Light Valley Solar

Outline Operational Environmental Management Plan

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Light Valley Solar

DCO Submission

[EN0110012/APP/LVS/07.03] Outline Operational Environmental Management Plan

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1 Introduction

1.1 Overview and purpose of the document

1.1.1 Light Valley Solar Limited (the 'Applicant') has prepared this Outline Operational Environmental Management Plan (oOEMP) in relation to an Application for a Development Consent Order (DCO) for the construction, operation, maintenance, and decommissioning of Light Valley Solar (the 'Proposed Development').

1.1.2 The Proposed Development is being led by the Applicant, Light Valley Solar Limited, which is a subsidiary of Island Green Power (IGP) UK Limited. IGP is a leading international developer of renewable energy projects, established in 2013.

1.1.3 The aim of this oOEMP is to demonstrate how the mitigation measures relevant to operational activities included in the ES will be implemented. This document does not address construction or decommissioning activities, which are subject to separate environmental management plans and procedures. Please refer to the Outline Construction Environmental Management Plan (oCEMP) [**EN0110012/APP/LVS/07.02**] and Outline Decommissioning Environmental Management Plan (oDEMP) [**EN0110012/APP/LVS/07.04**] for further information.

1.1.4 Likely significant effects have been identified through the Environmental Impact Assessment (EIA) process and are reported in the Environmental Statement (ES) Volume 1 of the ES (Chapters 5 to 17). A range of 'standard' or good practice mitigation and construction management measures are accounted for in the assessments, and these will be implemented during the construction of the Proposed Development. This oOEMP details these operational mitigation measures. It also sets out the monitoring activities designed to demonstrate that such mitigation measures are carried out, and that they are effective.

1.1.5 It is recognised that there could be multiple OEMP(s) prepared in substantial accordance with this oOEMP to deal with different parts of the Proposed Development, depending on the detailed operational strategy. Where this is the case, each detailed OEMP will set out how the management of construction impacts will be co-ordinated across areas covered by different OEMP(s).

1.1.6 One or more detailed Operational Environmental Management Plans (OEMPs) may be prepared by the appointed Contractor(s) substantially in accordance with this oOEMP.

1.1.7 This management plans incorporates embedded and good practice measures, as well as any further mitigation that arises out of the EIA process. An outline version of this management plan is submitted alongside the ES as part of this DCO Application to secure the commitments within each assessment. A Requirement is included in the draft DCO [**EN0110012/APP/LVS/03.01**] to ensure detailed management plans will be prepared to full versions by the appointed Contractor(s), substantially in accordance with the outline

management plans, and will be submitted for approval by North Yorkshire Council in advance of starting the relevant phase of works.

1.1.8 This oOEMP is designed with the objective of ensuring compliance with the relevant environmental legislation and mitigation measures set out within the ES. This document provides the likely structure of the detailed OEMP(s) and relevant preliminary information. It also indicates what additional information or controls might be included under each sub-section within each OEMP(s).

1.1.9 The key elements of this oOEMP include:

1) An overview of the Proposed Development and associated operational programme;
2) Identification of potential environmental effects;
3) Proposed design and other mitigation measures to prevent or reduce potential adverse environment effects;
4) Monitoring and reporting of effectiveness of mitigation measures; and
5) Links to other complementary plans and procedures.

1.1.10 The appointed Contractor(s) will be responsible for working in accordance with the environmental contractors documented in the oOEMP and for the preparation and implementation of each OEMP.

1.1.11 Any additional licences, permits, or approvals that are required will be listed in the OEMP(s).

1.2 The Order Limits and Proposed Development

Order Limits

1.2.1 The Order Limits (also referred to as 'the Site') outline the maximum extent of the land that will be required to facilitate the construction, operation and maintenance, and decommissioning of the Proposed Development and are shown on Figure 1.1 Site Location and Order Limits Plan (Volume 2) [**EN0110012/APP/LVS/06.02.01.01**]. The Order Limits are described in Chapter 2: The Proposed Development (Volume 1) [**EN0110012/APP/LVS/06.01.02**] of the ES.

1.2.2 The Order Limits cover an area of approximately 1,270 hectares (ha) located within the administrative area of North Yorkshire Council, near Selby. The Proposed Development comprises four broad areas:

1) Solar Development Sites (total area of 900 ha);
2) Cable Route Corridor (total area of 328.5 ha)
3) Highways Improvement Areas (HIA) (total area of 17.1 ha); and
4) Solar Development Site 8 Access (total area of 24.1 ha).

The Proposed Development

1.2.3 The Proposed Development comprises a solar photovoltaic (PV) electricity generating station of over 100 megawatts (MW) and 'associated development' comprising a Battery Energy Storage System (BESS), grid connection infrastructure and other infrastructure integral to the construction, operation and maintenance, and decommissioning phases.

1.2.4 The main element of the Proposed Development comprises seven Solar Development Sites (Solar Development Sites 1-4 and 6-8) that will accommodate the Solar PV Panels. A BESS Compound will be located within Solar Development Site 2. The BESS is intended to store surplus electricity generated by the solar PV system and/or energy from the grid.

1.2.5 The Cable Route Corridor is the area within which the export connection cables (hereafter referred to as the 'Grid Connection Cables') would be located to connect the Solar PV Sites to the National Grid at the existing Monk Fryston Substation (hereafter referred to as the 'Existing National Grid Monk Fryston Substation') and the area within which cables connecting the Solar Development Sites would be located (hereafter referred to as 'Interconnecting Cables') (refer to Figure 2.1: Illustrative Site Layout Plan (ES Volume 2) [**EN0110012/APP/LVS/06.02.02.01**].

1.2.6 Further details of the Proposed Development are presented in Chapter 2: The Proposed Development [**EN0110012/APP/LVS/06.01.02**] and the design envelope for the Proposed Development is set out in the Design Parameters and Commitments document [**EN0110012/APP/LVS/05.06**] and the limits of deviation shown on the Works Plan [**EN0110012/APP/LVS/02.03**].

2 Operational environmental management

2.1 Introduction

2.1.1 The following section sets out the general arrangements for the operational phase of the Proposed Development.

2.2 Operational activities

2.2.1 During the operational phase, general activity within the Proposed Development will be minimal and will be restricted principally to vegetation management, equipment maintenance and servicing, replacement and renewal of any components that fail, and monitoring. It is anticipated that maintenance and servicing would include the inspection, removal, reconstruction, refurbishment, or replacement of faulty or broken equipment to ensure the continued effective operation of the Proposed Development.

2.2.2 Across the anticipated lifetime of the Proposed Development of up to 60 years, it is expected that alongside the regular maintenance of equipment, infrastructure such as panels and batteries will require replacement. As components of the Proposed Development approach the end of their design life, an evaluation will be conducted to determine if they require maintenance or replacement across the Proposed Development.

2.2.3 It is not expected that an extensive replacement of all components will be required across the entirety of the Proposed Development during one period; instead, the programme for replacement of equipment is anticipated to be staged to maintain the electrical export to the National Grid.

2.2.4 The following assumptions have been considered:

1) Solar PV Panels typically have a lifespan of up to 40 years or more, and it has been assumed that Solar PV Panels will be replaced once during the lifetime of the Proposed Development. The Solar PV Panels are anticipated to be replaced over a maximum 12 - 24-month period;
2) The BESS Compound infrastructure could be replaced up to five times during the operational phase, inclusive of complete BESS Enclosure replacement of up to three times;
3) Transformers are assumed to have a design life of 30 years, transformers may require replacement once during the lifetime of the Proposed Development, although, replacement will only be carried out if required for performance or health and safety reasons;
4) No intrusive ground works will be required to replace Solar PV Panels or BESS.

2.2.5 If any abnormal loads are required for the replacement of equipment, consultation will be carried out and approvals will be sought from the relevant local planning and highways authorities.

2.2.6 Along the Cable Route Corridor activity will consist of routine inspections (schedule to be determined) and any reactive maintenance, such as where a cable has been damaged.

2.2.7 The existing Monk Fryston substation will be managed and maintained by National Grid. The substations on the Solar Development Sites will be managed and maintained by the Applicant / operator of the Site.

2.2.8 As stated in Chapter 14: Traffic and Movement (Volume 1) [**EN0110012/APP/LVS/06.01.14**] of the ES, during the Proposed Development's operational phase, there are anticipated to be five visits to each site per month for maintenance purposes. These would typically be made by LGVs. The installed grid connection cables (within the Cable Route Corridor) will be located underground. Access may be required for inspection and maintenance, but this is only likely once or twice a year.

