

**Proposed Solar PV Development**

# Preliminary Environmental Information Report

## Chapter 12 Traffic and Transport

Byers Gill Solar

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# 12 Traffic and Transport

## 12.1 Introduction

- 12.1.1 This chapter presents the findings of the preliminary assessment of the likely significant effects arising from the construction, operation and decommissioning of the Proposed Development on traffic and transport.
- 12.1.2 This chapter details the methodology followed for the assessment, summarises the regulatory and policy framework, and describes the existing environment in the area surrounding the Proposed Development. Following this, the design, mitigation and residual effects of the Proposed Development are discussed, along with the limitations of the assessment.
- 12.1.3 Transport aspects considered within the chapter for the Proposed Development include:
- Traffic and transportation baseline, established from desk studies and surveys;
  - Potential environmental effects on traffic and transport;
  - Assessment methodology used to complete the impact assessment; and
  - Highlights any necessary monitoring and/or mitigation measures that could impact on potential environmental effects that were identified in the Scoping Report.
- 12.1.4 The PEIR will be utilised to inform pre-application consultation. Post consultation, comments on the PEIR will be used to prepare the Environmental Statement (ES) that will accompany the application to the Planning Inspectorate (PINS) for development consent. The ES will contain an updated assessment arising from any new analysis undertaken following the PEIR and also taking into account any new data. A final Transport Statement (TS) and Outline Construction Traffic Management Plan (CTMP) will accompany the application for development consent. The TS is required by policy and will be prepared in support of the application to demonstrate that the Proposed Development is acceptable in highway terms, as well as to support the pre-application discussion with Highway Authorities. A description of the CTMP can be found in 12.10.2.
- 12.1.5 Some of the content discussed in this chapter will cross-refer with discussions in other chapters. It may be useful to make reference to other chapters, most notably; Chapter 7 Landscape and Visual and Chapter 9 Land use and Socio-economics.
- 12.1.6 The approach to cumulative assessment of both in-combination effects across disciplines and with other projects is outlined in Chapter 13 Cumulative Effects. Further information is required to allow for a proportionate assessment to be made including the agreement of a list of cumulative developments to be considered.

- 12.1.7 Where in-combination effects are identified cross topics, these will be considered during the assessment process and reported within the appropriate topic chapter where the effect has been identified.
- 12.1.8 Chapter 7 Landscape and Visual and Chapter 9 Socio-economics and Land Use of the PEIR considers effects of the Proposed Development on Public Rights of Way (PRoW).

## **12.2 Competent expert advice**

- 12.2.1 The traffic and transport assessment chapter has been led by Nicola Hill, a Chartered Transport Planning Professional (CTTP) based in Arup's Tees Valley office with nearly 20 years of experience undertaking transport assessments for large scale development projects.

## **12.3 Legislative and policy framework**

- 12.3.1 The relevant legislation, planning policy and guidelines which underpin the assessment methodology for the traffic and transport topic and inform the scope of the assessment are outlined in this section.

### **Legislation**

- 12.3.2 The legislation of relevance includes the Highways Act (1980) [1] which sets out the necessary requirement of an Environmental Impact Assessment.

### **Policy**

- 12.3.3 The following national and local policies of relevance have been considered:

#### **National**

- 12.3.4 The national policies of relevance include the National Policy Statements (NPS) as the primary policy and the National Planning Policy Framework (NPPF).
- 12.3.5 The Overarching National Policy Statement (NPS) for Energy EN-1 [2] sets out the Government's policy for the delivery of energy infrastructure, and provides the legal framework for planning decisions. NPS EN-3 [3], Renewable Energy Infrastructure does not include specific reference to solar technologies however, alongside the NPS for Electricity Networks Infrastructure (EN-5) [4], should be read alongside NPS EN-1 where relevant to a project.
- 12.3.6 In relation to traffic and transport, NPS EN-1 specifies in section 5.13 that development sites should include a transport assessment (TA), and where appropriate, the application should prepare a travel plan with demand management measures to mitigate transport impacts.

- 12.3.7 NPS EN-1 further notes that energy infrastructure can give rise to impacts on the surrounding transport infrastructure and therefore the applicant should seek to mitigate these impacts, including during the construction phase of the development. It is advised that planning obligations may be required to mitigate adverse impacts, and provided that the applicant is willing to enter into planning obligations, or requirements can be imposed to mitigate transport impacts identified in the TA, then development consent should not be withheld, and appropriately limited weight should be applied to residual effects on the surrounding transport infrastructure.
- 12.3.8 Of particular relevance to the Proposed Development, section 5.13 of NPS EN-1 refers to mitigation for HGV traffic including controlling numbers to specified time periods, controlling routes, making sufficient provision on site for HGV parking (to prevent parking on public roads) and consulting with network providers to make arrangements for any disruption.
- 12.3.9 On 30 March 2023, a draft suite of revised energy NPS were published for public which is ongoing at the time of preparation of this PEIR. The revised energy NPS are designated and therefore the existing NPS EN-1, EN-3 and EN-5 remain the national documents of most relevance and importance, however the revised NPS are PEIR Appendix 1.1 Planning Policy Framework.
- 12.3.10 The NPPF [5] sets out the Government’s planning policies for England and how these should be applied. In relation to transport, the NPPF specifies that development sites should ensure that:
- appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
  - safe and suitable access to the site can be achieved for all users; and
  - any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.
- 12.3.11 The NPPF advises that development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

### **Local**

- 12.3.12 The Proposed Development lies within the administrative boundaries of Darlington Borough Council, Stockton-on-Tees Borough Council and Durham County Council. Planning policy of relevance to the assessment which would be considered includes:
- 12.3.13 The Tees Valley Combined Authority Strategic Transport Plan (STP) 2020 – 2030 [6] presents a package of transport improvements to transform Tees Valley’s transport system. The transport vision for Tees Valley that is set out in the STP is as follows:

*“To provide a high quality, quick, affordable, reliable, low carbon and safe transport network for people and freight to move within, to and from Tees Valley.”*

