Prosiect Maen Hir

Solar a Storio Ynni

Preliminary Environmental Information Report

Volume III

Appendix 2-1: Scoping Opinion Request

Prosiect Maen Hir - September 2024

EN010156

lightsource bp

bp

Prosiect Maen Hir

Solar a Storio Ynni

Maen Hir Project

Solar and Energy Storage

Environmental Impact Assessment
Scoping Request

November 2023

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Glossary

Term	Description
Access Tracks	The access tracks within the Site constructed to provide access around the Project.
Ancillary Buildings	The office, warehouse and plant buildings which may be located within the Solar PV Site.
Ancillary Infrastructure	Works to include means of enclosure and boundary treatment, security and monitoring infrastructure, landscaping and biodiversity measures including planting, drainage and irrigation works, signage, earthworks, and access including permissive paths.
Applicant	Lightsource bp
BESS	Battery Energy Storage System - a system that allows renewable energy generated by the Project to be stored and then released to the grid when the power is needed most.
Central Container Inverters	Inverters, Switchgear and Transformers are located throughout the Solar PV Site and would be housed together in containers.
Central Transformers	Transformers that are located within the container that houses the Inverters and Switchgear.
~5MW Community Solar PV Array	An element of the Project which is intended to be owned by the local community
Construction Logistics Hub	An area within Maen Hir North where deliveries will be set down and managed throughout the Construction Phase.
Construction Phase	The process of constructing the Project as described in Chapter 3 of this EIA Scoping Report.
Cumulative effects	Effects upon the environment that result from the incremental impact of an action when added to other past, present or reasonably foreseeable actions. Each impact by itself may not be significant but can become a significant effect when combined with other impacts.
DCO Application	The application for a Development Consent Order (DCO) to be submitted by the Applicant for the Project.
Decommissioning Phase	The process of decommissioning the Project including the removal of all of the Solar PV Array including modules, Mounting Structures, Inverters and Transformers, the BESS and Project Substation.

Term	Description
Development Consent Order (DCO)	The order required for consent of a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 (PA 2008).
Displacement	Displacement measures the extent to which benefits of a development are offset by reductions in output or employment elsewhere.
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended)
Environmental Impact Assessment (EIA)	A process by which information about environmental effects of the Project is collected, assessed and used to inform decision making.
Fixed South Facing PV Arrays	PV Tables that are mounted to fixed Mounting Structures that face south.
Green Infrastructure	A network of multi-functional green spaces and other green features, urban and rural, which can deliver quality of life and environmental benefits for communities
Grid Connection Cables	The buried 400kV cables connecting the Project Substation to the National Grid Substation. Located within the Grid Connection Corridor.
Grid Connection Corridor	The proposed corridor for the Grid Connection Cables between the Project Substation and the National Grid Substation.
Inverters	Inverters convert the direct current (DC) electricity collected by the PV Modules into alternating current (AC), which allows the electricity generated to be exported to the National Grid.
Low Voltage Distribution Cables/Cabling	33 kV cables, which transmit electricity from the Solar Stations to the Project Substation, located within the Site.
Main High Voltage Cable Route	The route for the proposed 132/33kV underground cable connecting the Solar PV Sites and BESS to the Project Substation.
Mitigation	Measures including any process, activity or design to avoid, reduce, or remedy for negative environmental impacts or effects of a development.
Mitigation and Enhancement Areas	The areas that are being proposed for mitigation and enhancement.

Term	Description
Mounting Structure	A frame or r k designed to support the PV Modules, and which will provide for either a fixed south facing orientation, or a single access tracking orientation, and will be mounted on poles driven into the ground or fixed to a concrete foundation.
National Grid Substation	The proposed 400kV Substation that will be consented, owned and operated by National Grid Electricity Transmission.
Nationally Significant Infrastructure Projects (NSIPs)	Nationally Significant Infrastructure Projects (NSIPs) are large scale developments which require development consent pursuant to the PA 2008.
Operational Phase	The period within which the Project is operational, following the Construction Phase.
Parcel Substations	Small substations located within each land parcel (Maen Hir North, Central, and South) which will route the generated energy into the Main High Voltage Cable Route to the Project Substation.
Permissive Paths	New recreational permissive paths that the public can use during the Operational Phase.
The Project	A Nationally Significant Infrastructure Project (NSIP) for the installation of solar photovoltaic (PV) Modules and associated development which would allow for the generation, storage and export of electricity. The details of the Project are described in Chapter 3 of this EIA Scoping Report. The Project is known as 'Prosiect Maen Hir'.
Project Substation	The Project Substation comprising electrical infrastructure such as the transformers, switchgear and metering equipment required to facilitate the export of electricity from the Project to the National Grid. The Project Substation will convert the electricity to 400kV for onward transmission to the National Grid Substation via the Grid Connection Cables.

Term	Description
PV Module	A solar photovoltaic panel or module designed to convert solar irradiance to electrical energy. The PV panel is attached to a Mounting Structure and is referred to as a PV Module.
PV String	A row of PV Modules mounted onto the Mounted Structure that are connected to one another to form a PV string which is either connected to a String Inverter or a Central Container Inverter.
PV Tables	PV Modules mounted onto the Mounting Structure, forming tables, which are then set out in rows.
Receptor	A component of the natural or man-made environment that is affected by an impact, including people.
Scoping Study Area	The area considered for development during EIA Scoping. The area outside the Site is the search area for the Main High Voltage Cable Route, Grid Connection Corridor, construction access and further mitigation and enhancement areas.
Site	Areas proposed for solar PV and other associated infrastructure, mitigation and enhancement.
Single Axis Tracker PV Arrays	PV Modules that are mounted to Mounting Structures that allow the PV Table to rotate and track the movement of the sun.
Solar Farm	Electricity generating station comprising of PV Modules connected to the National Grid via a substation.
Solar PV Array	A Solar PV Array is a distinct grouping of Solar PV Tables. The Solar PV Arrays are arranged within the Solar PV Site.
Solar PV Site	The area within the Site that is being proposed for PV Arrays, Solar Stations and the Parcel Substations.
Solar Station	A Solar Station means a station comprising centralised Inverters, Transformers and Switchgear with each component grouped together to form each Solar Station.
String Inverters	Inverters located throughout the Solar PV Site, mounted on the Mounting Structures underneath the PV Modules to form a PV String.
String Transformers	Transformers located within the container are distributed throughout the Solar PV Site, forming a PV String.

Term	Description
Study Area	The area in which a particular assessment or survey targets. The study area will vary depending on the nature of the technical assessment.
Switchgears	Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment
Temporary Construction Compounds	Temporary laydown areas comprising areas of hardstanding, car parking, areas to store materials and equipment, waste skips, security infrastructure including fencing, lighting and cameras.
Transformers	A structure serving to transform electricity to a higher voltage which will either be a String Transformer or a Central Container Transformer.
Written Scheme of Investigation	A Written Scheme of Investigation outlines known and potential archaeological features and deposits or built heritage elements on a site and suggests a structure for exploring them using the latest, most appropriate and cost-effective archaeological techniques.
Zone of Influence (ZoI)	The area for the assessment of combined effects. Zones of Influence (ZoIs) are variable depending on the environmental factor being discussed.
Zone of Theoretical Visibility	A map, usually digitally produced, showing areas of land within which, the Project is theoretically visible.

1 Introduction

1.1 Overview

1.1.1 This Environmental Impact Assessment (EIA) Scoping Request has been prepared on behalf of Lightsource bp (the 'Applicant') for a solar generating station with a capacity of over 350 megawatts (MW) alternating current (AC), with energy storage, (the 'Project') at land in Anglesey (the 'Site') (see Figure 1-1).

1.1.2 The Project known as 'Prosiect Maen Hir' will form a key part of the Isle of Anglesey County Council's (IoACC) Energy Island Programme, which seeks to put the Island at the forefront of low carbon energy research and development, production and servicing, with the intention of bringing economic, community, and environmental benefits.

1.1.3 As the Project will have a capacity of over 350MW it is a Nationally Significant Infrastructure Project (NSIP) and therefore, requires a Development Consent Order (DCO) under the Planning Act 2008 (Ref 1-1).

1.1.4 This Scoping Request has been prepared in accordance with Regulation 10(1) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 1-2), as amended, hereafter referred to as the 'EIA Regulations'. In line with the requirements of Regulation 10(3) of the EIA Regulations, this request contains the following information to assist the Planning Inspectorate (PINS), as the relevant authority, in adopting a Scoping Opinion:

- A plan sufficient to identify the land;
- A description of the Project, including its location and technical capacity;
- An explanation of the likely significant effects of the Project on the environment; and
- Such other information or representations as the person making the request may wish to provide or make.

1.1.5 This Scoping Request has been prepared to provide an overview of the likely significant environmental effects that have been considered in scoping the EIA for the Project. It sets out the intended scope and the methodologies for assessments of the likely significant environmental effects to be reported in the Preliminary

Environmental Information Report (PEIR) and Environmental Statement (ES), the latter of which will accompany the DCO Application. This Scoping Request also provides the justification and rationale for scoping out environmental topics or receptors where it is considered that significant effects are unlikely to arise as a result of the Project.

1.1.6 The EIA Scoping Request has been prepared with reference to PINS Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Ref 1-3) which contains guidance on EIA Scoping.

1.2 The Applicant

1.2.1 Lightsource bp is a global leader in development, financing, management and operation of utility-scale solar projects. For over a decade Lightsource bp has been harnessing sunlight to help power the world in a clean, sustainable and responsible way. Lightsource was established in 2010, and has provided sustainable and affordable energy to businesses and communities throughout the UK.

1.2.2 In 2017 Lightsource joined forces with bp and subsequently became Lightsource bp, and is scaling-up to help meet the rising demand for reliable electricity, while supporting the global energy transition to net zero. Lightsource bp has developed 8.4GW of solar capacity globally to date.

1.3 Consenting Regime and Need for Environmental Impact Assessment

1.3.1 Under Section 14(1)(a) and 15(2) of the Planning Act 2008, the Project is defined as an NSIP, more specifically, as an onshore generating station in Wales with a generating capacity exceeding 350MW that does not generate electricity from wind. The legislative framework for EIA for projects of this type is the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations'), as amended.

1.3.2 The EIA Regulations specify which developments are required to undergo EIA and development relevant to the NSIP planning process are listed under either of 'Schedule 1' or 'Schedule 2'. Those developments listed in Schedule 1 must be

subject to EIA, while developments listed in 'Schedule 2' must only be subjected to EIA if they are considered "likely to have significant effects on the environment by virtue of factors such as its nature, size or location". The criteria on which this judgement must be made are set out in Schedule 3 of the EIA Regulations.

1.3.3 The Project falls under Schedule 2 Part 3(a) of the EIA Regulations as it constitutes "industrial installations for the production of electricity, steam and hot water…".

1.3.4 The Applicant considers that due to the Project's nature, size and location that it has the potential to have significant effects on the environment and therefore constitutes EIA Development. In accordance with Regulation 8(1)(b) of the EIA Regulations, the Applicant hereby provides notice that it will provide an Environmental Statement in support of the DCO Application.

1.4 Purpose of this Scoping Request

1.4.1 The process of identifying the issues to consider within the PEIR/ES and establishing the scope of the assessment, is known as 'scoping'. Although scoping is not a mandatory requirement under the EIA Regulations, it is recognised as a useful preliminary procedure which helps to identify the main effects that a Project is likely to have on the environment.

1.4.2 This Scoping Request provides information on the Site location, the Project, the likely significant effects on the environment, and any other such information that is considered relevant, including the proposed approach to assessment, in specific accordance with Regulation 10(3) of the EIA Regulations. The environmental topics which are proposed to be included in the EIA scope, and those which are not, are presented in Chapters 7 and 8 of this Scoping Request, respectively.

1.4.3 Overall, and in line with best practice, this scoping exercise aims to achieve the following objectives:

- Establish the availability of existing baseline data

- Define a survey and assessment framework from which a comprehensive EIA spanning those environmental topics which are likely to experience significant environmental effects can be undertaken
- Invite consultees to comment on the proposed EIA, in terms of:
  - The potential significant environmental effects which require assessment
  - The assessment methodology for each environmental topic proposed to be scoped into the EIA process
  - Sources of information
  - Issues of perceived concern
  - Any other areas which should be addressed in the EIA

1.5 Structure of the Scoping Request

1.5.1 The Scoping Request is structured as follows:

- Chapter 2: Provides a description of the Site and its context
- Chapter 3: Provides a description of the Project based upon current planning and design work, along with the anticipated construction process and timescales as is known at this stage
- Chapter 4: Overview of the consultation process
- Chapter 5: Legislative and planning policy context
- Chapter 6: Overview of the EIA process, EIA methodology and the manner in which the information will be provided and presented within the Environmental Statement
- Chapter 7: Environmental topics which are to be scoped into the EIA
- Chapter 8: Summary

1.6 EIA Consultant Team

1.6.1 The EIA Consultants who have contributed to the preparation of this Scoping Request are set out in Table 1-1.

Table 1-1 EIA Consultant Team

EIA Scoping Topic	Organisation
Planning	DWD
EIA Coordination	LDA Design

EIA Scoping Topic	Organisation
Landscape and Visual	
Major Accidents and/or Disasters	
Ecology and Biodiversity	AECOM
Climate Change	
Cultural Heritage and Archaeology	Cotswold Archaeology
Access and Highways	Velocity
Noise and Vibration	BWB Consulting
Air Quality	
Water Resources	
Ground Conditions	
Agriculture and Soils	Kernon Countryside Consultants
Glint and Glare	Neo-Environmental
Socioeconomics	Volterra
Health	

1.7 References

Ref 1-1 Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2021) Planning Act 2008.

Ref 1-2 HM Government (2017) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

Ref 1-3 The Planning Inspectorate (2020) Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements.

Ref 1-4 European Union (2015) Directive 2014/52/EU of the European Parliament.

2 Site Description and Context

2.1 Introduction

Site Context

2.1.1 Ynys Môn - The Isle of Anglesey, is a long-settled land. From the end of the last Ice Age to the present day, communities have shaped this land on which they depend for shelter, food, fuel, and building materials. Evidence of the past and of change is visible across the Island; in the fabric of the landscape, the architecture of buildings, the pattern of settlements, and the energy infrastructure - both old derelict windmills and newer wind and solar developments.

2.1.2 Some of the most characteristic features of Anglesey are the standing stones, or 'meini hirion (the plural); and that is why this Project is named 'Prosiect Maen Hir'. The stones mark the passage of time and align to the movement of celestial bodies, being hugely important to the communities that created and maintained them. They feature variously throughout the Island either standing alone, or having been incorporated into gateposts, but remaining as symbols of the relationship between the Island's heritage, communities, and land.

2.1.3 Prosiect Maen Hir represents a further chapter in the history and future of Anglesey and responds to the need to achieve Net Zero.

2.1.4 The Site is located in the north of the Island, and comprises approximately 1,234 hectares (ha) of land identified with potential to accommodate Solar PV development and associated infrastructure including the Project Substation and Battery Energy Storage System (BESS). The Site is defined as comprising three linked parcels for ease of referencing.

2.1.5 The parcels are: an area near Rhosgoch and Bodewryd (identified as ‘Maen Hir North’), to the south-east of Llanerch-y-medd (‘Maen Hir South’), and around the northern and eastern periphery of Llyn Alaw (‘Maen Hir Central’). The land predominantly comprises agricultural fields, with an area of brownfield land within Maen Hir North close to Rhosgoch which was formerly a Shell oil depot (the ‘former Shell site’).

2.1.6 The land assembled to accommodate the Project comprises the Site and the Scoping Study Area (see Figure 2-1).

2.1.7 The Site is proposed for:

- Solar PV Arrays
- Project Substation
- Battery Energy Storage System (BESS)
- Accesses
- Temporary construction compounds
- Mitigation and enhancement
- Community Solar PV Array (~5MW)

2.1.8 Land at the former Shell site is proposed as the temporary strategic hub for construction logistics for the Project. The works required to bring forward this Construction Logistics Hub, and to develop the community solar and the BESS also envisaged at the former Shell site, may involve infrastructure investment that could generally help to unlock its future development to support the planned employment and energy uses - enabling an energy hub. This is of significance given dormancy of the former Shell site and lack of development opportunities coming forward to date.

2.1.9 The Scoping Study Area (see Figure 2-1) comprises the Site and the search area for the Main High Voltage Cable Route, Grid Connection Corridor, construction access and further mitigation and enhancement areas.

2.2 Overview of the Scoping Study Area

2.2.1 The Scoping Study Area contains a variety of habitats typical of rural pastoral farmland. These are typically characterised by improved grassland, grazed by cattle and sheep, with some small areas of arable. Field boundaries include hedges, dry stone walls and cloddiau (a locally characteristic boundary feature of a dry-stone wall with compacted earth or earth/rubble core). Semi-natural vegetation includes semi-improved grasslands, marshy ground (including fen habitat), neutral and acid grasslands. Heathlands are present along field margins. Large woodland blocks and forestry plantations are not characteristic, and tree cover tends to be restricted to copses and shelterbelts, linear woodlands defining field boundaries, and associated with wetlands/streams. Many woodland copses are isolated in agricultural land, and around farms. Notable areas of regenerating

woodland/scrub are associated with the former Shell site and along the former railway.

2.2.2 Outside the areas designated for their ecological value, priority habitats tend to be poorly connected discrete areas within individual fields. These include areas of purple moor grass and rush pasture, lowland acid grassland, lowland heathland and fen. There are also some small areas of ancient semi-natural and restored ancient woodland.

2.2.3 The presence of prehistoric funerary monuments are indicators that the landscape was once occupied. Large-scale excavations in advance of development at other locations on the island have revealed very well-preserved and extensive remains of previously unrecorded prehistoric, Romano-British, and medieval settlement.

2.2.4 The landscape, especially but not solely the north-western part, includes many standing stones, burial mounds, and other funerary monuments, most of which are Scheduled Monuments. The historic core of Amlwch is a Conservation Area, comprising many Listed Buildings. In the surrounds further Listed Buildings including medieval churches, farmsteads, bridges, windmills, and a watermill are present.

2.2.5 Beyond the primary transportation route of the A55 linking the mainland of Wales to the port at Holyhead, routes tend to follow the coast. Within Central Anglesey, a network of roads focusses on Llannerch-y-medd, the main market town in the Scoping Study Area. Beyond this is a network of winding rural roads, linking villages, hamlets and isolated farms and dwellings.

2.3 The Site

2.3.1 This subsection of the Scoping Request sets out a more detailed description of the Site utilising referencing to three parcels. More detailed baseline information is provided within each of the individual environmental topic sections in Chapters 7 and 8.

Maen Hir North

2.3.2 Maen Hir North is located at OS grid reference SH 40643 91159 (approximate centre). The parcel equates to approximately 413ha.

2.3.3 The area is characterised by a complex landscape of extensive drumlin fields with consistent south-west to north-east orientation and shallow valleys. It is predominantly intensively farmed improved grassland across the drumlins with marshy grasslands and scrub between.

2.3.4 There are occasional rocky outcrops with remnant dry ericaceous heath and acid grassland. Local field boundary patterns are defined by cloddiau, fences and hedgerows. The settlement pattern is characterised by the rural villages linked by winding lanes and port town of Amlwch.

2.3.5 There is visible energy infrastructure including numerous existing wind turbines (Rhyd-y-Groes and Ystgellog wind farms), occasional disused windmills, overhead lines and the solar development (Rhyd-y-Groes). The parcel includes the former Shell site at Rhosgoch; a brownfield area with regenerating scrub vegetation.

2.3.6 Maen Hir North is partly within the Mynydd Mechell Special Landscape Area (SLA) designation to the west at Clegyrog Blas within the visual context of the existing 400kV overhead lines. The northern parcel is also partially visible within distant and elevated views from the Parys Mountain SLA approximately 1.75km to the east.

2.3.7 There are fragmented networks of Public Rights of Way crossing the parcel and connecting to local settlements and Mynydd Mechell and Mynydd Parys Special Landscape Areas (SLAs). The Copper Trail National Cycle Network Route (NCN500) runs through the parcel.

2.3.8 The Wen (a Main River) runs in parallel with a portion of the northern eastern edge of the parcel. The Goch (a Main River) runs along the eastern most edge of the parcel. Glasgraig Fawr (a Main River) runs through the south-eastern part of the parcel. The Wygyr (a Main River) interacts with the parcel within the central-eastern portion, flowing initially along the eastern edge before briefly entering the parcel and then running parallel to the central-northern and north-west portion of the parcel.

2.3.9 The parcel is not subject to any statutory heritage designations. There are four scheduled monuments within 1km of the parcel, including: Bodewryd Standing

Stone, located approximately 0.14km to the south-west of the parcel; Pen-y-Morwyd Round Barrow, located approximately 0.09km west of the parcel; Llifad Carreglefn, located approximately 0.07km west of the parcel; and Dyffryn Adda Copper Furnace and Precipitation Ponds, located approximately 0.52km north-east of the parcel.

2.3.10 There are no Registered Historic Parks and Gardens within 1km of the parcel. There are nine Listed Buildings within 1km of the parcel.

Maen Hir Central

2.3.11 Maen Hir Central is located at OS grid reference SH 40759 88131 (approximate centre). The parcel equates to approximately 425ha located to the north and east of Llyn Alaw reservoir.

2.3.12 The topography of the area is characterised by extensive drumlin fields surrounding the reservoir of Llyn Alaw.

2.3.13 The area is predominantly intensively farmed improved grassland across the drumlins with marshy grasslands (including lowland fen) and scrub between. The local field boundary patterns defined by cloddiau, fences and hedgerows. There are indications of historic hedgerow removal in some places.

2.3.14 There is visible energy infrastructure including numerous existing wind turbines (Llanbabo wind farm), occasional disused windmills and overhead lines.

2.3.15 The area is relatively sparsely settled with isolated dwellings, farms and hamlets linked by winding lanes.

2.3.16 Very few existing Public Rights of Way are within the parcel with limited public access to Llyn Alaw. A network of National Cycle Routes converge on Llanerch-y-medd to the south.

2.3.17 Glasgraig Fawr (a Main River) runs from Llyn Alaw to the central eastern area of the parcel before running along the eastern edge of the parcel. Afon Alaw (a Main River) flows from Llyn Alaw into the central eastern area of the parcel before following the western boundary of the south-eastern side of the parcel.

2.3.18 Maen Hir Central is not subject to any statutory heritage designations. There are two scheduled monuments within 1km of the parcel, including: Llys Einion

Standing Stone, located approximately 0.66km to the east of the parcel; and Maen Chwyf, located approximately 0.93km east of the parcel.

2.3.19 There are no Registered Historic Parks and Gardens within 1km of the parcel. There are four Listed Buildings within 1km of the parcel.

Maen Hir South

2.3.20 Maen Hir South is located at OS grid reference SH 44492 82579 (approximate centre). This parcel equates to approximately 396ha comprising. Hedges, trees and woodland form the boundaries to the fields.

2.3.21 The area is characterised by undulating topography with occasional rocky outcrops and small areas of semi-natural habitat including mires scattered throughout the area within a matrix of improved agricultural grassland.

2.3.22 It is relatively well-treed landscape with small copses/woodlands and linear tree belts typically along water courses. There is a field pattern of medium sized fields defined by hedgerows. The area is lightly settled with linear hamlets, isolated farms and dwellings linked by winding lanes and small market town of Llanerch-y-medd.

2.3.23 There are no existing Public Rights of Way within the parcel and the North Wales Coast National Cycle Network Route (NCN500) runs adjacent to the northern and eastern boundaries of the parcel.

2.3.24 The River Cefni runs past the south-western boundary of the parcel. The River Ysgoldy runs from the central western part of the area and joins the aforementioned River Cefni flowing to the south-western boundary of the parcel. A network of drains and streams, which follow field boundaries, are also present across the area.

2.3.25 Maen Hir South is not subject to any statutory heritage designations. There are three scheduled monuments within 1km of the parcel, including: Llech Golman, located approximately 0.1km to the west of the central extent of the parcel; Maen Addwyn, located approximately 0.1km west of the parcel; and Carreg Leidr which is located approximately 0.48km to the north of the parcel.

2.3.26 There are no Registered Historic Parks and Gardens within 1km of the parcel. There are 18 Listed Buildings within 1km of the parcel.

3 Project Description

3.1 Overview

3.1.1 The Project comprises the construction, operation and maintenance, and decommissioning of a solar photovoltaic (PV) electricity generating station with a capacity exceeding 350 MW (megawatts), and associated development including a Battery Energy Storage System (BESS) of up to 360MW and a ~5MW Community solar PV array.

3.1.2 A new National Grid 400kV Substation (the National Grid Substation) is to be consented separately by National Grid Electricity Transmission (NGET). National Grid has not yet identified the location for this new 400kV Substation, however engagement between the Applicant and NGET is ongoing.

3.2 Components of the Project

Overview

3.2.1 The Project comprises the following principal components as the NSIP and associated development:

- Solar PV Site (Maen Hir North, Maen Hir Central, and Maen Hir South)
- PV modules
- Mounting structures
- Inverters
- Transformers
- Switchgear
- Project Substation and control buildings comprising electrical infrastructure such as the transformers, switchgear and metering equipment required to facilitate the export of electricity from the Project to the National Grid
- Parcel Substations - smaller substations within each parcel
- Battery Energy Storage System (BESS)
- Fencing, security elements and ancillary infrastructure
- Access Tracks
- Main High Voltage Cable Route - underground cabling connecting the Solar PV Site and BESS to the Project Substation

- Grid Connection Corridor - the route of the underground connection between the Project Substation and a new National Grid Substation
- Green infrastructure
- Mitigation and/or enhancement areas
- ~ 5MW Community Solar PV Array
- Construction Logistics Hub
- Temporary Construction compounds

3.2.2 Further details for each of the key components are set out below.

PV Modules

3.2.3 Solar panels, also known as photovoltaics (PV), are made up of cells, which convert the light energy from daylight into electrical energy.

3.2.4 The solar panels will be attached to metal frames or mounting structures which together form PV tables (or modules) and are arranged in rows (or as arrays). The PV tables will be fixed to pile driven galvanised steel posts.

3.2.5 Each PV module will have a direct current (DC) generating capacity which will be converted to MW(AC). As detailed below, the inverters are required to convert the Direct Current (DC) electricity generated by the panels, to Alternating Current (AC).

3.2.6 There are currently two options for the mounting structures which are being considered and which are described below:

- Fixed South Facing PV Arrays (maximum height 3.3m)
- Single Axis Tracker PV Arrays

Fixed South Facing PV Arrays

3.2.7 Individual panels consist of a series of bifacial, mono-crystalline cells which make up an individual panel. The mounting structures will be orientated east west and would be installed between 18 and 25 degrees to the horizontal facing south to optimise daylight absorption.

Single Axis Tracker PV Arrays

3.2.8 Individual panels consist of a series of bifacial, mono -crystalline cells which make up an individual panel. The mounting structures will be orientated north/south and

would operate between 60 degrees from the horizontal (facing east in the morning) moving toward 0 degrees (horizontal) at midday, and up to 60 degrees from the horizontal (facing west in the evening). The modules would track from east to west throughout the day and would return to their resting position 60 degrees (facing east) over night.

PV Module Mounting Structures

3.2.9 The frames upon which the solar PV panels will be mounted will be pile driven or screw mounted into the ground to a typical depth of approximately 2m, subject to ground conditions. The option to install concrete blocks known as 'shoes' may also be considered, avoiding the need for driven and screw anchored installation, therefore minimising ground disturbance. The mounting frames would likely be made of either anodised aluminium alloy or galvanised steel and would have a rough matt finish.

Inverters

3.2.10 Inverters are required to convert the DC electricity collected by the PV modules into alternating current (AC) which allows the electricity generated to be exported to the National Grid. Inverters are sized to deal with the level of voltage and intensity, which is output from the strings of PV modules.

3.2.11 There are two options for inverters:

String Inverters

3.2.12 String inverters are small enough to be mounted underneath or behind the modules, and are typically 1.5m in length by 0.5m in depth by 1m in height.

Central Container Inverters

3.2.13 Central container inverters will typically be housed within a container measuring approximately 8.5m x 2.5m and 3m in height. The containers are typically externally finished in keeping with the prevailing surrounding environment, often utilising a green or grey painted finish. The containers would typically be mounted on adjustable legs on an area of hardstanding.

Transformers

3.2.14 Transformers are required to step up the voltage of the electricity generated from the PV arrays before it reaches the substation.

3.2.15 The footprint of the transformers will typically be 12.5m x 4.5m and 3.2m in height. Transformer cabins are typically externally finished in keeping with the prevailing surrounding environment, often utilising a green painted finish. The configuration of equipment will depend on the iterative design process and influenced by technical and environmental factors.

Switchgears

3.2.16 Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment. Switchgears are used both to de-energise equipment to allow work to be done and to clear faults downstream.

3.2.17 Switchgears are typically housed within a container with a typical footprint of 6.5m x 2.5m and 3m in height. Switchgear containers will be located either adjacent to the central invertor containers or the Project substation compound.

3.2.18 The configuration of equipment will depend on the iterative design process as influenced by technical and environmental factors.

Substations and Control Buildings

3.2.19 There will be a main Project Substation (400/33KV) located near the point of connection. The Project Substation will comprise electrical infrastructure such as the transformers, switchgear and metering equipment required to facilitate the export of electricity from the Project to the National Grid. The Project Substation is also expected to include a control building which will include office space and welfare facilities as well as operational monitoring and maintenance equipment. The indicative size of the substation compound is 200m x 200m, with an approximate height of 15m that allows for the substation and associated electrical control buildings and office/warehouse buildings.

3.2.20 Each land parcel (Maen Hir North, Central, and South) will contain a smaller substation (Parcel Substations) which will route the generated energy into the Main High Voltage Cable Route to the Project Substation.

Onsite Cabling

3.2.21 Low voltage cabling between PV modules and the inverters will typically be located above ground level (along a row of racks), fixed to the mounting structure,

and then underground (between racks and in the central inverters and or transformer input). Higher rated voltage cables (around 33kV) are required between the transformers, switch gear and the Parcel Substations. The dimensions of trenching will vary subject to underground cabling and the associated number of ducts they contain and will be dependent on the method of installation and ground conditions. There may be a requirement for horizontal directional drilling (HDD) within the Site to cross beneath existing buried utilities, underneath roads and hedges and drains.

3.2.22 Data cables will be required throughout the solar PV Site to allow for monitoring during operation, such as the collection of data on solar irradiance from pyranometers. The data cables would typically be installed within the same trench and alongside the electrical cables.

Electricity Export and Point of Connection to National Grid

3.2.23 The electricity generated by the Project is expected to be exported via a 400kV connection between the Project Substation and the National Grid Substation (the Grid Connection Corridor). The grid connection cables to the National Grid Substation will comprise 400kV cables within a trench, up to 2.5m in depth.

3.2.24 The alignment and route of the Grid Connection Corridor is under consideration within the Scoping Study Area and will be refined throughout the progression of the Project through PEIR and ES.

Fencing, Security & Ancillary Infrastructure

3.2.25 A perimeter fence will enclose the operational area of the Project. The fence is likely to be a ‘deer fence’ (wooden or metal posts with a wire mesh) and up to 2.5m in height. Palisade fencing up to 3m in height would be required around the perimeter of the Parcel Substations, Project Substation and BESS.

3.2.26 Pole mounted internal facing closed circuit television (CCTV) systems installed at a height of up to 3.5m are also likely to be deployed around the perimeter of the operational areas. Access gates will be of similar construction and height as the perimeter fencing. Clearances above ground or mammal gates will be included to permit the passage of wildlife.

3.2.27 CCTV cameras would use night-vision technology with a 50m range, which would be monitored remotely and avoid the need for night-time lighting. No areas of the Project are proposed to be continuously lit. For security requirements, operational lighting would include Passive Infra-red Detector (PID) systems which would be installed around the perimeter of the Project.

3.2.28 The lighting of the Project Substation would be in accordance with Health and Safety requirements, particularly around any emergency exits where there would be lighting, similar to Street Lighting that operates from dusk. Otherwise, there would be low level lighting on specific operational units that would again operate from dusk. All lighting would seek to limit any impact on sensitive receptors.

3.2.29 Lighting sensors for security purposes will be implemented around the onsite primary substation and other critical electrical infrastructure. No areas are proposed to be permanently lit.

3.2.30 Lightning protection masts will be located within the Site which will be up to 6m.

Site Access

3.2.31 It is anticipated that a Construction Logistics Hub will be located within Maen Hir North as a point of delivery for materials.

3.2.32 Secondary points of access to the solar arrays will be required across the solar PV Site, the details of which will be confirmed once the general arrangement and layout of the Project is further developed.

Access Tracks

3.2.33 It is anticipated that onsite Access Tracks will follow the alignment of the existing agricultural tracks, where possible. New internal Access Tracks will be up to 4.5m wide, and passing bays will be provided along the internal Access Tracks. The main access will be up to 6m wide to facilitate two-way HGV traffic. The internal Access Tracks will likely be constructed of compacted stone with excavation kept to a minimum. Where drainage is required a ditch or a swale may be located downhill of the internal access track to control any potential for surface water run-off.

Community Solar

3.2.34 The Applicant intends to provide a ~5MW Community Solar PV array as part of the Project.

BESS

3.2.35 The Battery Energy Storage System will allow the storage of energy generated by the solar panels at times of low demand and release to grid at times when demand is high or when solar irradiance is lower, known as load shifting. This is likely to comprise batteries which would be housed in containers and located adjacent (side by side) to the central invertor containers and would be either single or double stacked.

3.2.36 The precise number of individual battery storage containers will depend upon the level of power capacity and duration of energy storage.

3.2.37 The typical dimensions of the battery containers would measure 17.5m x 4m and 3.5m in height (if double stacked). The containers would be located on areas of hard standing, with a minimum clearance of 0.1m beneath the container and the hardstanding. The containers are typically externally finished in keeping with the prevailing surrounding environment, often utilising a green or grey painted finish.

3.2.38 The BESS would also include other ancillary infrastructure such as ventilation / cooling systems, water storage, and Access Tracks and hardstanding areas.

Green Infrastructure

3.2.39 The existing hedgerows, woodland, ditches, ponds and field margins will be retained within the layout of the Project where practicable, with the exception of removals and/or crossings required for new Access Tracks, perimeter fencing and cable routes. Any accesses will be designed to use existing agricultural gateways/tracks between the fields and the width of any new accesses will be kept to a minimum where practicable.

3.2.40 Minimum offsets/buffers from the Solar PV Arrays or perimeter fencing, will be defined and incorporated within the design of the Project where practicable at PEIR stage and within the Environmental Statement (ES), with the exception of where Access Tracks, perimeter fencing and/or cable routes are required to cross an existing feature. These offsets/buffers will be used to deliver a combination of

embedded mitigation and enhancement in the form of hedgerow planting and/or grass/wildflower planting. The buffers/offsets will be a minimum and for example may be increased to deliver further mitigation or enhancements and/or respond to root protection areas where required.

Energy Hub

3.2.1 From the outset, the Applicant's wider ambition has been for the Project to enable an Energy Hub on the former Shell site which in turn would support economic development and job creation. The works required to bring forward the Construction Logistics Hub, and to develop the community solar and the BESS, may involve infrastructure investment that could generally help to unlock the site to support the planned employment and energy uses - helping enable an Energy Hub. This is of significance given the dormancy of the former Shell site and lack of development opportunities coming forward to date.

3.3 Development Capacity

3.3.1 Solar panels generate electricity in Direct Current (DC) form. PV modules feed into inverters which convert electricity to Alternating Current (AC). Because the inverter is separate from the panels, the total capacity of a solar farm can be measured either in terms of the combined capacity of installed solar panels (measured in DC) or in terms of combined capacity of installed inverters (measured in AC).

3.3.2 Paragraph 3.10.42 of the draft National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3) (March 2023) confirms that for the purposes of determining the capacity thresholds in Section 15 of the Planning Act (PA) 2008, all forms of generation other than solar are currently assessed on an AC basis, while solar farms are assessed on their DC capacity. Draft EN-3 states that from the date of designation of the new NPS, for the purpose of Section 15 of the PA 2008, the maximum combined capacity of the installed inverters (measured in AC) should be used for determining the solar capacity of a site.

3.3.3 Paragraph 3.10.46 of draft EN-3 states the DC installed generating capacity of a solar farm will decline over time in correlation with the reduction in panel array efficiency, and that applicants may account for this by overplanting solar panel

arrays. Footnote 84 confirms that "Overplanting refers to the situation in which the installed generating capacity or nameplate capacity of the facility is larger than the generator's grid connection".

3.3.4 Therefore, to maximise the use of the available grid connection over the lifetime of a development, solar generators may install (but not initially use) additional panels to act as a backup for when panels degrade.

3.3.5 Paragraph 3.10.47 states, "AC installed export capacity should not be seen as an appropriate tool to constrain the impacts of a solar farm. Applicants should use other measurements, such as panel size, total area and percentage of ground cover should be used to set the maximum extent of development when determining the planning impacts of an application".

3.3.6 The parameters applied for in the DCO Application provide for a solar farm with a generating capacity of over 350MW to account for the normally applied factors as a result of:

- Degradation of panels over time
- Seasonal and daily variation of solar irradiance
- Loss of power in the conversion from AC to DC

3.3.7 This will ensure that Prosiect Maen Hir will be able to fully optimise the available grid connection and generate as much clean power as possible each day over the Operational Phase.

3.4 Construction

Construction Activities

- Site preparation:
  - The establishment of the Construction Logistics Hub
  - Delivery of construction materials, plant and equipment
  - The establishment of perimeter fencing
  - The establishment of the primary and secondary temporary construction compound(s)
  - The upgrade of existing tracks and construction of new Access Tracks

  - The upgrade or construction of crossing points (bridges/culverts) over drainage ditches and below ground utility infrastructure
  - Marking out location of Mounting Structures
  - Advanced habitat creation and landscaping (if appropriate)
- Solar PV Site construction:
  - Delivery of Project components
  - Erection of Mounting Structures
  - Mounting of PV Modules
  - Installation of electrical cables
  - Installation of Transformers and Inverters
  - Construction of Project Substation
  - Construction of the BESS
  - Construction of onsite electrical infrastructure to facilitate the export of generated electricity
  - Construction of the ~5MW Community Solar PV Array
  - Testing and commissioning
  - Habitat and landscaping creation and reinstatement in accordance with the principles set out within the outline Landscape and Ecology Management Plan (oLEMP)

3.4.1 There will be Heavy Goods Vehicles (HGV) and Light Goods Vehicle (LGV) vehicle movements associated with deliveries and construction worker arrivals and departures. Typical construction vehicles will include excavators, ramming machines, cable layers, low loaders, crane and waste vehicles, trenchers, telehandlers, forklift trucks and tractors/trailers. The number of HGV and LGV movements will be confirmed in the ES.

Construction Programme

3.4.2 The construction phase is anticipated to take place over up to two sequential phases. The final programme will be dependent on the detailed layout design and potential environmental constraints on the timing of construction activities, and will be detailed in the ES.

Construction Management

3.4.3 An outline Construction Environmental Management Plan (oCEMP) will be prepared to support the DCO Application. The oCEMP will set out the mitigation measures identified through the EIA process to be employed during the construction phase.

3.4.4 An Outline Construction Traffic Management Plan (oCTMP) including details on construction logistics and construction worker travel will be prepared in support of the DCO Application that includes information to guide the delivery of material, plant, equipment, and staff during the construction phase.

3.5 Operation and Maintenance

3.5.1 The Operational Phase of the Project is proposed to be 60 years. During the Operational Phase of the Project, onsite activities would include routine servicing, maintenance activities, and the replacement of equipment as and when required, as well as management of vegetation.

3.5.2 There will be a need to replace parts of the operational equipment of the Project throughout the Operational Phase to ensure that any damaged, faulty or degraded equipment does not impede functionality and output. The effects of these activities are anticipated to be lesser than the construction phase, and would be controlled and managed through appropriate management plans and by the requirements of the DCO.

3.5.3 There may be a level of HGV activity required to replace equipment onsite. The ES will include further details of the maintenance and replacement activities and appropriate controls will be developed as part of the DCO. An Operational Environmental Management Plan (OEMP) would include control measures to ensure no significant impacts would arise during the maintenance and replacement activities.

3.5.4 The land underneath and around the PV Arrays would be managed through a combination of sheep grazing, hay/silage production, wildflower grassland, in order to maintain the field vegetation during the operational phase of the Project.

3.5.5 The management of the landscape and ecological features will be undertaken in accordance with a detailed Landscape and Ecological Management Plan (LEMP) that will be secured via a requirement of the DCO.

3.5.6 At this stage of the Project, it is anticipated that there would be approximately two visits per week and up to four permanent staff onsite required for routine inspection and maintenance activities. At times during operation, it will be required for additional staff to attend when necessary for replacement of solar and BESS infrastructure. The ES will confirm the likely operational traffic flows.

3.6 Decommissioning

3.6.1 During the Decommissioning Phase, all the solar infrastructure including PV modules, mounting structures, above ground cabling, inverters, transformers, switchgear, fencing, ancillary infrastructure, Parcel Substations, BESS and the Project Substation would be removed and recycled or disposed of in accordance with good practice following the waste hierarchy, with materials being reused or recycled whenever possible. All waste will be disposed of in accordance with the legislation at the time of decommissioning.

3.6.2 Any requirement to leave the Access Tracks would be discussed and agreed with the landowners at the time of decommissioning and consented separately.

3.6.3 Decommissioning is anticipated to take approximately 6 to 12 months.

3.6.4 The Site would be reinstated in accordance with a Decommissioning Environmental Management Plan (DEMP). The DEMP will be subject to the approval of the local planning authorities.

3.7 Rochdale Envelope

3.7.1 EIA is the iterative process in which the assessment of environmental impacts is undertaken in parallel with the design process of the Project. The design and layout of the Project will evolve in response to the identification of specific constraints and opportunities. The comments made in response to this Scoping Request and the statutory consultation process will also influence the final design and layout of the Project.

3.7.2 Advice Note Nine 'Rochdale Envelope' was published by the Planning Inspectorate (PINS) in July 2018 to address the degree of flexibility that would be considered appropriate to deal with uncertainties associated with applications for development consent.

3.7.3 In order to maintain flexibility in the design and layout, the Project will adopt the Rochdale Envelope approach by specifying parameter ranges which will be defined in the Project Description chapter of the ES. These parameters will be considered in detail by technical authors in the ES to ensure the realistic worst-case effects of the Project are assessed for each potential receptor.

3.8 Design Principles

3.8.1 The purpose of the Design Principles is to set a framework that can be used by the Local Planning Authority to control the detailed design of the Project beyond the written and spatial parameters. The National Infrastructure Commission (NIC) defined the role of principles as:

"Principles should act as reminders to the delivery organisation, a steer in the right direction, and a means of restoring focus to the big picture…Design Principles should be a point of departure, setting out a common understanding [of] the issues to be addressed" (Ref 3-1)

3.8.2 The Design Principles Framework is structured as follows:

- Vision and Objectives
- Project Principles
- Design Principles

Vision and Objectives

3.8.3 The Vision and Objectives for the Project are:

- Decarbonising our energy supply
- Increasing the supply of low-cost energy
- Respect and enhance features in the landscape and promoting connectivity through a proactive approach to creating and enhancing green infrastructure

- Provide a net benefit for biodiversity through enhancement and long-term management
- Create a positive environmental, cultural, and economic legacy for Anglesey.

Draft Project Principles

3.8.4 The Draft Project Principles have been informed by the seven goals of the Well-being of Future Generations (Wales) Act 2015 and adapted to fit the context of the Project.

Image 3-1 WFG Seven well-being goals

3.8.5 The draft Project Principles are:

- Contribute to a productive and low carbon society through the sustainable management of natural resources.
- Unlock opportunities to generate green economic growth and employment opportunities.
- Promote the resilience of ecosystems and facilitate people's enjoyment of the natural and cultural environment.
- Maintain and enhance a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change.
- Enhance people's physical and mental well-being by connecting people and place.

- Promote an equitable society and economy through the provision of community assets.
- Respond to the landscape to protect and enhance attractive, viable, safe and well-connected communities.
- Leave a lasting legacy beyond the length of the Project through environmental net gain, lasting social outcomes and improved access to nature.
- Promote and protect Welsh culture, heritage and language.

Design Principles

3.8.6 The Design Principles are currently being developed and will be refined in an iterative process responding to the ongoing EIA and stakeholder engagement. They will be tailored to each of the parcels so that the Project responds to the different characteristics across the Site.

3.9 References

Ref 3-1 National Infrastructure Commission, 2018. Developing Design Principles for National Infrastructure

4 Consultation

4.1 Introduction

4.1.1 The Applicant has previously shared their ambition to generate electricity from solar energy in this location, having introduced proposals for 'Môn Solar' on a part of this Site. This included online early engagement with local stakeholders, and community webinars held in March 2021, under COVID-19 restrictions. The proposals have since evolved and the project re-introduced as Prosiect Maen Hir, which is the subject of this Scoping Request.

4.1.2 Sections 42, 47 and 48 of the Planning Act 2008 (Ref 4-1) and Regulation 13 of the EIA Regulations (Ref 4-2) require that certain stakeholder groups and the local community must be consulted as part of the pre-application process. As part of this process a Preliminary Environmental Information Report (PEIR) will be produced and consulted upon.

4.1.3 Consultation alongside the EIA process is critical to the development of a comprehensive and proportionate ES. The views of statutory and non-statutory consultees are important to ensure that the EIA from the outset focuses on the environmental studies and to identify specific issues where significant environmental effects are likely, and where further investigation is required. The consultation, as an ongoing process, enables mitigation measures to be incorporated into the Project to limit adverse environmental effects and optimise environmental benefits.

4.1.4 Early and ongoing engagement with consultees will be important to influence the design process of the Project by seeking an appropriate level of feedback from consultees, to ensure that comments are considered in project design.

4.2 Scoping Consultation

4.2.1 PINS acting on behalf of the Secretary of State will consult on this Scoping Request in accordance with Regulation 10(6) of the EIA Regulations. Consultees include statutory consultation bodies, including environmental bodies (such as Natural Resources Wales, and Cadw) as well as relevant planning authorities. Comments received from consultees will be considered and included within the Scoping Opinion issued by PINS.

4.3 Statutory Consultation

4.3.1 A Statement of Community Consultation (SoCC) will be prepared in accordance with Section 47 of the Planning Act 2008. The SoCC will outline how the Applicant intends to consult with the local community on the Project. The Applicant is required to consult the local authorities identified pursuant to section 43(1) of the Planning Act 2008 on the draft SoCC and they will have a period of at least 28 days, following receipt of the request, to comment on a draft SoCC prior to its publication for inspection by the public.

4.3.2 During the statutory consultation, consultation will also be undertaken with prescribed consultation bodies as well as affected landowners and persons with an interest in land, in accordance with Sections 42 of the Planning Act 2008 and Regulation 13 of the EIA Regulations. The Applicant will also publicise the proposed DCO Application in accordance with Section 48 of the Planning Act 2008.

4.3.3 The responses received during consultation will be carefully considered and taken into account in the design evolution of the Project in accordance with Section 49 of the Planning Act 2008. The consultation responses will be recorded in a Consultation Report which will be submitted to support the DCO Application.

4.4 References

Ref 4-1 Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2021) Planning Act 2008.

Ref 4-2 HM Government (2017) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

5 Legislative Context and Planning Policy

5.1 Introduction

5.1.1 This section sets out the overarching legislative context and planning policy for the Project. Appendix 5-1 provides a discipline specific overview of the same.

5.2 Net Zero: Opportunities for the Power Sector

5.2.1 In June 2019 the Government raised the UK's ambition on tackling climate change by legislating for a net-zero greenhouse gas emissions target for the whole economy by 2050. Decarbonising the power sector is integral to achieving this goal and requires major investment in renewable energy, such as solar, which are supported by planning policy at a local and national level.

5.2.2 The National Infrastructure Commission (NIC), official advisor to the Government on infrastructure, has subsequently produced a report, 'Net Zero: Opportunities for the Power Sector' (Ref 5-1), in March 2020, which sets out the infrastructure required in order to meet the 2050 target, including the amount of new renewable energy development that would need to be deployed. The report recommends that across all scenarios significant solar, onshore wind, and offshore wind, with between 129-237 gigawatts ('GW') of renewable capacity is in operation by 2050, including:

- 56-121 GW of solar
- 18-27 GW of onshore wind
- 54-86 GW of offshore wind

5.2.3 The British Energy Security Strategy (April 2022) expects a five-fold increase in solar deployment by 2035, with an ambition for up to 70 GW of solar installed by this date. Powering Up Britain: Energy Security Plan (March 2023) reiterated the aim of achieving 70GW of solar by 2035. This generally aligns with modelling in the National Grid Electricity System Operator (NGESO) report, Future Energy Scenarios (Ref 5-4), published in July 2023, which provides comparable statistics (although slightly less than) which shows a need for approximately 60 GW of solar being needed between 2030-2035 in the 'Leading the Way' scenario.

5.2.4 Although the above figures are high-level, they demonstrate the amount of new infrastructure that is required to meet the urgent need to decarbonise the energy sector in the UK. The scale of this need is such that it must be shared throughout the UK and in recognition that climate change is a national and global issue.

5.3 Net Zero Strategy: Build Back Greener

5.3.1 The Net Zero Strategy (Ref 5-5), published by Government on 19th October 2021, builds on the Government's commitments made in the Energy White Paper (2020) (Ref 5-6) and sets out the long-term strategy, policy and proposals to keep the UK on track for future carbon budgets as well as setting the vision for a decarbonised economy by 2050. Key policies in the Strategy related to UK power generation include:

- "By 2035 the UK will be powered entirely by clean electricity, subject to security of supply; […]
- 40 GW of offshore wind by 2030, with more onshore, solar and other renewables – with a new approach to onshore and offshore electricity networks to incorporate new low carbon generation and demand in the most efficient manner that takes account of the needs of local communities […]
- Deployment of new flexibility measures including storage to help smooth out future price spikes."

5.4 Planning Act 2008

5.4.1 The Project constitutes NSIP development, in accordance with the Planning Act 2008 (Ref 5-7), as it comprises:

- The construction or extension of a generating station (Part 3, Section 14(1)(a)); and
- It is located in Wales, does not generate electricity from wind and has a capacity of more than 350MW (Part 3, Section 15(3A).

5.4.2 Therefore, a DCO application under the Planning Act 2008 is required and will be determined by the Secretary of State.

5.5 National Policy Statements

5.5.1 As at the date of this EIA Scoping Report, the DCO Application must be determined in accordance with s105 of the Planning Act 2008. The Secretary of State must have regard to any local impact report, and any other matters which the Secretary of State thinks are both important and relevant to their decision. The adopted and draft NPSs are important and relevant for the purposes of the Secretary of State's decision making.

5.5.2 The following NPSs are relevant to the Project:

- Overarching NPS for Energy (EN-1) (Ref 5-8)
- NPS on Renewable Energy Infrastructure (EN-3) (Ref 5-9)
- NPS for Electricity Networks Infrastructure (EN-5) (Ref 5-10)

Overarching National Policy Statement for Energy (EN-1)

5.5.3 The Overarching NPS for Energy (EN-1), adopted by the Department of Energy and Climate Change (DECC) in July 2011, sets out the national policy for delivering major energy infrastructure in England and Wales. The NPS has effect in combination with the relevant technology specific NPS, National Policy for Renewable Energy Infrastructure (EN-3), and together they provide the primary basis for decisions made by the Secretary of State.

5.5.4 Part 3 of EN-1 identifies the need that exists for nationally significant energy infrastructure. With regards to decision making, paragraph 3.1.1. of EN-1 states how "the UK needs all the types of energy infrastructure covered in this NPS in order to achieve energy security at the same time as dramatically reducing greenhouse gas emissions".

5.5.5 Paragraph 3.1.2 states: "It is for industry to propose new energy infrastructure projects within the strategic framework set by Government. The Government does not consider it appropriate for planning policy to set targets for or limits on different technologies".

5.5.6 Paragraph 3.1.3 states that applications for development consent to which the NPSs apply should be assessed on the basis that the Government has demonstrated that there is a need for those types of infrastructure. Substantial

weight should be given to projects that would contribute to satisfying this need: paragraph 3.1.4.

5.5.7 Paragraph 3.3.11 notes that renewable energy sources, such as solar, are intermittent and, as a result, back-up sources are required at times when the availability of intermittent renewable sources is low. Paragraph 3.3.12 goes on to identify how electrical storage technologies can be used to compensate for intermittence.

5.5.8 Paragraph 4.1.3 of the NPS EN-1 states that in considering any Project, and in particular when weighing its adverse impacts against its benefits, the Secretary of State should take into account:

- Its potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits; and
- Its potential adverse impacts, including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.

5.5.9 Section 4.2 of the NPS EN-1 is related to the requirement for assessment of likely significant environmental effects and reporting within an Environmental Statement for projects that are subject to the European Environmental Impact Assessment Directive (85/337/EEC).

5.5.10 Paragraph 4.2.2 of the NPS states that:

"To consider the potential effects, including benefits, of a proposal for a project, the IPC [now PINS] will find it helpful if the applicant sets out information on the likely significant social and economic effects of the development, and shows how any likely significant negative effects would be avoided or mitigated. This information could include matters such as employment, equality, community cohesion and well-being."

5.5.11 Paragraph 4.3.2 continues:

"For the purposes of this NPS and the technology-specific NPSs the ES should cover the environmental, social and economic effects arising from pre-construction, construction, operation and decommissioning of the project."

5.5.12 Paragraph 4.2.4 states that when considering a proposal, the Secretary of State should:

"Satisfy itself that likely significant effects including any significant residual effects taking account of any proposed mitigation measures or any adverse effects of those measures, have been adequately assessed. In doing so the IPC [now Secretary of State] should also examine whether the assessment distinguishes between the project stages and identifies any mitigation measures at those stages. The IPC [now Secretary of State] should request further information where necessary to ensure compliance with the EIA Directive."

5.5.13 Where relevant, the EIA process will take into account the requirements of the NPS. It is worth recognising that some of the elements in this NPS are superseded due to changes to legislation and policy, an example being the reference to not consenting associated development in Wales at paragraph 1.4.3.

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

5.5.14 The NPS on Renewable Energy Infrastructure (EN-3), published by the DECC in July 2011, taken together with the Overarching NPS for Energy (EN-1), provides the primary basis for decisions by the Secretary of State on applications it receives for nationally significant renewable energy infrastructure.

5.5.15 The importance of generation of electricity from renewable sources is stated at Paragraph 1.1.1 of NPS EN-3:

"Electricity generation from renewable sources of energy is an important element in the Government's transition to a low-carbon economy. There are ambitious renewable energy targets in place and a significant increase in generation from large-scale renewable energy infrastructure is necessary…".

5.5.16 At the time of publication of NPS EN-3, utility scale solar development was not feasible. Therefore, whilst providing an assessment and technology-specific information on certain renewable energy technologies, NPS EN-3 does not include solar PV development, and only covers projects for biomass/waste and offshore and onshore wind.

National Policy Statement for Electricity Networks Infrastructure (EN-5)

5.5.17 The NPS for Electricity Networks Infrastructure (EN-5) was published by the DECC in July 2011 and forms part of the suite of energy NPSs and is to be read in conjunction with the Overarching NPS for Energy (EN-1).

5.5.18 NPS EN-5 is relevant to the Project as the policy applies to "transmission systems (the long distance transfer of electricity through 400kV and 275kV lines), and distribution systems (lower voltage lines from 132kV to 230V from transmission substations to the end-user) which can either be carried on towers/poles or undergrounded" and "associated infrastructure, e.g. substations (the essential link between generation, transmission, and the distribution systems that also allows circuits to be switched or voltage transformed to a useable level for the consumer) and converter stations to convert DC power to AC power and vice versa."

5.5.19 NPS EN-5 sets out further technology-specific considerations, in addition to those impacts covered in NPS EN-1, being, site selection, relationship of planning applications for new generating stations and related infrastructure, climate change adaption, good design, Biodiversity and Geological Conservation; Landscape and Visual; and Noise and Vibration. Furthermore, NPS EN-5 sets out technology-specific considerations for the impact of electromagnetic frequencies (EMFs).

5.6 Draft National Policy Statements

Draft Overarching National Policy Statement for Energy (EN-1), 2023

5.6.1 In contrast to the adopted NPS EN-1 (2011) (Ref 5-8), the Draft NPS EN-1, published in March 2023 (Ref 5-11), makes specific reference to the generation of electricity from solar photovoltaic technology and recognises that there is an urgent need for new electricity generating capacity to meet UK objectives.

5.6.2 Similar to NPS EN-1, sections 3.2-3.3 of the Draft NPS EN-1 establishes the need for renewable energy. Substantial weight should be given to this need when determining planning applications for renewable energy projects.

5.6.3 Paragraph 3.3.20 of the Draft NPS EN-1 states that: "wind and solar are the lowest cost ways of generating electricity, helping reduce costs and providing a clean and secure source of electricity supply (as they are not reliant on fuel for generation). Our analysis shows that a secure, reliable, affordable, net zero

consistent system in 2050 is likely to be composed predominantly of wind and solar." The NPS highlights that Government requires a sustained growth in the capacity of solar in the next decade and recognises that solar development needs to be coupled with technologies which optimise energy generation even when conditions for solar generation are not optimal.

5.6.4 Paragraph 3.3.12 also notes that decentralised and community energy systems such as micro-generation contribute to our targets on reducing carbon emissions and increasing energy security. However, they will not replace the need for new large-scale electricity infrastructure.

5.6.5 Paragraphs 3.3.25-3.3.26 of the Draft NPS EN-1 recognises that that energy storage is key in achieving net zero and providing flexibility to the energy system, so that high volumes of low carbon power can be integrated and to reduce the costs of the electricity system and increase reliability by storing surplus electricity in times of low demand to provide electricity when demand is higher.

5.6.6 Draft NPS EN-1 sets out assessment principles and generic impacts that an Environmental Statement should address, and any specific considerations for applications in Wales. This includes a reference at paragraph 4.1.5 to the duty under Section 6 of the Environment (Wales) Act 2016 and seek to maintain and enhance biodiversity, and in so doing promote the resilience of ecosystems. Where relevant, the Draft NPS refers to Planning Policy Wales and Technical Advice Notes, and the need to take account of the development plan, which in Wales is a three-tier development plan including the National Development Framework (Future Wales), regional Strategic Development Plans, and Local Development Plans.

Draft National Policy Statement for Renewable Energy Infrastructure (EN-3), 2023

5.6.7 The Draft NPS EN-3 (Ref 5-12), published in March 2023, introduces a new section (Section 3.10) on solar photovoltaic generation, recognising that solar farms are one of the most established renewable electricity technologies in the UK and the cheapest form of electricity generation worldwide. Paragraph 3.10.1 states that the government has committed to sustained growth in solar capacity

to ensure that the UK is on the pathway to meet net zero emissions by 2050, and as such, solar is a key part of Government's strategy for low-cost decarbonisation of the energy sector.

5.6.8 Paragraph 3.10.2 refers to the Government's support of solar that is co-located with other functions, including storage to maximise the efficiency of the land use.

5.6.9 Paragraphs 3.10.9 - 3.10.39 of the Draft NPS EN-3 sets out the following key influences that developers should consider when selecting sites for solar development:

- Irradiance and site topography
- Proximity of a site to dwellings
- Agricultural Land Classification and land type;
- Accessibility
- Public rights of way
- Security and lighting
- Grid connection

5.6.10 Paragraphs 3.10.40 - 3.10.63 of the Draft NPS EN-3 outline the technical considerations for solar farms that relate to site capacity, site layout design and appearance, project lifetime, decommissioning and flexibility.

5.6.11 Paragraphs 3.10.64 - 3.10.153 of the Draft NPS EN-3 provides topic-specific requirements of how applicants should consider impacts within technical assessments, development of proposed mitigation measures and decision-making for solar development, for the following topics:

- Biodiversity and ecological conservation;
- Landscape, visual and residential amenity;
- Glint and glare;
- Cultural heritage; and
- Construction including traffic and transport noise and vibration.

Draft National Policy Statement for Electricity Networks Infrastructure (EN-5), 2023

5.6.12 The Draft NPS EN-5 (Ref 5-13) was published in March 2023 and recognises that new electricity networks required for electricity generation, storage and interconnection infrastructure are vital to achieving the nation's transition to net zero. Paragraph 1.6.1 of Draft NPS EN-5 sets out the relevance of this NPS to infrastructure associated with generation e.g. substations.