2.2.9 Alongside regular maintenance trips it is expected, as noted above, that some infrastructure i.e. solar panels and batteries will require replacement during the 60-year life cycle. Further information on the programme of replacement activities is set out in Chapter 2: The Proposed Development (ES Volume 1) [**EN0110012/APP/LVS/06.01.02**].

2.2.10 As the expected programme for battery and panel replacements is less intensive and will occur on a site-by-site basis, the number of vehicle trips will be lower during replacement activities than during the construction phase. Furthermore, the cable route corridor movements are a large proportion of construction traffic movements (and would not form part of the replacement activities), and therefore any replacement traffic is expected to result in fewer vehicle trips across the Proposed Development compared to traffic associated with the construction phase for both HGV and total traffic movements.

2.2.11 Table 14-20 in Chapter 14: Traffic and Movement (Volume 1) [**EN0110012/APP/LVS/06.01.14**] of the ES outlines that there could be 322 HGV movements per day at the peak of construction. At a measurable scale, this amounts to a peak of 12 HGV movements at a Solar Development Site. If the HGV movements are expected to exceed this assessed number during replacement activities, a reassessment will be carried out and any appropriate mitigation measures developed and notified to North Yorkshire Council, with such notification demonstrating that effects associated with replacement traffic movements would not lead to significant effects in EIA terms.

2.2.12 During the operational phase, planned solar PV replacement within Solar Development Site 1 will be limited to the breeding period (April to August) within the southern proportion of the solar array area only (250 m section; see Figure 4 in the Shadow Habitat Regulations Assessment [**EN0110012/APP/LVS/05.11**]).

2.2.13 Welfare facilities will be required at the substations within each Site. An Outline Drainage Strategy **[EN0110012/APP/LVS/06.03.15.04]** is included in the application and includes the management of wastewater. The techniques to manage wastewater will be confirmed within the detailed Drainage Strategy.

2.2.14 Before the programme of replacement works begin (excluding ad-hoc replacement works) a Community Liaison Group will be set up and will meet prior to the replacement works commencing and will be in place until the replacement works have been completed as a formal forum for local issues to be raised. A Community Liaison Officer will be appointed to lead discussions with local communities and also act as the primary point of contact should there be any queries or complaints.

2.3 Operation programme

2.3.1 Operation of the Proposed Development is expected to start following construction, anticipated to be Q4 of 2030. The Proposed Development will operate for no more than 60 years and decommissioning is estimated to commence around 2090. Decommissioning may take between 24-36 months. However, it is possible that decommissioning may take less time, and this will be confirmed in the final DEMP.

2.4 Working hours

2.4.1 The Solar Development Sites will generally be unmanned during normal operation. Routine maintenance (including infrastructure replacements) would be carried out as required Monday to Friday 07.00 – 18.00. Emergency maintenance would be carried out as and when needed. Works required outside of these working hours will require written approval from NYC, expect in respect of emergencies.

2.4.2 Replacement infrastructure deliveries by HGV will arrive between 09:30-16:30 where practicable. They will be coordinated to avoid HGV movements during the traditional AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00). In addition, worker shift patterns will be coordinated to avoid travel during the network peak hours of 08:00-09:00 and 17:00-18:00.

2.5 Control of light

2.5.1 During operation, no part of the Proposed Development will be continuously lit. The use of motion detection security lighting to avoid permanent lighting will be utilised within the substation and BESS area and a sensitive lighting scheme will be developed ensuring inward distribution of light and avoiding light spill onto existing boundary features.

2.5.2 Lighting will be directed downward away from boundaries.

2.5.3 Where lighting is required during infrastructure replacement activities, this will be for safety reasons, will be temporary in nature and predominantly limited to the core working hours. Whilst the type of lighting to be used for infrastructure replacement activities has not yet been confirmed, the following principles will be adhered to:

1) Use of focused directional fittings to minimise outward light spill and glare (e.g. hoods/ cowls which direct light below downwards) outside of the Solar Development Sites; and

2) Lighting to be directed towards the middle of the Sites rather than towards the boundaries.

2.6 Traffic management

2.6.1 During maintenance activities, the appointed Contractor(s) will ensure that the impacts from traffic on the local community (including local residents and businesses and users of the surrounding transport network) are minimised, where reasonably practicable. Existing field accesses / construction access points will be used to access the Proposed Development wherever practicable.

2.7 Parking

2.7.1 During operation, parking on permeable gravel hardstanding will be provided at the substation / switch rooms locations.

2.7.2 Wheel washing facilities will be provided at each access point only where there is a reasonable risk of mud or debris being tracked onto the public highway and will take place on entry to and egress from the Site. The requirement for, and location of, such facilities will be confirmed at detailed design stage within the detailed OEMP based on ground conditions, planned activities, and seasonal factors. Internal access roads within Solar Development Sites will be of permeable construction and areas of exposed soil will be minimised, reducing the potential for mud to be transferred to vehicle wheels.

2.7.3 Where implemented, wheel washing activities will be undertaken in a designated impermeable area which is bunded to prevent runoff. Rumble strips or dry brushing will be used to minimise water use. Wash water will either be disposed of off-site by a licensed contractor or directed to a permanent drainage system incorporating appropriate treatment measures for suspended solids, which may include SuDS components and silt management measures. The method of containment, treatment (where required) and disposal will be confirmed at detailed design stage within the detailed OEMP. Where SuDS are used, these will be designed to provide sufficient treatment for suspended sediment, metals and hydrocarbons.

2.7.4 Where wheel washing is not required, visual inspection of vehicles will be undertaken before they depart the Site, to ensure that mud and debris is not carried onto the highway.

2.8 Recycling and waste

2.8.1 In order to control the waste generated during operation and maintenance, the Contractor(s) will separate the main waste streams on-site, prior to transport to an approved, licensed third party facility for recycling or disposal.

2.8.2 In accordance with the waste hierarchy, the Proposed Development will prioritise waste prevention, followed by preparation for reuse, recycling and recovery, with landfill disposal as the last resort.

2.8.3 All waste to be removed from the Site will be undertaken by fully licensed waste carriers and taken to suitably licensed waste management facilities and managed in line with the requirements of the Waste (England and Wales) Regulations (2011) and the Hazardous Waste (England and Wales) Regulations (2005) (as amended).

2.9 Management of vegetation planting

2.9.1 An Outline Landscape and Ecological Management Plan (oLEMP) **[EN0110012/APP/LVS/07.05]** has been prepared and submitted as part of the application.

2.9.2 The oLEMP provides a framework for delivering the landscape strategy and the successful establishment and future management of proposed landscape works associated with the Proposed Development. It sets out the short and long-term measures and practices that will be implemented to establish, monitor and manage landscape and ecology mitigation and enhancement (biodiversity net gain) measures embedded in the design.

2.9.3 The oLEMP sets out the measures proposed:

1) To mitigate the effects of the Proposed Development on landscape, biodiversity and heritage features;
2) To enhance the biodiversity, landscape, and green infrastructure value of the Order limits; and
3) To secure compliance with relevant national and local planning policies.

2.9.4 A detailed Landscape and Ecology Management Plan (LEMP) will be prepared in accordance with the Outline LEMP **[EN0110012/APP/LVS/07.05]** and will be submitted to and approved by the relevant local planning authority or authorities prior to construction. This will include provisions in respect of ongoing maintenance and management of the landscape and ecological measures proposed, which will be cross referenced in the detailed OEMP(s).

2.10 Panel cleaning

2.10.1 Due to the wet UK climate, Solar PV Panels are largely self-cleaning and deterioration in PV system output due to dust or dirt is generally low. The requirement for, and the frequency of, cleaning of the Solar PV Panels due to the build-up of dust and dirt varies depending upon site specific conditions. For example, the presence of fine dust emitters such as quarries, agricultural operations (harvesting), and the volume and proximity of nearby woodland can all impact the level of dust deposition. However, the main factor influencing cleaning requirements in the UK is lichen growth which again is influenced by site specific and climatic factors.

2.10.2 As stated above, the deterioration in output due to dust or dirt is generally low and, therefore, the requirement for cleaning due to loss of output is balanced against cost of the cleaning operation. Some sites can operate without the need to be cleaned, whereas some sites require cleaning annually. The cleaning requirements for the Proposed Development can only be accurately determined once operational and, therefore, to present a worst-case for the assessments presented in this ES, an annual cycle is assumed.

2.10.3 The Solar PV Panels would be cleaned using water only. Deionised water would be used as preference. No chemical cleaning products would be used, with stubborn dirt brushed or wiped off the panels.

