deliveries will be subject to a technical approval process. These applications would be prepared following consent.

The BE16 abnormal load permits and movement orders will be submitted using National Highways ESDAL system. Permits and orders relating to these will be obtained by the haulier undertaking the transport of AIL components.

Road Closures

It is anticipated that the proposed construction activities for the Scheme do not require the full closure of any public road.

Lane closures will be required to construct the access junctions in a safe and efficient manner. One lane would be coned off and controlled by traffic signals when the junctions are being constructed.

These works will be temporary in nature and short-lived. They would not exceed 50 metres (m) in length and would not result in full road closures, diversion or significant delays.

As soon as the junctions were complete, the traffic signals and lane restriction would be removed.

Proposed Traffic Management Measures

Traffic Management Group

The traffic management proposals in this report will be provided to the Principal Contractor and they will be required to abide by these regulations as part of their commercial contracts with the Applicant. Failure to follow the traffic management measures proposed would be a contractual matter and could result in contractors being dismissed from the site.

To assist with general traffic management proposals and measures during the construction period, it is proposed that a Traffic Management Group be formed to help advise of progress, issues and to feedback public comments. The suggested structure of this group would include, but would not be limited to the following:

- Local Road Managers from both Nottinghamshire and Lincolnshire County Councils;
- Local ward elected members;
- A representative from each of the neighbouring Parish Councils;
- A representative from the Police;
- The Site Manager;
- The CTMP Co-ordinator; and
- A senior member from the Applicant's development team.

This group would help co-ordinate works and provide a robust conduit for information and issues that may arise. It is suggested that it would meet as a minimum, every two months during the construction period, although specific construction activities may warrant changes in frequency over that time.

Pages with information about the construction of the Project will be available on the project website. These will be updated throughout the construction period. If visitors to the site are unable to find the answer to their question on the webpages, an email address will be provided on the project website to contact the Applicant. In addition, details will also be circulated via a newsletter advising about ongoing activities. A telephone number for the CTMP Co-ordinator would be published during operational hours to resolve any traffic management problems that occur and these calls would be logged and reported to the Applicant on a weekly basis to monitor the situation.

All contractors will be monitored through regular spot-checks to ensure they follow the approved access routes. Access routes identified will be clearly defined in all sub-contracts and signposted.

The site access junctions will be kept clear at all times during construction and will be monitored by on-site staff to ensure vehicles do not attempt to use the area for parking.

Use of a visible vehicle identification system should be employed to ensure compliance with the agreed route and driver behaviour standards. This will allow the public to identify any rogue vehicles to the site office for easy recognition and review.

The Applicant will also create a protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic wherever possible.

The following measures would be provided to assist in managing traffic across the road network.

General Measures

Local suppliers such as quarries and concrete works are proposed to help minimise traffic levels of the network. Upon selection of the Principal Contractor, wider area routing information (routes to join the A57 and A1133) will be made available and final numbers of traffic movements confirmed.

The following measures would be implemented through this CTMP during the construction phase:

- Contractual requirement in the Balance of Plant contract that contractors will only use the agreed access route;
- Direction signage signposting traffic on the agreed access routes;
- Identification numbers on HGVs and vans to allow easy recognition. These to be of a unique design and to be installed on the sides and rear of all HGVs accessing the site, for journeys to and from the site;
- Providing the public with details of how to report use of unapproved routes or driving issues of concern;
- Using GPS trackers to allow the monitoring of all bulk delivery HGV movements;
- Setting out site staff disciplinary measures for those who ignore the agreed access routes and enforcing these throughout the construction period;
- All site vehicles will feature “white noise” reversing warning devices to reduce noise disruption when on site;
- All materials delivery lorries (dry materials) will be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures will be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities will be established at the site entrances. A road sweeper would also be provided at site to ensure that the public roads near the site accesses are kept clean;
- A 30 miles per hour (mph) speed limit will apply to all HGV deliveries being made to site on the route from the A1133, Moor Lane, Main Street and Polly Taylor’s Road; and
- Site induction for all staff instructing them on what route to site they can use to enter and exit the site and obtaining their acknowledgement that there is only one approved access route. The induction would include:

- A tool box talk safety briefing;
- The need for appropriate care and speed control;
- A briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through towns and villages on the route); and
- Identification of the required access routes and access junction operation and the controls to ensure no departure from these routes.

