

Prosiect Maen Hir

Solar a Storio Ynni



Preliminary Environmental Information Report Non-technical Summary

Prosiect Maen Hir - September 2024

EN010156



Ynys Môn - The Isle of Anglesey, shortened to Anglesey for every day use, is a long-settled land. From the earliest hunter gathers circa 7000BC that set up seasonal camps on the Island after the end of the last Ice Age, to the present day, communities have interacted with, and shaped the land on which they depended for their shelter, food, fuel and building materials. Evidence of the past is all around us. It is in the archaeological record beneath our feet, and in myths, legends and stories we pass on generation to generation and forms an Anglesey rich in the Welsh language and culture today. It is also visible in the rich architecture of churches and chapels, domestic and industrial buildings, and in the very fabric of the landscape; the patterns of fields, settlements and routeways.

Some of the most enigmatic of Anglesey's monuments are the Island's standing stones or 'meini hirion' (the plural) and are why we name this project 'Prosiect Maen Hir'. Their purpose may have been driven by the practical need to stake a claim on the land, or to demarcate special places that provided a link to the ancestors. They may also mark the passage of time by aligning to the movement of celestial bodies, astronomy and sacred places for the Druids (the priests of the Celts). Their true meaning is lost in the mists of time. However, the effort to source and erect the megaliths would have clearly represented a huge communal endeavour, indicating they were enormously important to the societies that created and maintained them.

The enduring presence of the meini hirion indicates that many of the stones have retained meaning and value over the intervening generations. Some have been respected and venerated within changing religious movements. Others have been repurposed as gate posts. They are an important part of Anglesey's heritage tourism and today, are protected and cherished as enigmatic survivors of our past.

The standing stones of Anglesey have borne witness to many changes over the millennia. They have seen the sun rise and fall many thousands of times, a key aspect for some of the meini hirion and ancient stone burial chambers linked to the sun's alignment and in particular the solstice. However, they remain steadfast sentinels and symbols of the enduring and everlasting relationship between the Island's heritage, communities and the land.

Our project, known as Maen Hir, represents a further chapter in the history and future of Anglesey, today known as 'Ynys Môn - Ynys Ynni/Anglesey Energy Island' because of the Island's land and sea contribution to the low carbon/net zero energy ecosystem and mix. It marks our generations urgent need to respond to the challenges of our times and the urgency and shared responsibility to achieve Net Zero. Prosiect Maen Hir will tread lightly within the landscape; recognising and respecting the rich layers of Welsh language and cultural significance. The meini hirion will oversee Prosiect Maen Hir, and the positive environmental, cultural and economic legacy it will create.

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Glossary

Term	Description
132kV Substation	Substations within the Solar PV Site comprising 132kV Transformers and Switchgear contained within a palisade fenced compound.
33kV Substation	Substations within the Solar PV Site comprising 33kV Transformers and Switchgear housed within containers or brick buildings with no fencing.
Access Tracks	Existing and proposed tracks within the PEIR Boundary (not including public highways).
Alternating Current	The form in which electricity is delivered to the National Grid. Otherwise known as AC.
Ancillary Buildings	The office, storage and plant buildings which may be located within the Solar PV Site.
Ancillary Infrastructure	Works that are ancillary to the Project, including 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 SPV 204 Limited, a wholly owned subsidiary of Lightsource bp.
Associated Development	Development associated with the Project including the BESS, Grid Connection Route and Ancillary Infrastructure integral to the construction, operation, maintenance, and decommissioning of the Project.
BESS	Battery Energy Storage System - a system that allows renewable energy from the grid or the Project to be stored and then released to the grid, or an off-taker, when the power / service is needed most. Typically comprising containers which include the rack, modules, and cells; Power Conversion Systems (inverters and transformers) and ancillary infrastructure.
Cable Route Corridor	The route for the proposed 132kV and/or 33kV underground cables connecting the 33kV and 132kV Substations to the BESS and the Project Substation.
Central Inverters	Inverters comprising containerised units located throughout the Solar PV Site.

Term	Description
Community Solar Project	A 5MWp (DC) solar project which is intended to be owned by an independent management organisation for the benefit of the local community.
Construction Compounds	Areas used during construction comprising hardstanding, car parking, construction site office and welfare facilities, working areas, storage of materials and equipment, waste management facilities, security infrastructure including fencing, lighting and cameras.
Construction Phase	The period of commissioning and constructing the Project as described in Chapter 5 of this PEIR.
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 period of decommissioning the Project including the removal of all of the PV Arrays including modules, Mounting Structures, Inverters and Transformers, the BESS and Project Substation.
Development Consent Order	The means of obtaining permission for a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. Otherwise known as DCO.
Direct Current	The electrical charge that flows one way from the Solar Modules or BESS. Otherwise known as DC.
Displacement	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	A process by which information about the likely significant effects (LSE's) of the Project is collected, assessed and used to inform decision making. Otherwise known as EIA.
Fixed South Facing Structure	PV Tables forming fixed structures that face south.
Former Oil Depot	The area of brownfield land within Maen Hir North that was formerly a Shell operated fuel terminal.