2.11 Security

2.11.1 The Sites will be subject to several security risk management threat assessments during the development, construction, operation and ultimately decommissioning phases. These security risk management threat assessments are to be procured by the Application and / or Operator and conducted by Suitable Qualified and Experienced Persons (SQEP) and will determine security risks.

2.11.2 The Applicant recognises, and embraces, the symbiotic relationship between safety and security. The security arrangements to be present at the Site will therefore contribute to the overall safety of all who will, or may, enter the Site. The security arrangements will be SQEP reviewed at identified epochs commensurate to the Security Risk rating and will further assess any changes in the Security Risk Management Threat Assessment.

2.11.3 The boundary of the Solar Development Sites will be secured by both fencing and by the provision of Closed-Circuit Television (CCTV) equipment. Cameras would be placed on galvanised steel painted green poles with a maximum height of 3 m. Perimeter fencing will be deer wire mesh and wooden post fencing with a maximum height of 2.5 m. All new access tracks will be secured by gates, which will be set back from the public highway. Where existing access tracks are used that also provide access to residential properties, appropriate security measures will be put in place in consultation with the relevant property owner(s).

2.11.4 There will be palisade fencing around the substations and BESS compound which will have a maximum height of 3 m.

2.11.5 Other potential security measures expected to be included comprise:

1) Detection systems such as beam break and image detection to raise alarm when fence breached;
2) Audio announcement when intruder detected to warn alarm triggered and police on way;
3) Barriers / locked gates at main entrances to the Sites;
4) Steel doors on substation buildings;
5) Buried cables, as much as practicable;

6) Remote monitoring; and

7) Alarm response contract with keyholder/security company.

2.12 Responding to environmental incidents and emergencies

2.12.1 A Flood Warning and Evacuation Plan (FWEP) will be developed prior to the commencement of construction and will be a live document that will be updated during the operation and decommissioning phases of the Proposed Development. The FWEP will be developed taking into account the measures outlined in the Flood Risk Assessment (FRA) [**EN0110012/APP/LVS/06.03.15.01**] and the updated FWEP will be presented alongside the detailed OEMP for approval by NYC.

2.12.2 An Emergency Response Plan will be developed in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environment Agency, in relation to responding to flood warnings and events.

2.12.3 A Substation Fire Action Plan will be prepared ahead of the commissioning of the Proposed Development, to include the following good practice safety measures. The Site Manager/fire safety representative will need to assess the fire location(s), wind directions and surrounding receptors. The Site Manager/fire safety representative will take appropriate actions accordingly. The actions to be taken include:

a) to inform any potentially affected residents (including the need to keep windows closed), especially those that are located at downwind locations to the substation fire;
b) to inform the relevant community organisations of the need to cancel or change the layout of outdoor events ; and
c) To inform local farmers of the need to stop any farming activities and to move any farmers/workers within 300 m of the substation fire to a cleaner air location. A cleaner air location would preferably not be downwind and be at a distance greater than 300 m from the substation fire.

3 Mitigation and management

3.1 Purpose

3.1.1 This section of the oOEMP sets out the mitigation and management measures to be included as a minimum in the detailed OEMP(s). It also identifies where monitoring is proposed, to assess the effectiveness of the mitigation measures. Nothing in this oOEMP would prevent the modification or omission of the control measures set out in Table 3-1-Table 3-14 where the operational methodology means that the measures can be so modified or omitted. This will be confirmed (including confirming that the absence or change to such control measures would not lead to any materially new or materially different effects than those reported in the ES) at the time of submission of the detailed OEMP.

3.2 Committed mitigation and management measures

3.2.1 A summary of the mitigation and management measures to be included as a minimum in the detailed OEMP(s) (save where reference is made to other management plans or strategies where the measures will be included in detailed versions of those plans), is provided below.

Table 3-1 Air Quality

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
BESS fire emissions	Measures included in the Outline Battery Safety Management Plan (oBSMP) [**EN0110012/APP/LVS/07.06**] to be developed in the detailed BSMP include measures to limit human exposure to air pollution in the event of a fire, such as: ▪ Notification of potentially affected residents including advice on the health effects of smoke and ways to reduce exposure (e.g. close windows and stay indoors); ▪ Should there be a BESS fire in close proximity to the A63 road, the site operator is to determine wind direction from the BESS Compound weather station and seek to close the road if deemed necessary; and ▪ Notification of potentially affected members of the public to move to a cleaner air location in the event of a BESS fire.	Refer to the oBSMP.
Dust and air quality complaints resulting from any operational replacement works	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record the measures taken. Make the complaints log available to the local authority when asked.	The detailed OEMP(s) will outline a communication strategy to address dust and air quality complaints, a transparent investigation protocol and a commitment to take remedial action where required
Back-up generator emissions	Ensure the back-up generators adhere to emissions standards and seek alternatives were practicable, such as batteries or alternative fuel.	To be confirmed in the detailed OEMP(s).

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Vehicle emissions from the operational maintenance activities required during operation of the Proposed Development	Vehicles will be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner. All plant and vehicles will be required to switch off their engines when not in use and when it is safe to do so. In addition, plant and vehicles will conform to relevant applicable standards.	The overall responsibility will be with the Applicant. Specific responsibilities will be confirmed in the detailed OEMP(s).
Fugitive dust emissions during replacement activities	Good practice measures set out for construction (outlined in the oCEMP) will be reintroduced and implemented for replacement activities. Appropriate mitigation and control measures will be included in the detailed OEMP(s), which would include: **General** ▪ Develop and implement the stakeholder communications plan that includes community engagement before work commences on-site. ▪ Display the name and contact details of person(s) accountable for air quality and dust issues on the Site. This may be the environmental manager, construction project manager or the site manager. ▪ Display the Contractor(s) head or regional office contact information. ▪ Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the relevant local authorities. **Site Management** ▪ Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. ▪ Make the complaints log available to the local authority when asked. ▪ Record any exceptional incidents that cause dust and/or air emissions, either on-site or offsite, and the action taken to resolve the situation in the logbook. ▪ Hold regular liaison meetings with other third party, high-risk construction sites within 250m of the Order limits, to ensure plans	The overall responsibility will be with the Applicant. Specific responsibilities will be confirmed in the detailed OEMP(s). The following monitoring will be undertaken: ▪ Undertake on-site and off-site inspection (particularly during replacement works), where receptors (including roads) are nearby, to monitor dust, record inspection results and make the log available to the Local Authority when asked. ▪ Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority or authorities when asked. ▪ Increase the frequency of site inspections by the person accountable for air quality and dust issues on-site when

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the up-to-date picture of the interactions of the off-site transport / deliveries which might be using the same strategic road network routes. **Preparing and maintaining the Sites** ▪ Plan site layout so that machinery and dust causing activities are located away from receptors, as far as practicable. ▪ Erect solid screens or barriers around dusty activities or the Solar Development Sites that are at least as high as any stockpiles on-site. ▪ Fully enclose site or specific operation where there is a high potential for dust production and the site is active for an extensive period. ▪ Avoid site run-off of water or mud. ▪ Keep site fencing, barriers and scaffolding clean using wet methods. ▪ Remove materials that have a potential to produce dust from site as soon as practicable, unless being re-used on-site. If they are being re-used on-site cover as described below. ▪ Cover, seed, or fence stockpiles to prevent wind-whipping. **Operating vehicle / machinery and sustainable travel** ▪ Ensure all vehicles / machinery switch off engines when stationary / not in use – no idling vehicles. ▪ Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. ▪ Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas. ▪ . ▪ Ensure all off-road vehicles comply with the requirements of the Non-Road Mobile Machinery (NRMM) standards, where applicable. Use stage 4 NRMM as a minimum and stage 5 where practicable. ▪ Encourage sustainable travel (public transport and car-sharing).	activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. ▪ Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where practicable, commence baseline monitoring at least three months before work commences on-site or, if a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction. Any unforeseen issues that arise in relation to vehicle movements will be logged by the Site Manager. If necessary, the issues will be discussed with the local highway authority so that they can be resolved as appropriate.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	Operations ▪ Only use cutting, grinding or sawing equipment fitted, or in conjunction with, suitable dust suppression techniques, such as water sprays or local extraction e.g. suitable local exhaust ventilation systems. ▪ Ensure an adequate water supply on the site for effective dust / particulate matter suppression mitigation, using non-potable water where practicable and appropriate. ▪ Use enclosed chutes and conveyors and covered skips. ▪ Minimise drop-heights from loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. ▪ Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. **Waste management** ▪ No bonfires and burning of waste materials. **Earthworks** ▪ Re-vegetate earthworks and exposed areas / soil stockpiles to stablise surfaces as soon as practicable. ▪ Use Hessian, mulches or tackifiers where it is not practicable to revegetate or cover with topsoil, as soon as practicable. ▪ Only remove the cover in small areas during work and not all at once. **Trackout** ▪ Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Sites. This may require the sweeper being continuously in use. ▪ Avoid dry sweeping of large areas.	