Road Signage

A junction signage strategy will be prepared and agreed with both County Councils prior to works commencing. The strategy will include the following:

- Direction signage to ensure vehicles keep to the approved routes;
- Site access signage to advise other road users of increased movements at the junction;
- Chapter 8 (Traffic Signs Manual) “Slow Down” signage along the proposed access routes; and
- AIL specific signage.

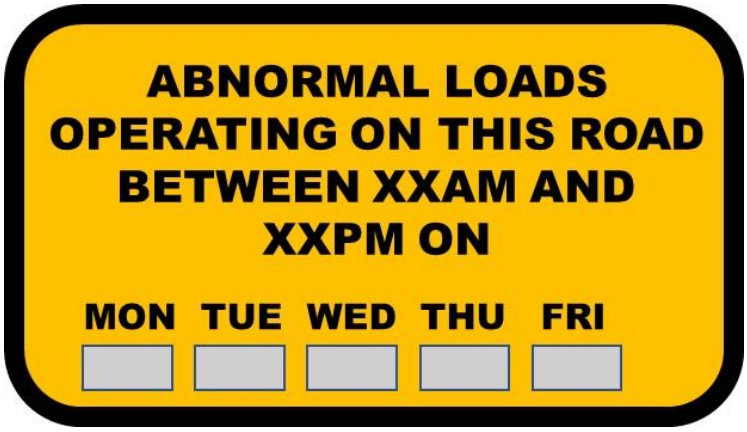
In addition to the statutory road signage noted around the site access junctions, further information signage would be provided to assist road users especially during AIL deliveries. Advance warning signs would be installed at locations agreed with both County Councils.

Information signage could be installed to help assist drivers and an example is illustrated in Figure 1. Flip up panels (shown in grey) would be used to mask over days where convoys would not be operating. When no convoys are moving, the sign would be bagged over by the Traffic Management contractor.

This signage will assist in helping improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).

Regular maintenance will be undertaken at the sign locations to keep the plates clean and to ensure that verge vegetation does not obscure them.

Figure 1: Example Information Sign



HGV Vehicle Requirements

To ensure the highest standards of safety for all road users and contractors, all HGVs frequently arriving at site shall be required to comply with the following standards:

- Prominent hazard warning signage, advising other road users not to get too close to the vehicle;
- A camera system for blind spots;
- Audible or visual front nearside driver alerts;
- Audible nearside left turn warning;
- Reversing external warning; and
- A Mobile Digital Recorder capable of storing two weeks' worth of data, which may be viewed by the Principal Contractor on a 'just cause' basis.

Wear & Tear Agreement

A legal agreement with both County Councils is suggested to cover the cost of abnormal wear and tear on the affected road network and at the site access junctions. This would be agreed with both Councils following the granting of planning approval.

The wear & tear agreement will address concerns about possible damage to the public road, verges and structures. It will be based upon condition surveys of the roads to ensure that the condition of the roads do not deteriorate solely as a result of the construction works.

Video footage of the pre-construction phase condition of the proposed access routes would be recorded to provide a baseline of the state of the road prior to any construction work commencing. This High Definition (HD) baseline review would inform any change in the road condition during the construction stage of the Scheme as it notes the existing condition of the road surface and features and details current condition.

The condition survey would feature still images for the survey and would measures specific defects to monitor their progression. Locations of points would be accurately logged using a GPS tracker.

To agree the current state of the roads, the report would be agreed with the Councils prior to construction works commencing.

Any immediate necessary repairs would be coordinated with the Councils. Any damage caused by traffic associated with the Scheme, during the construction period that would be hazardous to public traffic, would be repaired immediately.

During construction activities, a general road wear and tear review would be undertaken with the Council every three months during construction. Interim reviews will be undertaken by the Principal Contractor on a weekly basis and the progress reports issued to the Applicant.

Any damage to road infrastructure caused directly by construction traffic would be made good, and street furniture that is removed on a temporary basis would be fully reinstated.

There would be a regular road edge review and any debris and mud would be removed from the public carriageway to keep the roads clean and safe during the initial months of construction activity, until the construction junction and immediate access track works are complete.

Where defects occur on the road network, the Principal Contactor will ensure that they maintain a stockpile of road repair material on site to undertake repair works quickly and efficiently, when authorised by the Councils to undertake interventions.

