

Light Valley Solar

Environmental Statement Volume 1

Chapter 16: Other Environmental Matters

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**Light Valley
Solar**

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Light Valley Solar

DCO Submission

Chapter 16: Other Environmental Matters

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16 Other Environmental Matters

16.1 Introduction

- 16.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA) work concerning the potential impacts of the Proposed Development for Other Environmental Matters during the construction, operation and maintenance, and decommissioning phases. This chapter addresses other environmental topics that do not require individual chapters on the basis that they have been scoped out of the Environmental Statement (ES). The findings of this chapter support the ES where applicable, and feed into the mitigation proposals for the Proposed Development and commitments made within the various Outline Management Plans submitted in support of the DCO Application.
- 16.1.2 This chapter is supported by a number of technical appendices and addresses:
- 1) Construction Dust Assessment (Appendix 16.1 (ES Volume 3)) **[EN0110012/APP/LVS/06.03.16.01]**;
 - 2) Arboricultural Impact Assessment (AIA) (Appendix 16.2 (ES Volume 3)) **[EN0110012/APP/LVS/06.03.16.02]**;
 - 3) Battery Energy Storage System (BESS) Fire Emissions Modelling (Appendix 16.5 (ES Volume 3)) **[EN0110012/APP/LVS/06.03.16.05]**;
 - 4) Electromagnetic Interference (EMF) Report (Appendix 16.6 (ES Volume 3)) **[EN0110012/APP/LVS/06.03.16.06]**;
 - 5) Ground Conditions – Preliminary Risk Assessment (PRA) (Appendix 16.3 (ES Volume 3)) **[EN0110012/APP/LVS/06.03.16.03]**; and
 - 6) Glint and Glare Assessment (Appendix 16.4 (ES Volume 3)) **[EN0110012/APP/LVS/06.03.16.04]**.
- 16.1.3 For more details about the Proposed Development, refer to Chapter 2: The Proposed Development (ES Volume 1) **[EN0110012/APP/LVS/06.01.02]**.

16.2 Consultation

Scoping Opinion

- 16.2.1 An EIA Scoping Report (Appendix 1.1, ES Volume 3) **[EN0110012/APP/LVS/06.03.01.01]** was submitted to the Planning Inspectorate (PINS) on 11 November 2024, with a formal request for Scoping Opinion. PINS subsequently issued the EIA Scoping Opinion (Appendix 1.2, ES Volume 3) **[EN0110012/APP/LVS/06.03.01.02]** on the proposed scope on the 19 December 2024.
- 16.2.2 A summary of consultation and response to the EIA Scoping Report, in response to the topic covered by this chapter, are outlined below in Table 16-1.

Table 16-1 Other environmental matters – Scoping opinion comments

Scoping opinion I.D	Scoping opinion comment	How is this addressed
PINS [ID 3.2.1]	Construction dust: The Scoping Report states that subject to the implementation of suitable site-specific mitigation measures through the Outline Construction and Decommissioning Environmental Management Plan (oCEMP and oDEMP) residual significant effects are unlikely. Paragraph 6.8.1.2 [of the scoping report] proposes a construction dust assessment to support the Development Consent Order (DCO) application and to identify site-specific mitigation measures, which would feed into the oCEMP and oDEMP. The Inspectorate agrees that this matter can be scoped out, subject to the provision of the assessment being undertaken in line with relevant guidance and confirming that there is no potential for significant effects. Given the nature of the Proposed Development, the Inspectorate agrees that significant effects from dust and particulate matter from the operational phase of the Proposed Development are unlikely and that this matter can be scoped out of further assessment.	A construction dust assessment has been undertaken to support this ES (Appendix 16.1 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.01], and mitigation measures have been recommended in line with the best practice Institute of Air Quality Management (IAQM) construction dust guidance. Section 16.3 below summarises the conclusions of the Construction Dust Assessment. IAQM guidance advises that with the implementation of these best practice measures, no significant effects should occur. These measures have been included in the Outline Construction Environmental Management Plan (oCEMP) [EN0110012/APP/LVS/07.02], Outline Operational management Plan (oOEMP) [EN0110012/APP/LVS/07.03] and Outline Decommissioning Environmental Management Plan (oDEMP) [EN0110012/APP/LVS/07.04]. Final details on traffic volumes (see Chapter 14: Traffic and Movement (ES, Volume 1) [EN0110012/APP/LVS/ 06.01.14] and Appendix 14.1 Transport Assessment (ES, Volume 3) [EN0110012/APP/LVS/06.03.14.01], programme and phasing have been considered and assessed against the EPUK/IAQM criteria at ES stage and construction traffic volumes fall below the relevant thresholds.
North Yorkshire Council [other supporting comments]	Arboriculture: There is potential for the Proposed Development to adversely affect existing boundary trees and vegetation. This should be reviewed, protected and retained where appropriate. A tree survey and arboricultural impact assessment will be required to BS5837:2012. This is important if boundary vegetation is needed for ongoing screening of the site. The operational life of the proposed scheme should also be taken into account. We would wish	An Arboricultural Impact Assessment has been undertaken to support this ES (Appendix 16.2 AIA and Tree Protection Plan (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.02]. Section 16.4 below summarises the conclusions of the AIA. An Outline Landscape and Ecological Management Plan (oLEMP) [EN0110012/APP/LVS/07.05] sets out how site vegetation will be retained and managed.

Scoping opinion I.D	Scoping opinion comment	How is this addressed
	to see certainty that site vegetation would be retained during the maintenance management period and not later removed as a consequence of the development.	
PINS [ID 3.2.4]	BESS Emissions modelling: The Scoping Report proposes to scope out an assessment of unplanned air quality emissions due to a BESS fire event on the basis that the applicant intends to prepare an outline Battery Fire Safety Management Plan (oBFSMP) to support the DCO. The Inspectorate agrees that this matter can be scoped out, subject to the BFSMP being prepared in line with relevant guidance and confirming that there is no potential for significant effects. The applicant's attention is drawn to the comments from National Highways at Appendix 2 of this Opinion in relation to the requirement for a Safety Risk Assessment (SRA) in accordance with standard GG104 of DRMB for the BESS.	A BESS Emissions Modelling technical report has been produced to support this ES (Appendix 16.5 (ES Volume 3) [EN0110012/APP/LVS/06.03.16.05]. Section 16.5 below summarises the conclusions of the BESS Emissions Modelling Report. The BESS Emissions Modelling report assesses potential likely effects on human health as well as the potential effects of BESS fire emissions on visibility on the local road network. The report concludes that there would be no significant air quality effects as a result of a BESS fire incident, including with regard to visibility on surrounding roads. An Outline Battery Fire Safety Management Plan has also been produced in line with relevant guidance to support the DCO Application [EN0110012/APP/LVS/07.06]. The BESS Emissions Modelling report assesses potential likely effects on human health as well as the potential effects of BESS fire emissions on visibility on the local road network. The report concludes that the lowest visibility predicted on local roads occurs at 'ROAD2', which represents the A63, 24 m south-east of the BESS Compound. The worst-case visibility distance predicted at this location because of smoke from a BESS fire is 146.1 m, which is twice the vehicle stopping distance at the national speed limit for this road (the typical braking distance is 73 m for a car travelling at 60 mph. These visibility calculations assume that a fire occurs at the closest BESS enclosure to the road and that this happens to coincide with the worst possible meteorological conditions for pollution dispersion at that road location (worst hour for dispersion across five years of meteorological data). In reality the wind direction required to blow smoke from the BESS area to the A63

Scoping opinion I.D	Scoping opinion comment	How is this addressed
		occurs relatively infrequently (only 8.4% of the total time). A BESS and site-specific Plume Study will be conducted at detailed design to reassess impacts, the Emergency Response Plan (ERP) will contain any requisite incident response protocols. Large Scale Fire Testing (LSFT) will establish likely burn out times and measure smoke plume composition (height, density, max. size, etc.) from the BESS design. An Outline Battery Fire Safety Management Plan has also been produced to support the DCO Application [EN0110012/APP/LVS/07.06]. The detailed BSMP content and ERP protocols will reflect these test results and the Plume Study results. A weather station will be installed within the BESS area to establish wind directions immediately if a BESS fire occurs. The detailed design phase of the Proposed Development will consider the lifecycle of the battery system from installation to decommissioning. At the detailed design stage, the selected BESS design will have completed Large Scale Fire Testing (LSFT) to fully inform inputs for risk assessment tools which will be utilised together with detailed consequence modelling to provide a comprehensive site operations and emergency response safety audit.
PINS [ID 3.11.2]	BESS fire risks - The Scoping Report states that a Battery Fire Safety Management Plan (BFSMP) will be a requirement of the DCO and will contain measures to reduce the risk of electrical fires and explosions. The applicant's attention is drawn to the comments from National Highways at Appendix 2 of this Opinion regarding the assessment of potential impacts on the [Strategic Road Network] SRN (particularly the A63) in the event of a fire at the BESS, and the requirement for a Safety Risk	A BESS Emissions Modelling technical report has been produced to support this ES (Appendix 16.5 (ES Volume 3) [EN0110012/APP/LVS/06.03.16.05]. Section 16.5 below summarises the conclusions of the BESS Emissions Modelling Report. See response above.