5.6.13 Draft NPS EN-5 includes a new section on 'Environmental and Biodiversity Net Gain' at Section 2.5, which states that when planning and evaluating a project's contribution to environmental and biodiversity net gain, it will be important, for both the Applicant and Secretary of State, to recognise that "the linear nature of electricity networks infrastructure allows excellent opportunities to: i) reconnect important habitats via green corridors, biodiversity stepping zones, and re-establishment of appropriate hedgerows; and/or ii) connect people to the environment, for instance via footpaths and cycleways constructed in tandem with environmental enhancements."

5.6.14 Section 2.9 of Draft NPS EN-5 concerns the relevant impacts which applicants must provide information on. Paragraph 2.9.9 states that "New substations, sealing end compounds (including terminal towers), and other above-ground installations that serve as connection, switching, and voltage transformation points on the electricity network may also give rise to adverse landscape and visual impacts".

5.6.15 Paragraph 2.9.11 in Draft NPS EN-5 confirms that landscape and visual benefits may arise through the reconfiguration, rationalisation, or undergrounding of existing electricity network infrastructure.

5.7 Future Wales: the National Plan 2040

5.7.1 Future Wales: the National Plan is the National Development Framework for Wales; the spatial and strategic top tier of the development plan in Wales, which sets the direction for development in Wales to 2040. The specific purpose of Future Wales is to ensure the planning system at all levels is consistent with, and supports the delivery of, Welsh Government strategic aims and policies.

Accordingly, Future Wales does not contain statements on all land use planning issues set out in Planning Policy Wales, but rather has policies on issues which the Welsh Government considers a current national priority or matters which are distinctly spatial and require national leadership.

5.7.2 The National Plan identifies four regions for the future development in Wales – North Wales, Mid Wales, South West Wales and South East Wales. The direction for North Wales recognises the Anglesey Energy Island with Policy 24 addressing North West Wales and Energy, with Welsh Government recognising the solar potential and supporting this as a location for new energy development and assessment. Accordingly, the proposed developments associated with the Anglesey Energy Island Programme will be supported in principle as a means to create economic benefits and renewable energy. The policy expectations for new energy-related development include supporting local and regional communities; providing jobs and investment in training and skills; and working with universities and businesses across the region to co-ordinate and maximise new investment to support the wider region.

5.7.3 The National Plan recognises the opportunities in Wales to generate renewable energy and commits to maximising the potential. The Welsh Government's targets on renewable energy include 70% of electricity consumption to be generated from renewable energy by 2030; one gigawatt of renewable energy capacity to be locally owned by 2030; and for new renewable energy projects to have at least an element of local ownership from 2020. In support of local and shared ownership of energy projects Welsh Government introduced guidance for developers, local communities and decision-makers entitled 'Guidance for developers, local communities & decision-makers: Local and shared ownership of energy projects in Wales' (June 2022).

5.7.4 Policy 17 of the National Plan provides the strategic and criteria-based policy for determining planning applications for renewable and low carbon energy development and Policy 18 provides the criteria specifically for assessing Developments of National Significance, however, it is relevant to assessing an NSIP scheme too. The National Plan goes on to state that irrespective of location

or scale, the design and micro-siting of proposals must seek to minimise the landscape and visual impact, particularly those in close proximity to homes and tourism receptors. The National Plan also addresses some of the key interfaces with renewable energy including the importance of Wales' productive land resource and protecting agricultural land.

5.8 Planning Policy Wales

5.8.1 The latest update of Planning Policy Wales (PPW) was published by Welsh Government in February 2021 and was updated in October 2023. The PPW sets out the Welsh Government's planning policies and how these should be applied for development in Wales. Footnote 60 to PPW refers to the Welsh Government's Policy Statement: Local ownership of energy generation in Wales – benefitting Wales today and for future generations (February 2020) (Ref 5-19), which sets out the Welsh Government's ambition for delivering renewable energy capacity which also brings prosperity for local communities.

5.8.2 As mentioned above, as at the date of this EIA Scoping Request, the DCO Application must be determined in accordance with s105 of the Planning Act 2008. The Secretary of State must have regard to any local impact report, and any other matters which the Secretary of State thinks are both important and relevant to their decision. PPW is a document that will be important and relevant for the purposes of the Secretary of State's decision making. The PPW also provides relevant context for individual assessment topics. In some instances, the NPS' include specific references to PPW.

5.8.3 PPW is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.

5.8.4 PPW highlights the Welsh Government's support for renewable energy by stating that low carbon electricity must become the main source of energy in Wales. Section 5.9 also states that local authorities should "facilitate all forms of renewable and low carbon energy development and should seek cross-department co-operation to achieve this". PPW clarifies that in doing so, planning authorities should seek to ensure their area's full potential for renewable and low

carbon energy generation is maximised and renewable energy targets are achieved.

5.8.5 PPW highlights the importance of energy storage in managing the transition to a low carbon economy and states that proposals for new storage facilities should be supported wherever possible.

5.8.6 PPW also highlights the Welsh Government's expectations on local involvement and community benefit. Paragraph 5.9.24 states that "all new renewable energy projects in Wales to include at least an element of local ownership, to retain wealth and provide real benefit to communities."

5.8.7 PPW outlines the expectations as it relates to relevant issues for solar pv development, including on biodiversity and on the best and most versatile land resource. For instance, as it relates to agricultural land, paragraph 3.59 states that “when considering the search sequence and in development plan policies and development management decisions considerable weight should be given to protecting such land from development, because of its special importance. Land in grades 1, 2 and 3a should only be developed if there is an overriding need for the development, and either previously developed land or land in lower agricultural grades is unavailable, or available lower grade land has an environmental value recognised by a landscape, wildlife, historic or archaeological designation which outweighs the agricultural considerations.”

5.8.8 Updates have been made to PPW in October 2023 following a consultation earlier in 2023, in order to address the Nature Emergency through the Planning System through an Annex, and to be formally included in the next iteration of the Policy (version 12). The main changes to the policy are regarding taking a stronger approach to Green Infrastructure, further clarity regarding the application of the step-wise approach to securing net benefit for biodiversity, strengthened approach to the protection of SSSI's and closer alignment with stepwise approach regarding the management of trees and woodlands.

5.9 Regional Policy

North Wales Energy Strategy (November 2021)

5.9.1 The North Wales Energy Strategy (NWES) (Ref 5-20) was produced by the North Wales Economic Ambition Board, with support from Welsh Government. It is a regional energy strategy which covers the administrative areas of the following local authorities: Isle of Anglesey; Gwynedd, Conwy; Denbighshire; Flintshire; and Wrexham.

5.9.2 The overall objective of this strategy is to develop a strategic pathway identifying key interventions to deliver on the region's ambitions for decarbonising its energy system and ensure the region benefits from the transition. It contains an 'Energy Vision scenario' modelled to set out a potential decarbonisation route that will put the region on track to achieve a net zero energy system by 2050.

5.9.3 This NWES seeks to "harness the abundance of local low carbon resources to become a green powerhouse and diversify the energy mix', inter alia through "…the deployment of land-based renewables such as onshore wind, hydroelectric, solar PV and hydrogen".

5.9.4 The 'Energy Vision' scenario within the NWES would see increases in the deployment of ground-mounted solar PV, anaerobic digestion (including biomethane-producing sites), biomass electricity/CHP and hydropower. It clarifies that each of these technologies could have a small but significant impact on local renewable energy generation with associated economic benefits.

Emerging North Wales Strategic Development Plan

5.9.5 As required by the Future Wales: National Plan 2040 (February 2021), each region must have a Strategic Development Plan (SDP) that recognises the strengths and challenges in that region, and also complements the plans and work taking place in other regions. SDPs must embed placemaking as an overarching principle, and co-ordinate and manage development across each region to ensure that wider than local matters are tackled collaboratively.

5.9.6 SDPs must be produced by Corporate Joint Committees (CJCs). The North Wales CJC was established on 01 April 2021 and will exercise functions relating to strategic development, planning and regional transport planning. There was a

consensus among the North Wales local authorities that the CJC should continue in the direction established by the North Wales Economic Ambition Board, and that the functions of this board should be transferred by way of delegation agreement to the North Wales CJC.

5.9.7 The North Wales CJC appear to be at an early stage of establishing the SDP but it is understood that the strategic planning sub-committee will prepare the draft delivery agreement and progress the SDP.

5.10 Local Policy

Anglesey and Gwynedd Joint Local Development Plan (July 2017)

5.10.1 The development plan for the Isle of Anglesey comprises the Joint Anglesey and Gwynedd Local Development Plan 2011 to 2025 (JLDP) (Ref 5-21), which was adopted on 31 July 2017. The JLDP is a land use development strategy covering a 15-year period and aims to inter alia protect areas to ensure the maintenance and enrichment of the natural and built environment. The JLDP confirms that studies in 2014 and 2016 confirmed there are opportunities for solar PV farms in the Plan's area.

5.10.2 Policy PS 7 (Renewable Energy Technologies), Policy ADN 2 (PV Solar Energy) and Policy PCYFF 5 (Carbon Management) within the JLDP (Ref 5-21) are those of most relevance to the principle of large-scale solar development. These policies provide a policy framework to promote the use of renewable energy or low carbon technology as part of individual developments or through provision of stand-alone equipment, whilst not compromising the objectives of landscape and conservation designations.

5.10.3 Policy ADN 2 (PV Solar Energy) asserts that proposals for Solar PV Farms of 5MW or more should be directed to the potential search areas shown on the Proposals Map. Proposals of this scale will only be permitted in other locations in “exceptional circumstances when the need for a scheme can be justified and there are specific locational circumstances”. Policy ADN 2 sets out the criteria for which solar PV farms of 5MW or more would need to conform to including requiring mitigation of impacts on landscape character, heritage assets and natural

resources, no significant harm to the safety or amenity of sensitive receptors and no resultant unacceptable cumulative impacts.

Isle of Anglesey Supplementary Planning Guidance

5.10.4 To aid the interpretation of policies within the development plan, and to provide additional guidance on specific topics, the Council has adopted the following supplementary planning guidance which could be relevant to the proposed solar development:

- Design in the Urban and Rural Built Environment (March 2008) (Ref 5-22). Although this supplementary planning guidance was prepared for the previous development plan, the Isle of Anglesey County Council concluded this guidance is still relevant.
- Planning Obligations (September 2019) (Ref 5-23)
- Maintaining and Creating Distinctive and Sustainable Communities (July 2019) (Ref 5-24).

5.10.5 Whilst not supplementary planning guidance, the Council has also published the Isle of Anglesey County Council's Community Benefit Contributions Strategy (November 2021) (Ref 5-22). This document does not form part of the Council's suite of supplementary planning guidance but does set out its expectations in relation to securing voluntary community benefit contributions from major development, and therefore could represent an important and relevant consideration in the determination of an application for a DCO.

Anglesey and Gwynedd Development Plan Review

5.10.6 The Anglesey and Gwynedd Joint Planning Policy Service (JPPS) have begun the process of reviewing the JLDP and preparing a replacement plan. The JPPS published a review report in March 2022 which looked at all the evidence relevant to the JLDP. This concludes that due to contextual changes together with issues beyond the control of the JLDP, such as the implications of the Covid pandemic, Brexit, population and household projections and the uncertainty associated with Wylfa Newydd, it is appropriate that a Full Plan Review is undertaken.

5.10.7 The Draft Review Report was subject to a 6-week public consultation period between 5th November to 20th December 2021. The Full Council agreed at its

meeting on 10th March 2022 to publish the Review Report and submit it to the Welsh Government for their consideration. The report concluded that it was considered appropriate that a Full Plan Review is undertaken. It is anticipated that the SDP will be prepared in parallel and that the Join Planning Policy Service will be required to provide input into the process of preparing the SDP.

5.11 References

Ref 5-1 National Infrastructure Commission (2020) Net Zero: Opportunities for the Power Sector.

Ref 5-2 Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2021) British Energy Security Strategy.

Ref 5-3 Department for Energy Security and Net Zero (2023) Powering Up Britain: Energy Security Plan.

Ref 5-4 National Grid Electricity System Operator (2021) Future Energy Scenarios.

Ref 5-5 Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2021) Net Zero Strategy: Build Back Greener

Ref 5-6 Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2020) Energy white paper: Powering our net zero future.

Ref 5-7 Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2021) Planning Act 2008.

Ref 5-8 Department of Energy and Climate Change (2011) NPS for Overarching Energy (EN-1).

Ref 5-9 Department of Energy and Climate Change (2011) NPS for Renewable Energy (EN-3).

Ref 5-10 Department of Energy and Climate Change (2011) NPS for Electricity Networks (EN-5).

Ref 5-11 Department for Energy Security and Net Zero (2023) draft NPS for Overarching Energy (EN-1).

Ref 5-12 Department for Energy Security and Net Zero (2023) draft NPS for Renewable Energy (EN-3).

Ref 5-13 Department for Energy Security and Net Zero (2023) draft NPS for Electricity Networks (EN-5).

Ref 5-14 Welsh Government (2021) Future Wales: The National Plan 2040.

Ref 5-15 Welsh Government (2021) Planning Policy Wales – Edition 11.

Ref 5-16 Welsh Government (2021) Planning Policy Wales – Edition 11.

Ref 5-17 Welsh Government (2021) Planning Policy Wales – Edition 11.

Ref 5-18 Welsh Government (2022) Guidance for developers, local communities & decision-makers: Local and shared ownership of energy projects in Wales.

Ref 5-19 Welsh Government (2020) Policy statement: local ownership of energy generation in Wales - benefitting Wales today and for future generations.

Ref 5-20 Gwasanaeth Ynni (2021) North Wales Energy Strategy.

Ref 5-21 Isle of Anglesey County Council and Gwynedd Council (2017) Anglesey and Gwynedd Joint Local Development Plan.

Ref 5-22 Isle of Anglesey County Council and Gwynedd Council (2008) Design in the Urban and Rural Built Environment Supplementary Planning Guidance.

Ref 5-23 Isle of Anglesey County Council and Gwynedd Council (2019) Planning Obligations Supplementary Planning Guidance.

Ref 5-24 Isle of Anglesey County Council and Gwynedd Council (2019) Maintaining and Creating Distinctive and Sustainable Communities.

Ref 5-22 Isle of Anglesey County Council and Gwynedd Council (2021) Community Benefit Contributions Strategy.

6 Environmental Impact Assessment Methodology

6.1 The EIA Process

6.1.1 EIA is the process of compiling, evaluating and presenting all the likely significant environmental effects of a project, prior to major decisions being made. It is born out of Directive 85/337/EC (as amended) (Ref 6-1) on the assessment of the effects of certain public and private projects on the environment. Following a series of amendments, a new Directive, EIA Directive 2014/52/EU (Ref 6-2) came into force on 15 May 2014. This Directive was transposed into English law, for the purposes of the Project, on 16th May 2017 through the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (Ref 6-3).

6.1.2 To ensure that the EIA Regulations continue to operate following the UK's withdrawal from the European Union, the EIA Regulations were amended under the Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018 (SI 2018/1232) (Ref 6-4) to replace references to EU Directives and legislation and to uphold international obligations through domestic legislation.

6.1.3 In general terms the main stages in the EIA are as follows:

- Baseline Conditions – collation and review of available data and undertake baseline surveys
- Scoping – identification of likely significant issues to determine the scope of the EIA
- Consultation – seek feedback from consultees and the public in relation to key environmental issues, methodology adopted and design approaches
- Assessment Methodology – define methodologies using topic specific guidance and best practice techniques and assess the likely significant effects of the Project, identify and evaluate alternatives, provide feedback to the project design team, incorporate any necessary mitigation measures and assess residual effects
- Preparation of the Environmental Statement and non-technical summary

6.1.4 The assessment process is designed to produce an environmentally sensitive development by considering and assessing the effects of the Project against

existing environmental baseline conditions. To date, the EIA team has undertaken a review of both the environmental sensitivities within and surrounding the Site and within the Scoping Study Area to identify any potential environmental effects. Where the baseline environment has been informed by Site visits and environmental surveys, these have been detailed in the relevant topic section of this Scoping Request.

6.1.5 The EIA process will be undertaken in accordance with the EIA Regulations, guidance produced by PINS and the Institute of Environmental Management and Assessment (IEMA) and other environmental topic-specific guidance. The ES will set out details on the methodology and approach, along with the overall conclusions of the EIA process. It will also outline the main parameters and detailed design aspects of the Project against which the assessment will be undertaken.

6.1.6 Development parameters will be determined and fixed for the purposes of the EIA through an iterative approach taking into account baseline environmental information, the evolving design and any associated technical requirements.

6.1.7 The EIA will assess the construction, operational and decommissioning phases of the Project.

6.2 Baseline Conditions

6.2.1 An important step in the EIA process is to establish a baseline against which to assess the effects of the Project. Information relating to the existing environmental baseline will be collected through field and desktop study, including:

- Online/digital resources
- Data searches, e.g. Local Biological Record Centres, Historic Environment record, etc.
- Baseline Site surveys
- Available environmental information submitted in support of other planning applications for development in the vicinity

6.2.2 For each environmental topic chapters, the methods of baseline data collection will be discussed with the relevant consultees.

6.3 EIA Scoping

6.3.1 Whilst every ES should provide a full factual description of the development, the emphasis of Schedule 4 (of the EIA Regulations) is on the 'significant' environmental effects to which a development is likely to give rise. Regulation 10(3) of the EIA Regulations require an EIA Scoping Request to include an explanation of the likely significant effects of the development on the environment. It isn't the role of the EIA and ES to assess all potential effects of Project, which is further evidenced by Regulation 14(2)(b), which requires the ES to include a description of the likely significant effects of Project on the environment.

6.3.2 Where relevant, the environmental topics set out within this Scoping Request provide an outline of the proposed approach to assessment and the potential environmental effects. The ES will provide an objective analysis of the likely significant environmental effects and highlight the key issues relevant to the decision-making process.

6.3.3 In accordance with the EIA Regulations, a cumulative assessment will also be undertaken. The approach to this assessment is outlined in more detail in Chapter 6 of this report.

6.3.4 Upon receipt of the EIA Scoping Opinion, the points raised within the Scoping Opinion will be presented within a tabulated format. This table will be included within the ES and be used to sign-post stakeholders to the relevant section of the ES so to demonstrate how the points raised have been considered and addressed.

6.4 Consultation

6.4.1 Consultation with stakeholders will be undertaken throughout the EIA process to gather feedback on the emerging project proposals, baseline survey methodologies and results and assessment methodology. Consultation with statutory consultees and stakeholders has already commenced to help inform the content of this EIA Scoping Request. Further detail on stakeholders who have already been consulted can be found within the individual environmental chapters of this document.

6.5 EIA Methodology

EIA Assessment Scenarios

6.5.1 The EIA will assess the effects of the following scenarios:

- Construction Phase
- Operational Phase
- Decommissioning Phase

6.5.2 The Operational Phase is proposed to be 60 years. Detail on the anticipated construction programme and start of operation will be provided in the PEIR from the basis of technical assessments.

6.5.3 The ES will include within each of the environmental topics a description of the current baseline and the future baseline.

6.5.4 The 'future baseline' scenario will describe the changes from the baseline scenario as far as natural changes can be established.

6.5.5 The potential likely significant effects arising as a result of the Project will be assessed against these three baselines as follows:

- Construction Phase – Current and Future Baseline
- Operational Phase – Future Baseline
- Decommissioning Phase – Future Baseline

Prediction of Likely Effects

6.5.6 When undertaking an EIA, environmental effects are classified as either permanent or temporary, as appropriate to the effect in question. Permanent effects are those which are irreversible (e.g., permanent land take.) The duration of temporary effects differs for each environmental topic depending on their own methodologies but can broadly be defined as:

- Short Term
- Medium Term
- Long Term

6.5.7 In assessing the significance of likely effects identified through the EIA process, account will be taken as to whether effects are direct or indirect, secondary,

cumulative, transboundary, short, medium or long term, permanent or temporary and neutral, positive or negative.

Determining Significance

6.5.8 The EIA will identify the likely 'significance' of environmental effects (beneficial or adverse) arising from three phases (construction, operation and decommissioning) of the Project. The significance of residual effects will be determined by reference to the criteria set out for each environmental topic. The approach to assessing and assigning significance to an environmental effect is derived from a variety of sources including, in particular, the NPSs, Planning Policy Wales (PPW) and relevant planning practice guidance, legislative requirements, topic specific guidelines, standards and codes of practice, the EIA Regulations, advice from statutory consultees and other stakeholders and the expert judgement of the team undertaking the EIA.

6.5.9 The likely effect that the Project may have on identified environmental receptors will be influenced by a combination of the sensitivity (or importance) of the receptor and the predicted magnitude of impact from the baseline conditions.

6.5.10 Assignment of environmental sensitivity of a receptor will generally depend on the vulnerability, recoverability and value/importance of the receptor. The environmental sensitivity (or importance) will be determined using the following categories:

- High – high importance and rarity, international level and very limited potential for submission
- Medium – high or medium importance and rarity, regional level and limited potential for substitution
- Low – low or medium importance and rarity and local level.
- Negligible – very low importance or rarity and local level

6.5.11 Where other categories of sensitivity have been used, this will be set out in the individual environmental topic assessment.

6.5.12 The categorisation of the magnitude of impact will take into account the following factors:

- Extent
- Duration
- Frequency
- Reversibility

6.5.13 Impacts will be defined as either beneficial or adverse. As a guide magnitude of impact will generally be assigned using the categories below. Further details of the topic-specific methodologies adopted for the EIA, will be defined within the methodology section of each of the topic chapter:

- High:
  - Adverse: Loss of a resource and/or quality and integrity of a receptor; severe damage to key characteristics, features or elements.
  - Beneficial: Large scale or major improvement of receptor quality; extensive restoration or enhancement, major improvement of attribute quality.
- Medium:
  - Adverse: Loss of resource, but not adversely affecting integrity; partial loss of and/or damage to key characteristics, features or elements.
  - Beneficial: Benefit to or addition of key characteristics, features or elements. An improvement to attribute quality.
- Low:
  - Adverse: Some measurable change in attributes, quality or vulnerability, minor loss of or alteration to one (possibly more) key characteristics, features or elements.
  - Beneficial: Minor benefit to or addition of one (possibly more) key characteristics, features or elements, some beneficial impact on attribute or reduced risk of a negative impact occurring.
- Negligible:
  - Adverse: Very minor loss or detrimental alteration to one or more characteristics, features or elements.
  - Beneficial: Very minor benefit to or positive addition of one or more characteristics, features or elements.

- No change: No loss or alteration to characteristics, features or elements, no observable impact in either direction.

6.5.14 The overall significance of the effect will be assigned by the interaction of both sensitivity of the receptor and magnitude of impact. The level of significance will be determined in each of the environmental topic assessments and will consider relevant topic-specific legislation, planning policy and guidance.

6.5.15 Professional judgement will be used to assign the most appropriate option where the matrix offers more than one level of significance. The topic assessments will adopt this general approach to assigning significance, unless stated in the individual topic chapters.

Cumulative Effects

6.5.16 The cumulative assessment will be undertaken in accordance with PINS Advice Note 17 and consider two types of cumulative effects:

- Effect interactions: combined effect of an individual development effects – for example, noise, dust and visual on one particular receptor.
- In-combination effects: multiple developments generating additive effects which together have an increased effect on the same receptors.

Effect Interactions

6.5.17 Each topic chapter within the ES will provide a summary of effect interactions, setting out how the particular topic area has considered and assessed synergistic effects arising as a result of direct effects from other environmental chapters. Rather than assessing this separately, these effects are often considered within the main assessment owing to the integrated nature of the EIA process, where this is the case, this will be explained within each of the environmental topic chapters of the ES.

In-combination effects

6.5.18 The cumulative effects assessment will adopt a four-staged approach, as set out in the following subheadings.

Stage 1

6.5.19 The first step will be to prepare a long list of other developments with the potential to have in-combination effects with the Project. The long list will be developed based on the appropriate Zones of Influence (ZoI) for each topic discipline. The ZoI for each environmental topic area will be identified based on the extent of likely effects in line with industry specific guidance along with professional judgement and knowledge of the local area for each environmental topic area.

6.5.20 The long list will be shared with the Isle of Anglesey County Council to ensure that the list is comprehensive. It will be kept under review up until the point of determination of the application to ensure that the information within the ES is up to date at the point of decision.

Stage 2

6.5.21 Stage 2 of the cumulative effects assessment approach will be to review and apply a threshold criteria to the long list, in order to establish a short list of other existing and/or approved development to ensure that the cumulative assessment is proportionate. The criteria will ensure that only other existing and/or approved development which is likely to result in significant cumulative effects is taken forward to the assessment stage. The shortlist of existing and/or approved development will be consulted upon with statutory and non-statutory consultees during the EIA process. The threshold criteria to be used will consider the following factors:

- Temporal Scope
- Scale and Nature of the Development
- Other factors such as, nature and capacity of the receiving environment, source-pathway-receptor approach
- Professional judgement

Stage 3

6.5.22 Environmental information will be gathered for short listed existing and/or approved development, where available, including details of:

- Proposed design
- Location

- Programme (construction, operation and decommissioning)
- Baseline data
- Effects arising from such other developments

Stage 4

6.5.23 Technical disciplines will contribute to the preparation of an in-combination effects chapter of the PEIR/ES. The assessment will be undertaken to an appropriate level of detail commensurate with the information available on other existing and/or approved developments and will set out measures envisaged to reduce or avoid any identified significant adverse cumulative effects and, where appropriate, any proposed monitoring arrangements.

Transboundary Effects

6.5.24 Regulation 32 of the EIA Regulations require the consideration of any likely significant effects in the environment of another European Economic Area (EEA) member state. Guidance of the consideration of transboundary effects is provided in the PINS' Advice Note Twelve 'Transboundary Impacts and Process', published in December 2020 (Ref 6-5).

6.5.25 Annex 1 of Advice Note Twelve sets out the transboundary screening proforma for potential effects on the environment on another EEA member state and includes the following criteria and relevant considerations:

- Characteristics of the development
- Location of development (including existing use) and geographical areas
- Environmental importance
- Potential impacts and carrier
- Extent
- Magnitude
- Probability
- Duration
- Frequency
- Reversibility
- Cumulative impacts

Mitigation

6.5.26 Regulation 14(2) of the EIA Regulations requires that where significant effects are identified 'a description of any features of the proposed development, or measure envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects in the environment' should be included in the ES.

6.5.27 Environmental effects remaining after mitigation measures have been incorporated are termed residual effects and these will be fully described in the ES.

6.5.28 Mitigation measures are developed as part of an iterative process and therefore will be developed throughout the EIA process in response to the findings of the initial assessments.

6.5.29 Measures will be identified in order to avoid, reduce and, if possible, offset significant adverse effects identified during the EIA process. Where possible, these measures will be incorporated into the form or design of the Project. Once these measures are incorporated into the design, they are termed 'embedded measures'.

6.5.30 Embedded measures relevant to the construction phase will be described within an outline Construction Environmental Management Plan (CEMP), and within each technical chapter.

6.5.31 For the operational phase, such embedded measures will be represented in the design of the Project, and through control measures as part of the DCO such as an outline Operational Environmental Management Plan (OEMP). Embedded measures will either be incorporated into the design from the outset or identified through the assessment process.

6.5.32 The ES will assess effects with embedded measures in place. Where significant adverse effects are identified after considering these embedded measures, 'additional mitigation measures' will be proposed. These will be taken into account in the assessment of residual effects.

6.5.33 A summary of all mitigation measures and how they will be secured, either inherently through the Project design, or through control documents, or requirements within the DCO, will be set out in the ES.

Monitoring

6.5.34 The EIA Regulations require “the monitoring of any significant adverse effects on the environment of the Project”. The ES will specify which effects, if any, will require monitoring.

Consideration of Alternatives

6.5.35 It is necessary to consider reasonable alternatives for the Project, and to set these out clearly in the ES, in accordance with paragraph 2 of Schedule 4 to the EIA Regulations:

"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

6.5.36 Regulation 14(2)(d) of the EIA Regulations also requires that the ES should include:

"A description of the reasonable alternatives studies by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment".

6.5.37 The consideration of alternatives will likely involve the analysis of different layouts, scales, technologies adopted, design parameters and Site selection process. The ES will include a description of the alternatives relevant to the Project that have been considered, as well as the justification for selecting the chosen option. The consideration of alternatives will be presented within a standalone chapter within the ES.

6.6 Environmental Statement

6.6.1 In accordance with Regulation 14(3) of and Schedule 4 to the EIA Regulations, the EIA process will be documented in an ES which will describe the Project, give full details of the EIA methodology and any technical methodologies and data used in support of the assessment; detail any mitigation and enhancement measures that have been employed; present the assessment of likely significant environmental effects and provide a schedule of proposed mitigation and monitoring arrangements. The ES will present the residual effects, and an assessment of the cumulative effects and impact interactions as described in each of the topic sections within this Scoping Request.

6.6.2 Subject to responses from statutory consultees on this Scoping Request, the ES will consist of the following Volumes:

Volume I: Main ES Text and Supporting Drawings

6.6.3 This Volume will comprise the main ES text and supporting drawings and will include the following:

- A description of the methodology and approach to EIA
- A detailed description of the Site
- A detailed description of the Project, including details of the construction, operational and decommissioning phases
- A description of the evolution of the design process, including a review of the main layout options and reasonable alternatives along with an indication of the main reasons for selecting the chosen option
- A detailed assessment methodology for each environmental topic scoped into the EIA
- A description of the current baseline environment and an outline of the likely evolution thereof without implementation of the development for each environmental topic
- An assessment of predicted environmental effects during the construction, operational and decommissioning phases
- A description of the mitigation measures proposed
- A description of any residual environmental effects

- The impact of the project on climate and the vulnerability of the project to climate change
- An assessment of cumulative effects

Volume II: Technical Appendices

6.6.4 Volume II will include all technical data required to support the assessment conclusions set out in Volume I.

Volume III: Non-Technical Summary

6.6.5 A Non-Technical Summary (NTS) will be prepared which will provide a brief description of the Project, a broad summary using non-technical language of the likely significant effects, and mitigation measures identified to reduce or remove those effects. This document will be provided in Welsh and in English.

Content of the ES

6.6.6 The proposed content of Volume I of the ES is proposed as follows:

- Chapter 1: Introduction
- Chapter 2: Description of Site and Context
- Chapter 3: Site Selection and Alternatives
- Chapter 4: Description of Project
- Chapter 5: Consultation
- Chapter 6: Legislative and Planning Policy
- Chapter 7: EIA Methodology including details of assumptions and/or limitations
- Chapter 8 – 17: Environmental Topic Assessments
- Chapter 18: Cumulative Assessment
- Chapter 19: Summary of Residual Effects and Mitigation Measures including details of how mitigation will be secured

6.6.7 Each of the technical assessments will be set out in the following format:

- Introduction
- List of relevant legislation and planning policies
- Assessment methodology, including a summary of consultation undertaken, explanation of how the assessment responds to the EIA Scoping Opinion,

list of sources of information & guidance documents, details of the study area, assessment process/criteria and any assumption and limitations

- Baseline Description of the Site (current state of the environment (baseline) and an outline of the likely evolution thereof without the implementation of the Project (future baseline)
- Assessment of likely significant effects (including the impact of climate change and major accidents/disasters where relevant)
- Proposed enhancement, mitigation and monitoring measures
- Residual effects
- Summary
- List of references

6.7 References

Ref 6-1 European Union (1985) Directive 85/337/EC.

Ref 6-2 European Union (2014) Directive 2014/52/EU.

Ref 6-3 HM Government (2017) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

Ref 6-4 HM Government (2018) The Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018.

Ref 6-5 The Planning Inspectorate (2020) Advice Note Twelve: Transboundary Impacts and Process.

Ref 6-6 Institute of Environmental Management and Assessment (2017) Delivering Proportionate EIA.

Ref 6-7 Institute of Environmental Management and Assessment (2015) Shaping Quality Development Guidance.

7 Proposed Scope of the PEIR and ES

7.1 Introduction

7.1.1 Regulation 5 of the EIA Regulations sets out the requirements and scope of the EIA Process. This chapter of the EIA Scoping Request sets out how the EIA process and ES will consider those factors listed within Regulation 5.

7.1.2 Following a review of environmental surveys and preliminary appraisal work to date, it is proposed that the EIA needs to focus on the following environmental topics where there is potential for significant effects occur:

- Landscape and Visual
- Ecology and Biodiversity
- Cultural Heritage
- Transport and Access
- Air Quality
- Noise and Vibration
- Ground Conditions
- Soils and Agriculture
- Water Resources
- Climate Change
- Glint and Glare
- Socio-economics
- Health
- Other Matters (including Glint and Glare)

7.1.3 These topics are referred to in greater detail in this chapter, under the following headings:

- Introduction
- Baseline Conditions
- Assessment Methodology
- Potential Effects
- Proposed Scope
- Consultation

7.2 Landscape and Visual

Introduction

7.2.1 This section of the Scoping Report sets out the approach to the Landscape and Visual Impact Assessment (LVIA). The baseline conditions are first established followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

Baseline Conditions

Site Context

7.2.2 The baseline conditions of the Site and surrounding context are described as follows:

Maen Hir North

7.2.3 Maen Hir North is situated between Amlwch to the north-east, Rhosybol to the south-east, Rhosgoch to the south and Bodewryd to the west. This parcel of the Site is centred around the former Shell site with remnant haul roads, hardstandings, embankments and settling pools surrounded by areas of regenerating scrub, gorse and woodland. A disused railway line associated with the copper mine at Parys Mountain extends between Rhosgoch and Amlwch to south of the former Shell site.

7.2.4 The land use is predominantly pastoral grazing with improved grassland across the drumlins and the Afon Wygr valley to the north-west. A semi-elevated upland plateau is located near Clegyrog Blas and Mynydd Mechell to the west of the northern parcel. Field boundaries are defined by cloddiau, hedgerows and stock proof fencing of variable condition and intactness.

7.2.5 To the south-east of the former Shell site, the landform is more gently undulating and dissected by the disused railway, with pastoral fields and forestry stretching below the rising escarpments of Pen-y-mynydd and the visually prominent pit head and copper mines at Parys Mountain to the east.

7.2.6 The character of the northern parcel is partly influenced by existing renewables infrastructure including the Ysgellog wind turbines, Fferm Wynt wind farm and the

Rhyd-y-groes solar farm to the north, as well as the 400kV overhead transmission lines extending between Clegyrog Blas and Rhosgoch to the west.

7.2.7 The northern parcel is visible to varying degrees from a number of public highways including the unclassified lanes between Rhosgoch, Bodewyrd, Hafodllin Fawr, Pen-y- Frynwent, Pen-Parc Bach and Bodelffra.

7.2.8 The northern parcel is also partially visible from a number of public rights of way (ProW) although many of these routes appear to be no longer in use following our initial field investigations. Views of the northern parcel from PRoW are likely to include:

- Public footpaths 11/041/1, 11/041/2, 11/040/3, 11/039/1 to the north-east of the northern parcel between Pen Parc Bach, Trogog-Ishaf and Llain Delyn
- Public footpaths 11/037/1 at Penciw to the north-east of the former Shell site, and public footpaths 11/075/1, 44/028/1, 44/028/2, 38/068/1 through the woodland at Gorsedd Wygr to south of the former Shell site
- Public footpaths 38/065/4, 38/065/5, 38/066/1, 38/067/1, 38/067/2, 38/069/1, 38/069/2, 38/070/1, 38/072/1, 38/074/1, 38/074/2, 38/074/3, 38/085/1 and 44/035/1 between Bodewryd, Rhosgoch and Clegyrog Blas to the west of the northern parcel

7.2.9 The northern parcel is partly within the Mynydd Mechell Special Landscape Area (SLA) designation to the west at Clegyrog Blas within the visual context of the existing 400kV overhead lines. The northern parcel is also partially visible within distant and elevated views from the Parys Mountain SLA approximately 1.75km to the east. The northern parcel would not be clearly perceptible from within the Anglesey Area of Outstanding Natural Beauty (AONB) designation approximately 1.05km to the north due to the intervening landform and the existing renewables development at Fferm Wynt Wind Farm and the Rhyd-y-groes Solar Farm.

Maen Hir Central

7.2.10 Maen Hir Central is situated to the north and east of the Llyn Alaw reservoir between Garreg Fawr, Llanbabo, Bryn Pabo, Rhosgoch, Rhosybol and Llanerch-y-medd. The central parcel covers the northern and eastern margins of the Llyn Alaw reservoir extending to the higher plateau to the north-west of Llanbabo beneath the Llyn Alaw Wind Farm near Tyn Rhos.

7.2.11 The central parcel is predominantly pastoral grazing with improved grassland. Field boundaries are defined by stock proof fencing, hedgerows and cloddiau, although historic hedgerow removal and field amalgamation is evident to the north and east of the central parcel.

7.2.12 The character of the central parcel is partly influenced by the Llyn Alaw Wind Farm to the north-west, and the 400kV overhead lines between Rhosgoch and Llandyfrydog to the east at the potential location of the Project Substation. Other 400kV overhead lines are visible to the west of the central parcel near Garreg Fawr on the boundary of the Site and the Mynydd Mechell SLA.

7.2.13 The central parcel is visible to varying degrees from a number of public highways including the B5111 between Rhosybol and Llanerch-y-medd to the east, the unclassified lanes between Ty'n-y-ffrwd, Tyn-rhos, Rhos Engan and Gongl Rhedyn to the north and east, and between Llanbabo, Bryn Pabo and Garreg Fawr to the west.

7.2.14 The central parcel is restricted in terms of access from PRoW although views would be perceptible to varying degrees from:

- Public footpaths 38/056/1, 38/084/1 and 47/020/1 to the north-west of the central parcel near Garreg Fawr and the Llyn Alaw Wind Farm
- Public footpath 44/032/1 and the permissive footpath along the northern shore of the Llyn Alaw reservoir near Gongl Rhedyn and Refail Newydd
- Public footpath 44/031/1 at Tyn-rhos on the higher ground to the north-east of the Llyn Alaw reservoir and to the north of the potential Project Substation
- Public footpath 44/027/1 between the disused railway, Glasgraig Fawr and the unclassified lane

- Public footpath 25/003/1 between the B5111 to the north of Llanerch-y-medd and Ceidio to the south
- Public footpaths 25/016/1 and 25/036/1 at the Penwerthyr Nature Reserve to the south of the Llyn Alaw reservoir
- Copper Trail cycle route following the B5111 near Llanerch-y-medd to the south-east of the central parcel

7.2.15 The central parcel is partly visible from the uplands within the Mynydd Mechell SLA to the north-west. However, these views of the central parcel would in the context of the existing 400kV overhead lines at Garreg Fawr and the Llyn Alaw Wind Farm to the north-west. The central parcel will also be distantly perceptible within elevated panoramic views from Mynydd Bodafon and the AONB approximately 4.32km to the east.

Maen Hir South

7.2.16 Maen Hir South is situated between Maenaddwyn, Capel Coch, Tre-Ysgawen and Bachau to the east of Llanerch-y-medd. The Site here is broadly horseshoe shaped and contained on the lower ground to the east and west of a low ridgeline divided by a farm track between Yns Groes, Ynys Bach and Yns Fawr.

7.2.17 The southern parcel is predominantly pastoral grazing with medium scale field enclosures defined by hedgerows, cloddiau and stock proof fencing within the surroundings of Cwyrt and Plas-Llanfihangel to the north. The southern parcel also contains areas of unimproved grassland, overgrown hedgerows and woodland to the south. Larger tracts of woodland and copses are found at Caer-mynydd Covert, New Covert, Flat Covert and Plevana Covert which encloses the skyline to the south of the southern parcel.

7.2.18 The character of the southern parcel is also partly influenced by the wind turbines near Plas-Llanfihangel and the 400kV overhead lines extending between Cae Fabli and Hebron to the north-east.

7.2.19 The southern parcel is visible to varying degrees from a number of public highways including the unclassified lanes between Bachau, Cwyrt Bach, Maenaddwyn and Capel Coch and the B5111 between Llanerch-y-medd and

Llangwyllog. The southern parcel itself is largely inaccessible in terms of PRoW although views would be perceptible to varying degrees from:

- Public footpaths 44/036/1, 44/058/1 and 44/058/2 between Cwyrt Bach, Lon Leidr and Hebron to the north
- Public footpath 40/031/1 at Mynydd Bodafon to the north-east
- Public footpath 25/012/1 on the higher ground between the B5111 and Bachau near Llanerch-y-medd to the west
- North Wales Coast National Cycle Route (NCR 500) following the unclassified lanes to the north and east of the southern parcel

7.2.20 The southern parcel is also partly visible within elevated panoramic views from Mynydd Bodafon approximately 1.19km to the north-east of the southern parcel within the AONB. However, the position of Maen Hir South would not interrupt any distant views towards the Eryri / Snowdonia National Park to the south-west of the elevated viewpoint at Mynydd Bodafon.

Landscape and Visual Study Area

7.2.21 It is accepted practice within LVIA that the extent of the study area is defined by the visual envelope arising from the development based upon the preliminary Zone of Theoretical Visibility (ZTV) mapping and fieldwork. In this case, a 3km Landscape and Visual study area has been defined beyond the Scoping Study Area boundary as shown on Figure 7-1. The Landscape and Visual study area is considered appropriate to cover the extent and likelihood of significant effects arising from the Project which would be material to the decision-making process.

7.2.22 The Landscape and Visual study area is likely to be further refined once the development parameters for the above ground components including the Solar PV Site, Project Substation and BESS have been further reviewed as part of the iterative masterplanning, assessment and consultation process.

Landscape Character

7.2.23 Landscape character is defined on page 157 of GLVIA3 (Ref 7-1) as the “distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.”

7.2.24 Landscape character assessments describe what makes an area unique and often includes guidance on measures to protect and improve local distinctiveness. Landscape character assessments can also highlight sensitive landscapes and/or landscape elements and features and inform decisions about how adverse effects arising from new development can be mitigated.

7.2.25 The LVIA will review a number of published Landscape Character Assessments (LCA) as further detailed below:

- Cyfoeth Naturiol Cymru / Natural Resources Wales (NRW) – National Landscape Character Areas
- Cyfoeth Naturiol Cymru / Natural Resources Wales (NRW) – National Seascape Assessment for Wales (Nov 2015)
- Isle of Anglesey County Council (IoACC) – Anglesey Seascape Character Assessment (2013)
- Isle of Anglesey County Council (IoACC) – The Anglesey Landscape Strategy: Landscape Character Area (Update 2011)
- Cyfoeth Naturiol Cymru / Natural Resources Wales LANDMAP database – comprising Geological, Habitats, Visual and Sensory, Historic and Cultural aspects

National Landscape Character Areas

7.2.26 NRW have identified 48 no. National Landscape Character Areas (NLCA's) at a broad scale across Wales. The descriptive profiles for the NLCA's highlights what distinguishes one landscape from another, with reference to their regionally distinct natural, cultural and perceptual characteristics.

7.2.27 Figure 7-2 shows that two NLCA's are located within the study area including NLCA02 Môn – Canolbarth Môn / Central Anglesey covering the Project and NLCA01 Arfordir Môn / Anglesey Coast following the coastal fringe to the north and east of the island.

7.2.28 The key characteristics and management objectives of NLCA 01 and NLCA 02 will inform the baseline condition assessments of the LVIA. However, due to the availability of more detailed IoACC and LANDMAP assessments undertaken at the local level, these will not be further assessed within the effects section of the

LVIA. The LVIA will review the following NLCA's within the baseline condition section as summarised within Table 7-1.

Table 7-1 National Landscape Character Areas

NLCA Ref	Key Characteristics
NLCA02 Môn – Canolbarth Môn / Central Anglesey (*covering the majority of the northern, central and southern parcels)	The land-locked central part of Anglesey – part of the largest island in Wales (720km²). Rock outcrops and a distinct geological grain – the gentle topography, low lying and near flat in places, follows a north-east to south-west 'grain' imposed by major faults. Contrasting rock types include Ordovician sandstones and shale, bands of volcanic tuffs and Carboniferous Limestone. In various places there are many craggy rock outcrops. Extensive drumlin fields – thick layers of glacial boulder clays, especially in north-west Anglesey, result in a classic 'basket of eggs' rolling drumlin landscape. Lowland pastures and mixed field patterns – silty and peat soils underlie lowland pastoral grazing land bounded by a strongly geometric pattern of medium to large scale and, more occasionally, small scale fields. Few woodlands – woodlands larger than a small copse are an exception, being notably around Llangefni Dingle and Llyn Cefni reservoir, together with estate woodlands at Presaddfed (Bodedern). Except in sheltered areas, individual trees are few. Generally rural settlement patterns – the only urban settlement is the county town of Llangefni, in the centre of the island. It's nucleated historic core contrasts with modern peripheral housing and expanding light industrial and business park developments. There are only a few villages, but numerous scattered hamlets and farms throughout the area. Linear, ribbon villages concentrate along Telford's the A5 road across the island. Prehistoric and funerary sites – ritual and funerary monuments including cairns and round barrows, Iron Age hill forts and Early Christian churches, burial grounds and inscribed stones. Historic windmill towers – including some restored examples, form local features.

NLCA Ref	Key Characteristics
	Modern wind farms – generally limited to an area north of Llandeusant but are seen in longer distance views from a much wider area. Llyn Alaw – a large reservoir, nearly 3 miles long and a notable visual feature, providing significant over wintering habitat for wildfowl. Llyn Cefni is a smaller example of the same.
NLCA01 – Arfordir Môn / Anglesey Coast (*covering small area to west of northern parcel)	The coastal zone – by far the largest island in Wales (720 km²) containing the largest outcrop of Precambrian rocks in southern Britain, but with areas of other rock types too. Much of the highest land – on the island falls within the coastal area, including Parys Mountain (147m) and Holyhead Mountain (220m). Strong geological orientation – there is a south-west to north-east geological orientation, resulting in corrugated topography, which is manifest along the coastline in places as rocky headlands and sandy bays. Igneous rock intrusions and outcrops of quartzite have created the dramatic landforms and skyline of Holyhead Mountain and South Stack, at Holy Island. Great variety of coastal types – the coastline has great variety, from sheer coastal cliffs and dramatic rocky headlands, to small sandy coves and extensive low lying dunes and sandy estuaries. A legacy of coastal quarrying that has long since ceased, remains apparent in places, for example at Penmen. Wind exposure but some shelter – the striking and windswept heathland landscapes of the wild coastline at Holyhead Mountain and North and South Stack, together with the barren, mined landscape of Parys Mountain, contrast markedly with the gentler, green, pastoral landscapes inland, away from the immediate coastal edge.

National Seascape Character Areas

7.2.29 NRW have identified 29 no. Marine Character Areas (MCA's) at a broad scale across the inshore waters of Wales. The National Seascape Assessment for Wales (Ref 7-2) notes that each MCA has its own individual character, distinctiveness and sense of place derived from the relationship between land and sea.

7.2.30 MCA06 North Anglesey Coastal Waters is located to the north, MCA06 Holyhead Bay and The Skerries to the north-west, and the Red Wharf and MCA03 Conwy Bays to the east of the study area. The ZTV (see Figures 7-7 to 7-13) and field investigations has shown that the coastal MCA's are unlikely to be affected by the Project and have therefore been scoped-out of the LVIA.

IoACC Landscape Character Areas

7.2.31 IoACC have undertaken a more detailed LCA at the local level. The Anglesey Landscape Strategy: Landscape Character Area (Ref 7-3) undertaken by TACP consultants identifies 18 no. LCA's with 7 no. LCA's located within the study area as shown on Figure 7-3. The LVIA will assess the following LCA's which are likely to be affected by the Project as summarised within Table 7-2.

Table 7-2 IoACC Landscape Character Areas

LCA	Descriptions
LCA 5, Gogledd Orllewin Yny Mon / North West Anglesey (*covers the northern and central parcels)	The key feature of its character is the extensive drumlin field. This has resulted in the classic "basket of eggs" description for the landscape…Interspersed with this landform are a number of hard rocky features such as Mynydd y Garn and Mynydd Mechell. The majority of the landscape is characterised by improved grassland, especially in the drumlin field. However there are a number of marshy grasslands amongst the drumlins as well as small scattered areas of scrub. The LCA also contains the largest water body on the island, Llyn Alaw, which is a reservoir and of importance to breeding birds and wintering wildfowl.
LCA 6, Almwch a'r Cyffiniau / Amlwch and Environs (*covers the northern and central parcels)	This LCA is centred around the historic town of Amlwch and includes the northern coastline between Bull Bay and Point Lynas. It essentially lies within a broad, shallow valley extending down to the coastline. Again more modern windfarm development has been an increasing feature and like LCA 5, the juxtaposition of disused windmills to modern windfarms clearly reflects the importance of wind energy in this part of the island.
LCA 7, Mynydd Parys / Parys Mountain (*1.2km east of	A unique, iconic landscape feature on Anglesey. In terms of landform, it forms a low but prominent ridge on a south west – north east orientation. Some 2kms long and 1km wide, rising to some 150 metres AOD, it forms a visually dominant feature

northern parcel and 2.3km north-east of central parcel)	within the more undulating surrounds. The mainly opencast method of extraction has left a “moonscape” of colourful outcrops impregnated with copper, lead and sulphur. This is interspersed with derelict pit headgear, settling ponds, tips and quarry faces. Much of the area is designated as a SSSI. The mine became an important cultural landscape feature, one of the sublime spectacles of its era visited by travellers and artists in search of contemporary aesthetic notions of the beautiful, picturesque or sublime. In more recent times it has provided a backdrop for films and science fiction programmes.
LCA 8, Cefnwlad Bae Dulas / Dulas Bay Hinterland (*follows eastern boundary of southern parcels)	The LCA is focused upon the sandy, shelving coastal landscape of Dulas Bay, where low tide exposes the extensive sandy beach of Traeth Dulas. As with much of this part of Anglesey, the landscape is gently undulating. The most prominent outcrop is Mynydd Bodafon.
LCA 17, Gorllewin Canol Ynys Mon / West Central Anglesey (*covers the southern parcel)	An expansive LCA which includes a large area of the rural heartland of Anglesey and including the settlements of Gwalchmai and Llangefni. The LCA also includes a small section of coastal landscape at Rhosneigr including Traeth Llydan, with its associated dune system and impounded water body (Llyn Maelog). The topography is generally undulating which reflects its underlying geology, particularly the Coedana Granites. This results in a number of rocky outcrops that typify the landscape of this part of the island. These, together with small areas of semi-natural habitats – hedges, trees, mires – are scattered throughout the area within a matrix of improved agricultural grassland.

Assessment of the Potential for Solar PV Farms in Gwynedd and Ynys Môn

7.2.32 IoACC have published an assessment of the potential for solar PV farms in Gwynedd and Ynys Môn (Ref 7-4) as part of the evidence base for the Joint Local Development Plan. Each of the LCA’s identified within Table 7-2 above have been attributed a solar sensitivity rating. The LVIA will review the methodology, criteria, and justifications applied to these LCA sensitivity ratings as outlined within Table 7-3.

Table 7-3 IoACC Landscape Character Area and Sensitivity Ratings

LCA	Sensitivity Rating	Notes
LCA 5, Gogledd Orllewin Yny Mon / North West Anglesey (*covers the northern and central parcels)	Medium	Outside the AONB and SLA it is considered there may be some capacity for micro to small scale developments, in particular where these would relate well to the existing built environment/urban landcover. There may also be limited capacity for very infrequent sensitively sited small to medium scale development towards the south of the LCA.
LCA 6, Almwch a'r Cyffiniau / Amlwch and Environs (*cover the northern and central parcels)	Medium	Within the AONB and SLAs (and all areas that contribute to their setting), there is typically no capacity for field-scale solar PV energy developments. Outside the AONB and SLAs it is considered there may be some capacity for well sited micro to small scale developments, in particular where these may relate to the existing built environment/urban landcover.
LCA 7, Mynydd Parys / Parys Mountain (*1.2km east of northern parcel and 2.3km north-east of central parcel)	High	N/A
LCA 8, Cefnwlad Bae Dulas / Dulas Bay Hinterland (*follows eastern boundary of southern parcels)	Medium-High	Sensitivity increases within the parts of this LCA that fall within the Anglesey AONB and the distinctive Parciau Estatelands SLA as these areas are more tranquil, remote and scenic. The AONB is focussed towards the east along the coast and the prominent landform of Mynydd Bodafon and is largely free from energy and other modern

LCA	Sensitivity Rating	Notes
		developments (with the exception of some static caravan/chalet parks). Outside the AONB and SLAs it is considered there may be some capacity for micro scale developments, in particular where these may relate to the existing built environment/urban landcover.
LCA 17, Gorllewin Canol Ynys Mon / West Central Anglesey (*covers the southern parcel)	Low Medium	Within the AONB and SLAs (and all areas that contribute to their setting), there is typically no capacity for field-scale solar PV energy (with the exception of very infrequent micro scale, development) The Mona airfield and A5/A55 corridor detract from the tranquillity of the landscape, further reducing sensitivity. There may also be limited capacity for larger scale developments, in particular towards the south west where the landscape is already influenced by modern infrastructure.

LANDMAP Assessments

7.2.33 The LANDMAP database provides a consistent approach and baseline for landscape character assessment in Wales. Planning Policy Wales (Ref 7-5) paragraph 6.3.20 advises that:

"LANDMAP is an important information resource, methodology and monitoring baseline for the landscape of Wales, which can help to inform planning for sustainable management of the natural resources in an area…[and that]…LANDMAP assessments can help to inform green infrastructure assessments, SPG on landscape, development management decisions,

landscape character assessments, Special Landscape Area (SLA's), local distinctiveness, design and landscape sensitivity studies."

7.2.34 LANDMAP comprises five datasets or geographical areas known as geological, habitats, visual and sensory, historic and cultural aspects as shown on Figure 7-4(i)–6-4(v). For any given location, all five evaluated aspects are recorded allowing for the inter-relationship between them to inform the landscape character of an area. A consistent methodology has been applied by NRW to assess and evaluate each aspect resulting in a structured and consistent set of LANDMAP survey records for the study area. The LANDMAP aspect areas will therefore provide a basis for the assessment of the Project on landscape character within the LVIA.

7.2.35 The LVIA will review all the geological, habitats, historic and cultural aspects covering the northern, central and southern parcels and cable route corridors with potential for physical effects. The LVIA will also review the visual and sensory aspects covering the parcels within the ZTV with the potential for visual effects. The LANDMAP aspects that will be assessed within the LVIA are shown in Table 7-4.

Table 7-4 LANDMAP Aspects and Overall Evaluations

ID / Name	Overall Evaluation / Justification
Geological	
YNSMNGL002 Llanfechel	High – Includes key SSSIs mainly for bedrock geology and forms a major part of the important Anglesey drumlin field.
YNSMNGL004 Llaneilian-Bodgadfa	Moderate – Typical landscape of geomorphological feature and deposits. No notable sites recorded.
YNSMNGL005 Amlwch	Moderate – No notable sites recorded and geology presumed to be widespread.
YNSMNGL009 Mynydd Mechel	Moderate - Typical landscape of widespread geological unit. No notable sites recorded.
YNSMNGL010 Afon Wygyr	Moderate – Typical landscape of geomorphological feature and deposits. No notable sites recorded.

ID / Name	Overall Evaluation / Justification
YNSMNGL016 Rhosgoch	Moderate – No notable sites recorded and geology presumed to be widespread.
YNSMNGL017 Gwredog	Moderate – No notable sites recorded and forms a small part of a widespread feature.
YNSMNGL018 Afon Alaw	Moderate – No notable sites recorded and geomorphology typical of feature/process and not known to be exceptional.
YNSMNGL020 Llanerch-y-medd	High – Although the AA contains two SSSIs, 2 potential GCR sites/RIGS and 3 other RIGS, they are small in comparison to the area as a whole... They indicate a geology/geomorphology of outstanding value locally, but overall a valuation of "high" is most appropriate.
YNSMNGL025 Afon Goch	Moderate – No notable sites recorded and geomorphology typical of feature/process and not known to be exceptional or is widespread.
YNSMNGL026 Cae'r-mynydd	Moderate – No notable sites recorded and geomorphology typical of feature/process and not known to be exceptional.
Habitats	
YNSMNLH006 Farmland - West Anglesey	Moderate – Very difficult to evaluate because the area is 89% is improved grassland which is generally quite a low ecological value habitat but there is a limited scattering of pSINC sites throughout the Aspect Area and a reasonable number of key species.
YNSMNLH008 Llyn Alaw	High – Importance is recognised by SSSI designation and the presence of a number of key species or important numbers of commoner species.
YNSMNLH019 Mynydd Mechel	High – Quite difficult to evaluate because the area clearly contains many areas of valuable habitat scattered throughout reflected in the presence of some SSSI areas and a number of pSINC designation but 45% of the Aspect Area is improved grassland. Could easily be evaluated as moderate but the area does contain a good number of key species and the mosaic of different habitats does add to the value of the area.

ID / Name	Overall Evaluation / Justification
YNSMNLH027 Farmland - central Anglesey	Moderate – Quite difficult to evaluate because the area is 87% improved grassland which is generally quite a low ecological value habitat but the area also clearly contains many areas of valuable habitat scattered throughout reflected in the presence of some pSINC, SSSI and most notably SAC areas, the area also supports a good number of key species although these records are generally confined to the aforementioned areas of particularly valuable habitat.
YNSMNLH031 Farmland - N. Anglesey	Low – The Aspect Area is largely improved grassland with a noticeable arable element as well, neither of these are generally particularly valuable ecological habitat. There are limited areas of more valuable semi-natural habitat present (although small parts of three pSINCs close to the coast and Afon Wygyr pSINC are present).
YNSMNLH092 Llanerch-y-medd	Low – The area is built up which is a low biodiversity value habitat so evaluated as low.
YNSMNLH093 Farmland E. of Llyn Alaw	Low – Quite difficult to evaluate because the area is 90% is improved grassland which is generally quite a low ecological value habitat and there are very limited other areas of semi-natural habitat. There are however a scattering of pSINC sites throughout the Aspect Area and a number of key species but these do not quite increase the evaluation to moderate so the areas is evaluated as low.
YNSMNLH136 Llyn Hafodol	High – Importance is recognised by SSSI designation with important habitats present.
Visual and Sensory	
YNSMNVS004 Mynydd Bodafon	High – 50/50 high /outstanding but outstanding qualities not of national significance.
YNSMNVS008 North-west drumlins	Moderate – Mainly moderate.
YNSMNVS009 Mynydd Mechell	High – All high.
YNSMNVS010 Drumlins with windfarms	Moderate – Mix of low, moderate and high.

ID / Name	Overall Evaluation / Justification
YNSMNVS011 North coast hinterland	High – Attractive and distinctive intricate landscape with rocky parts, views to coast, sheltered valleys... Generally unspoilt, except around Bull Bay.
YNSMNVS012 Central smooth belt	Moderate – Mainly moderate and low.
YNSMNVS013 Central/south-west craggy belt	Moderate – Mainly moderate.
YNSMNVS014 Benllech hinterland	Moderate – Mainly moderate.
YNSMNVS035 North coast	High – Mainly high.
YNSMNVS036 Cemlyn	Outstanding – 50/50/ high/outstanding, with wildlife interest adding to value with a strong character and rarity.
YNSMNVS037 East coast	High – Mainly high.
YNSMNVS056 Llyn Alaw	Moderate – All moderate.
YNSMNVS060 Amlwch	Low – 50% low, with unattractive character.
YNSMNVS068 Cemaes	Moderate – Mainly moderate.
YNSMNVS069 Llanfechell	Moderate – 50/50 moderate/low, but pleasant rural village.
YNSMNVS070 Llanerch-y-medd	Moderate – 50/50 moderate/low, but quite attractive.
YNSMNVS087 Parys Mountain	Outstanding – All outstanding.
Historic	

ID / Name	Overall Evaluation / Justification
YNSMNHL016 Fieldscape, central eastern Mon	Outstanding – Of national value (on the whole) as a broad landscape area in which it is difficult to differentiate but which contains many disparate patterns which illustrate and exemplify Anglesey's evolution as a primarily rural area. This is considered to justify the overall valuation even though on the basis of a strict matrix it would merit 'High'.
YNSMNHL036 Llanerch-y-medd	High – Of regional value for its historic market (visible in the wide main street) and for an attractive cluster of mainly 19th century buildings.
YNSMNHL037 Fieldscape, Tre-Ysgawen	High – Of county value as an area of estate parkland, 18th/19th century in date, overlying an earlier fieldscape of organised, regular fields.
YNSMNHL039 Capel Coch	High – Of county value as an unusual (19th century) ribbon development along a straight road, with earlier antecedents, including Prehistoric occupation.
YNSMNHL050 Amlwch/Parys Mountain	Outstanding
YNSMNHL051 Penrhyd Lastra	Moderate – Of local value as a disparate area of indistinct field and scattered settlement patterns which could be subsumed elsewhere.
YNSMNHL052 Fieldscape, Rhosbeirio	High – Of county value as an area of gently rolling rural fields and farms inland from the coast, though the historic character is significantly altered by the wind-farm which now dominates the visual impact.
YNSMNHL053 North coast, Mon	High
YNSMNHL058 Mynydd Mechell	High – Of county value as a higher-lying, rocky area with a distinctive pattern of small fields and clustered settlement, along with a complex set of tracks and footpaths.
YNSMNHL074 Rhosybol	High – for its association with the Parys mines as a workers' settlement, despite the only Moderate condition of the aspect area.
Cultural	
YNSMNCLS010	Moderate – Mosaic of: High or outstanding, Moderate.