- 12.3.14 Of relevance to the Proposed Development in the Tees Valley STP are the proposals to improve the east-west A66 corridor from the A1(M) to the A19(T).
- 12.3.15 The Proposed Development covers areas of both Darlington and Stockton Borough Council. The Stockton Local Plan [7], adopted in 2019, refers to seeking accordance with the NPPF, and notes the approach in favour of sustainable development. Policy SD5 – Natural, Built and Historic Environment, and Policy SD6 – Transport and Infrastructure Strategy, outline the principles that the Proposal Development needs to align to. This includes aspects such as ensuring the road network is safe and maintains reliable journey times.
- 12.3.16 The Darlington Local Plan [8] was only recently adopted (February 2022) and outlines a number of transport related policies in Chapter 10. Policy IN1 – Delivering a Sustainable Transport Network includes principles such as ensuring existing footpaths cycle routes and bridleways are protected from development which could impair their functioning, and also enhancing PRoW. The policy also notes the requirement to ensure the safe and efficient operation of the highway network, referring specifically to ensuring the A1 and A66 maintain their strategic function, to enable businesses to continue to benefit from good links to the strategic road network.

## Guidance

- 12.3.17 The following guidance informs the assessment:
- 12.3.18 IEMA Guidelines for the Environmental Assessment of Road Traffic (1993) are used to consider the environmental impacts on traffic and transport. In accordance with the IEMA Guidelines, the following conditions on the transport network within the study area have been considered:
- severance (change in traffic flows);
  - driver delay;
  - pedestrian, horse riding and cyclist amenity (change in traffic flows on local routes used by pedestrians, horse riding and cyclists); and
  - accidents and safety.
- 12.3.19 In considering the impacts, the review looks at the change between the Baseline and the Future Baseline during construction, operational phase and decommissioning of the Proposed Development.

## 12.4 Assessment Methodology

12.4.1 The scope of this PEIR has been developed in consultation with relevant statutory and non-statutory consultees as detailed in Section 12.5.

12.4.2 Taking into consideration the scoping and consultation process, Section 12.9 summarises the impacts considered as part of this assessment.

### Desk Based Study

12.4.3 Analysis has been undertaken to inform the baseline conditions. The analysis undertaken include:

- The analysis of collision data (sourced online from the crashmap website) on the LRN and surrounding SRN for the period 2015 to 2019; and
- The analysis of HGV routing to determine the quickest route to/from the SRN and Panel Areas access points, using google maps.

### Site Specific Surveys

12.4.4 A traffic survey was undertaken at 12 locations across the local highway network for a week from the 15 -21 of March 2023, to assess the baseline vehicle flows that currently exist on the local network. The results of the traffic survey are provided in Section 12.8 of this chapter.

### Assessment Criteria and Assignment of Significance

12.4.5 The significance of an effect is determined by the sensitivity of a receptor and the magnitude of an impact. This section describes the criteria applied in this chapter to characterise the sensitivity of receptors and the magnitude of potential impacts. The terms used to define magnitude and sensitivity are based on those that have been used in Institute of Environmental Management and Assessment's (IEMA) Guidelines for Environmental Impact Assessment [9] and the Design Manual for Roads and Bridges (DMRB) [10].

12.4.6 The receptors considered in this assessment are:

- Pedestrians, horse riding and cyclists; and
- Car drivers and passengers.

12.4.7 The criteria used to assess receptor sensitivity is shown in Table 12-1.

**Table 12-1 Sensitivity criteria**

Sensitivity	Definition
Very High	Receptors with the greatest sensitivity due to site-specific characteristics which make them sensitive to changes in traffic flows.
High	Receptors of high sensitivity to traffic flows.
Medium	Receptors of medium sensitivity to traffic flows.

<b>Low</b>	Receptors with some sensitivity to traffic flows.
<b>Negligible</b>	Receptors with low sensitivity to traffic flows that are a sufficient distance from impacted road and junctions.

12.4.8 The magnitude of impact has taken into consideration the impact duration which, for the purpose of this assessment, is defined as followed:

- Short term: up to one year;
- Medium term: a period of more than one year, up to five years; and
- Long term: a period greater than five years.

12.4.9 The criteria used to assess the magnitude of impact is shown in Table 12-2

**Table 12-2 Impact Magnitude Criteria**

<b>Magnitude of Impact</b>	<b>Definition</b>
<b>High</b>	Changes which would likely significantly change conditions to the extent that it would significantly impact travel behaviour.
Medium	Changes which would change conditions to the extent that it may impact travel behaviour to a measurable degree.
Low	Changes which are likely to be perceptible but not to the extent that they would change conditions which would otherwise prevail.
Negligible	Changes which are just perceptible.
No Change	No loss of alteration or characteristics, with no observable impact.

## Severance

12.4.10 Severance is defined by the IEMA [9] as the perceived divisions that can occur within a community when it becomes separated by a traffic route.

12.4.11 The assessment thresholds, set out in Table 12-3, are based on changes in traffic flows set out in IEMA [9].

**Table 12-3 Magnitude of impact for severance**

<b>Magnitude of Impact</b>	<b>Definition</b>
High	More than 90% change in traffic flow
Medium	60% to 90%
Low	30 to 60%
Negligible	0% to 30%
No Change	No change in traffic flows



## Driver Delay

- 12.4.12 The nature of a road, along with capacity and congestion, can impact driver delay. The sensitivity on roads is considered to be low if there is generally no congestion and is not considered to be sensitive to changes in traffic.
- 12.4.13 The IEMA Guidelines note that driver delay is only likely to be 'significant' when the traffic in the network surrounding the development is already at, or close to, the capacity of the system.
- 12.4.14 The IEMA guidance [9] does not define the magnitude of impact for driver delay. Therefore, for the purpose of this report, professional judgement has been used to assess the impact of driver delay.