Scoping opinion I.D	Scoping opinion comment	How is this addressed
	Assessment (SRA) in accordance with standard GG104 of DRMB	
National Highways [other supporting comments]	BESS fire risks - Should these risks materialise they have the potential to negatively affect the operation of the SRN, particularly if the A63 has to be closed to traffic for a prolonged period of time.	A BESS Emissions Modelling technical report has been produced to support this ES (Appendix 16.5 (ES Volume 3) [EN0110012/APP/LVS/06.03.16.05]. Section 16.5 below summarises the conclusions of the BESS Emissions Modelling Report. The BESS Emissions Modelling report assesses potential likely effects on human health as well as the potential effects of BESS fire emissions on visibility on the local road network and includes a number of points on the A63. See response two lines above for more details on this. Initial indications from the assessment are that in the event of a BESS Fire, it is unlikely to result in a closure of the A63. An Outline Battery Fire Safety Management Plan has also been produced to support the DCO Application [EN0110012/APP/LVS/07.06].
PINS [ID 3.7.1]	EMF: The Scoping Report seeks to scope out EMF on the basis that the Proposed Development would comprise underground cables with a maximum voltage up to and including 132 kilovolts (kV). As such, the Scoping Report considers that the Proposed Development would not be capable of exceeding the International Commission on Non-Ionizing Radiation Protection (ICNIRP) exposure guidelines. On the basis that the proposed cables do not exceed 132kV, the Inspectorate is content that an assessment of EMF impacts on human receptors can be scoped out of the ES. However, if the design of the Proposed Development changes and voltages of over 132kV are proposed, this matter must be assessed.	The Proposed Development includes some 275 kV cables and therefore a High-Level Electromagnetic Field (EMF) Assessment has been provided to support this ES [EN0110012/APP/LVS/06.03.16.06]. Section 16.6 below summarises the conclusions of the EMF Assessment. Chapter 6: Biodiversity (ES Volume 1) [EN0110012/APP/LVS/06.01.06] includes an assessment of the operations phase risk to fish from Electromagnetic Fields (EMF) resulting from buried cables in line with the EA's recent EMF Position Statement, and where needed, how any EMF effects will be mitigated.

Scoping opinion I.D	Scoping opinion comment	How is this addressed
	Notwithstanding the above, the Inspectorate considers that the ES should assess impacts on fish from EMF where significant effects are likely, see ID 3.3.14 above. The Applicant is advised to agree its assessment approach with the Environment Agency.	
PINS [ID 3.8.1]	Ground conditions: The Inspectorate notes the justification provided by the Applicant in order to scope out all aspects of ground conditions from the ES. The Inspectorate considers that the information provided aligns with the requirements of the Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development and accompanying Solar Scoping Table. On this basis, the Inspectorate is therefore in agreement that all aspects of ground conditions can be scoped out of further assessment. The Applicant however is advised to reconsider this dependent on the results of the Preliminary Risk Assessment (PRA). The Applicant is also directed to the Environment Agency's consultation response (Appendix 2) which provides information in relation to the requirements of the PRA.	A Preliminary Risk Assessment (PRA) has been undertaken to support this ES (Appendix 16.7 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.07]. Section 16.7 below summarises the conclusions of the PRA. Based on the findings of the PRA, no significant effects in relation to ground conditions have been identified and the Applicant still considers that it is appropriate to scope out ground conditions from detailed consideration in the ES.
Environment Agency [other supporting comments]	Ground conditions: Section 12 does not present a PRA or Conceptual Site Model for the Proposed Development, and does not set out the environmental sensitivity, or indicative magnitude of impact for aspects of ground conditions, for the potential impacts from the construction, operation and maintenance or decommissioning phases (as indicated in Section 4.5.2).	A Preliminary Risk Assessment (PRA) has been undertaken to support this ES. (Appendix 16.7 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.07]. Section 16.7 below summarises the conclusions of the PRA. Potential impacts and effects on groundwater have been addressed in Chapter 15: Water Resources and Flood Risk [EN0110012/APP/LVS/06.01.15].

Scoping opinion I.D	Scoping opinion comment	How is this addressed
Environment Agency [other supporting comments]	Ground conditions: We request confirmation that the PRA and preliminary Conceptual Site Model (CSM) will incorporate Site Reconnaissance (site walkover). The scope of intrusive investigations should be defined to address potentially significant contaminant linkages and uncertainties in the preliminary CSM. This will enable refinement of the CSM, and the production and implementation of a Remediation Strategy, should unacceptable contaminant linkages be identified and verified (as per LCRM guidance). We would like to see reference to any such intrusive investigations being carried out in accordance with BS10175:2011+A2:2017.	Comment noted. The PRA has been undertaken to support the ES. (Appendix 16.7 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.07] . Section 16.7 below summarises the conclusions of the PRA. The PRA includes information from site walkover visits. No significant contaminant linkages have been identified. The PRA includes recommendations for sampling to confirm the conceptual site model as part of proposed geotechnical ground investigations to support the detailed development design prior to construction. This requirement for ground investigations is secured through the oCEMP [EN0110012/APP/LVS/07.02] Intrusive ground investigation for ES stage is not considered necessary.
Environment Agency [other supporting comments]	Ground conditions: Section 12.5.1 lists the data sources used to establish the baseline ground conditions of the Study Area. Section 12.5.2 states that no surveys for ground conditions have been completed at the time of production of the Scoping Report, but a geo-environmental PRA desk study report will be produced and presented as a technical appendix to the PEIR and Environmental Statement. This will build on the findings of the assessment presented in the Scoping Report. It is not indicated whether intrusive site investigations are proposed to address areas of uncertainty identified in this PRA. If potentially significant contaminant linkages are identified, we would expect intrusive investigations to be carried out to verify the associated risks to controlled waters.	Comment noted. The PRA which has been undertaken to support the ES (Appendix 16.7 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.07] . Section 16.7 below summarises the conclusions of the PRA. No significant contaminant linkages have been identified. The PRA includes recommendations for sampling to confirm the conceptual site model as part of proposed geotechnical ground investigations to support the detailed development design prior to construction. Intrusive ground investigation for ES stage is not considered necessary.
Canal and River Trust	Ground conditions: In relation to mitigation measures, whilst we	The PRA which has been produced ES (Appendix 16.7 (ES Volume 3))

Scoping opinion I.D	Scoping opinion comment	How is this addressed
[other supporting comments]	have no significant issue with the details identified in section 12.7, we believe that, as a minimum, exploratory trial pitting should be undertaken to discount risks from imported/artificial ground, or to identify specific mitigation measures, within the Cable Corridor Areas. This is pertinent as published British Geological Society (BGS) data shows areas of made/artificial ground to be locally present within the Cable Corridor Options Area, and works could expose contamination associated with this to the wider environment.	[EN0110012/APP/LVS/06.03.16.07] . assesses the risk associated with contamination. No significant pollutant contaminant linkages have been identified, including from imported/artificial ground. Intrusive geotechnical and geoenvironmental investigation to inform detailed design is recommended as part of pre-construction surveys once the Cable Route Corridor areas have been further refined and any additional mitigation measures will be identified and included in the detailed CEMP. Risks to the environment can be adequately controlled through adherence to measures in the CEMP. Intrusive investigation as part of the ES stage is not considered necessary.
National Highways [other supporting comments]	Glint and glare: Considering the nature of the proposed development, it is important to highlight that paragraph 70 of Circular 01/2022 states that: <i>“Some developments, notably solar farms, wind turbines and those with expansive glass facades, have the potential to create glint and glare which can be a distraction for drivers. Where these developments would be visible from the SRN, promoters must provide an appropriate assessment of the intensity of solar reflection likely to be produced, which satisfies the company that safety on the SRN is not compromised.”</i> As such, I would expect any forthcoming application to be accompanied by a Glint and Glare Assessment which specifically considers impacts on the SRN.	A glint and glare assessment has been undertaken to understand potential impacts and is included in this ES (Appendix 16.4 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.04] . This includes consideration of impacts to the Strategic Road Network (SRN). Section 16.8 below summarises the conclusions of the Glint and Glare Assessment.
PINS [ID 2.0.2]	Glint and glare: The Scoping Report states that there are two options for the proposed panels: static or tracking. The Inspectorate recommends that this decision is made prior to submission of the DCO application. If this is not	A glint and glare assessment has been undertaken to support this ES (Appendix 16.4 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.04] . This assesses the potential impacts and effects of both static and tracker panels.

Scoping opinion I.D	Scoping opinion comment	How is this addressed
	possible, the ES should identify and assess the worst-case scenario for applicable topics (including Landscape and Visual, Cultural Heritage and Glint and Glare) during operation.	Section 16.8 below summarises the conclusions of the Glint and Glare Assessment.
PINS [ID 2.1.3]	Glint and glare: Regarding the Glint and Glare assessment, the applicant's attention is drawn to the comments from the Canal and River Trust and National Highways at Appendix 2 of this Opinion requesting that this assessment considers glint and glare impacts on river users and the Strategic Road Network (SRN).	A glint and glare assessment has been undertaken to support this ES (Appendix 16.4 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.04] . This assesses the potential impacts and effects on users of the waterways, particularly the River Aire. The Selby canal is outside of the assessment area as it is over 1.2 km from the nearest Solar Development Site. Results will be no greater than those modelled towards the River Aire. Section 16.8 below summarises the conclusions of the Glint and Glare Assessment.
Canal and River Trust [other supporting comments]	Glint and glare: We wish to highlight that river users are especially vulnerable to glint and glare impacts, as they transverse the water at a slow pace, and need good sight in order to navigate. We therefore request that the Environmental Report should specifically assess for glint and glare impacts for boaters.	A glint and glare assessment has been undertaken to support this ES (Appendix 16.4 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.04] . This assesses the potential impacts and effects on users of the waterways, particularly the River Aire. Section 16.8 below summarises the conclusions of the Glint and Glare Assessment.