ID / Name	Overall Evaluation / Justification
North-west drumlins	
YNSMNCLS012 Mynydd Mechell	High – Over 75% Moderate.
YNSMNCLS013 Drumlins with windfarms	High – Over 75% High or outstanding.
YNSMNCLS014 North coast hinterland	High – Mosaic of: Moderate, High or outstanding.
YNSMNCLS016 Central smooth belt	Low – Over 75% High or outstanding.
YNSMNCLS071 Llyn Alaw	Moderate – Over 75% Moderate.

Visual Amenity

7.2.36 Visual amenity is defined within GLVIA3 as the "overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area."

7.2.37 In order to identify those receptors or groups of people who may be significantly affected, Zone of Theoretical Visibility (ZTV) mapping, desk-based studies, field investigations and photographic evidence will be provided as part of the LVIA. A preliminary ZTV and viewpoints locations has been provided in Figure 7-12 to inform this LVIA scoping chapter.

7.2.38 The preliminary ZTV will be subject to change as the Project and development parameters evolves through the iterative design, assessment and consultation process. The extent of actual visibility arising from the Project is likely to be less than indicated by the preliminary ZTV due to the screening effects provided by localised changes in landform, hedgerows and woodland although not surveyed within the LiDAR terrain data.

7.2.39 The preliminary LVIA viewpoints have been identified within Table 7-5 below for consultation and these will be agreed with the IoACC landscape officer. In addition, GLVIA3 states at paragraph 6.19 that specific viewpoints may be

identified where there are key promoted viewpoints within the study area, or illustrative viewpoints to “demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations”.

7.2.40 Visual receptors that would be assessed within the LVIA chapter would typically include:

- Local residents and visitors
- Motorists using local roads
- Cyclists using National Cycle Routes
- Walkers using public footpaths and long distance recreational routes
- Equestrians using bridleways
- Workers

Visual Receptor Groups

7.2.41 Visual effects will be assessed for groups of receptors within close proximity of each other and which are judged to experience similar or commonality of effects. These will be referred to as Visual Receptor Groups (VRG’s) and may include different types of receptors. The VRG’s will be defined within the Zone of Theoretical Visibility (ZTV) and the refined Zone of Visual Influence (ZVI) or the main area of visibility arising from the Project as determined from the field surveys.

7.2.42 For those visual receptors located outside of the ZVI there would be very limited or no visibility of the Project, such that the effects would be Negligible at most. Visual receptors located outside of the ZVI will not be taken forward for detailed assessment within the LVIA.

Representative Viewpoints

7.2.43 Representative viewpoints will be selected from publicly accessible locations to provide a proportionate range of views of the Project at different distances and directions from the Site. The viewpoint locations will represent a wide range of receptors, providing a 'sample' of the visual effects from the locality.

7.2.44 The viewpoint locations are purposefully selected to illustrate a range of visual effects or specifically to ensure representation from an identified receptor. The viewpoints would be ‘micro-sited’ during the field surveys to represent the ‘worst case scenario’ or greatest extent of visibility from a particular viewpoint.

7.2.45 The preliminary ZTV and viewpoints submitted for consultation with the IoACC landscape officer are shown on Figure 7-12 and detailed within Table 7-5.

Table 7-5 Preliminary LVIA Viewpoints

No.	Location	Receptors	Grid Ref	Distance (km) / N, E, S, W
1	Graig Wen, Porth Cynfor / Hell's Mouth within AONB	Walkers; Visitors	239935, 394697	2.5km, North of northern parcel
2	Unclassified lane near Pen Parc Mawr and Fferm Wynt Wind Farm	Motorists	241397, 392487	0.35km, North of northern parcel
3	Public footpath 152 near Amlwch Cemetery	Walkers	242992, 392715	0.94km, North East of northern parcel
4	Road bridge across Afon Wygr near Hafodllin Bach	Motorists	240110, 391595	Boundary of northern parcel
5	Layby near the former Shell site	Motorists	241910, 391454	Boundary of northern parcel
6	Road bridge across dismantled railway to south- east of the former Shell site	Motorists	242174, 390990	0.27km, East of northern parcel
7	Byway at Pen-y-mynydd at Parys Mountain within OAL and SLA	Walkers Equestrians	243632, 390533	1.52km, East of northern parcel
8	Elevated viewpoint to west of Parys Mountain within OAL and SLA	Walkers Visitors	243741, 390213	1.75km, East of northern parcel
9	Unclassified lane near St Mary's Church, Bodewyrd	Motorists Visitors	240015, 390632	0.08km North of northern parcel
10	Unclassified lane near Clegyrog Blas within Mynydd Mechell SLA	Motorists	238418, 390122	Boundary of northern parcel
11	Unclassified lane near Tyn-rhos	Motorists	240289, 388854	0.58km, North of central parcel

No.	Location	Receptors	Grid Ref	Distance (km) / N, E, S, W
12	Unclassified lane near Pant-y-Gwydd within Mynydd Mechell SLA	Motorists	236727, 388797	0.46km, North West of central parcel
13	Unclassified lane near Llyn Alaw Wind Farm to north of Llanbabo	Motorists	237868, 387378	Boundary of central parcel
14	Unclassified lane near railway bridge between Rhosgoch and Llannerch-y-medd	Motorists	241177, 388663	Boundary of central parcel
15	Penwerthyr Nature Area and public footpath 1262 to south of Llyn Alaw reservoir	Walkers Visitors Birdwatchers	240448, 386648	1.08km, South of central parcel
16	B5111 highway to north of Llannerch-y-medd	Motorists Residents	242310, 385778	Boundary of central parcel
17	Elevated viewpoint to south-west of Mynydd Bodafon within AONB	Walkers Visitors	246502, 384704	1.19km, North of southern parcel
18	Unclassified lane near Llanfihangel Tre'r Beirdd / St. Michael Church to north of Capel Coch	Motorists Visitors	245948, 383703	Boundary of southern parcel
19	Public footpath 1258 on higher ground to east of Llannerch-y-medd	Walkers	242995, 383396	0.63km, West of southern parcel
20	B5111 highway between Llannerch-y-medd and Rhosmeirch	Motorists	243058, 381011	Boundary of southern parcel

7.2.46 The representative viewpoints would be ‘micro-sited’ during the field surveys to represent the ‘worst case scenario’ or greatest extent of visibility for the particular viewpoint. In addition, photomontages will be selected from a number of the representative viewpoints to provide a visual aid. The photomontages would be undertaken in accordance with the Landscape Institute’s, Technical Guidance

Note 06/19, Visual Representation of Development Proposals Type 3 standards (Ref 7-6) and undertaken at year 1 and 15 of operation to demonstrate any proposals for visual screening.

7.2.47 The photomontages would be provided from the following viewpoint locations as identified within Table 7-5 above:

- Viewpoint 7, Byway at Pen-y-mynydd at Parys Mountain OAL and SLA
- Viewpoint 8, Elevated viewpoint to west of Parys Mountain OAL and SLA
- Viewpoint 12, Unclassified lane near Pant-y-Gwydd within Mynydd Mechell SLA
- Viewpoint 15, Penwerthyr Nature Area and public footpath 1262 to south of Llyn Alaw reservoir
- Viewpoint 17, Elevated viewpoint to south-west of Mynydd Bodafon within the AONB

Landscape Designations

7.2.48 The Project is located within the surroundings of the following statutory and non-statutory landscape designations as shown on Figure 7-6 and Table 7-6.

Table 7-6 Landscape Designations

ID / Name	**Distance (km) / N, E, S, W**
Anglesey Area of Outstanding Natural Beauty (AONB) • 1.05km to north of the northern parcel at Burwen • 4.32km to east of central parcel at Mynydd Bodafon • 1.19km to the north-east of the southern parcel at Mynydd Bodafon	1.05km, North of northern parcel
Parys Mountain and Slopes Special Landscape Area (SLA) • 1.75km to the east of the northern parcel at Parys Mountain	1.75km, East of central parcel
Mynydd Mechell and Surrounds Special Landscape Area (SLA) • Small area of northern parcel located within SLA at Clegyrog Blas • 0.04km to north-west of central parcel at Pant-y-Gwydd.	Small area to west covered by northern parcel
Parciau Estatelands Special Landscape Area (SLA) • 0.08km to east of southern parcel near Mynydd Bodafon	0.08km, East of southern parcel

Anglesey Area of Outstanding Natural Beauty

7.2.49 The Project is not located within the Anglesey Area of Outstanding Natural Beauty (AONB) although may be regarded as being within the setting of the designation. The northern parcel is situated 1.05km to the south of the AONB at Burwen and the southern parcel is 1.19km to the south-west of the AONB at Mynydd Bodafon.

7.2.50 AONB's are afforded statutory protection under the Countryside and Rights of Way Act 2000 (CROW Act) (Ref 7-7). The purpose of the AONB is to conserve and enhance the natural and scenic beauty of the designation.

7.2.51 Overarching National Planning Statement EN-1 states in paragraph 5.9.12 and 5.9.13 that:

"The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational, and other relevant constraints…

7.2.52 [and]

"The fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent."

7.2.53 National Planning Statement EN-3 states in paragraph 3.10.87 that:

"Landscape and visual impacts should be considered carefully pre-application. Potential impacts on the statutory purposes of nationally designated landscapes should form part of the pre-application process."

7.2.54 Planning Policy Wales states in para 6.3.5 and 6.3.7 that:

"Planning authorities have a statutory duty of regard to National Parks and AONB purposes. This duty applies to all activities affecting National Parks and AONBs, whether those activities lie within, or in the setting of, the designated areas."

[and that]

"In AONB's, planning authorities should give great weight to conserving and enhancing the natural beauty of AONB's and should have regard to the wildlife, cultural heritage and social and economic well-being of areas."

7.2.55 Anglesey AONB was designated in 1966 and covers the majority of the Isles 201km coastline and inland areas which form a backdrop to Holyhead Mountain and Mynydd Bodafon. IoACC have provided the following overview of the AONB:

"The Isle of Anglesey's AONB, has one of the most distinctive, attractive and varied landscapes in the British Isles. Some of the main features of the Anglesey AONB are:

Low cliffs alternating with coves and pebble beaches;

Sheer limestone cliffs interspersed with fine sandy beaches; and

Stretches of sand dunes with beaches."

7.2.56 Planning Policy Wales advises in para 6.3.9 that:

"The special qualities of the designated areas should be given weight in the development planning and development management process. Proposals in…AONB's must be carefully assessed that their effects on those features which the designation is intended to protect are acceptable."

7.2.57 In determining the effects on the special qualities of the AONB and its setting, the LVIA will review the Isle of Anglesey AONB Management Plan 2015-2020 (Ref 7-8). The Management Plan identifies the special qualities of the AONB and determines what actions are required to ensure that these qualities are conserved and enhanced for future generations. Appendix 1 of the Management Plan details the special qualities in terms of landscape, seascape, geological and geomorphological features, ecology and biodiversity, historic landscape, cultural attributes, soils, air and water quality, and PRoW.

7.2.58 The AONB authority provides no specific guidance or a position statement on how the setting of the designation should be assessed. However, the Management Plan does identify 'Expansive Views' as a special quality under Table 1 and notes in paragraph 1.1.3 that:

"The influence on the character of the AONB by expansive views is significant. By virtue of their height, scale and sheer size, the mountains of Snowdonia dominate the majority of the AONB's landscape. Add to this the ever changing appearance of the sea then the perception of the landscape of the AONB is one of exposure, openness, wilderness and a feeling of isolation.

The nature of the expansive views can be summarised as follows:

Views across the Irish Sea

Views across those areas of Anglesey not included in the AONB designation;

Local views, for example across the Menai Strait

Distant views, such as to the Great Orme, Snowdonia, Llyn Peninsula and the Isle of Man, often described as 'borrowed' landscapes."

7.2.59 It is therefore considered that the special qualities of the AONB does include any effects on the expansive views and the visual relationship between the AONB and the surrounding undesignated landscape will be scoped in to the LVIA. However, the LVIA will not assess and will scope out any effects on the other special qualities identified within Appendix 1 of the Management Plan which are not considered relevant.

Special Landscape Areas

7.2.60 Figure 7-6 shows that the Project is located within the surroundings of 3 no. non-statutory Special Landscape Areas (SLA). The northern parcel is located 1.75km west of the Parys Mountain SLA and a small area to the west of the northern parcel is within the Mynydd Mechell and Surrounds SLA. The central parcel is located 0.04km to the south-east of the Mynydd Mechell and Surrounds SLA. The southern parcel is also 0.08km to the west of Parciau Estatelands SLA.

7.2.61 Overarching National Planning Statement EN-1 states in paragraph 5.9.14 that:

"Outside nationally designated areas, there are local landscapes that may be highly valued locally and protected by local designation. Where a local development document in England or a local development plan in Wales has policies based on landscape character assessment, these should be paid particular attention. However, local landscape designations should not be used

in themselves to refuse consent, as this may unduly restrict acceptable development."

7.2.62 Planning Policy Wales advises in paragraph 6.3.13 that:

"SLAs are non-statutory designations that define areas of high landscape importance, which may be unique, exceptional or distinctive to the area. Planning authorities should apply these designations where there is good reason to believe that normal planning authorities cannot provide the necessary protection."

7.2.63 The SLAs have been identified by IoACC based upon the NRW LANDMAP database. Development is not prohibited within the SLAs provided it considers the recognised character, quality and overall evaluations of the relevant aspects from LANDMAP.

7.2.64 A review of the SLAs was undertaken by LUC on behalf of the Anglesey and Gwynedd Joint Planning Policy Unit (Ref 7-9). A statement of value and significance has been prepared for each SLA. Each statement provides a description of the SLAs landscape character, drawing attention to those qualities and features that are key to the designation.

7.2.65 The LVIA will assess the impact of the Project on these statements of value for the identified SLA's and will inform the emerging masterplan as part of the iterative design and assessment process. The LVIA will seek to remove or reduce any unacceptable impacts on the qualities for which the SLA has been designated.

7.2.66 The LVIA will assess the effects of the Project on the statements of value and special qualities of the Parys Mountain and Slopes SLA and the Mynydd Mechell and Surrounds SLA. The ZTV (see Figures 7-9, 7-12 and 7-13) and fieldwork has identified that there would be restricted visibility between the southern parcel and the Parciau Estatelands SLA such that the effects are unlikely to be significant. The LVIA therefore proposes to scope out the assessment of effects on the setting of the Parciau Estatelands SLA.

Assessment Methodology

Overview

7.2.67 The GLVIA 3 advises in paragraph 1.1 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."

7.2.68 Paras. 2.20-2.22 of GLVIA3 indicates that there are two main components of LVIA including an assessment of landscape effects (1) and an assessment of visual effects (2). These two components are two "related but very different considerations."

7.2.69 The assessment method for LVIA chapter of the ES will be based upon the following industry standards and best practice guidance including:

- The Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, Landscape Institute with the Institute of Environmental Management and Assessment, 2013
- An Approach to Landscape Character Assessment, Natural England, 2014 (Ref 7-10)
- Landscape Institute, Technical Guidance Note 06/19, Visual Representation of Development Proposals
- Landscape Institute, Technical Note 06/17, Townscape Character Assessment (Ref 7-11)
- Landscape Institute, Technical Guidance Note 02/19, Residential Visual Amenity Assessment (Ref 7-12)
- Landscape Institute, Technical Guidance Notes 02/21, Assessing landscape value outside national designations (Ref 7-13)

Assessment

7.2.70 The assessment of effects section within the LVIA will include the following key activities:

- Preparation of a ZTV mapping study based upon the agreed or 'frozen layout' for the Project

- An assessment to identify the sensitivity of landscape and visual receptors within the study area
- An assessment to identify the magnitude of change and significance of effects arising from the Project on the identified landscape and visual receptors
- An informed professional judgement regarding the nature of the change and whether it is positive, neutral or adverse
- A clear description of the effects identified, with supporting information setting out the rationale for the judgements
- Identification of which effects are judged likely to be significant or not significant with regards to the EIA Regulations
- The production of visualisations from the agreed representative viewpoints to illustrate the post construction visual effects arising from the Project during the operation stage (year 1 and 15)

7.2.71 The key terms used within the LVIA will include:

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

Sensitivity of the Receptor

7.2.72 Susceptibility indicates the ability of a landscape or visual receptor to accommodate the Project "without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies" (GLVIA3, para 5.40). The criteria for assessing susceptibility is outlined in Table 7-7.

Table 7-7 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.

7.2.73 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.

7.2.74 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 Project.

7.2.75 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 Project.

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

7.2.77 Landscape Value is "the relative value that is attached to different landscapes by society" (GLVIA3, page 157). The criteria for assessing landscape value is outlined in Table 7-8.

Table 7-8 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 observations indicate 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.

7.2.78 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 when considering landscape receptors, and a greater

emphasis on susceptibility when considering visual receptors. The combination of susceptibility and landscape value to determine sensitivity is outlined in Table 7-9.

Table 7-9 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 7-10 Visual 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

7.2.79 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 will be further described in the detailed methodology submitted with the LVIA.

Magnitude of Effect

7.2.80 Scale of effect is assessed for all landscape and visual receptors and identifies the degree of change which would arise from the Project. The criteria for assessing the scale of effects is outlined in Table 7-11.

Table 7-11 Scale of Effect

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.

7.2.81 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. The criteria for assessing the duration of effects is outlined in Table 7-12.

Table 7-12 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 10-60 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.

7.2.82 Most effects will be long term and reversible; 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 and decommissioning of the Project will usually be short-term in duration.

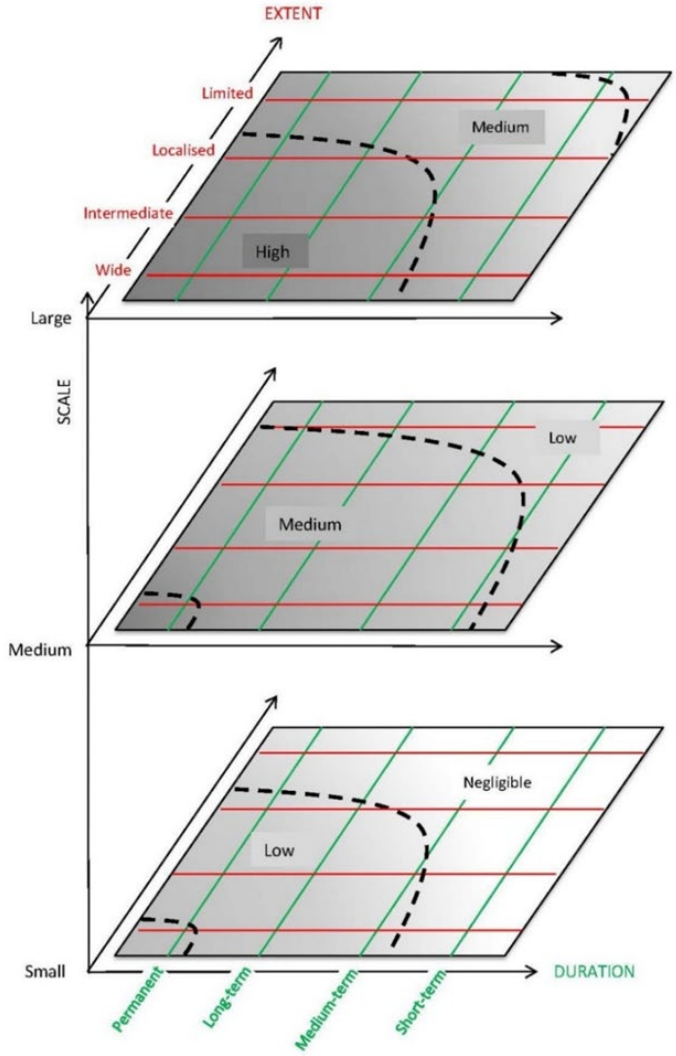
7.2.83 Extent of effects is assessed for all receptors and indicates the geographic area over which the effects would be experienced. The criteria for assessing the extent of effects is outlined in Table 7-13.

Table 7-13 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%).

7.2.84 The Magnitude of effect is informed by combining the Scale, Duration and Extent of effect. Image 7-1 below illustrates the judgement process.

Image 7-1 Magnitude of Effect



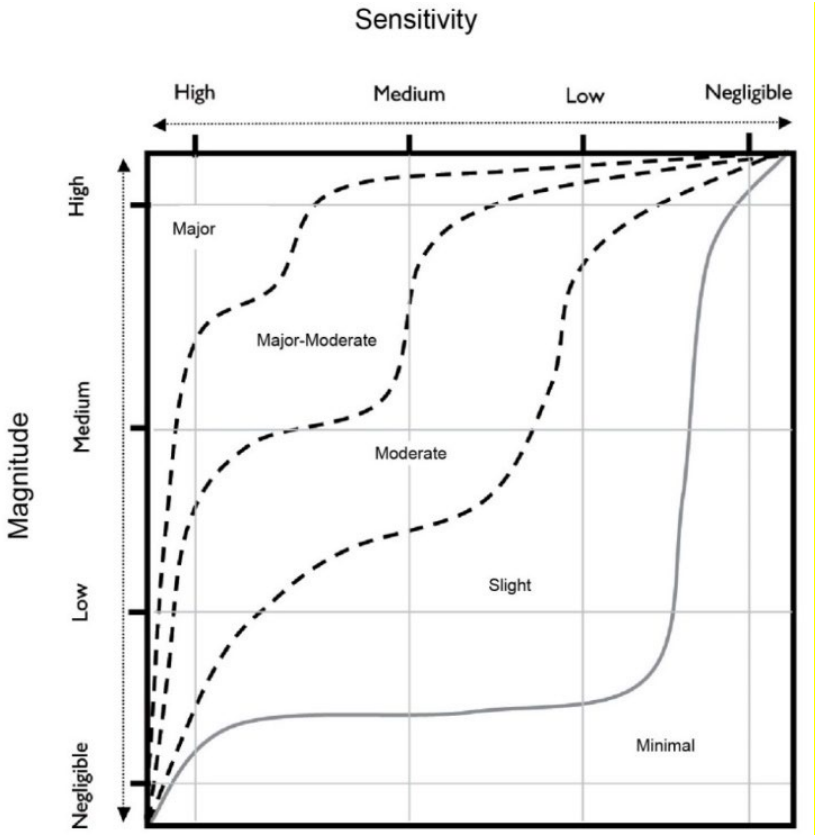
7.2.85 As can be seen from the diagram above, scale is the primary factor in determining magnitude; most of each layer indicates that magnitude will typically be judged to be the same as scale, but may be higher if the effect is particularly widespread and long lasting, or lower if it is constrained 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.

Determining the Significance of Effects

7.2.86 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 Image 7-2.

Image 7-2 Significance



7.2.87 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, para 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, para 5.40) and would be considered within the planning balance by the decision maker.

7.2.88 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 the 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

7.2.89 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.

7.2.90 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.

7.2.91 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.

Visualisations

7.2.92 The LVIA will be accompanied by a number of visualisations undertaken in accordance with the Landscape Institute's Technical Guidance Note 06/19, Visual Representation of Development Proposals Type 3 specifications. The Type 3 visualisations which will adequately show the detailed mass, scale and form of the Project as well as the architectural finishes and rendering of materials, etc.

7.2.93 The Type 3 visualisations would be accurate and verified with the relevant grid co-ordinates, cylindrical projection, 90 degree horizontal field of view, 96% enlargement factor, based upon LiDAR mapping or surveyed topographic data. The Type 3 visualisations would be undertaken during the operation stages (year 1 and 15) to show the visual screening provided by any proposed mitigation measures. The detailed methodology for the visualisations will be set out within the appendices of the LVIA.

Residential Visual Amenity Assessment

7.2.94 There is no automatic legal 'right to a view', even in the case of significant impacts to residents' outlook. However, this is balanced against the effect on visual amenity in the development area, which is a factor in broader considerations of

public interest. A separate Residential Visual Amenity Assessment (RVAA) will be undertaken to consider the significance of effects on the private views of the surrounding properties and the acceptability of living conditions.

7.2.95 The RVAA will be undertaken in accordance with the Landscape Institute's, Technical Guidance Note 02/19. The scope of residential properties to be included within the RVAA will be limited to within 100 metres distance of the proposed Solar PV Sites and Project Substation. Beyond this distance, the Project may be visible although it is unlikely that it would result in any overbearing effects such that living conditions would be affected to an unacceptable degree.

Amenity and Recreation Assessment (ARA)

7.2.96 Amenity and Recreation Assessment (ARA) relates to the impacts on users of recreational resources comprising Public Rights of Way (PRoW) including public footpaths; bridleways; restricted byways; and Byways Open to All Traffic (BOAT); permissive footpaths; open access and common land; cycle routes, recreational facilities, nature reserves, parks and waterbodies used for recreation. The ARA will assess any physical changes (e.g. PRoW diversions or closures) and other environmental impacts including visual amenity, noise, traffic movements, dust and other emissions, traffic movements which may affect overall experience of the PRoW as a recreational resource.

7.2.97 Figure 7-5 identifies a number of amenity and recreational resources in the surrounding context. These comprise a variety of PRoW, open access land, nature areas, cycle trails, walking routes and formal and informal recreation areas. The ARA will consider the effects to the amenity and recreation resource within a 500m study area from the northern, central and southern parcels.

7.2.98 Initial field investigations have shown that a number of the PRoW within the study area and on the IoACC Definitive Map are no longer in use, accessible or visible on the ground. If access is no longer provided along a particular PRoW, this will be identified and noted within the ARA.

7.2.99 The ARA will be provided as separate appendix to the LVIA. There is no universally recognised guidance for the ARA although the methodology will follow

the principles of the LVIA methodology and will be informed by relevant policy and guidance.

Night-Time Effects and Lighting

7.2.100 During the construction and decommissioning stages, the Project will require temporary lighting and would be designed as far as reasonably practicable to minimise any light spill and sky glow and will not be continuously lit. Lighting is likely to be limited to core construction working hours.

7.2.101 During the operational stage, the Solar PV Site will generally remain unlit with the exception of the Parcel Substations and manually operated and motion-detection lighting utilised for operational and security purposes. No visible lighting would be required at the perimeter fencing and Infra-Red (IR) lighting would be provided by the security system to provide night vision functionality for the CCTV.

7.2.102 The lighting of the Project Substation and BESS would be in accordance with Health and Safety requirements, particularly around any emergency exits where there would be lighting, similar to street lighting that operates from dusk. Otherwise, lighting sensors for security purposes will be implemented around the Project Substation and ancillary buildings.

7.2.103 The lighting design would seek to limit any impacts on sensitive receptors through directional cowls, as secured through the oOEMP. A separate Lighting Impact Assessment (LIA) has therefore been scoped out of the LVIA chapter.

Potential Effects

7.2.104 The potential landscape and visual effects arising from the Project during the construction, operation (maintenance) and decommissioning stages are likely to arise in relation to the following key components:

- PV Arrays
- Mounting structures
- Inverters
- Transformers
- Switchgear
- Substation and ancillary buildings

- Low voltage distribution cables
- Grid connection cables
- Fencing, security and ancillary infrastructure
- Access tracks, passing places and temporary lighting
- Green infrastructure and landscape mitigation and enhancement measures

Construction and Decommissioning Stages

7.2.105 The landscape and visual effects during the construction and decommissioning phases would be managed through the outline Construction Environmental Management Plan (oCEMP) and the outline Decommissioning Environmental Management Plan (oDEMP) secured by the DCO.

7.2.106 Traffic movements including HGV's, plant, machinery, temporary lighting, passing places and highway works are likely to be visible in this timeframe particularly at close proximity to the construction compounds within the former Shell site. The effects during construction and decommissioning phases are likely to be short term and temporary.

Operational Stage

7.2.107 During the operational phase, the Project would likely result in medium or long term effects. Within the early part of the operational phase, the effects will be at their greatest. Over time, the scale of effects would generally reduce as the proposed vegetation establishes to gradually screen or filter views of the Project. The landscape features would be subject to ongoing management through the outline Landscape and Ecological Management (oLEMP) to ensure the amenity and/or screening effects of this vegetation are achieved in the long term.

Potential Landscape Character Effects

7.2.108 The effects on landscape character considers how the introduction of new landscape elements physically alters the landform, landcover, landscape pattern, and perceptual attributes or how visibility of the Project changes the way in which landscape character is perceived.

7.2.109 The landscape character of the northern, central and southern parcels would generally change from agricultural or previously developed land to a solar PV development comprising solar arrays, access tracks, temporary compounds,

underground cabling, grid connections, inverters, transformers, security (deer) fencing and CCTV equipment. The effects on landscape character will be influenced by the physical and visual containment provided by the landform, woodlands and hedgerows together with any existing infrastructure or built form.

7.2.110 The landscape effects will depend on the sensitivity (susceptibility + value) of the relevant LCA or LANDMAP aspect areas combined with magnitude of change (scale + extent + duration) arising from the Project. Mitigation measures will be identified and embedded through the iterative design and assessment process to reduce the identified effects.

Landscape Effects from Maen Hir North

7.2.111 Fieldwork has shown that the potential effects of the northern parcel on landscape character are likely to be experienced to varying degrees between:

- The drumlin landforms at Nant-y-fran, Rhyd-y-groes, Werthyr and Trogog to the north of the former Shell site and within the context of the existing Rhyd-y-groes wind and solar farms;
- The gently undulating grazing land, forestry and the disused railway between Trogog-uchaf, Bodelffra, Hafod Onnen and Bryngleu to the east;
- The undulating plateau with rough grazing, dry stone walling, isolated rocky outcrops and mixed coniferous and deciduous woodland between Gwredog, Four Crosses, Rhosgoch and Hafodol to the south; and
- The upland area on the fringes of the Mynydd Mechell SLA with rocky outcrops, gorse scrub and drystone walling between Clegyrog Blas, Bodewyrd and Rhosbierio to the west of the northern parcel.

7.2.112 The effects of the northern parcel on landscape character will be contained within the context of the former Shell site and the potential location of the construction and logistics hub, BESS and community owned solar. This is due to the previous industrial land use, the historic removal of landscape features, and the regenerating scrub and woodland which partially encloses the former Shell site.

7.2.113 The existing 400kV overhead lines extend across the western part of the northern parcel which coincides with the area designated within the Mynydd Mychell SLA, thus reducing the potential effects on landscape character at this location. The

existing Ysgellog wind turbines, Fferm Wynt Wind Farm and the Rhyd-y-groes Solar Farm are located between the northern parcel and the AONB further to the north, thus intervening any outward views that might affect the special qualities of this designation.

Landscape Effects from Maen Hir Central

7.2.114 Fieldwork has shown that the potential effects of the central parcel on landscape character are likely to be experienced to varying degrees between:

- The northern slopes and margins of the Llyn Alaw reservoir between Penbol Uchaf, Gongl Rhedyn, Penbol, Tyn-rhos and Rhosgoch to the north;
- The eastern slopes and margins of the Llyn Alaw reservoir between Glasgraig Fawr, Lletty, Penrhyn, Ty'n-y-ffrwd, Cawr Mawr and the B5111 to the north of Llanerch-y-medd;
- Limited areas of the southern banks of Llyn Alaw reservoir between Penwerthyr, Gwregod Uchaf and the reservoir pumping station; and
- Elevated areas of the Llyn Alaw Wind Farm at Ty-newydd, Gwaen-y-dog and Pant-y-Gwydd on the fringes of the Mynydd Mychell SLA to the north-west of the central parcel.

7.2.115 The effects on landscape character would be partly reduced by the location of the Llyn Alaw Wind Farm and the existing 400kV overhead lines near Gwaen-y-dog and the Mynydd Mychell SLA to the north-west. The effects will also be influenced by the existing 400kV lines between Rhosgoch, Glasgraig Fawr and Llandyfrydog to the east of the central parcel.

Landscape Effects from Maen Hir South

7.2.116 Fieldwork has shown that the potential effects of the southern parcel on landscape character are likely to be experienced to varying degrees between:

- The gently undulating lowland grazing land between Cwyrt Bach, Clorach-bach, Hebron and Maenaddwyn to the north;
- The low ridgeline of Cae Fabli, Tyn Lon, Capel Coch to the east separating the southern parcel from the Cors Erddreiniog National Nature Reserve (NNR) to the east;

- The wooded horizon enclosing the southern parcel between Caer-mynydd Covert, New Covert, Flat Covert and Plevana Covert and the B5111 highway to the south; and
- The rising slopes at Felin, Peniel and Bachau to the east of Llanerch-y-medd to the west of the southern parcel.

7.2.117 The effects on landscape character will be partly reduced within the context of the two wind turbines and the existing 400kV overhead line near Plas-Llanfihangel to the north-east of the southern parcel. The prevailing landform, low ridges and wooded horizon along the southern boundary encloses the southern parcel within a 'horseshoe' framework such that the effects on landscape character are likely to be reduced in geographical extent.

Potential Visual Effects

7.2.118 The visual effects consider the changes in views arising from the Project in relation to visual receptors (or people) within the surrounding towns and villages, motorists using local roads, walkers using public footpaths, or equestrians using bridleways, etc.

7.2.119 The visual effects will depend on the sensitivity (susceptibility + value) of the receptor combined with magnitude of change (scale + extent + duration) arising from the Project. Visual receptors on public highways or PRoW within close proximity to the Site are likely to experience a higher magnitude of change due the visible change from its current land use to a proposed Solar PV Site, Project Substation or BESS. Beyond the parcel boundaries, visibility of the Project would reduce and would typically be restricted by landform, hedgerows and woodland.

Visual Effects from Maen Hir North

7.2.120 Figure 7-7 shows the preliminary ZTV for the northern parcel. The ZTV and fieldwork has shown that the potential visual effects of the northern parcel are likely to be experienced to varying degrees from:

- Public highways including the unclassified lanes travelling between Rhosgoch, Bodewyrd, Hafodllin Fawr, Pen-y- Frynwent, Pen-Parc Bach and Bodelffra.

- Public footpaths 11/041/1, 11/041/2, 11/040/3, 11/039/1 to the north-east of the northern parcel between Pen Parc Bach, Trogog-Ishaf and Llain Delyn;
- Public footpaths 11/037/1 between Penciw and the former Shell site and public footpaths 11/075/1, 44/028/1, 44/028/2, 38/068/1 through the woodland at Gorsedd Wygr to south of the former Shell site.
- Public footpaths 38/065/4, 38/065/5, 38/066/1, 38/067/1, 38/067/2, 38/069/1, 38/069/2, 38/070/1, 38/072/1, 38/074/1, 38/074/2, 38/074/3, 38/085/1 and 44/035/1 between Bodewryd, Rhosgoch and Clegyrog Blas to the west.
- Distant elevated views from the Parys Mountain SLA approximately 1.75km to the east of the northern parcel.

Visual Effects from Maen Hir Central

7.2.121 Figure 7-8 shows the preliminary ZTV for the central parcel. The fieldwork has shown that the potential visual effects of the central parcel are likely to be experienced to varying degrees between:

- Public highways including the B5111 between Rhosybol and Llanerch-y-medd, the unclassified lanes between Ty'n-y-ffrwd, Tyn-rhos, Rhos Engan and Gongl Rhedyn to the north and east of the Llyn Alaw reservoir, and between Llanbabo, Bryn Pabo, and Gwaen-y-dog near Llyn Alaw Wind Farm to the west.
- Public footpaths 38/056/1, 38/084/1 and 47/020/1 to the north-west of the central parcel near Garreg Fawr and the Llyn Alaw Wind Farm.
- Public footpath 44/032/1 and the permissive footpath along the northern bank of the Llyn Alaw reservoir near Gongl Rhedyn and Refail Newydd.
- Public footpath 44/031/1 at Tyn rhos on the higher ground to the north-east of the Llyn Alaw reservoir and to the north of the Project Substation.
- Public footpath 44/027/1 between the dismantled railway, Glasgraig Fawr and the unclassified lane.
- Public footpath 25/003/1 between the B5111 to the north of Llanerch-y-medd and Ceidio to the south of the central parcel/

- Public footpaths 25/016/1 and 25/036/1 at the Penwerthyr Nature Reserve to the south of the reservoir.
- Distant elevated views from Mynydd Bodafon within the AONB approximately 4.32km to the east of the central parcel.

Visual Effects from Maen Hir South

7.2.122 Figure 7-9 shows the preliminary ZTV for the southern parcel. Fieldwork has shown that the potential visual effects of the southern parcel are likely to be experienced to varying degrees between:

- Public highways including the B5111 between Llanerch-y-medd and Llangwyllog, the unclassified lanes between Bachau, Cwyrt Bach, Maenaddwyn and Capel Coch.
- Public footpaths 44/036/1, 44/058/1 and 44/058/2 between Cwyrt Bach, Lon Leidr and Hebron to the north.
- Public footpath 40/031/1 at Mynydd Bodafon to the north-east.
- Public footpath 25/012/1 on the higher ground between the B5111 highway and Bachau near Llanerch-y-medd to the west.
- North Wales Coast National Cycle Route (NCR 500) following the unclassified lanes to the north and east.
- Elevated views from Mynydd Bodafon within the AONB approximately 1.19km to the north-east of the southern parcel.

Combined Visual Effects

7.2.123 Figures 7-12 and 7-13 shows the combined ZTV's for the Project. The Site is influenced by existing renewables development to varying degrees including the Ysgellog wind turbines, Fferm Wynt Wind Farm and the Rhyd-y-groes Solar Farm to the north, by the Llyn Alaw Wind Farm to the west, and by the wind turbines near Plas-Llanfihangel to the south.

7.2.124 Field investigations have shown that the Project would appear subdivided and compartmentalised by the prevailing landform and forestry such that there would be a limited number of locations in which one or more of the development parcels would be viewed in-combination, sequentially or in-succession from a single viewpoint. These viewpoints are likely to be restricted to the elevated panoramic

views from Parys Mountain to the north-east and from Mynydd Bodafon to the east of the Site.

Proposed Scope

Scoped In

7.2.125 This LVIA scoping chapter has identified a number of receptors which are likely to be affected in landscape and visual terms including through theoretical visibility mapping and field surveys. The applicant proposes to scope in the following landscape and visual receptors during the construction, operation (maintenance) and decommissioning stages of the Project as identified within Table 7-14.

Table 7-14 Scoped In

Landscape Effects
IoACC Anglesey Landscape Character Areas: • LCA5, Gogledd Orllewin Yny Mon / North West Anglesey • LCA6, Almwch a'r Cyffiniau / Amlwch and Environs • LCA7, Mynydd Parys / Parys Mountain • LCA8, Cefnwlad Bae Dulas / Dulas Bay Hinterland • LCA17, Gorllewin Canol Ynys Mon / West Central Anglesey
LANDMAP Geological Aspects: • SMNGL002 Llanfechel • YNSMNGL004 Llaneilian-Bodgadfa • YNSMNGL005 Amlwch • YNSMNGL009 Mynydd Mechel • YNSMNGL010 Afon Wygyr • YNSMNGL016 Rhosgoch • YNSMNGL017 Gwredog • YNSMNGL018 Afon Alaw • YNSMNGL020 Llanerch-y-medd • YNSMNGL025 Afon Goch • YNSMNGL026 Cae'r-mynydd • LANDMAP Habitats Aspects: • YNSMNLH006 Farmland - West Anglesey • YNSMNLH008 Llyn Alaw

- YNSMNLH019 Mynydd Mechel
- YNSMNLH027 Farmland - central Anglesey
- YNSMNLH031 Farmland - N. Anglesey
- YNSMNLH092 Llanerch-y-medd
- YNSMNLH093 Farmland E. of Llyn Alaw
- YNSMNLH136 Llyn Hafodol

LANDMAP Visual and Sensory Aspects:

- YNSMNVS004 Mynydd Bodafon
- YNSMNVS008 North-west drumlins
- YNSMNVS009 Mynydd Mechell
- YNSMNVS010 Drumlins with windfarms
- YNSMNVS011 North coast hinterland
- YNSMNVS012 Central smooth belt
- YNSMNVS013 Central/south-west craggy belt
- YNSMNVS014 Benllech hinterland
- YNSMNVS035 North coast
- YNSMNVS036 Cemlyn
- YNSMNVS037 East coast
- YNSMNVS056 Llyn Alaw
- YNSMNVS060 Amlwch
- YNSMNVS068 Cemaes
- YNSMNVS069 Llanfechell
- YNSMNVS070 Llanerch-y-medd
- YNSMNVS087 Parys Mountain

LANDMAP Historic Aspects:

- YNSMNHL016 Fieldscape, central eastern Mon
- YNSMNHL036 Llanerch-y-medd
- YNSMNHL037 Fieldscape, Tre-Ysgawen
- YNSMNHL039 Capel Coch
- YNSMNHL050 Amlwch/Parys Mountain
- YNSMNHL051 Penrhyd Lastra
- YNSMNHL052 Fieldscape, Rhosbeirio
- YNSMNHL053 North coast, Mon

• YNSMNHL058 Mynydd Mechell • YNSMNHL074 Rhosybol
LANDMAP Cultural Aspects: • YNSMNCLS010 North-west drumlins • YNSMNCLS012 Mynydd Mechell • YNSMNCLS013 Drumlins with windfarms • YNSMNCLS014 North coast hinterland • YNSMNCLS016 Central smooth belt • YNSMNCLS071 Llyn Alaw
Visual Effects
Visual Receptor Groups (VRG's) within the ZVI will be scoped in.
Representative Viewpoints: 1. Graig Wen, Porth Cynfor / Hell's Mouth within AONB 2. Unclassified lane near Pen Parc Mawr and Fferm Wynt Wind Farm 3. Public footpath 152 near Amlwch Cemetery 4. Road bridge across Afon Wygr near Hafodllin Bach 5. Layby near the former Shell site 6. Road bridge across dismantled railway to south-east of the former Shell site 7. Byway at Pen-y-mynydd at Parys Mountain within OAL and SLA 8. Elevated viewpoint to west of Parys Mountain within OAL and SLA 9. Unclassified lane near St Mary's Church, Bodewyrd 10. Unclassified lane near Clegyrog Blas within Mynydd Mechell SLA 11. Unclassified lane near Tyn-rhos 12. Unclassified lane near Pant-y-Gwydd within Mynydd Mechell SLA 13. Unclassified lane near Llyn Alaw Wind Farm to north of Llanbabo 14. Unclassified lane near railway bridge between Rhosgoch and Llannerch-y-medd 15. Penwerthyr Nature Area and public footpath 1262 to south of Llyn Alaw reservoir 16. B5111 highway to north of Llannerch-y-medd 17. Elevated viewpoint to south-west of Mynydd Bodafon within AONB 18. Unclassified lane near Llanfihangel Tre'r Beirdd / St. Michael Church to north of Capel Coch 19. Public footpath 1258 on higher ground to east of Llannerch-y-medd

20. B5111 highway between Llannerch-y-medd and Rhosmeirch
• Key Transport Routes: • B5111 between Amlwch, Parys Mountain, Rhosybol, Llanerch-y-medd and Llangefni
• Long Distance Recreational Trails, National Cycle Routes and Accessible Landscapes: • These will be assessed within a separate Amenity and Recreation Assessment (ARA) as an appendix to the LVIA. The scoped-in receptors are identified below.
Landscape Designations
• Anglesey Area of Outstanding Natural Beauty (AONB): • Effects on the 'expansive views' special quality identified within Appendix 1 and Table 1 of the AONB Management Plan. The LVIA will scope out all other special qualities identified within the Management Plan.
• Special Landscape Areas: • Parys Mountain and Slopes • Mynydd Mechell and Surrounds
Other
Visualisations: • The LVIA will be accompanied by a number of visualisations undertaken in accordance with the Landscape Institute's Technical Guidance Note 06/19, Visual Representation of Development Proposals Type 3 specifications. The photomontages would be provided from the following viewpoint locations: • Viewpoint 7, Byway at Pen-y-mynydd at Parys Mountain OAL and SLA • Viewpoint 8, Elevated viewpoint to west of Parys Mountain OAL and SLA • Viewpoint 12, Unclassified lane near Pant-y-Gwydd within Mynydd Mechell SLA • Viewpoint 15, Penwerthyr Nature Area and public footpath 1262 to south of Llyn Alaw reservoir • Viewpoint 17, Elevated viewpoint to south-west of Mynydd Bodafon within the AONB
Residential Visual Amenity Assessment (RVAA): • The RVAA will be undertaken in accordance with the Landscape Institute's Technical Guidance Note 02/19, Residential Visual Amenity Assessment (RVAA) as a separate appendix to the LVIA. The scope of residential

properties to be included within the RVAA will be limited to within 100 metres distance of the parcels and substation.
Amenity and Recreation Assessment (ARA): • PRoW located within the 500m study area of the northern, central and southern parcels • National Cycle Network Route 5 and 566 • Copper Trail Cycle Route • North Wales Coast Cycle Route • Parys Mountain, Geotrail and Open Access Land • Mynydd Bodafon, Open Access Land • Cors Erddreiniog National Nature Reserve

Scoped Out

7.2.126 On review of the desk based analysis, visibility mapping and fieldwork, the applicant proposes to scope out the following landscape and visual receptors as detailed within Table 7-15.

7.2.127 Lighting Impact Assessment is proposed to be scoped out.

Table 7-15 Scoped Out

Landscape Effects
• National Landscape Character Areas: • NCA01, Arfordir Môn / Anglesey Coast • NCA02, Môn – Canolbarth Môn
National Seascape Character Areas: • MCA03, Red Wharf and Conwy Bays • MCA06, North Anglesey Coastal Waters • MCA07, Holyhead Bay and The Skerries
• IoACC Anglesey Landscape Character Areas: • LCA 4, Arfordir y Gogledd Orllewin / North West Coast • LCA 9, Y Traeth Coch / Red Wharf Bay
Visual Effects
Visual Receptor Groups (VRG's) located outside of the ZVI will be scoped out.
Key Transport Routes:

• A5025 between Cemaes, Amlwch and Penysarn • A55 and A5 between Holyhead, Llanfihangel yn Nhowymn, Gwalchmai and Menai Bridge / Porthaethwy • B5112 between Llanerch-y-medd, Carmel, Trefor and Engedi
Long Distance Recreational Trails, National Cycle Routes and Accessible Landscapes: • These will be assessed within a separate Amenity and Recreation Assessment (ARA) as an appendix to the LVIA. The scoped-out receptors are identified below.
Landscape Designations
• Eryri / Snowdonia National Park • Parciau Estatelands, Special Landscape Area (SLA)
Other
• Amenity and Recreation Assessment: • Isle of Anglesey / Wales Coast Path – between Porth Cynfor / Hells Mouth and Porth Llechog / Bill Bay at Amlwch • National Trust – Coronation Tower King Edward VIII and Porth Cynfor / Hells Mouth • Geotrail – Wyfla Visitor Centre to Cemaes Bay • Geotrail – Bodafon to Moelfre • Geotrail – Porth Amlwch • Circular Walk – Llanellian • Open Access Land – Penygraigwen • PRoW located outside of the 500m study area for the northern, central and southern parcels. • PRoW which are no longer used, accessible or identifiable on the ground.
Night-Time Effects and Lighting: • During the operational stage, the Solar PV Site will generally remain unlit with the exception of the Parcel Substations and manually operated and motion-detection lighting utilised for operational and security purposes. The LVIA proposes to scope out the night-time effects and lighting assessment.

Consultation

7.2.128 Consultation with respect to the LVIA chapter has not yet been undertaken with the host Local Planning Authority (Cyngor Sir Ynys Môn / Isle of Anglesey County Council) prior to submission of this EIA Scoping Report.

7.2.129 Consultation will be undertaken with IoACC and the AONB Authority as part of this EIA Scoping Report to agree the scope, approach and methodology, and the locations of representative viewpoints and photomontages that will inform the assessment process within the LVIA chapter.

References

Ref 7-1 3rd Edition Guidelines on Landscape and Visual Impact Assessment (GLVIA3)

Ref 7-2 The National Seascape Assessment for Wales (LUC, Nov 2015)

Ref 7-3 The Anglesey Landscape Strategy: Landscape Character Area (Update 2011)

Ref 7-4 IoACC have published an assessment of the potential for solar PV farms in Gwynedd and Ynys Môn (prepared by LUC, July 2016)

Ref 7-5 Planning Policy Wales (PPW, Edition 11, February 2021)

Ref 7-6 Landscape Institute's, Technical Guidance Note 06/19, Visual Representation of Development Proposals Type 3 standards

Ref 7-7 Countryside and Rights of Way Act 2000 (CROW Act)

Ref 7-8 Isle of Anglesey AONB Management Plan 2015-2020

Ref 7-9 LUC on behalf of the Anglesey and Gwynedd Joint Planning Policy Unit (JPPU, 2012

Ref 7-10 An Approach to Landscape Character Assessment, Natural England, 2014

Ref 7-11 Landscape Institute, Technical Note 06/17, Townscape Character Assessment

Ref 7-12 Landscape Institute, Technical Guidance Note 02/19, Residential Visual Amenity Assessment

Ref 7-13 Landscape Institute, Technical Guidance Notes 02/21, Assessing landscape value outside national designations

7.3 Ecology and Biodiversity

Introduction

7.3.1 This section of the Scoping Report sets out the approach to the assessment of ecology. The baseline conditions are first established through a desktop review and overview of baseline surveys, followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

7.3.2 Where appropriate, reference is made to ongoing ecological surveys, which commenced in November 2022 and will continue into 2024 to gather detailed baseline ecological information. The requirement and extent of these surveys have been informed by desk study data, an extended phase 1 habitat survey of accessible land, together with professional judgement and local knowledge of the geographical area and range of important ecological features it supports.

Baseline Conditions

Site Context

Maen Hir North

7.3.3 The land is largely characterised by improved grassland, grazed by cattle and sheep with field boundaries typically formed by fences, hedgerows, dry stone walls and cloddiau (a dry-stone outer wall with a compacted earth, or earth/rubble core). Semi-natural vegetation includes semi-improved, marshy, neutral and acid grassland with scrub and heathland mostly scattered and fragmented interspersed with improved grasslands. Occasional areas of plantation woodland and ancient semi-natural woodland are located in the area. Watercourses such as streams (nants) and rivers (afons), drains and ponds (pwlls) are scattered throughout. The former Shell site is located within the northern area, with remnant haul roads, hardstanding, embankments and settling pools surrounded by areas of regenerating scrub, gorse and plantation woodland. A disused railway line associated within the copper mine at Parys Mountain extends between Rhosgoch and Amlwch to the south of the former Shell site.

Maen Hir Central

7.3.4 The land is formed of predominantly improved grassland, bounded by fences, hedgerows, dry stone walls and cloddiau. Areas of semi improved neutral and acid grassland, marshy grassland, and lowland fen and reedbed abut Llyn Alaw. Pockets of plantation woodland and ancient semi-natural woodland are located throughout the area. Watercourses are scattered throughout, many of which feed into Llyn Alaw. The disused railway continues through the eastern side of the area.

Maen Hir South

7.3.5 Maen Hir South is largely formed of improved and poor semi-improved grassland bordered by hedgerows, cloddiau and stock proof fencing. Marshy grassland, regenerating gorse and scrub, are also present. Pockets of plantation woodland, ancient semi-natural woodland and watercourses are located throughout the area.

Statutory Designated Sites

7.3.6 Statutory sites that are designated for nature conservation were identified through a review of the MAGIC website. There are seven international designated sites (SACs, SPAs and Ramsar sites) within 10 km of the Scoping Study Area and 23 other statutory designated sites (SSSIs, NNR, LNRs) within 5 km of the Scoping Study Area. These sites are shown on Figures 7-14 to 7-15 and summarised below in Table 7-16.

Table 7-16 Statutory Designated Sites within 10 km (international) and 5 km (national) of the Site and Scoping Study Area

Site Name	Description	Distance (km) and direction from closest point of the Site Boundary	Distance (km) and direction from closest point of the Scoping Study Area
Internationally Designated sites			
Corsydd Môn a Llyn / Anglesey and Llyn Fens Ramsar	An internationally important suite of base-rich fens which occupy valley heads and former lake basins which have mostly infilled with marl and peat deposits, with open water persisting at two of the sites. Calcareous springs from limestone and calcareous drift aquifers irrigate the fens and result in a distinctive vegetation. These fens are notable as the best sites in Wales for stoneworts.	0.41 km south east	0.33 km south east
Corsydd Mon / Anglesey Fens SAC	Annex I habitats that are a primary reason for the selection of this site: • 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. • 7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae • 7230 Alkaline fens Annex I habitats present as a qualifying feature but not the primary reason for selection of this site: • 4010 Northern Atlantic wet heaths with Erica tetralix • 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) Annex II species that a primary reason for the selection of this site: • 1013 Geyers' whorl snail (Vertigo geyeri)	0.41 south east	0.33 km south east

Site Name	Description	Distance (km) and direction from closest point of the Site Boundary	Distance (km) and direction from closest point of the Scoping Study Area
	Annex II species present as a qualifying feature but not a primary reason for site selection: • 1044 Southern damselfly • 1065 Marsh fritillary butterfly (Euphydryas aurinia)		
Anglesey Terns / Morwenoliaid Ynys Môn SPA	During the breeding season the area regularly supports: Roseate tern (Sterna dougallii), 3 pairs representing 5% of the GB breeding population; Common tern (Sterna hirundo), 189 pairs representing 1.5% of the GB breeding population; Arctic tern (Sterna paradisaea), 1,290 pairs representing 2.9% of the GB breeding population; Sandwich tern (Sterna sandvicencis), 460 pairs representing 3.3% of the GB breeding population.	1.70 km north east	0.77 km north west
North Anglesey Marine / Gogledd Môn Forol SAC	Annex II species that are a primary reason for the selection of this site: • 1351 Harbour porpoise (Phocoena phocoena).	1.71 km north east	0.82 km north west
Bae Cemlyn / Cemlyn Bay SAC	Annex I habitats that are a primary reason for selection of this site • 1150 Coastal Lagoons • Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site • 1220 Perennial vegetation of stony banks Cemlyn lagoon on the north coast of Anglesey, north Wales, is considered to be the best example of a saline coastal lagoon in Wales	5.35 km north west	5.22 km north west
Liverpool Bay / Bae Lerpwl (Wales) SPA	The Liverpool Bay SPA site supports non-breeding Red-throated diver (Gavia stellata), Little gull (Hydrocoloeus minutus), and Common scoter	5.46 km north east	5.26 km north east

Site Name	Description	Distance (km) and direction from closest point of the Site Boundary	Distance (km) and direction from closest point of the Scoping Study Area
	(Melanitta nigra), as well as breeding Common tern (Sterna hirundo) and Little tern (Sterna albifrons). The site also supports an internationally important waterbird assemblage.		
Y Fenai a Bae Conwy / Menai Strait and Conwy Bay SAC	Annex I habitats that are a primary reason for the selection of the site: • 1110 Sandbanks which are slightly covered by sea water all the time • 1140 Mudflats and sandflats not covered by seawater at low tide • 1170 Reefs • Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site • 1160 Large shallow inlets and bays • 8330 Submerged or partially submerged sea caves	5.67 km north east	5.61 km north east
Nationally Designated sites			
Llyn Alaw SSSI	Llyn Alaw is the largest mesotrophic open water in West Gwynedd. It has considerable ornithological interest especially for overwintering wildfowl and the number of teal (Anas crecca), shoveler (Spatula clypeata) and whooper swans (Cygnus cygnus) at times are around 1% of the British population. In autumn large flocks of waders, in particular curlew (Numenius arquata), lapwing (Vanellus vanellus) and golden plover (Pluvialis apricaria), visit the exposed mud areas. The uncommon slender spike-rush (Eleocharis acicularis) occurs in the reservoir margins.	Immediately adjacent	Within the Scoping Study Area

Site Name	Description	Distance (km) and direction from closest point of the Site Boundary	Distance (km) and direction from closest point of the Scoping Study Area
Llyn Hafodol and Cors Clegyrog SSSI	This site comprises two wetland basins of biological interest; Cors Clegyrog is an acidic basin mire; Llyn Hafodol a mesotrophic mire. Open water provides habitat for the nationally rare waterwort Elatine hydropiper.	0.38 km north	Within Scoping Study Area
Cors Erddreiniog SSSI, NNR	Cors Erddreiniog is a large calcareous valley mire of national importance. Base-rich springs, provide habitat for narrow-leaved marsh orchid (Dactylorchis traunsteineri), which has been the subject of taxonomic research and fly orchid (Ophrys insectifera). This orchid-rich vegetation type, found at a few sites in Anglesey and Lleyn, is not found elsewhere in Great Britain.	0.41 km south east	0.33 km south east
Salbri SSSI	The acidic basin mire at Salbri is exceptionally intact and remains waterlogged throughout the year. Two nationally uncommon bryophytes Sphagnum platyphyllum and Cephalozia pleniceps have been recorded, and there are populations of locally uncommon flowering plants including the mud sedge Carex limosa.	0.43 km north east	0.14 km north
Maen Gwyn SSSI	Designated for its Geological Interest	0.76 km west	Within the Scoping Study Area
Tyddyn y Waen SSSI	This site comprises fen meadow habitat with associated soligenous mire. The locally uncommon fen bedstraw (Galium uliginosum,) is recorded here.	0.91 north east	0.85 km north east
Fferam Uchaf SSSI	Designated for its Geological Interest	1.10 km south west	1.03 km south west
Mynydd Parys	Mynydd Parys is one of a few metal mine workings in Britain which have been relatively undisturbed since mining ceased and lie in areas with	1.24 km south east	0.78 km south east

Site Name	Description	Distance (km) and direction from closest point of the Site Boundary	Distance (km) and direction from closest point of the Scoping Study Area
SSSI	relatively low atmospheric pollution. More than 125 lichen species have been recorded from the mineralised substrates alone; a number are very scarce in Wales and at least one species is new to Britain and possibly new to science - a Lecidea species.		
Llanbadrig - Dinas Gynfor SSSI	Designated for its Geological Interest	1.63 north west	1.79 north west
Llyn Llygeirian SSSI	Llyn Llygeirian is a moderately base rich lake in West Gwynedd. The flora of the lake includes the regionally rare frogbit (Hydrocharis morsusranae) and the nationally uncommon waterworts (Elatine hydropiper and E. hexandra), needle spike-rush (Eleocharis acicularis), spring quillwort (Isoetes echinospora) and pillwort (Pilularia globulifera).	2.32 km north west	2.33 km north west
Penrhos Lligwy SSSI	This site is selected as an inland example of lowland heathland habitat associated with an area of Carboniferous Sandstone in north-eastern Anglesey.	2.26 km north east	2.19 km north east
Nantanog SSSI	Designated for Geological Interest	3.20 km south	3.07 km south
Cors Bodwog SSSI	Cors Bodrog has been selected for its biological interest as an example of mesotrophic mire. Eight species of Odonata have been recorded including the nationally scarce variable damselfly Coenagrion pulchellum and the scarce blue-tailed damselfly Ischnura pumilio. The breeding bird community which is of local importance includes teal, reed warbler (Acrocephalus scirpaceus), grasshopper warbler (Acrocephalus scirpaceus) and curlew.	3.24 km south west	2.64 km south west

Site Name	Description	Distance (km) and direction from closest point of the Site Boundary	Distance (km) and direction from closest point of the Scoping Study Area
Cors Goch SSSI, NNR	Cors Goch is a nationally important valley mire developed in a hollow in Carboniferous Limestone. The geology is complex and interstratified with the limestone are beds of a coarse pebbly sandstone. The fen has a rich insect fauna, the Lepidoptera and Odonata being well represented.	3.47 km south east	3.39 km south east
Cae Gwyn SSSI	The main features of interest at Cae Gwyn are two wetland areas, separated by an area of heathland with outcropping rock. The flora is distinguished by an abundance of royal fern Osmunda regalis which varies from very large old plants to young plants; other notable species are bog sedge Carex limosa and cranberry Vaccinium oxycoccus. The northern wetland differs in having denser areas of willow (Salix spp.) and common reed Phragmites communis, but is similar in having numerous plants of Osmunda.	3.64 km north west	3.53 km west
Tre'r Gof SSSI	This site has been selected for it's biological interest, in particular as a representative example of rich –fen habitat in north-west Wales. A wide range of wetland plant species occur in the various communities, and of particular interest is the presence of a population of the marsh fern (Thelypteris thelypteroides) which is a scarce fen plant in Britain where it appears to be declining over much of its range.	3.64 km north west	3.56 km north west
Craig Wen / Cors Castell SSSI	This site is selected as an example of lowland acidic heathland habitat and base rich fen. Two uncommon heathland plant species, marsh gentian (Gentiana pneumonanthe) and pale heath violet (Viola lactea), both of which have declined over recent years in Britain, are present.	3.80 km south east	3.71 km south east
Y Bonc, Marianglas SSSI	No information available.	3.95 km east	3.87 km east

Site Name	Description	Distance (km) and direction from closest point of the Site Boundary	Distance (km) and direction from closest point of the Scoping Study Area
Caeau Talwrn SSSI	Caeau Talwrn are of special interest for their neutral grassland and mire vegetation. the site comprises a complex of small enclosures to the south and west of the village of Talwrn situated on glacial drift in the upper catchment of the Afon Cefni. The heterogeneous nature of the drift and topography together with the local occurrence of base-rich springs and seepage lines has given rise to a complex mosaic of vegetation types varying with the impedance of the drainage. The vegetation of this site is of particular interest as it includes not only dry neutral grasslands and various types of mire especially rich-fen, fen-meadow and rush pasture, but also shows the transitions between the various types particularly well.	4.35 km south east	4.22 km south east
Coed y Gell and Morfa Dulas SSSI	Coed y Gell is a small natural coastal woodland occurring on a steep north-facing slope overlying Old Red Sandstone rock on an ancient woodland site. It falls within the Hedera helix - Quercus/Fraxinus (ivy - oak/ash). There is a varied ground flora including a number of uncommon bryophyte species of which the liverworts (Marchesinia mackaii, Cololejeunea rossettiana and Plagiochila britannica) are most noteworthy. Morfa Dulas consists of a spit supporting interesting dune grassland and saltmarsh communities.	4.39 km north east	3.68 km north east
Tyddyn Gyrfer SSSI	This site is selected for its biological interest, in particular as an example of fen meadow habitat with associated soligenous mire. There is a range of different vegetation communities within a small area at Tyddyn y Waen SSSI reflecting ecological gradients and a variable management history.	4.42 km west	3.40 km west

Site Name	Description	Distance (km) and direction from closest point of the Site Boundary	Distance (km) and direction from closest point of the Scoping Study Area
Trwyn yr Wylfa / Wylfa Head LNR	Mixture of coastal grassland and heath habitats. Although there are no specific ornithological interest features listed for the site itself, the following have been recorded passing offshore: gannets (Morus bassanus), shearwaters (Puffinus puffinus), terns (Sternidae spp.) and other seabirds.	4.38 km north west	4.36 km north west
Nant y Pandy (The Dingle) LNR	The Dingle/Nant y Pandy Local Nature reserve is a 10 hectare (25 acre) wooded valley. The site supports amphibians, invertebrates and reptile such as adder (Vipera berus) and common lizard (Zootoca vivipara). It also supports many bird species including grey wagtail (Motacilla cinerea), kingfisher (Alcedo atthis), tawny owl (Strix aluco), buzzard (Buteo buteo) and grey heron (Ardea cinerea). Llyn pwmp is also known to support fish populations including those of brown trout (Salmo trutta), roach (Rutilus rutilus) and perch (Perca fluviatilis).	4.66 km south	4.46 km south east

Non-Statutory Designated Sites

7.3.7 There are 22 non-statutory sites designated for nature conservation within 2km of the Scoping Study Area (see paragraphs 7.3.56 - 7.3.58). These sites have been designated as Local Wildlife Sites (LWS) for their biodiversity value at a local level and are known to have supporting value to a wide variety of protected and ecologically important species and, or habitats. These sites are shown on Figure 7-16 and summarised in Table 7-2.