## Pedestrian, Horse Riding and Cyclist Amenity

- 12.4.15 IEMA [9] defines pedestrian amenity as the relative pleasantness of a journey. The IEMA guidelines suggest that the threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow has doubled.
- 12.4.16 The perception of traffic can impact upon feelings of fear and intimidation. This is dependent on the volume of traffic, the HGV composition, the proximity of traffic to people or the level of protection. Professional judgment has to be used to determine the magnitude of impact on pedestrian, horse riding and cyclist amenity due to the absence of a commonly agreed threshold.

## Accidents and Safety

- 12.4.17 IEMA [9] references the use of professional judgement to assess the accident and safety impacts. Implications of local circumstances, or factors which may elevate or lessen risks of accidents, such as junction conflicts, would be considered.
- 12.4.18 Changes in traffic flows and highway design could influence the risk of accidents. Therefore, professional judgement has been used to consider the risks in terms of accidents and safety, considering changes in traffic flows, existing accident clusters, and embedded design mitigation measures.

## 12.5 Scoping and Consultation

### Scoping

- 12.5.1 A Scoping Report was submitted to PINS on 27 October 2022, with a Scoping Opinion issued by the PINS on 6 December 2022. Table 12-4 includes a summary of how this chapter of the PEIR has responded to each scoping opinion comment.

**Table 12-4 Response to the Scoping Opinion**

Reference	Stakeholder	Comment	Response
Table 11.14 and paragraph 11.11.28		Scoping Report paragraph 11.11.28 states that operational traffic will be minimal and therefore impacts in terms of severance, driver and pedestrian delay, pedestrian and cycling amenity and accidents and safety will be minimal. The ES should confirm the number of movements and demonstrate that these do not exceed relevant thresholds for further assessment (e.g. as set out in GEART).	The increase of traffic, at the construction and operational phase does not exceed the GEART threshold as described in paragraph 12.11.10 of this document.
Tables 11.14 and 11.15	PINS	The total number of trips along the potential access routes is set out in Scoping Report Table 11.14 which has derived from other solar farm proposals; the total would be 72 trips per day during construction phase assuming a worst-case scenario. Whilst this has been considered against the baseline of the major roads, the baseline for the rural roads to be used to access the site are unknown as are the proposed access locations, and it is assumed that the change would be <10% in line with GEART guidance. This also doesn't take into consideration the change in the type of traffic. The Inspectorate does not agree to scope out consideration of severance during construction/decommissioning. The ES should provide baseline data for the affected road network and characterise the construction traffic change in terms of number, types and routing of movements in line with relevant guidance, including that for construction workers, and assess significant effects where they are likely to occur.	A survey was undertaken to provide baseline data which can be found in Table 12-6. The impact of construction traffic on the LRN and SRN with regards to HGVs and overall traffic according to guidelines is described in paragraph 12.11.4 - 12.11.8 of this document. A network diagram of the survey data can be found in Appendix 12.1 and a Network diagram of vehicle percentage increases due to the construction phase can be found in Appendix 12.2.
Tables 11.14 and 11.15		The Scoping Report states that due to the rural nature of the road network, and that the increase in construction traffic is expected to be within the daily variation of traffic flows, minimal impacts are anticipated. However, this is not evidenced through provision of baseline data compared with the anticipated construction traffic movements and the capacity of the road network. Additionally, there is potential for weight and width	Table 12-6 details the survey data used as baseline data. A network diagram of the survey data can be found in Appendix 12.1 and a Network diagram of vehicle percentage increases due to the construction phase can be found in Appendix 12.2. Figure 12.1 details where key weight restrictions are in the local area and 12.11.3 details how weight

Reference	Stakeholder	Comment	Response
		restrictions on rural roads which is not discussed in the Scoping Report.	restrictions have been considered.
Document TM001	JSJV on behalf of National Highways	The SRN, specifically the A1(M), A19 and A66 should be included within the Study Area for assessments of the impact of the development proposals.	We can confirm that the study area used for this assessment includes the A1(M), A66. Results can be found in 12.11.6, 12.11.7.
		JBM Solar will have to pay due cognisance to how the cabling proposals will impact on the SRN, in terms of installation and maintenance.	The exact cable routes are not yet confirmed, although cabling for the Proposed Development is not expected to impact on the SRN with route options only proposed along the LRN.
		The EMP, CEMP and CTMP will be the key documents – alongside the TA – to assessing the impact of the development proposals at the SRN, and where required, to provide appropriate mitigation. Where possible, the aforementioned documentation should be based on a ‘first principles’ approach, drawing on the experience of JBM Solar and its appointed contractor, to ensure the development proposals are assessed robustly.	An Outline CTMP and a TS will be provided alongside the ES once the DCO application is made. As stated in 12.13.7.
		JSJV request that any data from the construction of other solar farm developments which is used in calculating the projected construction traffic generation should be included in full within the TA for verification purposes.	Full detail of other solar farm developments used to inform the ‘first principle’ approach will be included in full within the TS.
		JSJV request that the trip generation estimates take into account the varied sizes of the different Panel Areas within the assessment of the trip generating potential.	The 36 trips have been distributed across the six Panel Areas according to size. As detailed in 12.11.3 and Table 12-7.
		Given that the SRN should be included in the Study Area, it should be considered and assessed in terms of the impact on the base traffic conditions, which included road safety.	Collision data covering the study area has been sourced. The study area includes the LRN and surrounding SRN. The analysis can be seen in 12.8.5 to 12.8.8.
		The operational and decommissioning impacts on traffic will have to be set out by JBM Solar within the relevant documentation.	Operational traffic impacts are discussed in 12.11.26 to 12.11.29.  Decommissioning traffic impacts are discussed in 12.11.30.

