

2 PROJECT DESCRIPTION

Introduction

- 2.1 This chapter provides a description of the Proposed Development and forms the basis for the environmental assessment provided in this ES. Further information can be found in the appendices to this chapter provided in **Volume 3** of this ES.
- 2.2 The effects of the Proposed Development have been assessed throughout the ES based on what is likely. For example, construction information is presented as the 'likely case'. A number of measures which would reduce or avoid adverse environmental effects arising have been included as part of the design. Details of these measures are provided in this chapter and set out in each topic chapter. This chapter, together with the subsequent topic chapters, provide the data required to identify and assess the main and likely significant effects of the project in accordance with Regulation 17 and Schedule 4 of the EIA Regulations.
- 2.3 This chapter also provides a description of the site and an overview of the approach to the construction of the Proposed Development.

The Site and Surrounding Area

Site Location

- 2.4 The site lies within the administrative boundary of Rhondda Cynon Taf County Borough Council (the 'LPA') and is located 13km north-west of Cardiff City Centre.
- 2.5 The site is located on land between Church Village and Treforest Industrial Estate, to the east is the main railway line linking Cardiff and the Valleys. To the west lies the A473. Maesmawr Road runs through the site in a north-south direction and there is an existing solar farm (Maes Bach) located to the southeast of the site. For more detail on the site location please see **Figures 2.1 – 2.4** in **Volume 2** of this ES.
- 2.6 The site itself extends to approximately 40 hectares (98.8 acres) (including the cable route) and consists of several parcels of land. The parcels are irregular in shape and comprise a series of agricultural fields of varying sizes. They are currently primarily used for pasture grazing and are bound by a mixture of mature woodland, trees and hedgerows.

Geology and Topography

- 2.7 The site is within an identified Mineral Resource Area, with the geology underlying the majority of the site containing secondary shallow coal resources, isolated areas of primary shallow coal resources and superficial glaciofluvial sand and gravel deposits. Whilst these deposits are present, they are recorded to extend significantly beyond the site boundary.
- 2.8 The topography of the site, based upon Ordnance Survey 1:10,000 mapping contours, generally slopes from the east to the west, ranging from 130m Above Ordnance Datum (AOD) on the eastern boundary to 100m AOD towards the western half of the site, where it plateaus at the unnamed stream running through the site.

Site History

- 2.9 A review of historical maps indicates that, since 1875 the land has remained undeveloped, but an old tramway once ran westerly along the northwestern boundary linking the former Llantrisant and Taff Vale Junction Railway and Maes Mawr Colliery to the northeast of the site.
- 2.10 The site is currently used for agricultural purposes, comprising of several agricultural fields, primarily used for pasture grazing, bound by a mixture of mature woodland, trees, hedgerows and fencing.

Planning Context

- 2.11 As the site lies within the administrative boundary of Rhondda Cynon Taf County Borough Council (RCTCBC) the Development Plan for the purposes of Section 38(6) of the Planning and Compulsory Purchase Act 2004 comprises of:
- Future Wales: The National Plan 2040 published February 2021; and
 - Rhonda Cynon Taf Local Development Plan 2006 – 2021 (LDP) adopted March 2011.
- 2.12 The LDP Proposals and Constraints Map indicate the site is not allocated for any specific use. However, it is affected either in whole or in part by the following designations:
- Special Landscape Area (Policy NSA 25);
 - Sandstone Resources (Policy AW 14.2); and
 - Primary and Secondary Coal Resources (Policy AW 14.4).
- 2.13 The site is also close to the following designation:
- SINC - Site of Important Nature Conservation (Policy AW 8).
- 2.14 RCTCBC are currently preparing a Revised LDP (RLDP) which will replace the current adopted LDP. The RLDP (2020-2030) is expected to be adopted in 2025. As with the current LDP, the RLDP will set out a vision for the County Borough and allocate land for development such as housing, employment, retail and tourism. It will also contain policies to protect the environment and increase public green space, and to seek to reduce carbon emissions and encourage appropriate renewable energy production.
- 2.15 The ES provides an overview of relevant legislative and planning policy context within each topic chapter. The assessments have regard to national and local policy documents, as relevant to that particular topic.
- 2.16 The ES does not include a separate chapter on planning policy context. The draft guidance on EIA from the Department for Communities and Local Government 'EIA: A Guide to Good Practice and Procedures' (DCLG 2006) (paragraph 155) states that there is no requirement to provide chapters on planning and sustainability in ESs.
- 2.17 A separate Planning Statement will be submitted with the DNS application.