Statutory Consultation

- 16.2.3 A period of statutory consultation took place between 26 June to 7 August 2025 wherein consultees were able to respond to preliminary environmental information set out in the Preliminary Environmental Information Report (ES). [Table 16-2](#) ~~Table 16-2~~ outlines the statutory consultation responses relating to other environmental matters and how these have been addressed through the ES.
- 16.2.4 Responses to the Statutory Consultation are outlined in the Consultation Report **[EN110012/APP/LVS/05.01]**

Table 16-2 Statutory consultation comments

Consultee	Comments	How has this comment been addressed
Monk Fyston Parish Council, and general public	BESS Fire Risks: Concerns about BESS fires and resultant contamination risks from tackling them	A BESS Emissions Modelling technical report has been produced to support this ES (Appendix 16.5 (ES Volume 3) [EN0110012/APP/LVS/06.03.16.05]. Section 16.5 below summarises the conclusions of the BESS Emissions Modelling Report. The BESS Emissions Modelling report assesses potential likely effects on human health as well as the potential effects of BESS fire emissions on visibility on the local road network. An Outline Battery Fire Safety Management Plan has also been produced to support the DCO Application [EN0110012/APP/LVS/07.06]. An embedded mitigation measure for the Proposed Development includes firewater containment for the battery energy storage system (BESS). The drainage team have noted these stipulations and have worked to ensure these points are taken forward and recognised in the design of the BESS. The outline drainage strategy is outlined within Appendix 15.4 (ES Volume 3) [EN0110012/APP/LVS/06.03.15.04], which also considers the findings of the outline Battery Safety Management Plan (oBSMP) [EN0110012/APP/LVS/07.06].
Hillam Parish Council	Air Quality: Air quality concerns in relation to construction	A construction dust assessment has been undertaken to support this ES (Appendix 16.1 (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.01], and mitigation measures have been recommended in line with the best practice Institute of Air Quality Management (IAQM) construction dust guidance. Section 16.4 below summarises the conclusions of the Construction Dust Assessment. IAQM guidance advises that with the implementation of these best practice measures, no significant effects should occur. These measures have been included in the Outline Construction Environmental Management Plan (oCEMP) [EN0110012/APP/LVS/07.02], Outline Operational management Plan (oOEMP) [EN0110012/APP/LVS/07.03] and Outline Decommissioning Environmental Management Plan (oDEMP) [EN0110012/APP/LVS/07.04]. Final details on traffic volumes (see Chapter 14: Traffic and Movement (ES, Volume 1) [EN0110012/APP/LVS/ 06.01.14] and Appendix 14.1 Transport Assessment (ES, Volume 3) [EN0110012/APP/LVS/06.03.14.01], programme

Consultee	Comments	How has this comment been addressed
		and phasing have been considered and assessed against the EPUK/IAQM criteria at ES stage and construction traffic volumes fall below the relevant thresholds.
Forestry Commission	Arboriculture: It is understood that the current Arboricultural Impact Assessment (AIA, June 2025), only assesses trees and woodlands associated with the proposed Solar Development Sites, and not the Cable Corridor Options. When specific cable routes are considered, a similar assessment of trees and woodlands should be undertaken. The joint Natural England and Forestry Commission Standing Advice on Ancient Woodland advises that proposals in proximity to ancient woodland should have a buffer of at least 15m.	An Arboricultural Impact Assessment has been undertaken to support this ES (Appendix 16.2 AIA and Tree Protection Plan (ES Volume 3)) [EN0110012/APP/LVS/06.03.16.02]. This assesses potential impacts across the Solar Development Sites, Cable Route Corridor, Highways Improvements Areas and the Site 8 Access Area. Section 16.4 below summarises the conclusions of the AIA. The Proposed Development avoids impacts on both ancient / veteran trees identified in the survey and on the Ancient Tree Inventory (ATI), and ancient woodland. Both features will be adequately protected by exclusion during construction. Buffers around ancient/veteran trees have been established based on Natural England Standing advice: ▪ Ancient woodland – 15 m buffer or Root Protection Area (whichever is larger), except for adjacent to Common Wood SINC. ▪ A buffer of 15 times the stem diameter as measured at 1.5 m, will be put in place around ancient/ veteran trees.
Natural England	Impacts to ancient woodland and ancient and veteran trees should be considered in line with paragraph 180 of the NPPF.	See response above.
Yorkshire Wildlife Trust	We also welcome the commitment to avoiding removing any trees in the proposed cable route, however we would be grateful to be contacted regarding this matter if tree loss is anticipated and advise of compensatory measures.	Worst-case scenario tree and hedge loss has been calculated for the cable route in the Arboricultural Impact Assessment [EN0110012/APP/LVS/06.03.16.02], assessed as part of ES Volume 1 Chapter 16: Other Environmental Issues [EN0110012/APP/LVS/06.01.16]. The report also sets out the approach to avoiding tree loss for visibility accesses and visibility splays along the cable route. The Applicant will replant trees and hedges lost along the cable route within the cable

Consultee	Comments	How has this comment been addressed
		route corridor where possible, subject to detailed design works, as set out in and secured through the outline Construction Environment Management Plan (oCEMP, [EN0110012/APP/LVS/07.02]).

Targeted Consultation

- 16.2.5 A period of targeted consultation took place between 16 October 2025 and 20 November 2025, during which feedback was encouraged to comment on minor changes to the Proposed Development boundary area, in relation to access points during construction and operation; visibility splays to ensure safe sightlines for vehicles entering and exiting the Proposed Development; passing places on narrow roads; access requirements for abnormal indivisible loads (less frequent but large delivery vehicles that have wider turner circles); Cable Route Corridor adjustments to avoid environmental and engineering constraints; and permissive paths to enable increased public access routes within the Solar Development Sites. Table 16-3 outlines the targeted consultation responses relating to Other Environmental Matters and how these have been addressed through the ES.

Table 16-3 Targeted consultation comments

Consultee	Comment	Applicant response
Local resident	Arboriculture: Unnecessary Loss of Mature Trees and Hedgerows: The repeated references to “possible cutting back or removal of trees or hedges” across every single change (access points, visibility splays, passing places, AIL routes, and cable route) indicate a blanket policy of vegetation removal that will permanently scar the local landscape. These features are irreplaceable ecological corridors and provide critical habitat, carbon sequestration, and visual screening. Their loss cannot be mitigated by standard replanting schemes.	The Applicant can confirm that it intends to minimise and avoid vegetation removal where possible. Surveys have and will continue to be undertaken to establish whether trees and hedgerows are overgrown at the time of construction and if they need to be cut back to facilitate any of the localised changes. Where it has been determined that trees or hedgerows do need to be cut back, further surveys and visual inspections would be undertaken to ensure we are not disturbing existing habitats. Any unavoidable tree losses as a result of the Proposed Development will be mitigated with replacement planting as close to the location, type and character of the existing vegetation, as far as reasonably practicable, to reduce effects resulting from such losses.

16.3 Air Quality Assessment - Construction Dust Assessment

Introduction

- 16.3.1 This section of the ES presents a summary of the findings of an assessment of the likely significant effects in relation to construction dust as a result of the Proposed Development.
- 16.3.2 This chapter is supported by the following appendix in ES Volume 3: Appendix 16.1: Construction Dust Assessment **[EN0110012/APP/LVS/06.03.16.01]**.

Assessment of likely impacts and effects.

- 16.3.3 A review of current legislation, planning policy and a baseline assessment describing the current air quality conditions, with regard to particulate matter (PM₁₀ and PM_{2.5}), in the vicinity of the Proposed Development has been carried out.
- 16.3.4 A baseline assessment has been carried out to review the air quality conditions in the vicinity of the Proposed Development. Concentrations are well below the annual mean air quality objectives for PM₁₀ (40µg/m³) and the new interim target for PM_{2.5} (12µg/m³).
- 16.3.5 A review of sensitive receptors in the vicinity of the Order Limits has been conducted to inform the construction dust assessment in line with the distance criteria in the Institute of Air Quality Management (IAQM) guidance (Ref 1).
- 16.3.6 There are between 10 to 100 highly sensitive human receptors within 20 m of the Order Limits, including residential properties in the surrounding rural areas.
- 16.3.7 Considering ecological receptors, no internationally or nationally designated sensitive ecological sites have been identified within 50 m of the Order Limits.
- 16.3.8 The closest locally designated ecological receptors to the Order Limits are the three Ancient Woodland (AW) ecological receptors (Common Wood and two at Gilbertson's Wood) located within 20 m of the Order Limits. As advised by the project arboricultural consultant, the sensitivity of these AW ecological sites to dust deposition has been classified as high, since they are listed as irreplaceable habitats in the NPPF and the recent Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024 (Ref 17).
- 16.3.9 There are four Sites of Importance for Nature Conservation (SINCs) within the Order Limits; Bywater Wood (CRC 4-POC), Nightingale Wood (CRC 1-4), Ouse Bank-Westfield-Riccall Ings (CRC 1-4) and Scarrow Green Pond, Little Skipwith (CRC 1-4), which are all current North Yorkshire SINCs. However, as these SINCs are of local designation, they are classed as low sensitivity receptors in line with the IAQM guidance.
- 16.3.10 In addition, there are a further three low sensitivity SINCs contained within 20 m of the Order Limits including; Gilbertson's Plantation (Wheldrake Site 65)) (York

SINC) which overlaps with Gilbertson's Wood Ancient Woodland, alongside two currently designated North Yorkshire SINCs (Common Wood and Mulberry Farm Ponds).

- 16.3.11 In addition, some of the Order Limits include Functionally Linked Land (FLL) and may support important qualifying bird species for which the Lower Derwent Valley (SPA and Ramsar), Humber Estuary (SPA and Ramsar) and Thorne and Hatfield (SPA) are designated for. FLL, though located outside the designated boundaries, is considered alongside the SPA and Ramsar sites it supports, as it may provide critical foraging or roosting habitat for qualifying bird species up to 20 km from a designated site's boundary (see Chapter 12: Ornithology (ES Volume 1) [EN0110012/APP/LVS/06.01.12]). Impacts on this land may undermine the conservation objectives of the designated sites and so the FLL has been considered to be highly sensitive to dust soiling.
- 16.3.12 The potential impact of dust deposition on these sensitive ecological receptors (AW, SINCs and FLL) has been considered below.
- 16.3.13 Construction dust impacts have been considered and assessed using the qualitative approach described in the latest Air Quality Management (IAQM) guidance (Ref 1). The IAQM guidance considers the potential for dust emissions from activities such as demolition of existing structures, earthworks, construction of new structures and trackout. Earthworks refer to the processes of soil stripping, ground levelling, excavation and land capping, while trackout is the transport of dust and dirt from the Proposed Development onto the public road network where it may be deposited and then re-suspended by vehicles using the network.
- 16.3.14 For each of these dust-generating activities, the guidance considers three separate dust effects:
 - 1) Annoyance due to dust soiling;
 - 2) Harm to ecological receptors; and
 - 3) The risk of health effects due to a significant increase in PM10 exposure.
- 16.3.15 The methodology takes into account the scale to which the above effects are predicted to be generated (classed as small, medium or large), as well as the levels of background PM10 concentrations and the distance to the closest receptor, in order to determine the sensitivity of the area.
- 16.3.16 Taking into consideration the dust emission magnitude and the sensitivity of the area, the assessment shows that the Proposed Development has been classified as high risk to dust soiling, low risk to human health and high risk to ecological impacts (at worst), prior to the implementation of mitigation measures.
- 16.3.17 It is important to note that the Order Limits have been assessed considering the entire Proposed Development area, which is large, and, as such, the impacts will vary depending on where the construction activities (earthworks, construction or trackout) are being undertaken in relation to the Order Limits.
- 16.3.18 The dust emitting activities can be greatly reduced or eliminated by applying the site-specific mitigation measures. As high risk has been determined for the

construction activities, relevant high-risk measures have been provided according to the IAQM guidance (Ref 1).