Reference	Stakeholder	Comment	Response
		The proposed impacts during the decommissioning phase are stated to be similar to the construction phase, and as such, should be assessed accordingly.	Decommissioning traffic impacts are discussed in 12.11.30.
		The TA and CTMP should be aligned, as there will be significant crossover between the two documents	Further assessment will include an aligned Transport Statement (TS) and Outline CTMP.
		Collision data for the Study Area should include five years where COVID-19 restrictions were not in place. The study area for collision data should take into account the SRN, paying due cognisance to the comments made in this document regarding the Study Area	Collision data covering the study area has been sourced, for the period 2015 to 2019 inclusive, avoiding years impacted by COVID-19, from the Crashmap website. Collision analysis can be found in 12.8.5 to 12.8.8.
		With regard to the TA, CTMP and Glint and Glare Assessment, due cognisance needs to be given to the parameters set out in this document.	Further assessment will include an aligned Transport Assessment and Outline CTMP.

## Consultation

12.5.2 The results of consultation carried out as part of the assessment are summarised in Table 12-5.

**Table 12-5 Response to Consultation**

Stakeholder	Comment	Response
<b>Cleveland Fire Brigade</b>	It should be noted that Cleveland Fire Brigade now utilise a Magirus Multistar Combined Aerial Rescue Pump (CARP) which has a vehicle weight of 17.5 tonnes. This is greater than the specified weight in AD B Vol 2 Section B5 Table 15.2.	Noted – the Proposed Development will utilise the existing highway so no changes to the carriageway are proposed. This will, therefore, not impact on existing weight restrictions.
<b>Darlington Borough Council</b>	Largely agrees with methodology put forward. However, the assessment fails to recognise that additional vehicle movements associated with construction would be mostly generated by construction work staff. Agreed that post-construction that any additional traffic could be accommodated on the local highway network.	A CTMP will be produced as part of the construction phase to minimise any negative environmental impacts. This would include detail of access arrangements for staff. An Outline CTMP will be submitted with the DCO application.
<b>Darlington Borough Council</b>	Subject to submission of Transport Statement and CTMP, agreed that traffic and transport and glint and glare can be scoped out.	A CTMP will be produced as part of the construction phase to minimise any negative environmental impacts. An Outline CTMP will be submitted with the DCO application.

Stakeholder	Comment	Response
<b>UK Health Security Agency</b>	Traffic and Transport is proposed to be scoped out on the basis that traffic flows will be below the 10% change in accordance with the IEMA GEART rules. The assessed traffic volumes during construction identifies a worst case scenario of 72 HGVs per day, but this does not include construction worker vehicular access. It should be noted that the existing construction vehicle routes via local villages such as Bishopton may include sensitive locations (Bishopton Redmarshall Primary School). The scoping report proposes a Construction Transport Management Plan (CTMP) will provide suitable mitigation. Traffic volume data, routes and proposed mitigation must include construction worker transport requirements. The CTMP must include the identification of sensitive location and any specific proposed mitigation, such as avoiding school opening and closing hours.	A CTMP will be produced as part of the construction phase to minimise negative environmental impacts. More detail can be found in 12.10.2. An Outline CTMP will be submitted with the DCO application.
<b>Durham County Council</b>	On the basis that solar farms generate very little operational traffic the solar farm would not raise any concerns over road safety.	The summary of effects can be seen in Table 12-8.

## 12.6 Assessment Assumptions and Limitations

- 12.6.1** This PEIR provides preliminary information based on the design of the Proposed Development to date and the data gathered at this point in time. Some of the information gathered will be supplemented and provided in full and final form within the ES.
- 12.6.2** The PEIR is intended to inform consultation responses and a more detailed assessment of the identified direct effects and potential indirect amenity effects on identified sensitive receptors could be undertaken at the ES stage, drawing on the further assessment work of other disciplines.
- 12.6.3** The nature of the Proposed Development is such that the greatest impact will be during the construction phase, with this being the focus of traffic and transport effects presented in the PEIR. At the time of this PEIR, it is still the assumption that all Panel Areas will be built simultaneously during the 12 month construction period, which results in more traffic but over a shorter time period (rather than spreading the traffic impact over a longer construction period).

- 12.6.4 It is expected that the traffic associated with the operational phase of the Proposed Development will be negligible, with initial calculations suggesting that there will be one trip (two movements going to and from the site) per month to each Panel Area.
- 12.6.5 It has been assumed that construction trips will be routed to and from the Panel Areas via the Strategic Road Network, and that the shortest and quickest possible route to the strategic network will be chosen, taking into consideration weight limit restrictions.
- 12.6.6 As the percentage change in daily vehicle flows projected during the construction is forecast to be less than 10% (maximum is 7%) it has been concluded that no junction capacity assessments are required.
- 12.6.7 With regard to the decommissioning phase, the effects are considered to be similar to, or of a lesser magnitude, than the effects generated at the construction phase. However, there can be a high degree of uncertainty regarding decommissioning meaning that future traffic flows cannot be accurately fixed to a future date. Therefore, it is considered that the peak construction represents a worst case for the decommissioning phase.

## **12.7 Study Area**

- 12.7.1 The proposed development is located in a rural area, in between the urban conurbations of Darlington and Stockton on Tees. There are a number of villages within the study area including (from west to east) Brafferton, Bishopton, and Stillington.
- 12.7.2 The study area is bound by and includes the Surrounding Strategic Road Network (SRN): A1(M), A66(T), A19(T) and A689. The study area further includes the Site Area and surrounding Local Road Network (LRN). Lime Lane, Lodge Lane and the unnamed road running through Great Stainton to Bishopton key local roads which link all the Panel Areas together and are included within the study area. A map of the study area and the six Panel Areas can be seen in Figure 12.1 Proposed Access Routes and Survey Locations.
- 12.7.3 The highway network serving each Panel Area can be found in Section 12.8.

## **12.8 Baseline Conditions**

- 12.8.1 The baseline conditions for the Proposed Development at the time of the PEIR are presented below.

### **Highway Transport**

- 12.8.2 The Proposed Development is located in a rural area, in between the urban conurbations of Darlington and Stockton on Tees. There are a number of villages in the study area including (from west to east) Brafferton, Great Stainton and Bishopton.