Project Description

- 2.18 The Proposed Development comprises the erection of a solar farm and ancillary development capable of generating approximately 30MW of electricity for a period of up to 40 years. The Proposed Development is temporary and fully reversible at the end of its lifespan.

Summary of Key Parameters

- 2.19 The table below provides a summary of the key parameters of the Proposed Development which have formed the basis for the assessment of effects in this ES.

Table 2.1: Key Parameters for Environmental Assessment

Element of the Development	Key Parameter for EIA
Site area	40 hectares
Maximum height	Solar panels and tables up to 3.2 m above ground
Area of built development comprising:	
Area covered by solar panels	Approximately 9 hectares

Element of the Development	Key Parameter for EIA
Inverters	These are anticipated to be 2.4m wide, 7m long and 3m high and current design has 16 inverters
District Network Operator (DNO) Substation	This is anticipated to be 3.8m wide, 5.75m long and 3.74m high.
Solar Farm Substation	This is anticipated to be 3.8m wide, 5.75m long and 3.74m high
CCTV	Numerous CCTV cameras mounted on poles 3m high
Internal Access Roads	Internal road network to allow access on site approx. 3.5m wide.
Security Fencing	Fencing of approx. 2.4m height surrounding the site.
Area of landscape planting/semi-natural greenspace	Native hedgerow and tree planting provided to improve screening of the Proposed Development were possible.

Key Components

2.20 The project includes the following key components:

- Solar panels and frames



- DNO and solar farm inverters



- Cabling

- Security fencing



- CCTV System



2.21 An indicative proposed site layout plan is provided in **Figure 2.1**. Further details of the key components are provided below.

Solar Panels, Frames, Inverters and Transformers

- 2.22 The panels will be arranged in series of rows up to a height of approximately 3.2m at the highest and 0.8m at the lowest points and tilted southwards at an angle of 10-25 degrees. The panels themselves will be bifacial and will be approximately 2.4m by 1.3m in size. The underside of a bifacial panel has a transparent material that allows the panel to also collect light which reflects from the ground
- 2.23 The support frame uprights are pile driven into the ground. The distance between the rows of panels will vary depending on the gradient of the topography but will typically be spaced between 2m and 8m apart.
- 2.24 Several inverters will be required across the site, requiring some excavation and gravel base for their foundations.

Cabling

- 2.25 The majority of the cabling associated with the development will be laid underground via surface dug trenches of approximately 1m deep and 50cm wide and backfilled. These will utilise existing access tracks and road options wherever possible, particularly where sensitive habitats or archaeology is potentially present.

Substations

- 2.26 A DNO substation, solar farm substation, monitoring house and storage building will be positioned towards the northern portion of the site near the road as shown on the Solar Layout Plan at **Figure 2.1**.

Access and Parking

- 2.27 Several existing access points will be used for access for the construction, maintenance and decommissioning of the Proposed Development. Existing farm tracks will be used for internal access within the site wherever possible. New access tracks, where required, will be formed, normally, using a layer of permeable crushed stone.
- 2.28 A detailed Construction Traffic Management Plan (CTMP) describing the delivery routes, construction routes, construction compounds and any associated parking or management of construction traffic will be submitted with the planning application.

Transport Management

- 2.29 The EIA Scoping Report (**Appendix 4.1**) and Welsh Minister's Scoping Direction (**Appendix 4.2**) confirmed that transport, both construction and operational, should be scoped out of the EIA as it would be unlikely to have significant environmental effects and can be adequately addressed through the submission of separate standalone reports, such as the CTMP mentioned above.
- 2.30 The Proposed Development will cause limited impacts on the local road network during the construction phase. As stated above, the CTMP will provide details of traffic routing and any accommodation works (with provision for contractor parking). Once operational, the vehicle movements associated with the Proposed Development will be minimal, approximately 10-20 visits a year by van or four-wheel drive vehicle.
- 2.31 A Construction Traffic Management Plan (CTMP) has been produced and forms part of the submitted application. The CTMP covers details such as the construction period, which is expected to be approximately 6-8 months, with construction hours expected to be between 08:00 and 18:30 hours Monday to Friday and 08:00 to 13:00 hours on Saturday. Deliveries will vary in amount per day during the construction period with an average of 6-8 deliveries (6-8 inbound plus 6-8 outbound movements) per day over the period.
- 2.32 It is envisaged that the main construction route will be from the north via the A473 and Maesmawr Road. This is the same route that the adjacent Maes Bach Solar Farm used for its construction traffic and thus the route has already been confirmed as being suitable for use as a construction route for a solar farm. The details of the main construction routes are set out in more detail in the outline CTMP. However, it is expected that the final details will be agreed following determination of the application via a planning condition requiring a final CTMP to be submitted prior to construction works commencing.