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	▪ Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. ▪ Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. ▪ Record all inspections of haul routes and any subsequent action in a site logbook. ▪ Ensure haul routes are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. ▪ Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Sites where reasonably practicable). ▪ Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. ▪ Access gates to be located at least 10 m from receptors where practicable.	

Table 3-2 Agricultural Land and Soils

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Potential for surface soil compaction and disturbance in some areas due to maintenance work. For example, grassed access alleys traversed by light vehicles for site maintenance could cause surface compaction in damp or wet soil conditions. If sheep grazing is used for vegetation management, surface compaction can result if numbers of grazing is too great in wet conditions. Surface compaction can cause surface runoff.	The detailed OEMP(s) will detail how the risk of causing surface compaction will be minimised and how to remove compaction if it has occurred using measures, consistent with the principles in the oSRMP **[EN0110012/APP/LVS/07.14]** and the approved detailed SRMP(s) for the construction phase. Examples include specification of vehicles used for any trafficking of access tracks, placement and movement of any livestock troughs and site inspection by a suitably experienced soil scientist to monitor for the emergence of any soil compaction issues. Maintenance work on solar arrays and equipment in relation to soil and land disturbance will be carried out in accordance with these measures. Any grazing of livestock will be in accordance with good practice guidance for livestock welfare. The oSRMP **[EN0110012/APP/LVS/07.14]** sets out the principles for retaining and storing soil resources. The detailed OEMP(s) will provide further information on the specific mitigation measures for retaining and storing soil resources.	Soil assessments and monitoring will be undertaken as detailed in the Soil Resource Management Plan.

Table 3-3 Biodiversity

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Impacts on biodiversity features during the operation of the Proposed Development.	Appointment of an Ecological Clerk of Works (ECoW) prior to commencement of any operational works. The ECoW will provide ecological supervision during sensitive works, ensuring that works proceed in line with ecological mitigation commitments, including timing restrictions and habitat protection. Delivery of a Toolbox Talk by the ECoW to all site personnel, raising awareness of sensitive ecological features (such as bird nesting areas and buffer zones) and communicating the correct working practices to minimise disturbance or harm. The oLEMP [**EN0110012/APP/LVS/07.05**] will prescribe how all habitats within the Sites are to be managed to maximise the benefits for biodiversity. A schedule of ecological monitoring requirements during the operational phase is also set out in the oLEMP to ensure the successful establishment of the proposed planting and to identify any remedial measures required, including details of governance over the operational lifetime, and processes for addressing unforeseen ecological effects or conflicts with BNG objectives. The detailed oOEMP will outline ecological mitigation measures relevant to the operational phase (including replacement activities) to protect species and habitats during operation of the Proposed Development, such as: ▪ Vegetation clearance will be undertaken at an appropriate time of year so as to avoid incidental injuring or killing of reptiles and amphibians. ▪ Reasonable avoidance measures for any management or replacement activities that have the potential to cause disturbance to badger setts or roosting bats, including appropriate buffers (of up to 30 m) around any badger setts, or trees with suitability for	Refer to the oLEMP. A pre-condition site walkover will be undertaken in advance of replacement works (at least three months prior to start of works) to reconfirm the ecological baseline conditions and to identify any new ecological risks, such as newly constructed badger sets and / or new otter resting places / holts. Updated species surveys, including bats, otter, water vole, brown hare and badger, would be completed as appropriate to reconfirm the status of protected species identified, to inform mitigation requirements and support protected species licence applications, if required, and the requirement for any ECoW supervision during the replacement phase. Such surveys would be undertaken sufficiently in advance of replacement works to account for seasonality constraints and to

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	roosting bats (a buffer of up to 15 m). Advice should be sought from an appropriately qualified ecologist. ▪ Motion detection security lighting will be used to avoid permanent lighting and a sensitive lighting scheme will be developed ensuring inward distribution of light and avoiding light spill onto existing boundary features. ▪ Fencing for replacement activities (as required) will be designed to let small mammals pass through where practicable. The fencing will be specifically designed to retain numerous commuting corridors around existing linear features (ditches and hedgerows) through the Proposed Development that will be free of obstacles to faunal movement. ▪ Additional habitat enhancement / creation, which includes grassland and woodland, to connect with retained commuting features such as ditches and hedgerows, will be established to enhance green corridors. This will act to improve the Solar Development Sites for a variety of fauna post development. ▪ The detailed OEMP will include relevant invasive species control measures, building on the principles set out in the outline Invasive Species Management Plan (oISMP) [**EN0110012/APP/LVS/07.22].** ▪ Protection and maintenance of buffer zones around retained ecological features i.e. 10 m buffers surrounding ditches, to protect species such as otter and water vole. The detailed OEMP(s) will also include measures to reduce the potential impact of any large-scale replacement of infrastructure within the Proposed Development during the operational phase, including but not limited to: ▪ An ecological walkover to identify any new constraints prior to any large-scale replacement campaigns.	allow time for the implementation of any necessary mitigation, prior to replacement. Additional surveys may be required during replacement activities as advised by the Applicant's ECoW, based on the findings of the updated walkover and protected species surveys, or otherwise as identified as appropriate by the Applicant or their appointed Contractor(s).

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	▪ The completion of updated protected species surveys to understand the spread of species within the Solar Development Sites. For example water vole surveys where any impacts to ditches are anticipated. ▪ The completion of a pre replacement otter survey to be conducted at least three months prior to any large-scale replacement activities (and within the 50 m buffer zone). Surveys will be targeted to the area of potential impact and be assessed at the time as to the need for the survey. ▪ The completion of two pre replacement badger surveys, the first at least three months prior to the start of to any large-scale replacement activities, and the second at least one months prior to the start of any large-scale replacement activities. ▪ A pre replacement check for leverets by an ECoW which may be required if certain areas of habitat are impacted during brown hare breeding season. ▪ Site personnel will remain vigilant of any new badger setts and stop work if they locate a new sett. A suitably qualified ecologist will be informed immediately if a sett is located within a working area. The ecologist will then advise on the correct course of action required prior to re-commencing works.	
Potential pollution from battery fire or replacement at Light Valley Solar BESS.	The risk of a fire and measures to mitigate impacts in the event of a fire will be detailed within the detailed Battery Safety Management Plan, developed prior to the commencement of construction, and updated to prior to operation and decommissioning.	Refer to the detailed BSMP.

Table 3-4 Climate Change Resilience and Greenhouse Gas Emissions

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Greenhouse gas emissions from the operational maintenance activities.	Regular planned maintenance of the Proposed Development will be conducted. Where applicable, for replacement activities, the construction mitigation measures will also be applied during operation to optimise efficiency. These measures include: ▪ Segregating waste to be re-used and recycled, where reasonably practicable. ▪ When replacing assets, minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content where feasible. ▪ Reusing suitable infrastructure and resources already available within the Sites where practicable to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil for fill requirements). ▪ Switching vehicles and plant off when not in use and ensuring vehicles conform to current UK emissions standards. ▪ Conducting regular planned maintenance of the plant and machinery to optimise efficiency. ▪ The Proposed Development will adhere to good practice and guidance regarding the emission of sulphur hexafluoride (SF_6). Gas insulated switchgear equipment is now supplied to minimise leakages. Additionally, through regular checks of the equipment for gas leaks, it can be expected that leaks to be de minimis. ▪ SF_6 will be avoided where practicable. The detailed OEMP will explain if the Applicant has been able to avoid the use of SF_6 or will provide the evidence that paragraph 2.10.15 of NPS EN-5 can apply, taking account of the process set by paragraphs 2.9.62-2.9.64, and if it does, the detailed OEMP	The overall responsibility will be with the Applicant. Specific responsibilities will be confirmed in the detailed OEMP(s).