Table 7-2 Non-Statutory Designated Sites within 2 km of the Site and Scoping Study Area

Site	Description	Distance (km) and direction from closest point of the Site	Distance (km) and direction from closest point of the Scoping Study Area
Coed Cae Mawr LWS	Broad-leaved woodland with smaller areas of dry and marshy grassland. Bird cherry (Prunus padus), a rarity on Anglesey occurs here. This site is considered valuable for birds as woodland is scarce in this part of Anglesey.	Immediately adjacent to the Site	Within the Scoping Study Area
Rhostir Mynydd Mechell LWS	This site consists of five separate blocks of heathland with an associated area of acid and marshy grassland.	0.96 km north west	0.86 km north
Mynydd Bodafon LWS	An extensive area of dry heath/ grassland mosaic amongst numerous rock outcrops with some smaller areas of wet heath, basin mire, flushes and wet birch (Betula spp.) and willow woodland where the drainage is impeded. There is also a small lake (Gors Fawr) which is notable for the presence of the very rare pillwort (Pilularia globulifera) in one of only three sites on Anglesey.	1.00 north east	0.88 km north east
Coed Cefn-Du LWS	A damp birch woodland with abundant alder (Alnus glutinosa). The southeast corner consists of marshy grassland and is immediately adjacent to Cors Erddreiniog SSSI.	1.03 km east	0.95 km east
Graigfryn LWS	A large area of basic flush and a range of types of marshy grassland with smaller additional patches of dry heath, acid flush and semi-improved neutral grassland. The site borders the Afon Lligwy along the valley bottom. The site is notable for a small population of grass of parnassus which is local on Anglesey.	1.10 km east	1.03 km east
Llyn Bwch LWS	A lake with a margin of extensive beds of bottle sedge (Carex rostrata) merging into tall fen vegetation and marshy grassland at the edges.	1.12 km north west	1.11 km north west

Site	Description	Distance (km) and direction from closest point of the Site	Distance (km) and direction from closest point of the Scoping Study Area
	There is heath-grassland mosaic on the surrounding rock outcrops. Dragonflies and damselflies are abundant at this site.		
Pyllau Pentrefelin - Dyffryn Adda LWS	A series of former lakes bordering the drain from Pentrefelin to Dyffryn Adda with open water, swamp, basin mire, marshy grassland and wet heath. The lakes show various stages in the transition from open water to marshy grassland to wet heath.	1.21 km south east	0.95 km east
Porth Llechog LWS	A strip of seacliff heath, inland heath and grassland occurring in a mosaic with several flushes and streams, above sheer cliffs. Northern marsh-orchid (Dactylorhiza purpurella), common spotted-orchid (Dactylorhiza fuchsii) and hybrids are abundant in the flushes.	1.45 km north east	1.11 km north east
Mynydd Parys LWS	Aa large area of inland heath associated with the former copper mines at Mynydd Parys. The site has breeding stonechat (Saxicola rubicola), yellowhammer (Emberiza citrinella), whitethroat (Sylvia communis) and wheatear (Oenanthe oenanthe).	1.46 east	1.01 km south east
Afon Wygyr LWS	A river valley which provides a varied and undisturbed habitat for birds and other wildlife. The river contains brown trout and eels and is bordered by species rich bank-side vegetation and marshy grassland and elm (Ulmus spp.) ash (Fraxinus excelsior) and sycamore (Acer pseudoplatanus) woodlands.	1.52 km north west	1.42 km north west
Llyn Llaethdy LWS	This shallow man-made lake is surrounded by marshy grassland. The lake is devoid of vegetation and the water level fluctuates to expose large areas of bare mud. It is a winter-feeding area for waders and wildfowl. Birds of prey hunt over the marshy grassland. The invertebrate fauna is especially rich in Odonata.	1.58 km east	1.40 km east

Site	Description	Distance (km) and direction from closest point of the Site	Distance (km) and direction from closest point of the Scoping Study Area
Llyn Cors Goch LWS	A small basin mire surrounded by marshy grassland with a species-rich meadow to the east. The basin mire vegetation includes very local many-stalked spike-rush (Eleocharis multicaulis). The species rich marshy grassland includes six species of sedge (Carex spp.), eyebrights (Euphrasia officinalis) and both northern marsh and common spotted orchids.	1.67 km north west	1.68 km north west
Rhostir Ponciau LWS	This site consists of an area of wet heathland with two small areas of marshy grassland. There is a large colony of marsh gentians (Gentiana pneumonanthe), a nationally rare species which occurs in Wales only on Anglesey.	1.68 km east	1.61 km east
Tir Pori Traian LWS	This site consists of two fields of semi-improved neutral grassland one of which is relatively unmodified.	1.72 km south west	0.99 km west
Arfordir Trwyn y Buarth - Porth Wen LWS	Coastal cliff species rich grassland and heathland with several species-rich flushes where orchids can be found. In gullies on the cliffs many woodland plants find shelter. Whorl-grass (Catabrosa aquatica), which is very local on Anglesey, is present at the eastern most end of this site. Choughs (Pyrrhocorax pyrrhocorax) and ravens (Corvus corax) feed here, and fulmars (Fulmarus glacialis) breed on the cliffs. Other breeding birds include yellowhammer, stonechat, wheatear and whitethroat. The potentially invasive Small-Leaved Cotoneaster (Cotoneaster microphyllus) is also present.	1.82 km north	0.72 km north west
Tir Lleidiog Ty Du LWS	A basin mire with areas of marshy grassland, raised bog and dense willow carr. Ornithology interest associated with this site includes grasshopper warbler, sedge warbler (Acrocephalus schoenobaenus),	1.84 km north west	1.20 km north west

Site	Description	Distance (km) and direction from closest point of the Site	Distance (km) and direction from closest point of the Scoping Study Area
	garden warbler (Sylvia borin), reed bunting (Emberiza schoeniclus), whitethroat and moorhen (Gallinula chloropus).		
Llyn Llwyn-Crwn a Sgarp Caerhos Lligwy LWS	A composite site, consisting of a long strip of woodland (Ogo Dano) a small area of unimproved pasture and an area of wet woodland (Llyn Llwyn-Crwn). More open areas include one area of semi-improved calcareous grassland and many steep rocky faces which support species-rich grassland.	1.98 east	1.91 km east
Cors y Bol LWS	A large area of valley mire on deep peat with associated areas of marshy grassland, mixed swamp, scattered and dense willow scrub and some semi-improved acid grassland. The site has considerable ornithological interest with populations of breeding snipe (Gallinago gallinago), curlew, lapwing, grasshopper warbler, sedge warbler, reed bunting, whinchat (Saxicola rubetra) and whitethroat. Barn owls (Tyto alba) use it for hunting and it provides a wintering area for greylag (Anser anser) and canada geese (Branta canadensis), woodcock (Scolopax rusticola) and harriers (Circinae spp.).	2.01 km south	1.74 km south
Arfordir Porth Wen - Porth Llechog LWS	A narrow strip of sea cliff, grassland and heath above areas of bare rock sloping down to sheer cliffs. There are several shaded, steep-sided crevices which have a flora similar to the field layer of woodland. This section of coast has considerable ornithological interest with breeding oystercatcher (Haematopus ostralegus), fulmar and herring gull (Larus argentatus). It is also used as a feeding area by chough and raven.	2.02 km north	0.86 km north
Cors Frigan LWS	A wet woodland mosaic of natural alder, willow and birch carr with some planted conifers (Pinophyta spp.) and exotic shrubs.	2.04 km east	1.97 km east

Site	Description	Distance (km) and direction from closest point of the Site	Distance (km) and direction from closest point of the Scoping Study Area
	Species found here include include early marsh orchid (Dactylorhiza incarnata), common twayblade (Neottia ovata), dogwood (Cornus sanguinea), crow garlic (Allium vineale), marsh violet, saw-wort and several sedge species.		
Maen Eryr LWS	A floristically rich wet meadow adjacent to an area of species-rich woodland. The wetter parts of the meadow are dominated by rushes with herb species such as common spotted orchid, yellow rattle (Rhinanthus minor), marsh arrowgrass (Triglochin palustris), bog asphodel (Narthecium ossifragum) and water mint. Drier areas have red bartsia (Odontites vernus), sneezewort and wild carrot (Daucus carota). The woodland is dominated by ash and sycamore, with some birch and planted conifers.	2.11 km south east	2.00 km south east
Bodafon-y-Glyn Wood LWS	A small broad-leaved wood dominated by hazel and willow on the lower slopes of Mynydd Bodafon. Water avens (Geum rivale), a very local species on Anglesey, is recorded on this site.	2.20 km north	1.31 km north east

Habitats

7.3.8 Priority habitats listed under Section 7 of the Environment (Wales) Act 2016 (Ref 7-14) which are present or likely to be present (where determination by further survey is required) on land within the Scoping Study Area comprise hedgerows, rivers, standing water/ponds and priority deciduous woodland.

7.3.9 Datamap Wales also identifies the following areas of Priority Habitats within the Scoping Study Area:

- lowland acid grassland
- lowland fen and reedbed
- lowland heathland
- purple moor grass and rush pasture
- traditional orchards

7.3.10 These habitats have the potential to support a range of protected and notable species.

7.3.11 Cofnod identifies ancient woodland as present within the Scoping Study Area, including ancient and semi-natural woodland, restored ancient woodland and ancient replanted woodland.

7.3.12 An initial review of the Woodland Trust Ancient Tree Inventory does not indicate any notable/veteran trees within the Scoping Study Area.

Species

7.3.13 The desk study identified records of protected or notable species of flora or fauna within the Scoping Study Area. These include:

- five amphibian species; great crested newt (*Triturus cristatus*), smooth newt (*Lissotriton vulgaris*), palmate newt (*Lissotriton helveticus*), common frog (*Rana temporaria*) and common toad (*Bufo bufo*)
- three reptile species; common lizard (Zootoca vivipara), adder (*Vipera berus*) and slow-worm (*Anguis fragilis*)
- one hundred and fifty six bird species, including (but not limited to) kingfisher (*Alcedo atthis*), marsh harrier (*Circus aeruginosus*), hen harrier (*Circus cyaneus*), long-tailed duck (*Clangula hyemalis*), whooper swan

(*Cygnus cygnus*), merlin (*Falco columbarius*), peregrine (*Falco peregrinus*), hobby (*Falco subbeteo*), red kite (*Milvus milvus*), chough (*Pyrrhocorax pyrrhocorax*), fieldfare (*Turdus pilaris*), redwing (*Turdus iliacus*), black headed gull (*Chroicocephalus ridibundus*), yellowhammer (*Emberiza citrinella*), kestrel (*Falco tinnunculus*), herring gull (*Larus argentatus*), linnet (*Linaria cannabina*), spotted flycatcher (*Muscicapa striata*), curlew (Numenius arquata), grey partridge (Perdix perdix), golden plover (*Pluvialis apricaria*), bullfinch (*Pyrrhula pyrrhula*), starling (*Sturnus vulgaris*), lapwing (*Vanellus vanellus*), short eared owl (*Asio flammeus*), great black backed gull (*Larus marinus*), willow warbler (*Phylloscopus trochilus*), grey plover (*Pluvialis squatarola*) and common tern (*Sterna hirundo*)

- five bat species; brown long eared (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), and unidentified Myotis species;
- six other protected and notable mammal species; brown hare (Lepus europaeus), otter (*Lutra lutra*), red squirrel (*Sciurus vulgaris*), water vole (*Arvicola amphibius*), water shrew (*Neomys fodiens*) and west European hedgehog (*Erinaceus europaeus*)
- one hundred and twenty seven invertebrate species, including (but not limited to) small pearl-bordered fritillary (*Boloria selene*), small heath (*Coenonympha pamphilus*), dingy skipper (*Erynnis tages*), grayling (*Hipparchia semele*), wall (*Lasiommata megera*), southern damselfly (*Coenagrion mercuriale*), variable damselfly (*Coenagrion pulchellum*), scarce blue-tailed damselfly (*Ishnura pumilio*) and common darter (*Sympetrum striolatum*)
- eight fish species; eel (*Anguilla anguilla*), sea trout (*Salmo trutta*), brown trout (Salmo trutta subsp. fario), three-spined stickleback (Gasterosteus aculeatus), rudd (Scardinius erythrophthalmus), cuckoo ray (*Leucoraja naevus*), lesser spotted dogfish (*Scyliorhinus canicula*) and River Lamprey (*Lampetra fluviatilis*); and two molluscs; marsh pond snail (*Stagnicola palustris*) and silky snail (*Ashfordia granulata*)

- eighty-one notable plant species, including (but not limited to) bluebell (*Hyacinthoides non-scripta*), navelwort (*Umbilicus rupestris*), Alexanders (*Smyrnium olusatrum*), field madder (*Sharardia arvensis*), heath groundsel (Senecio sylvaticus), rustyback (Ceterach officinarum), Sheep's bit (*Jasione montana*), crosswort (Cruciata laevipes) and hedge bedstraw (*Gallium mollugo*)
- twelve Invasive Non-Native Species (INNS), listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (Ref 7-15); Canada goose (*Branta canadensis*), hottentot fig (*Carpobrotus edulis*), hollyberry cotoneaster (*Cotoneaster bullatus*), small-leaved cotoneaster (*Cotoneaster Manddail*), Himalayan cotoneaster (*Cotoneaster simons*), New Zealand pigmyweed (*Crassula helmsii*), Montbretia (*Crocosmia pottsii x aurea C. x crocosmiiflora*), Japanese knotweed (*Reynoutria japonica*), Himalayan balsam (*Impatiens glandulifera*), Parrot's feather (*Myriophyllum aquaticum*), Rhododendron (*Rhododendron ponticum*) and Japanese rose (*Rosa rugosa*)

Survey results

7.3.14 Surveys are currently ongoing, however initial findings include the following;

- The former Shell site has habitat suitability for a range of species including but not limited to reptiles, great crested newts, water voles, red squirrels, invertebrates, bats and birds species;
- Otter have been found to be present, confirming the Site as being used for foraging and commuting. No resting sites or holts have been noted to date, but there is potential within and around the Site for these to be present;
- Water voles have been confirmed to be present within a number of watercourses surveyed to date within the northern area and are anticipated to be present elsewhere. Crossing locations of watercourse are unknown at this stage therefore it may be possible to avoid known areas of water voles through design;
- No evidence of badgers has been noted to date;

- Great crested newts have been found to be present within and around the Site;
- Initial observations resulting from breeding bird surveys reveal that boundary habitats, notably hedgerows and scrub, support the greatest assemblage of breeding bird species. Whereas, field interiors typically support comparatively low numbers of breeding birds, such as meadow pipit (*Anthus pratensis*) and skylark (*Alauda arvensis*);
- The Site and adjacent areas support a diverse assemblage of wintering bird species, due to the range of habitats present. Six species listed on Annex 1 of the EU Birds Directive (2009) have been recorded, including whooper swan, great white egret (*Ardea alba*), marsh harrier, hen harrier, merlin and chough. Additionally, 14 Section 7 (Environment (Wales) Act 2016), 20 Red List, 34 Amber List and three Local Biodiversity Action Plan (chough, skylark and song thrush (*Turdus philomelos*)) species have been recorded (Ref 7-16). However, survey results to date indicate that no species reach numbers considered to be significant (Ref 7-16 within the Site as a whole. Locally, fields bordering Llyn Alaw and some of those within land in the Southern area, particularly where marshy grassland and waterbodies are present, support comparatively greater numbers of wildfowl and waders. Woodland, hedgerow and scrub habitats provide shelter and foraging opportunities for a range of species, such as woodcock (*Scolopax rusticola*), winter thrushes and passerines.
- Bat activity surveys are ongoing, however, to date lower levels of activity have been noted on site (although not yet fully analysed), with species present including common pipistrelle, soprano pipistrelle, noctules, and Leisler's (*Nyctalus leisleri*). There are scattered trees and areas of woodland within the Site with bat roost potential, and suitable buildings within the Scoping Study Area. It is anticipated that these features can be retained through careful design.

Field Surveys

7.3.15 Selective field surveys commenced in 2022 on land within the Site that was accessible, field surveys were expanded in 2023 and will continue in 2024. Prior to this, wintering bird surveys were also conducted over winter 2021/22.

7.3.16 No surveys have been undertaken on any land outside the Site, however, appropriate surveys will be undertaken as the Project develops.

Extended phase 1 habitat survey

7.3.17 Extended phase 1 habitat surveys have commenced in accordance with the published method (Ref. 7-18) and supplemented by UK Habitat Classification and condition assessment to inform Net Benefits for Biodiversity Assessment. The survey aims to identify the habitats present, and the possible presence of protected, priority or otherwise notable species and, where relevant, the likely importance of habitat features for such species. Any observed Invasive Non-Native Species (INNS) of plants have been recorded in addition to incidental records of protected or priority species or their field signs. The survey has been completed of the majority of the Site, where access was possible. No land within the 50 m of the Site or the Scoping Study Area (out with the Site described above) has been surveyed at this stage, however, appropriate surveys will be undertaken as the design develops.

Badger survey

7.3.18 A presence/ absence survey for setts and search for field signs has been undertaken in combination with Phase 1 habitat survey of land within the Site, where access was possible. Further surveys will be undertaken in 2024 where appropriate.

Bats - Preliminary Roost Features (PRF) survey

7.3.19 Individual trees and structures have been subjected to a PRF assessment survey in accordance with The Bat Conservation Trust guidance (Ref 7-19) within the Site, where access was possible. No woodland blocks, farmyard and residential buildings have been surveyed at this stage. Further surveys will be focused on features that may be affected once known, but appropriate buffers will be applied to suitable habitats where possible to retain the majority of potential features.

Bats - Foraging/Commuting survey

7.3.20 The Site is predominantly open agricultural land, of low value for foraging/ commuting bats. Seasonal bat activity surveys have commenced based upon published guidance (Ref 7-19) (latest at the time of the survey) for most of the Site, where access was possible. Further surveys will be undertaken within the Site throughout 2024 where appropriate. It is anticipated that much of the Site will not be an adverse change for foraging and commuting bats, and beneficial changes in habitats and additional planting would occur as part of the Project.

Bird survey (breeding)

7.3.21 Breeding bird surveys have commenced following the Common Bird Census (CBC) methodology (Ref 7-20) amended for five visits rather than ten. Bird territories within the Site will be determined using standard territory mapping techniques to identify and isolate areas within which birds display consistent breeding behaviours. Birds observed only flying over the Site have also been recorded but will be discounted from territory analysis. Surveys have been completed of most of the Site, where access was possible. Further surveys will be undertaken in 2024 where appropriate.

Bird survey (wintering and passage)

7.3.22 Wintering bird surveys have commenced comprising walked transects within the Site to confirm the assemblage of wintering and passage bird species present. Surveys have been partially completed within the Site where appropriate and where access was possible, and included a minimum 50 m buffer. Where birds were detectable beyond 50 m, they were recorded up to a distance of approximately 200 m.

Great crested newt habitat assessment

7.3.23 Habitat Suitability Index (HSI) of ponds have commenced in accordance with Oldham et al., 2000 (Ref 7-23) within the Site and a 250 m buffer, where access was possible. Further surveys will be undertaken in 2024 where appropriate.

Great crested newt presence/ likely absence survey

7.3.24 Environmental DNA (eDNA) surveys (using approved great crested newt eDNA kit suppliers) have commenced in accordance with the protocols as set out by

Biggs et al. (Ref. 7-24) on suitable waterbodies within the Site, and a 250 m buffer, where access was possible. Further surveys will be undertaken in 2024 where appropriate. It is anticipated that much of the Site will not be an adverse change for great crested newts, and beneficial changes in habitats would occur as part of the Project.

Otter and water vole survey

7.3.25 Presence/ absence surveys for otter and water vole have commenced, looking for field signs along watercourses and ditches. A search for otter holts will be extended up to 250 m from watercourses, where required. Surveys have been undertaken in accordance with standard guidance (Ref 7-25, 7-26 & 7-27). A small part of the Site has been surveyed so far. The majority of the Site has not yet been surveyed at this stage. Surveys will be focused on affected watercourses once known, which is anticipated to be limited to those crossed by access routes and/or cable installation, with appropriate buffers limiting effects elsewhere.

Red Squirrel survey

7.3.26 An initial desk-based study will be carried out within the Scoping Study Area to identify possible affected woodlands that may be suitable for use by red squirrels or are known to be occupied by them. Information gained from the Phase 1 Habitat survey will also be used to identify potential areas for consideration. Data will be requested from the Red Squirrel Trust and other local groups. The density of dreys can be used as a crude index of squirrel numbers and it may be particularly useful as a relative measure of habitat use. Winter dreys are often counted to ensure that squirrel dreys are distinguished from bird nests as crows, magpies and some raptors build large nests made of twigs. The total number of dreys is then related to the area of woodland searched. The drey densities can be used as a relative measure of habitat use. The estimated drey numbers can be converted to crude indices of squirrel densities. Surveys will be required within any suitable areas, including woodland that may be unavoidably affected once known. It is anticipated that much of the Site will not be an adverse change for red squirrels, and beneficial planting would occur as part of the Project.

Reptile surveys

7.3.27 Reptile surveys will be undertaken where required on suitable habitats that will be affected, focused mainly on areas of permanent land take, or where temporary works could adversely affect the existing reptile habitat or potential for harm to reptiles during construction could occur. It is anticipated that the former Shell site has habitat suitability. Once the suitability of a habitat has been determined, those assessed as having potential to support reptiles will be subject to a presence/absence survey. In accordance with current guidelines (Ref 7-28), artificial refugia will be laid down across areas assessed as being suitable for use by reptiles on the first visit and then left to 'bed in'. Seven survey visits will subsequently be carried out to check for the presence of reptiles, with the artificial refugia collected and removed from the areas at the end of the last survey. Where appropriate these will be combined or replaced with transect surveys comprising the surveyors walking a defined route through the habitat and stopping to observe reptile presence, often at distance using binoculars.

7.3.28 Surveys will likely be required in the former Shell site, as well as any areas with suitability that may unavoidably be affected. It is anticipated that much of the Site will not be an adverse change for reptiles, and beneficial changes in habitats would occur as part of the Project.

Terrestrial invertebrate surveys

7.3.29 Affected and unavoidable locations within the Site where the Phase 1 habitat survey identifies habitat as being potential significant habitat for terrestrial invertebrates will be surveyed where appropriate, following an initial assessment. It is anticipated that the former Shell site has habitat suitability. The survey methodology would be dependent on the target species.

7.3.30 Surveys will be required within any areas of suitability that may be unavoidably affected once known. It is anticipated that much of the Site will not be an adverse change for invertebrates, and beneficial changes in habitats would occur as part of the Project.

Detailed Habitat/Vegetation Surveys

7.3.31 Affected locations within the Site where the Phase 1 habitat survey identifies habitat as being particularly species diverse and/or sensitive and/or a type restricted in the UK/region. The survey would be undertaken in accordance with the Joint Nature Conservation Committee (JNCC) National Vegetation Classification (NVC) Users' Handbook (Ref 7-29).

7.3.32 NVC surveys will be likely required in the former Shell site, as well as important habitats such as fens, and woodlands that may unavoidably be affected, however it is anticipated that the more diverse habitats will be retained as part of the design where possible.

Aquatic species surveys

7.3.33 Targeted affected sections of watercourses/ ditches will be assessed in accordance with standard guidance. The survey methodology for aquatic species would be dependent on the target species. Surveys will be focused on affected watercourses once known, which is anticipated to be limited to those crossed by access routes and/ or cable installation, with appropriate buffers limiting effects elsewhere.

Assessment Methodology

Approach

7.3.34 The approach used for the Ecological Impact Assessment (EcIA) will be undertaken in accordance with best practice guidance as published in the Chartered Institute of Ecology and Environmental Management *(*CIEEM) guidelines and summarised below.

7.3.35 The principal steps involved in the EcIA can be summarised as follows:

- Ecological features that are both present and might be affected by the Project are identified (both those likely to be present at the time works begin and those predicted to be present at a set time in the future) through a combination of targeted desk-based study and field survey work to determine the relevant baseline conditions.
- The importance of the identified ecological features evaluated, placing their relative biodiversity and nature conservation value into geographic context.

This is then used to define the relevant ecological features that need to be considered further within the assessment process.

- The changes or perturbations predicted to result as a consequence of the Project (i.e. the potential impacts), and which could potentially affect relevant ecological features are identified and their nature described. Established good-practice, legislative requirements or other incorporated design measures to minimise or avoid impacts are also described and are taken into account.
- The likely effects (beneficial or adverse) on relevant ecological features are then assessed, and where possible quantified.
- Measures to avoid or reduce any predicted significant effects, if possible, are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines). If necessary, measures to compensate for effects on features of nature conservation importance are also included.
- Any residual effects of the Project are reported; and scope for ecological enhancement is considered.

7.3.36 The ecological surveys conducted between 2022 and 2024 will confirm or identify the presence or probable absence of any species and habitats and will be undertaken in the appropriate season for each species group.

7.3.37 The ‘Zone of Influence’ for the Project is the area over which ecological features may be affected by changes as a result of the Project and associated activities. The Zone of Influence will be different for each ecological receptor identified, dependent on each receptor’s sensitivity to change and will be determined using the maximum extents for study areas of each identified receptor. Where necessary, these will be appropriately revised as the Project evolves.

7.3.38 To support focussed EcIA, there is a need to determine the scale at which the relevant ecological features identified through the desk studies and field surveys undertaken for the Project are of value. A hierarchical geographical approach will be used to assign nature conservation resource importance (or value) based upon those within the CIEEM Guidelines for Ecological Impact Assessment in the UK

and Ireland: Terrestrial, Freshwater, Coastal and Marine (Ref. 7-30) (hereafter referred to as the CIEEM guidelines) and professional judgement.

7.3.39 It is not necessary in the assessment to address all habitats and species with potential to occur in the study area and instead the focus should be on those that are 'relevant' i.e., ecological features considered important and potentially affected by the proposed Project. In its guidance, CIEEM makes clear that there is no need to "carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable". This does not mean that efforts should not be made to safeguard wider biodiversity, and requirements for this will be considered. National policy documents emphasise the need to achieve net gains for nature and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.

7.3.40 The frames of reference used for the assessment, based on the CIEEM guidelines will be:

- International (generally this is within a European context, reflecting the general availability of good data to allow cross-comparison)
- National (Great Britain, but considering the potential for certain ecological features to be more notable (of higher value) in Wales, with context relative to Great Britain as a whole)
- Regional (Wales)
- County (Isle of Anglesey)
- District (Twrcelyn/Talybolion/Lligwy/Canolbarth Mon)
- Local (has value at the 'Site' level)

7.3.41 Species populations are valued on the basis of their size, recognised status (such as through published lists of species of conservation concern and designation of BAP status), and legal protection.

7.3.42 In assigning values to species populations, it is important to consider the status of the species in terms of any legal protection. However, it is also important to consider other factors such as its distribution, rarity, population trends and the size of the population which would be affected. For example, whilst the great

crested newt is protected under European law, and therefore conservation of the species is of significance at an international level, this does not mean that every population of great crested newt is internationally important. It is important to consider the particular population in its context. Therefore, in assigning values to species, the geographic scale at which they are important will be considered. The assessments of value rely on the professional opinion and judgment of experienced ecologists.

7.3.43 Plant communities will be assessed both in terms of their intrinsic value, and as habitat for protected species whose habitat is also specifically protected, and for species of nature conservation concern which are particularly associated with them.

7.3.44 Due regard will also be paid to the legal protection afforded to species during the development of mitigation and compensation measures to be implemented as part of the Project. For European protected species, there is a requirement that the project should not be detrimental to the operation of the population of the species concerned at a favourable conservation status in their natural range.

7.3.45 Assessing the value of features requires consideration of both existing and future predicted baseline conditions. Therefore, the description and valuation of ecological features will take account of any likely changes, such as trends in the population size or distribution of species, likely changes to the extent of habitats and the effects of other schemes or land use changes.

7.3.46 With the overarching emphasis being on developments contributing to and not eroding biodiversity, ecosystem resilience and the ecosystem services of a site and the wider ecosystem; Natural Resources Wales (NRW) has developed a framework for evaluating ecosystem resilience based on five attributes and properties specified in the Environment (Wales) Act 2016. This is referred to as DECCA: Diversity, Extent, Condition, Connectivity and Aspects of ecosystem resilience. The attributes provide a framework for considering the state of ecosystem resilience in Wales and can be applied across different habitats and land uses and for a range of different scales. This Framework aims to promote a whole system approach rather than simply achieving a metric. This Framework

will be utilised when conducting the ecological assessments and developing associated measures - from enhancement to mitigation - to ensure that the Project will maintain and enhance biodiversity in a holistic manner that will aim to build a more resilient ecological network.

Habitat Regulations Assessment

7.3.47 It is necessary to consider whether the Project is likely to have a significant effect on areas that have been internationally designated for nature conservation purposes (i.e. European sites). European sites are protected under the Conservation of Habitats and Species Regulations 2017 (as amended; relevant to England and Wales) (Ref. 7-31). The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act").

7.3.48 However, the most recent amendments to the Habitats Regulations (the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref. 7-32) make it clear that the need for Habitats Regulations Assessment (HRA) continues to apply, including through the creation of a national site network within the UK comprising the protected sites already designated under the EUs Natura 2000 ecological network, establishing management objectives of the national site network, imposing a duty for appropriate authorities to manage and adopt the network objectives, and arranging for reporting on the implementation of the Regulations given the UK no longer reports these to the EU.

7.3.49 Although the UK has departed the EU, the HRA will nonetheless take account of relevant EU case law (for instance, the Holohan (Ref. 7-33) and People over Wind (Ref. 7-34) cases) as a precaution.

7.3.50 Whilst the HRA decisions must be taken by the competent authority (the SoS, informed by the recommendations of the appointed Examining Authority), the information needed to undertake the necessary assessments must be provided by the Applicant. The information needed for the competent authority to establish whether there are any Likely Significant Effects (LSEs) from the Project and to assist in carrying out its Appropriate Assessment, will be provided in the HRA Report.

7.3.51 Stage 1 of the HRA process (Test of Likely Significant Effects) will consider the potential pathways of effect between the Project and the European designated sites within 10 km of the Site boundary (on the basis that it is unlikely that a Scheme such as this will affect sites further afield), and whether there is potential to have a significant adverse effect on the integrity of the European designated sites, either alone or in combination with other plans or projects. Potential pathways of effect currently include noise, light and visual disturbance during construction, pollution (via hydrological links to the designated sites) and dust emissions and loss / disturbance of functionally linked land used by qualifying bird species. Information used to support the HRA process will include desk study data and appropriate field surveys. Stage 1 will result in the preparation of a HRA Screening Report.

7.3.52 Where there is potential for the Project to have a likely significant effect upon the qualifying features of the European designated sites, the pathway will be taken forward to Stage 2 – Appropriate Assessment. At Appropriate Assessment, the measures that will be implemented to either avoid the impact in the first place, or to mitigate the ecological effect to such an extent that it is no longer significant, will be set out.

7.3.53 If required, the HRA will be prepared in line with Planning Inspectorate Advice Note 10 (Habitats Regulations Assessment) (Ref. 7-35) including completion of the necessary matrices. The HRA process will be in line with the EIA process. There would be a "Test of Likely Significant Effects Report" at the Preliminary Environmental Information (PEI) Report stage, and this will be updated as necessary for the Development Consent Order (DCO) application including a report to inform Appropriate Assessment, if required.

Desk Study

7.3.54 A desk study search was undertaken of the Site in October 2022. A further updated desk study search of the Scoping Study Area (encompassing the Site) was undertaken in October 2023. Both searches aimed to identify:

- sites of international nature conservation value (Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites (as

well as proposed or potential sites) within 10 km (see Figure 7-15)), extended up to 30 km for bat related SACs

- other statutory designated sites of nature conservation value (Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR) within 5 km (see Figure 7-15))
- non-statutory sites designated for nature conservation (Local Wildlife Sites (LWS), Wildlife Trust Reserves, ancient woodland, ancient or veteran trees and other notable habitats within 2 km (see Figure 7-16))
- records of protected and notable species within 2km

7.3.55 Sources used to inform the desk study comprised:

- MAGIC website (Ref. 7-36) for information on statutory designated sites for nature conservation interest
- Joint Nature Conservation Committee website (Ref. 7-37) for site information and designation details of SACs, SPAs and Ramsar Sites
- Datamap Wales website (Ref. 7-38) for information on the location of Priority Habitats
- Cofnod, the local Ecological Data Centre for records on non-statutory designated sites, ancient woodlands and for protected/notable/invasive non-native species (INNS) records
- Woodland Trust Ancient Tree Inventory (Ref. 7-39) for records of veteran and ancient trees
- aerial imagery (Google Maps)
- Anglesey's Local Biodiversity Action Plan

Study Area

7.3.56 The study area for the ecological assessment includes the land within the Site and the Scoping Study Area, with appropriate buffers as described below.

7.3.57 The extent of the study area reflects standard industry good practice and the scoping distances that statutory consultees would typically expect to be considered for identification of features external to the Project that could be affected. These have been informed by published guidance and professional judgement. A Zone of Influence (ZoL), representing the areas within which effects

could occur from the Project and associated activities will be identified and detailed in the assessment.

7.3.58 The desk study included searches for records of protected or notable species and nationally designated and statutory and non-statutory sites within 2 km and for internationally important designated site within 10 km. This was extended up to 30 km for bat related SACs. The wider search area was used to gather contextual information and is proportionate for the nature and type of development proposed. With the exception of the wintering birds and great crested newts, where the field surveys were extended to neighbouring large fields to gather contextual information on mobile species, and ponds within 250 m, the field surveys carried out to inform the baseline conditions primarily covered the Site and a 50 m buffer where possible. This is due to the contained nature of the Project and the type of development, which will have a very limited Zone of Influence (ZoI) in relation to ecological impacts. Due to the nature of the Project, wider ranging impacts, such as additional recreational activities which might have an adverse effect on habitats in the wider area, would not occur as a result of the Project, however promotion of recreational paths such as near to Llyn Alaw and along the disused railway will be considered as part of the Project, and where these are taken forward they will be done sensitively to avoid potential adverse disturbance effects.

Determining Significance of Effect

7.3.59 In line with Section 1.21 in the CIEEM guidelines, the terminology used within the EcIA will draw a clear distinction between the terms ‘impact’ and ‘effect’. For the purposes of this EcIA these terms are defined as follows:

- Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow.
- Effect – Outcome to an ecological feature from an impact. For example, the effects on commuting bats from loss of a hedgerow.

7.3.60 When describing potential impacts (and where relevant the resultant effects) consideration will be given to the following characteristics likely to influence this (Sections 5.11 to 5.18 in the CIEEM guidelines)

- Positive / Negative – i.e. is the change likely to be in accordance with nature conservation objectives and policy:
- Positive – a change that improves the quality of the environment, or halts or slows an existing decline in quality e.g. increasing the extent of a habitat of conservation value; or
- Negative – a change that reduces the quality of the environment, e.g. destruction of habitat.
- Extent – the spatial or geographical area or distance over which the impact/ effect may occur under a suitably representative range of conditions;
- Magnitude – the 'size', 'amount' or 'intensity' and 'volume' of an impact - this is described on a quantitative basis where possible.
- Duration – the time over which an impact is expected to last prior to recovery or replacement of the resource or feature. Consideration will be given to how this duration relates to relevant ecological characteristics such as a species' lifecycle. However, it is not always appropriate to report the duration of impacts in these terms. The duration of an effect may be longer than the duration of an activity or impact.
- Frequency and Timing – i.e. consideration of the point at which the impact occurs in relation to critical life-stages or seasons.
- Reversibility – i.e., is the impact temporary or permanent. A temporary impact is one from which recovery is possible or for which effective mitigation is both possible and enforceable. A permanent effect is one from which recovery is either not possible or cannot be achieved within a reasonable timescale (in the context of the feature being assessed).

7.3.61 For each ecological feature only those characteristics relevant to understanding the ecological effect and determining the significance will be described. The determination of the significance of effects has been made based on the predicted effect on the structure and function, or conservation status, of relevant ecological features, as follows:

- Not significant – no effect on structure and function, or conservation status.
- Significant – structure and function, or conservation status is affected.

7.3.62 The CIEEM guidelines states that effects should be determined as being significant when:

"an effect either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local. A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project".

"In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)".

7.3.63 Using this information and judgment, it is determined whether the effects will be significant or not on the integrity (of site/ecosystems) or conservation status (of habitats/species) of each ecological feature and the impact significance is determined at the appropriate geographical scale.

7.3.64 Professional judgement is used to determine if an effect is significant or not in relation to the integrity of the defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, which relates to the level at which it has been valued. If an effect is found not to be significant at the highest geographical level at which the resource or feature has been valued, it may be significant at a lower geographical level. By way of example, limited impacts on a woodland of county importance might be assessed as being significant at a district level of importance. Once the potential effects of the Project have been assessed as per the geographical scale set out above, an effect at District level or below to an ecological feature is considered not significant in terms of the EIA process.

Potential Effects

Construction

Designated Sites

7.3.65 There is no potential for permanent/temporary habitat loss, modification or fragmentation within any designated sites. However, Project infrastructure may be implemented on agricultural land that is considered to be functionally linked with designated sites. As such, the potential for significant adverse effects on designated sites set out below relate to the potential for permanent/temporary habitat loss, modification or fragmentation of functionally linked agricultural land.

7.3.66 There is no potential for significant effects on statutory and non-statutory designated sites (without mobile qualifying criteria) located greater than 2 km from the Scoping Study Area. Without mobile criteria relating to these sites there is unlikely to be a pathway for an impact on any species.

7.3.67 There is potential for significant adverse effects on statutory designated sites (SACs, SPAs, Ramsar sites) with mobile qualifying criteria located up to 10 km from the Scoping Study Area. This is due to the potential permanent or temporary loss, fragmentation or modification of functionally linked land and displacement/ disturbance of birds or other mobile criteria that use the functionally linked land within the Scoping Study Area.

7.3.68 There is potential for significant adverse effects on national statutory designated sites within 2 km of the Site due to the potential for functionally linked land utilised by birds or other species to be lost, modified and/or fragmentated.

7.3.69 There is potential for significant adverse effects on non-statutory designated sites (LWS) within the Site or within 2 km of the Scoping Study Area (e.g. loss, modification or fragmentation of functionally linked land, or disturbance of species associated with Coed Cae Mawr LWS).

7.3.70 There is no potential for significant adverse effects on non-statutory designated sites (greater than 2 km from the Scoping Study Area). Effects are very unlikely due to the distance between the Scoping Study Area and the non-statutory designated sites and the lack of a pathway for an impact on species associated with these sites.

Habitats

7.3.71 Measures to not only retain but enhance the overall biodiversity of the Site will be implemented with a habitat creation led approach. This could include the creation of diverse wildflower grassland in areas outside the proposed solar array and seeding of permanent grassland within the array. Further biodiversity and enhancement improvements will be explored throughout the evolution of the Project.

7.3.72 Habitats of principal importance (HPIs) will be retained within the Site where possible, with exceptions such as breaks for internal access routes and cable corridors where these can't be aligned with existing field gateways. Where appropriate the HPIs will be bolstered with additional planting of diverse habitats to either increase the extent of the HPIs or increase connectivity and structural diversity, such as adding scrub areas with an informal edge adjacent to woodland plots. Therefore, habitat losses will be largely limited to agricultural land, a habitat of very low intrinsic ecological value.

7.3.73 However, at this stage in the design development it is not possible to confirm that there will be no permanent and temporary habitat loss, disturbance and fragmentation of habitat (including functionally linked habitat) associated with access tracks with potential for significant adverse effects. Habitat that may be subject to adverse effects include lowland acid grassland, purple moor grass rush pastures, hedgerows and other notable habitats. No woodland would be lost but there is potential for indirect impacts to Ancient Woodland, Ancient and Veteran trees, semi-natural woodlands.

7.3.74 There is no potential for significant adverse effects to common and widespread habitats of low sensitivity and/ or conservation interest. Standard construction mitigation measures that will be secured by a Construction Environmental Management Plan (CEMP) will be sufficient to avoid significant adverse effects. Furthermore, significant adverse effects are very unlikely due to the habitats being of low sensitivity and/ or conservation interest.

7.3.75 During construction there is potential for adverse effects on ecological habitats due to accidental pollution of watercourses and a loss/reduction of existing habitat

quality due to changes in water levels. Potential for water pollution or other indirect impacts during construction on adjacent habitats and species will be controlled though implementation of a CEMP.

Protected and Notable species

7.3.76 Construction of the Project has the potential for significant effects on the following protected or notable species:

- Bats
- Badger
- Birds breeding and non-breeding
- GCN
- Invertebrates
- Otter and Water vole
- Red squirrel
- Reptiles
- Other mammals (brown hare, hedgehog and polecat)
- Other aquatic species

7.3.77 Embedded (siting of Project infrastructure and design principles) and Additional (good practice construction methodology implemented through a CEMP) mitigation will likely be sufficient to avoid the potential for significant adverse effects on these protected species. However, the above species are scoped into the assessment on a precautionary basis and to inform the detailed mitigation to be secured by the DCO consent.

Bats

7.3.78 The construction of the Project will avoid the loss of features with bat roost suitability in so far as possible by retaining woodland (with the exception of young plantation that is not suitable for roosting bats), trees and hedgerows with trees. If the loss of a bat roost is unavoidable, a European Protected Species licence will be obtained from Natural Resources Wales and suitable mitigation will be employed to ensure there is no mortality of bats caused by removing the roost. Alternative suitable roosting locations (e.g. bat boxes will be provided to maintain the favourable conservation status of local bat populations. The construction of

the Project will largely avoid impacts upon hedgerows and other boundary features, which will retain connectivity across the Site for commuting and foraging bats. The enhancement of improved grassland fields (around the panels) and the creation of new open areas of species rich grassland and tree planting will offer suitable habitat for foraging bats. Standard environmental protection measures will be implemented and adopted during construction formalised through a CEMP. These will include pollution prevention and measures to control light spill into suitable retained habitats (e.g. woodland).

Badger

7.3.79 The construction of the Project will retain, avoid and buffer any active badger setts should they be identified as far as practicable. If destruction/ disturbance of an active sett is unavoidable, the sett will be closed under a Natural Resources Wales licence and mitigation measures updated accordingly. Sufficient buffers from retained habitats will ensure that badger can move freely across the Site. Any perimeter fencing will be permeable to badgers and connectivity across the Site will be improved with the enhancement/ creation of hedgerows and grassland, therefore increasing foraging opportunities for badger. Standard (embedded) environmental protection measures will be implemented and adopted during construction, secured through a CEMP. These will include covering excavations or leaving them with suitable egress.

Breeding and Non-breeding birds

7.3.80 The construction of the Project will minimise permanent habitat loss as far as reasonably practicable and provide replacement habitat where required. Replacement habitat will include open areas of suitably managed grassland to provide habitat for notable ground nesting species such as skylark, lapwing and curlew and the creation of wetland areas which could provide suitable habitat for a range of bird species, including over wintering waders. The construction of the Project will be undertaken over many months and disturbance impacts (noise/ visual disturbance) will not occur across the Site in its entirety at any one time. Construction will also not significantly impact upon hedgerows and other boundary features which retain connectivity across the Site for the general breeding bird assemblage and minimise fragmentation of retained habitats.

7.3.81 Standard environmental protection measures will be implemented and adopted during construction and formalised through a CEMP. These will include measures to prevent and control pollution during construction and measures to minimise noise, lighting and vibration disturbance to breeding birds to ensure that, where construction of the Project is undertaken within the bird breeding season (typically March to August inclusive), then disturbance to breeding birds in adjacent and retained habitats will be minimised. Where construction cannot avoid nesting birds, then nesting bird checks will need to be undertaken by a suitably experienced ecologist prior to construction (where this occurs within the breeding season) to ensure there is no species mortality. The CEMP will likewise include measures to minimise noise, lighting and vibration disturbance to wintering birds to ensure that, where construction is undertaken within the winter months, disturbance to birds in adjacent and retained habitats will be minimised.

GCN

7.3.82 The construction of the Project will minimise permanent habitat loss as far as reasonably practicable and retain suitable habitat features including ponds, ditches, hedgerows and semi-improved neutral grassland. Mitigation strategies will be completed for GCN and, where required, a European Protected Species licence will be obtained from Natural Resources Wales for translocation of animals away from construction areas sufficiently in advance of the works to meet with the optimum time for mitigation. Standard (embedded) environmental protection measures will be implemented and adopted during construction formalised through a CEMP. These will include measures to prevent and control pollution including light and noise pollution during construction.

Invertebrates

7.3.83 Permanent habitat loss will be minimised as far as reasonably practicable, including, hedgerows, woodlands and semi-improved neutral grassland. New areas of suitable habitat, including species rich grassland will be created as part of the Project, which will benefit terrestrial invertebrates. Standard (embedded) environmental protection measures will be implemented and adopted during construction formalised through a CEMP. These will include best practice and reasonable avoidance measures to prevent harm to invertebrates, including

phased clearance under an ecological watching brief, where required. More detailed mitigation will be developed following completion of initial invertebrate surveys.

Otter and Water vole

7.3.84 Where direct crossings are not required, watercourses/ ditches will be protected by suitable stand-off buffers, of at least 10 m. If open cut techniques are used to cross ditches (for cabling works), then the working widths will be kept to a minimum and the habitat affected will be reinstated post-construction to avoid permanent loss of habitat. Where new watercourse/ditch crossings are required for access, these will be designed to maintain connectivity along watercourses/ditches for otter and water vole (and other species) and will retain as much of the existing bankside habitats as possible e.g. by avoiding the construction of new culverts and constructing crossings with spans of a sufficient width. Should surveys confirm the presence of otter or water vole, mitigation to ensure legislative compliance would be required including, if necessary, changes to the design, working methods and/or a derogation/mitigation licence from Natural Resources Wales if disturbance is unavoidable. Standard (embedded) environmental protection measures will be implemented and adopted during construction formalised through a CEMP. These will include measures to prevent and control pollution including light and noise pollution during construction.

Red squirrel

7.3.85 Permanent habitat loss will be minimised as far as reasonably practicable, including woodland and hedgerows. New areas of woodland and hedgerow habitat will be created as part of the Project, which will benefit red squirrel. Should surveys confirm the presence of red squirrel, mitigation to ensure legislative compliance would be required including, if necessary, changes to the design, working methods and/or a derogation licence from Natural Resources Wales if disturbance is unavoidable. Standard (embedded) environmental protection measures will be implemented and adopted during construction formalised through a CEMP. These will include measures to prevent and control pollution including light and noise pollution during construction.

Reptiles

7.3.86 Permanent habitat loss will be minimised as far as reasonably practicable, including, hedgerows, woodland edge and semi-improved neutral grassland. New areas of suitable habitat, including grassland and woodland will be created as part of the Project, which will benefit reptiles. Vegetation clearance in advance of construction will be undertaken at an appropriate time of year so as to avoid incidental injuring or killing of reptiles, where necessary. Standard (embedded) environmental protection measures will be implemented and adopted during construction formalised through a CEMP. These will include best practice and reasonable avoidance measures to prevent harm to reptiles, including phased clearance under an ecological watching brief, where required.

Other mammals (brown hare, hedgehog, polecat)

7.3.87 Permanent habitat loss will be minimised as far as reasonably practicable, including, to hedgerows, woodland edge and semi-improved grassland margins. New areas of suitable habitat, including species rich grassland (under and around the solar panels and separate open areas) and tree planting will be created as part of the Project, which will benefit these species. Mitigation measures that will be undertaken for other species e.g. reptiles, will also benefit these species. This includes undertaking vegetation clearance in advance of construction at appropriate times of the year and phased clearance under an ecological watching brief, where required.

Other aquatic species

7.3.88 The construction of the Project will avoid the open trenching of ditches and watercourses where possible which support fish and aquatic invertebrates (these are to be identified through further survey), and these will be retained and suitably buffered. It is anticipated the construction of the Project will be offset (at least 10 m from the bank top) from any peripheral watercourses. These offsets will prevent disturbance to aquatic habitats and species. Where vehicular crossings over watercourses are required for access, these will be clear-cut and wide-span to maintain connectivity. Standard (embedded) environmental protection measures will be implemented and adopted during construction and formalised through a

CEMP. These measures will include items such as dust suppression, silt fencing and pollution prevention, and control of noise and light pollution.

Designated sites and habitats susceptible to INNS

7.3.89 Construction of the Project has the potential to introduce or spread INNS leading to degradation of existing habitat quality and reduction in native species due to being outcompeted. The CEMP will include measures to prevent the introduction and spread of INNS.

Designated sites and habitats susceptible to air quality impacts

7.3.90 Depending on whether construction traffic flows exceed the Institute of Air Quality Management (IAQM) thresholds, the Project has the potential for air quality impacts on protected or otherwise notable habitats within 200 m of the affected road network.

7.3.91 Construction phase dust emissions have the potential to affect ecological receptors as a result of dust soiling. However, dust emissions during the construction phase are expected to be adequately managed through mitigation measures identified by the construction phase dust assessment and implemented by a CEMP. As such, it is considered that there is no potential for significant effects to ecological receptors as a result of dust deposition.

Operation

Designated Sites

7.3.92 Maintenance activities would involve the replacement of Project infrastructure such as PV modules, inverters and batteries where required. Vehicle movements to facilitate this would utilise access tracks put in place during construction and would be of a much smaller volume than construction. Indirect impacts on adjacent land that is functionally linked to designated sites would be sufficiently mitigated by measures secured by an Operational Environmental Management Plan (OEMP) to avoid any significant adverse effects. This may include standard practice measures such as controlling the timing of maintenance works to avoid seasonal nesting and breeding birds which are qualifying features of the designated sites.

7.3.93 As such, it is considered that there is no potential for significant adverse effects on designated sites during operation and maintenance.

Habitats

7.3.94 During operation of the Project it is not anticipated that there will be any further permanent habitat loss During maintenance, whilst very localised, temporary habitat loss, modification and fragmentation, disturbance could potentially occur for habitats if sections of non-ducted underground cables needed to be excavated and replaced. Maintenance works would be at a smaller scale to construction works with mitigation measures secured though implementation of an OEMP. Opportunities for habitat management during operation will be explored with stakeholders during the preparation of the DCO Application.

7.3.95 The operation phase would not generate dust emissions with the potential for significant adverse effects on ecological receptors.

7.3.96 During operation there is no potential for significant adverse effects on ecological receptors due to the accidental pollution of watercourses. Potential for water pollution or other indirect impacts during operation on adjacent habitats and species will be mitigated though implementation of an OEMP.

7.3.97 During operation of the Project there will be no further loss or reduction in habitat quality including for protected and notable species as a result of changes to groundwater.

7.3.98 CCTV cameras would use night-vision technology, which would be monitored remotely and avoid the need for night-time lighting. No areas of the PV Arrays are proposed to be continuously lit. During operation, no part of the Project would be continuously lit; manually operated and motion detection lighting would be utilised for operational and security purposes within the Project Substation and BESS. Temporary artificial lighting would be required for maintenance works but as with construction mitigation measures would be in place to minimise light spill onto sensitive receptors. As such, there is no potential for significant adverse effects on habitats as a result of lighting.

Protected and Notable Species

7.3.99 During operation of the Project there will be no further potential for significant effects associated with the incidental killing /injuring or disturbance of protected or notable species. It is considered that the following mitigation would be put in place and be sufficient to avoid significant adverse effects.

- The lighting scheme will be designed to avoid artificial lighting on linear features (including hedgerows and water courses), woodland and other retained or created habitats. This will avoid adverse effects on bats, dormice, otter, water vole, amphibians, birds and other SPIs.
- Onsite operational traffic will be minimal and limited to maintenance vehicle movements at very low intensity, with a negligible risk of accidentally injuring or killing any protected or notable species such as wild mammals, amphibians, reptiles or birds.
- No regular presence or work is envisaged onsite leading to disturbance of retained or created habitats.

7.3.100 During maintenance, whilst very localised, temporary habitat loss, modification and fragmentation, disturbance could potentially occur for protected and notable species if sections of non-ducted underground cables needed to be excavated and replaced. Maintenance works would be at a smaller scale to construction works with mitigation measures secured though implementation of an OEMP.

7.3.101 Whilst it is considered unlikely, there is the potential for the solar panels to attract congregations of birds, which may lead to displacement of populations.

Designated sites and habitats susceptible to INNS

7.3.102 During operation there would be no further risk of introducing INNS leading to degradation of existing habitat quality and reduction in native species due to being outcompeted.

Designated sites and habitats susceptible to air quality impacts

7.3.103 Vehicle trips for operation activities will not exceed the IAQM thresholds. As such, there is no potential for operation or operation of the Project to have significant air quality impacts on protected or otherwise notable habitats within 200 m of the affected road network.

Decommissioning

7.3.104 The potential effects of the decommissioning phase are anticipated to be less than the construction phase as construction vehicles will utilise existing access tracks and activities such as piling would not be required. Effects during the decommissioning phase would need to be informed by updated surveys. These surveys will be carried out within appropriate survey seasons, approximately one year prior to decommissioning and the legislation and policy background at that point in time will be used to inform the necessary mitigation to be set out in an appropriate document. These measures will be set out in Decommissioning Environmental Management Plan (DEMP).

Proposed Scope

Assessment Scope

7.3.105 Table 7-17 provides a summary of the impact pathways identified and those proposed to be scoped into and or out of the ecology and biodiversity assessment for the Project across the construction and operation phases.

7.3.106 The construction phase is considered to represent a worst-case scenario for the decommissioning phase so will not be assessed separately except where specific decommissioning activities that differ to construction activities are known.

Table 7-17 Summary of the impact pathways and Proposed Scope for Ecology

Receptor	Proposed to be scoped in/out	Rationale for Scoping Out/Proposed Scope
Construction		
Statutory and non-statutory designated sites (without mobile qualifying criteria) located greater than 2 km from the Site/Scoping Study Area	Scoped out	Effects are very unlikely due to the distance between the Site/Scoping Study Area and the designated sites. Without mobile criteria there is unlikely to be a pathway for an impact on species associated with these sites.
Statutory designated sites (with mobile qualifying criteria) located up to 10 km from the Site/Scoping Study Area (SACs, SPAs, Ramsar sites)	Scoped in	Proposed scope: • Permanent and temporary loss, modification and fragmentation of functionally linked habitat. • Displacement/disturbance of birds or other mobile criteria that use habitats within and outside of the designated site.
Statutory (national) designated sites - within 2 km of the Site/Scoping Study Area	Scoped in	Proposed scope: • Potential for permanent/temporary loss, modification and fragmentation of habitats utilised by birds or other species associated with Llyn Alaw SSSI. • Displacement/disturbance of birds or other mobile criteria that use habitats within and outside of the designated site.
Non statutory designated sites (LWS) - within 2 km of the Site/Scoping Study Area	Scoped in	Proposed scope: • Disturbance of species associated with Coed Cae Mawr LWS. • Potential for indirect impacts, and permanent/temporary loss, modification and fragmentation of habitats utilised by birds or other associated species
Non statutory designated sites (LWS) (greater than 2 km from the Site/Scoping Study Area)	Scoped out	Effects are very unlikely due to the distance between the Site/Scoping Study Area and the non-statutory designated sites and unlikely to be a pathway for an impact on species associated with these sites.