Appearance and Design

- 2.33 The Proposed Development is low lying in nature, typically shorter in height than the many existing mature trees and hedgerows around the site.

- 2.34 The appearance will be a more modern and obvious human influence on the landscape compared to that currently formed by industrialised agriculture. Whilst construction would cover a wide area, the works would be temporary and the Proposed Development itself will be considerably less solid and durable in appearance than traditional buildings. This would mitigate against the likely change in the character of the landscape.
- 2.35 The Proposed Development would be removed at the end of its 40 years lifetime enabling the site to return to its former agricultural character and appearance.

Landscape and Open Space Strategy

- 2.36 As mentioned above, the site lies within a local Special Landscape Area (SLA) as designated within the LDP. However, it should be noted that the SLA also covers a much wider area of the County Borough.
- 2.37 Landscape and biodiversity enhancements are proposed as part of the Proposed Development, which include enhancements to existing onsite hedgerows, as well as proposals for new hedgerow and tree planting as shown in **Figure 5.65**. The mitigation includes ecology enhancement and hedgerow infill planting, as necessary, in order to gap-up areas where existing hedge planting is sparse to help redefine field boundaries where they have become fragmented.
- 2.38 Landscape and biodiversity are considered in more detail in Chapters 5 and 6 of this ES respectively.

Drainage and Flood Risk

- 2.39 There are a number of unnamed ordinary watercourses acting as field drainage as well as a number of ponds on site. A small watercourse is located within the site boundary, flowing in a north-westerly direction through the site before existing the site along the northern boundary. Another small watercourse converges with this watercourse in the centre of the site.
- 2.40 The River Taff, a designated main river, runs through Treforest Industrial Estate and is located adjacent to the northern spur of the development site. Another main river, called Nant Dowlais, is located approximately 360m to the west of the site.
- 2.41 The Proposed Development would add a relatively small amount of additional impermeable surfacing relative to the site area.
- 2.42 With regard to drainage, the Scoping Direction (**Appendix 4.2**) stated:
- “However, given that soil compaction (which has not been addressed) can lead to additional water-run off, it is not possible at this stage to state that there will be no hydrological impacts created by the proposed development (during construction and decommissioning). PEDW does not agree that water (including drainage) can be scoped out at this early stage. Should subsequent assessment show that significant effects in this respect are not likely it may be possible to scope this topic out at this stage.”*
- 2.43 Whilst the Scoping Direction was being considered by Welsh Ministers and subsequently, a Drainage Strategy and Flood Consequence Assessment (FCA) has been prepared in accordance with Planning Policy Wales Edition 11 (February 2021), Technical Advice Note 15: Development and Flood Risk (July 2004) incorporating latest climate change data to ensure flood risk and hydrological impacts are managed appropriately. This is a separate document submitted with the planning application.
- 2.44 The Drainage Strategy and FCA confirm that designed in measures should, where practicable, mitigate the risk of soil compaction and the creation of rivulet systems and, therefore, that significant effects are not likely. Accordingly, drainage and flood risk is scoped out if this ES.

Lighting

- 2.45 There will be no use of artificial lighting during operation that could adversely affect field boundary habitats and/or adjoining woodland.
- 2.46 Some temporary task lighting may be required during construction and decommissioning depending on the time of year and sunlight levels.
- 2.47 The Proposed Development will cause a minimal amount of potential for redirection of light in terms of glint and glare via the surface of the panels. Any effects in terms of glint and glare would be localised and unlikely to be of a magnitude that would be significant in environmental terms. As such, consideration of these effects have been scoped out of the ES as a specific chapter.
- 2.48 This approach was confirmed as acceptable in the Scoping Direction (**Appendix 4.2**) which stated that PEDW is supportive of the inclusion of a Glint and Glare Assessment which will be compiled as part of the landscape chapter.

Sustainability

- 2.49 This section outlines the effects of the Proposed Development on sustainability factors such energy demand, waste, use of natural resources and residues and emissions.

Energy Demand

- 2.50 The Proposed Development will supply electrical energy to the distribution network rather than generate demand.
- 2.51 The Welsh Government (WG) has formally committed Wales to legally binding targets to deliver the goal of net-zero emissions, with the Climate Change Committee recommending the following targets that the Proposed Development will contribute to:
- Carbon Budget 2 (2021-25): 37% average reduction with credit (“offset”) limit of 0%
 - Carbon Budget 3 (2026-30): 58% average reduction
 - 2030 target: 63% reduction
 - 2040 target: 89% reduction
 - 2050 target: 100% reduction (net zero).
- 2.52 The Proposed Development will also contribute to cost-effective local energy generation and energy security with limited governmental subsidy and will, therefore, provide socio-economic and community benefits. Notably, the design of the Proposed Development will allow an efficient dual use of the land for renewable energy generation and agriculture.