12.8.3 The surrounding Strategic Road Network (SRN) is comprised of the A1(M) to the west of Proposed Development boundary, and the A66(T) to the south. The Site Area is also accessible from the A19(T) to the east. The highway network serving each Panel Area can be described as follows:

- Panel Area A: Brafferton
  - From the A1(M) Junction 59, access to Panel Area A would be via the A167 onto Brafferton Lane. Brafferton Lane is a rural road, subject to the national speed limit, with a footway on one side of the carriageway. From Brafferton Lane, vehicles would connect to High House Lane through the village to access Panel Area A using the existing field access.
- Panel Area B: around Hauxley Farm
  - It is expected that vehicle access to Panel Area B would via the A1(M) as per Panel Area A, but from Brafferton Lane, vehicles would connect to Lime Lane and Lodge Lane, both rural roads with no footways. An access road is provided off Lodge Lane into the Panel Area B.
- Panel Area C: Byers Gill Wood
  - Panel Area C is centrally located within the Site Area and therefore vehicles, depending on their origin, may travel to / from the Panel Area via the A1(M) to the north and west, the A66 to the south or the A19(T) from the east.
  - If vehicles access the Panel Area from the A1(M) south, they would travel the same route as vehicles travelling to Panel Area B, but from Lodge Lane vehicles would continue to the priority T-junction where Lodge Lane meets Elstob Lane, and travel south on Elstob Lane to access the track into Byers Gill Wood.
  - From the A1(M) north, vehicles could access Elstob Lane by leaving the A1(M) at Junction 60 onto the A689 and connect to Elstob Lane by exiting the Sands Hall roundabout onto Racecourse Road. There is a shorter connection from the A689 via Mordon, but HGV access through Mordon village is restricted.
  - From the A66 to the south, vehicles would connect to the rural roads of Bishopton Lane or Hill House Lane, both of which converge onto Elstob Lane.
  - From the A19(T) to the east, vehicles could access Elstob Lane via the A689 and exit at Racecourse Road, using the same route as those travelling via Junction 60 of the A1(M). Alternatively, they may connect to the A66 and approach from the south, or use local routes through Stockton.
- Panel Area D: Great Stainton
  - Panel Area D has the same access routes as Panel Area C, as it is also located off Elstob Lane, opposite Panel Area C.
- Panel Areas E and F: West of Bishopton and North of Bishopton
  - The existing access into Panel Area E is located off the rural road that connects to Elstob Lane at a priority T-junction and travels through the village of Bishopton. Access into Panel Area F is gained from this same unnamed road through Bishopton village.

- Access to the Panel Areas in Bishopton is expected to be via the same routes described above (A1(M) to the north and west, A66 to the south, and A19-A689 to the east).

- 12.8.4 The access routes to the Site Area are shown in Figure 12.1, as well as the temporary construction compound for each Panel Area.
- 12.8.5 Collision data covering the study area has been sourced, for the period 2015 to 2019 inclusive, from crashmap.com [11]. The study period was selected as this removes Covid years, increasing accuracy. The study area includes the LRN and surrounding SRN.
- 12.8.6 Reviewing the data on the LRN (west to east) shows that there have been six slight collisions and one serious collision during the study period at the A167 / Lime Lane junction. Three slight accidents have been recorded in the last five years at the Lime Lane / Lodge Lane junction, and a slight and serious accident were recorded at the Lodge Lane / Elstob Lane junction. Six slight accidents were recorded at the Bishopton Lane / Hill House Lane junction. Additionally, two slight accidents and one serious accident were recorded in Sadberge Village. Finally, one serious accident was recorded in Bishopton.
- 12.8.7 Reviewing the data on the surrounding Strategic Road Network (west to east) shows that there were three slight accidents, that included Goods Vehicles, recorded at the A1(M) Junction 59 during the study period. One slight accident, that involved a Goods Vehicle, was recorded at the A66 exit onto Bishopton Lane. Additionally, one slight accident, involving a Goods Vehicle, occurred at the Stockton Road/A66 junction. Finally, two slight accidents and one serious accident, including Goods Vehicles, were recorded at the A19/A689 interchange.
- 12.8.8 The data indicates that there appears to be no common causation factor, or significant trends, associated with the collisions. Maps showing collisions, during the study period, can be found in Appendix 12.3.
- 12.8.9 Due to the rural nature of the surrounding area, a number of the local roads are subject to weight restrictions (primarily <7.5t) allowing for access only by vehicles below this weight limit. This is shown in Figure 12.1.
- 12.8.10 A traffic survey was undertaken at 12 locations across the local network for a week from the 15-21 of March 2023, to assess the baseline vehicle flows that currently exist on the local network. The survey locations were identified as key locations through a desk study of the Panel Area locations and the quickest available route from these to the strategic network. The survey was undertaken using automatic traffic counts (ATC) across a week as standard to derive the average daily flows and Heavy Goods Vehicle (HGV) percentage. The results of the survey are provided in Table 12-6 . A network diagram displaying the flows below can be found in Appendix 12.1: Survey Traffic Network Diagram of Daily Traffic.



**Table 12-6 Daily Average Traffic Survey Data (2023)**

<b>Location</b>	<b>All Vehicles Ebound / Nbound</b>	<b>All Vehicles Wbound / Sbound</b>	<b>HGVs Ebound / Nbound</b>	<b>HGVs Wbound / Sbound</b>	<b>HGV % Ebound / Nbound</b>	<b>HGV % Wbound / Sbound</b>
Aycliffe Lane	178	116	5	3	3%	3%
High House Lane	121	114	6	5	5%	4%
Brafferton Lane	320	261	11	7	3%	3%
Lime Lane	453	423	23	22	5%	5%
Lodge Lane	1849	1683	66	47	4%	3%
Elstob Lane North	1649	1404	41	53	2%	4%
Elstob Lane South	2698	2299	68	56	3%	2%
Bishopston Lane	2,953	2,567	91	72	3%	3%
East of Great Stainton	1,000	655	54	21	5%	3%
West of Beach House Bank	222	220	8	12	4%	5%
West of Bishopston	752	454	30	12	4%	3%
The Green	1,097	790	44	33	4%	4%
<b>A1(M)*</b>	18,464	18,053	3,877	3,231	21%	18%
<b>A66*</b>	15,009	14,572	1,261	1,195	8%	8%
<b>A19*</b>	25,204	24,284	2,722	2,598	11%	11%

