Mallard Pass
Solar Farm

Mallard Pass Solar Farm

Preliminary Environmental Information Report

Volume 3: Appendices

Appendix 5.3: Outline Decommissioning Environmental Management Plan

May 2022

Outline Decommissioning Environmental Management Plan

1.1. Introduction

1.1.1. This document provides a draft outline for the Decommissioning Environmental Management Plan (oDEMP) for the Mallard Pass Solar Farm project (hereafter referred to as 'the Proposed Development'). This document will be updated at the next stage of the Proposed Development design prior to the Development Consent Order (DCO) Application and will be submitted with the suite of application documents but should be read as a draft version of that application document. A DEMP will be produced for the Proposed Development in accordance with a Requirement of the DCO, prior to commencing decommissioning, which will be required to be in accordance with the outline DEMP submitted as part of the DCO Application.

1.1.2. This document does not address measures for the construction or operational phase, which are provided in the separate draft Outline Landscape and Ecological Management Plan and the draft Outline Construction Environmental Management Plan (oCEMP) which is submitted as part of the Preliminary Environmental Information Report (PEIR) (see Appendix 5.1 and 5.2).

1.1.3. The draft oDEMP demonstrates how the mitigation measures and necessary monitoring requirements identified in the EIA process, will be implemented. The measures proposed within the DEMP will be agreed prior to commencement of decommissioning works with the relevant stakeholders. The DEMP will be prepared, following the appointment of a principal demolition contractor, prior to the start of works and in accordance with this oDEMP.

1.1.4. The draft oDEMP has been prepared with the objective of compliance with the relevant legislation and mitigation measures identified through the EIA process. Any additional licences, permits or approvals that are required for the decommissioning phase of the Proposed Development and are not

disapplied by the DCO, will be set out in the DEMP, including any environmental information submitted in respect of them.

1.1.5. This draft oDEMP covers the principal decommissioning activities envisaged at the time of preparing the PEIR. The oDEMP is intended to be a live document, such that modifications and necessary interventions can be made following further information and advice from consultees.

1.1.6. The appointed contractor will be responsible for working in accordance with the environmental controls documented in this oDEMP, pursuant to the DCO. The overall responsibility for implementation of the final DEMP will lie with the appointed contractor as a contractual responsibility to the Applicant, as the Applicant is ultimately responsible for compliance with the Requirements of the DCO.

1.1.7. Table 1.1 below sets out the other management plans that would be prepared in support of the DEMP.

Table 1.1 Additional Management Plans to Supplement the DEMP

Plan
Invasive Species Management Plan
Decommissioning Traffic Management Plan (DTMP) and Framework Travel Plan
Dust Management Plan (DMP)
Water and Decommissioning Management Plan (WCMP)
Pollution Prevention Plan (PPP)
Emergency Response Plan
Emergency Spillage Action Plan
Soil Management Plan (SMP)

1.2. The Proposed Development

1.2.1. The project involves the installation of solar photovoltaic (PV) generating panels and associated infrastructure which would allow for the generation of an anticipated 350 megawatts (MW) (the 'Proposed Development') at land at Mallard Pass, Essendine (the 'Site').

1.2.2. The key components of the Proposed Development comprise the following:

- PV modules;
- Mounting Structures;
- Inverters;
- Transformers;
- Switchgear;
- Primary Onsite Substation and Ancillary Buildings;
- Low Voltage Distribution Cables;
- Grid Connection Cables;
- Fencing, security and ancillary infrastructure;
- Access tracks; and
- Green infrastructure (GI).

2.0 Decommissioning

2.1. Decommissioning Activities and Programme

2.1.1. It is proposed that the Applicant will commit to decommissioning the Proposed Development when it ceases being operational; however, no time limit will be set for this. At this stage in the project, it is anticipated that all the solar infrastructure including PV modules, mounting structures, cabling on or near the surface, inverters, transformers, switchgear, fencing and ancillary infrastructure would be removed and recycled or disposed of in accordance with good practice and market conditions at that time of decommissioning. The future of the substation and control building would be agreed with the National Grid prior to commencement of decommissioning. Any requirement to leave the internal access tracks would be discussed and agreed with the landowners at the time of decommissioning.

2.1.2. It is likely that decommissioning would include the removal of any permissive paths and potential reversion of grassland underneath the PV Arrays back into arable. Any landscape structural planting, such as tree planting, hedgerows, scrub etc created to deliver biodiversity mitigation and enhancement associated with the Proposed Development that have potential to contain protected species would be left in-situ. If these were to be removed, appropriate surveys and licenses would be applied for at the time of decommissioning.

2.1.3. Decommissioning is anticipated to take approximately six months to twelve months.

2.1.4. The DEMP will include timescales and transportation methods, and would be agreed in advance with the local planning authorities. The DEMP would be secured via a DCO requirement.

2.1.5. The effects of the decommissioning phase are often similar to, or of a lesser magnitude than the effects generated during the construction phase.

However, there can be a high degree of uncertainty regarding decommissioning as engineering approaches and technologies evolve over the operational life of the Proposed Development, and assumptions have therefore been made for this draft oDEMP, where appropriate, in setting out the control measures required. At the time decommissioning is required, some control measures may no longer be relevant. 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 significant effects) at the time of submission of the detailed DEMP.

2.2. Working Hours

2.2.1. Core decommissioning hours will run from 07:00 to 19:00 Monday to Saturday, with no working on Sundays or Bank Holidays. HGV deliveries to the Site and works likely to generate substantial levels of noise, would be limited to daytime hours of 07:00 to 19:00 during weekdays or Saturday mornings (until 13:00 hours), unless otherwise agreed with the local authorities.

2.2.2. Working days will be one 12-hour shift, with employees travelling to and from Site an hour either side of these times (i.e. between 06:00 and 07:00, and 19:00 and 20:00). Where onsite works are to be conducted outside the core working hours, they will comply with the restrictions pursuant to the consenting process.

2.3. Traffic Management during Decommissioning

2.3.1. A separate Decommissioning Traffic Management Plan (DTMP) will be produced and agreed with the relevant authorities and stakeholders prior to the commencement of the decommissioning works at the Site. The DTMP will consider the methods by which materials, equipment and decommissioning workers will arrive at and depart from the Site.

2.4. Site Security

2.4.1. Site security during the Decommissioning phase will be managed by the contractor.

2.4.2. Site perimeter fencing, which will be established at the start of the decommissioning phase will remain in place for the duration of the decommissioning phase. Any storage of materials and chemicals will be kept secure to prevent theft or vandalism. The contractor will be responsible for establishing a safe system for accessing the material storage areas.

2.5. Waste Recycling and Disposal

2.5.1. The Waste (England and Wales) Regulations 2011 place a duty on all persons who produce, keep or manage waste to apply the 'Waste Hierarchy' in order to minimise waste production at every stage of the development.

2.5.2. The Waste Hierarchy is a European concept which requires anyone managing waste to consider first waste prevention, preparing for reuse and recycling, followed by waste recovery methods e.g. energy recovery and, lastly, waste disposal.

2.5.3. In order to control the waste generated onsite during the decommissioning phase, the contractor will separate the main waste streams onsite, prior to transport to an approved, licensed third party waste facility for recycling and disposal.

2.5.4. All reasonable actions will be taken by the contractor to minimise the volume of waste produced as a result of the decommissioning of the Proposed Development. This can be through reducing consumption, reuse, using resources efficiently, and designing for longevity. Waste segregation will be undertaken where possible to maximise the opportunities for reuse and recycling.

2.5.5. All waste removed from the Site will be undertaken by fully licensed waste carriers and taken to licensed waste facilities for recycling or disposal.

2.5.6. The waste disposal methods will be reviewed and updated to ensure compliance with any future changes in legislation.

2.6. Best Practice Measures

2.6.1. The Proposed Development will adopt the Considerate Constructors Scheme (CCS) (or equivalent at the point of decommissioning) to assist in reducing pollution and nuisance during the of the Proposed Development, by employing best practice measures.

3.0 Management, Mitigation and Enhancement Measures

3.1.1. This section of the oDEMP outlines the impacts, best practice measures, mitigation and/or enhancement measures to be included as a minimum within the DEMP. It also provides the monitoring requirements for each mitigation and/or enhancement measure and the responsible party required to secure such measures. The measures identified in Table 3.1 below will be reviewed and updated following consent of the application as part of the preparation of the DEMP.

Table 3.1: Summary of Decommissioning Management, Mitigation and Monitoring Measures

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
Landscape and Visual			
Loss of existing landscape features, e.g. vegetation Visibility of decommissioning activities	The DEMP will be required to take into account measures contained within the detailed LEMP. A pre-commencement survey of vegetation prior to decommissioning will need to be undertaken to establish the extent to which any vegetation removal will be needed. Measures proposed to mitigate potential effects on landscape during the decommissioning phase include: • To protect and retain existing trees and vegetation via decommissioning exclusion zones and tree protective fencing;	A pre-decommissioning arboricultural survey in line with BS5837:2012. ECoW will carry out monitoring of the proposed protection measures such as fencing.	Specific responsibilities will be confirmed in the DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Landscape and biodiversity management and enhancement measures including replacement tree planting (where relevant); • Landscape, arborists and Ecological Clerks of Works (ECoW) to ensure that the landscape and ecology requirements of the DEMP are adhered to and that the works are monitored; and • The perimeter security fence around the Site will remain in place until the end of the decommissioning phase to retain Site security. The design of the Proposed Development has ensured careful consideration of the access points to limit the loss of vegetation at access points and the number of field boundary crossings. Where access and crossings are necessary, they have been carefully		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	aligned to pass through the field access points and hedgerows where it would have the minimal impact on mature trees. The width of the access points will be minimised as far as possible to retain the landscape structure and habitat connectivity. The access points and internal access tracks used during the operational phase will be used for the purposes of decommissioning. **Tree Works** • A pre-decommissioning tree survey will be required prior to decommissioning to establish the baseline prior to starting works. This survey will inform the tree protection zones to be applied during decommissioning. The findings of this will be included within an Arboriculture Report, which will be accompanied by an Arboriculture Method Statement which		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	will set out mitigation and protection measures to be undertaken. • Where works in close proximity to retained trees cannot be practically avoided, these works will be undertaken in accordance with current best practice, defined in British Standard (BS) 5837: 2012 '*Trees in relation to design, demolition and construction*'. **Lighting** Temporary Site lighting during the decommissioning phase, required to enable safe working during decommissioning in hours of darkness, will be designed as far as reasonably practical so as not to cause a nuisance outside of the Site. Standard best practice measures will be employed to minimise light spill, including glare during decommissioning. **Screening**		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	Existing vegetation along the boundary of the Site will be retained and managed where practicable to ensure its continued presence and to aid the screening of low-level views into the Site.		
Ecology and Biodiversity			
Potential for spillages to enter watercourses and impact ecology. Clearance or damage of habitat to facilitate decommissioning – resulting in temporary or permanent reduction in habitat extent and	**Ecological Clerk of Works** • A licensed ECoW will be employed/contracted to advise on relevant environmental commitments and legislation, the findings of the updated surveys, protected species licencing requirements and with reference to the relevant project programmes; • Prior to the decommissioning of the Proposed Development, further Site walkover surveys will be undertaken by an ecologist to confirm whether the risks remain as previously assessed and/or to confirm correct	A pre-decommissioning site walkover will be undertaken in advance of mobilisation/any potential advance works to re-confirm the ecological baseline conditions and to	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
potential direct and indirect effects on associated species. Dust deposition on sensitive ecological receptors. Loss of grassland within the Site which will be used as a decommissioning compound area.	implementation of impact avoidance measures (e.g. protected species stand-offs). The scope of the required walkovers will be defined on a case-by-case basis in consultation with the project team, the local planning authorities or other relevant statutory consultees as necessary, based on the specific risks; • Relevant Site personnel will receive toolbox talks on the ecological risks present, legal requirements and working arrangements necessary to comply with legislation. Toolbox talks will be repeated as necessary over the duration of the decommissioning phase; • Contact details for the Site Management or alternative public interface will be available on a display board installed onsite so that nuisance or complaints can be logged and	identify any new ecological risks. Updated species surveys will be completed as appropriate to re-confirm the status of protected species identified, to inform mitigation requirements. Such surveys will be undertaken sufficiently far in advance of decommissioning works to account	

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	reported over the duration of the decommissioning works. A log book of complaints will be prepared and managed by the Site Manager. **Working Methods to avoid and minimise impacts on protected/ notable species and existing habitats** The following precautionary working methods will be employed to minimise potential adverse effects on habitats and protected/notable species prior to, and during, decommissioning: • Measures to prevent and minimise dust creation and air pollution will be adopted throughout decommissioning. Please refer to the **Air Quality** section of this table for the measures employed to minimise effects on air quality;	for seasonality constraints and to allow time for the implementation of any necessary mitigation, prior to decommissioning.	

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Measures to prevent pollution incidents will be adopted throughout the decommissioning phase. Please refer to the **Water Resources and Ground Conditions** section of this table for the measures employed to avoid pollution events with respect to water quality; • Measures to minimise effects on ecology from noise and vibration will be adopted throughout the decommissioning phase. Please refer to the **Noise and Vibration** section of this table for the measures employed to minimise noise and vibration; • Pre-commencement surveys will be undertaken to validate and, if necessary, update the baseline habitat survey findings and to update on the presence and location of		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	invasive species to inform the implementation of measures to prevent the spread; • Retained trees adjacent to decommissioning working areas will be protected by clearly defined root protection zones to prevent damage/compaction of roots by plant and other machinery; • Vegetation clearance will be undertaken in advance of decommissioning and at an appropriate time of year. This will likely involve a two-stage vegetation removal with a first cut in winter (October to February) and the final removal during the active season for reptiles (mid-April onwards). This would be implemented for any small scale hedgerow, scrub or rough grassland removal/clearance;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• As a precaution, prior to starting decommissioning works during the nesting season (mid-March to August), an experienced ecologist will carry out a watch of the affected field(s) to determine whether lapwing (or other ground nesting birds) are nesting in the area; • Prior to decommissioning the vegetation will be kept short to displace any present amphibians, which may be present, away from the decommissioning works when they emerge in the early spring, and discourage amphibians from moving into the Site from the surrounding habitat; • Reasonable avoidance measures will be used during clearance of any habitat suitable for reptiles, to minimise the risk of direct impacts including phased clearance of vegetation to gradually reduce suitability for reptiles, thereby		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	encouraging animals to move away from affected areas into adjacent suitable habitat; • Cleared ground will be maintained in a disturbed state in the lead up to the decommissioning works commencing to minimise the risk of ground nesting birds attempting to nest on cleared ground; • Implementation of measures to avoid animals being injured or killed within decommissioning working areas, through excluding them from such areas and preventing them falling into and becoming trapped in excavations; • Precautionary measures will be implemented to prevent trapping wildlife in decommissioning excavations. All excavations deeper than 1m will be covered or fenced overnight, or where this is not practicable, a means of		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	escape will be fitted (e.g. battened soil slope or scaffold plank) to provide an escape route should any animals stray into the decommissioning site and fall into an excavation; • Reasonable avoidance measures to avoid impact on badgers and bats will be employed, including buffers of 30m around any identified badger setts and 15m buffer around trees with bat roost potential; • A 15m buffer zone will be applied to the adjacent Local Wildlife Sites and ancient woodland surrounding the Site. • Prior to decommissioning works commencing onsite an updated badger survey will be undertaken across the entire Site to check for any changes to the status of setts and ensure up to date information on badger activity;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Toolbox talks will be delivered to contractors and Site operatives in advance of decommissioning. This toolbox talk will be delivered by a suitably qualified ecologist and will focus on badger, signs of badger presence to be aware of (particularly excavations); • Vegetation (including topsoil) will be carefully removed using an excavator using a toothed bucket. These works should be supervised by a suitably qualified and experienced ecologist if this is deemed appropriate to do so; • Any habitat features which may conceal sheltering amphibians (log piles, rubble mound bunds, any other debris etc.) will be dismantled by hand under supervision of the suitably qualified and experienced ecologist;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Dismantling of any onsite rubble piles should be conducted during the amphibian active season (i.e. April to October) during warm weather conditions (i.e. above 5°C) to avoid killing or injuring potential hibernating amphibians; and • the unlikely event that any Great Crested Newt are discovered during decommissioning works, works must cease immediately an appropriate approach will be agreed taking into account potential licencing requirements. **Habitat Restoration** Habitats to be temporarily lost or damaged during decommissioning will be fully reinstated on a like-for-like basis at the same location on completion of the works.		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
Potential for obtrusive light and light spill impact on species and habitats	Controls on lighting/illumination to minimise visual intrusion and potential adverse effects on sensitive ecology, such as bats, will be considered as far as reasonably practicable. Temporary lighting will be designed as far as reasonably practicable so as to minimise artificial light spill from the site. Lighting will be kept to a minimum during decommissioning works. Decommissioning working hours will be 07:00 – 19:00 Monday to Saturday and during decommissioning in the winter months, mobile lighting towers will be used. Any lighting required during the decommissioning phase will be directed away from retained habitats and include hoods or cowls to direct light forwards into the decommissioning areas.	None	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	Throughout the Site, motion detection security lighting will be used to avoid permanent lighting and the inward distribution of light will avoid light spill on to existing boundary features.		
Potential to spread invasive non-native species within the Site.	**Biosecurity** A seperate Invasive Species Management Plan which sets out procedures to ensure any imported building/landscaping materials are free from invasive non-native species (e.g. Schedule 9 species) will be prepared by the demolition contractor as a requirement of the DCO. This will ensure: • In the event that any future infestations of invasive non-native species are identified prior to and, or during the development process, exclusion zones will be established	The ECoW will carry out monitoring.	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	around them and the ECoW contacted for advice as detailed; and • In the instance where invasive non-native species are identified, works will be monitored by the ECoW to avoid the spread of invasive non-native species.		
Cultural Heritage and Archaeology			
Potential impact to archaeological deposits	The decommissioning phase is not expected to result in any impact beyond the already-disturbed footprint of the Proposed Development; therefore, it is not anticipated that decommissioning activities will have a direct physical impact upon archaeological remains.	None	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the final DEMP