Waste

- 2.53 Waste produced during construction will be kept to a minimum and will be managed and sorted accordingly. Only registered waste management companies will be utilised to dispose of construction waste (packaging, wood, metal) or waste from the construction team (general domestic or canteen/kitchen waste). The specialist engineering, procurement and construction (EPC) contractor hired to construct the Proposed Development will ensure that all waste is disposed of responsibly using only licensed waste management companies. This will be subject to appropriate due diligence checks prior to contracting.
- 2.54 Following decommissioning there will be significant potential for recycling many of the materials used in the Proposed Development. There may be some equipment at the end of the solar farm’s lifespan that would result in some solid waste. However, given the scale and nature of the Proposed Development significant effects are not likely in terms of waste generation. At decommissioning

stage, the solar panels will be unscrewed from the mounting frames and packaged either to send to a solar recycling depot, or if they are still operational, they may be sold on second-hand.

Use of Natural Resources

- 2.55 A desktop Agricultural Land Classification (ALC) Survey of the site was completed by RPS in November 2020 and updated in March 2022. The ALC assessment is a separate technical document forming part of the planning application.
- 2.56 The ALC assessment confirms that the site almost entirely comprises Grade 3b–Grade 5 agricultural land, with only a very small section of the cable route falling within Grade 3a, Best and Most Versatile (BMV) land. As such, agricultural land has been scoped out of the ES, as confirmed by PEDW in the Scoping Direction.
- 2.57 The Proposed Development is temporary in nature and fully reversable. Appropriate construction techniques will be implemented to reduce above and below ground works and to minimise any compaction of soil, mitigating any potential impact on the soil structure and ability to infiltrate water. Most of the soil will not be physically impacted by the Proposed Development.
- 2.58 Relatively small, localised areas of earthworks will be required to create level platforms for the substations, transformers and other containerised infrastructure, and to create the trenches for the HV and LV cables. Topsoil will be removed from the relevant areas and set aside separately from any subsoil. When backfilling the cable trenches, the subsoil will be replaced first, followed by the topsoil.
- 2.59 Following decommissioning, the above would ensure that the future quality of the agricultural land is maintained with no likely significant lasting adverse effects on the quality of the soil.

Residues and Emissions

- 2.60 Details of any potential effects in relation to residues and emissions having regard to water are set out in the separate Drainage Strategy and FCA.
- 2.61 Regarding emissions, Chapter 8 of this ES provides an assessment of the effects of the Proposed Development having regard to climate change, which concludes that the Proposed Development is likely to have a significant beneficial effect.
- 2.62 As explained in Chapter 8, this will be achieved through the Proposed Development's operation displacing carbon intensive forms of electricity generation outweighing the effect of emissions associated with the Proposed Development's construction. This results in the Proposed Development contributing positively to WG targets for the reduction of greenhouse gas emissions.

Vulnerability to Accidents and Disasters

- 2.63 The EIA Regulations state that an EIA must identify, describe and assess, in an appropriate manner, the direct and indirect significant effects arising from the vulnerability of the Proposed Development to risks of major accidents or disasters. Vulnerability of the Proposed Development to major accidents introduced by the location should be considered as well as risks that are an inherent characteristic of the Proposed Development.
- 2.64 The objective of such an assessment is to establish whether the Proposed Development increases risks to existing receptors or increases the sensitivity of those receptors to the consequences of the hazard. For example, by introducing new links/pathways between a possible hazard and a receptor.
- 2.65 Solar photovoltaic technology is a relatively benign and safe form of electricity generation with very low risk of accident or disaster and will not have a significant environmental effect in this regard.
- 2.66 The Proposed Development will be enclosed by appropriately designed security fencing and monitored by CCTV, which will lower the risk of unauthorised access and accidents.

2.67 Accordingly, vulnerability to accidents and disasters is scoped out of this ES, as confirmed by PEDW in the Scoping Direction.

Construction

2.68 The details of construction methods, timing and phasing are necessarily broad at this stage of the Proposed Development. The limits of the assessment, however, have been set sufficiently wide to allow a robust assessment to be undertaken of a reasonable worst-case scenario.