Upon completion of construction activities, a follow-on condition review will be undertaken and a defects list prepared. Works required to reinstate the road back to its original condition would be undertaken at the Applicant's expense following a review by the Council.

There are cases where defects will need to be undertaken quickly and the contractor will have arrangements in place to respond to serious and significant defects within two hours during normal working hours and within four hours outside normal working hours.

Turning Facilities & Banksmen

For safety reasons both onsite and for other road users, the site has been designed so all vehicles can enter and exit the site in a forward gear. No vehicle shall reverse onto unmanaged public roads and shall enter / exit the site using forward gear only.

A banksman will be provided at the site accesses to help guide traffic within the site and to ensure health and safety access for the site. The banksman will be in radio contact with the wider site compound to advise of movements to and from the site.

Upon completion of construction works, a gate will be provided on the access junctions. The gate will be set back from the public road to ensure that future maintenance HGV vehicles can stop at the gate without blocking the public road.

Onsite Parking

Once operational, parking will only be permitted in designated areas and all operatives will be required to reverse park at all times. The number of parking spaces will be provided as part of the DCO application.

During the construction works, parking will be provided in designated areas and all site operatives and visitors will be subject to site rules. No parking will be permitted on the public road verges.

Staff Travel Plan

A Staff Travel Plan will be developed, to manage the arrival and departure profile of staff and to encourage sustainable modes of transport, especially car-sharing. A package of measures could include:

- Provision of public transport information;
- Mini-bus service for transport of site staff from Lincoln and Retford;
- Promotion of a car sharing scheme; and

- Car parking management.

The Staff Travel Plan will be developed to reduce the number of single occupancy car journeys to and from the Scheme during construction and will minimise traffic on the local road network.

The Staff Travel Plan will be administered by the CTMP Co-ordinator and would be a contractual requirement as part of the Principal Contractor's contract with the Applicant.

The Staff Travel Plan will include targets to reduce car use during construction and will apply to site visitors, where it is practical to do so.

Non-Motorised Road Users

Pedestrians and Cyclists

There are no footways or street lighting on either side of the roads at the main site access junctions. Nevertheless, consideration must be given to pedestrians and cyclists alike as it will continue to carry local and HGV traffic associated with agricultural and other uses throughout the construction phase.

The Principal Contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. Advisory speed limits will be installed in advance of the site accesses to help reduce speeds and make drivers aware of cyclists, hikers and other vulnerable road users.

Signage will be installed on the site exit that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This will also be emphasised in the weekly toolbox talks.

Equestrians

The British Horse Society has made recommendations on the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in panic if really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

The main factors causing fear in horses in this situation are:

- Something approaching them, which is unfamiliar and intimidating;
- A large moving object, especially if it is noisy;
- Lack of space between the horse and the vehicle;
- The sound of air brakes; and
- Anxiety on the part of the rider.

The British Horse Society recommends the following actions that will be included in the site training for all HGV staff:

- On seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, wherever possible;

- If the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
- The vehicle should not move off until the riders are well clear of the back of the HGV;
- If drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
- All drivers delivering to the site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

Training for staff working at the site will advise staff on how to react properly if encountering equestrians on the access routes.

AIL Traffic Management Measures

AIL movements must be escorted by the Police. Given the size of the proposed loads, it is expected that at least three private escorts and a minimum of two police escort vehicles are likely to be required (exact requirement will be confirmed with the Police). The likely deployment of escorts will be as follows:

- The first police escort vehicle will be the advance escort and will be located sufficiently ahead of the convoy, to advise the convoy in good time of traffic stoppages, constraints and oncoming hazards;
- The second police escort and first civilian escort will provide support to the first escort at junction closures and would be located at the front of the lead vehicle; and
- The second civilian escort will be located behind the last vehicle to protect the rear of the convoy and ensure that following vehicles do not attempt dangerous overtaking manoeuvres. A third escort will be located at this location to provide support at the rear if the convoy and to prevent dangerous overtaking.

Before the convoys depart the Port of Entry (PoE – to be determined post the granting of the Development Consent Order) the Lead Driver should check weather and traffic conditions and ensure this information is included within the daily toolbox talks.