Term	Description
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 400kV cables connecting the Project Substation to the NGET Substation.
Grid Connection Corridor	The proposed corridor for the Grid Connection Cables between the Project Substation and the National Grid Electricity Transmission Substation.
High Voltage Distribution Cables	Cables (33kV and 132kV) which transmit electricity between the Transformers, Switchgear and the 33kV and 132kV Substations.
Highway Works	Public highways where there is potential for works such as road widening or amending to facilitate construction access.
Inverters	Inverters convert the Direct Current (DC) electricity generated by the PV Panels, to Alternating Current (AC) which is compatible with the wider National Electricity Transmission System.
IoACC	Isle of Anglesey County Council
kV	A kilovolt (kV) is a unit of measurement for electric potential or voltage.
Likely Significant Effects	Likely significant effects (LSE's) upon the environment, as defined in the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended).
Low Voltage Distribution Cables/Cabling	Cables which transmit electricity from the PV Arrays to the 33kV substations.
Mitigation	Measures including any process, activity or design to avoid, prevent, reduce, or offset an adverse environmental effect of the Project.
Mitigation and Enhancement Areas	Land that is being proposed for mitigation and enhancement including retained agricultural land.
Mounting Structure	The metal frames onto which the PV Modules are attached.
MW	A Megawatt (MW) is a unit of measurement equating to 1 million watts of electricity.
MWp	The maximum capacity (peak) of installed MW DC solar capacity.
National Electricity Transmission System	The United Kingdom's high-voltage electricity transmission network, known as the National Grid. Otherwise known as NETS.

Term	Description
National Grid Electricity Systems Operator	The electricity system operator for Great Britain, who move electricity around the National Grid to keep homes and businesses supplied with energy. Otherwise known as NGENSO.
National Grid Electricity Transmission	The owner and operator of the high-voltage electricity transmission network in England and Wales. Otherwise known as NGET.
Nationally Significant Infrastructure Project	Large scale infrastructure development that requires development consent pursuant to the Planning Act 2008. Otherwise known as NSIP.
NGET Substation	A new 400kV Substation anticipated to be consented, owned and operated separately by NGET. Not a part of the DCO Application.
Operational Phase	The period within which the Project is operational, following the Construction Phase, and which includes maintenance and replacement activities.
Parcels	The main land parcels of the Site comprising Maen Hir North, Maen Hir Central and Maen Hir South (A and B). Shown on Figure 5-1 Parameter Plan Overview.
PEIR	Preliminary Environmental Information Report - a document prepared to set out the preliminary identified likely significant effects of the Project upon the environment.
PEIR Boundary	The boundary around the area of land that makes up the Project for the purposes of the PEIR including the Solar PV Site, Mitigation and Enhancement Areas, Cable Route Corridor and the Highway Works.
Permissive Paths	New recreational permissive paths that the public can use during the Operational Phase of the Project.
Planning Inspectorate (PINS)	An executive agency of the Department for Levelling Up, Housing and Communities of the United Kingdom Government with responsibility for making decisions and providing recommendations and advice on a range of land use planning-related issues across England and Wales.
Point of Connection (POC)	The NGET Substation and associated connection into the existing 400kV overhead lines located in proximity to the Project, which the Project will connect into.
Primary Construction Compound	An area within Maen Hir North where construction deliveries will be set down and managed throughout the Construction Phase.

Term	Description
Project Substation	<p>The 400kV 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.</p> <p>The Project Substation will convert the electricity transmitted along the 33kV and/or 132kV cabling up to 400kV for onward transmission to the NGET Substation via the Grid Connection Corridor.</p>
Project Substation Switch Room	The main 33kV switch room within the 400kV Project Substation compound.
PV Arrays	Rows or groups of PV Tables that are connected to one another to form a PV Array which is either connected to a String Inverter or a Central Inverter.
PV Module or panel	Solar panels, also known as photovoltaic (PV) panels or PV Modules, are made up of cells, which convert the light energy from daylight into electrical energy. The solar panels are fixed to a Mounting Structure and referred to as a PV Table.
PV Table	PV Modules fixed to a Mounting Structure.
Receptor	A component of the natural or man-made environment that is affected by an impact, including people.
Rochdale Envelope	A flexible approach employed where the nature of the proposed development means that some details of the Project have not been confirmed (for instance the precise dimensions or locations of structures) when the application is submitted. Allows the EIA to be based on a 'worst-case' approach.
Single Axis Tracker	A tracking system that allows the PV Modules to rotate and track the movement of the sun. Otherwise known as SAT.
Solar PV Site	The Parcels within the PEIR Boundary that are being proposed for PV Arrays, 33kV / 132kV Substations, Access Tracks, Low Voltage Distribution Cables, BESS, Project Substation and other Ancillary Buildings and Infrastructure.
String Inverters	Inverters located throughout the Solar PV Site, mounted on structures under or next to PV tables.
Study Area	The area to which a particular assessment or survey relates. The study area will vary depending on the nature of the technical assessment.