Receptor	Proposed to be scoped in/out	Rationale for Scoping Out/Proposed Scope
Priority and Notable Habitats, Ancient Woodland and Ancient/ Veteran Trees within/immediately adjacent to the Site	Scoped in	Proposed scope: • Permanent and temporary habitat loss, modification and fragmentation of priority and notable habitats. • Indirect impacts to Ancient Woodland, Ancient and Veteran trees, semi-natural woodlands, lowland acid grassland, purple moor grass rush pastures, hedgerows and other notable habitats. • Potential for habitat gain, enhancement and increased connectivity.
Impacts to common and widespread habitats of low sensitivity and/or conservation interest	Scoped out	Effects are very unlikely due to the habitats being of low sensitivity and/or conservation interest.
Protected and notable species	Scoped in	Proposed scope: • Incidental mortality, disturbance, permanent and temporary habitat loss/gain, modification and fragmentation for the following species: • Bats • Badger • Birds breeding and non-breeding • GCN • Invertebrates • Otter and Water vole • Red squirrel • Reptiles • Other mammals (brown hare, hedgehog, polecat) • Other aquatic species

Receptor	Proposed to be scoped in/out	Rationale for Scoping Out/Proposed Scope
Designated sites and notable habitats susceptible to air quality impacts	Scoped in	Should screening of construction traffic flows show vehicle trips exceed the IAQM criteria, air quality impacts associated with construction road traffic will be assessed for protected or otherwise notable habitats within 200m of the affected road network.
Designated sites, protected and notable species susceptible to INNS within the Site/Scoping Study Area	Scoped in	Potential for introduction and spread of INNS during works and movement around the Site/Scoping Study Area, leading to degradation of existing habitat quality and reduction in native species due to being out competed
Operation		
Statutory and non-statutory designated sites (without mobile qualifying criteria) located greater than 2 km from the Site/Scoping Study Area	Scoped out	Significant effects are very unlikely due to the distance between the Site/Scoping Study Area and the designated sites. Without mobile criteria there is unlikely to be a pathway for an impact on species associated with these sites.
Statutory designated sites (with mobile qualifying criteria) located up to 10 km from the Site/Scoping Study Area	Scoped out	Mitigation measures such as the timing of maintenance works to avoid nesting and breeding of birds and/or non-breeding/wintering birds if present, which are qualifying features of the designated sites would be sufficient to avoid significant adverse effects. These measures would be secured through an OEMP.
Statutory designated sites within 2 km of the Site/Scoping Study Area	Scoped out	Mitigation measures such as the timing of maintenance works to avoid nesting and breeding of birds and/or non-breeding/wintering birds if present, which are qualifying features of the designated sites would be sufficient to avoid significant adverse effects. These measures would be secured through an OEMP.
Non statutory designated sites (LWS) within 2 km of the Site/Scoping Study Area	Scoped out	Mitigation measures secured through the OEMP will be sufficient to avoid significant adverse effects associated with maintenance activities on non-statutory designated sites.

Receptor	Proposed to be scoped in/out	Rationale for Scoping Out/Proposed Scope
Non statutory designated sites (LWS) (greater than 2 km from the Site/Scoping Study Area)	Scoped out	Significant effects are very unlikely due to the distance between the Site/Scoping Study Area and the non-statutory designated sites.
Priority and Notable Habitats onsite, Ancient Woodland and Ancient and Veteran Trees	Scoped in	Proposed scope: Temporary loss, modification and fragmentation (not applicable to ancient woodland or ancient/ veteran trees) during maintenance in small areas such as cable repair/replacement where intrusive activities may be required (i.e. replacement of cabling through open cut trenching) Indirect impacts on Ancient Woodland, Ancient/Veteran trees, semi-natural woodlands, lowland acid grassland, purple moor grass rush pastures, hedgerows and other notable habitats.
Common and widespread habitats of low sensitivity and/ or conservation interest	Scoped out	Effects are extremely unlikely due to the habitats being of low sensitivity and/or conservation interest.
Protected and notable species	Scoped in	Proposed scope: Temporary habitat loss, modification and fragmentation for the above species during maintenance in small areas such as cable repair/replacement where intrusive activities may be required (i.e. replacement of cabling through open cut trenching) Incidental mortality of protected or notable species during maintenance Disturbance (noise/ vibration, visual, lighting) including during maintenance to the following protected or notable species: • Bats • Badger • Birds breeding and non-breeding • GCN

Receptor	Proposed to be scoped in/out	Rationale for Scoping Out/Proposed Scope
		• Invertebrates • Otter and Water vole • Red squirrel • Reptiles • Other mammals (brown hare, hedgehog, polecat) • Other aquatic species
Designated sites and notable habitats susceptible to air quality impacts	Scoped out	Vehicle trips for operation activities will not exceed the IAQM thresholds. As such, there is no potential for operation of the Project to have significant air quality impacts on protected or otherwise notable habitats within 200m of the affected road network.
Designated sites, protected and notable species susceptible to INNS within the Scoping Study Area	Scoped out	During operation there would be no further risk of introducing INNS.

Survey Scope

7.3.107 The extended phase 1 habitat survey is ongoing in accordance with the established Joint Nature Conservation Committee (JNCC) methodology. The survey also includes a condition assessment, undertaken with reference to UKHab classifications to inform the Net Benefits for Biodiversity Assessment. Habitat condition assessments will be conducted within the appropriate seasonal period to make sure the condition can be effectively determined. The baseline information gathered from this, and other surveys, will be used to develop an appropriate strategy in line with the policies identified above.

7.3.108 It is anticipated that some of the habitats within the Site and the Scoping Study Area will have suitability to support protected or notable species including great crested newt (GCN), breeding birds, roosting, foraging and commuting bats, red squirrel, otter and water vole, and reptiles. The scope of the planned (and ongoing) ecology surveys are set out in Table 7-18.

7.3.109 The current survey scope and requirements may change, and additional surveys may be required following consultation with the Local Authority and Natural Resources Wales, and development of the Project. The surveys undertaken will inform any European Protected Species (EPS) mitigation licenses (where required).

Table 7-18 Scope of Project Ecology Surveys

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
Habitats: Phase 1 habitat survey and Habitat condition assessment to inform Net Benefits for Biodiversity Assessment	Phase 1 habitat survey in accordance with the published method. The Phase 1 habitat survey will be supplemented by UK Habitat Classification and condition assessment. Assessment of possible presence of protected, priority or otherwise notable species and, where relevant, the likely importance of habitat features for such species. Record of INNS. Incidental records of protected or priority species or their field signs.	Optimal time – April to October but can be carried out at any time of year. Surveys commenced in 2023 and will be concluded in 2024.	The Site and up to a 50 m buffer, plus relevant areas within the Scoping Area. This will be extended further where deemed appropriate.	The information will form the basis of the calculation of potential permanent and temporary habitat effects within the Ecological Impact Assessment (EcIA). Habitat condition assessments are required to support a Net Benefits for Biodiversity Assessment for the Project.
Hedgerows	Hedgerows that are identified as potentially Important and crossed by the Project will be surveyed in accordance with the methodology as outlined in Defra (2007) Hedgerow Survey Handbook: A standard procedure for local surveys in the UK (Ref 7-40).	Optimal time – May to September inclusive. Surveys to be carried out in 2024.	Areas to be identified following phase 1 habitat survey	Dedicated hedgerow surveys considered to only be warranted where potentially Important hedgerows are directly impacted by the Project. Hedgerows which are species-poor as determined by the Phase 1 habitat surveys will not be subject to detailed hedgerow surveys, as temporary effects on low value habitats can be appropriately assessed and

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
				mitigated without the requirement for additional baseline data.
Detailed habitat surveys (National Vegetation Classification (NVC))	Habitats that are identified as potentially notable/ species rich/ priority habitat will be surveyed in accordance with the methodology set out in the JNCC NVC User's Handbook	Optimal time – May to September inclusive. Surveys to be carried out in 2024.	Areas to be identified following phase 1 habitat survey	NVC surveys considered to only be warranted where potentially important habitats are directly impacted by the Project.
Badger (low risk)	Presence/ absence survey for setts and field signs in combination with phase 1 habitat survey. The survey will focus on habitat suitable to support setts. Incidental records obtained through desk study data in combination with the completion of other surveys will also supplement the baseline assessment.	Any time of year – and will be combined with the phase 1 habitat survey. Surveys commenced in 2023 and will conclude in 2024.	As part of the Phase 1 survey, plus any areas of dense vegetation affected.	To determine appropriate mitigation either through avoidance of impacts on setts, or Natural Resources Wales licensing for sett closures where direct impacts cannot be avoided. Pre-construction surveys for badger in areas where records of badger activity are identified will be committed to via the EcIA and embedded with mechanisms such as the CEMP or equivalent.
Bats – Preliminary Roost Features (PRF) assessment	Permanent impacts on trees will be avoided where possible. Trees to be impacted or subject to disturbance will be subject to a PRF assessment survey in accordance with The Bat Conservation Trust guidance. Should a structure or building be impacted this	Any time of year. Surveys commenced in 2023 and will be concluded in 2024.	As per the phase 1 Habitat Survey results plus woodlands	Information collated on the location of trees structures or buildings that are suitable for roosting bats will inform design and offset buffers to avoid direct effects upon potential roost sites (and avoidance of trees and

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
	will also be subject to PRF assessment in accordance with The Bat Conservation Trust guidance			woodland with higher ecological value irrespective of bats which should be avoided). Furthermore, the PRF assessment information will form the basis of the scope for roost surveys (as detailed below).
Bats – Foraging/ Commuting	The Site is predominantly open pasture, of low value for foraging/ commuting bats. Permanent impacts on trees/ woodland and hedgerows will be avoided as far as possible. Activity surveys will be completed where the Project has the potential to affect foraging and commuting bats (i.e. loss of woodland habitat or severance of linear features such as hedgerows, especially where linked to potentially higher value of habitat), to provide baseline survey data of use of the site by bats. The survey methodology will be based upon published guidance (updated as appropriate) and will be tailored as necessary to suit the Site. An appropriate level of survey effort comprising walked transects and periods of remote static detector deployment across the activity season will be undertaken.	Spring/ summer/ autumn surveys - April/ May to October inclusive subject to suitable weather conditions. Surveys commenced in 2023. To be concluded in 2024.	Transect routes, to cover the most suitable areas of affected habitats within the Site.	To determine appropriate mitigation. It is not considered warranted that more frequent than seasonal bat activity surveys will be required given the low value habitats that will be affected, that limited changes in lighting are anticipated, and the avoidance of the removal of mature trees or other structures which may support roosting bats. This is in line with published guidance (at the time of the surveys) which state that surveys should be proportionate. Where linear habitat features e.g., watercourses/ hedgerows are affected by the Project, but which may provide commuting

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
				routes or a foraging resource for bats, appropriate robust and precedented mitigation measures can be secured via adoption of construction methods that seek to avoid these features and reduce the temporary effects to a level that would not be significant.
Bats – Roosting	Wherever possible the Project will be designed to avoid trees with potential roost features (PRF) that have potential to support a bat roost. However, where this is not possible, trees will be subject to climbing and assessment of the identified PRF features where safe to do so, to confirm if the tree could be used as a roost and/ or if there are signs of bats. Where tree climbing confirms that the PRF does have potential to support a roost and /or where it is not possible to safely climb a tree, bat emergence/ re-entry surveys will be undertaken at dusk and dawn in accordance with standard survey guidance. Bat emergence/ re-entry surveys will also be undertaken on any buildings with	If required: between April/ May and September. If required, surveys will be carried out in 2024.	Features with bat roost suitability identified during the PRF assessments.	To determine appropriate mitigation, and licensing requirements if necessary, where trees/ buildings with confirmed/ potential bat roosts cannot be entirely avoided.

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
	bat roost suitability that will be impacted by the Project.			
Birds (Breeding)	The bird surveys follow the Common Bird Census (CBC) methodology amended for five visits rather than ten. Bird territories within the Site/ Scoping Area Boundary will be determined using standard territory mapping techniques to identify and isolate areas within which birds displayed consistent breeding behaviours Birds observed only flying over the Site/ Scoping Area Boundary will also be recorded but will be discounted from territory analysis.	March to July inclusive. Surveys commenced in 2023 and will be concluded in 2024.	Five survey visits will be completed within the Site plus relevant areas within the Scoping Study Area supplemented by additional surveys visits on land parcels of interest (i.e., potential to support Schedule 1 birds).	To confirm the assemblage of bird species and to inform any mitigation required.
Birds (Wintering and Passage)	Wintering bird surveys will be completed comprising walked transects within the Site/ Scoping Study Area to confirm the assemblage of wintering and passage bird species present.	October to March inclusive Surveys commenced 2022 and will be concluded in 2023.	Six monthly surveys between October and March using a general walkover survey methodology within the Site.	To confirm the assemblage of wintering and passage bird species within the Site, and to inform any mitigation required.
Great Crested Newt Habitat Assessment	Habitat Suitability Index (HSI) of ponds in accordance with Oldham et al., 2000	Optimal time- May to September	Within and up to 250 m from the Site plus relevant areas within the Scoping Area	Data will be used to inform the requirement for follow up Environmental DNA (eDNA) surveys

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
Great crested newt eDNA surveys	eDNA surveys (using approved great crested newt eDNA kit suppliers), will be undertaken in accordance with the protocols as set out by Biggs et al. on suitable waterbodies.	April 15th to June 30th Surveys commenced in 2023 and will be concluded in 2024.	Within and up to 250 m from the Site plus relevant areas within the Scoping Area. One survey visit to each waterbody Number of waterbodies and locations to be confirmed following the HSI survey.	Data will be used to inform the requirement for follow up GCN presence/ absence surveys
Great crested newt presence/ absence surveys	Presence/ absence surveys will be undertaken of ponds positive for GCN eDNA.	Mid-March to June 30th 6 survey visits required Surveys to be undertaken in 2024	Within and up to 250 m from the Site plus relevant areas within the Scoping Area. Number of waterbodies and locations to be confirmed following the eDNA survey.	To confirm the population size of GCN to input into EPS licence and proposed mitigation
Red squirrel	Walkover survey, drey count	Surveys can be conducted all year round, however February to April are the best time to conduct drey counts as dreys in regular	Areas to be identified following phase 1 habitat survey	To determine appropriate mitigation, and licensing requirements if necessary,

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
		use will appear well maintained.		
Reptiles	The Site is predominantly of low value for reptiles. Permanent impacts on trees/ woodland and hedgerows will be avoided as far as possible. Where habitats appear suitable for reptile populations (as identified during the phase 1 habitat survey) and are to be permanently affected by the Project presence/ absence surveys will be undertaken in accordance with guidance.	If required: Optimal – April to middle of June and September. Surveys to be carried out in 2024, if required.	Limited to areas where permanent loss of suitable habitat cannot be avoided - subject to the findings of the phase 1 habitat survey.	Presence/ absence reptile surveys will only be considered warranted to be completed where areas of moderate/ high value reptile habitat could not be avoided by the Project. These data will inform the EcIA and mitigation strategy. Temporary construction effects upon small areas of suitable reptile habitat will be able to be mitigated through appropriate pre-construction measures where habitats/features of interest for reptiles are identified e.g. supervised vegetation clearance at an appropriate time of year.
Otter and Water Vole	The Project will be designed to avoid effects upon watercourses as far as possible. A 10 m buffer will be implemented to avoid disturbance of riparian habitats where possible.	Otter - April tbo September inclusive. Water Vole – One or two surveys as required, one in the first half of the breeding season (April to June) and one in the second half of the	Up to 500 m length of affected watercourses – 250 m up and down stream of crossing point where possible/ appropriate. Access will be required to both	To determine appropriate mitigation either through avoidance of impacts on water vole/ otter habitat, or Natural Resources Wales licensing where direct impacts cannot be avoided.

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
	Presence/ absence surveys will be required, looking for field signs along watercourses and ditches. A search for otter holts will be extended to up to 250m from watercourses, where required. Surveys will be undertaken in accordance with standard guidance	breeding season (July to September). Surveys carried out August to September 2023, and to be concluded April to September 2024.	banks and up to 10m from the bank edge. Survey area may be extended to search for otter holts at greater distances from watercourses, where suitable habitat is present.	
Terrestrial Invertebrates	The Site is predominantly of low value for terrestrial invertebrates. Permanent impacts on habitats of value to notable or large assemblages of invertebrates will be avoided as far as possible. Where habitats appear suitable for notable or large assemblages of invertebrates (as identified during the phase 1 habitat survey) and are to be permanently affected by the Project further surveys will be undertaken in accordance with guidance set out	Dependent on species to be surveyed for. To be undertaken 2024.	Limited to areas where permanent loss of suitable habitat cannot be avoided - subject to the findings of the phase 1 habitat survey.	Terrestrial invertebrate surveys will only be completed where areas of moderate/ high value invertebrate habitat could not be avoided by the Project. These data will inform the EcIA and mitigation strategy.
Aquatic Ecology	A habitat condition assessment (Modular River Physical) survey of watercourses and drain/ ditches crossed by the Project will be	Any time of year To be undertaken in 2024	Focussed on watercourse crossing points	Specific aquatic flora and fauna surveys are not anticipated on the basis that the majority of the construction impacts on drains/ ditches will be temporary and reversible, and that potential

Survey	Scope of Survey	Survey Timing – Months	Survey Area Extent	Justification
	undertaken, where non-open cut techniques are not possible.			impacts (e.g., increase in suspended sediment) can be adequately addressed through standard mitigation techniques to be committed to in the CEMP. However relevant surveys will be conducted as required.

Consultation

7.3.110 Consultation will be undertaken with IACC and Natural Resources Wales (NRW) as part of this EIA Scoping Report to agree the scope, methodology, and mitigation that will inform the assessment process. Further consultation will be made with the RSPB Cymru, Coed Cadw Woodland Trust Wales, and other local groups as appropriate, such as but not limited to Red Squirrel Trust Wales.

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7.4 Cultural Heritage

Introduction

7.4.1 This section of the Scoping Request sets out the approach to the assessment of the effects of the Project upon the cultural heritage resource ('historic assets'). The baseline conditions are first established with an overview of baseline surveys followed by the proposed assessment methodology. The potential effects are then presented which form the basis of the issues proposed to be scoped in and out in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

7.4.2 Cultural Heritage encompasses buried archaeological remains; historic buildings, structures and monuments; and historic landscapes. Due to the nature of the Project, and specific factors associated with the historic assets known and expected to lie within and nearby the Site and Scoping Study Area, significant effects are not anticipated. The suite of available and industry standard mitigation and design measures are expected to completely avoid or minimise (to a not significant level) any adverse impacts. However, pending the results of further planned investigations, cultural heritage is scoped in.

Baseline Conditions

Built Heritage

7.4.3 There are no designated historic assets within the Site.

7.4.4 Within the Scoping Study Area the following designated historic assets (built heritage) are located:

- 27 Listed Buildings, comprising 6 Grade II* Listed Buildings and 21 Grade II Listed Buildings. These Listed Buildings range from medieval churches to 19th/20th century structures

7.4.5 The Heritage Study Area comprises the Scoping Study Area with a 2km buffer (see Figure 7-17) which has been agreed through consultation with the advisor at Gwynedd Archaeological Planning Service (GAPS) within a Written Scheme of Investigation (Appendix 7-1). The following additional designated historic assets (built heritage) are located within the Heritage Study Area:

- 51 Listed Buildings, comprising 9 Grade II* Listed Buildings and 42 Grade II Listed Buildings. As above, the Listed Buildings comprise medieval churches to 19th/20th century structures
- Two Conservation Areas: Amlwch Central c.1.5km to the north-west of the Site and Llanfechell c.1.4km to the east

7.4.6 The nearest Registered Parks and Gardens to the Scoping Study Area are the Grade II Listed Cestyll, located c.4.7km to the west; and the Grade II* Listed Carreglwyd, located c.5.5km to the west.

Archaeology

7.4.7 There are no designated historic assets of archaeological interest (Scheduled Monuments) within the Site.

7.4.8 Within the Scoping Study Area, there are seven Scheduled Monuments, including prehistoric standing stones and a chambered tomb.

7.4.9 Within the Heritage Study Area, an additional 14 Scheduled Monuments are situated. These include prehistoric standing stones, enclosures and round barrows, a Roman settlement, early medieval and medieval enclosure and settlement sites, and the 18th/19th century Parys Mountain open quarry with associated structures.

7.4.10 The initial research has highlighted the archaeological potential within the Site and in its wider environs, including:

- Maen Hir North: the area has a strong connection with prehistoric activity, in particular Bronze Age features, including metal working sites and mortuary remains such as a barrow and a cist. The later historic evidence suggests that there was a medieval settlement within the area's environs and the Site boundary. There is a medieval mill also recorded within this area.
- Maen Hir Central: a large number of archaeological features were identified in the area during the preliminary research. These include Bronze Age mortuary features and potential for earlier prehistoric remains, in the form of a potential Mesolithic flint scatter; later prehistoric or Romano-British

activity, including numerous enclosures; and later medieval and post-medieval evidence relating to quarrying and agricultural activity.

- Maen Hir South: the area contains later prehistoric or Romano-British features (i.e. roundhouses, enclosures and section of Roman Road) as well as linear features which could relate to field boundaries, enclosures or trackways of an unknown provenance.

Historic Landscape

7.4.11 There are no Registered Historic Landscapes within the Site or the Scoping Study Area. Within the Heritage Study Area, the Registered Historic Landscape of Amlwch and Parys Mountain is situated c.1km to the east of the Site (Figure 7-17).

Baseline Surveys

7.4.12 Initial desk-based research has taken place to inform the material presented within this section of the Scoping Report. This exercise reviewed available online heritage databases, including Coflein and Archwilio, and the Cadw list of designated historic assets, within the Heritage Study Area. This was supplemented by a Site visit, undertaken in July 2023, and Gwynedd Archaeological Trust Historic Environment Record data, obtained in August 2023.

Assessment Methodology

Overview

7.4.13 A detailed historic environment desk-based assessment, discussing the historic assets which may be affected by the Project is being prepared. The methodology for this assessment is presented within the Written Scheme of Investigation, which has been submitted to and approved by Jenny Emmett, Senior Planning Archaeologist at Gwynedd Archaeological Planning Service (Appendix 7-1).

7.4.14 This assessment will further investigate the potential extent and the historic value of buried archaeological remains within the Scoping Study Area which may be affected by the Project, and will present the results of the examination of further data including aerial photographic records, historic mapping and LiDAR imagery.

7.4.15 The assessment will incorporate a detailed built heritage and historic landscape assessment. This will comprise a 'settings assessment' of the key designated (and

potential undesignated) historic assets in proximity of the Site. This will also comprise an assessment of the historic landscape character of the Site, and assess impacts on the Registered Historic Landscape of Amlwch and Parys Mountain as a result of change within its setting. The results of the assessment will inform the need for, and scope of, any mitigation measures.

7.4.16 The baseline assessment work described above will culminate in an understanding of the historic values of any assets within the Heritage Study Area. An understanding of the Project (the impact of change to the baseline environment) alongside the understanding of significance and importance will allow for an impact assessment to be undertaken. This will be presented within a Cultural Heritage Impact Assessment report which will be submitted to support the application for development consent. This will include a discussion on any potential cumulative impacts.

Heritage Study Area

7.4.17 The Heritage Study Area comprises the Scoping Study Area with a 2km buffer (see Figure 7-17) which has been agreed through consultation with the advisor at GAPS within a Written Scheme of Investigation (Appendix 7-1). It is recognised that beyond a certain distance, solar PV arrays lose definition and assume a 'washed-over' appearance, and are perceived as blocks of faded colour within an established agricultural landscape. As such, it can be stated with confidence that assets beyond this distance would not be adversely affected. The detailed assessment of this matter will be explored with further site visits and the use of the Zone of Theoretical Visibility (ZTV) presented in the Landscape and Visual section of this Scoping Report, and further consultations with the advisors at GAPS and Cadw will be carried out to inform the selection of designated historic assets for detailed assessment.

7.4.18 For the assessment of archaeological potential, a minimum 1km buffer around the Scoping Study Area will be applied, although historic assets of archaeological interest beyond this study area may also be considered, if deemed appropriate to ensure a thorough understanding of the archaeological potential. This is more than sufficient to characterise the potential for buried archaeological remains.

Further Investigations

7.4.19 To further clarify the archaeological potential, a geophysical survey will be undertaken. The results of the desk-based assessment and the geophysical survey will then inform the need for and scope of any additional investigations which may be required to ensure the potential archaeological remains are investigated and recorded at an appropriate stage in the development process, in line with the requirements of the national and local planning policies requiring the protection of archaeological remains. Further investigations will also be deployed as required.

Determining Significance of Effect

Receptor Sensitivity/Importance/Value

7.4.20 The assessment of historic value has been guided primarily by the policies and guidance contained in Cadw's 'Conservation Principles' (Ref 7-42). This defines the value of a historic asset with reference to the following four key forms of value set out in Table 7-19.

Table 7-19 Historic values

Values	Description
Evidential	Derives from those elements of a historic asset that can provide evidence about past human activity, including its physical remains or historic fabric
Historical	Derives from aspects of past ways of life, or association with notable families, persons, events, or movements – it embodies the connection between past events and society with the present
Aesthetic	Derives from the sensory and intellectual stimulation drawn from a historic asset. It may include its physical form, and how it lies within its setting. It may also be the result of design, or an unplanned outcome of a process of events
Communal	Derives from the meanings that a historic asset has for the people who relate to it, or for whom it figures in their collective experience or memory. It may be commemorative or symbolic and relate to issues of identity or collective memory

7.4.21 Criteria for assessing historic value (sensitivity / importance) are set out in Table 7-20. As well as considering the principles above, this reflects current heritage

statute and policy for Wales and professional best-practice guidance, including Cadw publications 'Setting of Historic Assets in Wales' (Ref. 7-43) and 'Heritage Impact Assessment in Wales' (Ref. 7-44). The terms expressed in the PPW are used. This defines that the 'most important historic assets' often have statutory protection or are included in formal registers. These include World Heritage Sites, Scheduled Monuments, Protected Wreck Sites, Registered Battlefields, Grade I and II* Listed Buildings, and Grade I and II* Registered Parks and Gardens. The term significance, as adopted by EN-1, EN-3 and PPW to describe the interests or values of a historic asset or assets, has been avoided here to save confusion with the EIA terminology of significance criteria and 'significant effects'.

Table 7-20 Importance of Historic Assets

Importance of resource / asset	Description
High	World Heritage Sites and historic assets of acknowledged international importance, or that can contribute significantly to acknowledged international research objectives. Historic landscapes of international sensitivity (designated or not) and extremely well-preserved historic landscapes with exceptional coherence, time depth, or other critical factor(s). Scheduled Monuments and undesignated assets of Schedulable quality and importance, according to the non-statutory criteria for scheduling ancient monuments utilised by the Secretary of State. Historic assets or groups of assets that can contribute substantially to acknowledged national research objectives. Historic landscapes exhibiting considerable coherence, time depth or other critical factors and displaying considerable evidential, historic, aesthetic and communal value as identified by Conservation Principles. Registered Historic Landscapes. Grade I and II* Registered Parks/Gardens. Grade I and II* Listed Buildings or other Listed Buildings that can be shown to have exceptional qualities in their fabric or associations not adequately reflected in their Listing grade, or undesignated structures of clear national importance. Conservation Areas containing very important buildings.
Medium	Historic assets, or groups of assets or landscapes, that contribute to regional research objectives. Historic landscapes exhibiting reasonable coherence, time depth or other critical factors (including degree of preservation) and displaying

Importance of resource / asset	Description
	evidential, historic, aesthetic, and communal value as identified by Conservation Principles. Grade II Registered Parks/Gardens. Grade II Listed Buildings or historic buildings which can be shown to be of comparable significance. Conservation Areas containing important buildings which contribute significantly to their historic character, or historic townscapes with important historic integrity.
Low	Historic assets displaying limited evidential, historic, aesthetic, or communal value as identified by Conservation Principles. Historic assets, or groups of assets, that contribute to a limited degree to regional research objectives. Historic landscapes exhibiting limited coherence, time depth or other critical factors. Historic landscapes whose sensitivity is limited by poor preservation and/or poor survival of contextual associations. Locally Listed buildings and unlisted buildings of modest quality in their fabric or historical association.
Uncertain	Historic assets, the importance of which has not yet been ascertained.
Negligible	Historic assets with very little or no surviving archaeological interest. Historic assets or groups of assets that cannot appreciably contribute to acknowledged regional research objectives. Historic landscapes exhibiting little or no coherence, time depth or other critical factors and displaying evidential, historic, aesthetic, and communal value as identified by Conservation Principles. Buildings of no architectural or historical note.

Magnitude of Impact

7.4.22 The magnitude of impact upon historic assets is defined as the change resulting from development that affects the asset. The classification of the magnitude of change on heritage assets is rigorous and based on consistent criteria. This takes account of such factors as the physical scale and type of disturbance anticipated and whether features or evidence would be lost that are fundamental to their historic character and integrity. Changes may be adverse or beneficial. Depending on the nature of the change and the duration of development, effects can be temporary and/or reversible or permanent and irreversible. Change in itself, however, may not necessarily be harmful to heritage assets. For example,

judgements (such as paragraph 45 of the judgement by Lindblom J in R (Forge Field Society) v. Sevenoaks DC [2014] EWHC 1895 (Admin)) have clarified that in the context of the Planning (Listed Buildings and Conservation Areas) Act 1990 (Ref. 7-45) 'preserving' means doing 'no harm'; and does not necessarily mean 'no change'. Similarly, Cadw's 'Conservation Principles' defines 'preserve' as 'to keep safe from harm'.

7.4.23 This will include the consideration of such issues as: which, and how many, elements of a historic asset are affected; whether the change physically modifies the asset or whether it comprises changes in visual aspects, noise or access that would alter its setting; and whether the change in the value of an asset will be adverse or beneficial.

7.4.24 In terms of the assessment of effects arising from change to an asset's setting, the guidance provided by Cadw in 'Setting of Historic Assets in Wales' makes clear that 'setting is not itself a historic asset' and that its importance 'lies in what it contributes' to the historic values of an asset'.

7.4.25 The magnitude of impact on each individual historic asset is assessed using the criteria in Table 7-21. Changes may be adverse or beneficial; however, in the most part the descriptions offered below focus on adverse change.

Table 7-21 Magnitude of Impact

Magnitude of Impact	Description
High	Change to most or all key archaeological or historic building values, such that the asset is totally altered. Total changes to valued components of the setting of archaeological or historic building assets. Change to most or all key valued historic landscape elements, parcels or components; changes to valued sound quality; fundamental changes to valued use or access.
Moderate	Changes to many key archaeological or historic building elements, such that the asset's values are noticeably modified. Changes to the valued settings of archaeological or historic building assets, such that it is noticeably modified. Changes to many key historic landscape elements, parcels or components; noticeable differences in valued sound quality; considerable changes to valued use or access.

Magnitude of Impact	Description
Low	Changes to key archaeological or historic building elements, such that the values of the asset are slightly modified. Changes to the valued settings of archaeological or historic building assets, such that it is slightly altered. Change to a few key historic landscape elements, parcels or components; some limited changes to valued sound quality; slight changes to valued use or access.
No Impact	Inconsequential changes to archaeological or historic building elements or their settings; to key historic landscape elements, parcels or components; to use or access.

Significance of Effect

7.4.26 The significance of effect upon any historic asset is a product of the importance of the asset, and the magnitude of change upon its values. This is summarised in Table 7-22. Where two alternatives are given in the table, professional judgement is used to decide which best reflects the significance of effect.

Table 7-22 Criteria for Significance of Effect

Magnitude of Impact	Historic Asset Importance			
	High	**Medium**	**Low**	**Negligible**
High	Major	Major	Minor to Moderate	Neutral
Medium	Major to Moderate	Minor to Moderate	Minor	Neutral
Low	Minor to Moderate	Minor to Moderate	Minor	Neutral
No Impact	Neutral	Neutral	Neutral	Neutral

7.4.27 Regarding the significance of the effect upon historic assets, the key principle to be considered is whether the effect is significant. For the purposes of this report 'significant effects' are considered to be of 'Moderate' significance of effect or higher. The significance of effect can be adverse or beneficial. Such effects may also be temporary or permanent, and reversible or irreversible.

7.4.28 The measured significance of effect may be equated to key concepts in planning policy and heritage guidance regarding the assessment of development effects upon historic assets, as per Table 7-23. Key principles that are considered, in accordance with EN-1, EN-3 and PPW, are whether the effect comprises substantial harm or total loss. When a significant effect is identified, it may be appropriate to propose suitable mitigation measures to avoid, reduce or offset the effect.

Table 7-23 Description of the significance of effect with reference to heritage policy

Significance of Effect	Criteria
Major Adverse	Extensive harm to or total loss of the values of a designated historic asset (or asset worthy of designation) such that development should not be consented unless substantial public benefit is delivered by the development. Total loss of a historic asset of medium importance without compensatory mitigation measures. Extensive harm to a landscape designated by virtue of its historic landscape value.
Moderate Adverse	Less than extensive harm to or total loss of the values of a designated historic asset (or asset worthy of designation) such that the harm should be weighed against the public benefit delivered by the development to determine consent. Total loss of a non-designated historic asset of medium importance (i.e. which may contribute to regional research objectives) with compensatory mitigation measures agreed with statutory consultees. Harm to a non-designated historic asset, of a greater degree than that perceived of as Minor Adverse, which should be considered in determining an application. Harm to a historic landscape type of more than low importance, and of some rarity.
Minor Adverse (not significant)	Less than extensive harm to the value of a designated historic asset, of a lesser degree than that perceived as Moderate Adverse, but which should still be weighed against the public benefit delivered by the development to determine consent.

Significance of Effect	Criteria
	Harm to a non-designated historic asset that can be adequately compensated through the implementation of a programme of industry standard mitigation measures. Harm to a historic landscape type of limited heritage significance, and not of a rare form.
Neutral	Effect that is nil or imperceptible.
Minor Beneficial **(not significant)**	Development will deliver a positive contribution and / or better reveal the values of a non-designated historic asset.
Moderate Beneficial	Development will deliver a positive contribution and / or better reveal the values of a designated historic asset (or asset worthy of designation) such that an application should be treated favourably.
Major Beneficial	Development will deliver a positive contribution and / or better reveal the values of a designated historic asset of recognised international importance such that an application should be treated very favourably.

Potential Effects

Archaeology

Construction Phase

7.4.29 The potential effects upon the buried archaeological remains would occur during the construction phase.

7.4.30 Known and potential buried archaeological remains are anticipated to be present within the Site and the Scoping Study Area. However, the overall minimal nature of ground disturbing activities associated with the construction and decommissioning of the Project means that significant effects on the archaeological interest (significance) of any potentially surviving remains is very unlikely.

7.4.31 This matter has been identified as a material consideration in emerging government policy. The draft National Policy Statement for Renewable Energy Infrastructure (EN-3; March 2023) recognises (at paragraph 3.10.100) that "Below ground impacts, although generally limited, may include direct impacts on

archaeological deposits through ground disturbance associated with trenching, cabling, foundations, fencing, temporary haul routes etc." It goes on to state (at paragraph 3.10.101) that “solar PV developments may have a positive effect, for example archaeological assets may be protected … as the site is removed from regular ploughing or low-level piling is stipulated”.

7.4.32 Developing this point further, the size and frequency of the driven piles and cable runs for the solar arrays are so slight that even if their location were to coincide exactly with buried remains there would be no or negligible material loss of archaeological interest.

7.4.33 Furthermore, mitigation through detailed design (avoidance) can allow for any especially sensitive buried archaeological remains (such as human remains) to be safeguarded completely from any disturbance. These ‘no-dig’ solutions often comprise excluding discrete areas from solar PV arrays, any associated infrastructure and creating ‘protection zones’ during construction. Other complimentary techniques involve ballast footings (such as concrete shoes) to avoid piling completely. The desk-based assessment and geophysical survey will aid in the identification of any such locations and inform the need for any further surveys (such as trial trenching) so that any sensitive remains can be safeguarded.

Operational Phase

7.4.34 Impacts upon the archaeological resource would be confined to the construction phase of the Project. Accordingly, there would be no adverse effects upon the archaeological resource during the operational phase.

Decommissioning Phase

7.4.35 No additional disturbance to the ground is anticipated during decommissioning. As such, impacts to buried archaeological remains during this phase are not anticipated.

Built Heritage and Historic Landscape

Construction Phase

7.4.36 The potential effects upon the designated historic assets during the construction phase of the Project would derive from the presence of machinery, fencing,

construction compounds, as well as increased noise and traffic. Construction operations are temporary by nature, and the impacts associated with these works would be temporary and limited, and would not cause significant effects to those designated historic assets.

Operational Phase

7.4.37 Following the completion of the construction works, the Project would introduce change into the landscape setting of designated historic assets, and any impacts upon those assets as a result of change within their settings would be perceived for the duration of the operational phase.

7.4.38 The Project would change the character of land parcels within the setting of a number of designated historic assets (historic buildings, structures and monuments, gardens and Registered Historic Landscape). The historic landscape character of the Site itself has not been recognised as of particular importance. Furthermore, the fundamental agrarian nature of the setting of these designated historic assets would be unchanged.

7.4.39 For all designated historic assets, their historic value is largely derived from their physical fabric, which will not be affected by the Project. With regard to their setting, the views towards the assets are the critical components of their experience, the vast majority of these being views from up close, as it is in those views that their physical fabric and (for historic buildings) special interest can be appreciated. The form of the Project and its distance from these historic assets means that no important views of them would be lost or obscured. As such, key experiences of the buildings and monuments are unlikely to be altered. The potential effects upon those historic assets will be assessed through the methodology detailed above (and presented in Appendix 7-1), with options to incorporate appropriate mitigation measures for any sensitive assets into the design of the Project as the proposals evolve.

Decommissioning Phase

7.4.40 There would be temporary change within the settings of the designated historic assets during decommissioning, resulting from the use of machinery and traffic to disassemble the elements of the Project. Similarly, as during the Construction

Phase, such impacts would be temporary and limited and would not cause significant effects.

Proposed Scope

Scoped In

7.4.41 Based on the assessment presented above, it is highly likely that the Project can be accommodated without significant environmental effects on the cultural heritage resource. However, as further assessment work and investigations that will inform the implementation of appropriate and proportionate mitigation measures are pending, it is proposed to cultural heritage will be scoped into the EIA, with the scope of the assessment as follows:

- Effects on buried archaeology during construction
- Effects on designated historic assets, built heritage and historic landscape during operation

Scoped Out

7.4.42 The following effects are proposed to be scoped out:

- Effects on buried archaeology during operation
- Effects on designated historic assets, built heritage and historic landscape during construction

Consultation

7.4.43 A Written Scheme of Investigation for a Historic Environment Desk-Based Assessment (Appendix 7-1) was submitted to and approved by the archaeological advisors at Gwynedd Archaeological Planning Service (GAPS). A meeting will be arranged to discuss the scope of the Desk-Based Assessment and further investigations (geophysical survey), as well as the scope of the detailed settings assessment (to include Cadw advisors). Further consultations with GAPS and other stakeholders will be undertaken to provide updates from the on-going survey work. The consultations will also seek views on the scope of any mitigation.

References

Ref 7-42 Cadw Conservation Principles

Ref 7-43 Setting of Historic Assets in Wales

Ref 7-44 Heritage Impact Assessment in Wales

Ref 7-45 Planning (Listed Buildings and Conservation Areas) Act 1990

7.5 Transport and Access

Introduction

7.5.1 This section of the Scoping Request sets out the approach to the assessment of Transport and Access. The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

Baseline Conditions

Highway Network

7.5.2 It is acknowledged that the equipment required to implement the Project is likely to be imported into the UK from abroad and as such will most likely arrive at an appropriately located port. In this regard, it is anticipated that the Holyhead Port in Anglesey will serve as the primary entry point for these materials.

7.5.3 On that basis, an initial feasibility exercise has been undertaken to determine potential access routes along the Local Road Network (LRN) to the Site from the Strategic Road Network (SRN).

7.5.4 The SRN relevant to the Site is the A5025, which is a strategic coastal highway that acts as the primary ring road around the island. The A5025 connects with the A55 and A5 trunk roads at the Britannia Bridge over the Menai Strait. The A55 is a major road that runs along the north coast of Wales, providing links between Holyhead, Bangor, Conwy, and Chester. It also connects to the M53 and M56 motorways, continuing onto Manchester and Liverpool.

7.5.5 Due to the rural nature of the surrounding area within the A5025, a number of the local roads do not have formal road names or route designations, as well as having a lack of formal restrictions.

7.5.6 For the purposes of the routing feasibility exercise, it is assumed that all movements from the SRN will aim to reach Rhosgoch where it is proposed to provide a consolidation hub that will act as the main point for all deliveries to/from

the Project. From the main consolidation hub, the LRN will be used to transfer goods by way of local vehicles to the other parts of the Site.

7.5.7 To access the Site from the SRN during construction, five routes have been identified as follows.

- Route 1: Access to/from the north, via the A55 - A5153 - A5 - A5025 - Pig Y Rhos - Rhosgoch
- Route 2: Access to/from the south, via the A55 - Junction 5 - B5112 - B5111 - Rhosgoch
- Route 3: Access to/from the west, via the A55 - A5153 - A5 - A5025 - Llanfachraeth Llanddeusant - Llanbabo - Rhosgoch
- Route 4: (Potential Egress Route) - Access from Rhosgoch - Rhosybol - B5111 - A5025
- Route 5: Access to/from the south, via the A55 - A5153 - A5 - Llangefni - Lon Sardis - B5111 – Rhosgoch

7.5.8 The access routes to the Site from the SRN are shown at Figure 7-18

7.5.9 In order to transport materials to/from parcels across the Site from the consolidation hub in Rhosgoch, the LRN has also been reviewed to identify the potential routes to the other parcels. These routes are shown at Figure 7-19 and the feasibility of these routes will be reviewed further as part of the PEIR in consultation with the local highway authorities.

Walking and Cycling Network

7.5.10 Due to the rural nature of the Project, there is a limited provision of footways alongside the carriageways of the roads in the vicinity of the Site. However, there are footways on some sections of the identified SRN routes.

7.5.11 There are no dedicated cycling lanes within the vicinity of the Project; however, there are several designated cycle routes within the wider area of Anglesey, including:

- Lon Las Cymru NCN 8: National cycling route for 250 miles starting in Holyhead through Anglesey, Connects with NCN5 route.

- North Wales Coast Cycle Route NCN 5: National cycling route for 105 miles, 34 miles on Anglesey, passing sites like Llynnon Mill and crossing Menai Bridge.
- Copper Trail NCN 566: 34-mile circular county trail on northern Anglesey on quiet lanes. Connects with NCN5. Potentially challenging climbs.
- Lon Las Cefni NCN 566: 13-mile part off-road county cycling trail through Llangefni and nature reserves.
- Corsica Trail: 6-mile recreational forest trail through pine woods and wetlands.
- Bikequest Nature Trail: 5-mile forest trail in western Anglesey.

7.5.12 There are a number of PRoWs that pass alongside the boundaries between the Site parcels, described in the Landscape section of this Scoping Request.

7.5.13 With respect to equestrian users, it is anticipated that these users would utilise the existing PRoW and bridleway network, as well as some of the local roads within the vicinity of the Project. The established PRoW and bridleways represent existing suitable routes tailored for equestrian use in the area. It is considered unlikely that equestrian users would divert onto new paths through the Site.

Baseline Surveys

7.5.14 Baseline transport conditions will be reported initially for the PEIR and then within the ES and the Transport Assessment that will accompany the DCO submission as an Appendix to the ES, using survey data collected and AADT (Annual Average Daily Traffic) data for nearby roads. The scope of necessary surveys is the subject of consultation with the local highway authorities at this stage.

7.5.15 The location of the proposed extent of the Automatic Traffic Counts (ATC) on the respective links are identified within Figure 7-20.

7.5.16 Personal injury collision data will be obtained from the local highway authorities for all of the proposed construction access routes to determine whether there are any existing collision trends or highway safety issues on the local network that could be exacerbated by the Project.

7.5.17 To further inform the suitability of the identified routes, Ordnance Survey (OS) 'Mastermap' data has been obtained and topographical survey data will be collected to refine the swept path analysis of the proposed construction access routes for the anticipated vehicles. Further details on this analysis, including an overview of the different types of vehicles expected, will be provided within the ES.

Assessment Methodology

Guidance

7.5.18 Environmental Assessment of Traffic and Movement (EATM) Guidance produced by the Institute of Environmental Management and Assessment (hereafter the 'EATM Guidance') has informed the assessment methodology (Ref 7-46).

Assessment Process

7.5.19 The methodology utilised within the assessment and stages followed can be summarised as follows:

- Initial consultation with the relevant highway authorities and emergency services (National Highways, Isle of Anglesey County Council (IoACC), North Wales Police and North and Mid Wales Trunk Road Agent).
- Procure and process baseline traffic data, arranging additional surveys where necessary in collaboration with key stakeholders and consultees.
- Vehicle route feasibility assessments will be undertaken for vehicles for the construction, operational and decommissioning equipment and staff, including detailed observations of each of the proposed route options and identifying any sensitive receptors or constraints along the length of the routes. The main route assessments will primarily comprise the LRN from the SRN to the Site. However, a high-level assessment of the potential impact on the SRN will be provided in the PEIR once further details regarding construction timelines, vehicle traffic volumes and vehicle types are known including associated construction requirements.
- Department for Transport ('DfT') Trip End Model Presentation Program (TEMPRO) Growth Factors (Ref 7-47) will be used in order to develop and

assess future construction years, with an emphasis placed on assessing the peak year, the details of which will be set out within the ES.

- In consultation with the relevant stakeholders, route options would be explored and developed further to determine the feasibility of each route and whether they are acceptable or require further refinement.
- An initial assessment of traffic generation from the Project on the LRN, including routes between the different areas of the Site, will be undertaken alongside an initial assessment of effects.
- Once this traffic assessment is complete, the assessment will be refined to reflect any changes in the design of the Project or consultation feedback, followed by an additional assessment of the effects. At this stage, the requirement for additional surveys or localised assessments, including junction capacity modelling, will be determined.
- Following the outcomes of the additional assessments to identify the residual effects, there will be further consultation with the key stakeholders, consultees and residents to discuss the findings.
- A series of mitigation measures will be developed, as appropriate, to mitigate any residual impacts or concerns raised during consultation.
- The assessment will be further refined to reflect this consultation feedback, with appropriate updates made to the assessment, as well as assessment of the cumulative effects of other developments within the area.

7.5.20 The ES will describe and assess the likely significant effects associated with any improvements or changes to the network which are either required to facilitate construction and decommissioning phases of the Project or are required for restoration purposes on completion of the works. It is assumed network changes would be reinstated post-construction and decommissioning, with baseline conditions restored. The assessment will consider potential effects from any permanent improvements.

7.5.21 The assessment will be undertaken primarily through a desktop-based assessment, which will be supported by a series of site visits that will be utilised to validate the findings of any vehicle routing strategy that is developed. It is

proposed that traffic count locations will be identified and shared with stakeholders for review and comment.

7.5.22 The IEMA EATM Guidance identifies two broad rules-of-thumb which could be used as a scoping process to determine the scale and extent of assessment. These rules are summarised as follows:

- Rule 1 – include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles (HGVs) will increase by more than 30%).
- Rule 2 – include any other specifically sensitive areas where traffic flows may have increased by 10% or more (or there is a significant change in the mix of vehicles, such as an increase of more than 10% the number of HGVs).

7.5.23 With respect to the need for peak hour assessments, whilst there is no set IoACC guidance on thresholds for this, reference is made to the (now superseded) DfT 'Guidance on Transport Assessment' (2007) (Ref 7-48) which refers to a threshold of 30 two-way vehicle trips during a peak hour to warrant the need for junction capacity assessments. It is not considered that the level of trip generation during the AM and PM peak hours will be significant enough to warrant detailed junction capacity assessments using these thresholds, although the requirements for this will be developed in consultation with the local highway authorities and included within the PEIR.

7.5.24 The IEMA Guidance sets out the following transport and access assessment topics:

- Severance
- Driver Delay
- Pedestrian Delay
- Non-motorised User Amenity
- Fear and Intimidation
- Road Safety
- Hazardous and Large Loads

7.5.25 Severance is defined in the IEMA (2023) guidelines as the “perceived division that can occur with a community when it becomes separated by a major traffic artery”. The IEMA guidelines suggest changes in traffic flow or HGV flow by 30%, 60% or 90% can be considered as having a low, medium or high impact respectively on severance. In addition, the assessment will consider any effects from traffic flow changes as well as effects from formal diversions or closures required for network upgrades.

7.5.26 With respect to Driver Delay, the IEMA guidance defines this as any delay which may occur to motorists. The guidance states that any delays due to a Project are only likely to be significant when the network is close to or already at capacity. The IEMA guidance goes on to state "The assessment of driver delay will normally be based on the technical work reported within the Transport Assessment, which generally focuses on conditions in the network peak periods, with highway mitigation defined to ensure conditions with the development are not materially worse than would otherwise have been the case without the development and mitigation."

7.5.27 In relation to Pedestrian Delay, this is noted in the IEMA guidance as being utilised as a proxy for other non-motorised user delay when crossing a road. In the IEMA guidance, it is stated "Given the range of local factors and conditions that can influence pedestrian and non-motorised user delay (e.g. a discrete delay may have a lesser impact in an urban environment than a rural setting), it is not considered wise to set down definitive thresholds. Instead it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect."

7.5.28 For Non-motorised User Amenity, this is defined in the guidance as "the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic”. The guidance suggests that a tentative threshold for judging the significance of changes in non-motorised user amenity would be where the traffic flow is halved or doubled which would lead to a high impact, although that any assessment should pay full regard to the local conditions.

7.5.29 Fear and Intimidation is acknowledged within the IEMA (2023) guidance, stating: “A further environmental impact that affects people is the fear and intimidation created by all moving objects. While the traffic and movement assessment has to consider motorcycles, cars, lorries and buses, this scope of consideration is not exclusive – it also has to consider other modes of travel, including horses, cycles, mobility scooters, e-scooters and e-cycles, if appropriate". In the assessment of Fear and Intimidation, the IEMA guidance refers to an assessment of the 'degree of hazard' but acknowledges professional judgement should be used with reference to local conditions. The guidance also notes "The movement of hazardous/large loads will heighten people’s perception of fear and intimidation and, if this is likely to occur, it should be noted."

7.5.30 In respect of Road Safety, the IEMA guidance refers to the use of collision rates and identification of collision clusters to assess the implications of a development. The IEMA guidance recommends consultation with local highway authorities to determine the significance of any Road Safety effects.

7.5.31 With respect to Hazardous and Large Loads, the IEMA guidance states for Hazardous Loads that the assessment should “include a risk or catastrophe analysis to illustrate the potential for an accident to happen and the likely effect of such an event.” The guidance references any highway features that would pose a risk to any loads being transported, above the typical levels of risk that would generally be expected by utilising the highway network. For large loads (abnormal), the IEMA guidance acknowledges that this is regulated by National Highways in respect of the SRN and is subject to a separate agreement with all local highway authorities and the Police.

Transport and Access Study Area

7.5.32 The Transport and Access study area has initially been identified as the extent of Route One to the Site that is required to facilitate traffic movements associated with the construction, operational, and decommissioning phases of the Project, as well as any improvements or changes required to facilitate construction traffic and works required for restoration purposes. Figure 7-18 shows the identified study area which includes the expected routes to the Project.

7.5.33 The potential access routes have been identified for assessment as part of the initial scoping process, as outlined earlier in this Scoping Request. The assessment of the route options will be clearly set out within the PEIR once developed in consultation with the local highway authorities.

7.5.34 From this initial extent, the scope of the assessment will be refined further utilising the two IEMA 'rules-of-thumb' discussed earlier in this chapter. Any links within the study area that fall below these thresholds will be scoped out of the assessment, unless specifically requested to be incorporated by key stakeholders or the local highway authorities.

Assessment Scenarios

7.5.35 The assessment will comprise an assessment of the Peak Construction Year (with Project traffic) - Daily flows assessed against (i) the Baseline (2023) Daily flows and (ii) the future baseline Peak Construction Year (without Project traffic) - Daily flows. The peak construction year is to be confirmed and presented once further information about the layout of the Project is known.

Determining Significance of Effect

7.5.36 Categories of receptor sensitivity have been defined from the principles set out in the IEMA guidelines and include the following:

- Particular groups or locations which may be sensitive to changes in traffic conditions
- The list of affected groups and special interests set out in the guidance
- The identification of links or locations where it is felt that specific environmental problems may occur noting that such locations "…would include accident black spots, conservation areas, hospitals, links with high pedestrian flows etc"

7.5.37 As per the IEMA EATM guidance, the following sensitive receptors will be considered within the assessments:

- Non-motorised users
- Public right of way users
- Motorists and freight vehicles

- Public transport users
- Emergency services

7.5.38 Any nearby Sites of Special Scientific Interest (SSSI) and Local Wildlife Sites (LWS) are also identified as sensitive receptors.

7.5.39 The roads and access routes identified within the study area will then be classified by receptor sensitivity, as shown within Table 7-24. These roads and access routes are referred to as "links". Their classification and sensitivity is determined based on proximity and connectivity to the identified sensitive receptors like SSSIs and LWSs in accordance with the IEMA guidance.

Table 7-24 Receptor Sensitivity Assessment Criteria

Receptor Sensitivity	Assessment Criteria for Determining the Sensitivity of the Receptor
High	Sensitivity to traffic such as: • Schools, colleges and other educational institutions • Retirement/care homes for the elderly or infirm • Roads used by pedestrians with no footways • Accident clusters at a regional scale
Medium	Sensitivity to traffic such as: • Hospitals, surgeries and clinics • Parks and recreation areas • Shopping areas • Public Rights of Way (PROWs)/Bridleways at road crossings • Roads used by pedestrians with narrow footways • Accident clusters at a local scale
Low	Some sensitivity to traffic such as: • Open space • Tourist/visitor attractions • Historical buildings • Churches • PROWs/Bridleways away from road crossings • Roads used by pedestrians with standard footways

Receptor Sensitivity	Assessment Criteria for Determining the Sensitivity of the Receptor
	• Residential areas

7.5.40 The determination of the magnitude of the impacts will be undertaken by establishing the parameters of the associated traffic that may cause an effect and then quantifying these effects.

7.5.41 The significance of the effect will be concluded following assessment against the thresholds defined in the IEMA guidelines. The criteria for determining the magnitude of impacts depends upon the effect being assessed. Table 7-25 sets out the assessment criteria for determining the magnitude of change for each effect.

Table 7-25 Magnitude of Change Assessment Criteria

Potential Impact	Assessment Criteria for Determining the Magnitude of Change
Severance	The IEMA EATM guidance sets out a range of indicators for determining the magnitude of severance effects. It suggests changes in traffic flows and associated magnitude of impacts as: • <30% - negligible magnitude of change; • 30% - 60% - small magnitude of change; • 60% - 90% - medium magnitude of change; and • >90% - large magnitude of change
Driver Delay	The IEMA guidelines do not provide set thresholds for determining when a change in driver delay is likely to be significant and instead refer to any junction capacity assessments that may be undertaken, alongside professional judgement. As there is unlikely to be any junction modelling undertaken for the submission (given the anticipated levels of trip generation being low during the peak hours), it is proposed to use professional judgement and the overall changes in traffic flows with reference to the typical IEMA EATM thresholds (<30% is negligible, 30-60% is small, 60-90% is medium and >90% is large), to determine whether there is likely to be any significant changes to driver delay.
Pedestrian Delay	The guidelines recommend the use of professional judgement to determine whether pedestrian delay is significant across individual links, taking into consideration the varying characteristics of local

Potential Impact	Assessment Criteria for Determining the Magnitude of Change
	conditions within the study area. For the purposes of this assessment, the following thresholds related to changes in total traffic are applied alongside professional judgement and interpretations of the local conditions: • 0-30% - negligible magnitude of change • 30% - 60% - small magnitude of change • 60% - 90% - medium magnitude of change • greater than 90% - large magnitude of change
Non-motorised User Amenity	The IEMA guidance notes that a tentative threshold for determining significance of changes in non-motorised user amenity is when traffic flows are halved/doubled (which would lead to a high impact). A change of less than a quarter would represent a low impact and a change more than a quarter would present a medium impact. However, the guidance notes that any changes should be considered with professional judgement in light of the local conditions. It is proposed to use these thresholds alongside professional judgement taking into consideration the likely demand and provisions for non-motorised users across the links.
Fear and Intimidation	The IEMA guidelines refers to an assessment for the 'degree of hazard' in Table 3.1 of the guidance to assess fear and intimidation. Each road link in the study area will be assessed to determine the values of these parameters using traffic data. These values will then be compared to the thresholds defined in Table 3.1 to determine the degree of hazard score, from 0 up to 30. In determining the degree of hazard, the assessment will apply a score based on three parameters: • Average daily vehicle flows - This covers the total volume of all vehicles across an 18-hour period from a road link. Higher volumes indicate a greater hazard. • Total HGV flows - The total volume of heavy goods vehicles (HGVs) over an 18-hour day. A higher HGV volume represents a greater perceived hazard. • Average speeds - The mean speed of vehicles on the road link. Higher speeds are associated with greater hazard. • Once calculated, the total hazard score will be presented to determine

Potential Impact	Assessment Criteria for Determining the Magnitude of Change
	the level of fear and intimidation, as follows: • 0-20 - Small • 21-40 - Moderate • 41-70 - Great • 71+ - Extreme A comparison of the degree of hazard will be undertaken for the peak construction year with/without the construction flows and against the baseline traffic flows to determine any changes. Step changes are defined as increases in average daily traffic or heavy vehicle flow compared to baseline. A low step change is an increase of <400 vehicles/day or <500 heavy vehicles/day. A medium step change is an increase of >400 vehicles/day or >500 heavy vehicles/day. A high step change is two increases in separate flow thresholds from baseline. The magnitude of impact will then be determined as follows: • Negligible - no step change from baseline • Low - one step change from baseline (<400 daily vehicle trip increase) • Medium - one step change from baseline (>400 daily vehicle trip increase) • High - two step changes from baseline
Road Safety	The IEMA guidelines suggest that the magnitude of Road Safety impacts will be related to identifying collision clusters and collision rates through a detailed review of baseline characteristics to determine road safety sensitivity. However, it does not provide any defined thresholds. Instead, the guidance advises that professional judgement will be needed to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents occurring. In addition, the IEMA guidance refers to the use of a Stage 1 Road Safety Audit to determine the suitability of any Transport and Access related works that are proposed.
Hazardous and Large Loads	The IEMA guidance does not set specific thresholds for the consideration of Hazardous and Large loads, only that professional judgment should be utilised based on the frequency and nature of any Hazardous and/or Large loads.

7.5.42 It is noted throughout the IEMA guidance that the assessment of environmental effects arising from road traffic is not an exact science and a degree of professional judgement is required in all instances. This is particularly the case for the assessments of effects on non-motorised users where local characteristics need to be fully considered.

Significance of Effects

7.5.43 In order to provide a consistent and comparable assessment of the degree of significance for each, Table 7-26 presents a framework which is based on the magnitude of change compared to the sensitivity of receptor.

Table 7-26 Significance of Effect Matrix

Magnitude of Change	**Sensitivity of Receptor**		
	High	**Medium**	**Low**
High	Major	Major	Minor
Medium	Major	Moderate	Minor
Small	Moderate	Minor	Negligible
Negligible	Negligible	Negligible	Negligible

7.5.44 For the purposes of this assessment, only those effects which are identified as 'Moderate' and 'Major' are considered 'significant' and would require the consideration of further mitigation measures to reduce the effects to a lower level.

Potential Effects

7.5.45 The nature of the Project is such that the greatest impact is likely to occur during the construction phase. The peak construction phase is where the impact will be the greatest in terms of both vehicles for construction equipment and staff being required.

7.5.46 With respect to the decommissioning phase, there is a high degree of uncertainty as engineering approaches and technologies evolve over the lifespan of the Project meaning that future traffic flows cannot be accurately fixed to a future point in time. However, the effects are predicted to be similar to, or of a lesser magnitude than the effects generated during the construction phase due to reduced vehicle and staff movements. While precise impacts cannot be accurately

quantified at this stage, the assessment will provide a high-level evaluation of possible decommissioning traffic effects to acknowledge potential impacts based on the construction impacts, which are considered to be worst-case and the equivalent to or more severe than the decommissioning.

7.5.47 During the operational phase of the Project, it is envisaged that the volume of traffic associated with the operational phase of the Project would be so low as to be considered negligible, with only occasional visits needing to be made to the Site for routine maintenance and servicing purposes, and for ad hoc replacement of equipment.

7.5.48 The vehicles used for these visits are likely to be a four wheel drive off-road car, a van for monitoring and maintenance checks, and, on occasion a HGV to access the Site to deliver replacement parts. However, access by the HGV would be on an ad-hoc basis and would not be required frequently.

7.5.49 In relation to mitigation, at this stage it is considered that mitigation will primarily focus on reducing the impacts of the construction phase. It is anticipated this will primarily be through the development and implementation of a Construction Traffic Management Plan (CTMP), that will detail suitable mitigation measures to help reduce the impacts of construction. This will be supported by a Travel Plan (TP) to mitigate the impacts of any staff travel to the Project. The TP is likely to include measures such as car sharing initiatives, dedicated shuttle bus services, incentives for walking/cycling, and promotion of sustainable travel options to reduce single occupancy vehicle trips.

7.5.50 There may be a need for local road improvements and widening to improve access to the Site although the detail of this will be developed in consultation with the local highway authorities and outlined within the PEIR.

7.5.51 A Decommissioning Traffic Management Plan (DTMP) will be prepared in consultation with stakeholders prior to the commencement of decommissioning.