- 16.3.19 These include, amongst other measures as set out in Appendix 16.1 (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.01]**, effective site management, dust monitoring measures, site maintenance, careful management of soils, and cleaning of roads.

Conclusions

- 16.3.20 It has been concluded that with the appropriate best practice mitigation measures suitable for high-risk sites in place, as set out within Appendix 16.1 (ES Volume 3)) **[EN0110012/APP/LVS/06.03.16.01]** and secured through the oCEMP **[EN0110012/APP/LVS/07.02]** there is likely to be no significant effects on existing receptors from the dust-generating activities onsite.
- 16.3.21 The IAQM guidance (Ref 1) does not conclude significance prior to mitigation, so this can be considered the overall residual effect.

16.4 Arboricultural Impact Assessment

Introduction

- 16.4.1 This section of the ES presents a summary of the findings of an assessment of the potential impact upon on trees, woodlands and hedges within and within influencing distance of the Order Limits, comprising the Solar Development Sites, Cable Route Corridor, Highways Improvements Areas and the Site 8 Access Area. The impact assessment does not conclude on significance of effects. The report makes recommendations for mitigating any negative impacts.
- 16.4.2 This chapter is supported by the following appendix, produced by Treework Environmental Practice, on behalf of Arup, in Appendix 16.2: Arboricultural Impact Assessment (AIA) and Tree Protection Plan (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.02]**.
- 16.4.3 Appendix 16.2 is accompanied by four annexes:
- 1) Annex A – Tree Schedule
 - 2) Annex B – Tree Protection Plan
 - 3) Annex C – Tree Protection Specifications
 - 4) Annex D – Tree Survey Method and Limitations
- 16.4.4 The AIA provides an assessment of the impact of the Proposed Development upon on-site trees and relevant off-site trees and makes recommendations for mitigating any negative impacts.
- 16.4.5 The AIA reports on the likely direct and indirect impacts of the Proposed Development on trees in terms of both the buildability of the proposals and the long-term impact of the finished scheme. The impacts have been assessed on a worst-case scenario basis in terms of tree and hedge removals to facilitate construction accesses and visibility splays.
- 16.4.6 Survey work has identified 1685 individual trees, 257 groups of trees, 25 woodland blocks, and 440 hedges as falling within or within influencing distance of the Order Limits. Each of these features has been assigned a quality and value category from A (high) to U (low) according to BS5837:2012: Trees in relation to design, planning and construction. The tree survey data is presented within the Tree Schedule at Annex A of Appendix 16.2 (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.02]**.
- 16.4.7 The online planning map of North Yorkshire Council (former Selby District) indicates that no Tree Preservation Orders or Conservation Areas are present within the Solar Development Sites. One tree, T2309, within influencing distance of the wider Order Limits is covered by TPO 5/2003. There is one ancient woodland (Gilbertson's Wood) within influencing distance of Solar Development Site 1 that is identified on the government Magic portal. Nine veteran/ancient trees have been identified across the Solar Development Sites, 7 in Solar Development Site 1 and 2 along the Cable Route Corridor. A further 24 trees

within or within influencing distance of the Order Limits were identified as having some veteran habitat characteristics but were not judged to have a sufficient number of habitat features, longevity of habitat and/or age and size to qualify for veteran status.

- 16.4.8 No trees with statutory protection or ancient or veteran trees will be removed to facilitate the Proposed Development. T2309 may require minor pruning to facilitate construction access.
- 16.4.9 Three hedges (H1.16, H1.65, and H6.10) as identified in the ecology survey, which correspond to hedges H476 (H1.16), H309, H312, H316 and H317 (H1.65) and H1770 (H6.10) as identified in the arboricultural survey, have been identified in Chapter 8: Cultural Heritage (ES Volume 1) **[EN0110012/APP/LVS/06.01.08]** as being 'Important' under the criteria of the Hedgerow Regulations 1997 (Ref 3).

Assessment of likely impacts and effects.

Embedded mitigation

- 16.4.10 As embedded mitigation, when setting the parameters for land suitable for solar development and BESS development, a 15 m buffer was put in place around ancient woodland, a 10 m buffer was put in place around non-ancient woodland, a buffer of 15 times the stem diameter as measured at 1.5 m was put in place around ancient/veteran trees and a 5 m buffer was put in place for non-ancient/non-veteran trees. This mitigation is embedded and is secured via the Design Parameters and Commitments Document **[EN0110012/APP/LVS/05.06]** and the Outline Construction Environmental Management Plan **[EN0110012/APP/LVS/07.02]**. Following the establishment of more precise constraints in the form of Root Protection Areas (RPAs) and canopy extents from the tree survey, the buffers or the RPA, whichever is greater, have been applied. In rare cases where the buffers cannot be applied, alternative mitigation has been proposed to reduce the impacts on retained trees. The Design Commitments for ancient woodland and ancient and veteran trees are also applicable to the Cable Route Corridor and highway improvement areas, but the RPAs/canopy extents have been used to establish suitable distances between construction activity and retained trees, tree groups, hedges and non-ancient woodland.

Tree removal and retention

- 16.4.11 The removal of 1 individual tree and the removal of parts of 13 hedges up to a total of 81 metres of hedge will be required within the Solar Development Sites to facilitate the Proposed Development.
- 16.4.12 Three entire hedges, and short lengths of 2 hedges will be removed to facilitate ornithology enhancements and permissive path creation adjacent to the Solar Development Sites.
- 16.4.13 To facilitate the Cable Route Corridor or to maintain appropriate visibility splays for direct accesses to either the Cable Route Corridor or the Solar Development Sites, 54 individual trees, 11 entire tree groups, 19 entire hedges (with a total

length of 1501 m), small parts of 1 tree group (c. 6 trees) and 1 woodland group (2-3 trees) and parts of 55 hedges with a combined approximate total length of around 1715.5 m will need to be removed in the worst-case scenario.

- 16.4.14 Identification of vegetation removals to facilitate the cable installation have been based on a working width along the cable route of 25 m to accommodate the cable trench, the haul road, which will run adjacent, and spoil from the trenching. Where horizontal directional drilling (HDD) has been specified the launch and receptor pits will adopt a 10 m standoff from watercourses and 50 m from Canal and River Trust watercourses. Therefore, they will be outside of Ancient and Veteran Trees (AVT) buffer zones, RPAs and canopy spreads of trees, tree groups, woodlands and hedges.
- 16.4.15 Removals for visibility splays and accesses are based on a worst-case scenario Design Manual for Roads and Bridges (DMRB) criteria using the maximum criteria or One Step Below criteria. It may be possible to reduce the number of trees and lengths of hedges lost to visibility splay facilitation in the final construction plan by using alternative acceptable criteria or by using banksmen to ensure vehicle ingress/egress safety where high-value trees might otherwise be lost, but this assessment assumes a worst-case of loss.
- 16.4.16 Within or within influencing distance of the Order Limits, 59 Category U trees and 4 tree groups have been identified that are in poor structural and/or physiological condition such that they would not have an anticipated remaining lifespan of greater than 10 years. Where there is a need to remove these trees to facilitate the Proposed Development their removal has been recommended and is recorded. Elsewhere, it may not be necessary to remove Category U features unless they pose a high risk to infrastructure or construction personnel. This can be assessed on a case-by-case once the details of the construction programme have been finalised and in agreement with the Arboricultural Clerk of Works, as set out in the outline Construction Environmental Management Plan (oCEMP) **[EN0110012/APP/LVS/07.02]**.
- 16.4.17 No veteran or ancient trees or trees in ancient woodlands will be removed to facilitate the Proposed Development.
- 16.4.18 A 10 m span of one Important Hedgerow H1770 (H6.10)] in Solar Development Site 6 will be removed to facilitate the Proposed Development. The two other Important Hedgerows will be retained,
- 16.4.19 All other trees, tree groups, woodlands and hedges will be retained and protected during the lifetime of the Proposed Development.

Facilitative tree works

- 16.4.20 No tree works are likely to be required to facilitate installation of the panels, as trees within the Solar Development Sites fields are around the field boundaries and the panels will be installed internally to the fields, with generous offsets. Minor pruning such as crown lifting or removal of selected small branches may be

required to provide suitable clearance for construction and maintenance vehicles using the access tracks within the Sites.

- 16.4.21 Seven groups of trees, 3 hedges and 2 trees will require minor lateral pruning to provide suitable clearance along access tracks.
- 16.4.22 Crown raising to achieve clearance above the highway of 5 m will be required to an estimated 111 trees, 12 tree groups and the edges of 7 woodland blocks to facilitate the passage of large construction vehicles and abnormal indivisible loads (AILs) that will be using minor roads or access tracks unused to high-sided vehicles. The exact number of trees that will require pruning will be identified once construction access plans have been finalised, and thus the currently identified work represents the worst-case scenario.

Tree protection during construction

- 16.4.23 The AIA sets out measures to protect trees during construction, these measures are also set out in, and secured through, the oCEMP. Measures include:
- 1) Root Protection Areas (RPAs) and construction exclusion zones (CEZs).
 - 2) Requirements related to transport access and access tracks, including the use of existing access points and internal access roads to minimise the impacts on trees and hedges.
 - 3) The construction of BESS and Substations away from any retained trees or hedges.
 - 4) Location of construction compounds, both Solar Development Compounds and Cable Construction Compounds, to leave sufficient separation from boundary trees, tree groups and hedges.
 - 5) The siting of the final cable route to avoid the RPAs of all retained trees, but particularly the higher value category A and B trees, tree groups and hedges. And to minimise hedgerow loss.
 - 6) Special technical measures where conflicts between retained trees and aspects of the Proposed Development that cannot be dealt with by CEZs, tree protection or remedial tree work.

Tree protection during operation (including maintenance)

- 16.4.24 The AIA sets out requirements for tree and hedge maintenance work, as well as measures for protecting trees during any maintenance work of the solar farm infrastructure.