Within the route, there are locations where general traffic flows will need to be stopped to allow the safe manoeuvre of the loads. In these circumstances the advance escorts will ensure that the traffic is stopped before the convoys enter the affected section. The advance escorts will confirm through radio contact that the area is clear and safe for transit. Should general traffic fail to observe the request to stop, the advance escort will advise the convoy to immediately halt and will then proceed to remove the rogue traffic. The convoy must not start without approval from the advance escort.

In areas where the load is likely to, or is close to straddling the centre line, the advance escort should be positioned to give advance warning to the convoy such that evasive action can be taken. In constrained areas and other locations where verges are potentially soft the drivers must exercise care to ensure the trailer wheels do not leave the road surface as this may result in adverse load stability conditions.

Urban areas along the route pose different challenges for AILs. Whilst the vehicle speeds will be less than those in the rural sections of the route, there are more potential conflicts with other road users to be aware of. These include:

- Pedestrians and cyclists;
- Local vehicular traffic;
- Parked vehicles;
- Side junctions; and
- Street furniture.

Within urban areas, the convoy escorts will need to be aware of all road and footway users at turn sections within the route. At these locations there is potential for load over-sail and reference to the swept path assessment drawings is considered essential to identify these areas. It is important to note that only the Police have the power to request that vehicles and pedestrians move.

Within urban areas there is a higher chance of parked vehicles along the route and a possibility that parked cars will restrict available road width. Whilst these areas will not impede the loads, they do create a further zone where the load drivers and escorts will need to take care of conflicts that include restricted road widths, car doors opening and pedestrians crossing the road between parked vehicles.

Information relating to AIL movements will be provided directly to residents living in the immediate vicinity of the access routes. Information on the movement of the abnormal load convoys would also be provided to local media outlets by the Principal Contractor (or their appointed AIL delivery contractors) to help assist the public. Information would be provided to local newspapers and radio stations, which will include, but not limited to:

- Newark Advertiser;
- Lincolnshire Echo;
- Worksop Guardian;
- Nottingham Post;
- Radio Newark; and
- BBC Radio Nottingham.

The project website will also be used to help advise of movements. Information would relate to expected vehicle movements on the route. It is hoped that this level of information will make residents aware of convoy movements and help reduce any conflicts.

AIL Convoy Health & Safety Measures

All staff working on the project will be inducted before entering the site. This will be undertaken prior to the commencement of AIL movements.

A daily Tool Box Talk for all convoy staff to be held at the start of each working day and carried out by the appointed Transport Co-ordinator or Appointed Lead Driver. A detailed record of the talk should be kept and filed once the convoy has arrived at the site.

The Tool Box Talks will cover a minimum of the following matters:

- The current version of the CTMP to be carried by all convoy vehicles;
- Identification of any updates since the previous version of the CTMP;
- Requirement to have a CB radio (fixed or portable), with fully charged batteries;
- Anticipated transport restrictions in each section of the route;
- Driver instructions on incident reporting;
- Driver instructions on trailer steering methodology, and availability of assistance;

- Instructions on areas requiring traffic stoppage, and methodology for convoy passing through these areas;
- The welfare arrangements for drivers;
- A summary of the predicted weather, traffic and road conditions; and
- Any questions on the contingency plans.

Each of the convoy vehicles must be suitably equipped with hazard warning devices to warn all other road users. All the tractor, trailer and escort vehicles operating on the project must have the following:

- Tractor units to have beacon bars on the roof and 3M reflective markings on both sides;
- All vehicle warning signage to be in English;
- Trailer units to have amber beacons on the rear with 3M reflective markings on both sides;
- All escort vehicles will have beacon bars on the roof, with 360-degree motion for all round visibility, and 3M reflective markings;
- Fire extinguisher and first aid kit; and
- Certified cargo lashing straps are to be used at all times. Certification must be carried and made available for inspection, kept within the cab.

All hazard warning equipment must be checked and cleaned at the start of each day. Additional cleaning of the warning equipment may be required throughout the day and must be undertaken when required.

All relevant personnel must have the appropriate Personal Protective Equipment (PPE). All PPE clothing must be 'CE' marked to show it meets current standards and should be appropriate for use in trunk road situations (i.e. must be full coats with reflective bands on the arms).