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
			which will be secured as a requirement of the DCO.
Temporary impacts upon settings of built heritage assets during decommissioning.	Temporary impacts during decommissioning are not anticipated. However, key lessons learned and decision made during construction, regarding the location of temporary infrastructure, will be employed to ensure impacts can be avoided.	None	The overall responsibility will be with the contractor. Specific responsibilities will be confirmed in the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
Access and Highways			
The effect of the decommissioning phase on access and highways is anticipated to be the same or less than construction effects. Increased traffic flows, including HGVs on the roads leading to the Site. Severance and intimidation associated with	A seperate Decommissioning Traffic Management Plan (DTMP) will provide the mitigation measures required to reduce the impacts of increased traffic flows including heavy goods vehicles (HGVs) on the roads and severance and intimidation associate with increased traffic and abnormal loads. The DTMP will be produced prior to decommissioning works commencing. The assessment and identification of any mitigation measures for the transport of any abnormal loads will be undertaken separately through a standalone Abnormal Indivisible Load (AIL) assessment that will be prepared and submitted alongside the final DEMP and DTMP.	The appointed contractor will undertake such monitoring as is necessary. Further details to be confirmed in the final DEMP and DTMP.	Travel Plan Co-ordinator to oversee management, monitoring and implementation of the individual measures within the DTMP. Other responsibilities are to be confirmed in the final DEMP which will be

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
increased decommissioning traffic and abnormal loads.			secured as a requirement of the DCO.
Noise and Vibration			
Vibration due to decommissioning activities potentially causing annoyance at noise sensitive receptors and damage to building structures. Decommissioning traffic, plant and	Best Practicable Means (BPM) will be applied, as far as reasonably practicable, during decommissioning works to minimise noise and vibration at noise sensitive receptors, including neighbouring residential properties and other sensitive receptors arising from decommissioning activities. These include, as appropriate: • Ensuring that all appropriate processes, procedures and measures are in place to minimise noise before works begin and throughout the decommissioning programme;	Noise monitoring will be undertaken throughout the decommissioning phase. Requirements including monitoring locations and noise monitoring methods and frequency to be	To be confirmed in the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
machinery noise at nearby noise sensitive receptors.	• All contractors to be made familiar with the applicable legislation and guidance at the point of decommissioning which should form a prerequisite of their appointment; • Ensuring that, where reasonably practicable, noise and vibration is controlled at source (e.g. the selection of inherently quiet plant and low vibration equipment), review of the decommissioning programme and methodology to consider quieter methods, consideration of the location of equipment onsite and control of working hours; • Use of modern plant, complying with applicable UK noise emission requirements at the time of decommissioning works;	employed will be determined by the contractor and agreed pursuant to the section 61 (or any replacement statutory scheme) process. The final DEMP will set out a scheme for the provision of monthly reporting information to local residents to advise of potential noisy works that	

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Hydraulic techniques for breaking to be used in preference to percussive techniques, where reasonably practicable; • Drop heights of materials will be minimised; • Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use; • Plant and vehicles will be sequentially started up rather than all together; • Use of screening locally around significant noise producing plant and activities. Screening would be designed to minimise landscape and visual impacts; • Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturer's specifications;	are due to take place. The final DEMP will set out scheme for the monitoring of noise complaints and reporting to the Applicant for immediate investigation and action. Further details are to be confirmed in the final DEMP.	

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• All plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use; • Loading and unloading of vehicles, dismantling of Site equipment or moving equipment or materials around the Site to be conducted in such a manner as to minimise noise generation, as far as reasonably practicable; • All vehicles used onsite shall incorporate reversing warning devices as opposed to the typical tonal reversing alarms to minimise noise disturbance where reasonably practicable; • Appropriate routing of decommissioning traffic on public roads and along access tracks pursuant to the DTMP;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Section 61 Consents would be obtained for the Proposed Development which would include agreed decommissioning noise limits for nearby noise sensitive receptors; • Provision of information to local planning authorities and local residents to advise of potential noisy works that are due to take place; • Monitoring of noise complaints and reporting to the Applicant for immediate investigation and action. A display board will be installed onsite. These will include contact details for the Site Manager or alternative public interface with whom nuisance or complaints can be lodged. A log book of complaints will be prepared and managed by the Site Manager; and		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Consideration will also be given to traffic routing, timing and access points to the Site to minimise noise impacts at existing receptors following appointment of a principal contractor, and as decommissioning working methods are developed. Contractors will issue a project route map and delivery schedule to control decommissioning traffic. Management of heavy goods vehicles (HGVs) within the Site and being let onto the highway network will be managed through the DTMP.		
Air Quality			
The effect of the decommissioning phase on air quality is anticipated to be	Appropriate standards and best practice control measures will be included in the DEMP, which may include, but not be limited to: **Communication**	Measures in the final DEMP will include the implementation of inspection	To be confirmed in the final DEMP which will be secured as a

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
the same or less than construction effects. Increased nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$) from onsite and offsite decommissioning vehicle/plant emissions. Increased particulates and deposited dust from Site activities,	• Develop and implement a stakeholder communications plan that includes community engagement before work commences onsite; • Display the name and contact details of person(s) accountable for air quality and dust issues onsite. This may be the environment manager/engineer or the site manager. The head or regional office contact information will also be displayed; and • Demolition contractor to develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the local planning authorities. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should	procedures onsite to periodically visually assess any dust and air pollution which may be generated. Additional monitoring measures will be provided in the final DEMP.	requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
materials transportation, storage and handling, including use of haul roads.	be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time continuous monitoring and/or visual inspections. **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 planning authorities upon request; • Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook; and		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Hold regular liaison meetings with any other high-risk construction sites within 500m of the Site (if applicable), to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the offsite transport/ deliveries which might be using the same strategic road network routes. **Monitoring** • Agree dust monitoring locations and frequency with the local planning authorities. • Undertake onsite and offsite inspection, where receptors (including roads) are nearby, where access is granted to monitor dust, record inspection results, and make the log available to the local authority when asked. This should		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	include dust soiling checks of surfaces within publicly available land within 100m of Site, with cleaning to be provided if necessary; • Carry out Site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local planning authorities when asked; • Increase the frequency of Site inspections by the person accountable for air quality and dust issues onsite when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; and • Where possible commence baseline monitoring at least three months before work commences onsite or, if it a large		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	site, before work on a phase commences. The applicable guidance at the time of demolition should be referenced. **Preparing the Site** • Plan Site layout so that machinery and dust causing activities are located away from receptors, as far as is possible; • Erect solid screens or barriers around dusty activities that are at least as high as any stockpiles onsite where stockpiles are within 100m of receptors; • Fully enclose Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period where operations are within 100m of receptors;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Avoid Site runoff of water or mud; • Keep Site fencing, scaffolding and barriers clean using wet methods; • Remove materials that have a potential to produce dust from the Site as soon as possible, unless being re-used onsite. If they are being re-used onsite cover as described below; and • Cover, seed or fence stockpiles to prevent wind whipping. **Dust management** The contractor will need flexibility to determine which measures are most effective in a given situation, but the measures listed in IAQM guidance on assessment of dust from demolition and construction (2016) include:		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Implement wetting of dust generating activities, which are usually incorporated into a DMP (where necessary) produced by the contractor. • Undertake daily onsite and offsite inspection, where receptors (including roads) are nearby, where access is granted, to monitor dust and record inspection results, on publicly accessible land. • Increase the frequency of inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. • Locate dust causing activities away from receptors, as far as is possible.		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Use intelligent screening where possible – e.g. locating Site offices between potentially dusty activities and the receptors. • Erect solid screens or barriers around the Site boundary if necessary. • Fully enclose Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period where operations are within 100m of receptors. • Remove materials that have a potential to produce dust from Site as soon as possible, unless being re-used onsite.		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Depending on the duration that stockpiles will be present and their size, cover, seed, fence or water to prevent wind whipping. • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust. • Sheet vehicles carrying dusty substrates.		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on un-surfaced haul roads and work areas. • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction • Avoid scabbling (roughening of concrete surfaces) where possible. • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible.		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Use enclosed chutes, conveyors and covered skips, where practicable. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. • Ensure equipment is readily available onsite to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. **Operating vehicle/machinery and sustainable travel** • Ensure all vehicles switch off engines when stationary i.e. no idling vehicles;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable; • Ensure all non-road mobile machinery (NRMM) are regularly maintained and checked to minimise emissions; • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing); • Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	undertaker and with the agreement of the local authority, where appropriate); and • Produce a DTMP to manage the sustainable delivery of goods and materials. **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 onsite for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate; and		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Ensure equipment is readily available onsite to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. **Waste** • No bonfires and burning of waste materials will be carried out. In addition, activity specific mitigation measures include: **Earthworks** • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and • Only remove the cover in small areas during work and not all at once. **Track-out** • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Site. This may require the sweeper being continuously in use; • Avoid dry sweeping of large areas; • Ensure vehicles entering and leaving the Site are covered to prevent escape of materials during transport;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Inspect onsite 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; • Use internal track routes, which 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 Site where reasonably practicable); • If new access points are required, ensure there is an adequate area of hard surfaced road between the wheel		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	wash facility and the Site exit, wherever Site size and layout permits; and • Access gates to be located at least 10m from receptors where possible.		
Water Resources and Ground Conditions			
Leakage or accidental spillage of decommissioning materials and potential pollutants used onsite, migrating to nearby surface watercourses or	**General** Requirements set out in the pollution prevention guidance (and any other relevant guidance available at the time of decommissioning) will be provided in the DEMP. Embedded mitigation measures will be outlined within a Water and Decommissioning Management Plan (WDMP), which will be an annex to the DEMP and secured by a DCO requirement. It will describe water management measures to control surface water runoff and drain hardstanding and other structures. This will form	Water quality monitoring of potentially impacted watercourses will be undertaken to ensure that pollution events can be detected against baseline conditions and	Specific responsibilities to be confirmed in the WMP and final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
infiltrating to groundwater. Any flooding during decommissioning could flood equipment and/materials, causing release of pollutants to nearby surface watercourses or infiltrating to groundwater. Impacts on workers during decommissioning	part of a Pollution Prevention Plan (PPP), which will be secured by a DCO requirement. The WMP will comprise good practice methods and works that are established and effective measures to which the Applicant will be committed to control surface water runoff and drain hardstanding and secured by a DCO requirement. **Management of Site Runoff** The measures outlined below will be required for the management of fine particulates in surface water runoff as a result of the decommissioning activities: • All reasonably practicable measures will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse, arising from decommissioning activities. If still applicable at the point of decommissioning, the measures will accord with the	can be dealt with effectively. Specific details will be confirmed in the final DEMP.	