Arboricultural compensation and enhancement

- 16.4.25 Extensive planting of native woodland blocks, native woodland belts and hedges with and without individual trees planted within them will be carried out across all seven Solar Development Sites as compensation for trees and hedges lost to the Proposed Development, and to enhance canopy cover and hedge provision across the Solar Development Sites. Opportunities will also be taken to reinforce

existing hedges by planting new hedgerow plants where gaps currently exist, increasing widths and hedge tree planting. Indicative locations of these enhancements are shown on the Outline Environmental Masterplan **[EN0110012/APP/LVS/02.12]**. Trees and hedges lost to the cable installation will be replanted where appropriate in the Cable Route Corridor subject to further detailed design works and will be set out in the detailed CEMP.

Conclusion

- 16.4.26 The AIA identifies the number and value of individual trees, individual trees, groups of trees, woodland blocks, and hedges as falling within or within influencing distance of the Order Limits. It sets out how the design of the Proposed Development has developed to minimise potential impacts on the identified trees and hedges. It identifies any potential impact to trees, woodlands and hedges caused by the works to construct and operate the Proposed Development and outlines the measures that will be implemented to avoid or minimise impacts. The AIA also identifies the potential for arboricultural compensation and enhancement. The AIA does not conclude on significance of effect but it does feed into the assessment of effects in Chapter 16: Biodiversity (ES Volume 1) **[EN0110012/APP/LVS/06.01.06]**.

16.5 BESS Fire Emissions Modelling

Introduction

- 16.5.1 This section of the ES presents a summary of the findings of the BESS Fire Emissions Modelling technical report.
- 16.5.2 This chapter is supported by the following appendix, produced by Arcadis, in Appendix 16.5: BESS Fire Emissions Modelling technical report (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.05]**.

Assessment of likely impacts and effects.

- 16.5.3 The Battery Energy Storage System (BESS) has the potential to cause air quality impacts in the rare event of a fire incident. Concentrations of carbon monoxide (CO), formaldehyde, hydrogen chloride (HCl), hydrogen cyanide (HCN), hydrogen fluoride (HF), ammonia (NH₃), nitrogen dioxide (NO₂) and particulates from a potential BESS fire have been modelled using an air quality dispersion model to determine the likely effects on human health.
- 16.5.4 A high-level visibility assessment has also been undertaken using the modelled particulates results to determine the effect of BESS fire emissions on visibility on the local road network to inform the outline Battery Safety Management Plan (oBSMP) **[EN110012/APP/LVS/07.06]**.
- 16.5.5 The final design of the BESS layout, size and type of BESS Enclosure have not yet been fixed and therefore appropriate assumptions have been made regarding concept design for the BESS Fire Emissions Modelling assessment.
- 16.5.6 The assessment has been undertaken with due consideration of the Environment Agency's (EAs) 'Air emissions risk assessment for your Environmental Permit' guidance (Ref 5).
- 16.5.7 Predicted concentrations have been assessed against Acute Exposure Guidance Levels (AEGLs), which have higher threshold concentrations than the national air quality objectives and are relevant to short term releases. The occurrence of adverse health effects is not likely to occur in the general public at concentrations below the AEGLs.
- 16.5.8 There is no AEGL for particulates. As such, the Health and Safety Executive (HSE) Workplace Exposure Limit (WEL) (Ref 6) has been used.
- 16.5.9 In the absence of an AEGL 1 threshold for CO, CO concentrations have been compared against the World Health Organisation (WHO) CO guideline values.
- 16.5.10 Significance has been determined directly by reference to compliance with the applicable health-based threshold values. Where predicted concentrations are below the relevant thresholds, the effect is considered not significant.
- 16.5.11 The impact of the smoke plume on visibility was assessed by using the modelled PM₁₀ concentrations within the equation defined in the Principles of Smoke

Management (Ref 6). The calculated visibility distances were then compared against braking distances

- 16.5.12 The impact of the smoke plume on visibility has been calculated based on the mass concentration of particulate matter, using the equation developed in the Principles of Smoke Management (Ref 7).
- 16.5.13 For the purposes of the assessment, a Study Area of 1 km from the BESS Compound has been used, based on professional experience of assessing emissions from similar schemes, and based on air quality assessments undertaken for fires at similar BESS sites.
- 16.5.14 Human receptors have been identified in the vicinity of the Proposed Development using Google Earth imagery and Ordnance Survey mapping. Worst case receptors have been selected at locations closest to the BESS Compound where the public could be exposed to emissions from a potential BESS fire. These include existing residential properties (including gardens) and Public Rights of Way (PROW). There are no additional future receptors associated with committed developments within the 1 km Study Area.
- 16.5.15 Worst case locations on roads in the vicinity of the BESS Compound were selected for the visibility assessment.
- 16.5.16 Dispersion modelling has been undertaken using ADMS-6 (v6.0.2.1), which is developed by Cambridge Environmental Research Consultants Ltd and is accepted for the air quality assessment of industrial source type releases within the UK by the Environment Agency, Defra and local authorities. The model utilises hourly meteorological data to define conditions for plume rise, transport and diffusion of pollutants. It estimates the concentration for each source and receptor combination for each hour of input meteorology and calculates user-selected long-term and short-term averages.

Conclusions

- 16.5.17 Based on the factors of distance to the nearest locations of human exposure and the anticipated short-term nature of a fire incident, the assessment concludes that there would be no significant air quality effects as a result of a BESS fire incident. It is also worth noting that an outline Battery Safety Management Plan (oBSMP) **[EN110012/APP/LVS/07.06]** has been produced as part of this application and identifies how the Applicant will use good industry practice to reduce risk to life, property, and the environment in the rare event of a BESS fire.
- 16.5.18 The report concludes that the lowest visibility predicted on local roads occurs at 'ROAD2', which represents the A63, 24 m south-east of the BESS Compound. The worst-case visibility distance predicted at this location because of smoke from a BESS fire is 146.1 m, which is twice the vehicle stopping distance at the national speed limit for this road (the typical braking distance is 73 m for a car travelling at 60 mph. These visibility calculations assume that a fire occurs at the closest BESS enclosure to the road and that this happens to coincide with the worst possible meteorological conditions for pollution dispersion at that road

location (worst hour for dispersion across five years of meteorological data). In reality the wind direction required to blow smoke from the BESS area to the A63 occurs relatively infrequently (only 8.4% of the total time).

- 16.5.19 Notwithstanding, whilst there is low risk of adverse air quality effects at the closest receptors, a BESS and site-specific Plume Study will be conducted at detailed design to reassess impacts, the Emergency Response Plan (ERP), required by the outline Battery Safety Management Plan and produced at the detailed design stage, will contain any requisite incident response protocols. Large Scale Fire Testing (LSFT) will establish likely burn out times and measure smoke plume composition (height, density, max. size, etc.) from the BESS design.
- 16.5.20 An Outline Battery Fire Safety Management Plan has also been produced to support the DCO Application **[EN0110012/APP/LVS/07.06]**. The detailed BSMP content and ERP protocols will reflect these test results and the Plume Study results. A weather station will be installed within the BESS area to establish wind directions immediately if a BESS fire occurs.

16.6 Electromagnetic Field (EMF) Assessment

Introduction

- 16.6.1 This section of the ES presents a summary of the findings of an assessment of the likely significant effects on human health in relation to EMF as a result of the Proposed Development. The findings of this assessment have been interpolated in order to inform the assessment of potential impacts on aquatic ecology. Section 5 of Appendix 16.6 (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.06]** quantifies the magnitude of magnetic fields at the riverbed and in the water to enable consideration of impacts upon ecological receptors. Further consideration of these impacts is included within Environmental Statement Chapter 6: Biodiversity (ES Volume 1) **[EN0110012/APP/LVS/06.01.06]** and the Shadow Habitats Regulations Assessment Report **[EN0110012/APP/LVS/05.11]**. There are existing overhead lines of up to 400 kV which cross the Proposed Development and are considered within the assessment due to the potential for cumulative impacts.
- 16.6.2 This chapter is supported by the following appendix, produced by Pager Power, in Appendix 16.6: High-Level Electromagnetic Field Assessment (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.06]**.

Assessment of likely impacts and effects

- 16.6.3 The Proposed Development is located in North Yorkshire, UK, and will include underground power cables, conversion units, substations and Battery Energy Storage System (BESS).
- 16.6.4 The maximum voltages and potential locations for all underground cables, conversion units and BESS have been considered to account for a worst-case scenario that will be subject to refinement through detailed design.
- 16.6.5 All electrical equipment emits electric and magnetic radiation. Power cables produce both electric and magnetic fields which can potentially affect human health and ecological receptors. Electric and magnetic radiation from underground cables is generally less than radiation from overhead powerlines because emissions from adjacent conductors within a cable tend to cancel each other out. When assessing the impacts of overhead power lines, it is important to consider the impact of both electric and magnetic fields. Underground cables generally cause a negligible electric field above ground but can cause a significant magnetic field, which is dependent on the current in the conductors.
- 16.6.6 The UK Policy on public exposure limits to EMF radiation is designed to comply with the 1998 ICNIRP (International Commission on the Non-Ionizing Radiation Protection) guidelines in terms of the 1999 EU Recommendation (Ref 9). The National Policy Statement for Electricity Networks Infrastructure (EN-5) references the ICNIRP guidelines and states that applications should show evidence of compliance with these guidelines.

Assessment results – 275 kV underground cables

- 16.6.7 The maximum magnetic field produced by 275 kV underground cables is predicted to be 96.17 micro-Teslas. The magnetic field levels are therefore below the reference level from the public exposure limits in UK policy of 100 micro-Teslas.
- 16.6.8 This value correlates to a human being 1 m above ground level (agl), directly above the cable; the magnetic fields will be further diminished to any properties due to any separation distances horizontally from the cables to any dwelling.
- 16.6.9 The closest identified dwellings (see Appendix 16.6 (ES Volume 3)) **[EN0110012/APP/LVS/06.03.16.06]** are at least 50 m from the Cable Route Corridor, and as such magnetic fields will be significantly below the reference level of 100 micro-Teslas.
- 16.6.10 For users of Public Rights of Way (PRoWs), any radiation effects would be minimal and not significant in EIA terms as effects would be below the reference thresholds and these are not continually occupied, rather they are moving receptors, as opposed to residential dwellings and workplaces.
- 16.6.11 At watercourse crossings, where the cable will be buried at a minimum depth of 5 m, the residual maximum magnetic field produced by 275 kV underground cables is predicted to be 14.72 micro-Teslas at the riverbed. This figure reduces with vertical distance within the water column and horizontally upstream and downstream of the cable alignment.