2.69 A CTMP accompanies the planning application. The Proposed Development is anticipated to utilise established standard construction methodologies (including piling) for solar farms.

Indicative Phasing of Construction Works

2.70 The timing of construction of the Proposed Development would be dependent on securing planning permission and discharging any pre-commencement planning conditions. The indicative construction programme sets out a programme of approximately 6-8 months duration. It is assumed that the construction is likely to be phased as shown in **Table 2.2** below.

Table 2.2: Indicative Phasing of Construction

Phase	Indicative Dates	Activities
	Q2 2024	Site preparation, fencing, internal access and compounds and drainage works
	Q2 2024 – Q3 2024	Installing frames and panels
	Q3 2024	Install associate infrastructure and CCTV
	Q3 2024	Connection
	Q3 2024	Landscaping

2.71 The broad sequence of construction activities is likely to be:

- Site preparation which will involve mowing the site if required and marking out the site;
- Erecting the security fence, creating internal access roads, compound and crane areas;
- Construction of any drainage works;
- Piling the frames into the ground and installing mounting frames;
- Affixing the panels to the mounting frames;
- Trenching for the cable runs to a depth of approximately 1m and laying cables on site;
- Pouring the concrete base for the on-site substations to be situated on;
- Installation of the on-site substations;
- Erecting pole mounted CCTV cameras;
- Connecting all the cables up and backfilling the cable trenches;
- Approved landscaping works.

2.72 It is the intention of the Applicant that the site would be registered under the Considerate Constructors Scheme (CCS) or a similar, locally recognised certification scheme.

Construction Working Hours

2.73 Working hours would be 08:00 to 19:00 hours Monday to Friday, 08:00 to 13:00 hours on Saturday and at no time on Sundays or on public or bank holidays. These hours would be subject to agreement with the LPA. In the event that works are required outside of these hours in exceptional

circumstances, this would be agreed with the LPA prior to commencement of the activity, as necessary.

Environmental Management during Construction

- 2.74 Construction would be undertaken in accordance with good practice environmental management procedures that will be set out in more detailed plans and method statements contained within a Construction Environmental Management Plan (CEMP) to be developed by the contractor. The CEMP will set out the key management measures that the contractor will be required to adopt and implement. These measures will be developed based upon those effects identified during the EIA process and set out in the topic chapters of this ES. They will include strategies and control measures for managing the potential environmental effects of construction and limiting disturbance from construction activities as far as reasonably practicable.
- 2.75 The CEMP would be prepared during the pre-construction period once a contractor has been appointed. It is anticipated that a final CEMP would be submitted to the LPA for approval.

Construction Working Areas

- 2.76 A number of temporary facilities would be required during construction, including:
- Temporary offices and welfare facilities;
 - Storage area for materials, fuels, plant and equipment;
 - Waste management areas; and
 - Car parking facilities.
- 2.77 As far as possible, storage areas would be located away from existing properties. The storage areas would be bunded to mitigate any spillages of potential contaminants and would avoid being located in areas of vegetation or habitat to be retained.
- 2.78 All construction works will be carried out within the defined Proposed Development site boundary (as shown in **Figure 2.2**) and no additional land will be required.

Construction Access

- 2.79 Several existing access points will be used for access for the construction, maintenance and decommissioning of the Proposed Development. If necessary, some minor modifications to enable access to the site by all vehicles anticipated to visit it will be undertaken. Existing farm tracks will be used for internal access within the site wherever possible. New access tracks, where required, will be formed, normally, using a layer of permeable crushed stone.
- 2.80 Every effort would be taken to minimise the effects of traffic associated with the construction phase of the Proposed Development. Materials and resources would be sourced locally where possible and deliveries and construction traffic would endeavour to avoid travel during commuter peaks.
- 2.81 A CTMP detailing the delivery routes, construction routes, construction compounds and any associated parking or management of construction traffic has been prepared separately for submission with the planning application.

Construction Vehicles

- 2.82 The type of construction vehicles would be selected by the contractor prior to and during the construction phase. However, the following vehicles would typically be used during construction:
- Excavators;
 - Cranes (for assembly and erection);

- Low loaders (for transport of construction equipment and plant);
- Concrete lorries;
- Tipper lorries; and
- Construction staff vehicles.

2.83 Staff levels are likely to vary through construction depending on the operations being undertaken. It is anticipated that during the peak period of construction 40 staff will be required on-site per day, during the other phases of work it is anticipated that approximately 20 staff will be required. Although it is not expected that the Proposed Development would generate any abnormal loads, if any were required, the routing and nature of such loads would be agreed with the highway authority prior to that element of the work commencing.