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
from extreme weather.	principles set out in industry guidelines including the Construction Industry Research and Information Association (CIRIA) report '*C532: Control of water pollution from construction sites*' (2001) and CIRIA report '*C649: Control of water pollution from linear construction sites'* (2006). Measures may include use and maintenance of temporary lagoons, tanks, bunds and fabric silt fences or silt screens as well as consideration of the type of plant used; • A temporary drainage system will be developed to prevent runoff contaminated with fine particulates from entering surface water drains without treatment. This will include identifying all land drains and waterbodies within the Site and ensuring that they are adequately protected using drain		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	covers, sandbags, earth bunds, geotextile silt fences, straw bales, or proprietary treatment (e.g. lamella clarifiers); • If applicable, the relevant sections of British Standard (BS) 6031: Code of Practice for Earthworks (2009) will be followed for the general control of Site drainage; • Where practical, earth works will be undertaken during the drier months of the year. When undertaking earth moving works periods of very wet weather will be avoided, where practical, to minimise the risk of generating runoff contaminated with fine particulates. However, it is likely that some working during wet weather periods will be unavoidable, in which case other mitigation measures (see below) will be implemented to control fine sediment laden runoff. Water may also be required to dampen earthworks		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	during dry weather to reduce dust impacts, and any runoff generated will need to be appropriately managed by the contractor in accordance with the pollution prevention principles; • To protect watercourses from fine sediment runoff, topsoil/subsoil will be stored a minimum of 20m from watercourses on flat lying land. Where this is not practicable, and it is to be stockpiled for longer than a two-week period, the material will either be covered with geotextile mats, seeded to promote vegetation growth, or runoff prevented from draining to a watercourse without prior treatment; • Appropriately sized runoff storage areas for the settlement of excessive fine particulates in runoff will be provided. Site		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	runoff will either be treated onsite and discharged under a water discharge activity permit from the Environment Agency to controlled waters (potentially also including infiltration to ground); • Equipment and plant are to be washed out and cleaned in designated areas within the Site compound where runoff can be isolated for treatment before disposal as outlined above; • Mud deposits will be controlled at entry and exit points to the Site using wheel washing facilities and / or road sweepers operating during earthworks activities or other times as required; • Debris and other material will be prevented from entering surface water drainage, through maintenance of a clean		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	and tidy Site, provision of clearly labelled waste receptacles, grid covers and the presence of site security fencing; and • The WMP will include details of water quality monitoring. This will be based on a combination of visual observations and reviews of the Environment Agency's automatic water quality monitoring network. **Management of Spillage Risk** The measures outlined below will be implemented to manage the risk of accidental spillages onsite and potential conveyance to nearby waterbodies via surface runoff or land drains during the decommissioning phase: • Fuel will be stored and used in accordance with the prevailing regulations; currently the Control of Substances		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	Hazardous to Health Regulations 2002, and the Control of Pollution (Oil Storage) (England) Regulations 2001; • Fuel and other potentially polluting chemicals will either be in self bunded leak proof containers or stored in a secure impermeable and bunded area (minimum capacity of 110% of the capacity of the containers); • Any plant, machinery or vehicles will be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance is to take place offsite if possible or only at designated areas within the Site compound. Only equipment and vehicles free of all oil/fuel leaks will be permitted onsite. Drip trays will be placed below static mechanical plant;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• It is considered unlikely that the Proposed Development will require a high number of trips requiring the transportation of hazardous loads; however, all vehicles carrying hazardous loads during decommissioning will be required to follow the regulations set out in the Health and Safety Executive's (HSE) Carriage of Dangerous Goods (2009) or equivalent at the point of decommissioning; • Drivers must ensure that hazardous loads are always accompanied by a transport document which sets out detailed information on the load being carried, including full classification of any substances carried and how to package them. The transport document much include: – Information for each dangerous substance, material or article being carried;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	– Emergency instructions in writing; and – Means of identification, including a photograph of each member of the transportation crew. • All drivers of vehicles carrying hazardous loads must be appropriately trained, so that they: – Are aware of the hazards in the carriage of hazardous loads; – Can take steps to reduce the likelihood of an accident taking place; – Can take all necessary measures for their own safety and that of the public and the environment to limit the effects of any incident that does occur; and		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	– Have individual practical experience of the actions they will need to take. • All washing down of vehicles and equipment will take place in designated areas and untreated wash water will be prevented from entering watercourses; • All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses, and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling; • As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• All fixed plant use onsite will be self-bunded; • Mobile plant is to be in good working order, kept clean and fitted with plant 'nappies' at all times; • The WMP will include details for pollution prevention and will be prepared and included within the DEMP. Spill kits and oil absorbent material will be carried by mobile plant and located at high-risk locations across the Site and regularly topped up. All decommissioning workers will receive spill response training and tool box talks; • The Site will be secured to prevent any vandalism that could lead to a pollution incident; • Decommissioning waste / debris are to be prevented from entering any surface water drainage or water body;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Surface water drains on public roads trafficked by plant or within the compound will be identified and, where there is a risk that fine particulates or spillages could enter them, the drains will be protected (e.g. using covers or sand bags) or the road regularly cleaned by road sweeper; and • Water quality monitoring of potentially impacted watercourses will be undertaken to ensure that pollution events can be detected against baseline conditions and can be dealt with effectively. In addition, any Site welfare facilities will be appropriately managed, and all foul waste disposed of by an appropriate contractor to a suitably licenced facility. **Watercourse Crossings with Intrusive Techniques**		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	It is not anticipated that the decommissioning stage will require any new watercourse crossings as the existing and/or crossings constructed during the construction phase would be utilised. However, in the event that a new watercourse crossing is required, the use of in-situ fresh concrete in the construction of watercourse crossings will be avoided where possible by the use of pre-cast elements. Existing culverts may be upgraded and anticipated to be replaced with suitable pre-cast culvert designs. Ready-made concrete 'box style' or plastic culverts will be used. Existing culverts requiring an upgrade will be replaced using ready-made culverts. **Management of Risk to Morphology of Waterbodies** It is not anticipated that the decommissioning stage will require any new watercourse crossings as the existing and/or crossings constructed during the construction phase would be utilised.		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	However, in the event that a new watercourse crossing is required, the use of in-situ fresh concrete in the construction of watercourse crossings will be avoided where possible by the use of pre-cast elements. Existing culverts may be upgraded and anticipated to be replaced with suitable pre-cast culvert designs. Ready-made concrete 'box style' or plastic culverts will be used. Existing culverts requiring an upgrade will be replaced using ready-made culverts. Culverts will be designed based on pre-works morphology surveys and best practice in order to minimise effects of developments on the natural integrity and continuity of water courses. The design will incorporate the following criteria: • Culverts will be well bedded to avoid settlement and protected by an adequate cover of road material;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• The substrate and side/ head walls will be reinforced in order to prevent erosion; • The culverts will be designed such that it does not cause a barrier to movement of fish or other aquatic fauna; • The culvert type will be predominantly box culverts; • Culvert floors will have the same gradient (not exceeding a slope of 3 %) and level, and carry similar bed material and flow, as the original steam; • There shall be no hydraulic drop at the culvert inlet or outlet; • The width of the culvert will be greater than the active channel width of the watercourse;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Culverts will be used to conduct water under the solar park tracks; and • Any fences or screens fitted on the inlet or outlet of the culvert will be designed to allow at least 230 mm of space between the bars of the screen of fence, up to the high water level. • There is a preference to avoid construction in watercourses altogether through the use box culverts or bridges structures appropriately designed not to impede the flow of water and allow safe passage for wildlife, such as fish, water voles, otters etc. However, short and long term impact of designs should be considered, and there can be a case for using pipe or box culverts;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• When installing culverts, care will be taken to ensure that the construction does not pose a permanent obstruction to migrating species of fish, or riparian mammals (i.e. the crossings will make provision for fish and wildlife migration); • Culverts should be sized so that they do not interfere with the bed of the stream post construction, (i.e. the crossings will leave the watercourse in as natural condition as possible or permit reestablishment of substrate post construction); • Single culverts will be used in preference to a series of smaller culverts that may be more likely to become blocked with flotsam and create erosion (i.e. the crossings will not constrict the channel);		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• If any fish are found during the construction of any culverts, they will be removed from the immediate construction site to a place of safety if deemed necessary after consultation with the relevant fisheries interest; • To minimise impacts on breeding of any fish found, then any in-stream works in these areas will be conducted during months which have less impact on their breeding and development, where possible; • Ease and speed of construction are important to minimise disruption to the watercourse and surrounding habitat; • Designs should be low maintenance and where possible self-cleansing; and • Structures should visually in keeping with the surroundings		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	If required, each watercourse crossing shall be designed on a case by case basis to be appropriate for the width of watercourse being crossed, and the prevailing ecological and hydrological situation (i.e. the sensitivity of the watercourse). **Management of Flood Risk** The DEMP will incorporate measures aimed at preventing an increase in flood risk during the decommissioning works. Examples of measures that will be implemented onsite include: • Topsoil and other materials will be stored outside of the 1 in 100 year floodplain extent. If areas located within Flood Zone 2 are to be utilised for the storage of materials, this will be done in accordance with the applicable flood risk activity regulations, if required;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Connectivity will be maintained between the floodplain and the adjacent watercourses, with no changes in ground levels within the floodplain as far as practicable; • During the decommissioning phase, the contractor will monitor weather forecasts on a monthly, weekly and daily basis, and plan works accordingly; and • The laydown area, Site office and supervisor will be notified of any potential flood occurring by use of the Floodline Warnings Direct or equivalent service; As part of the DEMP the appointed contractor will be required to produce an Emergency Response Plan which will provide details of the response to an impending flood and include:		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• A 24-hour availability and ability to mobilise staff in the event of a flood warning; • The removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period where there is a forecast risk that the Site may be flooded; • Details of the evacuation and Site closedown procedures; • Arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters, from the temporary works areas; • The appointed contractor will sign up to Environment Agency flood warning alerts and describe in the Emergency Response Plan the actions it will take in the event of a flood		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	event occurring. These actions will be hierarchal meaning that as the risk increases the contractor will implement more stringent protection measures; • If water is encountered during below ground decommissioning, suitable de-watering methods will be used. Any groundwater dewatering required in excess of the exemption thresholds will be undertaken in line with the requirements of the Environment Agency; • Safe egress and exits are to be maintained at all times when working in excavations. When working in excavations a banksman is to be present at all times. Measures required for increased flood risk due to climate change are included in the Climate Change section of this table.		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
Potential for risks to human health associated with waste generation, land contamination, airborne contamination and groundwater contamination. The discovery of ground contamination during groundworks. Levelling of the Site including the	Best practice avoidance and mitigation measures proposed include: • Appropriate use of Personal Protective Equipment (PPE) and implementation and adherence to Health & Safety Protocols, Plans and Procedures; • A Pollution Response will be drafted prior to the commencement of the decommissioning works. The plan will outline key pollution mitigation measures including a Control of Substances Hazardous to Health (COSHH) / fuel inventory and key contacts to be notified in the event of a significant pollution incident, which may subsequently lead to the contamination of controlled waters. Tanks and dispensing pumps will be locked when not in use to prevent unauthorised access;	To be confirmed in the final DEMP.	To be confirmed in the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
possible introduction of new fill materials.	• Oils and hydrocarbons will be stored in designated locations with specific measures to prevent leakage and release of their contents, include the siting of storage areas away from surface water drains, on an impermeable base with an impermeable bund that has no outflow and is of adequate capacity to contain 110% of the contents. Valves and trigger guns will be protected from vandalism and kept locked up when not in use. All chemicals will be stored in accordance with their COSHH guidelines, whilst spill kits will be provided in areas of fuel/oil storage; • All plant and machinery will be kept away from surface water bodies wherever possible. Vehicles should be well maintained to prevent accidental pollution from leaks. Static machinery and plant should include drip trays beneath oil		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	tanks/engines/gearboxes/hydraulics, which will be checked and emptied regularly via a licensed waste disposal operator. Refuelling and delivery areas will be located away from surface water drains; • An emergency spillage action plan will be produced, which all Site staff will have read and understood, and provisions made to contain any leak/spill. Information regarding spill prevention and disposal of COSHH items will be provided as part of the standard site induction presentations and during regular toolbox talks and as the decommissioning works progress; • Workers will remain vigilant of ground conditions at all times and will report to the contractor any suspect areas of potential contamination;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Should any potentially contaminated ground, including isolated 'hotspots' of contamination and/or potential deposits of asbestos containing materials (ACM), be encountered, the contractor will be required to investigate the areas and assess the need for containment or disposal of the material. Advice should be sought from an environmental specialist should materials suspected of being contaminated be found. The contractor will also be required to assess whether any additional health and safety measures are required; • To further minimise the risks of contaminants being transferred and contaminating other soils or water, Site workers will be briefed as to the possibility of the presence of such materials;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• In the event that contamination is identified, appropriate remediation measures will be taken to protect Site workers, future Site users, water resources, structures and services; • The contractor will be required to place arisings and temporary stockpiles away from watercourses and drainage systems, whilst surface water will be directed away from stockpiles to prevent erosion; • Stockpiles and material handling areas will be kept as clean as practicable to avoid nuisance from dust. Dusty materials will be dampened down using water sprays in dry weather or covered; • The length of time materials are stockpiled onsite before being removed for re-use, recycling or disposal is to be kept		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	to a minimum and stockpiles are to be covered with tarpaulins prior to disposal; • Dust generating equipment e.g. mobile crushing and screening equipment will be located to minimise potential nuisance impacts to receptors, as far as practicable. • The risk to surface water and groundwater from runoff from any contaminated stockpiles during decommissioning works will be reduced by implementing suitable measures to minimise rainwater infiltration and/or capture runoff and leachates, through use of bunding and/or temporary drainage systems. These mitigation measures will be designed in line with current good practice, follow appropriate guidelines and all relevant licences/permits;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• The contractor will ensure that all material is suitable for its proposed use and will not result in an increase in contamination-related risks on identified receptors, including any landscaped areas and underlying groundwater; • Any waters removed from excavations by dewatering will be discharged appropriately, subject to the relevant permits being obtained from the Environment Agency; • The contractor will implement a dust suppression/management system in order to control the potential risk from airborne contamination migrating offsite to adjacent sites;		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Complaints about dust will be investigated at the earliest opportunity and appropriate action taken to control the source or remedy the impact as appropriate; • Access roads will be regularly cleaned and damped down with water; • All vehicles entering and leaving the Site during the decommissioning works will pass through a wheel washing facility. Vehicles used to transport materials and aggregates will be enclosed or covered in a tarpaulin. Vehicle movements will be kept to a minimum and vehicle speeds within the Site will be limited; • A competent/licensed contractor will survey (pre-site preparation survey as defined by the Health and Safety Executive (HSE)) and remove asbestos containing		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	materials and other materials and structures contaminated with asbestos fibres.		
Agricultural Land Use			
Impacts on soil	The DEMP will consider the potential effects on soils and will include a Soil Management Plan (SMP). The purpose of the SMP is to inform decommissioning and de-construction works to minimise the damage to soil structures during the disassembly phase, and provide amelioration to any localised impacts using good agricultural practices. The SMP will: • identify the different soil handling units across the site by reference to their resilience to being handled or trafficked. This study will consider soil properties and climatic conditions. It will be based on the SMP plans produced in the CEMP but, given the length of the intervening period, it will be updated to reflect climatic and soil conditions at the time of decommissioning	None.	To be confirmed in the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• identify the key periods when soils can be accessed for deconstruction works without significant risk of any structural damage, to direct the deconstruction process to avoid more susceptible soils from being affected during works • produce colour-coded maps to inform the deconstruction process regarding soil properties, timing and handling • produce guidance notes for operators regarding soil properties and condition • inform the soil stripping, handling and storing process for compounds so that the land can be restored after the completion of decommissioning in an appropriate way • set out land management techniques to be followed in the event of any localised soil damage, such as rutting in wetter areas, so that those soils can be recovered quickly • set out the immediate land care required for reverting the fields to arable use or, if appropriate, for maintaining		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	grassland cover, and making good any areas where cover was affected • provide a process for a review of soil health after a further 5 years, to be followed by any recommendations for revised land management practices. The DEMP will in particular focus on areas where longer-term infrastructure had been installed, in particular internal access tracks and bases for the solar stations. Internal tracks will have been located so far as possible where they will be suitable for post-decommissioning agricultural use. The DEMP will consider: • removal of vegetation from soil bunds prior to work • soil removal from storage depending upon soil type and resilience • separate reinstatement, if required, of topsoils and subsoils		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• seeding of restored soils and ongoing management of the vegetation • any special measures required to help restore soil where internal access tracks and solar station bases have been required		
Glint and Glare			
Glint and Glare risks are covered by the measures set out in the **Landscape and Visual** and **Access and Highways** sections of this table.			
Climate Change			
Greenhouse gas (GHG) emissions from decommissioning	Appropriate standard best practice measures to control impacts will be included in the DEMP and will include: • Adopting the CCS (or its equivalent) to assist in the reduction of pollution, including GHG, from the Proposed	To be confirmed by the contractor in the final DEMP	The overall responsibility will be with the Contractor. Specific

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
vehicles and equipment. Use of natural resources. Increased greenhouse gas emissions.	Development by employing industry best practice measures. These will be listed in the DEMP; • Encouraging the use of lower carbon modes of transport by identifying and communicating low carbon transport options, including local bus services and pedestrian and cycle routes to and from Site to all decommissioning staff and providing facilities for the safe storage of cycles; • Implementing a Travel Plan to reduce the use of private car journeys to Site by decommissioning staff and employees; • Liaising with decommissioning personnel for potential to implement staff minibuses and car sharing options;		responsibilities will be set out within the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Prevent idling vehicles by switching vehicles and plant off when not in use and ensuring that all decommissioning vehicles conform to current EU emissions standards; • Conducting regular and planned maintenance of the decommissioning plant and machinery to optimise efficiency; • Increasing recyclability by segregating decommissioning waste to be re-used and recycles where reasonably practicable; • Disposing of decommissioning waste locally where reasonably practicable to reduce emissions associated with transportation; and		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	• Reusing site-won materials to minimise the use of natural resources and unnecessary materials (e.g. reusing excavated soil onsite). The following measures are required to ensure safety of staff from increased flood risk onsite due to climate change: • Health and safety plans will be required to account for potential climate change impacts on workers, such as flooding and heatwaves; • Storing materials outside of flood extent as far as reasonably practicable; and • Appointing at least one designated Flood Warden who is familiar with the risks and remains vigilant to news reports,		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	Environment Agency flood warnings and water levels of the local waterways.		
Socio-economics			
Impacts to local residents, businesses and community facilities Disruption to users of Public Rights of Way	Temporary closures of Public Rights of Way (PRoW) will be supported by appropriate and clearly signed alternative routes and where possible will be planned and programmed to minimise disruption to users. All members of the decommissioning work force and visitors will be made aware of the bridleways affected by the decommissioning of the Proposed Development.	Monitor temporary diversions of PRoWs during the decommissioning phase to ensure they are suitable and well maintained for use.	To be confirmed in the final DEMP which will be secured as a requirement of the DCO.
Arboriculture			
Impact to trees	An Arboricultural Method Statement (AMS) will be prepared and will from part of the final DEMP. The AMS will identify the specification	A pre-decommissioning arboriculture	The LEMP will set out roles and

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	for tree protection measures and the methodology for sensitive works in proximity to retained trees during decommissioning. A pre-decommissioning tree survey will be undertaken where works are likely to affect trees. The findings and recommendations of these will be taken into account by the appointed contractor. Where works in close proximity to retained trees cannot be practically avoided, these works will be undertaken in accordance with best practice at the point of decommissioning, currently defined in British Standard (BS) 5837: 2012 'Trees in relation to design, demolition and construction'. All necessary protective fencing will be installed prior to the commencement of any Site clearance or decommissioning works.	survey in line with BS5837:2012 will be undertaken concurrently with the detailed design of the Scheme, to identify where trees are likely to be affected by the decommissioning works and to inform the development of the detailed design.	responsibilities for implementation.
Waste			

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
Potential to impact on sensitive receptors (humans, wildlife and controlled waters) if waste generated by the decommissioning phase of the Proposed Development is not stored and managed appropriately.	The contractor will consider the objectives of sustainable resource and waste management and seek to use material resources efficiently, reduce waste at source, reduce waste that requires final disposal to landfill and apply the principles of the waste hierarchy. This will include, where reasonably practical, working towards a cut and fill balance for excavations; segregation of materials onsite for appropriate re-use, recycling and recovery, with landfill as a last resort. This will be achieved by a combination of the following measures. **Waste Hierarchy** The Waste (England and Wales) Regulations 2011 place a duty on all persons who produce, keep or manage waste to apply the 'Waste Hierarchy' in order to minimise waste production at every stage of the development. The 'Waste Hierarchy' promotes selection of the Best Practicable Environmental Option (BPEO) and preferred option for management of waste.	The types, quantities and final destination of waste generated during the decommissioning phase will be identified, measured and recorded through the final DEMP. A register of all waste loads leaving the Site will be maintained to provide a suitable audit trail for compliance	To be confirmed in the final DEMP which will be secured as a requirement of the DCO.

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	The core waste management principles of prevention, reuse, recycle, recover and disposal as defined in the 'Waste Hierarchy' will be embedded within the final DEMP, produced prior to decommissioning. The separation of waste will be carried out at the source in order to maximise opportunities for reuse and recycling. Segregation of waste will require training, monitoring and enforcement. All areas used for temporary storage of waste on site will comply with Defra and the Environment Agency (EA) guidelines relevant at the point of decommissioning and will be clearly signed. Waste storage facilities will be provided at source using the best environmental options available. Any hazardous or special waste will be stored in separate, secure containers and clearly identified as such.	purposes and to facilitate monitoring and reporting of waste types, quantities and management methods.	