Emergency & Contingency Plan

To ensure access for emergency service vehicles, a coordination protocol will be established with the blue light emergency services. As the AIL convoys are escorted by the Police, the Police will be aware of potential access issues for ambulances and fire service vehicles and can take appropriate action on the route to pull to the side of the road or mount a verge to allow emergency vehicles past.

The civilian escort vehicles carry equipment to make running repairs to vehicles in the unlikely event of a breakdown. Further spares and equipment can also be based at the site for faster responses in case of mechanical issues.

The haulier will establish contracts with local suppliers to attend to any punctures and tyre issues, to minimise any stoppage time on the route.

Onsite Access Management Proposals

General Measures

During the construction phase, construction traffic has the potential to interact with walkers, cyclists and equestrians using the existing footpath network. Various measures are proposed to assist with the safety of all path users.

The Applicant will ensure that the Principal Contractor adheres to the following during the construction phase:

- That any footpath which has had its surface disturbed will be remediated upon completion of the relevant construction activity (i.e. at a crossing point);
- People will not be asked to avoid using a route or area when there is no safety related reason to do so;
- Warning signs will be removed promptly when the relevant hazard has ceased;
- Vehicular access gates may be locked for management reasons including the control of unauthorised vehicles for example but would only be locked where a side pedestrian side gate is provided. Where construction activities present a potential danger to pedestrians / other users a temporary diversion or re-routing would be advised in the interests of health & safety;
- All pedestrian gates to be provided on site will meet BS 5709 and shall have a minimum width of 1.525 mm to ensure equine access; and
- Electric wires or barbed wire will not be used on the site.

During construction activities, the construction contractor operatives will act and behave in a responsible manner when asking people to avoid construction activity risks. They will:

- Display signs notifying path users of any upcoming diversion option, prior to any diversion taking place;
- Notifying path users that a diversion option is in place by displaying signage at the site of the diversion itself;
- Take precautions, such as asking people to avoid using a particular route or area, or to avoid doing a particular activity where there are more serious or less obvious hazards to their safety;
- Keep any precautions to the minimum area and duration required to safeguard people's safety;
- Notify the public about any precautions at all access points;
- Not deliberately obstruct a footpath; and
- Not obstruct or hinder people from exercising access rights, either by physically obstructing access or by otherwise discouraging or intimidating them.

In addition, all construction operatives will be required to understand the requirements of onsite access rights at their induction. Failure to observe these may result in their removal from site.

Areas of Proposed Exclusion

Construction operations such as track construction, cabling and fencing works will require exclusion areas being set out in the areas surrounding these works.

Should there be a need to provide a short-term closure of a footway, the Applicant will advise both Council's Access Officers and comply with any relevant requirements in the DCO. Such closures would be signposted entrances to the affected footpath(s).

Proposed Temporary Diversions

Diversions to footpaths will be required during track construction activities.

During construction, it will be necessary to form the access track across existing footpath alignments. During these operations, the footpath will be subject to a minor diversion around the advancing head of the access track works. This will ensure access for footpath users in safety and diversion signs will be provided.

The diversion works will be 2m in width and will provide a 10m approximate diversion to allow the access track works to slightly pass the crossing point. Ducting will be provided to allow cabling works at a later stage that will not disrupt footpath access.

Upon completion of the track works, a footpath crossing point would be installed.

Details of any temporary footpath diversion works and any associated footpath enhancements will be provided in the full application package of documents.

Path Signage

Signage to inform footpath users will be provided on stakes at strategic locations on the footpath network. This will include at the entry points to the site, at any crossing points and at strategic points as a reminder.

All direction signs will be green and will have text height of 75mm to allow easy viewing.

In addition, the Principal Contractor will post a plan of the site at the entrance points to the site highlighting areas where works are ongoing to help advise path users on a regular basis.

Crossing Point Details

Where a footpath crosses the access tracks, a crossing point would be formed. This will include the following:

- "Access Track Crossing Ahead" signage for the footpath, on either side of the crossing, located at least 20m in advance of the crossing;
- "Crossing Point" and "Please look in both directions" signage for the footpath on either side of the crossing;

- A 2m wide chicane to ensure that cyclists slow down for the crossing to ensure the safety of all users;
- “Crossing Ahead” and “Slow Down, 10mph” signs on access tracks, located 100m and 50m in advance of the crossing on both directions; and
- “Give Priority to Footpath Users” on the site access track.