2.84 Further details of predicted traffic flows associated with the construction of the Proposed Development are provided within the CTMP.

Drainage

2.85 The construction phase would incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects on water quality or flood risk are reduced as far as practicable.

2.86 Such measures would be implemented through the CEMP, which will require the following:

- Installation of wheel washing facilities at the entrance to the construction compounds;
- Use of sediment fences along existing watercourses when working nearby to prevent sediment being washed into watercourses;
- Covers for lorries transporting materials to/from site to prevent releases of dust/sediment to watercourses/drains;
- Bulk storage areas to be secured and provided with secondary containment (in accordance with the Oil Storage Regulations and best practice);
- Storage of oils and chemicals away from existing watercourses, including drainage ditches or ponds;
- Concrete to be stored and handled appropriately to prevent release to drains;
- Preparation of a flood response plan in the event of flooding during construction works. This would include a procedure for securing or relocating materials stored in bulk;
- Treatment of any runoff water that gathers in the trenches would be pumped via settling tanks or ponds to remove any sediment;
- Obtain consent for any works (e.g. discharge of surface water) that may affect an existing watercourse. The conditions of the consent will be specified to ensure that construction does not result in significant alteration to the hydrological regime or an increase in fluvial risk;
- Use of a documented spill procedure and use of spill kits kept in the vicinity of chemical/oil storage;
- Storage of stockpiled materials on an impermeable surface to prevent leaching of contaminants and use of covers when not in use to prevent materials being dispersed and to protect from rain; and
- Stockpiles to be kept to minimum possible size with gaps to allow surface water runoff to pass through.

Construction Waste

- 2.87 The specialist EPC contractor hired to construct the Proposed Development will ensure that any waste that is required to be taken off site will be disposed of responsibly to registered waste companies during and immediately following construction.
- 2.88 The potential waste generated during the construction process will primarily be related to packaging, and will include:
- Any non-hazardous waste produced is likely to be primarily packaging and cable off cuts. This waste will be stored in a covered skip and recycled or appropriately disposed of.
 - Food waste from workers - personal rubbish will be collected along with non-recyclable packaging materials, for disposal at an appropriate landfill.
 - Portable toilets will be hired for the duration of the construction period, therefore there will be no human waste issues.
 - Excavated soil - the site will require some ground works for access tracks, cable trenching and equipment platforms. Excavated soil will be used for backfilling activities. Any excess subsoil will be removed from the sites and disposed of at an appropriate landfill or sold to a landowner needing additional soil.

Natural Resources

- 2.89 The CEMP will consider the main types and quantities of materials required for the Proposed Development in order to assess the potential for sourcing materials in an environmentally responsible way.
- 2.90 The CCS includes measures relating to the use of resources, including categories in relation to minimising the use of water. Any timbers used would be required to be Forest Stewardship Council (FSC) certified.
- 2.91 The construction process would take into account the principles of good practice in soil handling and restoration set out in the following documents, wherever possible, to reduce the possibility of damage to soil materials during the construction process:
- Ministry of Agriculture, Fisheries and Food (MAFF) (2000) Soil Handling Guide; and
 - Department for Food and Rural Affairs (Defra) (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (including the Toolbox Talks).
- 2.92 The EIA Regulations also refer to the use of land and biodiversity resources. Further details are provided in Chapter 6 (Biodiversity) of this ES and the Agricultural Land Classification Technical Report and Planning Statement which accompany the planning application.

Residues and Emissions

- 2.93 Details of greenhouse gas emissions are set out within Chapter 8 (Climate Change) of this ES.
- 2.94 The CEMP will consider ways of minimising construction activity residues and emissions, including spills, noise, vehicle emissions etc. during the construction phase.

Utilities

- 2.95 On site electrical power from generators will be utilised where necessary during the construction phase. It is not anticipated that new utility connections would be required for the construction compound.

Vulnerability to Accidents and Disasters during Construction

- 2.96 Foreseeable construction hazards to the environment could include fire and flooding, though risk is considered limited with good construction practices. Flood risk is assessed in the Flood Consequences Assessment which accompanies this ES and recommendations are made for action plans in the event of flooding during construction. Fire risk will be addressed by the contractor when formulating the CEMP.

Operation and Maintenance

- 2.97 Once operational, the Proposed Development will be operated remotely and only require between 10-20 visits per year for maintenance, monitoring and cleaning of the panels and site. Normally, the Applicant’s operational sites are managed through their Operations and Maintenance Team based in Bath. The Applicant also has an Asset Management Team to ensure the long-term management of its assets, including any site planting.
- 2.98 Assessment of accidents and emergencies for the operational phase is limited at this stage with security fencing and CCTV minimising health and safety risks as far as possible.
- 2.99 Emissions from activities from the Proposed Development shall be free from odour, noise and vibration at levels likely to cause pollution outside the site.