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	Waste Disposal Disposal activities will also be carried out in accordance with the relevant Pollution Prevention Guidelines (or any relevant successive guidance in place) in order to ensure compliance with current waste legislation. All waste transported offsite will be delivered to the appropriately licenced receivers of such materials. Waste transportation will take place at regular intervals to avoid the accrual of waste. Only registered waste carriers will be authorised to transport waste and a Waste Transfer Note (WTN) will be completed for each load of waste, which must contain a record of their waste carrier registration number. Copies of each WTN will be filed as an appendix to the final DEMP and held for a minimum of two years. The appropriate European Waste Catalogue (EWC) code will be		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	noted on the WTN, in addition to how it is contained. All sites receiving waste must have an appropriate permit, licence or registration exemption, the details of which should also be recorded. **Hazardous Waste** If required, the EA will be advised in advance of any hazardous waste movements and Waste Consignment Notes (WCNs) will be purchased in advance for this type of waste transportation. These consignment notes will be held for a minimum of three years. Burning of waste or unwanted materials will not be permitted onsite. 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.		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	All fuel and oil will be stored within an area of the decommissioning compound and contained by a small bund constructed from material sourced onsite and lined with an impermeable membrane in order to prevent any contamination of the surrounding soils, vegetation and water table, in accordance with Defra and Environmental Agency Oil Storage Regulations for Businesses 2016. Any contaminated runoff within the bund will be disposed of at an appropriate waste management facility. Any used (contaminated) spill kits, absorbent granules, sheets or fibres must be disposed of in accordance with the COSHH regulations and in accordance with the Emergency Spillage Action Plan. **Waste from Welfare and Domestic Facilities**		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	Temporary welfare facilities will be provided during the decommissioning phase, with permanent welfare facilities provided in the Site office, storage and welfare building. These facilities will include toilets, washing and drinking water. This will include a cess tank that will be periodically emptied and taken offsite by a licensed operator. All onsite welfare facilities will be clearly signposted and maintained. Where excess surface water occurs from the area of the buildings, this will be collected and treated in a Sustainable Drainage System (SuDS), prior to discharge. Effluent and waste from onsite decommissioning personnel will be treated at a package sewage treatment plant or a septic tank and discharged into a properly designed and sized drainage field, in		

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
	accordance with Defra's GPP4 (2021), subject to obtaining the required consents. Where a septic tank is used, this will be emptied on a regular basis and taken away by a registered waste disposal contractor. Collection facilities for other domestic refuse will be provided to segregate waste. These facilities will be clearly marked, positioned in appropriate locations and protected from the weather and animals.		
Major Accidents and/or Disasters			
The incidence of major accidents and disasters as a result of the	All works will be undertaken in accordance with (or their successors) the Building Regulations, NHS England Emergency Preparedness, Resilience and Response Framework, Health and Safety at Work Act 1974, Safety at Work Regulations 1999, CDM Regulations 2015, Railway Operator Regulatory Requirements, 999	To be confirmed in the final DEMP.	To be confirmed in the final DEMP which will be secured as a

Potential Impact	Mitigation and/or Enhancement Measure	Requirement for Monitoring	Method of Securing Measures and Responsibility
Proposed Development. Potential impacts on the Proposed Development as a result of Major Accidents and Disasters.	emergency service response procedure and call/response procedure to report utility system failures. Details of fire, police, emergency services and hospitals will be publicised and included in the Site induction. The relevant risk assessments for safety during decommissioning will be required and produced by the contractor prior to works commencing, which will be implemented to minimise the risk of accidents and disasters onsite. Furthers risks of major accidents and disasters are covered in the following sections of this table: **Access and Highways** and **Water Resources and Ground Conditions**.		requirement of the DCO.

4.0 Implementation of the final DEMP

4.1.1. The DEMP will set out all roles, responsibilities and actions required in respect of implementation of the measures described in this oDEMP, including:

- An organogram showing team roles, names and responsibilities;
- Training requirements for relevant personnel on environmental topics;
- Information onsite briefings and toolbox talks that will be used to equip relevant staff with the necessary level of knowledge to follow environmental control procedures;
- Measures to advise employees of changing circumstances as work progresses;
- Communication methods;
- Document control; and
- Environmental emergency procedures.

5.0 Monitoring and Recording

5.1. Monitoring

5.1.1. To meet the requirement of the DEMP, environmental monitoring of the Proposed Development and its impacts will be undertaken throughout the decommissioning phase.

5.1.2. As part of the monitoring process the contractor will allocate a designated Environmental Site Officer(s), who will be present onsite throughout the decommissioning works and when new activities are commencing. The Environmental Site Officer will observe Site activities and report any deviations from the measures set out within the DEMP, along with the action taken and general conditions at the time. The Applicant will be informed of any deviations from the measures set out within the DEMP as soon as possible following identification of such issues. The Environmental Site Officer will also act as day-to-day contact with relevant local authorities and other regulatory agencies such as the Environment Agency.

5.1.3. During the decommissioning phase, the Environmental Site Officer will conduct walkover surveys to ensure all requirements of the DEMP are being met. Action from these surveys will be documented on an Environmental Action Schedule, discussed with the Site Manager for programming requirements and issued weekly for actioning. The Environmental Site Officer and /or the Project Manager will arrange regular formal inspections to ensure the requirements of the DEMP are being adhered to. After completion of the works, the Environmental Site Officer will conduct a final review.

5.1.4. display board will be installed onsite. These will include contact details for the Site Manager or alternative public interface with whom complaints can be lodged. A log book of complaints will be prepared and managed by the Site Manager. A Community Liaison Officer will be appointed to lead discussions with local communities during the decommissioning phase. Contact details will also be available on the display board at the Site entrance should anyone

wish to make contact. The Contractor will set up a social media page where regular progress updates will be provided. This would be used to post any information on changes such as crane deliveries or new phases of work to ensure that the local community remain up to date.

5.2. Records

5.2.1. The Environmental Manager / Project Manager will retain records of environmental monitoring and implementation of the DEMP. This will allow provision of evidence that the DEMP is being implemented effectively. These records will include:

- Environmental Action Schedule;
- Licences and approvals;
- Results of inspections by Environmental Manager/ Project Manager;
- Other environmental surveys and investigations; and
- Environmental equipment test records.

5.2.2. The DEMP will be updated as necessary, with a full review as required (at least quarterly) throughout the decommissioning period. A brief report will be produced and submitted to the relevant local planning authorities for information on a quarterly basis and following completion of commissioning. This will summarise the monitoring process, observed deviations from the DEMP and the corrective actions taken.

Mallard Pass
Solar Farm

Mallard Pass Solar Farm

Preliminary Environmental Information Report

Volume 3: Appendices

Appendix 6.1: Landscape and Visual Impacts Assessment Methodology

May 2022

Appendix 6.1: Landscape and Visual Impact Assessment Methodology

1.1. Introduction

1.1.1. The Guidelines for Landscape and Visual Impact Assessment, third edition (GLVIA3), states that "*Landscape and Visual Impact Assessment is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and people's views and visual amenity*." (Landscape Institute (LI), 2013, paragraph 1.1).

1.1.2. Paras. 2.20-2.22 of GLVIA3 indicate that the two components (1) assessment of landscape effects, and 2) assessment of visual effects) are "*related but very different considerations*".

1.1.3. The assessment method for this PEIR, and the eventual Landscape and Visual Impact Assessment (LVIA), that will form part of the ES draws upon the established GLVIA3; An Approach to Landscape Character Assessment (Natural England, 2014), LI Technical Information Note (LI TIN) 05/17 regarding townscape character; LI Technical Guidance Note (LI TGN) 02/21 regarding landscape value; LI TGN 02/19 Residential Visual amenity assessment (RVAA); LI Technical Guidance Note 06/19 Visual Representation of development proposals and other recognised guidelines, whilst also being cognisant of the policy requirements of the NPSs and NPPF.

1.1.4. This appendix sets out a standard approach – specific matters in terms of the scope of assessment, study area and modifications to the standard approach for this assessment are set out within the Landscape and Visual chapter (Chapter 6) of the PEIR .

1.1.5. The methodology has the following key stages, which are described in more detail in subsequent sections, as follows:

- Baseline - includes the gathering of documented information; agreement of the scope of the assessment with the Planning Inspectorate; Site visits and liaison with the design team that may need to be addressed within the design.
- Design - input into the design / review of initial design / layout / options and mitigation options.
- Assessment - includes an assessment of the landscape and visual effects of the Proposed Development, requiring Site based work and the completion of a full report and supporting graphics.
- Cumulative Assessment - assesses the effects of the Proposed Development in combination with other developments, where required.

Baseline

1.1.6. The baseline study establishes the planning policy context, the scope of the assessment and the key receptors. All of these have been commenced for the PEIR. It typically includes the following key activities:

- A desk study of relevant current national and local planning policy, in respect of landscape and visual matters, for the Site and surrounding areas.
- Agreement of the main study area radius with the relevant local planning authorities.
- A desk study of nationally and locally designated landscapes for the Site and surrounding areas.
- A desk study of existing landscape character assessments and capacity and sensitivity studies for the Site and surrounding areas.
- A desk study of historic landscape character assessments (where available) and other information sources required to gain an

understanding of the contribution of heritage assets to the present day landscape.

- Collation and evaluation of other indicators of local landscape value such as references in landscape character studies or parish plans, tourist information, local walking & cycling guides, references in art and literature.
- The identification of valued character types/areas, landscape elements and features which may be affected by the proposal..
- Exchanging information with other consultants working on other assessment topics for the Proposed Development as required to inform the assessment.
- Draft Zone of Theoretical Visibility (ZTV) studies to assist in identifying potential viewpoints and indicate the potential visibility of the Proposed Development, and therefore, scope of receptors likely to be affected. The methodology used in the preparation of ZTV studies is described within Appendix 6.2.
- The identification of and agreement upon, through consultation, the scope of assessment for cumulative effects.
- The identification of and agreement upon, through consultation and engagement, the number and location of representative and specific viewpoints within the study area.
- The identification of the range of other visual receptors (e.g. people travelling along routes, or within open access land, settlements and residential properties) within the study area.
- Site visits to become familiar with the site and surrounding landscape; verify documented baseline; and to identify and take photography viewpoints and receptors.
- Input to the design process.

1.1.7. The information gathered during the baseline assessment is drawn together and summarised in the baseline section of the report and reasoned judgements are made as to which receptors are likely to be significantly affected. Only these receptors are then taken forward for the detailed assessment of effects (ref. GLVIA3, 2013, paragraph 3.19).

Design

1.1.8. The design and assessment stages are necessarily iterative, with stages overlapping in parts. Details of any mitigation measures incorporated within the proposals to help reduce identified potential landscape and visual effects are set out within the LVIA.

Assessment

1.1.9. The assessment of effects includes further desk and Site based work, covering the following key activities:

- The preparation of a ZTV based on the finalised design for the Proposed Development.
- An assessment, based on both desk study and Site visits, of the sensitivity of receptors to the Proposed Development.
- An assessment, based on both desk study and Site visits, of the magnitude and significance of effects upon the landscape character, designated and recreational landscape and the existing visual environment arising from the Proposed Development.
- An informed professional judgement as to whether each identified effect is positive, neutral or adverse.
- A clear description of the effects identified, with supporting information setting out the rationale for judgements.
- Identification of which effects are judged to be significant based on the significance thresholds set out within the LVIA

- The production of photomontages from a selection of the agreed viewpoints showing the anticipated view following construction of the Proposed Development.

Site

1.1.10. The effect of physical changes to the Site are assessed in terms of the effects on the landscape fabric and its character .

Assessment Terminology and Judgements

1.1.11. A full glossary is provided at the front of the PEIR. The key terms used within this assessment are:

- Susceptibility and Value - which contribute to the Sensitivity of the receptor;
- Scale, Duration and Extent - which contribute to the Magnitude of effect; and
- Significance.

1.1.12. These terms are described in more detail below.

Sensitivity of the Receptor

1.1.13. **Susceptibility** indicates the ability of a landscape or visual receptor to accommodate the Proposed Development "*without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies*." (GLVIA3, paragraph 5.40).

Table 1: Susceptibility

High	Undue consequences are likely to arise from the Proposed Development.
Medium	Undue consequences may arise from the Proposed Development.

Low	Undue consequences are unlikely to arise from the Proposed Development.

1.1.14. Susceptibility of landscape character areas is influenced by their characteristics and is frequently considered (though often recorded as 'sensitivity' rather than 'susceptibility') within documented landscape character assessments and capacity studies.

1.1.15. Susceptibility of designated landscapes is influenced by the nature of the special qualities and purposes of designation and/or the valued elements, qualities or characteristics, indicating the degree to which these may be unduly affected by the Proposed Development.

1.1.16. Susceptibility of accessible or recreational landscapes is influenced by the nature of the landscape involved; the likely activities and expectations of people within that landscape and the degree to which those activities and expectations may be unduly affected by the Proposed Development.

1.1.17. Susceptibility of visual receptors is primarily a function of the expectations and occupation or activity of the receptors (GLVIA3, paragraph 6.32).

1.1.18. **Landscape Value** is "*the relative value that is attached to different landscapes by society*" (GLVIA3, page 157).

Table 2: Landscape Value

National / International	Designated landscapes which are nationally or internationally designated for their landscape value.
Local / District	Locally or regionally designated landscapes identified through the baseline assessment; also areas which documentary evidence and/or site observation indicates as being more valued than the surrounding area.

Community	'Everyday' landscape which is appreciated by the local community but has little or no wider recognition of its value.
Limited	Despoiled or degraded landscape with little or no evidence of being valued by the community.

1.1.19. Areas of landscape of greater than Community value may be considered to be 'valued landscapes' in the context of National Planning Policy Framework (NPPF) (2021), paragraph 174.

1.1.20. **Sensitivity** is assessed by combining the considerations of susceptibility and value described above. The differences in the tables below reflect a slightly greater emphasis on value in considering landscape receptors, and a greater emphasis on susceptibility in considering visual receptor.

Table 3: Landscape Sensitivity

Landscape Sensitivity		Susceptibility		
		High	**Medium**	**Low**
Value	**National / International**	High	High-Medium	Medium
	Local / District	High-Medium	Medium	Medium-Low
	Community	Medium	Medium-Low	Low
	Limited	Low	Low-Negligible	Negligible

Table 4: Visual Receptor Sensitivity

Visual Receptor Sensitivity		Susceptibility		
		High	**Medium**	**Low**
Value	**National / International**	High	High-Medium	Medium
	Local / District	High-Medium	High-Medium	Medium
	Community	High-Medium	Medium	Medium - Low
	Limited	Medium	Medium - Low	Low

1.1.21. For visual receptors; susceptibility and value are closely linked - the most valued views are also likely to be those where viewer's expectations will be highest. The value attributed relates to the value of the view, e.g. a National Trail is nationally valued for access, not necessarily for the available views. Typical examples of visual receptor sensitivity are described further in Table 8 'Visual Receptor Sensitivity' of this Appendix.

Magnitude of Effect

1.1.22. **Scale** of effect is assessed for all landscape and visual receptors and identifies the degree of change which would arise from the development.

Table 5: Scale of Effect for Landscape and Visual Receptors

Large	Total or major alteration to key elements, features, qualities or characteristics, such that post development the baseline will be fundamentally changed.
Medium	Partial alteration to key elements, features, qualities or characteristics, such that post development the baseline will be noticeably changed.
Small	Minor alteration to key elements, features, qualities or characteristics, such that post development the baseline will be largely unchanged despite discernible differences.
Negligible	Very minor alteration to key elements, features, qualities or characteristics, such that post development the baseline will be fundamentally unchanged with barely perceptible differences.

1.1.23. **Duration** of effect is assessed for all landscape and visual receptors and identifies the time period over which the change to the receptor as a result of the development would arise.

Table 6: Duration of Effect

Permanent	The change is expected to be permanent and there is no intention for it to be reversed.

Long-term	The change is expected to be in place for 10-40 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
Medium-term	The change is expected to be in place for 2-10 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
Short-term	The change is expected to be in place for 0-2 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.

1.1.24. Most effects will be long-term or permanent; however, medium-term or short-term effects may be identified where mitigation planting is proposed or local factors will result in a reduced duration of effect (for example where maturing woodland will screen views in future). The effects arising from the construction of the Proposed Development will usually be short-term.

1.1.25. **Extent** of effects is assessed for all receptors and indicates the geographic area over which the effects will be felt.