Term	Description
Switchgears	Switchgears are the combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment.
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 5 of this PEIR. The Project is known as 'Prosiect Maen Hir'.
Transformers	A structure serving to transform or 'step-up' electricity to a higher voltage
Twin MV Skid	Two power conversion systems and one transformer.
Written Scheme of Investigation	A document which outlines known and potential archaeological features and deposits, or built heritage elements, and suggests a structure for exploring them using the most appropriate and cost-effective archaeological techniques.
Zone of Influence (Zol)	The area for the assessment of combined effects. Zones of Influence (Zols) are variable depending on the environmental factor being discussed.
Zone of Theoretical Visibility (ZTV)	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 Non-Technical Summary of the Preliminary Environmental Information Report (PEIR) has been prepared on behalf of Lightsource SPV 204 Limited (the 'Applicant') for a solar generating station with a capacity of over 350 megawatts (MW) alternating current (AC), and associated development including a Battery Energy Storage System (BESS), Project Substation, Community Solar Project and Ancillary Infrastructure, on land in Anglesey (the Project) (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 Anglesey at the forefront of low carbon energy research and development, production and servicing, delivering economic, community, and environmental benefits.
- 1.1.3 As the Project is located in Wales and has a generating capacity of over 350MW AC, it is a Nationally Significant Infrastructure Project (NSIP) and therefore requires a Development Consent Order (DCO) under the Planning Act 2008. The Environmental Impact Assessment (EIA) legislative framework for projects of this type is the Infrastructure Planning (EIA) Regulations 2017 (the 'EIA Regulations'), as amended.
- 1.1.4 The EIA Regulations specify which developments are required to undergo EIA. 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...'. The Applicant considers that due to the Project's nature, size and location, it has the potential to have likely significant effects on the environment and therefore requires EIA. In accordance with Regulation 8(1)(b) of the EIA Regulations, the Applicant provided notice within the Scoping Opinion Request (Appendix 2-1 of the PEIR) that it will provide an Environmental Statement (ES) in support of the DCO Application.

1.2 The Applicant

- 1.2.1 Lightsource SPV 204 Limited is a subsidiary of Lightsource bp; 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 formed a joint venture with bp and subsequently became Lightsource bp. Most recently, bp has announced the intention to fully acquire Lightsource bp, which currently operates as a 50:50 joint venture with bp. Lightsource bp 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 9.5GW of solar capacity globally to date.

1.3 Need for the Project

- 1.3.1 There is a growing body of UK energy and climate change international commitments, law, policy and guidance which highlights an urgent need for new energy generation infrastructure, particularly from renewable sources such as solar. Alongside this drive for new energy generation, the UK Government has committed to achieving net zero greenhouse gas emissions by 2050 and decarbonisation of the energy sector by 2035.
- 1.3.2 Decarbonisation is a UK legal requirement and is of global significance. In June 2019, the Government passed law to end the UK's contribution to global warming by 2050: Net Zero.

1.4 Purpose of the PEIR

- 1.4.1 The EIA Regulations state that the purpose of the PEIR is to provide sufficient information to enable stakeholders to develop an informed view of the likely significant effects of the Project.
- 1.4.2 The PEIR presents the preliminary findings of the EIA undertaken for the Project for the purpose of statutory consultation in accordance with the Planning Act 2008. The information presented within this report is preliminary and is based on the design of the Project as set out in Chapter 5: Project Description. Further design and EIA work is being undertaken to refine the assessment of predicted likely environmental effects. The final findings of the EIA process will be reported within the ES, which will be submitted with the DCO Application.

2 Environmental Impact Assessment Methodology

2.1 The EIA Process

2.1.1 EIA is the process of compiling, evaluating and presenting the likely significant environmental effects of a project. In general terms the main stages in the EIA are as follows:

- Establish the baseline – collate and review available data and undertake baseline surveys
- Scoping – identify likely significant effects to determine the scope of the EIA
- Consultation – seek feedback from consultees and the public in relation to key environmental issues, methodology and design approaches
- Assessment and design response – finalise 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 PEIR and ES

2.2 EIA Scoping

2.2.1 EIA Scoping is the process of identifying the issues to be considered within the PEIR and ES and establishing the scope of the assessment.