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	will outline monitoring processes that will be put in place to be compliant with the F-gas Regulation.	
Increased frequency and intensity of extreme weather events, including climatic changes over time	▪ Health and safety plans and risk assessments developed for operational activities will be required to account for potential climate change impacts on workers, such as flooding and heatwaves. This will include for the provision of flood defence equipment (e.g. sandbags) on-site and best practice health management measures for operational staff working in heat such as wearing loose clothing, staying hydrated and applying sun protection. ▪ Protecting workers and resources from extreme weather conditions through appropriate PPE and working practices. ▪ Using equipment's cooling systems where necessary / adapting working practice and equipment used based on current weather conditions. ▪ Monitoring weather forecasts and news for Environment Agency flood warnings, relevant weather warnings, and water levels of the local waterways.	Regular monitoring of weather forecasts for extreme conditions and activation of response plans as needed to reduce risks to the Proposed Development from heatwaves, heavy rainfall, and strong winds during the operational phase. Regular monitoring of weather-related impacts throughout the operational phase of the Proposed Development, acknowledging the uncertainties in climate change projections. This monitoring will help evaluate the effectiveness of mitigation measures and should be updated when new climate data becomes available. A record of extreme weather incidents impacting the Proposed Development (e.g., road surface damage, flooding, snow, ice) will be developed and monitored to help identify thresholds that trigger maintenance. Post-event inspections should follow intense rainfall or other extreme conditions to assess damage and apply necessary mitigation. Conduct regular inspections of drainage systems, materials, and structures to identify signs of deterioration. Additional checks should be carried out after

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
		extreme weather events (e.g., flooding, heatwaves, droughts, storms), with repairs or replacements scheduled as needed.

Table 3-5 Cultural Heritage

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Impacts on cultural heritage assets arising from changes in their setting as a result of security lighting, operational noise, associated traffic and glint and glare	Existing hedgerows in poor condition will be reinforced with new planting, where feasible, to strengthen landscape patter and habitat connectivity which will reinforce Historic Landscape Character. The oLEMP [**EN0110012/APP/LVS/07.05**] describes how existing and new habitats will be maintained during the first five years following implementation and managed in the long-term until decommissioning, including hedgerows and planting which provide screening. Motion sensing security lighting will be used to avoid permanent lighting and a sensitive lighting scheme will be developed ensuring inward distribution of light and avoiding light spill onto existing boundary features. These features will reduce any changes within the setting of identified heritage assets. Measures to minimise impacts from noise and traffic during operation are provided in the relevant sections of this oOEMP.	Refer to the oLEMP.
Operational phase impacts upon buried archaeological assets	It is not envisaged that any ground disturbance is required beyond that experienced during the construction phase, including for replacement activities. If ground disturbance is required beyond that caused during the construction phase then an appropriate archaeological mitigation strategy will be identified and agreed with the archaeological advisor(s) to the LPA in advance of any required works (i.e. a Written Scheme of Investigation (WSI)). If required, archaeological works will be undertaken by suitably qualified and experienced professional archaeological specialists. All archaeological works will be undertaken in line with national guidance (i.e. Historic England and CIfA guidance). If required, works will be monitored by the Archaeological Clerk of Works and /or the Archaeological Advisors to the LPA will monitor the completion of works in accordance with an appropriate, agreed WSI.	Monitoring as required.

Table 3-6 Landscape and Visual

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Loss of existing landscape features (e.g. vegetation).	The oLEMP [**EN0110012/APP/LVS/07.05**] sets out the measures proposed to mitigate the potential impacts and effects on landscape (and biodiversity) features, and to enhance the landscape and biodiversity value of the Order limits. A detailed LEMP will be prepared in accordance with the principles of the oLEMP and will be submitted to and approved by the relevant planning authority. This will include measures to ensure landscape mitigation and enhancements are established and maintained into and throughout the operational phase. No visible lighting will be utilised at the Order limits perimeter. Motion sensing security lighting will be provided within substation compounds and within the BESS compound to be used to maintain safe working conditions for winter months, security purposes, and maintenance activities. Any works affecting registered Village Greens will be reinstated to match existing standards, as far as is reasonably practicable unless otherwise agreed with North Yorkshire Council. **Screening** Existing vegetation along the boundary of the Order limits will be retained and managed where practicable to ensure its continued presence and to aid the screening of low-level views into the Order limits and for any replacement activities. A minimum 15 m offset from all infrastructure, including fencing, to PRoWs and permissive pathways will be adopted. A security fence will be designed to minimise its visual prominence. The fence will be a deer wire mesh and wooden post security fence with a maximum height of 2.5 m.	Refer to the oLEMP and detailed CEMP.

Table 3-7 Arboriculture

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Soil compaction or damage to stem/branches during replacement activities.	Trees will be adequately protected during any maintenance or replacement of infrastructure by the permanent security fencing (deer wire mesh with wooden post security fence, with a maximum height of 2.5 m), as all of the infrastructure will be sited within the fenced panel areas outside of the canopies and RPAs of retained trees. All tree pruning works will be undertaken by a professionally qualified and insured arborist working in accordance with British Standard 3998:2010 'Tree Work – Recommendations'. Replacement activities will be facilitated through use of Access Tracks installed during the construction of the Proposed Development, ensuring no additional root or canopy impacts to retained trees during replacement activities. Permanent Access Points and visibility splays for the Sites will be the same as those used for construction, ensuring no additional tree removal or pruning during operation of the Sites. Detailed tree protection matters will be set out in an Arboricultural Method Statement (ArbMS) produced prior to the commencement of each phase of development (and in accordance with the Aboricultural Impact Assessment [**EN0110012/APP/LVS/06.03.16.02**]). The Contractor(s) is to comply with the measures set out in this document and in the AMS.	To be confirmed in the detailed OEMP(s).
Planned and reactive maintenance	Planned and reactive tree maintenance work is likely to be required during the operational phase of the Proposed Development. This is likely to include removal of trees succumbing to ash dieback or other disease; removal or pruning of trees experiencing partial or total structural failure due to storm damage, where that failure threatens to damage infrastructure; hedge trimming and maintenance. Trees and hedges requiring maintenance will be accessed via the proposed access tracks or existing farm tracks to the extent practicable; temporary removal of the security fencing to access boundary trees and	To be confirmed in the detailed OEMP(s).

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	hedges may be required, but the fencing will be re-erected immediately after works are completed. All tree works will be carried out by suitably qualified, competent and insured Contractor(s) in accordance with BS3998: 2010 'Tree Work: Recommendations'.	

Table 3-8 Major Accidents and Disasters

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Major Accident or Disasters	All works will be undertaken in accordance with relevant Health and Safety legislation and guidance. Details of fire, police, emergency services and hospitals will be publicised and included in the site induction. An Outline Battery Safety Management Plan has been produced for the Proposed Development [**EN0110012/APP/LVS/07.06**] and will be developed into a detailed BSMP which will be referred to during operation to safely reduce and manage the risk of fire during operation. The detailed BSMP will include measures to minimise risks associated with batteries while complying with relevant standards. This will be updated and maintained as a 'live document' throughout the operational phase of the Proposed Development. An Emergency Response Plan will be prepared alongside the BSMP to minimise risks from smoke that may accompany a toxic gas release. An appropriate risk assessment will be produced prior to construction to minimise the risk of major accidents during operation. Mitigation measures to manage potential risks associated with BESS fires include: ▪ Containment of hazardous substances. Battery storage units will be housed in fully contained systems, ensuring that release of chemicals or contaminated fire water is captured and prevented from leaching into the environment. ▪ Fire suppression systems will prioritise the use of environmentally safer foams or fire waters, with containment measures in place to manage runoff. ▪ In the event of a fire, hazardous materials from damaged battery systems will be managed through containment and cleanup protocols.	To be confirmed in the detailed OEMP. Refer to the detailed BSMP. Post-incident environmental monitoring will be conducted to ensure soil and water quality is not compromised.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	The Applicant will provide arrangements for Sherburn Aerodrome fire and rescue service, or North Yorkshire Fire & Rescue Service on their behalf, to gain access to the Site in the event of an aircraft incident.	