Assessment results – 400 kV overhead powerlines

- 16.6.12 There are existing 400 kV overhead powerlines operating within the Order Limits; while it is understood that these cables will not be rerouted as part of the Proposed Development, they are relevant for comparison and potential cumulative impacts.
- 16.6.13 The maximum magnetic field produced by the existing overhead powerlines is predicted to be 81.942 micro-Teslas. The magnetic field value is therefore below the reference level from the public exposure limits in UK policy.
- 16.6.14 The maximum electric field produced by the existing overhead powerlines is predicted to be 10.642 kV/m. The electric field levels are therefore above the reference level from the public exposure limits in UK policy. Standoff distance of a minimum of 15 m is recommended as this limits risks associated with prolonged exposure to electromagnetic fields generated by the overhead powerlines. The closest identified dwelling to the existing overhead powerline in the vicinity of the Proposed Development is over 85 m away from the line and will therefore be far below the exposure limit for electric fields.
- 16.6.15 When considering the cumulative magnetic fields at 0 m from the proposed underground cables and existing overhead powerlines (worst-case for maximum EMFs and design parameters), the exposure limits are still maintained. When considering the cumulative electric fields at 0 m from the proposed underground

cables and existing overhead powerlines (worst-case for maximum EMFs and design parameters), the exposure limits are exceeded but can still be met with the recommended clearance distance of 15 m. More typically, the existing cable route is located over 500 m from the existing overhead lines at its nearest point and will therefore have no significant cumulative impact.

- 16.6.16 For users of Public Rights of Way (PRoWs), any radiation effects would be minimal and not significant in EIA terms as these are not continually occupied, rather they are moving receptors, as opposed to residential dwellings and workplaces. The ICNIRP public exposure thresholds relate specifically to locations of significant exposure time.

Assessment results – conversion units

- 16.6.17 Notable sources of radiation other than the cables will be the conversion units positioned across the Proposed Development.
- 16.6.18 The conversion units will be ‘CE’ marked (Conformité Européene, or European Conformity marking), and/or ‘UKCA’ marked (UK Conformity Assessed). CE and UKCA markings indicate that a product has been assessed by the manufacturer and determined to meet the safety, health, and environmental protection requirements of the European Union and the United Kingdom, respectively. CE marking requirements were adopted and extended indefinitely in Great Britain until the UK left the EU in 2020. From 1 January 2021, the UKCA mark started to replace the CE mark for goods sold within Great Britain, and the CE mark has continued to be required for goods sold in Northern Ireland. The marking requires that electrical and electronic equipment does not generate, or is not unintentionally affected by, electromagnetic disturbance.
- 16.6.19 The conversion units are predicted to produce fields at a lower level than that of underground cables because the equipment will be housed in protective enclosures. Design principles set out in the Design Parameters and Commitments document **[EN0110012/APP/LVS/05.06]** ensure that Conversion Units will be located at least 15 m from any Public Rights of Way.

Assessment results – substation and BESS

- 16.6.20 The proposed substations and BESS are located over 350 m from the nearest dwellings, ensuring compliance with public exposure limits. The substation and BESS will comply with EMF exposure guidelines, with equipment housed in protective enclosures to minimize radiation. All relevant equipment installed as part of the proposed substations shall be ‘UKCA’ marked.
- 16.6.21 For users of PRoWs, any radiation effects would be minimal due to their transient nature. Overall, no significant electromagnetic impacts are predicted from the proposed infrastructure as levels are not above the reference thresholds.

Conclusions

- 16.6.22 Magnetic field levels produced by the 275 kV cables are assessed as below the reference value from the public exposure limits in UK policy. They will be significantly below the reference value at the closest identified dwellings. For users of Public Rights of Way (PRoWs), any radiation effects would be minimal and not significant in EIA terms as effects would be below the reference thresholds and these are not continually occupied.
- 16.6.23 For overhead powerlines up to 400 kV, the maximum magnetic field is below the reference level, but the maximum electric field is above the reference level and an approximately 15 m clearance distance is recommended, which the nearest residential receptor achieves. With the exception of the point where the Cable Route Corridor crosses under the existing overhead lines, it is typically located over 500 m from the existing overhead lines at its nearest point and will therefore have no significant cumulative impact with the overhead powerlines. For users of Public Rights of Way (PRoWs), any radiation effects would be minimal and not significant in EIA terms as these are not continually occupied, rather they are moving receptors, as opposed to residential dwellings and workplaces. The ICNIRP public exposure thresholds relate specifically to locations of significant exposure time.
- 16.6.24 Radiation effects from Conversion units will not be significant due to the standards applied and the fact they will be housed in protective enclosures and located at least 15 m from any Public Rights of Way.
- 16.6.25 Radiation from the proposed substations and BESS will not be significant as they will be located over 350 m from any surrounding dwellings and workplaces. The substation and BESS are expected to comply with EMF exposure guidelines, with equipment housed in protective enclosures to minimize radiation. For users of PRoWs, any radiation effects would be minimal due to their transient nature. Overall, no significant electromagnetic impacts are predicted from the proposed infrastructure.

16.7 Ground conditions – preliminary risk assessment

Introduction

- 16.7.1 This section of the ES presents a summary of the findings of the preliminary risk assessment (PRA) in relation to ground conditions as a result of the Proposed Development.
- 16.7.2 This chapter is supported by the following appendix in Appendix 16.3 Ground Conditions Preliminary Risk Assessment (PRA) (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.03]**.

Assessment of likely impacts and effects.

- 16.7.3 The PRA presents a review of ground conditions information for each of the Solar Development Sites and the Cable Route Corridor (CRC) area for the Proposed Development.
- 16.7.4 Ground conditions beneath the Order Limits comprise a thick sequence of Superficial Deposits anticipated to comprise variable layers of sand, clay and silt. The bedrock strata comprise the Sherwood Sandstone Group, Roxby Formation and Brotherton Formation.
- 16.7.5 The Order Limits are crossed by surface water courses including the River Ouse and multiple streams and land drains.
- 16.7.6 Shallow groundwater may be encountered beneath the Order Limits, perched on lower permeability layers within the underlying superficial deposits. The Sherwood Sandstone bedrock beneath the Site is designated as a Principal aquifer and the Roxby Formation and Brotherton Formation bedrock and superficial deposits as Secondary aquifers.
- 16.7.7 There are multiple active groundwater and surface water abstractions within the Order Limits and in the surrounding area, which are generally for farming and spray irrigation use. CRC 1-4 crosses a groundwater source protection zone (SPZ) SPZ3 for a public groundwater supply abstraction. There are no SPZ1 or SPZ2 (more sensitive than SPZ3) within the Order Limits. Potential impacts and effects on groundwater resources have been addressed in Chapter 15: Water Resources and Flood Risk (ES Volume 1) **[EN0110012/APP/LVS/06.01.15]**.
- 16.7.8 In general, current and historical land uses across the Order Limits comprise agricultural land. Areas of localised, potentially contaminated, made ground are anticipated associated with farming activities, construction of rail lines, roads and river flood embankments and potential backfilled pits, ponds and quarries. No landfills, petrol stations or other significant industrial land uses have been identified within the Order Limits.
- 16.7.9 The Order Limits includes a Mining Remediation Authority coal mining reporting area. Underground mine workings are present at depth beneath some areas of the Order Limits. There are no development high risk areas, mine entries or recorded shallow mine working beneath the Order Limits. As mine workings are

present at depth there is considered to be a very low risk to the Proposed Development from coal mining related ground subsidence.

- 16.7.10 It has not been necessary to assess the strength of shallow soils, depth to engineering rockhead and groundwater in this study. This shall be confirmed by ground investigation (GI) to inform appropriate geotechnical design for foundations and will include sulphate testing to determine the concrete classification for the Proposed Development.
- 16.7.11 A conceptual site model and preliminary contamination risk assessment was prepared for each of the Solar Development Sites and Cable Route Corridors. Given the nature of the Proposed Development and the existing greenfield site, there is considered to be a typically very low to low risk from contaminated land to human health or controlled waters receptors. A moderate/low risk associated with the Cable Route Corridor to Secondary and Principal aquifers was identified from potentially contaminated localised Made Ground or other pollution incidents.
- 16.7.12 Although no significant potential sources of contamination have been identified it is possible that unforeseen ground conditions or contamination from agricultural uses or possible infilled ground could be encountered during construction, and a discovery strategy for managing unexpected contamination will be adopted, as set out in the oCEMP [EN0110012/APP/LVS/07.02].

Mitigation measures

- 16.7.13 Whilst risks from contamination to the Proposed Development are typically low for the Solar Development Sites, the conceptual site model will be confirmed through a ground investigation to be undertaken post consent, prior to the construction phase. A ground investigation to inform the geotechnical appraisal of ground conditions will be required to support the detailed design of the development. It is proposed that this records any contamination encountered and includes soil sampling and analysis to validate the contamination preliminary conceptual model. This requirement for ground investigations is secured through the oCEMP [EN0110012/APP/LVS/07.02].
- 16.7.14 Along the proposed Cable Route Corridors potential sources of contamination and sensitive receptors will be avoided where practicable. Once the cable route is narrowed down a geotechnical and geoenvironmental ground investigation will be carried out post consent, prior to the construction phase. This will inform on the geotechnical properties for the construction methodology (particularly at key crossings) to support the detailed design. The ground investigation will be carried out in accordance with BS10175:2011+A2:2017 (Ref 4). To mitigate any residual risk to controlled waters a discovery strategy for managing unexpected contamination is recommended for the proposed cable route and will be adopted as set out in the oCEMP [EN0110012/APP/LVS/07.02].