2.2.2 The EIA Scoping Opinion Request was issued to the Planning Inspectorate (PINS) on 9 November 2023 (see Appendix 2-1 of the PEIR) who subsequently adopted the EIA Scoping Opinion on 19 December 2023 (see Appendix 2-2 of the PEIR). Based on this, the following technical chapters have been scoped into the assessment, the results of which are summarised in Section 6 of this NTS.

- Landscape
- Ecology
- Heritage
- Transport
- Noise
- Ground Conditions
- Soils and Agriculture
- Water Resources
- Climate Change

- Other Matters (including air quality, glint and glare, major accidents and disasters and waste)
- Health

2.3 EIA Methodology

EIA Assessment Scenarios

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

- Construction Phase
- Operational Phase (proposed to be 60 years)
- Decommissioning Phase

Determining Significance

2.3.2 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 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 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.

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

2.3.4 Assignment of environmental sensitivity of a receptor will generally depend on the vulnerability, recoverability and value/importance of the receptor. Magnitude of impact is defined as the how far the impact deviates from the established baseline conditions and considers the extent, duration, frequency and reversibility of that impact. Impacts will be defined as either beneficial or adverse.

2.3.5 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.

Cumulative Effects

2.3.6 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.
- Cumulative effects: multiple developments generating additive effects which together have an increased effect on the same receptors.

2.3.7 Effect interactions are considered in each technical assessment and cumulative effects are assessed in Chapter 18 of the PEIR (summarised in Section 6.14 of this NTS).

Transboundary Effects

2.3.8 The EIA Regulations require the consideration of any likely significant effects in the environment of another European Economic Area (EEA) member state. PINS confirmed in their Scoping Opinion (Appendix 2-2 of the PEIR) that the likelihood of transboundary effects resulting from the Project is so low that it does not warrant the issue of a detailed transboundary screening or assessment.

Mitigation

2.3.9 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. Measures will be identified in order to avoid, reduce and, if possible, offset significant adverse effects identified during the EIA process. Measures that can be specified in detail and incorporated into the design or management controls of the Project are termed 'embedded mitigation'.

2.3.10 The PEIR and the ES, to be submitted with the DCO application, assess effects with embedded measures in place. Where significant adverse effects are identified after considering embedded measures, 'additional mitigation measures' will be proposed where practicable. These are taken into account in the assessment of residual effects.

Monitoring

2.3.11 The ES will specify which effects, if any, will require monitoring, and the mechanism by which they will be monitored.

3 PEIR Boundary and Context

3.1 Context

- 3.1.1 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, solar and nuclear developments, and overhead lines.
- 3.1.2 Some of the most characteristic features of Anglesey are the standing stones, or 'meini hirion' (the plural); and that is why the 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 remain as symbols of the relationship between the Island's heritage, communities, and land.
- 3.1.3 Prosiect Maen Hir represents a further chapter in the history and future of Anglesey and responds to the need to achieve Net Zero.

3.2 The PEIR Boundary

- 3.2.1 The PEIR Boundary is defined as comprising three linked Parcels for ease of referencing (see Figure 3-1). The Parcels are:
- Maen Hir North - near Rhosgoch and Bodewryd;
 - Maen Hir Central - around the northern and eastern periphery of Llyn Alaw; and
 - Maen Hir South A and B - to the north-east and south-east of Llannerch-y-medd.
- 3.2.2 The land predominantly comprises agricultural fields largely used for grazing, with an area of brownfield land within Maen Hir North close to Rhosgoch which was formerly an oil depot (the 'Former Oil Depot').
- 3.2.3 The PEIR Boundary comprises:

- Solar photovoltaic (PV) Site (includes the PV Arrays, BESS, 132kV Substations, Project Substation, and Access Tracks) – approx. 1,023ha
- Mitigation and Enhancement Areas – approx. 261ha
- Cable Route Corridor - 971.5ha
- Grid Connection Corridor (specific location not yet defined)
- Highways Works - 26.1ha
- Construction Compounds (specific locations not yet defined)

3.2.4 The PEIR Boundary also assumes that the National Grid Electricity Transmission (NGET) Substation will be located within Maen Hir Central to the east of Llyn Alaw, which is one of the Applicant's options for co-locating the Project Substation. Likewise, the Grid Connection Corridor is assumed to be within the PEIR Boundary.

Maen Hir North

3.2.5 Maen Hir North is located at OS grid reference SH 40643 91159 (approximate centre).

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

3.2.7 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 in the wider area beyond Maen Hir North is characterised by the rural villages linked by winding lanes and the port town of Amlwch, which lies outside the PEIR Boundary.