Table 7: Extent of Effect

Wide	Beyond 4km, or more than half of receptor.
Intermediate	Up to approx. 2-4km, or around half of receptor area.
Localised	Site and surroundings up to 2km, or part of receptor area (up to approximately 25%).
Limited	Site, or part of the Site, or small part of a receptor area (< approximately 10%).

1.1.26. The Magnitude of effect is informed by combining the scale, duration and extent of effect. Plate 1 below illustrates the judgement process:

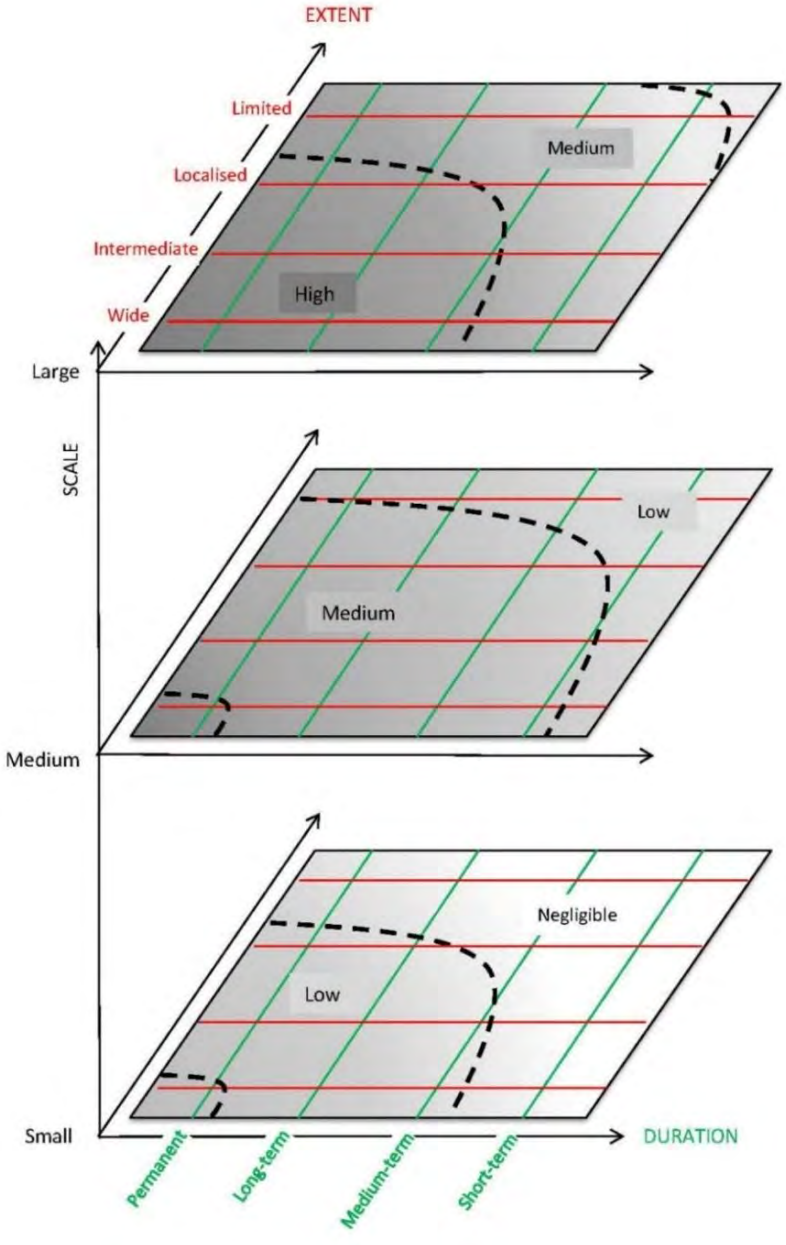

Plate 1: Magnitude of Effect

1.1.27. As can be seen from the illustration above, scale (shown as the layers of the diagram) is the primary factor in determining magnitude; most of each layer indicates that magnitude will typically be judged to be the

same as scale, but may be higher if the effect is particularly widespread and long lasting, or lower if it is constrained in geographic extent or timescale. Where the scale of effect is judged to be Negligible the magnitude is also assumed to be Negligible and no further judgement is required.

Significance

1.1.28. Significance indicates the importance or gravity of the effect. The process of forming a judgement as to the degree of significance of the effect is based upon the assessments of magnitude of effects and sensitivity of the receptor to come to a professional judgement of how important this effect is. This judgement is illustrated by Plate 2 below:

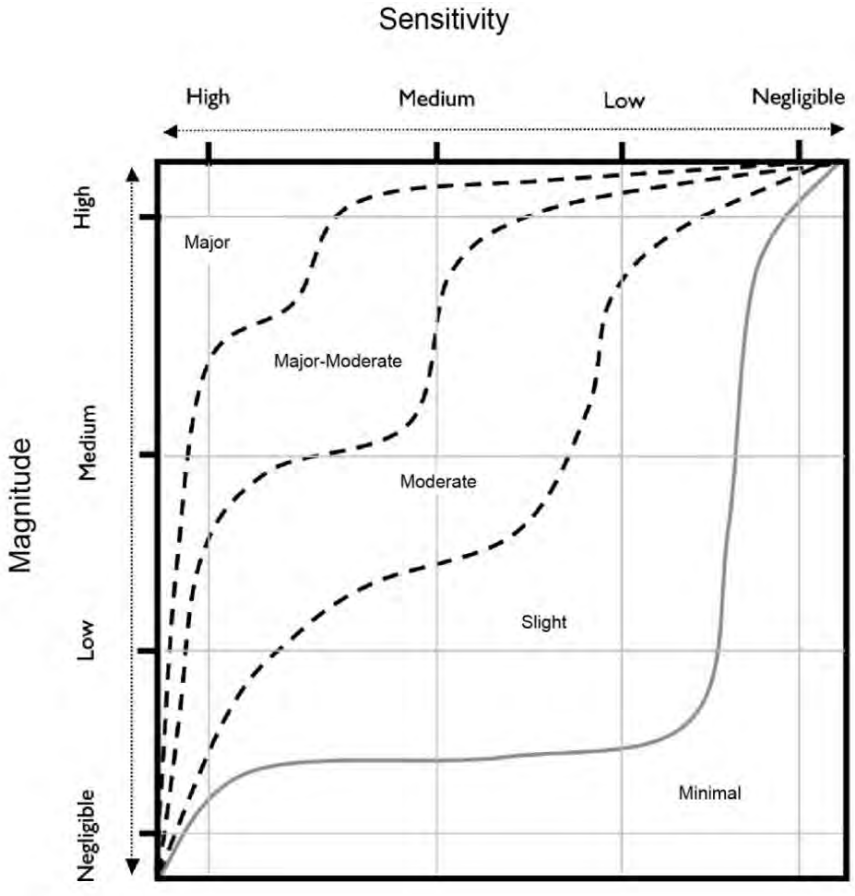

Plate 2: Significance of Effect

1.1.29. The significance ratings indicate a 'sliding scale' of the relative importance of the effect, with Major being the most important and Minimal being the least. Effects that are Major-Moderate or Major are considered to be significant. Effects of Moderate significance or less are "*of lesser concern*" (GLVIA3, paragraph 3.35) and not significant. It should also be noted that whilst an effect may be significant, that does not necessarily mean that such an impact would be unacceptable, or should necessarily be regarded as an "*undue consequence*" (GLVIA3, paragraph 5.40), and would be considered within the planning balance by the decision maker.

1.1.30. Where intermediate ratings are given, e.g. 'Moderate-Slight', this indicates an effect that is both less than Moderate and more than Slight, rather than one which varies across the range. In such cases, the higher rating will always be given first; this does not mean that the impact is closer to that higher rating but is done to facilitate the identification of the more significant effects (i.e. worse case) within tables. Intermediate judgements may also be used for judgements of Magnitude.

Positive / Adverse / Neutral

1.1.31. Effects are defined as adverse, neutral or positive. Neutral effects are those which overall are neither adverse nor positive but may incorporate a combination of both.

1.1.32. The decision regarding the significance of effect and the decision regarding whether an effect is beneficial or adverse are entirely separate. For example, a rating of Major and Positive would indicate an effect that was of great significance and on balance positive, but not necessarily that the proposals would be extremely beneficial.

1.1.33. Whether an effect is Positive, Neutral or Adverse is identified based on professional judgement. GLVIA3 indicates, at paragraph 2.15, that this is

a "*particularly challenging"* aspect of assessment, particularly in the context of a changing landscape.

Landscape and Townscape Character Considerations

1.1.34. The European Landscape Convention (2000) provides the following definition:

"*Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*."

1.1.35. And notes also, in Article 2, that landscape includes "*natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas*".

1.1.36. An Approach to Landscape Character Assessment (Natural England, 2014) defines landscape character as:

"*a distinct and recognisable pattern of elements, or characteristics, in the landscape that make one landscape different from another, rather than better or worse*."

1.1.37. The susceptibility of landscape character areas is judged based on both the attributes of the receiving environment and the characteristics of the Proposed Development as discussed under 'susceptibility' within the methodology section of the LVIA. Thus, the key characteristics of the landscape character types/areas are considered, along with scale, openness, topography; the absence of, or presence, nature and patterns of existing development, settlement, landcover, aesthetic, perceptual quality, the contribution of heritage assets and historic landscape elements and patterns, and land uses in forming the character. The condition of the receiving landscape, i.e. the intactness of the existing character will also be relevant in determining susceptibility. The likelihood of material effects on the landscape character areas can be

judged based on the scale and layout of the proposal and how this relates to the characteristics of the receiving landscape.

1.1.38. The introduction of any development into a landscape adds a new feature which can affect the 'sense of place' in its near vicinity, but with distance, the existing characteristics reassert themselves.

1.1.39. The baseline is informed by desk study of published landscape character assessments and field survey. It is specifically noted within An Approach to Landscape Character Assessment (Natural England, 2014) that:

"*Our landscapes have evolved over time and they will continue to evolve – change is a constant but outcomes vary. The management of change is essential to ensure that we achieve sustainable outcomes – social, environmental and economic. Decision makers need to understand the baseline and the implications of their decisions for that baseline*."

1.1.40. At page 51 of An Approach to Landscape Character Assessment (Natural England, 2014) it describes the function of Key Characteristics in landscape assessment, as follows:

"*Key characteristics are those combinations of elements which help to give an area its distinctive sense of place. If these characteristics change, or are lost, there would be significant consequences for the current character of the landscape. Key characteristics are particularly important in the development of planning and management policies. They are important for monitoring change and can provide a useful reference point against which landscape change can be assessed. They can be used as indicators to inform thinking about whether and how the landscape is changing and whether, or not, particular policies – for example - are effective and having the desired effect on landscape character*."

1.1.41. It follows from the above that in order to assess whether landscape character is significantly affected by a development, it should be determined how each of the key characteristics would be affected. The judgement of magnitude therefore reflects the degree to which the key characteristics and elements which form those characteristics will be altered by the Proposed Development.

Landscape value – considerations

1.1.42. Paragraph 5.19 of GLVIA3 states that "*A review of existing landscape designations is usually the starting point in understanding landscape value, but the value attached to undesignated landscapes also needs to be carefully considered and individual elements of the landscape- such as trees, buildings or hedgerows -may also have value. All need to be considered where relevant*."

1.1.43. Paragraph 5.20 of GLVIA3 indicates information which might indicate landscape value, including:

- Information about areas recognised by statute such as National Parks, Areas of Outstanding Natural Beauty;
- Information about Heritage Coasts, where relevant;
- Local planning documents for local landscape designations;
- Information on features such as Conservation Areas, listed buildings, historic or cultural sites;
- Art and literature, identifying value attached to particular areas or views; and
- Material on landscapes of local or community interest, such as local green spaces, village greens or allotments.

1.1.44. An assessment of landscape value is made based on the following factors outlined in Table 1 of the Landscape Institute's 'Technical

Guidance Notes 02-21: Assessing landscape value outside national designations': natural heritage; cultural heritage; landscape condition; associations; distinctiveness; recreational; perceptual (scenic); perceptual (wildness and tranquillity); and functional.

1.1.45. In addition to the above list, consideration is given to any evidence that indicates whether the landscape has particular value to people that would suggest that it is of greater than Community value.

Viewpoints and Visual Receptors – considerations

1.1.46. A wide variety of visual receptors can reasonably be anticipated to be affected by the proposed development. Within the baseline assessment, the ZTV study and Site visits are used to determine which visual receptors are likely to be significantly affected and therefore merit detailed assessment. In line with guidance (GLVIA3, 2013); both representative and specific viewpoints may be identified to inform the assessment. In general, the majority of viewpoints will be representative – representing the visual receptors at the distance and direction in which they are located and of the type(s) that would be present at that location. The representative viewpoints have generally been selected in locations where significant effects would be anticipated; though some may be selected outside of that zone – either to demonstrate the reduction of effects with distance; or to specifically ensure the representation of a particularly sensitive receptor.

- The types of visual receptors likely to be included with the assessment are:
- Users of walking routes or accessible landscapes including Public Rights of Way, National and Regional Trails and other long distance routes, Common Land, Open Access Land, permissive paths, land held in trust (e.g. Woodland Trust, National Trust) offering free public access, and other regularly used, permitted walking routes;

- Visitors to and residents of settlements;
- Visitors to specific valued viewpoints;
- Visitors to attractions or heritage assets for which landscape and views contribute to the experience; and
- Users of roads or identified scenic routes.

1.1.47. Visual receptors are grouped for assessment into areas which include all of the routes, public spaces and homes within that area. Receptor groups are selected as follows:

- Based around settlements in order to describe effects on that that community - e.g. a settlement and routes radiating from that settlement; or
- An area of open countryside encompassing a number of routes, accessible spaces and individual dwellings; or
- An area of accessible landscape and the routes within and around it e.g. a country park; and
- such that effects within a single visual receptor group are similar enough to be readily described and assessed.

1.1.48. With the exception of specific viewpoints, each route, settlement or location will encompass a range of possible views, which might vary from no view of the development to very clear, close views. Therefore, effects are described in such a way as to identify where views towards the development are likely to arise and what the scale, duration and extent of those views are likely to be. In some cases, this will be further informed by a nearby viewpoint and in others it will be informed with reference to the ZTV, aerial photography and Site visits. Each of these individual effects are then considered together in order to reach a

judgement of the effects on the visual receptors along that route, or in that place.

1.1.49. The representative viewpoints are used as 'samples' on which to base judgements of the scale of effects on visual receptors. The viewpoints represent multiple visual receptors, and duration and extent are judged when assessing impacts on the visual receptors.

1.1.50. For specific viewpoints (key and sometimes promoted viewpoints within the landscape), duration and extent are assessed, with extent reflecting the extent to which the development affects the valued qualities of the view from the specific viewpoint.

Table 8: Visual Receptor Sensitivity – typical examples

Visual Receptor Sensitivity	Susceptibility		
	High	Medium	Low
National / International	1	4	8
Local / District	2	5	8
Community	3	6	9
Limited		7	10

1) Visitors to valued viewpoints or routes which people might visit purely to experience the view, e.g. promoted or well-known viewpoints, routes from which views that form part of the special qualities of a designated landscape can be well appreciated; key designed views; panoramic viewpoints marked on maps.

2) People in locations where they are likely to pause to appreciate the view, such as from local waypoints such as benches; or at key views to/from local landmarks. Visitors to local attractions, heritage assets or public parks where views are an important contributor to the experience, or key views into/out of Conservation Areas.

3) People in the streets around their home, or using public rights of way, navigable waterways or accessible open space (public parks, open access land).
4) Users of promoted scenic rail routes.
5) Users of promoted scenic local road routes.
6) Users of cycle routes, local roads and railways.
7) Outdoor workers.
8) Users of A-roads which are nationally or locally promoted scenic routes.
9) Users of sports facilities such as cricket grounds and golf courses.
10) Users of Motorways and A-roads; shoppers at retail parks, people at their (indoor) places of work.

Preparation and use of Visuals

1.1.51. The ZTVs have been used to inform the field study assessment work, providing additional detail and accuracy to observations made on site. Photomontages have been produced in order to assist readers of the assessment in visualising the proposals, but are not used in reaching judgements of effect. The preparation of the ZTVs and photomontages has been informed by the Landscape Institute's Technical Guidance Note 06/19 'Visual Representation of development proposals' and SNH 'Visual Representation of Wind Farms Best Practice Guidance' (2017).

1.1.52. The following points should be borne in mind in respect of the ZTV study:

- Areas shown as having potential visibility may have visibility of the development obscured by local features such as trees, hedgerows, embankments or buildings.

1.1.53. A detailed description of the methods by which ZTVs and visualisations are prepared is included in Appendix 6.2.

1.1.54. In addition to the main visualisations, illustrative views are used as appropriate to illustrate particular points made within the assessment. These are not prepared to the same standard as they simply depict existing views, character or features rather than forming the basis for visualisations.