16.8 Glint and Glare

Introduction

- 16.8.1 This section of the ES presents a summary of the findings of an assessment of the possible effects of Glint and Glare as a result of the Proposed Development.
- 16.8.2 'Glint' is defined as a momentary flash of bright light typically received by moving receptors or from moving reflectors, while 'Glare' is defined as a continuous source of bright light typically received by static receptors or from large reflective surfaces. The term 'solar reflections' is used to refer to both collectively.
- 16.8.3 This chapter is supported by the following appendix, produced by Pager Power, in Appendix 16.4: Glint and Glare Assessment (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.04]**.
- 16.8.4 The Glint and Glare study is accompanied by a study on the empirical evidence on glint and glare from solar PV installations near UK aerodromes (Appendix 16.4: Glint and Glare Assessment (Annex H) (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.04]**). This study has been produced by Aviatica.

Methodology and Study Area

- 16.8.5 Both fixed south facing or single axis tracking panels options were assessed in the glint and glare assessment.
- 16.8.6 The area modelled is based upon the maximum possible extent of solar panels, to provide a worst-case assessment.
- 16.8.7 Airfields within 10 km of the Solar Development Sites were identified for assessment of potential impacts on aviation receptors.
- 16.8.8 A 1 km assessment area is considered appropriate for glint and glare effects on ground-based receptors. Receptors within this distance are identified based on mapping and aerial photography of the region. Ground based receptors include road, rail, waterways and Public Rights of Way users as well as dwellings.

Empirical study

- 16.8.9 The Glint and Glare Assessment uses the Forge Solar Model to predict the potential for reflections on aviation receptors. Whilst strictly applicable in the USA and to solar photovoltaic developments only, the methodology is widely used by aviation stakeholders internationally. The empirical study (Appendix 16.4: Glint and Glare Assessment (ES Volume 3) **[EN0110012/APP/LVS/06.03.16.03]**, Annex H) presents research carried out to test the validity of the ForgeSolar model predictions of glare to aviation receptors in the vicinity of operational Solar schemes in the UK. The details of each solar PV installation have been obtained from published planning documents. The published information for each aerodrome sourced from the UK Aeronautical Information Publication, aerodrome websites and pilots' guides, has then been analysed for any reference to the adjacent solar installation(s), advice or warnings to pilots, and mitigation

measures in place to address effects of glint and glare. Finally, aerodromes have been consulted through face-to-face meetings, telephone and email to determine whether incidents of adverse effects from glare have been experienced or reported to them by pilots. In the light of the findings of the study, it is clear that sole reliance should not be placed on the outputs of the ForgeSolar model to predict actual adverse glare effects on aircraft safety. The study demonstrates that notwithstanding modelled outputs, in the real world glint and glare issues have not led to actual impacts or concerns to users of airfields.

Assessment of likely impacts and effects.

- 16.8.10 Table 16-4 below provides a summary of the conclusions of the glint and glare assessment. The overall conclusion is for the layout and panel configurations assessed, with embedded mitigation only.

Table 16-4 Glint and glare, summary of assessment conclusions

Receptor type	Receptor location	Potential impact or effect
Aviation	Leeds East Airport	A low impact is predicted, and no mitigation is required.
	Sherburn-In-Elmet Airfield	Solar reflections with intensities of 'potential for temporary after-image' of a moderate impact are predicted towards the visual circuits for Runways 10/28, 10G/28G for both fixed and tracker panels. Solar reflections with intensities of 'potential for temporary after-image' of a low impact are predicted towards the visual circuits for Runways 01/19 and 06/24, for both fixed and tracker panels. For 'yellow' glare towards the visual circuits associated with runways 01/19 and 06/24, solar reflections would occur from outside a pilot's primary field-of-view for pilots on approach to the runway thresholds. Any possible glare would occur from behind the pilot whilst they are approaching the thresholds and is therefore unlikely to be experienced by pilots in practice. A low impact is predicted but ongoing consultation is being undertaken with Sherburn-In-Elmet Airfield to understand their position towards the Proposed Development and their operations. For visual circuits associated with runways 10/28 and 10G/28G, 'yellow' glare is predicted which would occur within a pilot's primary field-of-view, while they are on final approach. A moderate impact is predicted, and the development of mitigation measures is recommended by the Glint and Glare Study on the basis of the modelling work undertaken in that study. This is discussed further, below the table'
	Burn Airfield	Solar reflections with intensities of 'potential for temporary after-image' of a moderate impact are predicted towards the visual circuits for Runways 01 and 33 for tracker panels.

Receptor type	Receptor location	Potential impact or effect
		Solar reflections with intensities of 'potential for temporary after-image' of a low impact are predicted towards the visual circuits for Runways 19 and 25 for tracker panels. Solar reflections with intensities of 'potential for temporary after-image' of a moderate impact are predicted towards the visual circuits for Runways 01, 19, 25 and 33 for both fixed and tracker panels. For fixed south facing panels, 'yellow' glare will occur towards the visual circuits for runways 01, 25 and 33 in evenings throughout Spring and Autumn. A moderate impact is predicted towards visual circuits associated with runway thresholds 01 and 33, and mitigation is recommended. For runway 25, 'yellow' glare will only occur from outside of a pilot's primary field-of-view when on approach to the runway, and therefore a low impact is predicted, and no mitigation is required. For runway 19, 'green' glare is predicted, which is deemed acceptable in line with the associated guidance and industry best practice, a low impact is predicted, and no mitigation is required. For single axis tracking panels, 'yellow' glare is predicted towards visual circuits associated with all runway thresholds predominately during evenings in Spring. A moderate impact is predicted, and the development of mitigation measures is recommended by the Glint and Glare Study on the basis of the modelling work undertaken in that study. This is discussed further, below the table.
	Redmoor Farm Airfield	Redmoor Farm Airfield has been included within the assessment, however it is understood that the airfield ceased operation in 2015. To provide a worst-case assessment, the previously active runway has been modelled, Solar reflections with intensities of 'potential for temporary after-image' of a low impact are predicted towards the approach paths for runways 10 and 28 and for the visual circuits for Runways 10 and 28 for both fixed and tracker panels. Glare with 'potential for a temporary after-image' (yellow) is predicted towards the visual circuits associated with Redmoor Farm Airfield. 'Yellow' glare is predicted to be possible towards the visual circuits for runway 09 from fixed south facing panels, but no reflections are predicted towards the approach paths. For single axis tracking panels, 'yellow' glare is predicted towards the approach path for runway 27 and visual circuits for runway 09/27 although only for a very short duration (115 minutes per year) and will coincide with direct sunlight. 'Yellow' glare is predicted to occur for no more than 60 minutes on any given day at a particular location and will be possible towards approach paths for approximately 1 month per year.

Receptor type	Receptor location	Potential impact or effect
		Solar reflections with yellow glare are predicted to occur within 2 hours of sunset and therefore will occur when the Sun is low in the sky beyond the reflecting panels. This means that a pilot will likely have a view of the Sun within the same viewpoint of the reflecting solar panels. The Sun is a far more significant source of light. The weather would have to be clear and sunny at the specific times when the glare was possible to be experienced. A pilot would also have to be on the approach path at the specific times and dates when solar reflections are geometrically possible. Overall, should the airfield still be in use, it is judged that the effects can be operationally accommodated subject to notifying the airport of the dates/times in which yellow glare can occur to enable them to make informed decisions about the airfield operation and awareness for pilots.
	Gilrudding Grange Airfield	No solar reflections are geometrically possible for the approach paths for runways 09 and 27 and the visual circuits for runway 09 with fixed trackers. Solar reflections with intensities of 'potential for temporary after-image' of a low impact are predicted towards the visual circuits for Runways 27 fixed panels and for the approach paths and visual circuits for runways 09 and 27 for tracker panels. Glare with 'potential for a temporary after-image' (yellow) is predicted towards the visual circuits associated with Gilrudding Grange Airfield. 'Yellow' glare is predicted to be possible towards the visual circuits for runway 27 from fixed south facing panels, but no reflections are predicted towards the approach paths. For single axis tracking panels, 'yellow' glare is predicted towards the approach path for runway 09 and visual circuits for runway 09/27. Yellow glare towards the approach path is possible only for a very short duration (105 minutes per year) and will coincide with direct sunlight. 'Yellow' glare is predicted to occur for no more than 60 minutes on any given day at a particular location and will be possible towards approach paths during spring and autumn. Solar reflections with yellow glare are predicted to occur within 1 hour of sunrise and therefore will occur when the Sun is low in the sky beyond the reflecting panels. This means that a pilot will likely have a view of the Sun within the same viewpoint of the reflecting solar panels. The Sun is a far more significant source of light. The weather would have to be clear and sunny at the specific times when the glare was possible to be experienced. A pilot would also have to be on the approach path at the specific

Receptor type	Receptor location	Potential impact or effect
		times and dates when solar reflections are geometrically possible. Overall, it is judged that the effects can be operationally accommodated subject to notifying the airport of the dates/times in which yellow glare can occur.
	Bridge Cottage Airfield	No solar reflections are geometrically possible towards receptors associated with Bridge Cottage Airfield from fixed south facing panels. No impact is predicted, and no mitigation is required. Solar reflections are geometrically possible between the threshold and 1-mile from the threshold, but any solar reflections would be outside of a pilot's primary field-of-view and assessed as low impact for the approach paths and visual circuits for runways 19 and 18 for tracker panels. No solar reflections are geometrically possible for the approach path or visual circuits for runway 01 or 36. For single axis tracking panels, solar reflections are predicted to occur towards the approach paths for runways 18 and 19 from outside a pilot's primary field-of-view. This is deemed acceptable in line with the associated guidance and industry best practice, a low impact is predicted and no mitigation is required. Glare with 'low potential for a temporary after-image' (green) is predicted towards the visual circuits associated with runways 18 and 19. This is deemed acceptable in line with the associated guidance and industry best practice, a low impact is predicted and no mitigation is required.
	Elvington Airfield	No solar reflections are geometrically possible towards receptors associated with Elvington Airfield from fixed south facing panels. No impact is predicted, and no mitigation is required. No impacts are predicted for the approach path for Runway 26. Solar reflections with intensities of 'potential for temporary after-image' of a low impact are predicted towards the approach path for runway 08 and the visual circuits for Runways 08 and 26 for tracker panels. Glare with 'potential for a temporary after-image' (yellow) is predicted towards the visual circuits associated with Elvington Airfield from single axis tracking panels only. 'Yellow' glare is predicted to be possible towards the visual circuits for runway 08, for a total duration of 115 minutes per year. Solar reflections with yellow glare are predicted to occur within 1 hour of sunrise in mid-winter and therefore will occur when the Sun is low in the sky beyond the reflecting panels. This means that a pilot will likely have a view of the Sun within the same viewpoint of the reflecting solar panels. The Sun is a far more significant source of light.