3.2.8 There is visible energy infrastructure in the area around Maen Hir North including the Porth Wen Solar Farm to the north, numerous existing wind turbines (Rhyd-y-Groes and Ystgellog wind farms), occasional disused windmills, and a number of overhead lines. The parcel includes the Former Oil Depot at Rhosgoch; a brownfield area with remnant haul roads, hardstandings, embankments and settling pools surrounded by areas of regenerating scrub and gorse vegetation and woodland.

- 3.2.9 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 and energy infrastructure. The northern parcel is also partially visible within distant and elevated views from the Parys Mountain SLA approximately 1.75km to the east.
- 3.2.10 There are fragmented networks of Public Rights of Way (PRoW) crossing the parcel and connecting to local settlements and Mynydd Mechell and Mynydd Parys SLA. The Copper Trail National Cycle Network Route (NCN500) runs through the parcel along the existing roads.
- 3.2.11 The Wen (a Main River) runs 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 Afon 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.
- 3.2.12 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.
- 3.2.13 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

- 3.2.14 Maen Hir Central is located at OS grid reference SH 39271 87654 (approximate centre).
- 3.2.15 The topography of the area is characterised by extensive drumlin fields surrounding the reservoir of Llyn Alaw, which lies outside the parcel, and which is a Site of Special Scientific Interest (SSSI).

- 3.2.16 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 are defined by cloddiau, fences and hedgerows. There are indications of historic hedgerow removal in some places.
- 3.2.17 There is visible energy infrastructure including numerous existing wind turbines (Llanbabo wind farm), occasional disused windmills and overhead lines.
- 3.2.18 The area is relatively sparsely settled with isolated dwellings, farms and hamlets linked by winding lanes. Very few existing PRow are within the parcel with limited public access to Llyn Alaw.
- 3.2.19 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.
- 3.2.20 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.
- 3.2.21 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

- 3.2.22 Maen Hir South comprises two parcels - Maen Hir South A and Maen Hir South B.

Maen Hir South A

- 3.2.23 Maen Hir South A is located at OS grid reference SH 44251 82199 (approximate centre).
- 3.2.24 The area is situated to the north-east of Llannerch-y-medd between Llandyfydog, Pen-y-Foel and the B5111. The parcel is located within a shallow basin to the north-east of Llannerch-y-medd and separated by the moderately rising landform of Pen-y-Foel to the south.

- 3.2.25 It is characterised by gently undulating pastures of improved grassland with medium scale geometric field enclosures. The parcel drains into a shallow basin landform to the centre and east with marshy grassland and bog within low lying areas near Plas Llandyfrydog. Field boundaries are typically defined by hedgerows with intact cloddiau evident to the east of the parcel.
- 3.2.26 Two PRow run through the parcel; one through the western extent and the other through the eastern extent. The Copper Trail runs along the western and northern boundaries of the area.
- 3.2.27 The Maen Chwyf burial site Scheduled Monument is located within the northern extent of the area. Llys Einion Standing Stone Scheduled Monument is 85m to the north-west of the area.

Maen Hir South B

- 3.2.28 Maen Hir South B is located at OS grid reference SH 44222 82348 (approximate centre).
- 3.2.29 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.
- 3.2.30 It is relatively well-vegetated 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 the small market town of Llannerch-y-medd.
- 3.2.31 There are no existing PRow within the parcel. The North Wales Coast National Cycle Network Route (NCN500) runs adjacent to the northern and eastern boundaries of the parcel.
- 3.2.32 The Afon Cefni (a Main River) runs past the south-western boundary of the parcel. The Afon Ysgoldy (a tributary of the Afon Cefni) 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 parcel.

- 3.2.33 Maen Hir South B 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.
- 3.2.34 There are no Registered Historic Parks and Gardens within 1km of the parcel. There are 18 Listed Buildings within 1km of the parcel.

4 Reasonable Alternatives and Design Evolution

4.1 Introduction

4.1.1 This chapter of the PEIR provides a summary of the reasonable alternative options that have been considered by the Applicant for the Project to date, including the initial site selection process for the Project, its evolution into the Scoping Boundary and the PEIR Boundary, and through the development of the design.

4.1.2 The following alternatives have been considered during the design evolution process to date:

- Alternative site locations;
- Alternative size and scale;
- Alternative solar technologies; and
- Alternative design options including layouts for the Project generally as well as for specific design elements such as the solar development and BESS.

4.2 Site Identification

4.2.1 The starting point for the site selection was a UK wide assessment undertaken by the Applicant to identify transmission substations and/or overhead lines (OHLs) with suitable capacity to accommodate a utility scaled solar development to see if there were any connection opportunities.