Cumulative Assessment

1.1.55. The LVIA input to the cumulative assessment chapter 19of the PEIR. A search area from the Site (typically of a similar scale to the study area) will be agreed with the planning authority(s). For each of the identified cumulative schemes, agreement is reached with the local planning authority(s) as to whether and how they should be included in the assessment.

1.1.56. Schemes are included for assessment in the cumulative LVIA where specific circumstances indicate there is potential for cumulative effects to occur, with progressively decreasing emphasis placed on those which are less certain to proceed. Typically, operational and consented schemes are treated as being part of the landscape and visual baseline. i.e. it is assumed that consented schemes will be built except for occasional exceptions where there is good reason to assume that they will not be constructed.

1.1.57. In relation to landscape and visual cumulative assessment, it is important to note the following:

- For each assessed receptor, combined cumulative effects may be the same as for the Proposed Development, or greater (where the influence of multiple schemes would increase effects, or where

schemes in planning other than the Proposed Development would have the predominant effects).

- For each assessed receptor, incremental cumulative effects may be the same as for the Proposed Development, or reduced (where the influence of other schemes in planning would be such that were they consented and considered to be part of the baseline, the incremental change arising from the addition of the application scheme would be less).
- Subject to the distance and degree of intervening landform, vegetation and structures there may be no cumulative effects.

1.1.58. The LVIA input into cumulative assessment and considered the same groups of landscape and visual receptors as the assessment for the Proposed Development. The LVIA cumulative assessment has not identified any schemes that have the potential for significant cumulative landscape and visual effects.

Distances

1.1.59. Where distances are given in the assessment, these are approximate distances between the nearest part of the Site and the nearest part of the receptor in question, unless explicitly stated otherwise.

1.2. References

Landscape Institute and Institute of Environmental Management and Assessment (2013). The Guidelines for Landscape and Visual Impact Assessment (GLVIA3). 3rd Edition.

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Appendix 6.2: Visualisations and ZTV

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Appendix 6.2: Visualisations and Zone of Theoretical Visibility (ZTV) Studies

1.1. ZTV Studies

1.1.1. ZTV studies are prepared using the ESRI ArcGIS Viewshed routine. This creates a raster image that indicates the visibility (or not) of the points modelled. LDA Design undertake a ZTV study that is designed to include visual barriers from settlements and woodlands (with heights derived from NEXTMAP25 surface mapping data). If significant deviations from these assumed heights are noted during site visits, for example young or felled areas of woodland, or recent changes to built form, the features concerned will be adjusted within the model or the adoption of a digital surface model will be used to obtain actual heights for these barriers. In this instance 2m resolution LiDAR data combined with National Tree Map data has been used to include buildings and vegetation in the ZTV model. The model is also designed to take into account both the curvature of the earth and light refraction, informed by the Scottish Natural Heritage (SNH) guidance. LDA Design undertake all ZTV studies with observer heights of 2m.

1.1.2. The ZTV analysis begins at 1m from the observation feature and will work outwards in a grid of the set resolution until it reaches the end of the terrain map for the project.

1.1.3. For all plan production LDA Design will produce a ZTV that has a base and overlay of the 1:50,000 Ordnance Survey Raster mapping or better. The ZTV will be reproduced at a suitable scale on an A3 template to encompass the study area.

1.2. Ground Model Accuracy

1.2.1. Depending on the project and level of detail required, different height datasets may be used. Below, as indicated on Table 1, is listed the different data products and their specifications.

Table 1: Ground Modelling Products and Specifications

Product	Distance Between Points	Vertical RMSE Error
LiDAR	50cm – 2m	up to +/- 5cm
Photogrammetrically Derived Heights	2m – 5m	up to +/- 1.5m
Ordnance Survey OS terrain 5	5 m	up to +/- 2.5m
NextMap25 DTM	25 m	+/- 2.06m
Ordnance Survey OS terrain 50	50 m	+/- 4m

1.2.2. Site-specific topographical survey data may also be used where available.

1.3. Photomontages and Photowires

1.3.1. Verified / verifiable photomontages are produced in seven stages. Photowires are produced using the same overall approach, but only require some of the steps outlined below.

1) Photography is undertaken using a full frame digital SLR camera and 50mm lens. A tripod is used to take overlapping photographs which are joined together using an industry standard application to create a single panoramic image for each viewpoint. These are then saved at a fixed height and resolution to enable correct sizing when reproduced in the final images. The photographer also notes the GPS location of the viewpoint and takes bearings to visible landmarks whilst at the viewpoint.

2) Creation of a ground model and 3D mesh to illustrate that model. This is created using NextMap25 DTM point data (or occasionally other terrain datasets where required, such as site-specific topographical data or Photogrammetrically Derived Heights) and ground modelling software.

3) The addition of the proposed development to the 3D model. The main components of the proposed development are accurately modelled in CAD and are then inserted into the 3D model at the proposed locations and elevations.

4) Wireline generation - The viewpoints are added within the 3D CAD model with each observer point being inserted at 1.5m above the modelled ground plane. The location of the landmarks identified by the photographer may also be included in the model. The view from the viewpoint is then replicated using virtual cameras to create a series of single frame images, which also include bearing markers. As with the photographs, these single frame images are joined together using an industry standard application to create a single panoramic image for each viewpoint. These are then saved at a fixed height and resolution to ensure that they are the same size as the photographs.

5) Wireline matching - The photographs are matched to the wirelines using a combination of the visible topography, bearing markers and the landmarks that have been included in the 3D model.

6) For the photomontage, an industry standard 3D rendering application is used to produce a rendered 3D view of the proposed development from the viewpoint. The rendering uses materials to match the intended surface finishes of the development and lighting conditions according to the date and time of the viewpoint photograph.

7) The rendered development is then added to the photograph in the position identified by the wireline (using an image processing application) to ensure accuracy. The images are then layered to ensure that the development appears in front of and behind the

correct elements visible within the photograph. Where vegetation is proposed as part of the development, this is then added to the final photomontage.

1.3.2. In accordance with the guidance provided in Technical Guidance Note 06/19 'Visual representation of Development Proposals' (Landscape Institute, 2019), visualisations will be prepared to the technical methodology set out in below. The photowires and photomontages prepared in support of the LVIA will adhere to the Type 3 visualisation specification as surveyed locational accuracy is not generally necessary but image enlargement, to illustrate perceived scale, would be appropriate.

1.4. Technical Methodology

Table 2: Technical Methodology

Information	Technical Response
Photography	
Method used to establish the camera location	Aerial photography in ESRI ArcGIS along with GPS reading taken on site
Likely level of accuracy of location	Better than 1m
If lenses other than 50mm have been used, explain why a different lens is appropriate	N/A
Written description of procedures for image capture and processing	See paragraph 6I.10.1 point 1 above
Make and type of Panoramic head and equipment used to level head	Manfrotto Levelling Head 338 and Manfrotto Panoramic Head MH057A5
If working outside the UK, geographic co-ordinate system (GCS) used	N/A
3D Model/Visualisation	

Information	Technical Response
Source of topographic height data and its resolution	TBC
How have the model and the camera locations been placed in the software?	Georeferenced model supplied by engineers/architects Camera locations taken from photography viewpoint locations
Elements in the view used as target points to check the horizontal alignment	Existing buildings, infrastructure/road alignments, telegraph poles/street lighting/signage, field boundaries, DSM
Elements in the view used as target points to check the vertical alignment	Topography, existing buildings
3D Modelling / Rendering Software	Civil 3D / AutoCAD / 3DS Max / Rhino / V-Ray

References

Landscape Institute (2019). Visual Representation of Development Proposals. Technical Guidance Note 06/19.

Scottish Natural Heritage (2017). Visual Representation of Wind Farms Guidance. Version 2.2.

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Appendix 6.3: Landscape Planning Policy and Guidance

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Appendix 6.3: Landscape Planning Policy and Guidance

1.1. National Planning Policy Statements

Overarching National Policy Statement for Energy (EN-1)

1.1.1. NPS EN-1 (2011) provides overarching guidance for energy developments in England and Wales. The guidance recognises the need to diversify and decarbonise electricity generation and records the Government is *"committed to increasing dramatically the amount of renewable generation capacity"*.

1.1.2. In relation to landscape and visual matters, the importance of 'Good Design' is recognised in Section 4.5 of the guidance noting at paragraph 4.5.1 *"high quality and inclusive design goes far beyond aesthetic considerations*" and that *"Applying "good design" to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible."* .

1.1.3. Section 5.9 of EN-1 relates specifically to potential landscape and visual impacts noting at paragraph 5.9.1 "The landscape and visual effects of energy projects will vary on a case by case basis according to the type of development, its location and the landscape setting of the proposed development."

1.1.4. The guidance advises a landscape and visual impact assessment should be undertaken which should include any reference to relevant policies and character assessment and associated studies. Assessment of effects should also include the visibility of the proposal and potential impacts of views and visual amenity. Landscape and visual effects should be assessed for both construction and operation.

1.1.5. The guidance notes at paragraph 5.9.8 that "virtually all nationally significant energy infrastructure projects will have effects on the landscape. Projects need to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate."

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

1.1.6. NPS EN-3 sets out guidance for England and Wales in relation to renewable energy infrastructure and acknowledges at paragraph 1.1.1 the Governments *"ambitious renewable energy targets…and a significant increase in generation from large-scale renewable energy infrastructure is necessary…"*.

1.1.7. The guidance does not specifically address renewable solar energy proposals but paragraph 2.4.2 notes "Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology."

1.2. National Planning Policy

National Planning Policy Framework

1.2.1. The National Planning Policy Framework (NPPF, July 2021) makes clear that the purpose of planning is to help achieve sustainable development (Section 2), and that design (Section 12), and effects on the natural environment (Section 15) are important components of this.

1.2.2. Paragraph 11 sets out that in determining applications for development this means that developments which accord with an up-to-date development plan should be approved. Where the development plan is

not fit for the purpose of determining the application, paragraph 11 directs that the permission should be granted unless "*any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole" or "the application of policies in this Framework that protect areas or assets of particular importance provides a strong reason for restricting the overall scale, type or distribution of development in the plan*". The areas or assets of particular importance in respect of landscape and visual matters referred to within the relevant footnote 7 are:

- Area of Outstanding Natural Beauty (AONB);
- National Parks including the Norfolk Broads;
- Heritage Coast.

1.2.3. The list also includes important habitats sites, irreplaceable habitats and / or designated as Sites of Special Scientific Interest; land designated as Green Belt or Local Green Space; designated heritage assets or heritage assets of archaeological interest; and areas at risk of flooding or coastal change.

1.2.4. Section 11 sets out considerations in 'Making Effective Use of Land' and notes in paragraph 124 that in respect of development density the considerations should include whether a place is well-designed and "*the desirability of maintaining an area's prevailing character and setting … or of promoting regeneration and change*".

1.2.5. Section 12 sets out consideration in 'Achieving well-designed places' and indicates in paragraph 127 (Section 12) that decisions should ensure that developments:

"a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;

b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;

c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);

d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;

e) optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) …"

1.2.6. Section 15 of the NPPF covers both ecological and landscape matters. Paragraph 170 requires that decisions should contribute by:

"a) protecting and enhancing valued landscapes, … (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate; …"

1.2.7. In respect of valued landscapes, paragraph 175 notes that planning policy should "distinguish between the hierarchy of international, national and locally designated sites". Paragraphs 176 – 178 require that:

"*176. Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads. The scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.*

177. When considering applications for development within National Parks, the Broads and Areas of Outstanding Natural Beauty, permission should be refused for major development [60] other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of:

a) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;

b) the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and

c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.

178. Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 176), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character."

1.2.8. Footnote 60 notes that "*whether a proposal is 'major development' is a matter for the decision maker, taking into account its nature, scale and setting, and whether it could have a significant adverse impact on the purposes for which the area has been designated or defined*".

1.2.9. Paragraph 85 requires decisions to ensure that "…*new development is appropriate for its location*…" including by limiting the impact of light pollution on local amenity and "*intrinsically dark landscapes*".

1.3. Planning Practice Guidance for Natural Environment, July 2019

1.3.1. This document is intended to explain the key issues in implementing policy to protect biodiversity, enhance green infrastructure and also contains a section on landscape. This section reiterates the policy set out in the NPPF, highlights the importance of identifying the special characteristics of locally valued landscapes and recommends the use of landscape character assessments.

1.3.2. With regards to National Parks, the Broads and AONBs, the guidance states that:

"*Section 11A(2) of the National Parks and Access to the Countryside Act 1949, section 17A of the Norfolk and Suffolk Broads Act 1988 and section 85 of the Countryside and Rights of Way Act 2000 require that 'in exercising or performing any functions in relation to, or so as to affect, land' in National Parks and Areas of Outstanding Natural Beauty, relevant authorities 'shall have regard' to their purposes for which these*

areas are designated" (para 039). The same paragraph also requires consideration of the effects of development on the setting of AONBs.

1.3.3. The guidance also highlights that Natural England has published advice on Heritage Coasts. This guidance indicates that heritage coasts are "*managed to conserve their natural beauty and, where appropriate, to improve accessibility for visitors*" (para 043).

1.3.4. This document also provides guidance on green infrastructure, highlighting types of green infrastructure (para 004) and the benefits which they provide (005), including achieving well-designed places as "*green infrastructure exists within a wider landscape context and can reinforce and enhance local landscape character, contributing to a sense of place and natural beauty*" (para 006).

1.4. Planning Practice Guidance for Design: process and tools, October 2019

1.4.1. The guidance should be read alongside the National Design Guide and sets out the characteristics of well-designed places and demonstrates what good design means in practice. The guidance indicates that good design relates to 10 characteristics:

- context
- identity
- built form
- movement
- nature
- public spaces
- uses
- homes and buildings

- resources
- lifespan

1.4.2. In respect of the determining applications and the relationship between a proposal and the surrounding context, the guidance notes that:

"*permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions* …".

1.5. National Design Guide, January 2021

1.5.1. The guidance sets out characteristics of '*beautiful, enduring and successful places*' that reflect the '*Government's priorities and a common overarching framework*' and provides cross references to the National Planning Policy Framework.

1.5.2. The guidance indicates that "context, history and the cultural characteristics of a site, neighbourhood and region influences the location, siting and design of new developments".

1.5.3. In respect of context, the guidance indicates a positive sense of place and further notes that well-designed places are:

- based on a sound understanding of the features of the site and the surrounding context, using baseline studies as a starting point for design
- integrated into their surroundings so they relate well to them
- influenced by and influence their context positively; and
- responsive to local history, culture and heritage.

1.5.4. The guidance indicates that identity "*or character of a place comes from the way that buildings, streets and spaces, landscape and infrastructure combine together… Local character makes places distinctive*."

1.5.5. In respect of identity, the guidance further notes that well-designed places, buildings and spaces:

- have a positive and coherent identity that everyone can identify with;
- have a character that suits the context, its history; and
- are visually attractive.

1.5.6. The guidance indicates that nature "*contributes to the quality of a place, and to people's quality of life, and it is a critical component of well-designed places*." Natural features include "*natural and designed landscapes, high quality public open spaces, street trees, and other trees, grass, planting and water*".

1.5.7. In respect of nature, the guidance further notes that well-designed places:

- integrate existing and incorporate new natural features into a multifunctional network that supports quality of place;
- prioritise nature so that diverse ecosystems can flourish to ensure a healthy natural environment that supports and enhances biodiversity; and
- provide attractive open spaces in locations that are easy to access.

1.6. Local Planning Policy

1.6.1. Landscape related policy derived from relevant local plans have also been used to inform the Proposed Development and suitable design responses. The relevant local plans are provided below:

- Rutland Local Development Framework: Core Strategy (Adopted July 2011), RCC;
  - Policy CS1 – Sustainable development principles;
  - Policy CS2 - The spatial strategy;
  - Policy CS4 - The location of development;
  - Policy CS19 – Promoting good design;
  - Policy CS20 - Energy efficiency and low carbon energy generation;
  - Policy CS21 - The natural environment; and
  - Policy CS22 - The historic and cultural environment.
- Rutland Local Plan Site Allocations and Policies Development Plan Document (Adopted 2014), RCC:
  - Policy SP5 - Built development in the towns and villages;
  - Policy SP7 – Non-residential development in the countryside;
  - Policy SP15 – Design and amenity;
  - Policy SP17 –Outdoor lighting;
  - Policy SP18 - Wind turbines and low carbon energy developments;
  - Policy SP19 – Biodiversity and geodiversity conservation; and
  - Policy SP23 - Landscape character in the countryside.
- South Kesteven Local Plan 2011- 2036 (January 2020), SKDC:
  - Policy SP1: Spatial Strategy;
  - Policy SP4: Development on the Edge of Settlements;
  - Policy SP5: Development in the Open Countryside;

  - Policy EN1: Landscape Character;
  - Policy EN2: Protecting Biodiversity and Geodiversity;
  - Policy EN3: Green Infrastructure;
  - Policy EN5: Water Environment and Flood Risk Management;
  - Policy DE1: Promoting Good Quality Design; and
  - Policy OS1: Open Space.
- Carlby Parish Neighbourhood Development Plan, 2018 to 2036 (Made 2018) policies including [inter alia]:
  - Policy V.0: Village rural character and appearance;
  - Policy V.2: Development which would have a negative impact, which impedes or changes the views and green spaces on the entrance to the west of the village will not be supported; and
  - Policy V.4: Developments should safeguard and where appropriate incorporate traditional hedgerows and trees both in general, and on the approaches into the village in particular. Development that results in the loss of such features will not be supported.