7.5.52 The local highway authority and other key local stakeholders will be involved in the development of the mitigation documents, with consultation taking place on any measures that are proposed to be implemented.

Proposed Scope

Scoped In

7.5.53 Traffic generated during the construction and decommissioning of the Project will be assessed. The effect of the decommissioning phase is anticipated to be equivalent to or less than the construction phase and therefore it is considered that the construction phase presents a robust, worst-case assessment. Mitigation for the decommissioning phase will be provided in the form of a DTMP.

7.5.54 The effects to be assessed during the construction phase of the Project on those links that exceed the applicable thresholds are as follows:

- Severance
- Driver Delay
- Pedestrian Delay
- Non-motorised User Amenity
- Fear and Intimidation
- Road Safety

Scoped Out

Alternative Modes of Construction Access

7.5.55 There are no viable alternative modes of transport to the Site for construction materials, such as a new means of rail access. As such, only access by road for construction vehicles will be considered within the assessment from Holyhead Port.

7.5.56 Consideration of the shipment of materials to Holyhead Port cannot be assessed in the ES, as the location of origin for the materials of the Project are not yet known at this stage of the Project's development.

Operational Phase

7.5.57 As outlined above, it is considered that the significance of the environmental effects of the operational phase of the Project would be negligible and therefore not significant in EIA terms, with respect to Transport and Access and therefore a detailed assessment of the operational phase of the Project is proposed to be scoped out of the EIA.

7.5.58 It is assumed that any operational traffic flows would fall within the IEMA thresholds of less than a 30% change in total vehicle flows or 10% change in daily HGV flows, would therefore not be significant in EIA terms and not require further assessment in Transport and Access terms.

Hazardous and Large Loads

7.5.59 With respect to Hazardous Loads, analysis of the road network within the study area indicates that there are no particular features, such as significant vertical drops immediately beyond the carriageway, which would suggest that the transfer of materials poses a particular risk beyond that which would be expected on the general highway network.

7.5.60 In addition, any Large Loads required will be managed by National Highways, the local highway authorities and the Police through the Electronic Service Delivery for Abnormal Loads (ESDAL) system, meaning there will be a limited effect on the LRN or SRN, outside of the standard abnormal load permitting system.

7.5.61 No likely significant effects in EIA terms are anticipated and it is therefore proposed to scope Hazardous and Large Loads out of the assessment.

Consultation

7.5.62 A Traffic Route Analysis Technical Note was issued to IoACC on 7 September 2023 which set out the principles of the routing strategy and the extent of baseline surveys. A response was received from IoACC on 29 September 2023, which confirmed that the extent of the baseline traffic surveys was appropriate and requested that further dialogue is required on the proposed construction access routes.

7.5.63 Additional consultation will be undertaken with the key stakeholders noted above in paragraph 7.5.19 and those identified through the consultation process once further details are available on the requirements of the Project.

References

Ref 7-46 Environmental Assessment of Traffic and Movement (EATM) Guidance produced by the Institute of Environmental Management and Assessment ('IEMA', 2023) has informed the assessment methodology

Ref 7-47 Department for Transport (2007). Guidance on Transport Assessment.

Ref 7-48 Department for Transport (2017). National Transport Model TEMPRO Database.

7.6 Air Quality

Introduction

7.6.1 This section of the Scoping Request sets out the approach to the assessment of air quality. The baseline conditions are first established through a desktop review of existing air quality followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

Baseline Conditions

Local Air Quality Management

7.6.2 There are no existing Air Quality Management Areas (AQMAs) declared by Isle of Anglesey County Council (IACC) in its administrative area indicating that there are currently no air quality concerns on the Isle of Anglesey. The closest AQMA is located approximately 87km east in Liverpool and was declared for the potential exceedance of the current annual mean nitrogen dioxide (NO2) air quality objective of 40µg.m-3 (microgram per cubic metre) for England.

Local Air Quality Monitoring

7.6.3 IACC undertakes monitoring of NO2 within its administrative area through a network of passive diffusion tubes. At the time of assessment 2020 and 2021 monitoring data was available for review and was therefore included in the review of monitoring data. It should be noted however, due to the influence of the COVID-19 pandemic lockdown restrictions, 2019 monitoring data should be treated as the last year of typical monitoring data in accordance with the IAQM position statement.

7.6.4 Bias adjusted NO2 monitoring results between 2015 and 2021 are detailed in Table 7-27. Exceedances of the current annual mean air quality objective for NO2 are highlighted in bold.

Table 7-27 Annual Mean NO2 Concentrations at IACC Monitoring Locations

ID	X, Y	Site Monitoring Type	2015	2016	2017	2018	2019	2020	2021
IACC-018	252569, 372057	Kerbside	38.1	39.7	37.8	35.3	32.8	-	-
IACC-046	253265, 372372	Roadside	-	-	44.8	37.9	46.4 *	-	-
IACC-049	229513, 379321	Roadside	-	11.3	14.0	13.1	14.5 *	-	-
IACC-50	231593, 382274	Roadside	-	15.3	8.3	8.8	8.9*	-	-
IACC-051	231555, 387112	Roadside	-	9.9	8.0	7.9	7.7*	-	-
IACC-053	235575, 392545	Roadside	-	7.0	8.6	8.7	8.2*	-	-
IACC-054	236752, 393090	Roadside	-	10.2	7.6	8.2	9.5*	-	-
IACC-055	236908, 393378	Roadside	-	9.0	4.7	5.7	5.1*	-	-
IACC-081	224942, 382866	Roadside	-	-	-	19.7 (1)	18.7	14.8	14.2
IACC-082	252360, 378402	Roadside	-	-	-	18.6 (1)	18.1	13.6	16.2
IACC-083	253057, 372313	Roadside	-	-	-	-	10.8	7.9	8.5
IACC-084	226681, 381486	Roadside	-	-	-	-	7.8*	6.4	6.3

7.6.5 N.B. – denotes data not available, (1) denotes data capture less than 75% for the year, * denotes less than 3 months of data capture and therefore concentration presented is the mean for the period of monitoring rather than the whole year.

7.6.6 As shown in Table 7-27, annual mean NO2 concentrations are below the current air quality objective of 40µg.m-3 for Wales at all monitoring locations across the

Isle of Anglesey between 2015 and 2021 with the exception of IACC-046. Diffusion tube IACC-046 monitored concentrations above the air quality objective in both 2017 and 2019; however monitoring data at this location in 2019 is not valid as there is less than three months of data capture and therefore could not be annualised. Prior to 2019, annual mean concentrations at this location had decreased.

7.6.7 Concentrations across all monitoring locations were relatively consistent between 2015 and 2021 at the majority of monitoring locations; however significant decreases were identified between 2016 and 2017 at IACC-50, IACC-54, and IACC-55. All monitoring locations experienced a decrease in emissions between 2019 and 2021; likely a result of Government imposed lockdown restrictions.

7.6.8 IACC also monitors particulate matter (PM10 and PM2.5) concentrations within its administrative area using automatic monitoring stations. Table 7-28 below details both PM10 and PM2.5 annual mean concentrations between 2015 and 2021. Exceedances of the current relevant annual mean air quality objectives are highlighted in bold.

Table 7-28 Annual Mean PM10 and PM2.5 Concentrations at IACC Monitoring Locations

ID	X, Y	Site Monitoring Type	Pollutant	2015	2016	2017	2018	2019	2020	2021
CM1	239692, 379774	Rural	PM10	17.2	18.8	13.2	13.0	17.0	25.9 (1)	16.3
			PM2.5	6.1	8.6	8.4	9.0	9.0	11.7	6.2
CM2	248566, 381325	Rural	PM10	13.1	8.1	11.0	10.1	14.0	19.0	15.8
			PM2.5	4.0	6.4	6.8	6.0	6.0	8.0	7.0
CM3	234355, 393310	Rural	PM10	34.8	14.9	13.3	14.1	13.6 (1)	-	-
			PM2.5	7.4	8.5	8.8	8.9	7.1 (1)	-	-

ID	X, Y	Site Monitoring Type	Pollutant	2015	2016	2017	2018	2019	2020	2021
CM4	253457, 374348	Rural	PM10	-	-	8.1	8.5	13.0	17.0	10.3
			PM2.5	5.4	6.7 (1)	6.5	7.0	7.0	7.0	5.7

N.B. (1) denotes data capture less than 75% for the year, - denotes data not available.

7.6.9 As shown in Table 7-28, PM10 and PM2.5 annual mean concentrations were below the current relevant air quality objectives for Wales, of 40µg.m-3 for PM10 and 25µg.m-3 for PM2.5, between 2015 and 2021.

7.6.10 An overall downward trend was evident in PM10 concentrations between 2015 and 2018; however increases in annual mean PM10 concentrations were identified at all monitoring locations between 2018 and 2020. For PM2.5, annual mean concentrations fluctuated between 2015 and 2019, with concentrations increasing in 2020.

Assessment Methodology

Overview

7.6.11 The assessment methodology is based on the following relevant guidance:

- Llywodraeth Cymru Welsh Government, Local Air Quality Management, Technical Guidance (2022)
- Institute of Air Quality Management (2023) Assessment of dust from demolition and construction
- Institute of Air Quality Management and Environmental Protection UK (2014) Land-Use Planning and Development Control: Planning for Air Quality
- Institute of Air Quality Management (2020) A guide to the assessment of air quality impacts on designated nature conservation sites[1]

- Llywodraeth Cymru Welsh Government, Design Manual for Roads and Bridges (2019) LA 105 Air Quality

Construction

Construction Phase Dust Emissions

7.6.12 A qualitative construction phase dust assessment will be undertaken in accordance with the Institute of Air Quality Management (IAQM) guidance to determine the risk of dust emissions associated with earthworks, construction and trackout activities. Mitigation measures will be developed as required to reduce dust emissions as far as practicable for inclusion within a Construction Environmental Management Plan (CEMP).

Construction Phase Road Traffic Emissions

7.6.13 The Scoping Study Area (see Figure 2-2) is not located within an existing AQMA. As such, the screening criteria provided in the IAQM & Environmental Protection UK (EPUK) guidance of 500 Light Duty Vehicles (LDV) and/or 100 Heavy Duty Vehicles (HDV) as a 24-hour Annual Average Daily Traffic (AADT) flows applies. The number of vehicles associated with the construction phase of the Project is currently unknown. Considering the size and scale of the proposals, there is potential that the construction phase traffic generation will exceed the screening criteria and a detailed assessment will be required.

7.6.14 If the thresholds are not exceeded, a qualitative assessment of construction phase road traffic emissions will be undertaken as detailed within the IAQM and Environmental Protection UK (EPUK) guidance.

7.6.15 If a quantitative assessment is required, concentrations of nitrogen dioxide (NO2) and particulate matter (PM10 and PM2.5) will be predicted at identified existing sensitive human receptor locations in the study area. Changes in these pollutant concentrations with the Project in place will be determined and compared to the significance criteria provided in the IAQM and EPUK guidance to determine the effect of the Project. Predicted pollutant concentrations will also be compared to the current relevant air quality objectives for Wales set by the Welsh Government.

7.6.16 Receptors relevant to the long-term and short-term air quality objectives detailed within LAQM(TG.22) will be considered. Taking into consideration local air quality

monitoring in the vicinity of the Scoping Study Area and the location of the sensitive receptor locations relative to the road network, there is the potential for significant effects on local air quality to arise as a result of the Project.

7.6.17 Any effects associated with construction phase road traffic emissions are likely to be short-term, temporary and direct as a result of the Project.

7.6.18 Predicted pollutant concentrations will be compared to the current relevant air quality objectives for Wales and the significance of the effect determined with regard to IAQM and EPUK guidance. The current relevant air quality standards and objectives are detailed in Table 7-29.

Table 7-29 Air Quality Standards and Objectives (Wales)

Pollutant	Averaging Period	Air Quality Objective (µg.m-3)	Date to Achieve by
NO2	Annual Mean	40	31 December 2005
	1-hour mean not to be exceeded more than 18 times per year	200	31 December 2005
PM10	Annual Mean	40	31 December 2004
	24-hour mean not to be exceeded more than 35 times per year	50	31 December 2004
PM2.5	Annual mean	25	1 January 2015

Non-Road Mobile Machinery

7.6.19 Emissions from construction non-road mobile machinery (NRMM) have the potential to increase pollutant concentrations during the construction phase. The IAQM guidance states that, based on experience of assessing exhaust emissions from on-site plant and traffic, that significant effects on air quality are unlikely and do not need to be quantitatively assessed.

7.6.20 Any emissions from NRMM will be temporary and localised and will be controlled through industry-practice mitigation measures. The IAQM guidance states: “Experience of assessing the exhaust emissions from onsite plant (NRMM) and

site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed.". Emission during construction will also be controlled through a CEMP. As such, it is not proposed to undertake any assessment of NRMM emissions and emissions from NRMM are proposed to be scoped out of the air quality assessment.

Shipping Emissions

7.6.21 It is anticipated that construction materials will be delivered to the Isle of Anglesey at Holyhead via shipping methods before onwards transit to a Construction Logistics Hub within the Site. Information on shipping methods is not available at this stage; however it is likely that material will be transported on existing fleet and additional shipping movements associated with supplying the Project will not be required. As such, no likely significant effects arising from shipping emissions in connection with the Project are anticipated. An assessment of potential impacts as a result of additional emissions associated with shipping is not required and is scoped out of the ES.

Operation

Operational Phase Road Traffic Emissions

7.6.22 For operational phase road traffic emissions, the screening criteria within the IAQM and EPUK guidance of 500 LDVs and 100 HDVs as 24-hour AADT flows also applies. Due to the nature of the Project, whereby the only operational phase traffic will relate to maintenance and repairs of the solar panels, and replacement of equipment as required, it is anticipated that up to 20 staff a day will travel to/from the Site. It is therefore unlikely that the screening criteria detailed within the IAQM and EPUK guidance will be exceeded. As such, an assessment of operational phase road traffic emissions has been scoped out.

Operational Phase Onsite Emissions

7.6.23 Based on the nature of the Project, no pollutant emissions from on-site infrastructure are anticipated. Furthermore, no on-site combustion plant is proposed. Therefore, an assessment of on-site operational phase air quality emissions is not required. No likely significant effects from operational phase

onsite emissions are anticipated and it is proposed that this effect is scoped out from the assessment.

Decommissioning

7.6.24 As set out in the Transport and Access assessment, the road traffic associated with the decommissioning phase is considered to have the same as or lower effects than the construction phase. Furthermore, road traffic emissions and background pollutant concentrations are anticipated to decrease in the future due to improvements in vehicle emissions standards. Therefore, the assessment of road traffic emissions over the construction phase is considered to be a worst-case scenario for the decommissioning phase so a separate assessment of road traffic emissions during the decommissioning phase will not be undertaken.

7.6.25 As with road traffic, NRMM and dust emissions during the decommissioning phase are considered to be of a lesser magnitude than during the construction phase.

Air Quality Study Area

Construction Phase Dust Emissions

7.6.26 The IAQM construction dust guidance requires that construction dust effects on human receptors are assessed up to 250m from the boundary of a development site and up to 50m for ecological receptors, for demolition, construction and earthworks activities. For trackout, effects are assessed at human and ecological receptors within 50m of the routes used by construction vehicles on the public highways and up to 250m from the site entrances.

Construction Phase Road Traffic Emissions

7.6.27 The study area for the construction phase road traffic emissions assessment will be defined using the criteria detailed in the IAQM and EPUK guidance. The IAQM and EPUK guidance defines the affected road network as roads where the changes between the “do something” traffic (with the development in place) and the “do minimum” traffic (without the development in place) exceed the following criteria:

- A change in LDV 24-hour AADT flows of more than 500; or
- A change in HDV 24-hour AADT flows of more than 100; or

- A change in speed; or
- A change in carriageway alignment by more than 5m.

7.6.28 The selection of human and ecological receptor locations will be influenced by the study area once defined. The sensitivity of ecological designations to road traffic emissions will be identified through the Ecology assessment.

Determining Significance of Effect

Construction Phase Dust Emissions

7.6.29 Table 7-30 provides a summary of receptors to be considered within the construction phase dust assessment for both dust soiling impacts and impacts on human health within the study area.

Table 7-30 Receptor Sensitivity to Dust Soiling Impacts and Human Health Effects (IAQM Guidance)

Receptor Sensitivity	Dust Soiling Impacts	Human Health Effects
High	Residential dwellings Churches Hotels and holiday homes Campsites and associated long to medium term car parks	Residential dwellings
Medium	Agricultural outbuildings Places of work Llyan Alaw Site of Special Scientific Interest (SSSI)	Hotels Holiday homes Campsites
Low	Farmland (grazing) Public Rights of Way Roads	Public Rights of Way

7.6.30 Any effects associated with fugitive dust emissions during the construction phase are likely to be direct, short-term and temporary. The IAQM guidance states that "significance is only assigned to the effect after considering the construction activity with mitigation". The significance of any effects associated with the construction of the Project will be identified, taking into account committed mitigation, in accordance with IAQM guidance. With the implementation of the

mitigation measures detailed, the residual impacts from the construction phase are considered to be 'not significant'.

Construction Phase Road Traffic Emissions

7.6.31 Guidance is provided by the IAQM and EPUK to determine the significance of the effect of development-generated road traffic emissions on local air quality. The impact descriptors at receptor locations are detailed in Table 7-31. These impact descriptors consider the predicted magnitude of change in pollutant concentrations and the concentration in relation to the relevant current air quality objectives for Wales.

Table 7-31 Significance of Environmental Impact

Long Term Average Concentration at receptor in Assessment Year	**% Change in Concentration Relative to Air Quality Assessment Level (AQAL)**			
	1%	**2 – 5%**	**6 – 10%**	**>10%**
75% or less of AQAL	Negligible	Negligible	Minor Adverse	Moderate Adverse
76 – 94% of AQAL	Negligible	Minor Adverse	Moderate Adverse	Moderate Adverse
95 – 102% of AQAL	Minor Adverse	Moderate Adverse	Moderate Adverse	Major Adverse
103 – 109% of AQAL	Moderate Adverse	Moderate Adverse	Major Adverse	Major Adverse
110% or more of AQAL	Moderate Adverse	Major Adverse	Major Adverse	Major Adverse

Note: Figures rounded up to the nearest whole number, therefore any value less than 1% after rounding (effectively less than 0.5%) will be described as negligible.

7.6.32 In determining the significance of construction phase road traffic emission effects, the spatial extent, duration, frequency and reversibility of impacts will be considered in addition to professional judgement. Whilst professional judgement is used in determining whether effects are significant, it is generally considered that ''major' and 'moderate' equates to a significant effect in EIA terms.

7.6.33 For ecological receptors, where impacts are not screened out against the relevant critical loads, the Ecology assessment will determine the significance of effect as per the IAQM guidance[1].

Potential Effects

Construction

Construction Phase Dust Emissions

7.6.34 Construction phase dust emissions have the potential to affect human and ecological receptors as a result of dust soiling and on human health. However, dust emissions during the construction phase are expected to be adequately managed through mitigation measures identified by the construction phase dust assessment and implemented by a CEMP. As such, no significant effects to air quality are expected and therefore construction phase dust emissions are proposed to be scoped out of the assessment.

Construction Phase Road Traffic Emissions

7.6.35 Development-generated traffic during the construction phase has the potential to give rise to additional emissions of NO2, PM10 and PM2.5 during construction. The increase in emissions may result in elevated pollutant concentrations at existing sensitive human and ecological receptor locations, where relevant, within the vicinity of the Scoping Study Area.

7.6.36 Taking into consideration the location of the sensitive receptor locations relative to the road network, there is the potential for significant effects on local air quality to arise as a result of the construction of the Project.

7.6.37 The potential for cumulative effects will also be assessed to consider the impacts of concurrent construction of the Proposed Development and identified committed developments in the vicinity of the Site, identified through the scoping process.

NRMM

7.6.38 Any emissions from NRMM will be temporary and localised and will be controlled through good practice mitigation measures. As such, potential for significant effects on local air quality are considered unlikely and it is proposed that emissions from NRMM are scoped out of the assessment.

Shipping Emissions

7.6.39 It is anticipated that construction materials will be delivered to the Isle of Anglesey via shipping methods before onwards transit to a Construction Logistics Hub within the Site. Information on shipping methods is not available at this stage, however, it is likely that material will be transported on existing fleet and additional shipping movements associated with supplying the Project will not be required. As such, potential for significant effects on local air quality are considered unlikely and it is proposed that shipping emissions are scoped out of the assessment.

Operation

Operational Phase Road Traffic Emissions

7.6.40 The only operational phase traffic will relate to maintenance and repairs of Project infrastructure. It is considered that there is no potential for any significant adverse effects on air quality associated with operational road traffic and it is proposed that operational phase road traffic emissions are scoped out of the assessment.

Operational Phase Onsite Emissions

7.6.41 Based on the nature of the Project, there will be no pollutant emissions from onsite infrastructure. As such, it is considered that there is no potential for any significant adverse effects on air quality and it is proposed that operational phase onsite emissions are scoped out of the assessment.

Proposed Scope

Scoped In

7.6.42 The following aspects are proposed to be scoped into the EIA:

- Qualitative or quantitative construction phase road traffic assessment will be undertaken depending on the volumes of road traffic

Scoped Out

7.6.43 The following aspects are proposed to be scoped out of the EIA:

- Qualitative assessment of fugitive dust emissions during the construction phase
- Assessment of NRMM emissions
- Assessment of emissions associated with shipping of construction materials
- Qualitative assessment of the operation phase road traffic emissions
- Assessment of on-site operational phase emissions

7.6.44 On this basis, it is proposed that air quality is covered in an 'Other Environmental Topics' chapter and not within a dedicated air quality chapter.

Consultation

7.6.45 IACC will be consulted on the assessment methodology.

References

Ref 7-49 Institute of Air Quality Management (2021) Position Statement: Dealing with Uncertainty in Vehicle NOx Emissions within Air Quality Assessments, Version 1.1

Ref 7-51 Llywodraeth Cynulliad Cymru Welsh Government (2022) Local Air Quality Management Technical Guidance (LAQM.TG22)

Ref 7-52 Institute of Air Quality Management (2023) Assessment of dust from demolition and construction

Ref 7-53 Institute of Air Quality Management and Environmental Protection UK (2014) Land-Use Planning and Development Control: Planning for Air Quality

Ref 7-54 Institute of Air Quality Management (2020) A guide to the assessment of air quality impacts on designated nature conservation sites

7.7 Noise

Introduction

7.7.1 This section of the Scoping Request sets out the approach to the assessment of noise and vibration. The baseline conditions are first established with an overview of baseline surveys followed by the proposed methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation to be undertaken is then set out.

7.7.2 Note that the scope of this section considers noise and vibration effects on human receptors and excludes the consideration of noise and vibration on ecological or heritage receptors, which will be considered in Chapter 7: Ecology and Chapter 8: Cultural Heritage, where appropriate.

Baseline Conditions

7.7.3 Following a site walkover undertaken in August 2023, it was observed that the noise climate in the Scoping Study Area (Figure 2-1: Scoping Study Area) typically comprised natural and wildlife noise such as birdsong, and occasional operational noise from agricultural land and farm buildings. Distant road traffic noise from rural road networks was observed to be audible, but infrequent. Wind turbines were sporadically located in neighbouring fields and noise from them was noted to be just distinguishable during attendance.

7.7.4 A desktop review has been undertaken using available mapping and address data of the potential noise-sensitive receptors in proximity to the Scoping Study Area.

7.7.5 It is considered that the nearest existing noise-sensitive receptors consist of isolated dwellings, with more densely populated settlements along road networks within 500m of the Scoping Study Area.

7.7.6 There are statutory ecologically designated sites within 500m of the Scoping Study Area including:

- Llyn Alaw Site of Specifical Scientific Interest (SSSI), located along the southern boundary of Maen Hir Central

- Salbri SSSI, located to the north of Maen Hir Central
- Llyn Hafodol and Cor Clegyrog, SSSI, located to the north of Maen Hir Central
- Cors Erddreniniog SSSI, located to the east of Maen Hir South
- Corsydd Môn a Llyn / Angelsey and Llyn Fens Ramsar, located to the east Maen Hir South
- Corsydd Mon / Angelsey Fens Special Area of Conservation (SAC) located to the east Maen Hir South

7.7.7 Baseline conditions at these sites will be established within this Chapter, and will be considered further in Chapter 07: Ecology.

7.7.8 There is a network of Public Rights of Way (PRoW) both within the Site and across the Scoping Study Area.

Baseline Surveys

7.7.9 A baseline noise survey will be undertaken at locations representative of the noise-sensitive receptors identified, to characterise the existing ambient and background noise levels at nearby noise-sensitive receptors (NSRs). Characterising the local noise environment in this way will allow the effect of any noise generating sources associated with the Project to be assessed against the existing baseline conditions. The proposed survey will include the installation of unattended continuous noise loggers at fixed locations for a period of approximately one week.

Assessment Methodology

Overview

7.7.10 The assessment methodology is based on the following standards and guidance:

- British Standard 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures (BS7445-1) (Ref 7-56)
- British Standard 5228: 2009+A1: 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2 (BS5228) (Ref 7-57)

- World Health Organization Guidelines for Community Noise (WHO 1999) (Ref 7-58)
- World Health Organization Environmental Noise Guidelines for the European Region (WHO 2018) (Ref 7-59)
- British Standard 8233: 2014 Guidance on sound insulation and noise reduction for buildings (BS8233) (Ref 7-60)
- British Standard 4142: 2014+A1:2019 Method for rating and assessing industrial and commercial sound (BS4142) (Ref 7-61)
- Highways England (2019) Design Manual for Roads and Bridges (DMRB) LA 111 Noise and Vibration Revision 2 (including the Wales National Application Annex to LA 111) (Ref 7-62)
- Calculation of Road Traffic Noise,1988 (CRTN) (Ref 7-63)
- Moorhouse, A T, Waddington, D C and ADAMS, M. (2011) NANR45: Procedure for the Assessment of Low Frequency Noise Complaints. London: Department for Environment, Food and Rural Affairs (Ref 7-64)
- Technical Advice Note 11: Air Quality, Noise and Soundscape' and 'Supporting Document 1: Soundscape Design (Ref 7-65)

Approach

Construction Phase Noise and Vibration Assessment

7.7.11 The effects of construction noise and vibration on existing sensitive receptors, including decommissioning phase, will be assessed based on guidance contained within BS5228.

7.7.12 Construction noise levels will be predicted at nearby existing sensitive receptors to determine the magnitude of impact based on a typical construction plant list for a development of this size and nature, and following the methodology set out in Annex F of BS5228-1.

7.7.13 Construction vibration levels will be predicted at nearby existing sensitive receptors based on a typical construction plant list for a development of this size and nature, and following the methodology set out in BS5228-2.

7.7.14 Where significant effects are likely to occur due to road traffic noise associated with the construction phase, these will be assessed within the ES. These will be

assessed following the principles of DMRB LA111 by referencing Table 3.17 within DMRB by comparing the existing baseline with and without the Project to determine the change in noise levels.

7.7.15 The focus of the construction phase assessment will be on the identification of any likely significant effects, and consequently any mitigation measures that will need to be included in a Construction Environmental Management Plan (CEMP).

Operational Phase Noise

Noise Associated with Fixed Plant and Equipment

7.7.16 Operational noise associated with the Project will be assessed in accordance with BS4142. The rating levels due to proposed operations will be compared with the typical background sound levels established through the noise surveys. BS4142 requires a context assessment to be undertaken before determining likely significant effects, which will be undertaken by drawing on other standards and guidance such as BS8233, where applicable.

Low Frequency Noise

7.7.17 NANR45 provides an assessment method to determine whether low frequency sound that might be expected to cause disturbance is present in a NSR's premises.

7.7.18 The assessment method includes measurement and quantitative assessment of low frequency noise within the complaint's dwelling. The assessment compares field measurements of the noise against a reference curve. Where the measured noise level exceeds the reference curve, then low frequency noise which may cause a likelihood of significant effect may be present.

7.7.19 The assessment method does not include a method of determining the likelihood of significant effect if low frequency noise is present.

7.7.20 While the guidance is not intended as a means of predicting the effects of low frequency noise, using this method on existing noise sources can provide a useful indication on whether these noise sources could contribute to the low frequency sound scape and ultimately lead to a significant effect, should they occur.

Tranquillity Assessment

7.7.21 There is no industry standard approach to determining the impact of a development on tranquillity. Therefore, it is proposed to develop a methodology drawing on multiple sources such as local open space policies, BS8233 and WHO Guidelines (1999). Areas such as open spaces, PRoW, local nature reserves (LNRs) etc. will be considered within any assessment.

7.7.22 Reference will be given to soundscape guidance, such as 'Technical Advice Note 11: Air Quality, Noise and Soundscape' and 'Supporting Document 1: Soundscape Design.

Noise Study Area

7.7.23 The assessment will focus on the nearest residential receptors to the Project, within a region of approximately 500m from the boundary of the potential solar development areas, Project Substation, and Battery Energy Storage System (BESS). This is because operational noise emissions from solar developments are generally limited and based on experience of similar recent developments, significant effects are unlikely beyond this distance.

7.7.24 Similarly, construction traffic noise impacts will be localised and temporary in character. For construction phase traffic, a notional receptor at 10m from the edge of the road will be used because the change in road traffic noise level adjacent to any given road will be the same at all distances where noise from that route is dominant.

Determining Significance of Effect

Receptor Sensitivity

7.7.25 In accordance with the principles of Environmental Impact Assessment (EIA) and using professional judgement, the sensitivity of receptors (existing and proposed) to noise or vibration impacts during either construction or operational phases have been defined in Table 7-32 below.

Table 7-32 Sensitivity/Value of Receptor

Sensitivity/ Value of Receptor	Description	Examples of Receptor Usage
Very High	Receptors where noise or vibration will significantly affect the function of a receptor	Auditoria/studios Specialist medical/teaching centres, or laboratories with highly sensitive equipment
High	Receptors where people or operations are particularly susceptible to noise or vibration. Sensitive ecological receptors known to be vulnerable to the effects of noise or vibration.	Residential Quiet outdoor areas used for recreation Conference facilities Schools/educational facilities in the daytime Hospitals/residential care homes Libraries Ecologically sensitive areas for example Special Protection Areas (SPAs)
Medium	Receptors Moderately sensitive to or vibration where it may cause some distraction or disturbance	Offices Restaurants Sports grounds when spectator noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf)
Low	Receptors where distraction or disturbance of people from noise or vibration is minimal	Residences and other buildings not occupied during working hours Factories and working environments with existing high noise levels Sports grounds when spectator noise is a normal part of the event

Significance of Effect

7.7.26 The significance of effect resulting from each individual potential impact type below is derived from the magnitude of the impact and the sensitivity or value of the affected receptor using the matrix presented in Table 7-33.

Table 7-33 Classification of Effects

Sensitivity/Value of Resource/Receptor	Magnitude of Impact			
	High	**Medium**	**Low**	**Very Low**
Very High	Major	Major	Moderate	Minor
High	Major	Moderate	Minor	Negligible
Medium	Moderate	Minor	Negligible	Negligible
Low	Minor	Negligible	Negligible	Negligible

7.7.27 With respect to the Classification of Effects outcomes from Table 7-33, effects of Negligible and Minor are considered to be not significant, whereas effects of Moderate and Major are considered to be significant, in EIA terms.

Potential Effects

Construction and Decommissioning

7.7.28 The construction of the Project will involve the use of construction plant that have the potential to generate noise effects at NSRs. Such activities will generally be limited both in intensity and/or duration. These potential effects will be mitigated through the implementation of a Construction Environmental Management Plan (CEMP) and a Decommissioning Environmental Management Plan (DEMP).

7.7.29 Some activities such as piling or horizontal drilling, which may be used if deemed necessary, have the potential to cause significant effects either because of an increased intensity for the former or due to potential extended hours of operation for the latter, if used as part of the construction of the Proposed Development.

7.7.30 Some construction activities, such as piling operations, drilling or vibratory rolling techniques, can generate vibration levels in close proximity to their use (less than 50m typically); however, if used as part of the construction of the Proposed Development this would likely be for limited periods such that significant levels are unlikely.

7.7.31 Any effects associated with the construction and decommissioning of the Project are likely to be short-term and temporary in nature.

Operation

7.7.32 The potential for operational noise effects would be associated with electrical and mechanical plant associated with the Project. Whilst noise produced by the solar arrays themselves is expected to be minimal, large electrical plant such as transformers, batteries and inverters can generate noise, some of which may be tonal in nature, making it potentially more noticeable. The proposed Project Substation will include larger electrical plant (also tonal in nature and with higher noise emissions) as well as ancillary cooling units.

7.7.33 Primary mitigation will first involve adjusting the design of the Project to maximise (where possible) the distance from areas including noise-generating plant from noise-sensitive receptors. The detailed design of the Project, including final plant locations and selections, can be controlled through a requirement of the DCO that would establish suitable noise limits at the boundary of the Site.

7.7.34 Any effects associated with the operational phase of the Project are likely to be long-term in nature. The effect of the Project is determined with regard to the change in existing noise levels at the nearest NSRs to the Project.

7.7.35 Vehicular movements during the operation of the Project related to routine servicing and maintenance would be very limited and unlikely to be associated with any significant noise effects.

7.7.36 The plant likely to be used at the Project, when operational, would generate negligible levels of vibration at the boundary of the Project and therefore significant effects are not anticipated.

Proposed Scope

Scoped In

7.7.37 The following are scoped into the assessment of the construction phase of the Project.

- Noise and Vibration from Onsite Activities
- Project Generated Road Traffic Noise

7.7.38 The construction phase is considered to represent a worst-case scenario for the decommissioning phase which will generate lower levels of noise. As such, the decommissioning phase will not be assessed separately.

7.7.39 The following are scoped into the assessment of the operation phase of the Project.

- Noise from Fixed Plant and Equipment
- Low Frequency Noise
- Tranquillity Assessment

Scoped Out

7.7.40 The following are scoped out of the assessment of the construction phase of the Project:

- Tranquillity Assessment (due to temporary nature of effects)

7.7.41 The following are scoped out of the assessment of the operation phase of the Project:

- Noise and vibration from road traffic
- Vibration from electrical plant

Consultation

7.7.42 Engagement with the relevant consultees and stakeholders will be undertaken to develop the assessment methodology, including proposed measurement locations for the baseline noise measurements.

References

Ref 7-56 British Standard 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures (BS7445-1)

Ref 7-57 British Standard 5228: 2009+A1: 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2 (BS5228)

Ref 7-58 World Health Organization Guidelines for Community Noise (WHO 1999)

Ref 7-59 World Health Organization Environmental Noise Guidelines for the European Region (WHO 2018)

Ref 7-60 British Standard 8233: 2014 Guidance on sound insulation and noise reduction for buildings (BS8233)

Ref 7-61 British Standard 4142: 2014+A1:2019 Method for rating and assessing industrial and commercial sound (BS4142)

Ref 7-62 Highways England (2019) Design Manual for Roads and Bridges (DMRB) LA 111 Noise and Vibration Revision 2 (including the Wales National Application Annex to LA 111)

Ref 7-63 Calculation of Road Traffic Noise,1988 (CRTN)

Ref 7-64 Moorhouse, A T, Waddington, D C and ADAMS, M. (2011) NANR45: Procedure for the Assessment of Low Frequency Noise Complaints. London: Department for Environment, Food and Rural Affairs

Ref 7-65 Technical Advice Note 11: Air Quality, Noise and Soundscape' and 'Supporting Document 1: Soundscape Design

7.8 Ground Conditions

Introduction

7.8.1 This section of the Scoping Request sets out the approach to the assessment of ground conditions. The baseline conditions are first established with an overview of the results of the initial baseline surveys followed by the proposed methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is also set out.

Baseline Conditions

7.8.2 The Scoping Study Area (see Figure 12-2) predominantly comprises agricultural land utilised for grazing livestock or growing crops. The former Shell site in Maen Hir North represents the only brownfield land use within the Scoping Study Area. Several watercourses are present across the Scoping Study Area and Llyn Alaw, a reservoir, is to the south west of Maen Hir Central.

7.8.3 Historically, the Scoping Study Area has remained largely undeveloped with the former Shell site being constructed in the 1970s. Several, very small, localised quarries are present across the Scoping Study Area.

7.8.4 The British Geological Survey (BGS) (Ref 7-66) indicates that the Scoping Study Area is predominantly underlain by superficial deposits of Devensian Till. However, Alluvium is mapped locally adjacent to water courses. Peat is mapped locally in the areas where Alluvium is indicated to be present to the east of Llyn Alaw. Superficial deposits are locally absent at sporadic locations across the Scoping Study Area, which often corresponds with rock outcrops at ground level. The Scoping Study Area is not located within any areas associated with coal mining.

7.8.5 Bedrock is indicated to predominantly comprise the New Harbour Group, South Stack Formation and Ordovician Rocks, with localised igneous intrusions sporadically mapped across the Scoping Study Area.

7.8.6 The Till is categorised as an undifferentiated Secondary Aquifer (assigned where it is not possible to attribute either category A or B to the strata), whilst the Alluvium

is categorised as a Secondary A Aquifer (permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers). All bedrock geologies mapped underlying the Scoping Study Area are categorised as Secondary B Aquifers (predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering).

7.8.7 The whole island of Anglesey falls within a UNESCO designated Geopark due to its international geological significance, with more than 100 rock types, many types of surface sediments, and some of the oldest fossils in England or Wales.

7.8.8 The Scoping Study Area is in an area of low risk from unexploded ordinance.

7.8.9 The future baseline conditions of the Scoping Study Area, considering the uses are predominantly agricultural, are unlikely to significantly alter. Any changes would be minimal associated with localised uses of the site, for instance, a localised fuel spill.

7.8.10 Other than the ground investigation at the former Shell site, in respect of the remainder of the site, ground investigation is not anticipated to be required for the preparation of the PEIR. The rest of the site is in agricultural use comprising pasture, crops and animal grazing. Additionally, the development proposed has limited human exposure and even more limited human occupation. Ground investigation across the rest of the site would, therefore, only be undertaken where a potentially significant effect is identified by the Desk Study.

Baseline Surveys

- A Phase 1 Geo-Environmental Desk Study has been undertaken which will provide supporting baseline data to the EIA. A field reconnaissance (walkover) to determine the nature of the Scoping Study Area and its surroundings including current and former land uses, topography and hydrology was also carried out.

7.8.11 The desk study included the following:

- Acquisition and review of:

- Historical Ordnance Survey maps, to identify former potentially contaminative uses at the Scoping Study Area, and an assessment of the associated contamination risks
- A third-party environmental database search to identify flooding warning areas, local landfills, pollution incidents, abstractions, environmental permits etc. which may have had the potential to have environmental impact on the Scoping Study Area
- Historical aerial photographs (Google Earth) and other imagery (third-party environmental database search)
- Topographical, geological and hydrogeological maps
- Natural Resources Wales Interactive Viewer (Ref 7-67)
- British Geological Survey (BGS) archive records and mapping

7.8.12 A ground investigation has been completed on the former Shell site (Ref 7-68) in 2016. The Report will be reviewed as part of the Phase 1 Desk Study to inform the Preliminary Environmental Impact Report (PEIR).

7.8.13 A preliminary ground investigation will be undertaken within the former Shell site (see Figure 7-21, to inform the PEIR, if reliance cannot be gained on the third party report. This is likely to involve the following:

- Dynamic 'windowless' sampling (borehole drilling), with recovery of disturbed samples for geotechnical characterisation and chemical analysis, and in situ Standard Penetration Tests (SPTs), to a maximum depth of 4.0m below ground level (bgl), to assess shallow ground conditions and allow installation of gas and groundwater monitoring and sampling wells.
- Installation of gas and groundwater monitoring wells in percussion boreholes at a number of the windowless sampler boreholes, to allow gas concentration and groundwater level monitoring and collection of groundwater samples (and if necessary, quality testing).
- Trial pitting by mechanical excavator with recovery of disturbed samples for geotechnical characterisation and chemical analysis, and in situ hand shear vane tests, to a maximum depth of 3.5m bgl, to assess shallow ground conditions.

- Analysis of soil chemical and geotechnical samples for analysis at United Kingdom Accreditation Service (UKAS) and Monitoring Certification Scheme (MCERTS) accredited laboratory (as appropriate).
- Post investigation gas concentration and groundwater level monitoring visits on 4 occasions over a one month period in accordance with the frequencies stipulated in CIRIA C665.

7.8.14 The above data will be used to collate a conceptual site model to determine the likely contaminant linkages which could give rise to unmitigated environmental effects and the features that could give rise to unmitigated geotechnical effects.

Assessment Methodology

Overview

7.8.15 The likely significant effects as a result of the Project during the construction, operation and decommissioning phases will be assessed against the baseline.

7.8.16 If required and appropriate, measures will be proposed to avoid, prevent, mitigate, reduce or offset any significant negative effects and any residual effect will be identified.

7.8.17 The existing soil and groundwater conditions are to be defined following the baseline study by the Phase 1 Geo-Environmental Desk Study (referenced above) and the existing Ground Investigation Report for the former Shell site, which will use the potential 'source-pathway-receptor contaminant linkage' (S-P-R) concept to assess contaminated land risk as introduced in the Environmental Protection Act 1990 and to inform the assessment of likely significant effects on the environment in EIA terms. Any risk considered to be greater than 'low', would be carried through to EIA. Potential geotechnical risks, including slope stability, mining, ground instability risks, or possible shallow bedrock, will also be assessed.

7.8.18 Three potential impacts exist for any given site, all of which need to be considered in a risk assessment. These are:

- The site impacting upon itself
- The site impacting on its surroundings
- The surroundings, impacting the site

7.8.19 These potential S-P-R linkages will then be investigated, where impacts which could give rise to significant effects are identified, by undertaking ground investigation works. The information from the Phase 1 Geo-Environmental Desk Study and Ground Investigation will be used to develop the ground model (GM) and a Conceptual Site Model (CSM). This CSM will be based on a ground model of the on-site physical conditions and an exposure model of the possible contaminant linkages. The CSM forms the basis for Generic Quantitative Risk Assessment (GQRA), which will be undertaken in accordance with Environment Agency (EA) guidance, Land Contamination Risk management (LCRM). Depending on the outputs of the GQRA, a Detailed Quantitative Risk Assessment (DQRA) may be required, which would be undertaken post-DCO.

7.8.20 Environmental effects related to ground contamination are assessed by first identifying pollution linkages. A pollution linkage is said to exist where three conditions are satisfied:

- There is a source contaminant with the potential to cause harm to human health, property (including buildings) or the wider environment;
- There is a receptor (e.g. people, property, the environment) which might be harmed by the source of contamination; and
- There is a pathway by which the source can reach the receptor, so that harm can be caused.

7.8.21 On any particular site, there may be multiple sources, pathways and receptors and each source-pathway-receptor contaminant linkage must be examined and risk assessed. This is usually done in a series of stages or tiers, starting with a general, more conservative approach, but becoming more in-depth and site-specific if a more detailed approach is warranted (usually where the ground contamination issues (e.g. a contamination plume at depths, or with multiple sources) are very complex to resolve).

7.8.22 The stages of assessment are summarised as:

- Hazard identification
- Generic risk assessment
- Detailed risk assessment

- Risk evaluation

7.8.23 The stages of assessment from LCRM are detailed in Table 7-34.

Table 7-34 Risk Assessment Stages

Hazard Identification
• The potential pollution linkages are listed, and professional judgement is used to determine which of these can be considered plausible, i.e. there is a realistic probability that environmental damage might take place. • Only the plausible linkages need be considered further, in the generic risk assessment.
Generic Risk Assessment
• All the plausible linkages are considered in the light of ground investigation test results. • The concentrations of chemicals in the ground are compared, using specified statistical techniques, with published values (Generic Assessment Criteria), which are deemed indicative of minimal risk, for example to human health, plant life or the water environment.
Detailed Risk Assessment
• Where concentrations exceed the assessment criteria there is a need to identify potential mitigation measures. • Mitigation can include more detailed risk assessment using site-specific conditions rather than generic ones. • Mitigation measures can also include engineering work (also known as remediation), such as removal or treatment of the contaminant or severing of the pathway between the contaminant and the potential receptor, thereby breaking the linkage. • It is not always possible to completely remove an environmental effect and a residual impact may remain, or some secondary impacts may be generated. Accepting a secondary or residual impact may often involve a trade-off, which must be judged to be reasonable. An example of a trade-off might be the removal of contaminated soil from a development site, but the secondary impact would be increased lorry traffic and risk of road traffic accidents during the removal.
Risk Evaluation
• Risk Evaluation is used frequently in the decision-making process.

- This may involve more in-depth scientific analysis or professional judgement and local experience and can take place at any stage in the assessment process.
- The LQM CIEH Suitable for Use Levels (S4UL) and Water Framework Directive (WFD) generic criteria are by design very conservative in terms of providing protection to health and the environment. Consequently, a moderate exceedance of a criterion does not mean a sudden change from acceptable risk to unacceptable risk. Risk Evaluation allows for other factors to be considered as part of the risk assessment (where applicable), and a proportionate, considered approach to mitigation recommendations provided.

7.8.24 In accordance with good practice, the published guidance documents referenced in Appendix 5-1 will also be used in the assessment.

Study Area

7.8.25 The extent of the Ground Conditions Scoping Study Area is the Scoping Boundary and the immediate surrounding area (see Figure 7-22).

7.8.26 The 'immediate surrounding area' is defined for the purposes of the assessment as land within close proximity to, or bordering the Scoping Boundary (i.e. less than 250m from the Scoping Boundary) which has the potential to be a contaminant source and where there is a potential pathway for contaminant migration that may affect the receptors within the Scoping Boundary or alternatively be affected by the Project.

7.8.27 The inclusion of a 250m buffer is based on the ‘Guidance for the Safe Development of Housing on Land Affected by Contamination’ (Ref 7-69). This buffer is a conservative approach due to the lower sensitivity of the Project relative to the low density housing in the surrounding area, but reasonable in the context of the Project taking into account the distance over which contamination can migrate.

Determining Significance of Effect

7.8.28 The approach to assessing and assigning significance to an environmental effect is derived from a variety of sources including, legislative requirements, topic-specific guidance, standards and codes of practice, advice from statutory consultees and other stakeholders and the expert judgement of the team undertaking the EIA.

Receptor Sensitivity

7.8.29 The criteria used to determine receptor sensitivity are set out in Table 7-35.

Table 7-35 Framework for Determining Sensitivity of Water Resources and Ground Conditions Receptors

Receptor Sensitivity	Sensitivity Description
High	• A large, medium or small water body with a National Resources Wales (NRW) Quality classification of "High" or "Good" and / or a Current Chemical Quality classification of "Good" • The hydrological receptor and downstream environment has limited capacity to attenuate natural fluctuations in hydrochemistry and cannot absorb further changes without fundamentally altering its baseline characteristics / natural processes • The hydrological receptor is of high environmental importance or is designated as having national or international importance, such as Special Areas of Conservation (SACs) and Sites of Special Scientific Interest (SSSIs) • The hydrological receptor is designated for supporting ecological interest • The hydrological receptor acts as an active floodplain or other flood defence • The hydrological receptor will support abstractions for public water supply or private water abstractions for more than 25 people • Abstractions used for the production of mass-produced food and drinks • Areas containing geological or geomorphological features considered to be of national importance (e.g. SSSIs) • Local groundwater constitutes a valuable resource because of its high quality and yield, e.g., aquifer(s) of local or regional value, statutorily designated nature conservation sites (e.g., SACs and SSSIs) dependent on groundwater
Moderate	• A large, medium or small water body with an NRW Quality classification of "Moderate" • The hydrological receptor and downstream environment will have some capacity to attenuate natural fluctuations in

	hydrochemistry but cannot absorb certain changes without fundamentally altering its baseline characteristics / natural processes • The hydrological receptor is of regional environmental importance (such as Local Nature Reserves), as defined by the NRW • The hydrological receptor does not act as an active floodplain or other flood defence • The hydrological receptor supports abstractions for public water supply or private water abstractions for up to 25 people • Areas containing geological features of designated regional importance including Regionally Important Geological/geomorphological Sites (RIGS), considered worthy of protection for their historic or aesthetic importance • Aquifer of limited value (less than local) as water quality does not allow potable or other quality sensitive uses. Exploitation of local groundwater is not far-reaching • Local areas of nature conservation known to be sensitive to groundwater effects
Low	• A large, medium or small water body with an NRW Quality classification of “Poor” or “Bad” and / or a Current Chemical Quality classification of “Fail” • The hydrological receptor and downstream environment will have capacity to attenuate natural fluctuations in hydrochemistry but can absorb any changes without fundamentally altering its baseline characteristics / natural processes • The hydrological receptor is not of regional, national or international environmental importance • The hydrological receptor is not designated for supporting freshwater ecological interest • The hydrological receptor does not act as an active floodplain or other flood defence • The hydrological receptor is not used for recreational use • The hydrological receptor does not support abstractions for public water supply or private water abstractions • Geological features or geology not protected and not considered worthy of specific protection

	• Poor groundwater quality and / or very low permeability make exploitation of groundwater unfeasible. Changes to groundwater not expected to affect local ecology

Magnitude of Impact

7.8.30 The criteria used to determine magnitude of impact are set out in Table 7-36.

Table 7-36 Framework for Determining Magnitude of Change

Magnitude of Effect	Magnitude Description
High	• A short or long term major shift in hydrochemistry or hydrological conditions sufficient to change the ecology of the receptor. This change would equate to a change of an EA Quality classification by two classes, e.g., from “High” to “Moderate” • A sufficient material increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water • A major (greater than 50%) or total loss of a geological receptor or peat habitat site, or where there would be complete severance of a site such as to fundamentally affect the integrity of the site (e.g., blocking hydrological connectivity) • Major permanent or long term change (i.e., degradation of quality) to groundwater quality or a reduction in the available yield • Major permanent or long-term negative change to geological receptor • Changes to quality or water table level will cause harm to local ecology or will lead to flooding issue • A major permanent or long-term change to geological receptor, such as the alteration of pH or drying out of peat • Changes to groundwater quality or water table level that will negatively alter local ecology or will lead to a groundwater flooding issue
Moderate	• A short or long term non-fundamental change to the hydrochemistry or hydrological environment, resulting in a change in ecological status. This would equate to a change of

Magnitude of Effect	Magnitude Description
	an EA water quality classification by one class, e.g., from "Good" to "Moderate" • A moderate increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water • A loss of part (approximately 15 % to 50 %) of a geological receptor or peat habitat site, major severance, major effects to its integrity as a feature, or disturbance such that the value of the site would be affected, but could still function • Changes to the local groundwater regime may slightly affect the use of the receptor • The yield of existing supplies may be reduced or quality slightly deteriorated • Fundamental changes to local habitats may occur, resulting in impaired functionality
Low	• A detectable non-detrimental change to the baseline hydrochemistry or hydrological environment. This change would not reduce the EA Current Ecological Quality classification • A marginal increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water • A detectable but non-material effect on the receptor or a moderate effect on its integrity as a feature or where there would be a minor severance or disturbance such that the functionality of the receptor would not be affected • Changes to groundwater quality, levels or yields that do not represent a risk to existing baseline conditions or ecology
Negligible	• No perceptible changes to the baseline hydrochemistry or hydrological environment • No change to the EA water quality classification • No increase in the probability of flooding onsite and offsite

Magnitude of Effect	Magnitude Description
	• A slight or negligible change from baseline condition of geological resources • Change hardly discernible, approximating to a 'no change' in geological condition

Significance of Effect

7.8.31 The predicted significance of the effect is determined through a standard method of assessment and based on professional judgement, considering both the sensitivity of the receptor and the magnitude of the potential impact as defined in Table 7-37. Effects of moderate significance or greater are typically considered to be significant within the EIA process, but this is tested with professional judgement.

Table 7-37 Framework for Assessment of the Significance of Effect

Magnitude of Effect	Sensitivity of Resource or Receptor		
	High	**Moderate**	**Low**
High	Major	Major	Minor
Moderate	Major	Moderate	Minor
Low	Moderate	Minor	Negligible
Negligible	Negligible	Negligible	Negligible

7.8.32 Effects of moderate or greater significance are typically considered to be significant in terms of the EIA but this is tested with professional judgement. Where effects are considered as marginal, i.e. moderate/minor a precautionary approach will be adopted.

Potential Effects

7.8.33 The construction and decommissioning phases of the Project could generate some direct and indirect impacts, with temporary effects. Subject to the findings of further investigations, the potential impacts could include those set out below:

- Construction workers may come into direct contact with potentially localised contaminated soils and groundwater (to be further defined based on

findings of the site investigation) during the construction and decommissioning of the Project.

- As with any historical farmyards and farmland, the potential exists for further (unknown) limited contamination hotspots to be discovered during construction works.
- Hazardous gas emissions generated could present a potential health risk to construction workers, off-site commercial users and members of the public.
- Contaminated dust emissions (particularly associated with construction vehicle movement) could present a potential health risk to construction workers, off-site commercial users and members of the public.
- Dust emissions arising from general construction activities could result in impaired visibility on the adjacent highways and rail infrastructures.
- Ground gas and / or residual volatile contaminants (if present) could pose a risk to construction workers within confined spaces.
- Controlled Waters could be affected during demolition and construction by accidental spillage of oil and diesel through infiltration of polluted runoff through the soil and groundwater to the controlled water.
- Generation and temporary stockpiling of potentially surplus materials (depending on final site levels) coupled with inefficient management of stockpiled materials could lead to direct and indirect contamination impacts from silt-laden runoff on surface water features, and flora and fauna.
- Site levels constructed below the existing water table could result in periodic flooding of the development unless adequately mitigated.
- Changing in groundwater levels as a result of excavations within the Scoping Study Area. This may be a temporary direct or an indirect impact affecting hydrological receptors, the Geological site of special scientific interest (SSSI) and the rail line to the north.
- Uncontrolled dewatering of excavations could create surface water runoff if not adequately mitigated.
- In the absence of mitigation, demolition, excavation and construction works could introduce new contaminant sources and pathways creating a possible

link to site workers, visitors and contamination within the soil and groundwater.

- Excavation of temporary cuttings and placement of temporary slopes and over-steepened stockpiles could result in adverse geotechnical performance of infrastructure assets unless appropriately designed and mitigated.
- Damage to, or loss of geology of UNESCO importance.

7.8.34 During operation, the Project may generate a range of potential direct and indirect impacts, affecting a number of receptors. Assessment is necessary to identify the effects. However, it is considered they could include:

- Future site users and occupiers who may come into contact with residual contaminants (if present) or ground gases.
- Impact to drainage systems from changes to the groundwater flow regime, unless appropriately designed and mitigated.
- Excavation of permanent cuttings and placement of permanent slopes could result in adverse geotechnical performance of infrastructure assets unless appropriately designed and mitigated.
- Unacceptable heave or settlement beneath structures and infrastructure unless appropriately designed and mitigated.
- Degradation of concrete due to ground conditions, unless appropriately designed and mitigated.

Proposed Scope

Scoped In

7.8.35 The assessment will assess the likely significant environmental effects of the Project on the geology, soils and groundwater within the Scoping Study Area and in the local area.

7.8.36 The assessment involves consideration in terms of the naturally occurring geological conditions and any man-made deposits, known as Made Ground. Consideration is given to the physical nature of the rocks, soils and Made Ground, together with information on existing chemical or anthropogenic contamination,

ground gas and geotechnical features arising from the former and existing uses of the Scoping Study Area.

7.8.37 The hydrogeological regime, comprising the groundwater in any permeable deposits (rock, soil or Made Ground) beneath the Scoping Study Area, and the hydrological regime (surface water), will be described in so much as they interact with land contamination and geotechnical / construction risk.

Scoped Out

7.8.38 The Scoping Study Area is not located within a mineral safeguarding area, with the dormant Mynydd Paris mine located 1km east, the only mineral safeguarded area nearby. As the Scoping Study Area is not in a safeguarding area, and considering the UNESCO geopark status, mineral extraction is not considered to be viable at the Scoping Study Area, the Project is not anticipated to have any likely significant effects on mineral extraction and it is proposed that mineral extraction is scoped out.

Consultation

7.8.39 Engagement with NRW and Isle of Anglesey County Council has commenced to develop the assessment methodology. Engagement with Geomon Geopark will also be undertaken to inform the assessment methodology.

References

Ref 7-66 British Geological Survey (BGS) Geology Viewer

Ref 7-67 Natural Resources Wales Interactive Viewer

Ref 7-68 A ground investigation has been completed on the former Rhosgoch Oil Storage Depot site

Ref 7-69 Guidance for the Safe Development of Housing on Land Affected by Contamination'

7.9 Soils and Agriculture

Introduction

7.9.1 This section of the Scoping Request sets out the approach to the assessment of Soils and Agriculture. The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

Baseline Conditions

7.9.2 Agricultural land quality is assessed using a system of Agricultural Land Classification (ALC) devised by the then Ministry of Agriculture, Fisheries and Food (MAFF) in 1988 (Ref 7-70). This grades land into five grades, with Grade 3 subdivided into subgrades 3a and 3b. Planning Policy Wales defines land of Grades 1, 2 and 3a as the "best and most versatile" (BMV) land.

7.9.3 The soils are shown on the Soil Survey of England and Wales 1:250,000 Sheet 2 "Soils of Wales" (1983) (Ref 7-71) as falling mostly in the 713d Cegih association, described as slowly permeable seasonally waterlogged fine silty and clayey soils, with some fine silty and fine loamy soils with slowly permeable subsoils.

7.9.4 The Welsh Government has produced a Predictive ALC map (v2, 2021) (Figure 7-23). This shows land around Bodewryd to be mostly predicted subgrade 3b. The section north and east of the reservoir is shown as mostly subgrade 3a. The southern section is shown as a mixture of subgrades 2 and 3a, with patches of subgrade 3b.

7.9.5 The Scoping Study Area is mostly farmed, with most of the land down to grassland. Some of this is mown as forage, and some is grazed. Periodically fields in the area are cultivated and reseeded, and this practice and frequency will be examined as part of the baseline surveys. Field sizes are very variable, with the southern area in particular having generally small field sizes.

Baseline Surveys

7.9.6 The Welsh Government Guidance Note (v2.1) (Ref 7-72) advises that where land is shown as predictive Grades 1, 2 and 3a, ALC field survey is required. Where land is shown as predictive grades 3b, 4 and 5, survey is not required.

7.9.7 The Welsh Government ALC Frequently Asked Questions (Ref 7-73) advises that there is no prescribed guidance on the sampling density of field surveys. A detailed ALC normally involves one per hectare, but "depending upon the type of development, location, scale, purpose of the survey, availability of existing ALC data etc, less detailed surveys (or sometimes more detailed) surveys may be undertaken, but expert advice must be sought by a soil scientist or other practitioner experienced in undertaking ALC survey work".

7.9.8 The ALC survey will be undertaken initially across the areas predicted to be of BMV quality (as required in the Guidance Note), at a semi detailed survey level, with samples taken regularly on a 200m grid. This will provide ALC data for the whole Site. This may then be supplemented with detailed survey in locations where there is expected to be soil disturbance (e.g. for fixed equipment) or in locations where it is considered important to determine the grade boundaries at a detailed scale.

7.9.9 Soil information will be collected as part of the ALC survey, and can feed into soil management and handling advice.

7.9.10 The Site is farmed by a number of different landowners and occupiers, on a mixture of full and part time, owned and rented bases. The landowners potentially affected will be contacted and farming circumstances will be assessed, including effects on farm buildings, infrastructure, labour and enterprise operated.

Assessment Methodology

Approach

7.9.11 The assessment will consider the agricultural land quality of the Scoping Study Area, and the extent to which the Project will affect the inherent land quality. It will consider the method of construction and decommissioning and the impact this would have on soil qualities, and in particular whether the construction and decommissioning will result in any sealing or permanent downgrading of

agricultural land. It will consider the removal of the panels and the reversibility of the impact, and it will consider the extent to which agricultural use can continue during the life of the Project.

7.9.12 The assessment will consider soils. Clayey soils in wet climate areas are less resilient to being handled and trafficked, and the assessment will therefore consider the soils and the methodologies appropriate to minimise disturbance to soil structure from the Project.

7.9.13 The effect on the nature of the farm business, on farm enterprises and farm labour, will also be assessed.

Study Area

7.9.14 The study area is the Scoping Study Area in addition to adjoining agricultural land if that might be affected (e.g. it forms part of a larger affected farm business).