4.2.2 These initial searches were supplemented with assessments of initial key planning criteria which sought to identify sites which:

- benefited from good levels of irradiance;
- benefited from positive local renewable energy policy context;
- were minimally constrained in terms of environmental designations and flood zones;
- could deliver a positive local legacy;
- were accessible for construction;
- demonstrated generally favourable topography;
- had due regard to the proximity of residential receptors; and
- ideally included brownfield land.

- 4.2.3 The assessment identified several potential areas across the UK, one of which was a connection to the Wylfa-Pentir circuit (400kV overhead line). Overhead lines such as this are important arteries of the National Electricity Transmission System (NETS). They provide resilience through strength in depth to the NETS to enable very high levels of reliability to all users and are therefore likely to be well suited to connect large-scale solar generation facilities and allow the bulk transmission of power to consumers nationally whenever that power is demanded.
- 4.2.4 Further, IoACC's 'Anglesey Energy Island Programme' indicated there may be some support from IoACC and some stakeholders for this type of project. It was considered that a proposed utility scale solar development would help deliver on the ambitions laid out in the programme and result in tangible benefits for local communities.
- 4.2.5 Discussions with National Grid Electricity System Operator (NGESO) identified that the existing Wylfa-Pentir substation had capacity, and an initial connection offer was made to the Applicant for 240MW. After further technical engagement with NGET, it was determined that the most technically beneficial and cost-effective solution (for NGET) to provide a connection to a utility scale solar development would be a new direct connection to the existing 400kV OHL via the construction of a new substation (which would be consented by NGET).
- 4.2.6 The Applicant therefore initially focused on identifying land that was suitable for utility scale solar development close to the 400kV OHL, specifically seeking to minimise disruption to residential receptors and avoid areas of higher sensitivity in Anglesey before starting discussions with landowners on what land would be potentially available for development.
- 4.2.7 Suitable land was identified by the Applicant and in 2021 the Applicant consulted on a proposed solar development based on the 240MW connection. This was located in the north part of the Isle of Anglesey, in general proximity to the 400kV OHL. The project was initially known as Môn Solar.
- 4.2.8 During this initial consultation, the Applicant was approached by a number of additional landowners who registered their interest in being part of the project. Given the urgent need and general policy support for renewable energy

development nationally and within Anglesey the Applicant undertook to assess the suitability of the new land which had been offered for solar development.

4.2.9 The Applicant sought further engagement with NGET about the potential for a larger connection and submitted a grid connection application. In February 2023 an offer was received from NGET for an additional 120MW connection, on top of the 240MW already secured.

4.3 Site Selection

4.3.1 The site selection for the Project considered the following:

- Irradiance and site topography
- Land availability
- Network connection
- Proximity of a site to dwellings
- Agriculture land classification and land type
- Accessibility
- Public rights of ways; and
- Security and lighting

4.3.2 The factors listed above have had an important influence in the site selection process for the Project. However, there are other technical and environmental factors that also play a significant role in determining site selection.

4.3.3 To ensure the land proposed for the Project was comprehensively assessed, the Applicant undertook a two-stage site appraisal process to identify land suitable for solar development and for inclusion in the Project. These appraisals informed the EIA Scoping and PEIR boundaries for the Project.

4.3.4 A site and context appraisal, including a field-by-field BRAG (Black, Red, Amber or Green) assessment was undertaken. The appraisal was designed to provide a high-level strategic overview, which identified key constraints and barriers to development, as well as potential opportunities to deliver benefits or enhancements. The appraisal was based on a combination of desk-based appraisal of constraints, technical feasibility and site visits.

4.3.5 The technical topics included in the initial stage review included:

- Landscape

- Ecology
- Agricultural land
- Cultural Heritage
- Residential receptors (properties and settlements)
- Transport and access
- Flood risk
- Planning policy, designations and history / activity

4.4 Technology

4.4.1 There are currently two options being considered for the type of solar technology utilised by the Project:

- Fixed South Facing Structure; and
- Single Axis Tracker.

4.5 Alternative layouts

4.5.1 The design and layout of the Project has evolved iteratively throughout an ongoing environmental assessment process, site selection assessment and taking into consideration the emerging design principles and project outcomes, engagement with stakeholders and consultees and feedback.

4.5.2 The layout and extent of the Project for the purposes of the PEIR has been developed through careful consideration of the relevant constraints and opportunities and in response to the Applicant's evolving understanding of the PEIR Boundary's environmental conditions as part of the ongoing EIA process. The layout and extent of the Project will continue to be refined as the Applicant prepares its ES and DCO Application, taking into account consultation feedback and ongoing engagement with stakeholders.