Measures Adopted as Part of the Proposed Development

- 2.100 In order to avoid or reduce the environmental effects, a number of mitigation measures have been designed into the Proposed Development. Details of these can be found within each topic chapter of the ES and are summarised in **Tables 2.3** and **2.4** below.

Table 2.3: Measures to be Adopted as part of the Proposed Development during Construction

Topic	Proposed measures during construction
General/Design	Construction work will be kept away from tree root protection zones.
Historic Environment	Where archaeological remains are found, a programme of archaeological investigation would be agreed with the archaeological advisors to the planning authority. This would enable a better understanding of the presence, nature and date of any archaeological remains within those parts of the site where construction activities are planned and allow for the development of an appropriate strategy to avoid, reduce or offset any impacts that could occur as a result of construction. This programme should be a measure to offset the effect on historic assets and archaeological remains if any are found to be present and to be at risk from construction activities.
Landscape and Visual	Trees retained and protected in line with the measures set out in the Tree Survey and Arboricultural Impact Assessment (see Appendix 5.4). Temporary construction compounds sited to minimise landscape impacts and visibility from sensitive receptors.
Ecology and Nature Conservation	Retention of the network of field boundary hedgerows, banks and ditches avoiding the potential for loss and fragmentation by retaining long established features with indications of historic management coppicing and laying. None of the gaps in the hedgerows will be widened and all the overgrown spreading hedgerow canopies will be retained and protected. All the mature and semi-mature trees within the site are to be retained within the design. Stand offs have been incorporated between the field boundaries and the Proposed Development. Tree protection measures will also be implemented during construction. The alignment of the perimeter fencing will be set back from the canopies of all the retained trees to avoid the need for surgery to tree canopies or limbs, helping to preserve their intrinsic value and safeguarding features of biodiversity value.

Topic	Proposed measures during construction
	<p>Where the temporary tracks fall within the root protection areas of trees and hedgerows the construction will avoid the need for any excavation with all the tracks being built up above the existing ground level.</p> <p>Implementation of stand offs and buffers around any ponds or hydrological features.</p> <p>All areas of woodland will be protected within the site layout and design. The context of woodlands will be retained with 10m stand offs between the edges of the blocks of broadleaved woodland and the alignment of the perimeter fence. A wider stand-off of 15m will be created between the perimeter fence and all the SINC designated woodland adjoining the entire eastern boundary of the eastern section and the north-western boundary of the western section.</p>
<p>Traffic and Transport</p>	<p>A Construction Traffic Management Plan (CTMP) has been prepared to minimise deliveries from sensitive areas.</p> <p>A weekly booking system will be implemented for the delivery of plant and materials. The Applicant will strive to procure local contractors, thereby minimising transport costs and impact on the local environment.</p> <p>All delivery vehicles will be required to switch off their engines as they are waiting at the site, thereby preventing unnecessarily idling vehicles.</p> <p>Use of the agreed vehicle routes shall be included as a contractual requirement and will be communicated to all individuals associated with the works.</p>
<p>Noise and Vibration</p>	<p>Best practice guidance will be implemented throughout the construction stage. Standard best practice measures would ensure that construction noise would be controlled and managed to avoid significant adverse effects.</p>
<p>Climate Change</p>	<p>Good working practices during construction will be defined through a Code of Construction Practice (CoCP) which we expect will be required by a planning condition.</p> <p>Where practicable, prefabricated elements would be delivered to the site ready for assembly, which will reduce on-site construction waste and reduce vehicle movements as part of the construction process.</p> <p>Construction materials will be sourced locally where practicable, to minimise the impact of transportation.</p> <p>Vehicles used in road deliveries of materials, equipment and waste arisings on- and off-site will be loaded to full capacity to minimise the number of journeys associated with the transport of these items.</p> <p>All machinery and plant will be procured to adhere with emissions standards prevailing at the time and should be maintained in good repair to remain fuel efficient. When not in use, vehicles and plant machinery involved in site operations would be switched off to further reduce fuel consumption.</p> <p>Where possible, local waste management facilities will be used to dispose of all waste arisings, to reduce distant travelled and associated emissions.</p> <p>The volume of waste generated will be minimised, and resource efficiency maximised, by applying the principles of the waste hierarchy throughout the construction period.</p> <p>Equipment and machinery requiring electricity will only be switched on when required for use. Procedures will be implemented to ensure that staff adhere to good energy management practices.</p>
<p>Land Contamination and Ground Conditions</p>	<p>The construction process would take into account the principles of good practice in soil handling and restoration wherever possible, to reduce the possibility of damage to soil materials during the construction process.</p> <p>The layout has been amended to avoid areas of deep peat.</p>
<p>Hydrology and Flood Risk</p>	<p>Based on the flood risks identified and the nature of the Proposed Development, no specific mitigation measures are required to alleviate the risk of flooding.</p>
<p>Agricultural Land</p>	<p>Appropriate construction techniques will be implemented to reduce above and below ground works and to minimise any compaction of soil mitigating any potential impact on the soil structure and ability to infiltrate water.</p>