Table 3-9 Noise and Vibration

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Noise due to operational equipment impacting Noise Sensitive Receptors (NSR)	The assessment presented in Chapter 11: Noise and Vibration (ES Volume 1) [**EN0110012/APP/LVS/06.01.11**] is based on an indicative design available at the time of writing to inform a reasonable worst-case assessment. The design is expected to continue evolving, and changes may occur, such as modifications to the Conversion Unit locations, the layout of the BESS Compound or changes to plant selection. Any changes will ensure that resulting operational noise impacts do not lead to significant effects. Given this, the Applicant has committed that, the submission of the detailed OEMP will include: ▪ Details of the operational noise mitigation measures that have been implemented as part of the detailed design. ▪ A noise impact assessment of the finalised detailed design of that part of the Proposed Development to which the OEMP relates. This will be required to demonstrate that the operational noise sources will not lead to materially new or materially different effects that are worse than reported in this chapter. ▪ A commitment to undertake and submit to North Yorkshire Council a verification exercise (the methodology for which will be sought to be agreed as part of the detailed OEMP) three months after operations begin for that part of the Proposed Development. This verification exercise will seek to confirm that the conclusions of that noise impact assessment have been borne out. ▪ A commitment that if that verification exercise concludes that the conclusions have not been borne out that the Applicant will undertake remedial actions to ensure those conclusions are delivered.	The overall responsibility will be with the Applicant. Specific responsibilities will be confirmed in the detailed OEMP(s). Details of the noise impact assessment including any noise monitoring, will be determined within the detailed OEMP(s). This will include, where required, details of monitoring locations, monitoring frequency, trigger levels, exceedance procedures, reporting arrangements and any necessary corrective actions. The requirement for these elements will be developed with NYC.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Noise complaints resulting from any operational or replacement works	▪ Annual monitoring and maintenance of equipment will be undertaken. The monitoring will take place during each summer when cooling fans are likely to be at their loudest. The monitoring will include identifying any changes in sound pitch (frequency) or volume (level), and identifying any required relevant maintenance works. This ensures that plant noise at sensitive receptors throughout the operational lifetime of the Proposed Development is not materially worse than the levels presented in the ES. ▪ The results of such monitoring will be submitted to NYC for review within 4 weeks of the survey. Where this review indicates that plant noise levels generated by the Proposed Development have materially increased, the report to NYC will include an action plan and appropriate timescales for resolving the issue. The undertaker and NYC will then liaise in respect of any further maintenance or mitigation required to reduce plant noise levels back to those established during the post-completion verification exercise. ▪ In the case of third-party complaints, complaints will be logged, liaison with complainants and the NYC will be undertaken, and investigation and corrective works will be undertaken where necessary. ▪ Following submission of a complaint by a third party, acknowledgement of receipt of the complaint will be given and an investigation process will be started within a timescale agreed with NYC at the time. If the investigation finds that plant noise levels have risen above those established during the post-completion verification exercise, maintenance or corrective works will be carried out to reduce levels within a timescale agreed with NYC at the time. ▪ Contact details will be made available to residents and other sensitive receptors to submit complaints by email, telephone or post.	In accordance with the identified mitigation measure, the detailed OEMP(s) will outline a communication strategy to address noise complaints, a transparent investigation protocol and a commitment to take remedial action where required.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	▪ The complainant will be advised of the outcome of the investigation, any remedial actions to be taken and the planned timetable for the remedial actions to be completed. ▪ The above will be recorded in the complaints log. The complaints log will be available to the local authority upon request.	
Noise due to maintenance activities impacting NSR.	Where practicable, operator will schedule maintenance and replacement works which may result in considerable levels of noise for daytime periods only. Operator will implement measures to minimise potential noise impacts at sensitive receptors as presented in the noise and vibration chapter.	Specific responsibilities will be confirmed in the detailed OEMP(s).
Noise and vibration due to replacement activities impacting noise sensitive receptors.	The replacement of infrastructure, will follow, where practicable, the same principles to control noise outlined in the Outline Construction Environmental Management Plan (oCEMP) [**EN0110012/APP/LVS/07.02**]	Specific responsibilities will be confirmed in the detailed OEMP(s).
Noise due to replacement activities impacting new noise sensitive receptors located close to traffic routes or adjacent to solar development sites.	The replacement of infrastructure, will be undertaken, where practicable and relevant, utilising the same principles to control noise and vibration as are outlined in the Outline Construction Environmental Management Plan (oCEMP) [**EN0110012/APP/LVS/07.02]** and accounting for the noise sensitive receptors which exist at that time. This will include: • Best Practicable Means (BPM) to be applied during replacement works to minimise noise and vibration at Noise Sensitive Receptors (NSRs), including neighbouring residential properties and other sensitive receptors; • Where practicable, consideration of the routing of replacement traffic routes to take account of noise sensitive receptors; • Consideration of the location of site compounds (if required); and • Programming activities such that deliveries are undertaken during daytime hours only.	Specific responsibilities will be confirmed in the detailed OEMP(s).

Table 3-10 Ornithology

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Impacts to internationally and nationally designated Sites and non-breeding and breeding birds (in particular species listed within the Lower Derwent Valley and Humber Estuary SPA and Ramsar citation, and species considered as part of the waterbird assemblage), as well as ground nesting birds.	Appropriate standard and good practice control measures will be included in the detailed OEMP(s) to control maintenance and replacement activities, which will include: ▪ Lighting and Disturbance Control through demand-responsive motion-sensor units only, minimizing disturbance to nocturnal and crepuscular species (e.g., owls) and reducing light pollution near sensitive habitats. Lighting should be directed away from the Mitigation Area. ▪ Retention of Buffer Zones (previously established) to protect habitats and maintain low-disturbance areas for nesting, foraging, and commuting wildlife. ▪ Green corridors linking key ecological features to maintain habitat connectivity, and grassland beneath solar arrays to be managed sensitively to promote botanical diversity. ▪ Public Rights of Way to include signage, way markers and screening vegetation or fencing and (or) diversion to reduce visual and acoustic disturbance. (and be maintained). ▪ Maintenance and replacements works within 250 m of the southern portion of the Solar Development Site 1, where it adjoins the Bird Mitigation Area shall be undertaken outside of the non-breeding period (April to August, inclusive). ▪ ECoW advice should be sought if vegetation/disturbing activities are taking place within the breeding season to avoid potential impacts to nesting birds and Schedule 1 Birds. Pre-works checks should be carried out. ▪ Breeding and non-breeding bird surveys would be undertaken in accordance with the oLEMP **[EN0110012/APP/07.05]** and oBMAMP **[EN0110012/APP/LVS/07.19]**, which will inform actions required prior of any replacement works to account for seasonality	To be confirmed in the detailed OEMP(s) and sensitive lighting strategy.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	constraints and to allow time for the implementation of any necessary mitigation, prior to replacement.	

Table 3-11 Socioeconomics

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Disruption to local residents, businesses and community facilities.	Primary mitigation measures are embedded within the Proposed Development, as set out in the respective topic tables in this oOEMP and will reduce operational effects (such as noise, air quality, transport, and landscape and visual) which in turn will mitigate the effects on the local community and existing facilities from a socioeconomic and land use perspective. Measures to mitigate the effects of operational noise and vibration are outlined in Table 3-9. Temporary workers, during periods of scheduled replacement activities, will be located either in the form of private rental accommodation, or hotels, or other services accommodation (e.g. furnished apartments for short-to-medium term stays), in locations where impact upon existing residents and visitors can be minimised. Measures in this respect will be set out in the detailed OEMP(s). Following approval of that detailed OEMP(s), re-assessment of accommodation availability will only be required if the worker numbers for a replacement campaign were to exceed those at construction, which would require a daily average of above 485. Where this is the case, North Yorkshire Council must be notified and this notification must explain to the Council the accommodation strategy for these workers and that the effects to accommodation availability from replacement workers will not lead to significant effects in EIA terms. Measures to mitigate the effects of landscape and visual amenity impacts from operation are outlined in Table 3-6. New non-vehicular permissive paths will also be installed, which would be open up to 364 days per year throughout the proposed 60-year operational lifetime of the Proposed Development. The permissive paths will be maintained and managed in accordance with the detailed Public Right of Way Management Plan (PRoWMP) [**EN0110012/APP/LVS/07.09**].	Refer to the oLEMP [**EN0110012/APP/LVS/07.05**]. Further detail on permissive pathway management to be provided in the detailed PRoWMP.