4.5.3 The Applicant carried out an assessment to identify sites that would be potentially suitable for the BESS and the Project Substation. The areas that were considered suitable for the BESS and Project Substation were areas that could potentially accommodate infrastructure up to 15m in height. The following factors have informed the development of the design in this regard:

- Proximity and visual impact to residential receptors

- Areas where noise could be accommodated or mitigated
- Land with accessible access and egress
- Generally level or slightly sloping topography
- Impact on the setting of heritage assets
- Landscape setting and visibility
- Flood Zone 2 or 3; and
- Proximity and location of PRow

4.6 Design Evolution

4.6.1 The PEIR boundary evolved following EIA scoping (November 2023), due to survey results as part of the preliminary environmental assessment and landowner interests changing. Following scoping, approximately 188 ha of land to the north of Llannerch-y-medd within the EIA Scoping Boundary for the Main High Voltage Cable Route, Grid Connection Corridor and construction access, was identified as being suitable for Solar development and further mitigation and enhancement areas. It was added to form part of Maen Hir Central.

4.6.2 Since scoping, further amendments have been made to the PEIR Boundary due to landowner interests changing. An area in the south end of Maen Hir Central was removed from the Project (except for the Cable Route Corridor) due to the landowners deciding to expand their core farming business, rather than diversifying with solar.

4.7 Summary

4.7.1 Following Statutory Consultation, the Applicant will review feedback from all stakeholders and consultees and feed this into the design review process, prior to fixing the design parameters for the purposes of the ES and DCO Application. The layout and design of the Project will continue to evolve, and any further evolution documented in the Reasonable Alternatives and Design Evolution chapter of the ES.

5 Project Description

5.1 Overview

5.1.1 The Project comprises a solar generating station with a capacity of over 350 MW AC, and associated development including a BESS, Project Substation, Community Solar Project and Ancillary Infrastructure, on land in Anglesey.

5.1.2 The Project will be connecting to a new NGET Substation, which is anticipated to be consented separately by NGET.

5.2 Components of the Project

Overview

5.2.1 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 A and B) containing:
 - PV Arrays – PV Modules and Mounting Structures forming PV Tables and laid out in PV Arrays
 - Low Voltage Distribution Cabling
 - 33kV / 132kV Substations, to include but not limited to:
 - Transformers
 - Switchgear
 - Inverters - String Inverters (under or next to PV Tables) or Central Inverters (which would be located throughout the Solar PV Site)
 - Transformers - required to step up the voltage of the electricity generated by the PV Arrays before it is routed to the Project Substation
 - Project Substation which consists of:
 - electrical infrastructure such as the Transformers, Switchgear and metering equipment with a ring main unit (RMU unit) at 33kV
 - Battery Energy Storage System - Typically comprising containers which include the rack, modules, and cells; Power Conversion Systems (inverters and transformers) and ancillary infrastructure
 - Fencing, security and Ancillary Infrastructure
 - Access Tracks

- Highway Works
- Drainage and services
- Public rights of way improvements and permissive paths
- Green Infrastructure
- 5MWp Community Solar Project
- Construction Compounds
- Cable Route Corridor – The route for the proposed 132kV and/or 33kV underground cables connecting the 33kV and 132 kV Substations to the BESS and the Project Substation.
- Grid Connection Corridor – The proposed corridor for the Grid Connection Cables between the Project Substation and the NGET Substation. This corridor is still to be defined as it is dependent on the siting of the NGET Substation.
- Mitigation and Enhancement Areas

5.2.2 Further details for each of the key components will be provided in the ES, with the main elements being set out below.

PV Arrays

5.2.3 Solar panels, also known as PV panels or PV Modules, are made up of cells, which convert the light energy from daylight into electrical energy.

5.2.4 The solar panels are fixed to a Mounting Structure and referred to as a PV Table. Rows or groups of PV Tables that are connected to one another form a PV Array.

5.2.5 The Mounting Structures will be pile driven or screw mounted into the ground to a typical depth of approximately 2.5m, subject to ground conditions. The option to install concrete blocks, avoiding the need for driven and screw anchored installation will be based on the results of the archaeological survey and the geotechnical analysis. The Mounting Structure would likely be made of either anodised aluminium alloy or galvanised steel and would have a rough matt finish.

5.2.6 The PV Arrays will have a direct current (DC) generating capacity which will be converted to AC by a String Inverter or Central Inverter.

5.2.7 There are currently two options being considered for the type of solar technology utilised by the Project, and which are described below:

- Fixed South Facing Structure
- Single Axis Tracker

Inverters

5.2.8 Inverters are required to convert the DC electricity collected by the PV Modules into AC which allows the electricity generated to be exported to the National Electricity Transmission System. Inverters are sized to deal with the level and intensity of voltage, which is output from the PV Arrays.

5.2.9 There are two options for inverters:

- **String Inverters** can be mounted underneath or behind the PV Modules and are typically 1.5m in length by 0.5m in depth by 1m in height.
- **Central Inverters** will be distributed throughout the Solar PV Site. The containers would typically be mounted on an area of hardstanding.