*\*Data taken from National Highways Webtris website (annual 2022 data)*

## Walking and Cycling

12.8.11 Due to the location of the scheme in rural Tees Valley, limited footway provision is available alongside the carriageways in the vicinity of the Proposed Development. However, there is a network of P<sub>Ro</sub>W that cross the Panel Areas , further information can be found in Chapter 9 Socio-economics and Land Use of the PEIR. Similarly, there are a number of advisory cycle routes and bridleways that pass through Panel Areas A, B, C and D.

## Public Transport

12.8.12 There is little public transport provision surrounding the Proposed Development nonetheless, a section of railway line that runs to Stockton, through Stillington, is

located within 500m of the Site Area. Teesside Airport Railway Station is located within 5km of the Proposed Development, however, there is only one Sunday service from the station per week.

- 12.8.13 The Study Area is also a zone for the TeesFlex service, a Demand Responsive Bus Service operated by Stagecoach, in partnership with the Tees Valley Combined Authority. This provides a demand responsive service for the residents of villages surrounding the Proposed Development. The frequency of TeesFlex service is dependent on demand so varies day to day. TeesFlex offers connections to Stockton, Darlington, Billingham, and Sedgefield. There are no formal bus stops for this service so pick up and drop off points are based on user demand.

## 12.9 Potential effects

### Construction

- 12.9.1 The construction phase is of a temporary nature (12 months), however, during this temporary period the traffic generated by the Proposed Development could have the following effects:
- severance;
  - driver delay;
  - pedestrian, horse riding and cyclist amenity; and
  - accidents and safety.

### Operation

- 12.9.2 Based on evidence from solar farm developments elsewhere, it is forecast that when the Proposed Development is operational, a small number of maintenance trips are expected. Operational traffic is expected to be minimal, with occasional visits taking place by a handful of operatives. The majority of these trips will be by cars or vans, rather than HGVs. Thus, it is expected that any operational impacts on traffic and transport will be negligible.

### Decommissioning

- 12.9.3 Decommissioning of the Proposed Development could give rise to a similar level of effects as the construction phase of the Proposed Development. However, given that the future baseline transport conditions are likely to have changed significantly when the Proposed Development is decommissioned, it is not proposed that any further assessment of traffic and transport be undertaken for the decommissioning phase.
- 12.9.4 A robust interpretation of the construction phase represents a worst-case scenario for decommissioning, and therefore will be used as a proxy for the decommissioning stage. Consequently, no assessment, specific to decommissioning, has been undertaken.

## 12.10 Design, mitigation and enhancements

### Embedded design measures

12.10.1 There are no proposed embedded design measures. The access locations into the fields will utilise established vehicular access locations off the adopted highway, and the development does not propose to alter the existing highway.

### Construction mitigation

12.10.2 A Construction Traffic Management Plan (CTMP) will be produced as part of the construction phase to minimise any negative environmental impacts. An Outline CTMP will be submitted with the DCO application. This would include:

- The proposed access arrangements for construction traffic across the construction programme;
- The access arrangements for construction vehicles and staff;
- The management of vehicles on-site;
- The location of any wheel wash facilities;
- Measures to ensure the transportation of construction materials and waste is managed as sustainably as possible;
- The scheduling of construction material and logistics traffic movements on the LRN and SRN outside of peak hours and to use designated routes into construction sites;
- The consolidation of construction worker trips if possible;
- Detail of cooperation with the DNO, during the works to enable connection at Norton Substation, to minimise potential cumulative effects of such works being carried out;
- Measures to implement temporary construction compounds within each site to reduce the impact of vehicle deliveries and turning movements on the LRN; and
- Any other mitigation required to minimise the impact of construction traffic on the transport network.

12.10.3 These mitigation measures will be secured through a Requirement of the DCO, designed and constructed in accordance with relevant guidance and will ensure that the development delivers required mitigation.

### Operation mitigation

12.10.4 The Proposed Development in the operational phase is expected to produce a negligible amount of additional traffic (one trip per month). Therefore, no mitigation measures for the operational phase are required.

## Decommissioning mitigation

12.10.5 It is expected that the decommissioning mitigation required will be similar in nature to that at the construction phase. However, given that the future baseline transport conditions are likely to have changed significantly when the Proposed Development is decommissioned, it is not proposed that any mitigation measures be put in place the decommissioning phase at this stage.

## 12.11 Assessment of likely significant effects

### Construction Summary

12.11.1 The assumption that all Panel Areas will be constructed simultaneously, requires all construction traffic to be added to the network at the same time. However, it is noted that the additional traffic generated by the construction phase of the development will be negligible and the impact will be temporary.

12.11.2 As described in Chapter 11, Traffic, of the EIA Scoping Report construction trips have been estimated based upon two other JBM Solar UK based solar farm Sites. Based upon these previous sites it is forecast that each Panel Area could generate approximately six construction (HGV) trips (12 movements) per Panel Area, per day, during the construction phase.

12.11.3 This results in a total of 36 trips (72 movements per day), which have been distributed across the six Panel Areas based on the size of the Proposed Development. Based upon the trips assigned to each Panel Area, the construction traffic has been assumed to route to the Strategic Network; A1(M) and A66 using the quickest possible route according to Google maps whilst considering weight limit restrictions. It is worth noting that the A689 and A19 were considered but were not the quickest route onto the Strategic Network for any Panel Areas when considering weight restrictions. A network diagram, showing how the trips have been distributed on the network alongside the percentage change expected during construction on each road within the study, area can be found in Appendix 12.2 Percentage Increase Traffic Network Diagram of Daily Traffic. Table 12-7 presents the assumed trips per Panel Area and the Strategic Road construction traffic is assumed to use.