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Appendix 6.4: Residential Visual Amenity Assessment

May 2022

Appendix 6.4: Residential Visual Amenity Assessment

1.1. Introduction

1.1.1. Residential Visual Amenity Assessment (RVAA) relates to the visual effects to private residents of a proposed development. RVAA is concerned with "*the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from gardens and domestic curtilage*" (Landscape Institute (LI) 2019).

1.1.2. As set out in the Landscape Institute Technical Guidance Note for Residential Visual Amenity Assessment (2019) records that: "The planning system is designed to act in the public interest when making planning decisions. Nevertheless, effects on private interests are considered by planners in the 'planning balance'. This includes weighing effects on Residential Amenity which is distinct to Residential Visual Amenity." This will form part of the considerations and assessment set out in the Planning Statement to accompany the DCO Application.

1.1.3. Judgements formed in respect of Residential Visual Amenity should not be confused with the judgement regarding Residential Amenity. Nor should the judgement be seen as a 'test' with a simple 'pass' or 'fail'.

1.1.4. It is not uncommon for significant adverse effects on views and visual amenity to be experienced by people at their place of residence as a result of introducing a new development into the landscape. In itself, this does not necessarily cause particular planning concern. However, there are situations where the effect on the outlook / visual amenity of a residential property is so great that it is not generally considered to be in the public interest to permit such conditions to occur where they did not exist before.

1.1.5. A full RVAA will be undertaken as part of the Environmental Statement (ES), forming a standalone report appended to the Landscape and Visual Impact Assessment (LVIA) Chapter.

1.2. What might be affected by the Proposed Development?

1.2.1. The Proposed Development has the potential to affect the Residential Visual Amenity of private residents in close proximity to the Site. In essence, it seeks to answer the question 'is the effect of the development on Residential Visual Amenity of such nature and / or magnitude that it potentially affects 'living conditions' or Residential Amenity'? In LI guidance this is referred to as the Residential Visual Amenity Threshold.

1.2.2. The factors which might contribute to the threshold being reached, or the way in which these are expressed, may be different for different types of development (for example, one might use terms such as 'overwhelming/overbearing' for tall structures, or 'overly intrusive' for a development overlooking a garden or principal room). Determining whether the threshold has been reached requires informed professional judgement.

1.3. How have we assessed the effects relating to this topic?

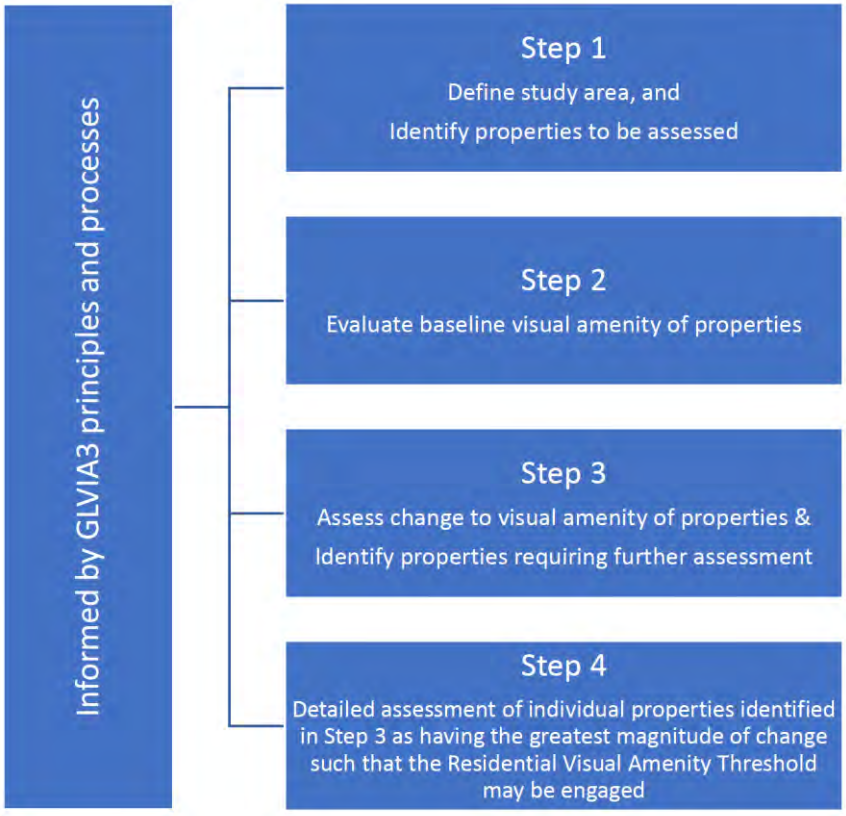
1.3.1. A RVAA will be undertaken as part of the ES forming an appendix to the LVIA. The RVAA methodology including the assignment of the threshold of significance effects will follow the LVIA methodology presented in Appendix 6.1 and be in accordance with best practice guidance produced by the LI (2019).

1.3.2. The guidance recommends four 'steps' and in situations where all four are engaged this will typically involve some iteration of the third and fourth steps. The first three steps fall broadly within the normal scope of LVIA consisting of an assessment of the magnitude and significance of

visual effect and change to visual amenity likely to be experienced by occupants at those individual residential properties which were identified while scoping the RVAA.

1.3.3. The fourth and final step of RVAA requires a further assessment of change to visual amenity examining whether the Residential Visual Amenity Threshold is likely to be, or has been, reached. Whether or not, this final step is engaged depends on the circumstances specific to the case. In any event, RVAA should be considered supplementary to LVIA following on from, and informed by, the latter's findings and conclusions.

1.3.4. The stages of the RVAA are summarised graphically below:



1.3.5. A study area of 100m from the Site boundary is proposed and considered appropriate for the purposes of RVAA.

1.3.6. For the purposes of the Stage 2 Preliminary Environmental Report (PEIR) steps 1 – 3 have been undertaken to a preliminary level.

Step 1 – Define Study Area:

- The first stage of the RVAA is to define the study area and identify residential properties to be assessed. A 100m RVAA study area has been identified based on the characteristics of the Proposed Development and receiving baseline environment, including consideration of the preliminary findings from the PEIR LVIA. For robustness, the study area has been based upon the Solar PV Site and extents of the Mitigation and Enhancement Area (Figure 3.1 of the PEIR) to ensure that all properties within close proximity are identified and considered as part of the preliminary RVAA. It should be noted that not all residential properties are located within 100m of the Solar PV Site which contains solar panels or built form associated with the Proposed Development but have still been included where they are located within 100m of the Mitigation and Enhancement boundary.
- The RVAA has not considered properties located within 100m of those areas of the Site which only relate to where potential highway works (Figure 3.1 of the PEIR) may be required to facilitate construction access as such works are not considered to materially affect visual residential given their nature in that overwhelming, overbearing or overly visually intrusive effects are highly unlikely to occur.
- The properties identified within the RVAA study area comprise of farmsteads, individual properties and 13 residential properties on Glen Crescent, Essendine, as shown on the figure at the end of this report and set out in Table 4.1.

Step 2 – Evaluate baseline visual amenity:

- Having established the study area and identified the residential properties that fall within the study area, an initial analysis of the visual amenity of the residential properties (including gardens) was

undertaken based on aerial photography and Google Street view. A Site visit (undertaken 22nd January 2022) was then undertaken to verify and confirm desktop analysis.

- Having undertaken the Site visit, it is considered that the current visual amenity of residential properties generally comprises views over rolling agricultural land. Open, longer distance views are possible from more elevated properties. Views are characterised by arable fields, woodland blocks and network of hedgerow boundaries and vegetation of the West Glen River. Views of built form, including other dwellings, the industrial estate at Essendine and the East Coast Mainline railway are also characteristic features in views.
- Views from more elevated properties in the northwest adjacent to the Site such as Lodge Farm, Barbers Hill House and Heath House allow views over undulating agricultural land, woodland blocks and field boundaries. Properties along Calby Lane (including Grange Farm and Grange Farm Cottages) are also relatively elevated with longer views possible southward over the Solar PV Site although views northward are screened by Braceborough Wood.
- Properties on Stanford Road (including those on Glen Crescent) have middle distance views over the undulating West Glen River valley where a patchwork of agricultural fields, woodland blocks and hedgerows, the East Coast Main Line railway and the industrial estate at Essendine can be seen. Views of the Solar PV Site from properties further south on Essendine Road are generally screened by woodland blocks and hedgerows.
- Properties near the central area of the Site such as North Lodge Farm, North Lodge Farm Bungalow and Wood Farm generally have views northward over the West Glen River valley where the vegetation in the valley and the East Coast Main Line railway form and effective filter and screen to views.

- Properties to the south of the Site such as Cobbs Nook Farm, Folly Farm and Green Lane Farm are set within relatively large grounds and benefit well screened by boundary vegetation.

Step 3 – Assess change to visual amenity:

1.3.7. Effects on Residential Visual Amenity are potentially most likely during construction and operation of the Proposed Development where residential properties are in close proximity to the Proposed Development. Effects during decommissioning are considered to be less than those of construction and operation given the Proposed Development would be reducing in size as it is decommissioned.

1.3.8. Potential effects may include being surrounded by the Proposed Development to the extent that there is a visual 'overwhelming' of the visual amenity from a residential dwelling, or that the Proposed Development is so visually prominent that is 'overly intrusive'.

1.3.9. The layout of the Proposed Development has been informed by the RVAA and in recognition that a 'one size' solution (e.g. a standard buffer offset) is a blunt approach, a bespoke response to specific to each property in question has been taken:

- Pull back and removal of the PV Arrays from areas near to residential properties in a specific design response following the principles of:
  - Pulling back to an existing physical boundary.
  - Pulling back to a lost physical boundary (e.g. historic hedgerow).
  - Pulling back to a proposed new boundary with new planting.

1.3.10. The additional pull back of PV Arrays following informal consultation can been seen on Figure 4.2 of the PEIR and are shown as Mitigation and Enhancement Areas.

1.3.11. Given the removal of the PV Arrays within close proximity to residential properties within the study area and the relatively low development heights of the Proposed Development, it is unlikely that effects of 'overbearing' would occur to the visual amenity of residential properties, this being more associated with tall structures such as wind farms. Associated infrastructure such as ancillary buildings and central container inverters are of similar height to the solar arrays and have been purposefully located away from residential properties.

1.3.12. Whilst glimpses of taller elements of the Proposed Development, namely the Primary Onsite Substation, may be possible from nearby residential properties, it is suitably distant from any residential properties and would be screened by existing and proposed vegetation so as not to result in visual effects of overwhelming, overbearing or of being overly intrusive.

1.3.13. The Glint and Glare, Noise and Air Quality PEIR all record that subject to appropriate mitigation measures, residual impacts as a result of the construction, operation and decommissioning of the Proposed Development would not be significant.

1.3.14. In addition to those measures already embedded within the design of the Proposed Development, the following measures will be deployed to further reduce any potential adverse Residential Visual Amenity impacts:

- New / infill structural planting to filter and screen views as illustrated on the Green Infrastructure Strategy Plan (Figure 6.10 o the PEIR); and
- The production and adherent to the Construction Environmental Management Plan (CEMP) and Landscape and Ecology Management Plan (LEMP). CEMP mitigation measures could include precautionary ways of working and the temporary installation of existing vegetation protection for sensitive areas during

construction. LEMP measures could include the management of existing and new planting for screening purposes and planting.

1.3.15. Given the nature of the Proposed Development, the existing outlook from residential properties in relation to the Site, and the offsets from the solar arrays from the residential properties, it is considered highly unlikely visual effects of 'overwhelming' or 'overbearing' would occur to residential properties.

1.3.16. Table 1 provides a preliminary RVAA of residential properties within the study area. The assessment is based on field survey and the likely visual effects for construction and operation of the Proposed Development. Additional mitigation measures, beyond the iterative design process, are also identified. In light of the conclusions of the preliminary RVAA, none of the properties identified within the study area are therefore considered to require further assessment within Step 4.

1.3.17. This RVAA will be updated to reflect the final design of the Proposed Development and included within the ES.

Table 1: Residential Visual Amenity Significance of Effects

Activity	Description of Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
Construction	Temporary visual disturbance to Residential Visual Amenity	Short term	Folly Farm, Essendine Road, Green Lane Farm	High	Negligible	Minimal (not significant)	CEMP	Minimal (not significant)
			Heath House Cottage, Vale, Farm, Lodge Farm, Barbers Hill House, Crossroads Spinney,	High	Low	Slight (not significant)	CEMP	Slight (not significant)

Activity	Description of Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
			The Old School, The Bungalows, Glen Crescent, Grange Farm Cottages, Grange Farm, Cobbs Nook Farm					
			Wood Farm Cottages, North Farm	High	Medium	Moderate (not significant)	CEMP	Moderate (not significant)

Activity	Description of Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
			Lodge, North Farm Bungalow					
Operation	Visual disturbance to Residential Visual Amenity	Permanent	Folly Farm, Essendine Road, Green Lane Farm	High	Negligible	Minimal (not significant)	Green Infrastructure Design and LEMP	Minimal (not significant)
			Heath House Cottage, Vale, Farm, Lodge Farm, Barbers Hill House,	High	Low	Slight (not significant)	Green Infrastructure Design and LEMP	Minimal (not significant)

Activity	Description of Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
			Crossroads Spinney, The Old School, The Bungalows, Glen Crescent, Grange Farm Cottages, Grange Farm, Cobbs Nook Farm					

Activity	Description of Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
			Wood Farm Cottages, North Farm Lodge, North Farm Bungalow	High	Medium	Moderate (not significant)	Green Infrastructure Design and LEMP	Slight (not significant)

References

Landscape Institute (2019) Residential Visual Amenity Assessment: Technical Guidance Note, Landscape Institute.

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LEGEND

- Solar PV Site and Mitigation and Enhancement Areas
- Residential Visual Amenity Study Area (100m)
- Residential Property - within Study Area

LDĀDESIGN

PROJECT TITLE

MALLARD PASS SOLAR FARM:
PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

DRAWING TITLE

Figure 1: Residential Visual Amenity Assessment

ISSUED BY	Oxford	T: 01865 887050	
DATE	April 2022	DRAWN	SG
SCALE @A3	1:25,000	CHECKED	GE
STATUS	Final	APPROVED	RP

DWG. NO. 7863_110

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

Sources: Ordnance Survey

Mallard Pass
Solar Farm

Mallard Pass Solar Farm

Preliminary Environmental Information Report

Volume 3: Appendices

Appendix 6.5: Amenity and Recreation Assessment

May 2022

Appendix 6.5: Amenity and Recreation

1.1. Introduction

1.1.1. Amenity and Recreation (A&R) assessment relates to the disturbance of users of recreational resources comprising Public Rights of Way (PRoW) (public footpaths, bridleways, restricted byways and byways open to all traffic (BOAT)), permissive footpaths and permitted access land, cycle routes, outside recreational facilities, open access land, common land, nature reserves, public open space and water bodies used for recreation from physical changes (e.g. diversions), and changes to views, noise, dust and other emissions, traffic and people.

1.1.2. A full A&R assessment will be undertaken as part of the Environmental Statement (ES), forming a standalone report appended to the Landscape and Visual Impact (LVIA) Assessment Chapter.

1.1.3. There is no established methodological guidance for A&R assessment therefore the methodology would be informed by relevant legislation and policy and previous approaches to A&R undertaken by LDA Design. The A&R assessment will identify the sensitivity of the recreational amenity resources that may be affected by the Proposed Development, the potential magnitude of change to them and assess the likely resultant impact. Reference to the LVIA Chapter, and other relevant ES Chapters such as Noise, Air Quality, Glint and Glare, Ecology and Biodiversity and Cultural Heritage and Archaeology, will be made where appropriate. No survey counts of users will be undertaken as the routes in question are not nationally designated (i.e. National Trails) they are mainly used by the local population. Night-time effects would also not be assessed as no lighting is proposed apart from motion activated security lighting around the Primary Onside Substation. The A&R will be supported by plans and figures as appropriate which includes Figure 1 presented at the end of this report.