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
	Limit works and traffic related noise and disruption to Birkin Fisheries Tea room, Gasgoigne Wood fishery and Homestead Livery Yard, Fairfield Equine Facilitated Wellbeing. Where practicable, the most disruptive activities will be scheduled outside of these peak times to preserve the tranquillity of the site. These measures would be equally applicable to any new receptors identified where preserving tranquillity is necessary. Should any new receptors be identified, these measures can be adjusted to suit the receptor type as needed.	
Demand for local employment	The Contractor(s) will seek out opportunities for local recruitment and procurement and supporting local education and skills uplifting during the Proposed Developments operation. The Outline Skills, Supply Chain and Employment Plan (oSSCEP) [**EN0110012/APP/LVS/07.13**] seeks to build upon these measures by setting out the ways in which the Proposed Development's employment and economic benefits could be delivered through focussing on local recruitment and procurement and supporting local education and skills uplifting.	Further detail provided in the oSSCEP [**EN0110012/APP/LVS/07.13**]
Disruption to Public Rights of Way	Details of measures to manage impacts to PRoWs and the permissive paths installed as part of the Proposed Development, as a result of maintenance or replacement activities, will be included in the detailed OEMP(s) and will be consistent with the principles of the measures set out in the Outline PRoWMP. Any diversions to PRoW and other recreational routes, if required during infrastructure replacement activities events, will be temporary with original routing restored as soon as practicable, appropriately signed, and the duration and length of diversions will be optimised to minimise impacts on accessibility and use.	Refer to the oPRoWMP [**EN0110012/APP/LVS/07.09**]
Use of the access track off Common Lane to the west of Field 6.8	Maintenance and replacement activities will be carried out in a manner which ensures that the use of access track off Common Lane to the west of Field 6.8 by those parties who have the legal right to use it will not be restricted.	N/A

Table 3-12 Traffic and Movement

Potential Impact	Mitigation/Enhancement Measure	Monitoring Requirement
Vehicle movements during operation.	All new access tracks will be secured by gates, which will be set back from the public highway. The detailed OEMP(s) will encourage workers to travel to the Site via sustainable travel, where practicable. If replacement activities are expected to generate more than 12 HGV movements at a Solar Development Site a reassessment of the transport impacts should be carried out and any appropriate mitigation measures developed and notified to North Yorkshire Council, with such notification demonstrating that effects associated with replacement traffic movements would associated with replacement traffic movements would not lead to significant effects in EIA terms.	The overall responsibility will be with the applicant. Specific responsibilities will be confirmed in the detailed OEMP(s), detailed PRoW Management Plan and detailed LEMP. The detailed OEMP(s) will include a requirement for the Site Manager to record HGV movements during replacement activities. These monitoring records shall be retained and made available to the Local Highway Authority on request.

Table 3-13 Water Resources and Flood Risk

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
The following impacts may occur without adequate mitigation: ▪ Impacts on water quality in waterbodies that may receive surface water runoff or be at risk of chemical spillages from supporting infrastructure for the Proposed Development (e.g. substations, battery stores, solar stations, local site offices and car parking etc.) and maintenance activities ▪ Potential for reduced chemical loading of watercourses associated with cessation of nitrate, pesticide, herbicide and insecticide applications on arable fields, or reduction in fine sediment / soil erosion, which would be beneficial ▪ Hydro-morphological impacts to waterbodies including changes to physical form (for example where outfalls or watercourse crossings are	**Drainage Strategy** A Drainage Strategy is included in the application and outlines management of surface and foul water. The Drainage Strategy [**EN0110012/APP/LVS/06.03.15.04**] provides where necessary the attenuation of surface water runoff from the operational Order Limits, whilst minimising flood risk to the Proposed Development and surrounding areas. In accordance with planning policy guidance, runoff from the Order Limits requires attenuation where there is an increase in hardstanding areas to ensure no increase in surface water discharge rates. Consideration has also been given to the water quality of discharge, with additional SuDS systems provided where a treatment train is required. A Water Discharge Activity Permit will be acquired, as necessary. **BESS** The Drainage Strategy and Outline Battery Safety Management Plan [**EN0110012/APP/LVS/07.06**] also outline how firewater runoff will be managed at the BESS Compound. If an internal water-based fire suppression system is provided within each of the BESS enclosures, this will include a separate water supply, internal drainage system, and segregated fire water containment system which will be isolated from the site drainage network. Testing of any water contained within the containment tanks following a fire would be carried out prior to the water being removed via tanker and treated off-site, ensuring it is handled in accordance with the relevant environmental legislation and best practice. If the BESS system does not incorporate an automatic fire suppression system and is designed to safely burn out to remove the risk of stranded energy in the battery	The detailed OEMP(s) will detail the following measures (including frequency): ▪ Regular recording of compliance in a logbook. ▪ Monitoring and maintenance of drainage systems. ▪ Monitoring of water receptors close to key infrastructure works, in line with Section 3 of outline Pollution and Spillage Response Plan **[EN0110012/APP/LVS/07.08]**. ▪ Monitoring and maintenance of vegetation beneath solar PV panels to ensure that erosion and sediment mobilisation is not increased and to ensure interception and infiltration of rainwater. ▪ Regular checking and maintenance of drainage isolation devices associated with fire water containment and pollution management to ensure they are operational when needed and not seized. ▪ Regular water quality monitoring is recommended in order to efficiently detect

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
required) which underpin habitats ▪ Impacts on flood risk from increased runoff from new impervious areas across the Sites ▪ Potential impacts on hydrology as a result of the Proposed Development by changing the way water infiltrates into the ground ▪ Potential beneficial impacts on local waterbodies where local abstractions are made for spray irrigation and therefore need will reduce.	systems, then full scale free burn testing will be conducted to demonstrate that loss will be safely limited to one enclosure without the intervention of the NYFRS. A secondary containment system will be provided within the surface water drainage network, enabling isolation of the system and provision of sufficient storage to contain water used during a fire event for boundary cooling. The BESS drainage system will be fully sealed (impermeably lined) to prevent infiltration and secondary containment systems may take the form of impermeable lagoons or tanks. Automated shut-off valves that are linked to the BESS fire alarm system will isolate the drainage network during a fire event. During standard operation, the self-actuating valves will be open to allow surface water runoff to discharge to the downstream network under normal operation. A manual back-up shut-off valve system allowing for redundancy will also be integrated. Regular checking and maintenance of drainage isolation devices associated with fire water containment will be undertaken to ensure they are operational when needed and not seized. During normal operation, the BESS drainage system will discharge surface water in a controlled manner. In the event of a fire, the drainage system will be automatically isolated to prevent the release of potentially contaminated runoff. Following a fire event, samples of the contained firewater runoff will be taken by a suitably competent person and submitted to a UKAS accredited laboratory for analysis using UKAS and MCERTS accredited methods, where applicable. The samples will be analysed to determine the presence and concentration of contaminants. The contained runoff will not be discharged or removed until the results have been reviewed and an appropriate management route confirmed. Where contamination is identified, stored firewater will subsequently be removed from site by licensed tanker for off-site treatment and disposal,	potential accidental pollution events. A monitoring plan will be developed in consultation with the EA which will outline the frequency of water quality monitoring during the first few months of operation for the purposes of confirming that water quality has returned to the baseline conditions established through pre-construction monitoring. ▪ A risk assessment and options appraisal will be undertaken at detailed design to establish whether additional water quality monitoring at outfalls from the Substations and BESS Compound, including the potential use of sensor-based systems, is required. Any monitoring measures identified through the risk assessment and options appraisal will be incorporated into the detailed drainage strategy. ▪ Relevant monitoring requirements identified through construction will be carried forward into the detailed

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
	in accordance with Environment Agency requirements. This approach ensures protection of nearby watercourses and downstream sensitive receptors. The drainage system will not be returned to normal operation until any required cleaning has been completed. Water levels and the available containment capacity will be monitored following an incident, taking into account forecast rainfall. Following an incident, sampling will be undertaken as soon as practical and, where the removal of retained firewater is required to maintain adequate available containment capacity prior to receipt of testing results, any contained water will be managed as potentially contaminated and removed by tanker for disposal. The detailed BSMP and drainage design will define any operational trigger levels and procedures for managing this residual risk. As the discharge of contaminated firewater to the environment is not permitted without an Environmental Permit, only water confirmed as uncontaminated and safe for release would be discharged in a controlled manner to the local drainage network. This approach ensures that environmental protection is maintained under both normal and emergency conditions. Where firewater requiring management is present, the need for an Environmental Permit would be identified and, if required, an application would be made. A risk assessment and options appraisal will be undertaken at detailed design to establish whether additional water quality monitoring at outfalls from the BESS Compound, including the potential use of sensor-based systems, is required. Any monitoring measures identified through the risk assessment and options appraisal will be incorporated into the detailed drainage strategy.	OEMP, including any post-construction monitoring required following completion of the works. ▪ Maintenance and inspection of infrastructure located within the floodplain, including any voided structures intended to facilitate the passage of flood flows. This will include routine inspections and inspections following flood events to identify and remove debris where necessary, maintaining flood flow paths and reducing the risk of debris accumulation affecting flood risk elsewhere .