**Table 12-7 Construction Trips per Panel Area**

Panel Area	Hectare Size (ha)	Construction Trips	Strategic Road
A	114.34	8	A1(M)
B	52.51	4	A1(M)
C	110.72	8	A66
D	87.90	6	A66
E	26.64	2	A66

Panel Area	Hectare Size (ha)	Construction Trips	Strategic Road
F	104.89	8	A66

- 12.11.4 On average, the 36 trips (72 movements per day) added to the local network are forecast to increase the average rural road daily vehicle traffic flow by 1.12% in the study area, and on the lowest trafficked road (High House Lane) by 7.05% (due to the existing low usage with a daily average of 235 vehicles). This can be seen in Appendix 12.2 Percentage Increase Traffic Network Diagram of Daily Traffic.
- 12.11.5 On average, the 36 trips (72 movements per day) added to the local network are forecast to increase the average rural road daily HGV traffic flow by 28.42% in the study area, the largest proportional change will be 8 HGV trips (16 movements per day) on the lowest trafficked road (High House Lane). Whilst the most additional HGV trips of 14 (28 movements per day) is expected on Elstob Lane leading through to the A66, the equivalent of one HGV trip per hour.
- 12.11.6 It is expected that during the construction phase, the daily vehicle traffic flow on the A1(M) will increase by 0.07% which can be seen in Appendix 12.2 Percentage Increase Traffic Network Diagram of Daily Traffic. It is further expected that the number of HGVs will increase by 0.34% with the addition of 12 HGV trips (24 movements per day).
- 12.11.7 It is further anticipated that during the construction phase, the daily traffic flow on the A66 will increase by 0.1% which can be seen in Appendix 12.2 Percentage Increase Traffic Network Diagram Daily Traffic, with proportion of HGVs increasing by 1.17% with the addition of 14 HGV trips (28 movements per day).
- 12.11.8 Overall, it is considered that the sensitivity receptors are low or negligible at the construction phase. Additionally, analysis of the traffic survey data shows very little change thus, deeming the magnitude of impacts to be negligible. Therefore, it is expected that there will be no observable impact on travel behaviours.

## Severance

- 12.11.9 To consider whether this potential change in traffic flows would have a severance effect, judgement has to be made on the magnitude of change in accordance with IEMA guidance.
- 12.11.10 The preliminary assessment forecasts that the increase in traffic, at the construction phase, is negligible as even on the lowest trafficked road (High House Lane with 7.05% traffic flow increase due to construction traffic) the change in average daily traffic flows is still below the allowed 10% as set out in the Institute of Environmental Assessment's Guidelines for the Environmental Assessment of Road Traffic [12]. Furthermore, a change in traffic of less than 10% is considered to have no discernible environmental effect, given that daily variations in background traffic flow may fluctuate by this amount.

- 12.11.11 The A1, A19 and A66 are all part of the SRN and, within the vicinity of the study area, are all dual carriageway routes with high daily average flows. For example, the A1 is subject to a AADF of approximately 40,000 vehicles at Junction 59.
- 12.11.12 The increase in HGV vehicles on the SRN, at the construction phase, is not significant as the change is below the allowed 30% change as set out in the Institute of Environmental Assessment's Guidelines for the Environmental Assessment of Road Traffic.
- 12.11.13 There is therefore considered to be a negligible effect on severance during construction.

### Driver Delay

- 12.11.14 The IEMA Guidelines note that these delays are only likely to be 'significant' when the traffic in the network surrounding the development is already at, or close to, the capacity of the system.
- 12.11.15 During the construction phase, it is expected that there will be an average of six deliveries per day (12 movements per day), per Panel Area. In other schemes of a similar nature, this volume of increased traffic on the network has not been significant and is not expected to have a significant impact on driver delay.
- 12.11.16 Overall, the survey data shows that there is not an existing capacity issue on the routes providing access to the Panel Areas.
- 12.11.17 It is expected that cable construction could cause driver delay should road based cable route options be chosen as the preferred routes. However, where this might be the case, it is proposed that cabling works will be outside of regular construction hours and network peak hours, therefore having minimal impact. Should final cable route selection include road options, further detail about the impact of and mitigation against driver delay caused by cabling works will be detailed in the ES and the Outline CTMP.
- 12.11.18 Overall it is considered that there would be a negligible effect on driver delay during construction.

### Pedestrian, Horse Riding and Cyclist Amenity

- 12.11.19 Due to negligible increase in traffic on the LRN, it is anticipated that the impact of the Proposed Development on pedestrian, horse riding and cyclist amenity will not be material, and, if at all, only in isolated locations.

- 12.11.20 However, it is acknowledged that the addition of HGVs to the network and additional traffic associated with the Proposed Development could have some temporary impact on the pleasantness of any pedestrian, horse riding or cyclist journey in the area. However, with the implementation of mitigation (CTMP) and given the temporary nature of the impact it is considered the likely effect to pedestrian, horse riding and cyclist amenity will be low, which is not significant.
- 12.11.21 The impact of the closure/rerouting of PRow is addressed in Chapter 9 Socio-economics and Land Use.

## Accidents and Safety

- 12.11.22 Analysis of collision data on the local road network surrounding the Panel Areas shows that two accidents recorded at the Lodge Lane/Elstob Lane junction, and two accidents at the Bishopton Lane/ Hill House Lane junction included a Goods Vehicle.
- 12.11.23 Analysis of collision data suggests that accidents including HGVs on the surrounding local and strategic road network are minimal, and there are no clusters of accidents and common trends.
- 12.11.24 Vehicular access into the Proposed Development will use established points of access off the public road network. As there is no evidence of a prevailing road safety issues in the area, and no proposed changes to the highway network, the effect on accidents and safety of the forecast increase in traffic flow generated by the development is expected to be negligible.
- 12.11.25 It is therefore considered that there is no reason to consider the effects of the Proposed Development on accidents and safety any further.