1.2. What might be affected by the Proposed Development?

1.2.1. Figure 1 illustrates the A&R study area and location of A&R resources listed in Tables 1 and 2 below. These comprise a variety of byways, bridleways, the MacMillan Way long distance path, footpaths and one area of open access land at Braceborough Great Wood. The amenity of these routes generally comprises rolling agricultural countryside characterised by agricultural fields, native woodland and hedgerows, and settlement in the form of farmsteads, villages and small towns. The presence of development and infrastructure such as the East Coast Mainline railway and industrial units at Essendine are visible from the PRoW network.

1.2.2. Table 1 below details A&R resources within the solar PV Site the amenity and recreation of which are likely to be affected by the Proposed Development.

Table 1: A&R Resource within the Site

A&R Resource	Reference	Location	Length within the solar PV Site	Total Length
MacMillan Way Long Distance Path		Boston, Lincolnshire to Abbotsbury, Dorset	510m	470km
Bridleway	E169	Stamford Road to B1176	1.15km	1.15km
Bridleway	E182 / BrAW/1/1	Banthorpe Lodge to Carlby Road	2.10km	2.25km
Footpath	Carl/4/1 / BrAW/9/1	Carlby to Braceborough	260m	2.81km
Footpath	BrAW/7/1	Carlby Road to Banthorpe Wood	250m	1.37km

A&R Resource	Reference	Location	Length within the solar PV Site	Total Length
Footpath	BrAW/3/1	Carlby Road to Braceborough	160m	1.17km
Footpath	Uffi/5/1	Newstead Road to A1175	1.6km	2.49km

1.2.3. The amenity experience of these routes varies according to location, topography and vegetation, both between them but also along them as individual routes. Bridleways such as BrAW/1/1 and E169 allow relatively middle and long distance views over the surrounding landscape whereas more vegetated routes such as the MacMillan Way and footpath BrAW/7/1 in the east of the Site are more enclosed and intimate.

1.2.4. In addition to the amenity resource within the Site, a number of recreational resources lie outside the Site boundary. Table 2 details A&R resources within 500m of the Site boundary ('the study area') where effects to the A&R may also occur as a result of the Proposed Development.

Table 2: A&R Resources within the study area

A&R Resource	Reference	Location	Total Area / Length
Forestry Commission Open Access Land	Braceborough Great Wood	To the west of Braceborough	45.3ha
Byway Open to All Traffic (BOAT)	E123 ('The Drift')	Pickworth to B1176	2.61km

A&R Resource	Reference	Location	Total Area / Length
Restricted Byway	Care/3/1	Aunby to Holywell	2.36km
Footpath	BrAW/7/2	Banthorpe Wood	150m
Footpath	E147	Belmesthorpe to Macmillan Way	720m
Footpath	E159	The Drift to Walk Farm	520m
Footpath	E166	Turnpole Wood	1.92km
Footpath	E168	The Drift to Tolethorpe Oaks	1.55km
Footpath	E170	Essendine to Manor Farm	485m
Footpath	E171 / Carl/1/1	Broadholme Farm to Carlby	1.08km
Footpath	Carl/942/1	Carlby to West Glen River	400m

1.2.5. As with amenity resources within the Site the recreational experience varies across and along these routes. The woodland of Braceborough Great Wood located adjacent to the north of the solar PV Site means that views from within the woodland large effectively screened. Vegetation lining The Drift (E123) in the east and BOAT at Aunby (Care/3/1) to the north also means that views of the Site are limited to gaps in field gateways and thinner sections of lining vegetation.

1.3. How have we assessed the effects relating to this topic?

1.3.1. There is no established methodological guidance for A&R assessment therefore the methodology would be informed by relevant legislation and policy and previous approaches to A&R undertaken by LDA Design. The assessment methodology is based on that used for the LVIA and follows

the same significance of impact threshold of moderate/major and above being significant. The A&R assessment in this PEIR has identified the sensitivity of the recreational amenity resources that may be affected by the Proposed Development, the potential magnitude of change to them and assess the likely resultant impact.

1.4. What are the potential environmental effects?

1.4.1. Potential effects to the A&R resource include:

- physical changes to resources (e.g. changes to PRoW through diversions or temporary or permanent closures);
- changes to the experience people have when using recreational resources due to perceptual or actual changes to views, noise, air quality or traffic movements in construction, operation and decommissioning; and
- changes to the experience people have when using recreational resources due to changes in the numbers of people using them and changes in user's behaviour.

1.4.2. Most effects are likely to arise to perceptual or actual changes during construction as a result of the construction activities such as operation of plant and movement of materials. Effects would also occur during operation but are likely to be visual (i.e. potential views of the Proposed Development) with little to no impact as a result of noise and air quality factors. Decommissioning effects are likely to be similar to those of construction.

1.4.3. Physical effects (e.g. the extinguishment or permanent diversion of PRoW) to the A&R resource are not anticipated. Temporary closures or diversions may be required for a very limited time period during construction to establish internal access tracks within the Site.

1.4.4. Effects as a result of increases in numbers of users is also unlikely to have any notable effect, either as a result of displacement to other A&R resources in the area or as an increase in numbers to the existing A&R resource.

1.4.5. During construction, the magnitude of change to the A&R resource within the Solar PV Site (Bridleways E169 and E182, the MacMillan Way, and footpath Uffi/5/1) is likely to be greatest given the proximity of these routes to construction. It should be noted however that this effect would be temporary, and construction would take place on a phased basis meaning it is unlikely that all routes would be affected at the same time. For routes within mitigation and enhancement area (Footpaths BRAW/9/1, BrAW/3/1 and BrAW/7/1, the impact would be substantially reduced given these areas would remain as arable fields.

1.4.6. For operation, effects would again be greatest for those routes within the Solar PV Site although over time existing and new planting would temper potential impacts. Effects to routes beyond the Site would also be reduced.

1.4.7. For routes beyond the Site for both construction and operation the effects are likely to be limited given intervening vegetation and landform.

1.4.8. No permanent effects to the A&R resource either within the Site or study area is considered to significant, with the only potential significant effect to the A&R resource identified at the PEIR stage for Bridleways E169 and E182 for the construction phase.

1.4.9. The Glint and Glare, Noise and Air Quality PEIR all record that subject to appropriate mitigation measures, residual impacts as a result of the construction, operation and decommissioning of the Proposed Development would not be significant.

1.5. How would we mitigate the environmental effects?

1.5.1. The A&R resource has been taken into consideration as part of the design process. These measures include:

- The retention of all PRoW within the Site maintaining their existing alignment.
- The offset of the Proposed Development, including solar arrays and supporting infrastructure, from A&R resources within and adjacent to the Site.
- The alignment of internal tracks to avoid where possible existing PRoW and siting them sensitively to existing vegetation.

1.5.2. Further mitigation measures include:

- New and infill planting along existing PRoW providing screening.
- An outline Construction Environmental Management Plan (oCEMP), outline Demolition Environmental Management Plan (oDEMP) and outline Landscape and Ecology Management Plan (oLEMP), incorporate measures to ensure disturbance to the A&R resource for the construction, operation and decommissioning of the Proposed Development are reduced as far as is practically possible.

1.6. What environmental effects would remain?

1.6.1. It is likely that visual effects to the recreational amenity of some PRoW within and nearby to the Site would remain. These are likely to be limited to particular sections of routes where vegetation and topography allow for views of the Proposed Development. As noted above, mitigation in the form of new planting and allowing existing vegetation to mature would lessen these effects.

1.6.2. As part of the Proposed Development, two new permissive paths are proposed, linking to existing routes and providing new opportunities for outdoor recreation. These are:

- Essendine Western Loop – A circa 1km link creating a loop running northwest of Essendine linking back to the existing bridleway E169.
- West Glen River – A circa 2.5km link from Stamford Road south-eastward along river corridor to join MacMillan Way.

1.6.3. A preliminary A&R assessment has been undertaken for the PEIR, the findings of which are set out in Table 3 below. The assessment methodology, including the assignment of sensitivity, magnitude and significance is based on that used for the LVIA and follows the same significance of impact threshold of moderate/major and above being significant.

Table 3: Amenity and Recreation Significance of Effects

Activity	Description of Potential Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
A&R Resource within the Site								
Construction And Decommiss-ioning-	Visibility, noise and vibration, construction traffic and air quality impacts of construction activities	Adverse short term	Bridleways E169 and E182 / BrAW/1/1	Community	High	Major-Moderate (significant)	CEMP	Major-Moderate (significant)
			MacMillan Way	Regional / District	Medium	Moderate (not significant)		Moderate (not significant)
			Footpath Uffi/5/1	Community	Medium	Moderate (not significant)		Moderate (not significant)

Activity	Description of Potential Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
			Footpaths BrAW/9/1, and BrAW/3/1	Community	Low	Slight (not significant)		Slight (not significant)
Operation	Visibility, glint and glare and noise impacts of operation	Adverse Permanent	Bridleways E169 and E182 / BrAW/1/1	Community	Medium	Moderate (not significant)	Green Infrastructure Design LEMP	Moderate (not significant)
			MacMillan Way	Regional / District	Low	Slight (not significant)		Slight/Low (not significant)
			Footpath Uffi/5/1	Community	Low	Slight (not significant)		Slight/Low (not significant)

Activity	Description of Potential Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
			Footpaths BrAW/9/1 (Carl/4/1), BrAW/3/1 and BrAW/7/1	Community	Negligible	Minimal (not significant)		Minimal (not significant)
A&R Resource within the Study Area								
Construction	Visibility, noise and vibration, construction traffic, air	Adverse short term	Braceborough Great Wood	Community	Negligible	Minimal (not significant)	CEMP	Minimal (not significant)
			MacMillan Way	Regional / District	Medium	Moderate (not significant)		Moderate (not significant)

Activity	Description of Potential Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
	quality impacts of construction activities		Byway E123 'the Drift'	Community	Medium	Moderate (not significant)		Moderate (not significant)
			Footpaths E170, E171, Carl/1/1 and Carl/942/1	Community	Low	Slight (not significant)		Slight (not significant)
			Restricted byway Care/3/1, Footpaths E147, E159 E166, E168 BrAW/7/2,	Community	Negligible	Minimal (not significant)		Minimal (not significant)

Activity	Description of Potential Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
Operation	Visibility, glint and glare and noise impacts of operation	Adverse Permanent	Braceborough Great Wood	Community	Negligible	Minimal (not significant)	Green Infrastructure Design LEMP	Minimal (not significant)
			MacMillan Way	Regional / District	Low	Moderate (not significant)		Moderate/Low (not significant)
			Byway E123 'the Drift'	Community	Low	Moderate (not significant)		Moderate/Low (not significant)
			Footpaths E170, E171, Carl/1/1 and Carl/942/1	Community	Low	Slight (not significant)		Slight/Minimal (not significant)
			Restricted byway Care/3/1,	Community	Negligible	Minimal (not significant)		Minimal (not significant)

Activity	Description of Potential Effect	Nature of Effect	Receptor	Sensitivity of Receptor	Magnitude of Change	Significance of Effect	Embedded and Proposed Mitigation Measures	Residual Effect Significance
			Footpaths E147, E159 E166, E168 BrAW/7/2,					

1.7. In-combination Effects

1.7.1. The Proposed Development has potential to affect the amenity experienced by users of recreational resources due to perceptual or actual changes to views, noise, or air quality. These effects within this assessment have been considered drawing on the following assessments:

- Landscape and Visual (Chapter 6 of the PEIR);
- Access and Highways (Chapter 9 of the PEIR);
- Noise and Vibration (Chapter 10 of the PEIR);
- Air Quality (Chapter 11 of the PEIR); and
- Glint and Glare (Chapter 14 of the PEIR).

1.7.2. The A&R Assessment is therefore inherently an in-combination assessment. All of these PEIR Chapters record that, subject to appropriate mitigation, no significant impacts to receptors within these disciplines would occur.

1.8. Conclusion and Next Steps

1.8.1. This A&R assessment will be updated to reflect the finalised Proposed Development and submitted as an appendix to the ES.

References

Lincolnshire County Council Electronic Working Copy Definitive Map [online] Available: http://lincs.locationcentre.co.uk/internet/internet.aspx?articleid=L4h7HM4AmHM~&preview=true [accessed 28.03.22]

Rutland County Council Definitive Map [online] Available: http://gis.rutland.gov.uk:8080/geoserver/www/prow/index.html?_ga=2.3744053.406719589.1648467974-1425159283.1612182505 [accessed 28.03.22]

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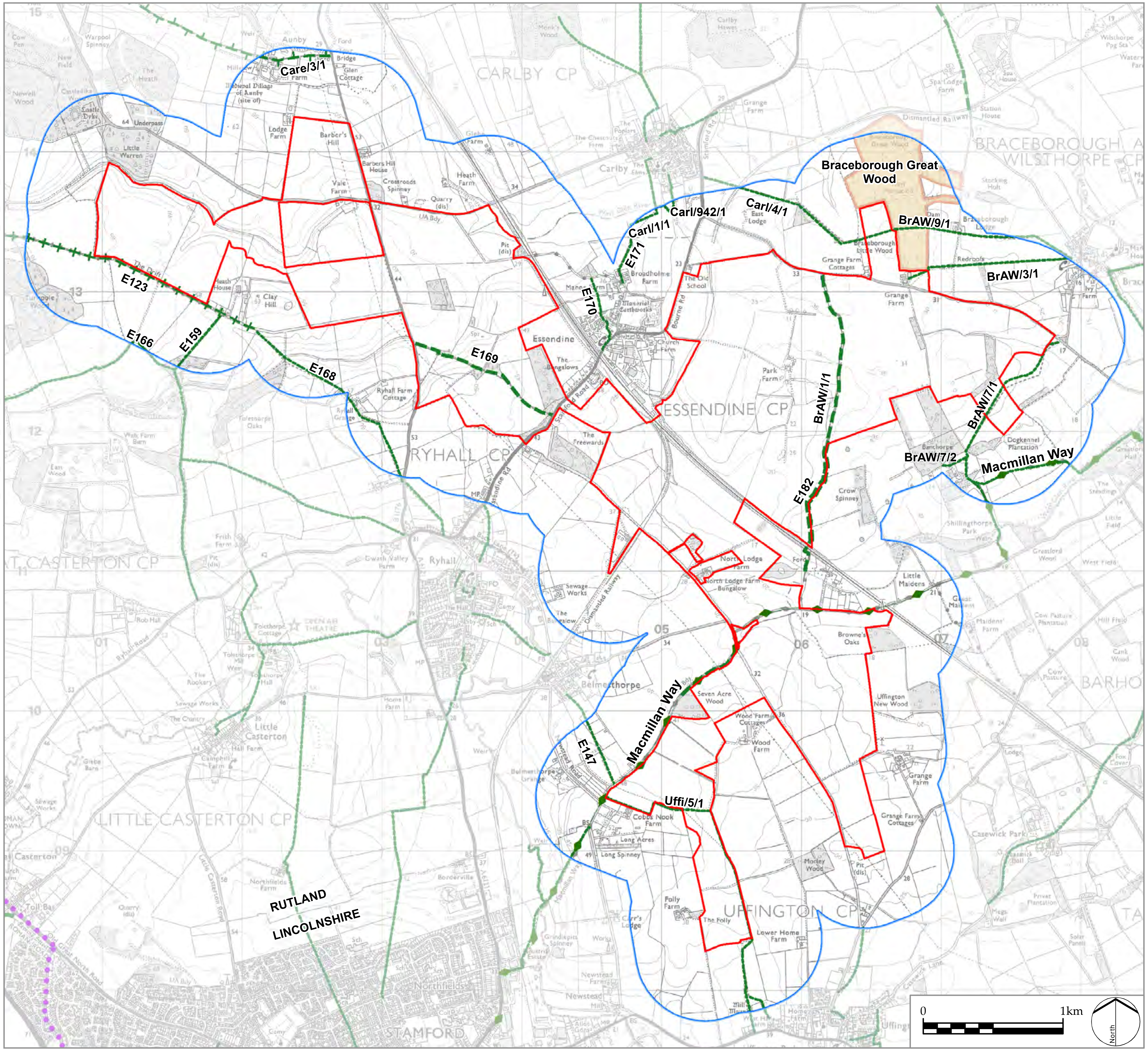

LEGEND

- Solar PV Site and Mitigation and Enhancement Areas
- Study Area (500m)
- National Cycle Network Route
- Open Access Land

Public Rights of Way

- Footpath
- Bridleway
- Restricted Byway
- Byway open to all traffic
- Long-distance footpath

LDĀ DESIGN

PROJECT TITLE

MALLARD PASS SOLAR FARM:
PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

DRAWING TITLE

Figure 1: Amenity and Recreation

ISSUED BY	Oxford	T: 01865 887050	
DATE	April 2022	DRAWN	SG
SCALE @A3	1:27,000	CHECKED	GE
STATUS	Final	APPROVED	RP

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No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

Sources: Ordnance Survey, Natural England, Sustrans