Receptor type	Receptor location	Potential impact or effect
		The weather would have to be clear and sunny at the specific times when the glare was possible to be experienced. Overall, it is judged that the effects can be operationally accommodated subject to notifying the airport of the dates/times in which yellow glare can occur.
	Birchwood Lodge Airfield	No significant impacts are predicted towards Birchwood Lodge Airfield from fixed south facing panels. No impact is predicted, and no mitigation is required. For single axis tracking panels, solar reflections are predicted to occur towards the approach paths and visual circuits for runway 08/26 with 'low potential for a temporary after-image' (green). This is deemed acceptable in line with the associated guidance and industry best practice, a low impact is predicted and no mitigation is required.
	Other airfields	No significant impacts are predicted upon aviation activity at Acaster Malbis Airfield, Garforth Airfield, Cliffe Airfield, Brighton Airfield and Melrose Farm Airfield; and detailed modelling is not required
Roads		For both panel configurations, a significant impact is predicted at Year 1 towards some sections of road, where there is no or insufficient existing vegetation screening. This includes Skipwith Road along the western edge of Solar Development Site 1; the A63 along the southern edge of Solar Development Site 2; Hillam Common Lane on the northern edge of Site 3; Roe Lane where it runs through Solar Development Site 4; and Haddlesey Road where it runs along the southern edge of Solar Development Site 4. Additional planting in the form of advanced planting has been proposed in order that new vegetation will be at a sufficient height to significantly obstruct views of reflecting panels once operational (see paragraph 16.8.13). For other receptors where glare is geometrically possible, screening will be present in the form of existing and/or proposed vegetation or reflections occur in the presence of significant mitigating factors. No further mitigation is required for these receptors and there will be no significant residual impacts.
Dwellings		For Fixed south facing panels, a significant (temporary) impact, prior to the maturity of proposed planting, is predicted for one dwelling to the west of Solar Development Site 1; one dwelling to the immediate north of Solar Development Site 2; one dwelling to the south-west of Solar Development Site 4; and three dwellings to the immediate north of Solar Development Site 6. For single axis tracking panels, a significant (temporary) impact, prior to the maturity of proposed planting, is predicted

Receptor type	Receptor location	Potential impact or effect
		for two dwellings to the north of Solar Development Site 1; two properties located between Solar Development Site 6 and 7; one dwelling on the southern edge of Solar Development Site 6; one dwelling to the immediate north of Solar Development Site 2; one dwelling to the south west of Solar Development Site 4 and three dwellings to the immediate north of Solar Development Site 6 For those properties likely to experience significant adverse effects under both panel scenarios, additional planting in the form of advanced planting has been proposed in order that new vegetation will be at a sufficient height to significantly obstruct views of reflecting panels once operational. For dwellings where impacts are only predicted from one panel configuration see paragraph 16.8.16 below for further detail on proposed mitigation and detailed design development. For all other receptors where glare is geometrically possible, screening will be present in the form of existing and/or proposed vegetation or reflections occur in the presence of significant mitigating factors. No further mitigation is required for these dwellings and there will be no significant residual impacts.
Railway		For both panel configurations, a significant impact is predicted towards some sections of railway along the north-western edge of Solar Development Site 6 in Year 1, where there is no or insufficient existing vegetation screening. Additional mitigation in the form of advanced planting has been proposed, in order that new vegetation will be at a sufficient height to significantly obstruct views of reflecting panels once operational (see Section 16.8.13). For all other receptors where glare is geometrically possible, screening will be present in the form of existing and/or proposed advanced planting. No further mitigation is required for these receptors and there will be no significant residual impacts.
Waterways		Solar reflections are geometrically possible towards a section of the River Aire. Views are expected to be screened by existing vegetation and intervening terrain, but the extent to which partial views may be possible has yet to be confirmed. A low impact is predicted in the worst case, and no mitigation is recommended.
Public Rights of Way (PRoW)	Public Rights of Way (PRoW) run through and around the Proposed Development.	Reflections towards observers on PRoW running through and around the Proposed Development could be experienced under certain conditions (typically coinciding with sunrise/sunset i.e. when the Sun is low in the sky and beyond the panels). Significant impacts to pedestrians/observers along PRoW are not possible due to glint and glare effects from solar developments. The reasoning is due to the sensitivity of the

Receptor type	Receptor location	Potential impact or effect
		receptors (in terms of amenity and safety) being concluded to be of low significance, with any effects being transient, the resultant effects being less serious than for example road users. No significant impacts are predicted upon PRow. No mitigation is recommended. Horses may also use bridleways in the vicinity of the site. Guidance produced by the British Horse Society (Ref 8) states with regard to glint and glare that “the incidence of glare or dazzle [from solar panels] is very low compared with glass and will not be uniform throughout a period of sunlight, assuming that the panel is static. Any reflection is unlikely to be a direct problem to horses, riders or carriage-drivers because of the angles and distances involved. No significant impacts are predicted upon PRow. No mitigation is recommended.

Mitigation

Aviation mitigation

- 16.8.11 Based on current illustrative layouts and the modelling undertaken in the Glint and Glare Study, that study recommends mitigation measures are developed in relation to solar reflections towards aviation receptors associated with Sherburn-In-Elmet Airfield and Burn Airfield. However, in light of the results of the Empirical Study, the Applicant has determined that the development of specific mitigation measures for these airfields is not required, as that study demonstrates that the modelled results do not lead to real world impacts.
- 16.8.12 Consultation has also been undertaken with other airfields where ‘yellow’ glare is predicted but is considered operationally accommodatable, given the short durations of yellow glare and low traffic volumes at the airfields. Details of the predicted glare scenario at each airfield, including times, will be provided before the Proposed Development is operational; to allow pilots to be briefed on the potential for glare and a communications protocol will be developed between the Proposed Development and airfields in relation to glint and glare issues. This is secured in the oOEMP [EN0110012/APP/LVS/07.03].

Road and rail receptor mitigation

- 16.8.13 Additional mitigation is proposed in the form of advanced planting at the commencement of the construction phase. The vegetation would be planted early to allow sufficient time for growth ahead of operation of the Proposed Development, in order to mitigate the impact of glint and glare on road and rail users from the solar panels in Year 1 of operation.
- 16.8.14 The locations where advance planting may be implemented is shown in Figure 16.1 Advanced Planting for Glint and Glare Mitigation (ES Volume 2)

[EN0110012/APP/LVS/06.02.16.1]. The need for, and details of, the proposed advanced planting will be subject to re-assessment at detailed design, and this is secured through the oCEMP [EN0110012/APP/LVS/07.02] and oLEMP [EN0110012/APP/LVS/07.05].

- 16.8.15 Ongoing engagement with landowners will seek to ensure that where existing vegetation is present that provides potential mitigation for glint and glare effects this is retained and a suitable height maintained.

Dwellings receptor mitigation

- 16.8.16 For receptors where significant impacts are predicted from both fixed and single-axis tracking panels, additional mitigation is proposed in the form of advanced planting at the commencement of the construction phase. The vegetation would be planted early to allow sufficient time for growth ahead of operation of the Proposed Development, in order to mitigate the impact of glint and glare on dwellings from the solar panels in Year 1 of operation.
- 16.8.17 Ongoing engagement with landowners will seek to ensure that where existing vegetation is present that provides potential mitigation for glint and glare effects this is retained and a suitable height maintained
- 16.8.18 The locations where advance planting may be implemented is shown in Figure 16.1 Advanced Planting for Glint and Glare Mitigation (ES Volume 2) [EN0110012/APP/LVS/06.02.16.1]. The need for, and details of, the proposed advanced planting will be subject to re-assessment at detailed design, and this is secured through the oCEMP [EN0110012/APP/LVS/07.02] and oLEMP [EN0110012/APP/LVS/07.05].
- 16.8.19 For dwellings where impacts are only predicted from one panel configuration in Year 1 of operation, there is currently no commitment to advance planting. However, if that panel configuration is taken forward at detailed design, investigations will be undertaken to confirm if the detailed design would lead to the currently assessed impacts and, if an impact is still predicted, the Proposed Development will be designed and/or operated (depending on the chosen technology) to ensure that glint and glare impacts are mitigated until planting has matured to screen glint and glare effects.

Conclusions – residual effects

- 16.8.20 The Glint and Glare Assessment, through its modelling, predicted significant impacts from both fixed south facing panels and single axis tracking panels towards aviation activity associated with Sherburn-in-Elmet and Burn Airfields and recommended mitigation measures be undertaken. However, the Empirical Study indicates that such impacts do not occur in the real world. On this basis, the Applicant has determined that specific mitigation measures for those airfields are not required. Given that position in respect of Sherburn-in-Elmet and Burn Airfields, and the conclusions in respect of the other airfields set out in Table 16-4, no significant effects are assessed to arise to airfield users from the Proposed Development. Temporary significant impacts were predicted on a number of

roads without advanced planting in place. With additional mitigation in place for road and rail users, in the form of advanced planting, it is assessed that any significant glint and glare issues would be mitigated and not significant.

- 16.8.21 Temporary significant impacts were predicted on a number of dwellings without advanced planting in place. With additional mitigation in place in the form of advanced planting, it is assessed that any significant glint and glare issues would be mitigated and not significant.
- 16.8.22 Temporary significant Solar reflections were assessed as possible from inside a train driver's primary field-of-view for some locations along the north-western edge of Solar Development Site 6. With additional mitigation in place in the form of advanced planting it is assessed that any significant glare effects would be mitigated.
- 16.8.23 No significant impacts are predicted upon users of the public rights of way, and no mitigation is required.

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- Ref 8 British Horse Society, April 2024, Advice on solar farms near routes used by equestrians.
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Light Valley
Solar

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