Determining Significance of Effect

7.9.15 The methodology to determine significance of effect is based on the Institute of Environmental Management and Assessment (IEMA) Guide “A New Perspective on Land and Soil in Environmental Impact Assessment” (February 2022) (hereafter the 'IEMA Guidance') (Ref 7-74).

7.9.16 The assessment methodology identifies the sensitivity of the various receptors in terms of their importance (e.g. BMV land quality) and their susceptibility to damage when being trafficked (e.g. sensitive soil type).

7.9.17 The IEMA Guidance considers land in Wales of ALC Grade 1, 2 and 3a to be of “very high” sensitivity, and land of Subgrade 3b to be of “medium” sensitivity. Land of Grades 4 and 5 is “low” sensitivity.

7.9.18 The methodology considers soils of high clay content in wetter climate regions to be sensitive to damage from trafficking.

7.9.19 The IEMA Guide does not provide magnitude and sensitivity definitions for farm businesses, although effects are described in paragraph 8.3.3. The criteria in the tables below are based on professional judgement. The methodology considers farm businesses to be more resilient to change. Full-time businesses that are terminated by proposals are identified as a major adverse magnitude of impact,

with farm businesses less affected being identified as moderate or minor magnitude impacts. The sensitivity of farms is reflective of their reliance to change.

7.9.20 The criteria used to determine sensitivity is set out in Table 7-38.

Table 7-38 Receptor Sensitivity Criteria

Sensitivity	ALC/biomass production (i)	Sensitivity of topsoil and subsoil (ii)	Agricultural businesses
Very High	Land of ALC Grades 1, 2 and Subgrade 3a	-	-
High	-	High clay soils where the FCD (iii) is >150, or medium textured soils where the FCD is >225	-
Medium	Land of ALC Subgrade 3b	High clay soils where the FCD is <150, or medium textured soils where the FCD is <225	Full-time businesses, and farm businesses where the location of land is particularly important such as dairy farms.
Low	Land of ALC Grades 4 and 5	Soils with a high sand fraction where the FCD is <225	Part-time farms or farms with low sensitivity to change, e.g. arable land held on short-term arrangements.
Negligible	Land of ALC Grades 4 and 5 with only indirect links	-	Agricultural land that is not farmed or does not form part of a farm business.

(i) For the full list please refer to the IEMA Guide (2022) Table 2

(ii) For the full list please refer to the IEMA Guide (2022) Table 4

(iii) Field Capacity Days, i.e. days when the soil is replete with water

7.9.21 The impact magnitude in the IEMA Guide is based on the “permanent, irreversible loss of one or more soil functions or soil volumes (including the permanent sealing or land quality downgrading)”. The assessment therefore considers whether there is permanent sealing or downgrading as a result of the Project.

7.9.22 Under the IEMA Guide the methodology considers the permanent sealing of land or ALC downgrading of more than 20ha to be a major adverse magnitude of impact, in line with the IEMA guide. It considers losses of 5 – 20ha to be a moderate adverse magnitude and losses of less than 5ha to be slight adverse.

7.9.23 The criteria used to determine impact magnitude is set out in Table 7-39.

Table 7-39 Impact Magnitude Criteria

Magnitude of Impact	**Definition**	
	Effects on Agricultural Land (Soils)	**Effects on Farm Businesses (agricultural businesses)**
Major	Permanent, irreversible loss or improvement of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20ha or loss/gain of soil-related features.	The impact of the Project would render a full-time agricultural business non-viable.
Moderate	Permanent, irreversible loss or improvement of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area between 5 and 20ha or loss/gain of soil-related features.	Significant changes in the day-to-day management of a full-time agricultural business, or closure of a part-time agricultural business. Loss of buildings or impacts on drainage or water supplies affecting the potential for at least 5ha of adjacent land to be farmed fully.
Minor	Permanent, irreversible loss or improvement of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area less than 5ha or loss/gain of soil-related features.	Land take would require only minor changes in the day-to-day management / structure of a full-time agricultural business or land take would have a significant effect on a part-time business. Minor effects, direct or indirect, on surrounding land beyond the boundaries of the Site.
Negligible	No discernible loss or reduction or improvement of soil functions or volumes.	Land take would require only negligible changes in the day-to-day management of a full-time agricultural business or land take would require only minor changes to a part-time farm business.

7.9.24 The derivation of these definitions is related to previous guidance in England and Wales that referred to 20ha as a single magnitude threshold. Currently in Wales 20ha or more is considered a nationally significant loss, with less than 20ha usually considered a matter for the local planning authority to consider on a case-by-case basis.

7.9.25 The matrix used to determine the resulting significant of effects based on receptor sensitivity/importance and magnitude of impact is set out in Table 7-40.

Table 7-40 Significance of Effect Matrix

		Impact Magnitude				
		No Change	**Negligible**	**Minor**	**Moderate**	**Major**
Receptor Sensitivity	**Very High**	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

7.9.26 Whether these effects are significant or not in EIA terms is assessed as set out in Table 7-41 below.

Table 7-41 Significance Categories

Significance Category	**Typical Description**
Very Large	Effects at this level are material in the decision-making progress
Large	Effects at this level are likely to be material in the decision-making progress

Significance Category	Typical Description
Moderate	Effects at this level can be considered to be material in the decision-making process
Slight	Effects at this level are not material in the decision-making process
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error

7.9.27 As such, effects of slight or neutral significance are considered to be not significant and immaterial in the decision making process. Effects of moderate significance, depending on relavent individual environmental factors and based on professional judgement, may be considered to be signficant and material in the decision-making process. Effects of large or very large significance are considered to be significant and material in the decision making process.

Potential Effects

Construction

7.9.28 The potential for adverse effects on agricultural land (both on the soils and the land quality) resulting from the construction of the following elements of the Project are considered:

- temporary construction compounds
- Access Tracks and Solar Stations
- PV Arrays
- vehicle trafficking
- electrical cabling
- Project Substation and BESS

Temporary construction compounds

7.9.29 The topsoil removed for the construction compounds will be placed temporarily in a low-level bund or bunds on land outside the compound. These bunds are short-term storage areas for the topsoil, which will be used in restoration of these areas once construction is complete. As such, the temporary construction compounds will have no adverse long-term effect on soils or agricultural land quality.

Access Tracks and Solar Stations

7.9.30 The topsoil removed for the construction access tracks and Solar Stations will be placed in bunds in proximity to where it is excavated. These bunds are long-term storage areas for the topsoil, which will be used in restoration when the Project is decommissioned after 60 years of operation. As such, the access tracks and solar stations will not have any permanent signficant adverse effects on soils or agricultural land quality.

PV Arrays

7.9.31 The PV modules will be mounted onto legs that will be inserted into the ground using a pneumatic hammer action, which pushes the legs straight down into the soil to the correct depth. This process does not involve any digging or mixing of the soils. It is similar to the process of knocking-in a fence post as the soil simply moves laterally as the leg is knocked in. Agricultural land where ground conditions require concrete feet would be very unlikely to be best and most versatile land. As a consequence, there will be no significant adverse effects to soil resource and the inherent agricultural land quality.

Vehicle Trafficking

7.9.32 Construction of the Project will involve vehicle trafficking over agricultural land. There is the potential for the soil to be adversely affected by vehicular movement if not managed properly. However, a Soil Management Plan (SMP) will be in place to mitigate adverse effect to soils (e.g. compaction).

Electrical Cabling

7.9.33 Cabling around the PV modules is usually limited to the end of each string, connecting back to the transformers. This cabling normally involves a narrow trench with soils replaced in the same order as they were removed, shortly after the trench is dug. This operation does not cause a significant effect on soils.

7.9.34 A larger cable connection will be required between the parcels and the Project Substation (the Main High Voltage Cable Route) and from the Project Substation to the National Grid Substation (the Grid Connection Corridor). This will again involve a narrow trench, and short-term disturbance, and no long-term adverse effect on soils.

Project Substation and BESS

7.9.35 The BESS and Project Substation are anticipated to be co-located with the National Grid Substation. However, their location will be informed by surveys and further details will be provided in the PEIR and ES.

Operation

7.9.36 The land under and around the PV Arrays will be kept in grassland use and potentially farmed by the grazing of sheep or production of fodder. Depending upon the grazing regime, there may be periodic need for some mowing or topping of grassland, but this will be normal agricultural activity and should have no adverse effect on soils. As such, there will be no significant adverse effects on soil resource or agricultural land quality during operation.

7.9.37 The Project has the potential for adverse economic impacts, as a result of reduced agricultural income for the businesses affected during the operational stage. However, this will be mitigated by alternative incomes received by leasing of the land for the Project. It is anticipated that agricultural activity, involving grazing of sheep, will be part of the ongoing land management.

Proposed Scope

7.9.38 The following potential effects are scoped into the assessment:

- Potential effect on agricultural land quality from any works involving sealing of land, and whether those are reversible (i.e. permanent) or temporary effects.
- Potential effect of construction methodologies, at construction and decommissioning, and whether these works might result in the permanent downgrading of agricultural land.
- Potential effect on soils from any land work or trafficking (i.e. vehicle movements), and the extent to which these could affect soil structure, and whether that is a temporary or permanent effect.
- Potential effect on farm businesses, temporary or long term, and any adverse or beneficial effects on agricultural enterprises and land use.

7.9.39 Potential effects on soils and land quality during operation are scoped out of the assessment.

Consultation

7.9.40 Engagement with Welsh Government's Soils, Peatland and Agricultural Land use Planning Unit has commenced to agree the assessment methodology.

References

Ref 7-70 Agricultural Land Classification of England and Wales: revised guidelines and criteria for grading the quality of agricultural land, MAFF (1988).

Ref 7-71 Soil Survey of England and Wales 1:250,000 Sheet 2 "Soils of Wales" (1983)

Ref 7-72 Predictive Agricultural Land Classification Map (Wales) Guidance Note version 2.1, Welsh Government (May 2021)

Ref 7-73 Agricultural Land Classification: Frequently Asked Questions, Welsh Government (May 2021)

Ref 7-74 Institute of Environmental Management and Assessment (IEMA) Guide “A New Perspective on Land and Soil in Environmental Impact Assessment” (February 2022) (hereafter the 'IEMA Guidance')

7.10 Water Resources

Introduction

7.10.1 This section of the Scoping Report sets out the approach to the assessment of the likely significant effects of the Project on Water Resources. The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

Baseline Conditions

Hydrology

7.10.2 The Water Resources Study Area is located across the catchments of several watercourses, shown in Figure 7-24.

Maen Hir North

7.10.3 The following watercourses flow through the Maen Hir North area which sits within the Afon Wygyr catchment:

- The Afon Wygyr which largely flows through the area in a westerly direction.
- The Afon Tregynrig, a tributary of the Afon Wygyr, flows from the north of the area in a southerly direction and outfalls to the Afon Wygyr adjacent to the northern extent of the area.
- The Afon Glasgraig Fawr flows adjacent to the south east of the Maen Hir North area in a southerly direction towards Llyn Alaw Reservoir.
- The Afon Wen flows to the north of the area in an easterly direction towards Almwch.
- There are also several ordinary watercourses and ditches located across the area.

Maen Hir Central

7.10.4 The following watercourses flow through the Maen Hir Central area which sits within the Afon Alaw and the Afon Tan Rallt catchments:

- The Afon Alaw which largely flows through the area in a northerly and westerly direction.
- The Afon Glasgraig Fawr, a tributary of the Afon Alaw, flows towards and through the area in a southerly direction and outfalls to the Afon Alaw at the eastern extent of the Llyn Alaw Reservoir.
- There are also several ordinary watercourses and ditches located across the area.

Maen Hir South

7.10.5 The Maen Hir South area can broadly be split into two catchments, to the north and south:

- The northern catchment is associated with the Afon Ynys Fawr which flows in a northerly direction within the north of the area.
- The southern catchment is associated with the Afon Cefni which generally flows in a southerly direction through the area.
- The Afon Ysgoldy, a tributary of the Afon Cefni, flows in a southerly direction within the west of the area and outfalls to the Afon Cefni south of the area.
- The Afon Llandyfrydog is shown to be present to the north of this area within the area between Maen Hir Central and Maen Hir South.
- Additionally, there are several ordinary watercourses and ditches located across the area.

Flood Risk

7.10.6 Natural Resources Wales (NRW) note that the Development Advice Map (DAM) and associated planning policy 'TAN15: Development and Flood Risk' (Ref 7-75) is the current framework for assessing flood risk to and from new development.

7.10.7 The Welsh Government is due to implement a revised TAN15 which will be supported by the Flood Map for Planning. The Flood Map for Planning has no official status until the revised TAN15 is implemented; however it represents the best available information on flood risk. Further guidance on which dataset to use is being sought through consultation with NRW and Isle of Anglesey County Council. Until consultation is completed, to ensure consistency with the current

guidance, the DAM (shown in Figure 7-25) will be used to inform this Scoping Request.

Maen Hir North

7.10.8 NRW's DAM shows most of the Maen Hir North area to be located within Zone A (considered to be at little or no risk of fluvial or tidal/coastal flooding). There is an area of Zone C2 (areas of the floodplain without significant flood defence infrastructure, based on the extreme flood outline, equal to or greater than the 1 in 1000-year) located within the centre of the area, associated with the Afon Wygyr.

7.10.9 There are also small areas of Zone B (areas known to have been flooded in the past) adjacent to the Afon Wygyr.

7.10.10 NRW have provided flood extents associated with hydraulic modelling undertaken for a Flood Alleviation Scheme (FAS) for the town of Amlwch. The extents have been reviewed and they do not cover the Water Resources Study Area and will, therefore, not be considered any further in the assessment.

Maen Hir Central

7.10.11 NRW's DAM shows most of the Maen Hir Central area to be located within Zone A. There is an area of Zone C2 located within the east of the area, associated with the Afon Alaw and Llyn Alaw Reservoir.

7.10.12 There are also small areas of Zone B adjacent to the Afon Alaw and the Llyn Alaw Reservoir.

Maen Hir South

7.10.13 NRW's DAM shows the majority of Maen Hir South to be located within Zone A. There is an area of Zone C2 located within the south of the Water Resources Study Area, associated with the Afon Cefni and to the north of the area, between the Maen Hir South area and the Maen Hir Central area, associated with Afon Ynys Fawr and the Afon Llandyfrydog.

7.10.14 There are also small areas of Zone B adjacent to the Afon Cefni, Afon Ysgoldy, Afon Wynys Fawr and an ordinary watercourse.

Ordinary Watercourses and Ditches

7.10.15 There are several ordinary watercourses and ditches within the Water Resources Study Area which are not represented within the DAM. The Surface Water and Small Watercourses Flood Zones mapping shows parts of the area to be at risk from these ordinary watercourses and ditches. The flooding generally correlates with the location of existing surface water bodies as well as topographical features such as depressions and valley lines.

Reservoirs

7.10.16 The Water Resources Study Area is not located within any areas shown to be at risk of flooding from any reservoirs including Llyn Alaw.

Surface Water

7.10.17 It is understood from a desktop review of available information that the majority of the Water Resources Study Area is not served by a positive surface water drainage system. Existing highways may be served by highway drainage and/or a surface water network. Rainfall is believed to infiltrate into the ground, where geological and hydrogeological conditions allow, and then runoff at surface level once the infiltration capacity of the ground has been exceeded. Any runoff generated will likely be directed to local surface water bodies.

7.10.18 The surface water and small watercourses mapping indicates surface water flood risk is present throughout the Water Resources Study Area.

Groundwater

7.10.19 As described in Chapter 12 (Ground Conditions) of this Scoping Request, The British Geological Survey (BGS) indicates that the Water Resources Study Area is predominantly underlain by superficial deposits of Devensian Till. However, Alluvium is mapped locally adjacent to water courses. Peat is mapped locally in the areas where Alluvium is indicated to be present to the east of Llyn Alaw. Superficial deposits are locally absent at sporadic locations across the Scoping Study Area, which often corresponds with rock outcrops at ground level. The Scoping Study Area is not located within any areas associated with coal mining.

7.10.20 Bedrock is indicated to predominantly comprise the New Harbour Group, South Stack Formation and Ordovician Rocks, with localised igneous intrusions sporadically mapped across the Scoping Study Area. The Till is categorised as

an undifferentiated Secondary Aquifer (assigned where it is not possible to attribute either category A or B to the strata), whilst the Alluvium is categorised as a Secondary A Aquifer (permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers). All bedrock geologies mapped underlying the Scoping Study Area are categorised as Secondary B Aquifers (predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering).

7.10.21 The Water Resources Study Area is not indicated to be within a Ground Water Source Protection Zone and there is no Ground Water Protection Zone within at least a 1km radius of the Water Resources Study Area.

Water Quality

Surface Water Quality

7.10.22 Six Water Framework Directive (WFD) surface water body catchments are mapped across the Water Resources Study Area, shown in Figure 7-26:

- The Afon Goch Amlwch River Waterbody Catchment which has a WFD overall water body quality classification of 'moderate', with an ecological status of 'moderate' and a 'moderate' chemical status.
- the Afon Wygyr River Waterbody Catchment which has a WFD overall water body quality classification of 'moderate', with an ecological status of 'moderate' and a 'high' chemical status.
- The Afon Alaw River Waterbody Catchment which has a WFD overall water body quality classification of 'good', with an ecological status of 'good' and a 'high' chemical status.
- The Afon Alaw Bach River Waterbody Catchment which has a WFD overall water body quality classification of 'moderate', with an ecological status of 'moderate' and a 'high' chemical status.
- The Afon Goch Dulas Waterbody Catchment which has a WFD overall water body quality classification of 'moderate', with an ecological status of 'moderate' and a 'moderate' chemical status.

- The Afon Cefni Waterbody Catchment which has a WFD overall water body quality classification of 'good', with an ecological status of 'good' and a 'high' chemical status

7.10.23 There is no drinking water protected river catchment areas within the Water Resources Study Area. However, the Llyn Alaw Reservoir is designated a Drinking Water Protected Area (Lake).

Groundwater Quality

7.10.24 One Water Framework Directive (WFD) groundwater body catchment is mapped across the entire Water Resources Study Area. The Ynys Môn GW catchment has a WFD overall water body quality classification of 'poor'.

7.10.25 The Water Resources Study Area is located within the Ynys Mon Secondary Groundwater Drinking Water Protected Area which has been assessed to be 'not at risk'.

Other Designations

7.10.26 There are statutory ecologically designated sites within and adjacent to the Water Resources Study Area including:

- Llyn Alaw SSSI, located along the southern boundary of Maen Hir Central
- Salbri SSSI, located to the north of Maen Hir Central
- Llyn Hafodol and Cor Clegyrog, SSSI, located to the north of Maen Hir Central
- Cors Erddreniniog SSSI, located to the east of Maen Hir South
- Maen Gwyn SSSI, located to the west of Maen Hir South

7.10.27 With the exception of Maen Gwyn SSSI, which is designated for its geological interest, the SSSIs are designated for their ecological interest and have hydrological connectivity to the Water Resources Study Area The SSSIs are shown in Figure 7-15.

7.10.28 There are no groundwater dependent terrestrial ecosystems located within the Water Resources Study Area.

Foul Water

7.10.29 The Water Resources Study Area is located within Welsh Water's sewerage area, though it is not believed to be currently served by a positive foul water drainage system. It is understood that there will be no foul infrastructure associated with the Project.

Baseline Surveys

7.10.30 Baseline characterisation for this Scoping Request have been established through desktop study, using freely available information detailed below:

- Identification of flood risks, typically associated with fluvial and surface water sources, using:
- NRW's DAM
- NRW's Flood Zones for Surface Water and Small Waterbodies
- NRW's Flood Risk from Reservoirs
- Amlwch Flood Alleviation Model Outputs (January 2023) provided by NRW (supplied October 2023)
- Identification of existing catchment pressures using NRW's Water Watch Wales
- Review of soil, geological and hydrological information using BGS Mapping and Phase 1 Geo-Environmental Assessments

Assessment Methodology

Overview

7.10.31 The assessment will be developed through consultations with various stakeholders, including NRW, Isle of Anglesey County Council (IoACC) (in its role as the Lead Local Flood Authority (LLFA)), Welsh Water and the Canal and Rivers Trust.

7.10.32 The ES Chapter will cross-reference a Flood Consequence Assessment (FCA) report and a Sustainable Drainage Statement (SDS) report and accompanying surface water drainage strategy, which will be appended to the ES.

7.10.33 It is anticipated that the assessment will consider the construction, operation and maintenance, and decommissioning stages of the Project and will take account of

the potential influence of climate change on the surface water and flood risk receptors.

7.10.34 Climate change is integral to assessing the likely significant effects of a Project on water resources, in terms of potential changes to rainfall, river flows, and water resource demand and quality. The Water Resources chapter of the ES will consider climate change. The adoption of climate change allowances will be based on the NRW latest guidance which utilises the 'UK Climate Projections 2018' (UKCP18) (Ref 7-76).

Scoping Study Area

7.10.35 The Water Resources Study Area for this assessment corresponds with the Scoping Study Area. There are potential significant receptors, such as flood risk, surface water and water quality, that exist within these limits as well as cumulative impacts which will also be included within the assessment. These include flood risk and drainage pathways and potential receptors such as watercourses and groundwater.

Determining Significance of Effect

7.10.36 The approach to assessing and assigning significance to an environmental effect is derived from a variety of sources including, legislative requirements, topic-specific guidance, standards and codes of practice, the EIA Regulations, advice from statutory consultees and other stakeholders and the expert judgement of the team undertaking the EIA.

7.10.37 The significance of effects arising from the Project will be established through a combination of the identification of receptor sensitivity and magnitude of potential impacts.

7.10.38 Table 7-42 and Table 7-43 below present the proposed criteria and thresholds for the assessment of receptor sensitivity and of the magnitude of potential impacts.

Receptor Sensitivity/Importance/Value

Table 7-42 Framework for Determining Sensitivity of Water Resources and Ground Conditions Receptors

Receptor Sensitivity	Sensitivity Description
High	• A large, medium or small water body with a WFD Quality classification of “High” or “Good” and / or a Current Chemical Quality classification of “Good” • The hydrological receptor and downstream environment has limited capacity to attenuate natural fluctuations in hydrochemistry and cannot absorb further changes without fundamentally altering its baseline characteristics / natural processes • The hydrological receptor is of high environmental importance or is designated as having national or international importance, such as Special Areas of Conservation (SACs) and Sites of Special Scientific Interest (SSSIs) • The hydrological receptor is designated for supporting ecological interest • The hydrological receptor acts as an active floodplain or other flood defence • The hydrological receptor will support abstractions for public water supply or private water abstractions for more than 25 people • Abstractions used for the production of mass-produced food and drinks • Areas containing geological or geomorphological features considered to be of national importance (e.g. SSSIs) • Local groundwater constitutes a valuable resource because of its high quality and yield, e.g., aquifer(s) of local or regional value, statutorily designated nature conservation sites (e.g., SACs and SSSIs) dependent on groundwater
Moderate	• A large, medium or small water body with a WFD Quality classification of “Moderate” • The hydrological receptor and downstream environment will have some capacity to attenuate natural fluctuations in hydrochemistry but cannot absorb certain changes without fundamentally altering its baseline characteristics / natural processes

Receptor Sensitivity	Sensitivity Description
	• The hydrological receptor is of regional environmental importance (such as Local Nature Reserves), as defined by the NRW • The hydrological receptor does not act as an active floodplain or other flood defence • The hydrological receptor supports abstractions for public water supply or private water abstractions for up to 25 people • Areas containing geological features of designated regional importance including Regionally Important Geological/geomorphological Sites (RIGS), considered worthy of protection for their historic or aesthetic importance • Aquifer of limited value (less than local) as water quality does not allow potable or other quality sensitive uses. Exploitation of local groundwater is not far-reaching • Local areas of nature conservation known to be sensitive to groundwater effects
Low	• A large, medium or small water body with a WFD Quality classification of “Poor” or “Bad” and / or a Current Chemical Quality classification of “Fail” • The hydrological receptor and downstream environment will have capacity to attenuate natural fluctuations in hydrochemistry but can absorb any changes without fundamentally altering its baseline characteristics / natural processes • The hydrological receptor is not of regional, national or international environmental importance • The hydrological receptor is not designated for supporting freshwater ecological interest • The hydrological receptor does not act as an active floodplain or other flood defence • The hydrological receptor is not used for recreational use • The hydrological receptor does not support abstractions for public water supply or private water abstractions • Geological features or geology not protected and not considered worthy of specific protection

Receptor Sensitivity	Sensitivity Description
	• Poor groundwater quality and / or very low permeability make exploitation of groundwater unfeasible. Changes to groundwater not expected to affect local ecology

Magnitude of Impact

Table 7-43 Framework for Determining Magnitude of Change

Magnitude of Effect	Magnitude Description
High	• A short or long term major shift in hydrochemistry or hydrological conditions sufficient to negatively change the ecology of the receptor. This change would equate to a downgrading of a WFD Quality classification by two classes, e.g., from “High” to “Moderate” • A sufficiently material increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water • A major (greater than 50%) or total loss of a geological receptor or peat habitat site, or where there would be complete severance of a site such as to fundamentally affect the integrity of the site (e.g., blocking hydrological connectivity) • Major permanent or long term negative change (i.e., degradation of quality) to groundwater quality or a reduction in the available yield • Major permanent or long term negative change to geological receptor; • Changes to quality or water table level will cause harm local ecology or will lead to flooding issue • A major permanent or long term negative change to geological receptor, such as the alteration of pH or drying out of peat • Changes to groundwater quality or water table level that will negatively alter local ecology or will lead to a groundwater flooding issue
Moderate	• A short or long term non-fundamental change to the hydrochemistry or hydrological environment, resulting in a change in ecological status. This change would equate to a

Magnitude of Effect	Magnitude Description
	downgrading of a WFD water quality classification by one class, e.g., from "Good" to "Moderate" • A moderate increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water • A loss of part (approximately 15 % to 50 %) of a geological receptor or peat habitat site, major severance, major effects to its integrity as a feature, or disturbance such that the value of the site would be affected, but could still function • Changes to the local groundwater regime may slightly affect the use of the receptor • The yield of existing supplies may be reduced or quality slightly deteriorated • Fundamental negative changes to local habitats may occur, resulting in impaired functionality
Low	• A detectable non-detrimental change to the baseline hydrochemistry or hydrological environment. This change would not reduce the WFD Current Ecological Quality classification • A marginal increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water • A detectable but non-material effect on the receptor or a moderate effect on its integrity as a feature or where there would be a minor severance or disturbance such that the functionality of the receptor would not be affected • Changes to groundwater quality, levels or yields that do not represent a risk to existing baseline conditions or ecology
Negligible2	• No perceptible changes to the baseline hydrochemistry or hydrological environment • No change to the WFD water quality classification

[2]Negligible magnitude of change includes magnitude of effects that would be assessed as no change to the baseline scenario.

Magnitude of Effect	Magnitude Description
	• No increase in the probability of flooding onsite and offsite • A slight or negligible change from baseline condition of geological resources • Change hardly discernible, approximating to a 'no change' in geological condition

Significance of Effect

7.10.39 The predicted significance of the effect is determined through a standard method of assessment and based on professional judgement, considering both the sensitivity of the receptor and the magnitude of the potential impact as shown in Table 7-44. Effects of moderate significance or greater are generally considered significant but this is tested with professional judgement.

Table 7-44 Framework for Assessment of the Significance of Effect

Magnitude of Impact	Sensitivity of Resource or Receptor		
	High	**Moderate**	**Low**
High	Major	Major	Minor
Moderate	Major	Moderate	Minor
Low	Moderate	Minor-Moderate	Negligible
Negligible	Negligible	Negligible	Negligible

Potential Effects

7.10.40 The Project has the potential to have a variety of impacts on the water environment, through construction, operation and maintenance, and decommissioning phases, as follows:

Flood Risk to and from the Project

7.10.41 The Project could result in the loss of potential floodplain storage, impedance of overland flood flow routes, and loss/disturbance to existing surface water bodies through the temporary or permanent obstruction of watercourse and ditch channels. Such potential impacts could influence the flood risk posed on-site and to the downstream catchment.

7.10.42 Research detailed within the 'Hydrological Response of Solar Farms', 'Biodiversity Guidance for Solar Development' and 'Technical Information note TIN101: Solar Parks: Maximising Environmental Benefits' (Ref 7-77) suggests that the development of solar panels over a grassy field does not have a significant effect on the volume of runoff, the peak discharge, nor the time to peak. It is therefore anticipated that the Project will not have a significant effect in relation to increasing flood risk on-site and to the downstream catchment.

7.10.43 Other elements of the Project, such as the battery energy storage system (BESS), access roads where relevant, the construction logistics hub and the Project Substation may increase the impermeable area and, as such, without appropriate mitigation has the potential to increase rates and volumes of surface water runoff, increasing the likelihood of downstream adverse effects.

Water Quality

7.10.44 Surface water discharges in the construction phase and decommissioning phase have the potential to adversely affect water quality in receiving waterbodies, if not appropriately treated, which could have the potential to affect human health and sites of ecological importance.

7.10.45 The Project has the potential to adversely affect surface water and groundwater water quality, if unmitigated. In the unlikely event of a fire during the operational phase, pollutants may also enter water bodies or groundwater which could have a potential significant effect.

Potable Water Supply

7.10.46 The Project will involve the use and consumption of potable water during construction. This has the potential to affect water resource availability within the local region. However, this affect will be temporary and of a minor magnitude and is therefore not expected to be significant.

Foul Water - Quantity and Quality

7.10.47 It is understood that there will be no foul infrastructure associated with the Project and, therefore, there is not expected to be an increase in quantity post-development.

7.10.48 The Project will generate foul water during construction which has the potential to adversely affect available treatment capacity. However, this affect will be temporary and of a minor magnitude and is therefore not expected to be significant. Welsh Water should be consulted prior to the start of construction works if a connection point for foul water from welfare facilities is to be required during the temporary construction phase.

Proposed Scope

Scoped In

7.10.49 Based on an initial baseline assessment and identification of potential environmental impact, the following receptors are proposed to be scoped in across all phases of the Project:

- Flood risk
- Surface water - quantity
- Water quality

Scoped Out

7.10.50 The following aspects are proposed to be scoped out of the EIA for all phases of the Project:

- Foul water - quantity and quality
- Potable water

Consultation

7.10.51 The assessment will be developed in consultation with various stakeholders. Stakeholders to be consulted include:

- NRW
- Isle of Anglesey County Council
- Welsh Water
- Canal and River Trust (Wales)

7.10.52 Engagement via email to the above stakeholders has commenced to agree the assessment methodology and full responses are yet to be received.

References

Ref 7-75 Technical Advice Note 15: Development and Flood Risk (Welsh Assembly Government, July 2004)

Ref 7-76 UK Climate Projections 2018' (UKCP18)

Ref 7-77 TIN101: Solar Parks: Maximising Environmental Benefits (Natural England, 2011)

7.11 Climate Change

Introduction

7.11.1 This section of the Scoping Report sets out the approach to the assessment of Climate Change including both the effects of the Project on the climate, and the impact of climate change on the Project. The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

Baseline Conditions

Greenhouse Gas (GHG) Emissions

7.11.2 The baseline condition for the lifecycle GHG assessment is a 'business as usual' scenario where the Project does not go ahead. The current land use within the Scoping Study Area (see Figure 2-1) and the local area consists predominately of agricultural fields mainly under arable production, with a network of hedgerows, drains and ditches and woodland blocks. The abundance of vegetation within the Project suggests the current land use may operate as a carbon sink. The current land use has relatively low levels of land use GHG emissions in the context of the overall emissions in the wider area as it is largely arable land. Baseline agricultural GHG emissions are dependent on types of soil and vegetation present, fuel use for the operation of vehicles and machinery, and other inputs such as fertiliser and pesticide use. Agricultural emissions displaced from the proposed development are not considered, as it is assumed that these agricultural activities would continue in a new location hence no reduction.

7.11.3 The future baseline comprises existing carbon stock and sources of GHG emissions resulting from the existing activities within the Scoping Study Area, as well as the existing emissions from the generation of grid electricity if the Project does not go ahead.

Climate

7.11.4 The existing baseline condition is the historic and current climate as defined in terms of temperature, rainfall and other climatic factors. Existing baseline data will be gathered for the historic climatic factors from the nearest climate station (Valley) to the Project. Baseline data is displayed below in Table 7-45.

Table 7-45 Historic climatic data (1981 - 2010) at the nearest climate station (Valley)

Climate Variable	Baseline (1981 - 2010)	Source Ref 7-78
Temperature		
Mean annual maximum daily temperature (°C)	13.2	Met Office
Mean summer maximum daily temperature (°C)	18.2	Met Office
Mean winter minimum daily temperature (°C)	3.5	Met Office
Number of days of air frost per annum	20.3	Met Office
Highest temperature for baseline period (°C)	18.8 (July)	Met Office
Lowest temperature for baseline period (°C)	3.0 (February)	Met Office
Rainfall		
Mean annual rainfall (mm)	841.1	Met Office
Mean summer rainfall (mm)	59.1	Met Office
Mean winter rainfall (mm)	73.6	Met Office
Wettest month on average (mm)	103.5 (November)	Met Office
Driest month on average (mm)	48.4 (May)	Met Office
Other		
Mean monthly wind speed at 10m (knots)	12.2	Met Office

7.11.5 An initial review of UK Climate Projections 2018 (UKCP18) data for the 25 km grid square within which the Scoping Study Area is located suggests that by the 2050s time period (2040–2069), the region could experience an increase of around 1.9°C in summer mean air temperature at 1.5 m, and an increase of 1.5°C in winter mean air temperature at 1.5 m, compared to a 1981–2010 baseline period.

For the same time period, the summer mean precipitation could decrease by around 14%, whilst in winter it could increase by 8%. This is based on 50th percentile of the Representative Concentration Pathway (RCP) 8.5[3] scenario, a trajectory adopted by the Intergovernmental Panel on Climate Change (IPCC) that is considered to be the high-emissions global scenario with the greatest concentration of GHGs in the atmosphere.

Baseline Surveys/Information Gathering

7.11.6 The sources of information used to inform the baseline and assessment methodology include:

- UK Climate Projections (UKCP) (2018), in accordance with NPS-EN1 (2011)
- Intergovernmental Panel on Climate Change (IPCC) (2014) (Ref 7-79)
- World Business Council for Sustainable Development and World Resources Institute (2001) The GHG Protocol (Ref 7-80)
- Department for Energy Security and Net Zero (DESNZ, formally BEIS/DEFRA) (2023) Conversion Factors Database (Ref 7-81)
- Inventory of Carbon and Energy Database (2019) [Ref 7-82]

Assessment Methodology

Guidance

7.11.7 The assessment methodology is informed by the following guidance:

- IEMA Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022) (Ref 7-83)
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2020) (Ref 7-84)

Overview

7.11.8 The Climate Change assessment comprises three elements of assessment which have different receptors:

[3] The figures against each Representative Concentration Pathway (8.5 in this instance) refer to the radiative forcing in Watts per square metre at the end of the 21st Century, relative to pre-industrial conditions.

- Greenhouse Gas Emissions: potential adverse impact on the global climate through emissions generated by the Project and beneficial impacts from any net carbon reductions achieved by the Project.
- Climate change resilience and adaptation: potential effects on the Project as a result of climate change.
- In-combination effects: the effect of climate change on the effects assessed within the other technical assessments (e.g. the consideration of increased flood risk due to climate change within the Water Resources assessment).

Assessment Approach

Greenhouse Gas Emissions

7.11.9 The receptor for the GHG impact assessment is the global climate. The GHG assessment will follow a project lifecycle approach to calculate estimated GHG emissions arising from the construction, operation and decommissioning of the Project and to identify GHG 'hot spots' (i.e., emissions sources likely to generate the largest amount of GHG emissions). This will enable the identification of priority areas for mitigation in line with the principles set out in IEMA guidance.

7.11.10 In line with the World Business Council for Sustainable Development and World Resources Institute GHG Protocol guidelines, the GHG assessment will be reported as tonnes of carbon dioxide equivalent (tCO2e) and will consider the seven Kyoto Protocol gases:

- Carbon dioxide (CO2)
- Methane (CH4)
- Nitrous oxide (N2O)
- Sulphur hexafluoride (SF6)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Nitrogen trifluoride (NF3)

7.11.11 Expected GHG emissions arising from the construction activities, embodied carbon in materials and operational and decommissioning emissions of the Project, as well as baseline emissions, will be quantified using a calculation-based methodology as per the following equation, and aligned with the GHG Protocol.

Activity data x GHG emissions factor = GHG emissions

7.11.12 Department for Environment, Food and Rural Affairs (Defra) 2021 emissions factors [Ref 7-85] and embodied carbon data from the University of Bath Inventory of Carbon and Energy (ICE) [Ref 7-86] are among those that will be used as the primary data sources for calculating GHG emissions.

7.11.13 The UK carbon budgets (Ref 7-87 and Ref 7-88) are currently only available to 2037 (6th Carbon Budget). Where further carbon budgets are not available (7th, 8th and 9th Carbon Budget periods), these will be projected based on data published by the Climate Change Committee (CCC). Totals for these periods have not been approved or ratified and are not legally-binding, but indicative figures can provide valuable context at this stage.

7.11.14 The sensitivity of the receptor (global climate) to increases in GHG emissions is always defined as high as any additional GHG impacts could compromise the UK's ability to reduce its GHG emissions and therefore meet its future 5-year carbon budgets. Also, the extreme importance of limiting global warming to below 1.5°C this century is widely accepted by the International Paris Agreement and the climate science community.

Climate change resilience and adaptation

7.11.15 The receptor for Climate Change Resilience (CCR) is the Project itself including its construction, operation and maintenance, and decommissioning stages. The CCR assessment will provide a description of how the Project will be designed to be more resilient to the climate change effects identified during the review of the UKCP 2018 data.

7.11.16 A detailed assessment of climate change projections will be conducted for the Scoping Study Area boundary as part of the PEIR and the ES. The CCR review will qualitatively assess the Project's resilience to climate change considering climate parameters using UKCP 18 projections. This will be completed in liaison with the project design team and the other EIA technical disciplines by considering the climate change projections for the geographical location and timeframe of the Project. Potential climate change impacts on the Project and associated receptors will be identified, and to consider the potential consequence and likelihood of

occurrence of the impacts, taking account of the measures incorporated into the design of the Project.

In-combination Climate Change Impacts

7.11.17 The receptors for In-combination Climate Change Impacts (ICCI) are receptors within the surrounding environment that will be impacted by the Project in combination with future climatic conditions. Baseline conditions for the ICCI assessment are the future climatic conditions determined using the climate change projections data in the project's geographical location and assessment timeframe.

7.11.18 The assessment will identify the extent to which identified receptors in the surrounding environment are potentially vulnerable to and affected by ICCI. The impacts will be assessed in liaison with the technical specialists responsible for preparing the applicable technical chapters in the PEIR and the ES.

Study Area

7.11.19 The study areas for the three elements of the assessment are:

- Greenhouse Gas Emissions: All direct GHG emissions arising from activities undertaken within the Scoping Study Area during the construction, operation and maintenance, and decommissioning of the Project. It also includes indirect emissions embedded within the construction materials arising as a result of the energy used for their production, as well as emissions arising from the transportation of materials, waste and construction workers. The Study Area also includes activities that may be avoided or displaced as a result of the Project such as other grid electricity production activities.
- Climate change resilience and adaptation: The land within the Scoping Study Area
- In-combination effects: The study areas of relevant technical assessments within the PEIR and the ES, includes all environmental receptors identified within all of the other relevant technical assessments.

7.11.20 In accordance with the IEMA Guidance, all impacts of GHG emissions on the global atmosphere are inherently cumulative, so there is no basis to assess the

cumulative effects of GHG emissions of multiple projects within a particular geographic area. Climate change resilience and adaptation effects are specific to the Project, so cumulative effects are not anticipated. Therefore, cumulative assessment will not be carried out for the assessments in this chapter.

Determining Significance of Effect

Effects of the Project on Climate (GHG Emissions)

7.11.21 For the purposes of this assessment, it has been considered that any increases in GHG emissions compared to the baseline has the potential to have an impact, due to the high sensitivity of the receptor (global climate) to increases in GHG emissions. This is in line with the IEMA guidance, which states that the combined environmental effect of GHG is environmental degradation, and that this degradation is reaching a defined limit. Therefore, any GHG emissions or reductions from a project might be considered to be significant. As such, the application of the standard EIA significance criteria is not considered to be appropriate for GHG assessments.

7.11.22 While all new GHG emissions contribute to a negative environmental impact, some projects will replace existing developments or baseline activity that has a higher GHG impact. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible, considering its contribution to reduce GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050.

7.11.23 The level of significance associated with the GHG impact of a project is to be contextualised and assigned through the professional judgement of the appropriate practitioner in accordance with the IEMA guidance. The GHG impacts of the Project will be put into context on the UK's five-year carbon budgets, which set legally-binding targets for GHG emissions. GHG impacts will also be put into context for the sub-sectoral budgets for energy generation.

7.11.24 Net GHG emissions from the Project will be assessed through comparison with other likely alternative sources of electricity generation. The assessment will therefore seek to quantify any emissions reduction due to the displacement of fossil fuel power generation, specifically unabated combined cycle gas turbine

(CCGT), as this currently provides the UK's marginal generating capacity. This is the generating capacity that must be replaced with low-carbon alternatives for UK to achieve its net zero target.

7.11.25 Essentially, the lifetime generation in MWh from the Project is generation that no longer has to be provided by a CCGT, and the associated reduction in emissions can be quantified by multiplying the lifetime generation in MWh by a representative carbon intensity for a CCGT.

Effects of Climate Change on the Project

7.11.26 The methodology for the climate change resilience assessment will use a combination of quantitative information on climate change projections and qualitative information related to potential impacts.

The overall risk of different impacts will be assessed both initially, then in consideration after mitigation and resilience measures are accounted for. In accordance with the IEAM guidance, a risk assessment type process will be adopted to assess project resilience to climate change impacts. An initial risk profile is developed to assess the risks due to climate change in the development's lifecycle. Table 7-46 to

7.11.27 Table 7-47 show the methods and criteria used to assess the likelihood, magnitude and overall climate change resilience risk for the assessment.

Table 7-46 Likelihood criteria for risk assessment

Likelihood term	Qualitative	Quantitative
Rare	Highly unlikely to occur	5%
Unlikely	Unlikely to occur	20%
Moderate	As likely to occur as not	50%
Likely	Likely to occur	80%
Almost certain	Very likely to occur	95%

Table 7-47 Magnitude of consequence for risk assessment

Risk Areas	Magnitude of Consequence				
	Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
Asset damage, engineering, operational	Impact can be absorbed through normal activity	Adverse event that can be absorbed by taking business continuity actions	A serious event that requires additional emergency business continuity actions	A critical event that requires extraordinary / emergency business continuity action	Disaster with the potential to lead to shut down or collapse or loss of the asset / network
Health and safety	First aid case	Minor injury, medical treatment	Serious injury or lost work	Major or multiple injuries, permanent injury or disability	Single or multiple fatalities
Environment	No impact on baseline environment. Localised in the source area. No recovery required	Localised within site boundaries. Recovery measurable within one month of impact	Moderate harm with possible wider effect Recovery in one year	Significant harm with local effect Recovery longer than one year. Failure to comply with environmental regulations / consent	Significant harm with widespread effect. Recovery longer than one year. Limited
Social	No negative social impact	Localised, temporary social impacts	Localised, longterm social impacts	Failure to protect poor or vulnerable groups. National, longterm social impacts	Loss of social licence to operate. Community protests
Financial	x % IRR < 2% of turnover	x % IRR	x % IRR	x % IRR	x % IRR

Risk Areas	Magnitude of Consequence				
	Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
		2-10% of turnover	10-25% of turnover	25-50% of turnover	> 50% of turnover
Reputational	Localised, temporary impact on public opinion	Localised, short-term impact on public opinion	Local, long-term impact on public opinion with adverse local media coverage	National, short-term impact on public opinion. negative national media coverage	National, long-term impact with potential to affect the stability of the government
Cultural Heritage and cultural premises	Insignificant impact	Short term impact. Possible recovery or repair.	Serious damage with wider impact to tourism industry	Significant damage with national and international impact	Permanent loss with resulting impact on society

7.11.28 To identify the level of significance, the likelihood of a climate impact occurring is considered along with the consequence of the impact. Table 7-48 presents how the significance is determined.

Table 7-48 Identification of significance ("S" Significant "NS" Not Significant)

Consequence						
Likelihood		**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
	Rare	Low (NS)	Low (NS)	Medium (NS)	High (S)	Extreme (S)
	Unlikely	Low (NS)	Low (NS)	Medium (NS)	High (S)	Extreme (S)
	Moderate	Low (NS)	Medium (NS)	High (S)	Extreme (S)	Extreme (S)
	Likely	Medium (NS)	High (S)	High (S)	Extreme (S)	Extreme (S)

	Almost certain	High (S)	High (S)	Extreme (S)	Extreme (S)	Extreme (S)

In-combination Effects of Climate Change and the Project on Environmental Receptors

7.11.29 The in-combination impacts of climate change and the Project towards the environmental receptors will be qualitatively assessed for the construction, operation and maintenance, and decommissioning of the Project. The receptors will be identified and the significance of effect will be assessed by other ES technical specialists when undertaking this assessment.

Potential Effects

GHG Emissions

7.11.30 Table 7-49 provides the lifecycle stages, related activities and primary emission sources from the Project that will be considered in the GHG assessment, in line with the Publicly Available Standard (PAS) 2080 – carbon management in buildings and infrastructure (Ref 7-89).

Table 7-49 Potential sources of GHG emissions

Lifecycle stage	**Activity**	**Primary emission sources**
Product stage	Raw material extraction and manufacturing of products required to build the equipment for the Project. Due to the complexity of the equipment, this stage is expected to make a significant contribution to overall Project GHG emissions.	Embodied GHG emissions from energy use in extraction of materials and manufacture of components and equipment. Emissions of GHG from transportation of products and materials.
	Transportation of materials for manufacturing.	
Construction process stage	On-site construction activity including emissions from construction compounds.	Consumption of energy (electricity; other fuels) from plant, vehicles, generators, and worker travel. Fuel consumption from transportation of materials to the Site, where these
	Transportation of construction materials (where these are not included in product-stage).	

Lifecycle stage	Activity	Primary emission sources
	Travel of construction workers.	are not included in product-stage embodied emissions. Due to the nature of the equipment, this could require shipment of certain components over significant distances. GHG emissions from transportation and disposal of waste. GHG emissions from net loss of carbon sink. Provision of clean water, and treatment of wastewater.
	Disposal of waste materials generated by the construction process.	
	Land use change.	
	Water use.	
Operation and maintenance stage	Operation and maintenance of the Project.	GHG emissions from energy consumption. These operational emissions are expected to be negligible in the context of the overall Project GHG impact. Leakage of potent GHGs, such as SF6, during operation. GHG emissions from material use and waste generation resulting from ongoing site maintenance. Emissions from routine maintenance (including emissions from the transportation of workers) are expected to be negligible, but the periodic replacement of components has the potential to have significant impacts given the complexity of the equipment involved, and the embodied carbon of the components to be considered.
Decommissioning stage	On-site decommissioning activity.	Consumption of energy (electricity and other fuels) from plant, vehicles and generators on the Site. Emissions from the disposal and transportation of waste. This has the potential to be significant given the complexity of the equipment.
	Transportation and disposal of waste materials.	
	Worker travel.	

Lifecycle stage	Activity	Primary emission sources
		GHG emissions from transportation of workers to the Site.

7.11.31 GHG emissions from the Project will be put into context by comparing them with other likely alternative sources of electricity generation. The assessment will therefore measure any savings in emissions due to the generation of the electricity via solar PV as compared to other electricity generation methods such as CCGT.

7.11.32 Additional carbon sequestration resulting from land use change from arable to permanent grassland will be assessed. Any long term sequestration from permanent land use changes could be included as mitigation through removal of GHG emission from atmosphere. However, land use changes that are not permanent (for example, grassland that would be returned to arable land upon decommissioning of the Project) would not be accounted for.

7.11.33 A Construction Environmental Management Plan (CEMP) will be prepared and implemented by the selected Principal Contractor to include a range of good practice construction measures.

7.11.34 The final selection of any mitigation measures, if required, will be detailed as part of the lifecycle GHG effect assessment in the ES. This may include GHG emission mitigation measures concerning construction, operation and decommissioning of the Project.

Climate change resilience and adaptation

Temperature change

7.11.35 The Project and the various receptors in the surrounding environment may be vulnerable to changes in temperature with effects such as heat stress of materials and structures.

Sea level rise

7.11.36 The Project is not located in an area susceptible to sea level rise, based on review of the Flood Risk Assessment Wales Map (Ref 7-90), and no in-combination effects with other environmental disciplines are predicted. Therefore, the effects of sea level rise on the Project and the in-combination effects with other environmental disciplines are proposed to be scoped out of the assessment.

Precipitation changes (frequency and magnitude of precipitation events and droughts)

7.11.37 The receptors may be susceptible to precipitation changes, for example, land subsidence and damage to structure and drainage systems during periods of heave rainfall.

Wind

7.11.38 The receptors may be susceptible to changes in wind pattern, for example, high winds and falling trees could damage structures and assets.

7.11.39 A statement will be provided within the PEIR and the ES to describe how the Project will be adapted to improve its resilience to future climate conditions.

In-combination effects

7.11.40 In-combination Climate Impact Assessment identifies how the resilience of various receptors in the surrounding environment is affected by a combination of future climate conditions and the Project. The various receptors are to be identified by technical disciplines in the PEIR and ES. A statement will be provided within the ES to describe measures that could help mitigate the effects of climate change on the receptors.

Proposed Scope

7.11.41 GHG Impact Assessment is scoped in and will cover all aspects of the Project from raw products and manufacture of materials, through to construction, operation and maintenance, and decommissioning.

7.11.42 Climate Change Resilience assessment is scoped in and will consider the vulnerability of the Project to extreme weather events and changes in temperature, precipitation and wind patterns. Sea level rise is proposed to be scoped out as the Project is not in an area susceptible to sea level rise.

7.11.43 The In-combination Climate Impact Assessment is scoped in, and will identify the impact of the Project, in combination with climatic changes, on receptors identified by other environmental disciplines. The climate parameters relevant to the

assessment are detailed in Table 7-50 below together with the rationale for scoping in or out.

Table 7-50 Climate Parameters for the ICCI of the Project

Parameter	Scoped In/Out	Rationale for Scoping Conclusion
Temperature change	In	The various receptors in the surrounding environment may be vulnerable to changes in temperature with potential effects of the Project identified by technical specialists. A detailed assessment will be conducted as part of the PEIR and the ES.
Sea level rise	Out	The Project is not located in an area susceptible to sea level rise, based on review of the Flood Risk Assessment Wales Map, and no in-combination effects with other environmental disciplines are predicted.
Precipitation change (frequency and magnitude of precipitation events and droughts)	In	The environmental receptors may be susceptible to precipitation changes with the potential effects of the Project identified by technical specialists. A detailed assessment will be conducted as part of the PEIR and the ES.
Wind	In	The environmental receptors may be susceptible to changes in wind pattern with the potential effects of the Project identified by technical specialists. A detailed assessment will be conducted as part of the PEIR and the ES.

Consultation

7.11.44 Consultation will be undertaken following submission of this Scoping Request with statutory parties including Natural Resource Wales and the Isle of Anglesey County Council (IoACC) on climate change targets, aims, commitments, other projects, plans and policy that affect climate and baseline data, as well as any known future developments in close proximity to the Project.

References

Ref 7-78 UK Met Office (2019). UK Climate Averages.

Ref 7-79 IPCC (n.d.) IPCC 6th Assessment Report Sea Level Projections.

Ref 7-80 World Business Council for Sustainable Development and World Resources Institute (2001). The GHG Protocol: A Corporate Accounting and Reporting Standard.

Ref 7-81 Department for Energy Security and Net Zero (DESNZ) (2023) Conversion Factors Database (2023).

Ref 7-82 Inventory of Carbon and Energy Database (2019)

Ref 7-83 IEMA (2022) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance.

Ref 7-84 IEMA (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation.

Ref 7-85 Department for Environment, Food and Rural Affairs (Defra) 2021 emissions factors

Ref 7-86 University of Bath Inventory of Carbon and Energy (ICE)

Ref 7-87 Her Majesty's Stationery Office (HMSO) (2009) The Carbon Budgets Order 2009.

Ref 7-87 HMSO (2011) Carbon Budget Order 2011.

Ref 7-88 HMSO (2016) Carbon Budget Order 2016.

Ref 7-89 The British Standards Institution (BSI) (2023) PAS 2080:2023 Carbon management in buildings and infrastructure.

Ref 7-90 Natural Resources Wales (2023). Flood Risk Assessment Wales Map

7.12 Glint and Glare

Introduction

7.12.1 This section of the Scoping Report sets out the approach to the assessment of Glint and Glare. The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

7.12.2 Solar panels are designed to absorb as much light as possible and not to reflect it. However, glint and glare can be produced as a reflection of the sun from the surface of the solar PV panel. Glint and glare can be defined by the following:

- Glint – 'A momentary flash of bright light'
- Glare – 'A continuous source of bright light'

7.12.3 Glare is significantly less intense in comparison to glint and can be described as a continuous source of bright light, relative to diffused lighting. This is not a direct reflection of the sun, but a reflection of the sky around the sun.

Baseline Conditions

7.12.4 There are a number of isolated dwellings, roads and Public Rights of Ways (PRoWs) in close proximity to the Site. Larger settlements are located further afield from the Site. A number of aviation receptors are located within proximity of the Site. No rail receptors are located within the vicinity of the Site.

7.12.5 The proposed scope is set out below with the identification of any potential effects.

Baseline Surveys

7.12.6 A site visit will be undertaken at the PEIR stage to gain a better understanding of any potential mitigation that is already present in the form of vegetation, topography etc.

Assessment Methodology

Overview

7.12.7 There is no standalone dedicated guidance on glint and glare assessments. However, the following has been used to form the assessment methodology as they contain relevant guidance:

- National Planning Practice Guidance – Renewable and Low Carbon Energy (Ref 7-91)
- Interim Civil Aviation Authority (CAA) guidance – Solar Photovoltaic Systems (Ref 7-92)
- CAA – CAP738: Safeguarding Aerodromes 3rd Edition (Ref 7-93)
- US Federal Aviation Authority (FAA) Administration Policy (Ref 7-94)
- FAA Policy: Review of Solar Energy Systems Projects on Federally Obligated Airports (Ref 7-95)
- Overview of Rail Safety and Standards Board Guidance (RSSB) (Ref 7-96)
- BRE (2014). Planning guidance for the development of large scale ground mounted solar PV systems (Ref 7-97)

7.12.8 The phases of the assessment and the underlying methodology are set out below.

Step 1 – Identification of Receptors

7.12.9 The assessment methodology is a multi-step process to determine which receptors have the potential to experience the effects of glint and glare. Receptors within a defined study area (depending on if ground-based or aviation) of the PV area. This is defined as:

- Ground-based receptors, including residential, road, railway and PRoW, within 1km of the Site.
- Aviation receptors within 30km, with detailed assessment for large international aerodromes within 20km, military aerodromes within 10km and 5km for small aerodromes.

7.12.10 A 1km study area for ground-based receptors is considered to be appropriate as this contains a variety of ground-based receptors in all directions from the Site.

7.12.11 These study areas outlined above are based on best practice and have been widely accepted across the UK and Ireland.

Step 2 – Technical Modelling

7.12.12 The model is based on the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT). This tool is specifically mentioned in the aforementioned FAA guidance as the software that should be used in this type of assessment.

7.12.13 The SGHAT model takes into account the following:

- Path of the sun throughout the year
- Configuration and technology type for the solar panels
- Observer locations
- Terrain elevation

7.12.14 The output of the modelling will quantify the dates and times that reflections could be experienced at the modelled receptor locations, along with the solar panel areas that would cause these reflections.

7.12.15 The modelling is based on worst-case principles, not considering obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, vegetation, hills, buildings, etc, and assuming clear skies at all times, therefore not accounting for meteorological effects such as cloud cover, fog, or any other weather event which may screen the sun. The model therefore overestimates the potential real-world impacts.

Step 3 – Impact Classification

7.12.16 Although there is no specific guidance set out to identify the magnitude of impact from solar reflections, the following criteria is based on best practice:

- High – Solar reflections impacts of over 30 hours per year or over 30 minutes per day
- Medium – Solar reflections impacts above 20 hours but below 30 hours per year or above 20 minutes but below 30 minutes per day
- Low – Solar reflections impacts up to and including 20 hours per year or up to 20 minutes per day

- None – Effects not geometrically possible or no visibility of reflective surfaces likely due to high levels of intervening screening

7.12.17 The following criteria applies to Road, Rail, and PRoW receptors:

- High - Solar reflections impacts with yellow glare (potential for after-image)
- Low - Solar reflections impacts with only green glare (low potential for after-image)
- None - Effects not geometrically possible or no visibility of reflective surfaces likely due to high levels of intervening screening or being outside drivers' field of view

7.12.18 The following criteria applies to Aviation receptors:

- High - Solar reflections impacts with yellow glare on approach paths / any glare impacts upon Air Traffic Control Towers (ATCT) (potential for after-image)
- Low - Solar reflections impacts with only green glare on approach paths (low potential for after-image)
- None - Effects not geometrically possible or no visibility of reflective surfaces likely due to high levels of intervening screening (ATCT only) or being outside pilots' field of view

7.12.19 As already mentioned, the model does not take account of any potential obstructions between the Site and the assessed receptors. Therefore, upon completion of the modelling a visibility assessment is undertaken to determine if each of the receptors have a clear sight of the Site where the glare is occurring from. Following this visibility assessment, the real-world impacts can be determined to decide if any mitigation is required or if the embedded mitigation in the local area is sufficient. The visibility assessment will consider the visibility of solar panels that cause glare towards the receptor. If not visible from the receptor, then no reflection can occur.

Step 4 – Identification of Mitigation Requirements

7.12.20 A site visit will be undertaken to better understand the screening afforded by existing vegetation/topography which will inform the need for further screening to mitigate effects where required.

7.12.21 Where receptors are identified in the visibility assessment to experience glare from the solar panels, mitigation will be secured. Typically, this is in the form of additional planting or buffers, and is proposed in collaboration with the planting specifications informed by the Landscape and Visual Impact Assessment.

Potential Effects

7.12.22 The reflective characteristics of modern solar panels are similar to commonly encountered sources within an outdoor environment including still water, greenhouses and windows on buildings.

7.12.23 There are a number of residential receptors in close proximity to the Site, many are single farm dwellings with surrounding vegetation. However, consideration will still be given to the effects of glint and glare on local residential receptors and mitigation will be considered to mitigate its effects. Therefore, effects are unlikely to be significant and can be mitigated.

7.12.24 Public roads within the vicinity of the Site appear to be well screened with intermittent/partial views into the Site, particularly among those roads that border the Site.

7.12.25 There are several PRoW which border and run through the Site (see Baseline Conditions of Section 6.1: Landscape and Visual), however, they are partially screened from the Site and landscape planting will implemented to screen them further.

7.12.26 Mitigation measures such as hedgerows/vegetation in fill will be sufficient to screen any potential views of the Site from residential, road and PRoW receptors where glint and glare is possible. Therefore, it is not anticipated that glint and glare will have a significant effect on residential, road and PRoW receptors.

7.12.27 There are no rail receptors located within 1km of the Site, therefore it is anticipated that glint and glare will not have a significant effect upon rail receptors

7.12.28 There are a number of aviation receptors located within 30km of the Site; RAF Mona (4.1km south), RAF Valley (13.1km southwest), Holyhead Helipad (12.8km southwest), The Skerries Helipad (12.1km west), Ysbyty Gwynedd Helipad (15.8km southeast) and Caernarfon (21.5km south). Only RAF Mona requires a detailed assessment as it is within 5km of the Site. However, due to their orientation in relation to the Site, it is anticipated that glint and glare will not have a significant effect upon aviation receptors.

Proposed Scope

Scoped In

7.12.29 The following receptors are proposed to be scoped into the Glint and Glare Assessment during the operation phase:

- Residential Receptors within 1km of the Site
- Road Receptors within 1km of the Site
- PRoWs within 1km of the Site
- Aviation Receptors

7.12.30 It is proposed that the Glint and Glare Assessment will be set out in full in a Technical Appendix to the ES and summarised within the "Other Matters" chapter of the ES.