## Operation

- 12.11.26 The average number of daily trips, in the operation phase of the development, has been calculated using examples of similar developments [13] [14]. The total operational trips expected for the Proposed Development, based on the examples operational trips and site sizes, is 73 operational trips per year (146 movements a year), equating to 0.4 trips per day (0.8 movements).
- 12.11.27 Surveys conducted as part of the study identified the average rural road flow as 2023.
- 12.11.28 Therefore, based on the anticipated operational trips of 0.4 trips per day (0.8 movements per day) and the average road flow of 2023, operational trips will increase daily traffic by 0.02%.
- 12.11.29 Overall, an expected increase of 0.02% on daily traffic is negligible as it is under the allowed 10% set out in the Institute of Environmental Assessment's Guidelines for the Environmental Assessment of Road Traffic [12].

## Decommissioning

- 12.11.30 Decommissioning of the Proposed Development could give rise to the same level of forecast trip generation as the construction phase of the Proposed Development. Therefore, the commissioning stage will be used as a proxy to determine the potential impacts of the decommissioning phase.
- 12.11.31 However, given that the future baseline transport conditions are likely to have changed significantly when the Proposed Development is decommissioned, it is not proposed that any further assessment of traffic and transport be undertaken for the decommissioning phase. The CTMP will set out how vehicle access to and from the site will be managed, and it is expected that the principles agreed to minimise disruption during construction will be reviewed and applied during decommissioning and captured through the proposed Framework Decommissioning Management Plan.

## 12.12 Monitoring

- 12.12.1 There is no monitoring proposed in relation to the Traffic and Transport effects given the predicted scale of change on the LRN / SRN.

## 12.13 Summary

- 12.13.1 This chapter has considered:
- Severance;
  - Driver delay;
  - Pedestrian, Horse Riding and Cyclist amenity; and
  - Accidents and safety.
- 12.13.2 This chapter has assessed potential environmental impacts of the Proposed Development in accordance with IEMA [9] and DMRB [10] guidance. Professional judgement has been used for qualitative assessment where appropriate.
- 12.13.3 Based on the methodology, assessment criteria and assignment of significance set out in this chapter, no significant impacts have been identified. All possible impacts are deemed to be negligible as seen in Table 12-8.

## Preliminary Construction Assessment

- 12.13.4 Construction of the Proposed Development could have short term, temporary localised impacts on the LRN. These impacts would be mitigated through the CTMP and any residual impacts are expected to be negligible.



## Preliminary Operational Assessment

- 12.13.5 The preliminary assessment of traffic and transport during the operation of the Proposed Development suggests that the impact will be negligible.

## Preliminary Decommissioning Assessment

- 12.13.6 The preliminary assessment of traffic and transport during the decommissioning phase is expected to be similar to that of the construction phase, which has been deemed to be negligible. However, given that the future baseline transport conditions are likely to have changed significantly when the Proposed Development is decommissioned, it is not proposed that any further assessment of traffic and transport be undertaken for the decommissioning phase.

**Table 12-8 Summary of effects**

<b>Receptor</b>	<b>Description of potential impact</b>	<b>Embedded design, mitigation, and enhancement measures</b>	<b>Sensitivity of receptor</b>	<b>Duration and reversibility</b>	<b>Magnitude of impact</b>	<b>Significance of effect</b>
<b>Pedestrians, Horse Riding and Cyclists</b>	Severance	CTMP	Negligible	Short Term	Negligible	Not Significant
<b>Pedestrians, Horse Riding and Cyclists</b>	Pedestrian, Horse Riding and Cyclist Amenity	CTMP	Low	Short Term	Negligible	Not Significant
<b>Car Drivers and Passengers</b>	Driver Delay	CTMP	Negligible	Short Term	Negligible	Not Significant
<b>Car Drivers and Passengers</b>	Accidents and Safety	CTMP	Negligible	Short Term	Negligible	Not Significant

## Further work

12.13.7 Further assessment and development of mitigation measures will be undertaken as part of the ES and through the completion of the following surveys, assessments and management plans:

- Outline CTMP;
- TS; and
- Undertake the in-combination and cumulative effects assessments.

# Bibliography

- [1] HM Government, “Highways Act,” 1980.
- [2] HM Government, “National Policy Statements for energy infrastructure,” 2023.
- [3] D. f. E. a. C. Change, “ National Policy Statement for Renewable Energy Infrastructure EN-3,” 2011. [Online]. Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/37048/1940-nps-renewable-energy-en3.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/37048/1940-nps-renewable-energy-en3.pdf). [Accessed 26 April 2023].
- [4] D. f. E. a. C. Change, “National Policy Statement for Electricity Networks Infrastructure,” 2011. [Online]. Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/47858/1942-national-policy-statement-electricity-networks.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf). [Accessed 26 April 2023].
- [5] HM Government, “National Planning Policy Framework (NPPF),” 2021.
- [6] Tees Valley Combined Authority, “Strategic Transport Plan 2020-2030,” 2020.
- [7] Stockton-On-Tees Borough Council, “Local Plan,” 2019.
- [8] Darlington Brough Council, “Local Plan,” 2016.
- [9] Institute of Environmental Management and Assessment, “Guidelines for Environmental Impact Assessment,” 2004.
- [10] Highways England, Transport Scotland, Welsh Government and the Department for Infrastructure , “Design Manual for Roads and Bridges, LA101, LA103, LA104 and,” 2020.
- [11] crashmap.com.
- [12] Institute of Environmental Assessment (IEA), “THE ENVIRONMENTAL ASSESSMENT OF ROAD TRAFFIC,” 1993.
- [13] Gately Moor Solar Farm.
- [14] Moreton Lane Solar Farm.
- [15] HM Government, “Infrastructure Act,” 2015.
- [16] Department for Transport, “National Policy Statement for National Networks,” 2014.
- [17] HM Government.