Table 2.4: Measures to be Adopted as part of the Proposed Development during Operation

Topic	Proposed measures during operation
General/Design	The design of the proposed development is low lying in nature, typically shorter in height than the many existing mature trees and hedgerows around the site. Once in operation, this will mitigate against any likely change in the character of the landscape.
Historic Environment	No archaeological effects are anticipated at the operational stage and therefore no further mitigation measures are required in terms of archaeology. No mitigation measures are required with regard to built heritage receptors within the study area, taking into consideration the distance at which they are located from the site and minimal visual effects which will likely arise as a result of the Proposed Development. The implementation of proposed landscaping would, however, assist to soften the limited views of the Proposed Development which may exist.
Landscape and Visual	Native hedgerow and tree planting will be provided to improve screening of the Proposed Development where possible. Allowing existing hedgerows to grow and increase in height. Planting native species trees and areas of scrub adjacent to field boundary hedgerows and woodland edges. Gap up/reinforce/replant existing site boundary hedgerows with additional native species planting and appropriate ongoing management where necessary. Existing grassland to be retained and managed beneath the solar panels. Management of existing semi-improved acid grassland, areas of marshy grassland, purple moor grass (<i>Molinia caerulea</i>) habitats and existing areas of tussocky grassland at the edges of all the fields.
Ecology and Nature Conservation	Ten bat boxes will be installed on mature trees in hedgerows within the site. Two barn owl nest boxes will be installed on large trees, one on the western boundary and one on the southern boundary. Twelve tree mounted bird boxes will also be installed. Wild bird seed crops will be established and maintained on four of the field boundaries that are currently set aside. These would be subject to annual activities designed to provide sources of food for wild birds, especially overwinter including linnet, meadow pipit and skylark. Existing vegetation in the existing set aside (predominantly broadleaved dock) will be stripped and linear areas shallowly ploughed prior to the sowing of the seed crop in spring. Sown plants will remain uncropped for 12 months and will provide food over winter. Every subsequent spring over the lifetime of the Proposed Development the previous years' crop will be shallowly ploughed and the same area resown with the wild bird seed crop The objectives and detailed proposals/actions and monitoring for each habitat area/habitat type will be set out in the detailed Habitat Mitigation and Management Plan which will be a working document running for the lifetime of the Proposed Development. This document will address potentially conflicting management objectives including maintaining the value of all the existing small areas of higher value habitats and enhancing lower value habitats through long term management.
Traffic and Transport	Given that the Proposed Development is being installed within fields using existing accesses, maintenance and inspection vehicle movements will replace the agricultural vehicle movements that the field generates. Thus, no specific mitigation is required given no intensification of use at the accesses during operation.
Noise and Vibration	Emissions from activities from the Proposed Development shall be free from noise and vibration at levels likely to cause pollution outside the site. Therefore, no specific mitigation is required in terms of noise and vibration.
Air Quality and Climate	As a renewable energy development, climate change mitigation is an inherent aim of the Proposed Development. To ensure maximum energy yield, and therefore maximum GHG emissions displacement, the solar array would be south facing, and rows of panels would be distanced between 2 and 8m apart from one another to avoid inter-panel shading. Bifacial panels are also proposed to be used to increase capture of sunlight.
Land Contamination and Ground Conditions	The Proposed Development will not have an adverse effect on ground conditions during operation. Best practice measures would be implemented during decommissioning to prevent any effects on ground conditions.

Topic	Proposed measures during operation
	The layout has been amended to avoid areas of deep peat.
Hydrology and Flood Risk	Based on the flood risk identified and the nature of the Proposed Development, no specific mitigation measures are required to alleviate the risk of flooding.
Agricultural Land	The Proposed Development is temporary in nature and fully reversible. The maintenance of grassland under the panels will, over time, increase organic matter within the soil, potentially improving its agricultural quality.

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