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
	There is also a possibility that a fire may coincide with a rainfall event. Any runoff emanating from the BESS Compound during or following a fire must be effectively contained and subsequently tested for contamination. The proposed containment system must therefore also be appropriately sized for the 1 in 100-year plus climate change design event to prevent the untreated discharge of contaminated firewater to surface or groundwaters. An appropriate containment volume will be agreed with North Yorkshire Fire and Rescue Service (NYFRS) during subsequent design stages. The Drainage Strategy also includes detail on operation and management of the drainage infrastructure in order to ensure that it continues to function effectively throughout the lifetime of the Proposed Development. **Solar PV Panels** PFAS is not to be used in solar panel coatings. Measures to prevent coating damage will be undertaken, including following specific recommendations from the manufacturer and avoiding thermal shock during cleaning. **Pollution controls** The design of the Proposed Development has included measures to avoid and minimise the risk of pollution to ground and water during its operation. An outline Pollution and Spillage Response Plan [**EN0110012/APP/LVS/07.08**] has been prepared which sets out the intended strategies for managing pollution and spillage incidents on site which include the availability of spill kits, as well as monitoring requirements. A detailed PSRP will be developed following the appointment of the Contractor(s), prior to the start of construction and	

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
	will be updated during the operation and decommissioning phases of the Proposed Development. This will be substantially in accordance with the outline plan. Measures included in the oPSRP include: ▪ All hazardous materials including chemicals, cleaning agents and solvent containing products to be properly sealed in sealed containers at the end of each day prior to storage in appropriately protected and bunded storage areas, away from drains, watercourses and sensitive receptors where practicable. ▪ Regular inspections and maintenance of all equipment will be undertaken in order to identify any leaks or damage early. Any panels which require maintenance / replacement will be removed before there is any leakage of chemicals from the sealed units. Any leaks will be dealt with in a way that is compliant with the prevailing environmental legislation. The detailed OEMP(s) will include a regular schedule for visual inspection of the panels and all other infrastructure. ▪ Cleaning of the panels will only be done using water. If any soiling remains on the panels they will be further cleaned with a soft cloth or brush. ▪ A detailed Battery Storage Safety Management Plan will include measures to control pollution in the event of a BESS fire. ▪ Avoidance of driving and parking of maintenance vehicles over areas of absent, thin or permeable superficial deposits where practicable. Ensure that vehicles are checked for condition before entering the site. ▪ PFAS is to be avoided on BESS batteries. ▪ Foul water generation will be limited to welfare facilities within substation compounds. In the absence of mains sewer connections, foul flows will be managed via a sealed non-mains drainage solution, comprising either a cesspool or package treatment plant	

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
	subject to detailed design. Where required, off-site disposal will be undertaken by a licensed contractor, or treated effluent will be discharged in accordance with the Environment Agency's General Binding Rules or an environmental permit. Systems will be designed to avoid impacts on water resources and located outside areas of flood risk, as confirmed by the Flood Risk Assessment. ▪ Bulk fuels and any chemicals used on the Sites will be stored appropriately, within an impervious bund of 110% of the volume of the container to reduce the potential for any contamination source in the event of a container failure / leak of battery fire and associated fire waters. Pollution risks associated with the proposed Substations, such as from a fire involving an oil-filled transformer, will also be managed through appropriate containment and drainage measures as outlined in the Outline Drainage Strategy [**EN0110012/APP/LVS/06.03.15.04**], applying the same principles of containment and drainage isolation as outlined for the BESS Compound. Areas containing potentially polluting equipment, including transformers and other oil-containing equipment, will incorporate secondary containment measures, with drainage arrangements designed to prevent the uncontrolled release of pollutants to the wider surface water drainage system or water environment. A risk assessment and options appraisal will be undertaken at detailed design to establish whether additional water quality monitoring at outfalls from the Substations, including the potential use of sensor-based systems, is required. Any monitoring measures identified through the risk assessment and options appraisal will be incorporated into the detailed drainage strategy. Other pollution prevention measures such as oil and chemical spill kits will also be available on site.	

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
	Resilience to flooding The Proposed Development will be designed and installed to be flood resilient / water compatible. This will be achieved in accordance with appropriate design standards and best practice guidance. Regular inspection and maintenance of the drainage systems, Sustainable Drainage Systems (SuDS) and culverts will take place throughout the operational phase. This will be undertaken in accordance with good practice guidance. Headwalls and other interfaces between below-ground and above-ground drainage shall be routinely inspected to ensure they remain free-flowing and do not become blocked. Where screens are installed, these shall also be regularly inspected and cleared of any accumulated material. Following significant rainfall events, visual inspections will be undertaken to identify any erosion, sediment deposition or damage to drainage features, and remedial works will be implemented where necessary to maintain system performance. Additional inspections shall be undertaken following flood events or other extreme weather conditions to identify damage and remove debris where necessary to maintain flood conveyance and ensure flood risk is not increased. The maintenance of drainage features will be largely in accordance with the requirements of the SuDS Manual (CIRIA 753). Any interfaces and subsequent maintenance requirements with IDB maintained watercourses will be discussed and agreed with the relevant IDB during subsequent design stages pursuant to the Protective Provisions in the draft DCO Application. SuDS features will be utilised to ensure the surface water drainage strategy adequately attenuates and treats runoff from the Proposed Development, whilst minimising flood risk to the Order limits and surrounding areas. A management and maintenance team will be	

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
	established to maintain SuDS features throughout the lifetime of the Proposed Development. A suitable Flood Warning and Evacuation Plan (FWEP) will be prepared alongside the detailed OEMP(s) and put in place for the operational phase. The FWEP will be developed taking into account the measures outlined in the FRA [**EN0110012/APP/LVS/06.03.15.01**]. **Blockages** To manage blockages of drainage networks, a management and maintenance team should be established to maintain the features throughout the lifetime of the Proposed Development. Blockages will be identified as part of the regular inspection of drainage systems and removed, with waste deposed of in accordance with the relevant Waste Management Legislation and as set out in the Drainage Strategy [**EN0110012/APP/LVS/06.03.15.04**]. **Monitoring** ▪ Monitoring and maintenance of vegetation beneath the solar PV panels to ensure that erosion and sediment mobilisation is not increased and to ensure interception and infiltration of rainwater. Planting management is covered in the oLEMP but will be suitable for the environment under panels to prevent sediment mobilisation/erosion. ▪ Litter and debris will be removed from gravel aprons surrounding buildings.	

Table 3-14 Other Environmental Matters

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
Light pollution	During operation, no part of the Proposed Development will be continuously lit. The use of motion detection security lighting to avoid permanent lighting will be utilised and a sensitive lighting scheme will be developed ensuring inward distribution of light and avoiding light spill onto existing boundary features.	Refer to the detailed OEMP(s)
Waste: Impacts of waste to the surrounding environment. Potential to impact on sensitive receptors (humans, wildlife, and controlled waters) if not stored and managed appropriately. Impacts on waste recycling and handling facility capacity.	The Proposed Development will prioritise waste prevention, followed by allowing for reuse, recycling, and recovery of equipment when it comes to replacement, with landfill disposal as the last resort, in line with the waste hierarchy. A Waste Management Strategy will be developed as part of the detailed OEMP(s) (consistent with the Outline Materials and Waste Management Plan [**EN0110012/LVS/APP/07.07**]) to ensure operational waste is managed suitably, and that waste arisings are sent for handling at facilities within the waste local authorities that have capacity to do so without adversely impacting upon their capacity to handle waste arisings for all other waste streams in the authority area. All waste management will comply with relevant regulations, and waste will be transported by licensed hauliers to authorised waste management sites with the necessary permits for the consigned wastes. Materials requiring removal from the Order limits during operation would be transported using licensed carriers and records kept, detailing the types and quantities of waste moved and the destinations of this waste, in accordance with the relevant regulations. Infrastructure such as PV panels and battery storage units that need to be replaced during the operational phase, will be removed and recycled as far as practical and in accordance with legislation and guidance applicable at the time, or if more suitable at the time, sold for refurbishment and reuse. The Proposed Development is expected to generate waste from electrical and electronic equipment (WEEE) during both the operation and maintenance phases. These items will be recovered and recycled by an authorised re-processor in compliance with the WEEE Regulations 2013. To ensure this is done according to “Best Available Treatment Recovery and Recycling Techniques,” a list of up-to-date authorised re-processors should be established	Refer to the detailed OEMP(s)

Potential impact	Mitigation / Enhancement Measure	Monitoring Requirement
	prior to the operational phase of the Proposed Development and kept up to date throughout the operation phase. This will be secured through measures set out within the detailed OEMP(s).	
Glint and glare effects	The detailed OEMP will require that anti-reflective coating is to be installed on the solar panels of the Proposed Development. The detailed OEMP will provide that 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 will also provide for a communications protocol between the Applicant and the airfields in respect of glint and glare issues.	Refer to the detailed OEMP.

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