Reflective pole markers will be provided in advance of the crossing point to aid identification for access track users.

A visibility splay in the access track verge will be created so that footpath users have good visibility in either direction at each crossing point. This will be maintained throughout the construction phase.

All signage would be kept and maintained during the operational phase of the Scheme.

CTMP Management

The key to a successful delivery of the CTMP will be the implementation, monitoring, review and enforcement of the plan. Without the implementation at the start of the project, the CTMP will not be effective and it will be carefully monitored and reviewed as the project progresses.

Key to this will be the requirement in the Principal Contractor contract for the CTMP to include as a deliverable measure, given the same status as the physical elements of the solar farm site itself.

The contractor will be obliged to follow the CTMP and would face penalties if this is not undertaken, which could result in disciplinary actions and ultimately being removed from the contract. This requirement will be placed upon all subcontractors working on site and will be communicated via the various contracts and through induction processes and tool box talks.

A CTMP Co-ordinator will be appointed on site and would be responsible for the implementation of the Scheme and the monitoring of its effectiveness. The Co-ordinator would also be the communication point for all external queries raised by members of the public, whilst also being the on-site lead for the plan.

Prior to works commencing the Co-ordinator would hold an initial meeting of the Traffic Management Group to advise all relevant groups of the start of works on site, expected traffic levels and what measures are to be deployed.

During the construction phase a log of public and staff comments relating to the operation of the CTMP would be kept and the Co-ordinator would be required to brief the Applicant on the issues raised and what measures are to be undertaken to address comments.

The Co-ordinator would chair the Transport Management Group and would provide updates and information for onward dissemination to the local community including local media queries and press releases for items such as AIL movements.

Quarterly reviews of the CTMP will be undertaken and where modifications are required, these would be discussed with the Council and Police and agreed before changes occur on the ground. Updates would then be advised to the Traffic Management Group.

Regular road condition reviews and sign maintenance will also be undertaken to ensure that the physical measures are safe and working efficiently.

The engagement of stakeholders and local representatives is considered key in ensuring that the increase in traffic levels associated with the construction phase can be carefully, efficiently and sensitively managed to the benefit all parties concerned.

Complaint Management

When complaints are received, the CTMP Co-ordinator will record the incident using a database logging system. A receipt of the complaint will be emailed to the person making the complaint. The receipt will include details of the formal response and how the complaint can be escalated, if required.

The Co-ordinator will then investigate the incident and will discuss what actions need to occur with the Applicant and Site Manager.

To ensure public faith in the reporting system, the Co-ordinator will agree a response timetable as part of the agreed CTMP. The following suggested response times are suggested:

- Receipt of original complaint: Within 2 working days of the complaint being received;
- Investigation time: Within 3 working days of receipt of the complaint (assuming no requirement to involve / consult with third parties);
- Corrective Action Decision: Within 1 working day of the completion of the investigation (assuming no requirement to involve third parties); and
- Response: To be issued to the complainant within 2 working days of the Corrective Action Decision.

It is of the utmost importance that the public know that their complaint will be investigated, actioned and that they are informed of what actions are being taken.

The time taken to respond, the number of complaints raised and a review of the corrective actions will be a standing agenda item of the Traffic Management Group to ensure that the public can be assured that their issues are being considered and dealt with.

Co-ordination with other Schemes

The CTMP Co-ordinator will liaise with other significant developments in the area to ensure that works and deliveries can be co-ordinated between other schemes in the area.

Where common issues can be agreed, these will be implemented once to avoid the need for repetition and delay to existing road users, where it is possible to do so.

Summary

To assist with the management of construction traffic on the access routes, a Construction Traffic Management Plan (CTMP) is proposed. This document is a live document and will be subject to alteration and enhancement in the run up to and throughout the construction phase of the Scheme.

The OCTMP sets out the approved access routes to the site, how this will be managed and the steps that will be undertaken to ensure that the roads leading to site are well managed to the benefit of all road users.

The CTMP will be secured by a DCO requirement (to be prepared in accordance with this outline CTMP) and seeks to be able to be partly self-enforcing through spot checks, contractual controls and information provision.

The Applicant would work with the Councils to develop the CTMP and ensure that the road network can function in a safe and efficient manner for all road users.

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solar farm