Scoped Out

7.12.31 The construction and decommissioning phases are scoped out of the assessment.

7.12.32 Rail Receptors are scoped out of the assessment entirely as there are no Rail Receptors within 1km of the Site

Consultation

7.12.33 Consultation will be undertaken with the relevant consultees, such as airfields and the local authority, prior to undertaking the Glint and Glare Assessment.

References

Ref 7-91 National Planning Practice Guidance – Renewable and Low Carbon Energy

Ref 7-92 Interim Civil Aviation Authority (CAA) guidance – Solar Photovoltaic Systems

Ref 7-93 CAA – CAP738: Safeguarding Aerodromes 3rd Edition

Ref 7-94 US Federal Aviation Authority (FAA) Administration Policy

Ref 7-95 FAA Policy: Review of Solar Energy Systems Projects on Federally Obligated Airports

Ref 7-96 Overview of Rail Safety and Standards Board Guidance (RSSB)

Ref 7-97 BRE (2014). Planning guidance for the development of large scale ground mounted solar PV systems

7.13 Socio-economics

Introduction

7.13.1 This section of the Scoping Report sets out the approach to the assessment of the likely significant effects of the Project on Socio-economics. The baseline conditions are first established through a desktop review followed by the proposed methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

Baseline Conditions

7.13.2 The Site is located in the Isle of Anglesey local authority boundary ('Anglesey'), which is to the north of the Anglesey island. As of 2021, Anglesey has a population of 68,900 with a population density of 96.7 people per square km, considerably lower than the average in England and Wales, which averages 394.6 people per square km (Ref 7-98).

7.13.3 In 2021, the total Gross Value Added (GVA) output for Anglesey was £1.0 billion (Ref 7-99), with GVA per head at £45,000. This figure is lower than the England and Wales, which has an average of £64,000.

7.13.4 In 2021, a total of 23,000 jobs were recorded in Anglesey. Anglesey is largely residential-focused, with an employment to population ratio of 0.34. This figure is significantly lower than the average ratio in England and Wales of 0.48 workers to residents. Key employment sectors are accommodation and food services, retail and agriculture, forestry and fishing. These sectors make up 14%, 12% and 10% of Anglesey's total employment, respectively. These figures are considerably higher than the national averages across England and Wales of 7%, 9% and 7% respectively (Ref 7-100).

7.13.5 Qualification and skills levels are broadly in line with national averages. 18% of Anglesey residents with no qualifications, which is the same as England and Wales. 32% of Anglesey residents have achieved the highest level of qualification

(equivalent to degree level). This figure is slightly below the national average (34%).

7.13.6 Households in deprivation is based on four dimensions, being education, employment, health and housing. 48% of households in Anglesey are not deprived in any dimension, which falls in line with national averages. This implies that 52% of Anglesey households are deprived in at least one dimension of deprivation.

7.13.7 In terms of the visitor economy, tourism is one of the main industries of Anglesey, providing a significant source of income and employment for the island. In 2021, there were approximately 1.5 million visitors, generating over £340 million in economic output for the local economy. A comparison of this economic contribution to the total economic output of Anglesey's economy (refer to paragraph 7.13.3) demonstrates the importance of tourism to the island. A third of Anglesey is designated as an Area of Outstanding Natural Beauty. Some of the top visitor destinations include the island's 50km heritage coast, UNESCO geopark and a range of historic attractions.

7.13.8 Visitor attractions near to the Site include Bull Bay Golf Club, Parys Mountain, Llyn Alaw reservoir, as well as the Tre-Ysgawen Spa.

7.13.9 There are approximately 31,000 visitor accommodation bedspaces across Anglesey, of which 1,400 are in serviced accommodation.

7.13.10 In terms of Public Rights of Way (PRoW), an initial desk-based review suggests that in total there are approximately 11 that either cross or sit on the perimeter of the Site - eight within the northern area, and three within the central area.

Assessment Methodology

Overview

7.13.11 There is no specific guidance available which establishes a methodology for assessing the socio-economic effects of a solar farm. Therefore, the approach to the socio-economic assessment is based on professional judgement, previous experience and good practice. It is informed by the planning policy requirements set out within the designated and draft National Policy Statements (NPS) and local planning policy, set out at Appendix 5-1.

Establishing the Baseline

7.13.12 The baseline will be developed from a review of relevant planning and economic development strategies and policies, as well a desk-based review of key socio-economic datasets.

7.13.13 Relevant strategies and policies will be reviewed including the Joint Local Development Plan (JLDP) and relevant Supplementary Planning Guidance (SPGs), such as the North Anglesey Economic Regeneration Plan.

7.13.14 The socio-economic profile will be developed from datasets covering the local and local authority level, with benchmarking against several geographic study areas, which will be defined in detail in the chapter. The datasets will include but not be limited to the following sources:

- ONS, 2021 Census
- ONS, Annual Population Survey
- ONS, Business Register and Employment Survey

7.13.15 The baseline analysis will summarise the socio-economic context of the various socio-economic study areas under three broad categories. Each category has a broad list of indicators. Each indicator will be reviewed during the assessment and only the most relevant and insightful indicators will be included:

- Demographics: population (resident and workplace), age, and deprivation
- Economy and labour market: employment, sectoral employment, unemployment and claimant count, labour skill levels, economic activity, land use
- Tourism and leisure: visitor economy, visitor accommodation, local attractions, and visitor expenditure

7.13.16 The future baseline assessment will present data on how some socio-economic indicators are anticipated to change. Projections of population, employment and the visitors will be presented for the possible core assessment year(s). The core assessment year(s) will be confirmed within the PEIR/ES and will be determined to represent a worst-case scenario from a socio-economic perspective, which is likely to be at the beginning of the construction phase, the year of peak

construction activity, and the end of the construction (i.e. first year of operation) as a minimum.

Study Area

7.13.17 Baseline conditions will be assessed at several geographic study areas. The study areas will be defined in detail in the chapter and could vary for individual effects, but are likely to include as a minimum: the local area (the immediate area surrounding the Site), the local authority (Isle of Anglesey County Council (IoACC)), the region (North Wales or Wales as a whole as per the ONS statistical boundary definition) and the nation (England and Wales, or the United Kingdom).

7.13.18 The Local Area will be defined at a later stage (ahead of production of the PEIR chapter). It will be based on a collection of small areas (likely to be comprised of a collection of either Ward or Lower Super Output Areas). This study area will be developed during the initial local needs assessment, which will include consultation with relevant stakeholders. This exercise will identify areas of local need through which the Project can benefit the Local Area and meet policy needs. It will also capture the area (and relevant receptors) that could potentially be adversely impacted by the Proposed Development from a socio-economic perspective. This will ensure that the Local Area is the best fit study area, capturing where the impact of the Project is likely to be felt locally, which cannot be determined at this early stage.

Receptors

7.13.19 Receptors are likely to include, but may not be limited to, current and future:

- Residents
- Workers
- Businesses
- Visitors

Determining Significance of Effect

7.13.20 The approach to the assessment of significance of effects is outlined below. There is no UK legislation or guidance for the assessment of socio-economic effects. Effects are identified from the interaction between the magnitude of impacts and the sensitivity of receptors. Specifically, the assessment of significance of impacts

is based on the magnitude of the predicted change to the baseline position, as well as the sensitivity of the socio-economic receptors.

7.13.21 With respect to phasing, an assessment will be undertaken to assess the impact of the Project on the baseline socio-economic conditions, at both (i) the construction and decommissioning phases and (ii) operational phase.

7.13.22 The decommissioning phase of the Project will occur at the end of the 60-year operational lifespan of the Project. The decommissioning of the Project will generate further direct and indirect socio-economic effects similar to during the construction phase. Given the socio-economic impacts during the construction and decommissioning phases of the Project are likely to be very similar, these phases will be assessed against the same proposed scope. The impact of the decommissioning phase is expected to be less or, at worst, equivalent to the construction phase. In light of presenting a worst-case assessment, assessing these stages against the same factors is deemed to be conservative.

Receptor Sensitivity

7.13.23 The receptor sensitivity will be assessed on a case by case basis, using professional judgement informed by the baseline statistics and stakeholder engagement. To assist with this assessment, broad definitions of the receptor sensitives are given in Table 7-51.

Table 7-51 Sensitivity Criteria

Sensitivity	Evidence for sensitivity assessment
High	Representative of where a receptor has limited ability to respond to change, possibly due to no surplus capacity / high scarcity.
Medium	Representative of where changes to the receptor would bring about noticeable changes in conditions in the area.
Low	Representative of where a receptor is particularly responsive to change or able to cope with change without substantial effects on existing status or viability.

Magnitude of Impact

7.13.24 Magnitude of impacts will be determined with reference to the baseline conditions, using the criteria provided in Table 7-52 and classified as high, medium, low, or

negligible. The assessment will aim to be objective by quantifying the magnitude of impacts wherever possible. Where quantification is not possible, qualitative assessments based on professional judgement will be made and justified.

7.13.25 Impacts will be identified as either beneficial or adverse.

Table 7-52 Magnitude of Impact

Magnitude of Impact	Description
High	Total loss or major / substantial alteration to key elements / features of the baseline (pre-development) conditions such that the post-development character / composition / attributes will be fundamentally changed.
Medium	Loss or alteration to one or more key elements / features of the baseline conditions such that post-development character / composition / attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss or alteration will be discernible / detectable but not material. The underlying character / composition / attributes of the baseline condition will be similar to the pre-development circumstances / situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

Significance of Effects

7.13.26 Socio-economic effects are a reflection of the relationship between the sensitivity of the affected receptor and the magnitude of the impact. Table 7-53 shows how the assessment of the significance of effects has been determined.

Table 7-53 Significance Matrix

Magnitude of Impact	Sensitivity of receptor		
	High	**Medium**	**Low**
High	Major	Major	Moderate
Medium	Major	Moderate	Minor
Low	Moderate	Minor	Negligible
Negligible	Minor	Negligible	Negligible

7.13.27 Moderate or Major effects are generally classed as 'significant', Minor and Negligible effects are classed as not 'significant' in EIA terms. However, this is tested with professional judgement and a conclusion will be drawn.

Potential Effects

7.13.28 Potential socioeconomic effects have been determined by considering what type of impacts the Proposed Development may generate during the construction and decommissioning phases within the relevant socio-economic study areas. Consideration of potential effects has been determined through the use of past experience, professional knowledge and a review of the socio-economics scope of previous (or current) similar solar farm projects across the UK.

Construction and Decommissioning

Construction and decommissioning jobs

7.13.29 The Project will create direct, indirect and induced jobs during the construction and decommissioning phase.

Provision of education, skills and training

7.13.30 The Project will provide an opportunity for local residents to acquire new skills and training within the construction industry.

Changes in demand for temporary workers accommodation

7.13.31 Construction workers are one of the most mobile groups in the economy. Given the location of the Project, with limited public transport links, construction workers may choose to reside in local temporary accommodation (such as short-term rentals) on Anglesey. This could create increased demand for this type of accommodation and hence will be considered in the socio-economic assessment. It is an important effect to consider in the assessment given the likely sensitivity of the receptor as a result of Anglesey's tourism economy, and the geographical nature of where Anglesey is located.

Effect on land uses

7.13.32 The construction phase of the Project will lead to a temporary and/or permanent loss of at least some of the following land uses - agricultural and brownfield. This will be investigated further as the Project is refined and will be outlined in the ES chapter.

7.13.33 The Site contains a mix of brownfield (allocated for development) and agricultural land. The Applicant is exploring opportunities to locate the BESS and other associated infrastructure within the brownfield land at the former Shell site, which is allocated for employment use in the Local Plan. Impacts on Agricultural land will be considered within the Agricultural Land chapter of the PEIR and ES.

7.13.34 For these reasons, the effect on agricultural and brownfield land has the potential to be significant and is proposed to be scoped in.

Spending associated with the workers

7.13.35 Workers are likely to spend money in the local area, such as at lunch or after work. However, given this is a temporary impact and only a proportion of these workers would be expected to spend money locally, this effect is unlikely to be significant when compared to the £9 million annual expenditure in the nearest retail centre to the Site - Almwch (Applied Planning, 2012). The receptor for expenditure wouldn't be expected to be particularly sensitive and therefore, in the context of existing retail expenditure, this effect is proposed to be scoped out.

Disruption to local businesses

7.13.36 As shown in Figure 7-27, there is not a high density of businesses in the vicinity of the Site that are likely to experience disruption from construction and decommissioning works resulting from traffic-related, noise and visual impacts during these phases.

7.13.37 Further to this, as presented in the Baseline Conditions, Anglesey has a significantly lower employment to population ratio (0.34) than the national average (0.48) (ONS, 2022), which is indicative of demographic changes and trends in employment. This shows that Anglesey has lower levels of employment relative to the residing population and so could be considered to have a residential focus relative to the national average, with a higher proportion of residents economically inactive.

7.13.38 It is evident that Anglesey is more residential-led with a relatively lower number of businesses (and hence worked) compared to its population, particularly around the Site. For this reason, disruption to local businesses is proposed to be scoped

out. Impacts to agricultural businesses associated with the Site will be considered within the Agricultural Land chapter or the PEIR and ES.

Changes in demand for health and social care

7.13.39 There is potential for increased demand for local health services arising from construction workers at the Project. However, construction workers will be temporary and are not expected to have a significant effect on health provision of either GPs (primary care) or the local A&E service. Prior to the start of works, the Applicant will be required to discharge requirements under the DCO relating to construction and logistics management, likely through the submission of a Construction Environmental Management Plan (CEMP), which will demonstrate how the contractors will follow good practice throughout the construction and decommissioning works, thus minimising the risk of accidents and any impacts upon local healthcare facilities. Further to this, only a small proportion (3%) of construction workers are expected to be injured at work in any one year, and so any impacts on local healthcare facilities are not expected to be significant. Any human health effects arising through changing demand for health and social care will be assessed within the Human Health chapter, and therefore can be scoped out of the socio-economic assessment.

Access to open space and Public Rights of Way (PRoWs)

7.13.40 The construction and decommissioning phase may impact on access to open space and PRoWs within and around the Site. It is more appropriate to discuss this potential effect within the Human Health chapter through changes to both physical health and wellbeing as a result of access (or disrupted access) to these types of spaces and is therefore scoped out of the socio-economic assessment.

Changes in crime and community safety

7.13.41 The Proposed Development is not expected to materially change crime incidences and community safety in the local area.

7.13.42 Security measures will be in place during the construction and decommissioning phase through security fencing, CCTV and lighting as per the Construction (Design and Management) Regulations 2015, which will also include the production of a health and safety plan. Based on this, there is unlikely to be

significant effects relating to crime and community safety during the construction and decommissioning phase and this effect is therefore proposed to be scoped out of the assessment.

Changes in commuting patterns

7.13.43 Driving is the main mode of travelling to work for residents in the wards surrounding the Site (Lligwy, Taybolion, Twrcelyn and Canolbarth Mon). Specifically 63% of working-age residents drive to work (ONS, Census 2021), which is higher than the average in England and Wales of 45%. There may be increased traffic generated during the construction and decommissioning phase with associated effects on driver delay during the construction and decommissioning phase.

7.13.44 The majority of the remaining residents in the local wards surrounding the Site who do not drive, work from home (23% of the total), compared to 4% in 2011 (the previous year for which this data is collected) reflecting the shift to remote working since the Covid-19 pandemic. These residents would therefore not experience significant effects related to commuting since they do not travel to work (ONS, Census 2021). The remaining 14% either take public transport (2%) or active travel options. Finally, as shown in Figure 7-27, there are limited businesses in the vicinity of the Site, suggesting it is unlikely a significant proportion of commuters will be travelling near the Site during construction and decommissioning works. The size of the workforce being relatively limited in Anglesey (refer to paragraph 7.13.4) also shows that the absolute number of workers who might be impacted by any disruption would be small.

7.13.45 Collectively, this shows how there are unlikely to be significant impacts on commuting patterns during the construction and decommissioning phase and therefore this is proposed to be scoped out of the assessment. It is noted that specific driver delay impacts will be discussed in Chapter 9: Transport and Access. Only if a significant effect is concluded on in this chapter, then the socio-economic assessment will scope in this effect for completeness.

Operation

Operational employment

7.13.46 The Project will create jobs during its operation. Direct jobs will be on Site. Additional indirect and induced jobs in the wider economy are expected to be supported by the Project's economic activity. However, solar farms are not worker-intensive developments. The number of direct operational workers are expected to be low. For this reason, operational employment is scoped out of the assessment.

Provision of education, skills and training

7.13.47 The Project has the opportunity to include educational programmes to improve the knowledge of renewable energy, which could benefit students attending local schools. It will also provide training and education opportunities to upskill the local residents, as well as provide direct job opportunities in a green industry. Given the Applicant's intention to put develop an employment and skills strategy to the benefit of local residents, this effect is scoped in to the assessment.

Impact of community power

7.13.48 The Project will include a ~5MW Community Solar PV Array, and therefore this effect is scoped into the socio-economic assessment.

Effect on land uses

7.13.49 The effect on agricultural land will be considered within the Agricultural Land chapters of the PEIR and ES. Any relevant impacts will also be considered in the socio-economic chapter. It is likely that this effect will be assessed holistically across all three phases as one combined assessment given crossovers in the methodology.

Changes to local tourism assets

7.13.50 The Project may adversely impact the visual amenity of some local tourism assets. Given the prominence of Anglesey's tourism sector as a key driver of growth and employment for the area, the impact on local tourism assets will be considered as part of the socio-economic assessment. The Project is also expected to have a beneficial impact on tourism through improvements to PRoWs

and tourism trails that may serve to attract visitors. For these reasons this effect is scoped into the socio-economic assessment.

Spending generated by the workers

7.13.51 Workers are likely to spend money in the local area, such as at lunch or after work. However, there is likely to be a relatively low number of operational workers onsite. Therefore, significant change to baseline local expenditure is not expected and therefore this effect is proposed to be scoped out.

Changes in crime and community safety

7.13.52 The nature of the Project as a solar PV scheme and energy storage is unlikely to lead to changes in the crime and community safety in the local area as it is unlikely to encourage crime incidences or change public safety. The Project will be secured with perimeter fencing (deer fencing around Solar PV areas and Palisade fence around the Project Substation and BESS) and monitored with CCTV equipment.

Impact on local housing affordability

7.13.53 The existing literature presents varied findings on whether solar farms have an adverse impact on local house prices.

7.13.54 The number of dwellings in Output Areas within 1km of the Site, only make up 4% of Anglesey's total housing stock. When this low number of houses is combined with a great degree of uncertainty over house prices impacts, this demonstrates that the Project is unlikely to have a material impact on local housing affordability.

7.13.55 More generally, the impact of any new development on house values is highly uncertain and will depend on a variety of different variables. Isolating the impact of the Project on the housing market is difficult as there are many different factors driving house prices. Other factors that are likely to influence housing affordability include (but may not be limited to):

- The performance of the macroeconomy - changes to interest and mortgage rates and wages
- National and local regulations on second homes and non-resident buyers of homes
- Housing allocations coming forward across Isle of Anglesey

7.13.56 Given the Project is temporary in nature over a finite lifespan, the panels are not nearby to a particularly large pool of homes, and landscaping mitigation measures will be put in place, it is considered unlikely that there will be significant impacts on housing affordability. This effect is therefore proposed to be scoped out of the assessment.

Access to open space and Public Rights of Way (PRoWs)

7.13.57 The Project may impact on access to open space and PRoWs within and around the Site. It is more appropriate to discuss this potential effect within the Human Health chapter as the impacts will be associated with changes in physical health and wellbeing (and also partially in the changes to local tourism assets' effect) and is therefore scoped out of the socio-economic assessment.

Impact on commuting patterns

7.13.58 Similarly to the construction phase, driving is the main mode of travelling to work for residents living locally to the Site and there is not expected to be significant driver delays resulting from the operation and maintenance of the Project. Movements will be controlled through the DCO (through OEMP) to ensure no significant effects. Any potential effects on transport and accessibility will be covered in the Chapter 9: Transport and Access chapter and therefore are proposed to be scoped out of the socio-economic assessment.

Proposed Scope

Scoped In

Construction and Decommissioning

- Construction and decommissioning jobs
- Provision of education, skills and training
- Changes in demand for temporary workers accommodation
- Effect on land uses

Operation

- Provision of education, skills and training
- Impact on community power
- Effect on land uses
- Changes to local tourism assets

Scoped Out

Construction and Decommissioning

- Spending associated with the construction workers
- Disruption to local businesses
- Changes in demand for health and social care
- Access to open space and Public Rights of Way (PRoWs)
- Changes in crime and community safety
- Changes in commuting patterns

Operation

- Operational employment
- Spending associated with the operational workers
- Changes in crime and community safety
- Impact on local housing affordability
- Access to open space and Public Rights of Way (PRoWs)
- Impact on commuting patterns

Consultation

7.13.59 As part of preparing the local needs assessment and baseline assessment, engagement will be carried out with relevant public bodies and community facilities and groups to supplement the desk-based findings. This will include the Isle of Anglesey County Council development team and local education providers. Collectively, these findings will be used to inform the evolving design of the Project ahead of the PEIR and ES stages of the DCO application.

References

Ref 7-98 ONS, 2022. Census 2021: TS006 - Population density.

Ref 7-99 ONS, 2023. Regional gross value added (balanced by industry: all ITL regions.

Ref 7-100 ONS, 2022. Business Register and Employment Survey 2021.

7.14 Health

Introduction

7.14.1 This section of the Scoping Report sets out the approach to the assessment of Human Health. The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES. The consultation undertaken to date and proposed further consultation is then set out.

7.14.2 The scope of the assessment will consider the World Health Organisation (WHO) definition of health: - 'a state of complete physical, mental and social wellbeing and not merely the absence of disease of infirmity' (Ref 7-101). The focus of the human health assessment within the EIA will be on community (i.e. human) health and wellbeing and not on occupational health and safety, in line with EIA guidance on assessing health as outlined in Relevant standards and guidance in this chapter.

Baseline Conditions

7.14.3 The Anglesey population generally performs better than the Wales average on health indicators. The average life expectancy for women and men in Anglesey is 82.9 and 78.6, respectively, which is in line with the England and Wales average of 82.6 and 78.6, respectively (Ref 7-102).

7.14.4 The proportion of Anglesey residents considered to be in good or very good health is 76%, higher than the Wales average of 72%. 30% of adults in Anglesey are limited by a longstanding illness, which is lower than the Wales average of 34%. Anglesey is expected to experience a significant increase in its elderly population, with a 48% increase in the population aged 75+ forecast to 2043, despite total population being projected to fall. This ageing population will place additional pressures on demand for health and social care (Ref 7-103).

7.14.5 Beyond physical health, 58% of adults in Anglesey report feeling they belong to their community, compared to the Wales average (52.2%). The proportion of adults reporting they are currently being treated for a mental health problem in

Anglesey is below the Wales average; 9% compared to 12%. Anglesey also has the 2nd highest proportion of residents that possess Welsh language skills across all local authorities in Wales - 69% of Anglesey residents possess Welsh language skills, compared to the Wales average of 27% (Ref 7-104). Welsh-language skills are important to health and wellbeing through feeling part of community and a sense of belonging.

7.14.6 The number of children in low-income families in Anglesey is higher than the Wales average - 35% compared to 32%. The main driver of deprivation across Anglesey stems from access to services, with half of the Lower Layer Super Output Areas (LSOAs) making up the local authority falling in the top 25% most deprived for this determinant.

Assessment Methodology

Overview

7.14.7 There is no specific guidance available which establishes a methodology for assessing the health effects of a solar farm. This section therefore provides a summary of the assessment methodology including the baseline analysis, and the relevant standards and guidance that will be used.

Relevant standards and guidance

7.14.8 The human health assessment will be undertaken in line with the latest best practice guidance on health impact assessment (HIA). The policy informing the assessment is set out at Appendix 5-1 (Anglesey and Gwynedd Joint Local Development Plan 2011-2026 and The Wales Wellbeing of Future Generations Act, 2015). The following standards and guidance will inform the health assessment:

- Wales HIA Support Unit, Health Impact Assessment: A practical guide (WHIASU, 2012). This provides a formal process for how to carry out health impact assessment for developments located in Wales. Note that it is unclear online if an updated 2021 version of this guide is now available. If an updated guide can be located, or is provided when consulting with relevant stakeholders, this will be used instead.

- Public Health Wales (PHW, 2021), HIA and Local Development Plan Guidance (WHIASU, 2021).
- Isle of Anglesey Health Impact Assessment Tool (Isle of Anglesey, 2009).
- Institute of Environmental Management and Assessment (IEMA) Effective Scoping of Human Health in Environmental Impact Assessment (IEMA, 2022).
- IEMA Health in Environmental Impact Assessment - A Primer for a Proportionate Approach (IEMA, 2017).
- International Association for Impact Assessment (IAIA), Human Health: Ensuring a high level of protection (IAIA, 2020).
- Mental Well-being Impact Assessment: a Toolkit (National MWIA Collaborative, 2011).

Study Area

7.14.9 Health effects are considered at varying spatial levels according to the nature of the effect and the aspect of the Project that gives rise to that effect. The core study areas are likely to include:

- The Local Area surrounding the Site - likely to be a collection of wards or LSOAs containing the Site;
- The local authority (Isle of Anglesey);
- The region (North Wales or Wales as a whole as per the ONS statistical boundary definition); and
- The nation, if required for comparative purposes (England and Wales/United Kingdom depending on data availability).

7.14.10 The relevant technical assessments of the EIA will influence the study area for specific health impacts. For example, where noise and vibration impacts are defined within a given study area of the Site, this same study area will be considered when assessing the health impacts associated with the changes in noise and vibration identified.

Establishing the Baseline

- The health baseline will be informed by the North Wales Population Needs Assessment, Anglesey Locality Needs Assessment, Anglesey Well-Being

Assessment, NHS data, Census (2021) data and as well as consultation with relevant groups (e.g. the Betsi Cadwaladr University Health Board [BCUHB]). It will also present data on the receptor populations (including residents, workers and visitors) within relevant study areas to understand the extent to which vulnerable groups are present in each study area. In line with Welsh HIA guidance, vulnerable groups include age-related groups, income-related groups, groups who suffer discrimination or other social disadvantage and geographical groups. Identified vulnerable groups will depend on the characteristics of the local population and the nature of the Project.

7.14.11 The ES will then present the baseline for each relevant health determinant to the area and will be established with reference to the following sources:

- A desktop review of the characteristics of the local area with information available from published database records such as the Department for Health, the NHS and the Office for National Statistics. This will also consider the health characteristics of the local authority as a whole and other information on local deprivation levels, health facilities, crime, obesity rates, and available open space;
- Other technical pieces of work that either comprise part of the ES or are standalone documents will be prepared and submitted in support of the DCO Application. This will include ES chapters (socioeconomics, transport, air quality and noise etc) and also other deliverables (design and access statement, planning statement etc).

Assessment Approach

7.14.12 The assessment of health will cross reference to the technical assessments undertaken for the other technical disciplines in the EIA, highlighting any conclusions reached which are relevant to human health. Rather than simply repeating the conclusions reached in these other disciplines, however, the focus of the health assessment will be on considering the extent to which these conclusions have any effect (or not) upon the health of the local population. The

thresholds for significance in these technical chapters are not always based upon population health, whereas this will be the focus of the health assessment.

7.14.13 To do this, it will be important to establish health pathways – these determine the relationships between the Project and potential health impacts on the population and will be assessed through a literature review of a wide range of academic publications/studies that assess the determinants of health and relevant pathways, and stakeholder engagement. For example, the literature review will consider the relationship between air quality and health effects, and how this differs by receptor group.

7.14.14 With respect to phasing, an assessment will be undertaken to assess the impact of the Project on the baseline health conditions, at both (i) the construction and decommissioning phases (C&D) and (ii) operational (O) phase.

7.14.15 The decommissioning phase of the Project will occur at the end of the 60-year operational lifespan of the Project. The decommissioning of the Project will generate further direct and indirect health effects similar to during the construction phase. Given similar impacts are expected during the construction and decommissioning phase, it will be assessed together with the construction phase with the same proposed scope. The impact of the decommissioning phase is expected to be less or, at worst, equivalent to the construction phase. In light of presenting a worst-case assessment, assessing the construction phase is deemed to be conservative.

7.14.16 The relevant technical assessments of the EIA will influence the study area for health impacts. For example, where noise and vibration impacts are defined within a given study area of the Site, this same study area will be considered when assessing the health impacts associated with the changes in noise and vibration identified.

Receptors

7.14.17 Receptor groups include the general population as well as vulnerable groups as detailed in Table 7-54. This will ensure that the assessment considers the ways in which the Project may affect health inequalities. The identified receptor population groups reflect the make-up of the relevant study area.

7.14.18 Additional bespoke receptor groups may be identified following consultation and the completion of a health baselining exercise.

Table 7-54 Receptor Groups

Receptor population group	Definition
General population	Existing residents
	Future residents onsite
	Existing workers in the area
	Future workers onsite
Vulnerable groups	Children and young people (aged under 18)
	Older people (Aged over 65)
	Income-related groups: low-income groups, unemployed, economically inactive, people unable to work due to ill health
	People with disability and long-term illness (including mental health issues, dementia, autism and epilepsy
	Refugee groups or those seeking asylum
	Travellers
	Single-parent families
	Lesbian and gay and transgender people
	Black and minority ethnic groups
	Religious groups
	People living in areas known to exhibit poor economic and/or health indicators
	People living in isolated or over-populated areas
	People unable to access services and facilities

7.14.19 The health assessment will also consider sensitive physical receptors - i.e. community facilities such as schools, care homes and healthcare facilities - which may contain populations particularly vulnerable to potential health effects relating to changes in air quality, noise and vibration, and transport. It is standard practice in health assessments to understand any localised effects on sensitive physical

receptors. This is because it is possible that across the relevant study area there won't be an overall significant effect on a receptor group, but there could be a localise and specific health impact on an individual physical receptor that needs to be assessed and discussed for robustness.

Determining the Significance of Effect

7.14.20 Effects are identified from the interaction between the magnitude of impacts and the sensitivity of receptors. Specifically, the assessment of significance of impacts is based on the magnitude of the predicted change to the baseline position, as well as the sensitivity of the health receptors.

Receptor Sensitivity

7.14.21 Table 7-55 sets out the criteria used to determine the sensitivity of receptors.

Table 7-55 Sensitivity Criteria

Sensitivity	Criteria
High	Representative of where a receptor has limited ability to respond to change, possibly due to no surplus capacity / high scarcity.
Medium	Representative of where changes to the receptor would bring about noticeable changes in conditions in the area.
Low	Representative of where a receptor is particularly responsive to change or able to cope with change without substantial effects on existing status or viability.

Magnitude of Impact

7.14.22 Magnitude of impacts will be determined with reference to the baseline conditions, using the criteria provided in Table 7-56 and classified as high, medium, low, or negligible. The assessment of magnitude of impact will be undertaken based on professional judgment as there are as there are no industry standard criteria. But, in general, the assessment of health impacts will consider factors such as the strength of the evidence base, the exposure, whether regulatory standards are met and change from the baseline position.

7.14.23 Impacts will be identified as either beneficial or adverse.

Table 7-56 Magnitude of Impact

Magnitude of Impact	Description
High	Total loss or major / substantial alteration to key elements / features of the baseline (pre-development) conditions such that the post-development character / composition / attributes will be fundamentally changed.
Medium	Loss or alteration to one or more key elements / features of the baseline conditions such that post-development character / composition / attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss or alteration will be discernible / detectable but not material. The underlying character / composition / attributes of the baseline condition will be similar to the pre-development circumstances / situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

Significance of Effects

7.14.24 Health effects are a reflection of the relationship between the sensitivity of the affected receptor and the magnitude of the impact. Table 7-57 shows how the assessment of the significance of effects has been determined.

Table 7-57 Significance Matrix

Magnitude of Impact	Sensitivity of receptor		
	High	**Medium**	**Low**
High	Major	Major	Moderate
Medium	Major	Moderate	Minor
Low	Moderate	Minor	Negligible
Negligible	Minor	Negligible	Negligible

7.14.25 Moderate or Major effects are generally classed as 'significant', Minor and Negligible effects are generally classed as not 'significant' (although Minor effects may be a matter of local concern). However, this is tested with professional judgement, and a conclusion is drawn.

Potential Effects

7.14.26 This assessment considers the following potential health determinants, which align with the determinants outlined in the IEMA guidance:

- Physical activity
- Risk-taking behaviour
- Diet and nutrition
- Housing
- Relocation
- Open space, leisure and play
- Transport modes, access and connections
- Community safety
- Community, identity, culture, resilience and influence
- Social participation, interaction and support
- Education and training
- Employment and income
- Climate change and adaptation
- Air quality
- Water quality or availability
- Land quality
- Noise and vibration
- Radiation
- Health and social care services
- Built environment
- Wider societal infrastructure and resources

7.14.27 Determinants that are likely to be relevant to the Project are then scoped into the health assessment. These potential health effects will be assessed during the construction, operation and decommissioning phases of the Project.

7.14.28 The consideration of health impacts with respect to solar farms is a relatively new and emerging area of knowledge. In broad terms, the potential adverse health effects of solar farms are typically considered to be related to harms that could arise on residential amenity, visual amenity, landscape character and the loss of

land uses that the land could have been used for otherwise (such as agricultural land). From a beneficial perspective, the potential health effects of solar farms are related to positive impacts on climate change outcomes, and the impacts associated with opportunities to improve both access to public rights of ways through good design and access to employment.

Proposed Scope

7.14.29 In line with IEMA guidance, this scoping exercise is proportionate. Health effects that are not likely to significantly affect population health are proposed to be scoped out, focusing only of those effects that are likely to be significant (IEMA, 2022).

7.14.30 A combination of the health determinants identified in the IEMA guidance, Welsh HIA guidance and Anglesey HIA Tool have been reviewed and will be used to assess the impact of the Project on human health.

7.14.31 A review of the Welsh HIA guidance and Anglesey HIA Tool, shows that both guidance documents capture the same health determinants, which fall under the following six broad categories:

- Lifestyles
- Social and community influences on health
- Living/environmental conditions affecting health
- Economic conditions affecting health
- Access and quality of services
- Macro-economic, environmental and sustainability factors

7.14.32 The determinants within each of these categories have been reviewed. Where necessary, IEMA determinants (and the scope of them) are adjusted to ensure that all Welsh specific determinants are captured in the proposed health scoping, and therefore the eventual health assessment. An example of an additional determinant added in for consideration is the determinant in the Anglesey guidance, "bilingualism and the Welsh culture".

Table 7-58 Proposed Scope

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
Health-related behaviours		
Physical activity	Out	Construction, Operation and Decommissioning Physical activity is a recognised important determinant of health, however, to avoid duplication, this is considered under 'open space, leisure and play'.
Risk-taking behaviour (including use of alcohol, cigarettes, non-prescribed drugs, sexual activity and other risk-related activity)	Out	Construction and Decommissioning The number of construction workers is unlikely to be significant enough to affect local markets to an extent where the workers could significantly alter community health behaviours. The expected construction workforce will be estimated and presented in Chapter 17: Socio-economics. Healthy workforce behaviour, such as encouraging positive social interaction in the local community, initiatives to minimise community disruption and good conduct, would be encouraged through measures put in place by the Applicant and their appointed construction contractor. Therefore, this is not considered to lead to a significant population health effect and is proposed to be scoped out. Operation The operational workforce will comprise a very small number of permanent staff which would be unlikely to significantly alter community health behaviours. Operational job estimates will be outlined in Chapter 17: Socio-economics. Therefore, this is not considered to lead to a significant population health effect and is proposed to be scoped out.
Diet and nutrition	In	Construction, Operation and Decommissioning The loss, albeit temporary, of the use of agricultural land could potentially have an impact on local food availability. . For this reason impacts on the diet and nutrition through potential effects on access to affordable local food (e.g. local farmers markets) are proposed to be scoped into the health assessment until the assessment of effects on agricultural land has been undertaken in Chapter 13 Soils and Agriculture of the ES. If this assessment concludes that any effects of the Project on

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
		agricultural land is unlikely to result in any impacts on local food availability, this issue will be scoped out of the health assessment.
Social environment		
Housing	C&D - In O - Out	Construction and Decommissioning Given the remote location of the Site, construction workers may require temporary accommodation, such as short-term rentals, which could lead to significant health effects on local residents if the local accommodation market is impacted. If the socio-economic assessment concludes that effects on local accommodation is not expected to be significant, this issue will be scoped out of the health assessment. Currently, effects related to temporary accommodation provision are scoped into Chapter 17: Socio-economics. Operation The operational workforce will comprise a very small number of permanent staff, limiting the potential for any adverse impacts on housing, that could result in a significant health effect. The expected operational workforce will be estimated and presented in Chapter 17: Socio-economics. Existing literature finds that housing effects from solar farms are mostly captured within a 1km buffer of the solar farm (Ref 7-105), whilst there is no general consensus in the literature on whether they do in fact adversely impact house prices at all. The number of dwellings in Output Areas within 1km of the Site, only make up 4% of Anglesey's total housing stock, a small proportion of the total. When this low number of houses is combined with a great degree of uncertainty over housing impacts from operational solar farms (as discussed in detail in the Socio-Economics section of this Scoping Report, this demonstrates that the Project is unlikely to have a significant impact on local housing and is therefore proposed to be scoped out.
Relocation	Out	Construction, Operation and Decommissioning The Project would not involve the compulsory acquisition or temporary possession of any homes or community facilities. As no relocation is necessary, this effect is therefore scoped out.

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
Open space, leisure and play	C&D - Out O - In	Construction and Decommissioning In terms of Public Rights of Way (PRoW), a desk-based review has identified that in total there are 21 that either cross or sit on the perimeter of the Scoping Boundary area, which have the potential to be affected by the construction and decommissioning of the Project. Works may lead to temporary disturbance of open spaces and PRoW in the form of temporary closures or diversions, but it is not considered that any impacts will be large enough in terms of extent of disruption, coverage of study area, or long enough in duration to have significant effects. This determinant is therefore proposed to be scoped out during this phase. Operation As part of the mitigation and enhancement measures, the Applicant is looking into potential improvements to PRoWs, and the potential creation of permissive paths, which could serve as a health and wellbeing benefit for residents and visitors alike. For this reason the effect is scoped in during this phase.
Transport modes, access and connections	C&D - In O - Out	Construction and Decommissioning There is potential for construction traffic to have associated impacts on emergency health related journey travel times, access to healthcare services, access to health promoting goods and services, community severance or road safety. This is therefore scoped into the assessment. Operation During the operational phase, the volume of traffic associated with the Project is considered to be negligible with only occasional routine visits required to the Site for maintenance, servicing, and replacement of equipment. It is therefore unlikely that there will be any significant population health effects due to changes in routine, emergency health related journey travel times, access to healthcare services, access to health promoting goods and services, community severance or road safety.
Community safety	Out	Construction and Decommissioning

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
		Good practice measures in terms of safety, such as a risk assessment prior to the start of works, would be secured through suitable management plans during construction and so the risk to the local community from accidental injury is scoped out.. Security measures will be in place during the construction phase through security fencing, CCTV and lighting as per the Construction (Design and Management) Regulations 2015, which will also include the production of a health and safety plan (HSE, 2015). Managing health and safety at the Site, will ensure safety risks to the local community are minimised since construction activities automatically increases community exposure to risks and impacts. Based on this, there is unlikely to be significant effects relating to community safety. On this basis, community safety is scoped out. Operation Security will be managed through perimeter fencing, CCTV and lighting Given the nature of the Project and its rural location, this suggests that no crime or community safety impacts would be anticipated and hence this determinant is proposed to be scoped out.
Community, identity, culture, resilience and influence	C&D - In O - In	Construction and Decommissioning Demographic changes resulting from an inward migration of workers to local communities could be significant, particularly if some workers reside within temporary accommodation in local communities. Construction works (including its visible impact) such as barriers, lighting or signage are not expected to disrupt community identity or community gatherings to an extent that would significantly affect population health, given the Site's location is not considered a place that the local community utilise to meet. Construction workers requiring temporary accommodation could result in significant changes to the local community identity and makeup. Any potential impacts on bilingualism and the Welsh culture will explicitly be assessed. This effect is proposed to be scoped in. Operation The visual impact of the Project on the existing landscape could influence the community identity and have potential effects on wellbeing. This is therefore proposed to be scoped into the assessment. Consideration will be given to the findings of the Landscape Visual Impact Assessment and Amenity and Recreation Assessment, when assessing this effect.

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
Social participation, interaction and support	Out	Construction, Operation and Decommissioning The Project would not directly affect land use for community interactions such as community centres or meeting places. Any indirect impacts on such spaces is addressed under the 'transport modes, access and connection' and 'open space, play space and leisure' health determinants. Based on this, this effect is scoped out.
Economic environment		
Education and training	In	Construction, Operation and Decommissioning All phases of the Project are expected to support education and training opportunities that could have a significant impact upon human health such as school programmes, adult learning and apprenticeships.
Employment and income	In	Construction, Operation and Decommissioning The Project provides opportunities for stable, fairly-paid employment, including opportunities for vulnerable groups with the potential for significant benefits from reduced inequalities. For these reasons, the effect is scoped in. It should however be noted that any potential adverse economic effects on local businesses are scoped out of the socio-economic assessment, due to the fact that a high density of businesses do not existing in the vicinity of the Site. As a result, this element of the determinant therefore also won't be considered within this health assessment.
Bio-physical environment		
Climate change and adaptation	C&D - Out O - In	Construction and Decommissioning Carbon and climate altering pollutant emissions are not expected to be of the scale to have significant health effects during this temporary phase, as the CEMP will be prepared to minimise harmful emissions such as adhering machinery to relevant emission standards. This determinant is proposed to be scoped out.

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
		Operation The Project would provide positive climate adaptation in the form of renewable energy generation. Whilst it is likely not of a scale to have a material effect on human health through the displacement of carbon emissions in isolation, the Project does have the potential to impact health outcomes through climate change in a number of ways. First, the Project helps to create resilience to climate change impacts, as well as greater flexibility with it being part of a mixed-approach to renewable energy generation (e.g. solar and BESS). At a local level, the Project creates opportunities for behaviours with respect to climate change to be altered, as residents and businesses learn more about and utilise renewable energy. Existing health literature suggests that specific vulnerable groups such as older people and those with a long-term health problems can experience differential impacts from changes to climate change (Ref 7-106). For example individuals with long-term respiratory conditions may be more sensitive to air pollution and older adults are less likely to be able to adapt to and deal with extreme weather conditions - this will be explored further in the health assessment. The assessment will therefore discuss the positive climate change effects on human health.
Air quality	Out	Construction and Decommissioning Construction phase dust emissions have the potential to affect human and ecological receptors as a result of dust soiling and on human health. However, dust emissions during the construction phase are expected to be adequately managed through mitigation measures identified by the construction phase dust assessment and implemented by a CEMP. As such, no significant effects to air quality are expected. Dust emissions during the construction phase would therefore not be expected to have a significant effect on population health and is therefore proposed to be scoped out of the assessment. Operation Impacts to air quality at sensitive human and ecological receptors from the operational phase of the Project are not anticipated to be significant as traffic flows are expected to be minimal and no combustion plant will be present onsite. Significant operational air quality effects are therefore not expected and this effect is proposed to be scoped out.

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
Water quality or availability	C&D - In O - Out	Construction and Decommissioning The surrounding presence of agricultural land means there could be a risk of agricultural and private water sources and supplies becoming contaminated. Standard mitigation measures such as forms of pollution control, will be brought forward to avoid pollution of local watercourses and outlined in Chapter 14: Water quality. The main potential for health effects are associated with the risk of contamination at the former Shell site in Maen Hir North, which will be considered. Therefore this effect is scoped in to the assessment. Operation Routine checks and maintenance, as well as operation and replacement of parts of the of the BESS, are unlikely to result in any water related risks to population health. Any risks would be managed through good practice and secured through management plans. If significant adverse effects are identified in the Chapter 14: Water Resources, appropriate mitigation measures will be put forward and addressed within that chapter..
Land quality	Out	Construction and Decommissioning It is considered unlikely that the construction phase will significantly affect the agricultural land quality or soil resource, particularly given that construction and decommissioning activities will involve limited excavation. However, if significant adverse effects are identified in the Chapter 13: Soils and Agriculture, consideration will be given to whether this should be scoped into the human health assessment. Operation It is unlikely that checks and maintenance activities would affect land quality to the extent that changes would significantly impact human health. However, if significant adverse operational effects are identified in the Chapter 13: Soils and Agriculture, this effect will be scoped into the human health assessment.
Noise and vibration	In	Construction and Decommissioning

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
		The nature of construction works in terms of intensity and duration means that significant effects from noise and vibration are considered unlikely. However, some activities such as piling and drilling could have health impacts associated with annoyance and sleep disturbance. Adopting a precautionary approach, noise and vibration effects are currently proposed to be scoped into the assessment. However, this effect may potentially be scoped out at a later stage, depending on the findings of the noise and vibration assessment. Operation The potential operational noise effects are scoped in due to the potential health effects associated with noise from electrical plants, tracker panels and transformers.
Radiation	Out	**Construction and Decommissioning** Construction works would not include using, or making material changes to, active major electrical infrastructure producing electro-magnetic fields (EMF). Relevant safeguards will be followed when temporary electrical equipment is used, with this mandated and secured through management plans. Accordingly, radiation is scoped out during this phase. **Operational** As with all electrical appliances and equipment, the required infrastructure for the Project will generate EMF. The Grid Connection Cable and Project Substation, which form a part of the Project, exceed 132kV and therefore have the potential to cause electromagnetic fields with potential for adverse effects on human health. The Grid Connection Cable will be buried underground at a suitable depth and the Project Substation will be set back from sensitive receptors and designed in accordance with relevant guidance (DECC Power Lines: Demonstrating compliance with EMF public exposure guidelines, A Voluntary Code of Practice 2012). In addition, in terms of EMF radiation, advice from National Grid is that Magnetic field levels at the boundary of a substation are typically at a level of 1 or 2 μT (microtesla), but this decreases very quickly as you move away from the substation. At approximately 1-2 metres from the substation, for example, the magnetic field is usually lower than the field found in homes. Therefore, electromagnetic fields are unlikely to have any adverse effects on residential receptors.

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
Institutional and built environment		
Health and social care services	C&D - In O - Out	Construction and Decommissioning There is potential for an increased demand for health and social care services required by construction workers. Construction workers typically record a slightly higher rate of accidents than the general workforce. Therefore, this effect is scoped in for the construction phase. Operation Increased demand for GP provision and emergency services can reduce the capacity of these facilities and therefore impact human health. The Project will have a very low number of operational employees. It is also expected that most operational workers would already be local residents, given the geographical nature of where the Project is located (a relatively isolated island location) and would continue to use healthcare services (GP services, dental practice and social care) near to their usual place of residence. Existing evidence shows that patients are far more likely to register with GPs near their place of residence rather than place of work. Therefore no significant changes are expected to demand for health and social care services.
Built environment	Out	Construction and Decommissioning The construction phase of the Project is unlikely to significantly affect existing features of the built environment in terms of population health. The Project cable route is still being determined but it is expected that it would use trenchless techniques where necessary, or introduce other design measures that seek to avoid surface disruption at sensitive features. In particular, cabling routes would seek to avoid local residential settlements where practicable. Any diversions of water and sewer systems would be secured in the Construction Environmental Management Plan (CEMP), therefore minimising disruption. On this basis, this health effect is proposed to be scoped out. Operation The Project would introduce new elements in the built environment, however these will be considered under the 'community identity' health determinant, with respect to how the solar panels, BESS and

Health effect	Scoped in/out	Justification, based on health determinants (split by phase of the Project)
		substation could influence the make-up and nature of the existing community identity. On this basis, this effect is proposed to be scoped out for this determinant, given it is more appropriate to be covered under the 'community identity' health determinant and this would simply lead to repetition here.
Wider societal infrastructure and resources	C&D - Out O - In	Construction and Decommissioning This phase would not generate public health benefits at this stage. Similarly, it is not anticipated that the construction activities would have any adverse significant impacts on the existing supply of electricity, nor any other wider societal infrastructure and resources. It is therefore proposed to be scoped out. Operation During the operation, the Project would provide renewable energy infrastructure including a proposed ~5MW Community Solar PV Array. A reliable supply of electricity is required in relation to factors including population safety, thermal comfort, healthcare, learning, business function and social networking.. It is therefore, scoped into the assessment.

Consultation

7.14.33 The Applicant will carry out a local needs assessment, in addition to the baseline assessment. The local needs assessment will focus on identifying and understanding local health needs and vulnerable groups that could be significantly impacted by the Project.

7.14.34 As part of this process, engagement will be carried out with relevant public health bodies, the local authority, and community facilities and groups to supplement the desk-based findings over the next few months, ahead of production of the PEIR. Examples of consultees that engagement will be sought with include the BCUHB (health board), NHS Wales (if not through BCUHB), the Isle of Anglesey County Council health officer and any identified prevalent vulnerable groups. Collectively, these findings will be used to inform the evolving design of the Project ahead of the PEIR and ES stages of the DCO application.

References

Ref 7-101 World Health Organisation (WHO), 2023. Health and Well-Being.

Ref 7-102 NHS Wales, 2022. Anglesey Locality Needs Assessment 2021-22.

Ref 7-103 ONS, 2022. Census 2021: RM161 - Welsh language skills by sex and age.

Ref 7-104 North Wales Social Care and Well-Being Services Improvement Collaborative, 2022. North Wales Population Needs Assessment

Ref 7-105 Martijn I. Dröes, Hans R.A. Koster, 2021. Wind turbines, solar farms, and house prices.

Ref 7-106 National Institute of Enviornmental Health Sciences, 2022. Climate Change and Human Health.

7.15 Major Accidents and Disasters

Introduction

7.15.1 This section of the Scoping Report sets out the approach to the assessment of Major Accidents and Disasters. The baseline conditions are first established through a desktop review followed by the proposed assessment methodology for the assessment of likely significant effects. The potential impacts are then presented which form the basis of the identification of the effects proposed to be scoped in and out from the PEIR and the ES in the following sub-section. The consultation undertaken to date and proposed further consultation is then set out.

Baseline Conditions

7.15.2 There are no active Upper Tier Control of Major Accident Hazards (COMAH) sites within the Scoping Study Area.

7.15.3 There are high pressure pipelines (major accident hazard pipelines) within the Isle of Anglesey. An existing 400 kV overhead power line traverses the Scoping Study Area from north west to south east.

7.15.4 The Strategic Road Network (SRN) relevant to the Site is the A5025, which is a strategic coastal highway that acts as the primary ring road around the Island. The A5025 connects with the A55 and A5 trunk roads at the Britannia Bridge over the Menai Strait. The A55 is a major road that runs along the north coast of Wales, providing links between Holyhead, Bangor, Conwy, and Chester.

7.15.5 The Natural Resources Wales (NRW) Development Advice Map shows that the majority of the Scoping Study Area is located within Zone A (considered to be at little or no risk of fluvial or tidal/coastal flooding). There are areas of Zone C2 (areas of the floodplain without significant flood defence infrastructure, based on the extreme flood outline, equal to or greater than the 1 in 1000-year) associated with the Afon Wygyr, Afon Alaw, Llyn Alaw Reservoir, Afon Ynys Fawr and Afon Llandyfrydog. There are also small areas of Zone B (areas known to have been flooded in the past) adjacent to these water bodies.

Assessment Methodology

Overview

7.15.6 In accordance with Schedule 4 of the EIA Regulations, the EIA methodology chapter of the ES will describe the risks of major accidents and/or disasters that are relevant to the Project.

7.15.7 The EIA Regulations do not include the definition of major accidents and/or disasters. For the purposes of the assessment, the following three definitions and accidents and disasters have been used within the context of the Project:

- The Control of Major Accidents Hazard (COMAH) Regulations, 2015 (Ref 7-107), defines a major accident as "an occurrence such as a major emission, fire, or explosion resulting from uncontrolled development, leading to serious danger to human health or the environment (whether immediate or delayed) inside or outside the establishment, an involving one or more dangerous substances".
- The International Federation of Red Cross & Red Crescent Societies Disaster and Crises Management Guidance provides a useful definition for disaster, which is "a sudden calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins."
- The Oxford English Dictionary defines an accident as "an unfortunate incident that happens unexpectedly and unintentionally, typically resulting in damage or injury."

Identifying Risks for Major Accidents and/or Disasters

7.15.8 To help identify major accidents and/or disasters which are relevant to the Project, the following guidance documents have been referred to:

- Cabinet Office National Risk register of Civil Emergencies (Ref 7-108)
- HM Government: Emergency Response and Recovery (Ref 7-109)

7.15.9 The Project does not introduce any construction or operational uses or procedures that are considered to have a risk of major accident or disasters that could affect

existing or future sensitive receptors, which are not considered through existing regulatory regimes. Such regimes include Building Regulations, NHS Wales 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 emergency service response procedure and call/response procedure to report utility system failures.

Study Area

7.15.10 The study areas in relation to fire risk will be defined in the PEIR/ES when the location of the Battery Energy Storage System (BESS) is confirmed. The area will be sufficient to consider the risk of fire at the BESS affecting nearby receptors.

Potential Effects

Transport Accidents

7.15.11 The Project will increase the amount of traffic on the public highway during both the construction, operation and maintenance, and decommissioning phases. The Transport Assessment and Transport and Access chapter of the ES will consider the highway safety and potential effect on accidents arising as a result of the Project.

7.15.12 Impacts from glint and glare to road, rail and aircraft users will be considered in the Glint and Glare Assessment, and mitigation measures will be identified and incorporated into the design of the Project, where necessary.

Flooding

7.15.13 Both the vulnerability of the Project to flooding, and its potential to exacerbating flooding will be assessed in the Flood Risk Assessment (FRA) and the Water Resources and Ground Conditions chapter of the ES to ensure that the Project is safe from water ingress for its lifetime in the event of flooding, without increasing flood risk elsewhere.

Fire

7.15.14 Components and equipment of the Project installed during construction and dismantled during the decommissioning phase would be in accordance with the relevant fire regulations and guidance from the Health and Safety Executive. The operational phase of the Project would involve routine maintenance, servicing,

and replacement of equipment to ensure the safe operation. Fire equipment and notices will also be provided onsite for the availability of personnel and would be regularly inspected and serviced in accordance with Regulatory Reform (Fire Safety) Order 2005. An Operational Environmental Management Plan (OEMP) will require the preparation of an Emergency Response Plan and be secured in the DCO. Furthermore, an outline Battery Storage Safety Management Plan will be prepared in support of the DCO application.

Major Accident Pipelines

7.15.15 National Grid Gas (NGG) has existing easements for pipelines which provides rights for ongoing access and prevents the erection of permanent / temporary buildings/structures, change to existing ground levels or storage of materials etc within the easement strip.

7.15.16 NGG's 'Guidance for developing solar farms near to gas distribution and transmission pipelines' will be followed and Protective Provisions for NGG's benefit will be included within the DCO. As such, there is no potential for any significant adverse effects in relation to major accident pipelines.

Electromagnetic Fields

7.15.17 The Grid Connection Cable and Project Substation, which form a part of the Project, exceed 132kV and therefore have the potential to cause electromagnetic fields with potential for adverse effects on human health. The Grid Connection Cable will be buried underground at a suitable depth and the Project Substation will be set back from sensitive receptors and designed in accordance with relevant guidance (DECC Power Lines: Demonstrating compliance with EMF public exposure guidelines, A Voluntary Code of Practice 2012). In addition, in terms of EMF radiation, advice from National Grid is that Magnetic field levels at the boundary of a substation are typically at a level of 1 or 2 μT (microtesla), but this decreases very quickly as you move away from the substation. At approximately 1-2 metres from the substation, for example, the magnetic field is usually lower than the field found in homes. Therefore, electromagnetic fields are unlikely to have any adverse effects on residential receptors.

Proposed Scope

Scoped Out

7.15.18 The following major accident and disaster topics are proposed to be scoped out as there is no potential for significant effects or they will be adequately addressed through other technical assessments:

- Transport Accidents
- Flooding
- COMAH Sites
- Electromagnetic Fields

Scoped In

7.15.19 It is proposed that the consideration of fire hazards relating to the BESS is not assessed within a dedicated major accidents and disasters chapter but is considered within an 'Other Matters' chapter of the PEIR/ES.

Consultation

7.15.20 National Grid Gas, National Grid Electricity Transmission, Natural Resources Wales and the Health and Safety Executive will be consulted on the risk of major accidents and disasters.

References

Ref 7-107 The Control of Major Accidents Hazard (COMAH) Regulations, 2015

Ref 7-108 Cabinet Office National Risk register of Civil Emergencies

Ref 7-109 HM Government: Emergency Response and Recovery

8 Summary

8.1.1 In accordance with the EIA Regulations the Scoping process is a formal regulatory stage that helps define the scope and level of detail to be included within the ES. The purpose of the scoping process is to identify the main issues that will be the focus of the assessment and avoid the need for the assessment to cover every possible environmental impact to unwarranted detail.

8.1.2 This Scoping Request represents notification under Regulation 8(1)(b) of the EIA Regulations that the Applicant will undertake an EIA in respect of the Scheme and produce an ES to report the findings of the EIA. It also represents a formal application to PINS under Regulation 10 of the EIA Regulations for a 'Scoping Opinion' as to the information to be provided within the ES that will form part of the DCO application. This report has identified the environmental effects that are considered to have the potential to be significant and proposes the approach to be used in assessments that will be undertaken for the EIA to characterise and understand the significance of these effects. The prescribed consultees are invited to consider the contents of this report and comment accordingly within the statutory 42 day time period.

8.1.3 Table 8-1 summarises the scope of the environmental topics assessments included in Chapter 7 of this report, which highlights the particular issues that are proposed to be scoped in and out of the EIA.

Table 8-1 Summary of the Proposed Scope

Potential Effect/Receptor	Construction	Operation	Decommissioning
Landscape and Visual			
Landscape Character Areas	X	X	X
LANDMAP Geological Aspects	X	X	X
Visual Effects	X	X	X
Landscape Designations	X	X	X
Amenity and Recreation Effects	X	X	X
Night-time and Lighting Effects	X	X	X
Ecology and Biodiversity			
Statutory and non-statutory designated sites (without mobile qualifying criteria) located greater than 2 km from the Site			
Statutory international designated sites (with mobile qualifying criteria) located up to 10 km from the Site	X		
Statutory national designated sites within 2km of the Site	X		
Non-statutory designated sites within 2km of the Site	X		
Non-statutory designated sites greater than 2 km of the Site			
Priority and Notable Habitats, Ancient Woodland and Ancient/ Veteran Trees within/immediately adjacent to the Site	X	X	
Impacts to common and widespread habitats of low sensitivity and/or conservation interest			

Potential Effect/Receptor	Construction	Operation	Decommissioning
Protected and notable species	X	X	
Designated sites and notable habitats susceptible to air quality impacts	X		
Designated sites, protected and notable species susceptible to INNS within the Scoping Study Area	X		
Cultural Heritage			
Archaeology	X		
Built heritage setting		X	
Transport and Access			
Transport effects: severance; driver delay; pedestrian delay; non-motorised user amenity; fear and intimidation; and road safety.	X		X
Alternative modes of construction access			
Hazardous and large loads			
Air Quality			
Qualitative or quantitative assessment of road traffic emissions	X		
Qualitative assessment of fugitive dust emissions			
Assessment of NRMM emissions			
Assessment of emissions associated with shipping of construction/maintenance materials			
Assessment of on-site operational phase emissions			
Noise and Vibration			

Potential Effect/Receptor	Construction	Operation	Decommissioning
Onsite construction activities	X		
Road traffic	X		
Fixed plant and equipment including low frequency noise		X	
Tranquillity			
Vibration from electrical plant			
Ground Conditions			
Geology, soils, contamination and groundwater	X	X	X
Mineral resources			
Soils and Agriculture			
Potential effect on agricultural land quality	X		
Potential effect on farm businesses, agricultural enterprises and land use	X	X	
Water Resources			
Flood risk	X	X	X
Surface water quantity	X	X	X
Water quality	X	X	X
Foul water - quantity and quality			
Potable water			
Climate			

Potential Effect/Receptor	Construction	Operation	Decommissioning
Greenhouse gas emissions	X	X	X
Climate Change Resilience and In-combination Climate Impact Assessment relating to extreme weather events and changes in temperature, precipitation and wind patterns	X		
Climate Change Resilience and In-combination Climate Impact Assessment relating to sea level rise			
Glint and Glare			
Residential Receptors within 1km of the PV Arrays		X	
Road Receptors within 1km of the PV Arrays		X	
PRoW within 1km of the PV Arrays		X	
Aviation Receptors		X	
Rail receptors			


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