Transformers

5.2.10 Transformers are required to step up the voltage of the electricity generated by the PV Arrays before it is routed to the Project Substation. If String Inverters are used, Transformers are required which are typically housed within containers and will be distributed throughout the Solar PV Site. The footprint of the Transformers will typically be 5.5m by 4.5m and 3.2m in height. The containers are typically externally finished in keeping with the prevailing surrounding environment, often utilising a green painted finish.

5.2.11 Where Central Inverters are used, the Transformers can be housed within the same area or within a separate outdoor cabinet, which would be smaller in scale than the Central Inverters.

Low Voltage Distribution Cabling

5.2.12 Low Voltage Distribution Cabling between PV Modules and the inverters will typically be located above ground level (along a row of racks), fixed to the PV Tables, and then buried underground in trenches within the Solar PV Site and potentially within the Mitigation and Enhancement Areas.

33kV / 132kV Substations

- 5.2.13 The Solar PV Site will contain 33kV and potentially 132kV Substations which both comprise Transformers and Switchgear that sit upon concrete foundations. They will gather generated electricity before it is routed to the Project Substation and BESS via the Cable Route Corridor. 33kV Substations would be required as a minimum with the potential for 132kV Substations if required. It is anticipated that there would be a maximum of 18 33kV Substations and ten 132kV Substations (if required) across the Solar PV Site.
- 5.2.14 The 33kV Substations would be housed in brick buildings or containers within the Solar PV Site. The maximum size for the 33kV Substations would be 13m by 4m with a height of 4m.
- 5.2.15 The Transformer and Switchgear within the 132kV Substations would not be contained within buildings or containers so palisade fencing would be required around the 132kV Substations. The 132kV Substations would have maximum dimensions of 30m x 40m with a height of 7m.

High voltage Distribution Cables and Cable Route Corridor

- 5.2.16 High Voltage Distribution Cables (33kV and 132kV) are required between the Transformers, Switchgear and the 33kV and 132kV Substations. The dimensions of trenching will vary subject to the number of underground cables and will be dependent on the method of installation and ground conditions. However, they are anticipated to be typically 1.8m in depth and 2.5m in width except where watercourses and utilities need to be crossed. Joint pits will be approximately 12m by 5m with a depth of 3m. There may be a requirement for horizontal directional drilling (HDD) or Pipe Jacking as methods to install underground cables, pipes, ducts and culverts.
- 5.2.17 The construction works would have a total working width of 6.5m in addition to temporary construction Access Tracks. The extent of the Cable Route Corridor is shown on the Parameter Plan (see Figure 5-1) and will be refined as the Project design evolves. The Cable Route Corridor includes construction access and will exclude residential properties and their immediate surroundings and sensitive environmental receptors where practicable.

Project Substation

- 5.2.18 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 Electricity Transmission System. The Project Substation includes a control building which will include office space and welfare facilities as well as operational monitoring and maintenance equipment. The indicative size of the Project Substation compound is 200m by 200m, with an approximate height of 15m that allows for the substation and associated electrical control buildings and office/welfare buildings.
- 5.2.19 The Project Substation may comprise two 400/33kV Transformers which will have a switchgear with a maximum footprint of 15m by 8m and a height of 11m located within the Project Substation compound.
- 5.2.20 The Applicant intends on locating the Project Substation in proximity to the NGET Substation, if practicable.

Grid Connection Corridor

- 5.2.21 The electricity generated by the Project is expected to be exported via a 400kV connection between the Project Substation and the new NGET Substation. The grid connection cables to the NGET Substation will comprise 400kV cables within a trench with a total working construction width of up to 20m.
- 5.2.22 The alignment and route of the Grid Connection Corridor will depend on the location of the new NGET Substation, which is to be determined by NGET. This has meant that the PEIR Boundary is necessarily broad to ensure that the assessment has covered the maximum area of land required for the Grid Connection Corridor. A high-level assessment has been carried out to explore route options. This will evolve further as engagement with NGET progresses.

National Grid Energy Transmission Substation

- 5.2.23 NGET are currently undertaking a siting study for the provision of the new NGET Substation to which the Project will connect. NGET has not yet identified the location for the NGET Substation; however, they have provided the Applicant with details of the parameters being used for their site selection process. The Applicant has applied these parameters to land within and in proximity to the Project and

identified a potentially suitable site for the NGET Substation and included this site within the PEIR Boundary. Based on the information currently available, the Applicant considers a potential location of the NGET Substation to be within Maen Hir Central to the east of Llyn Alaw, as shown on the Parameter Plans (REF) and the assessment in the PEIR is based on this location.

- 5.2.24 However, as a result of NGET's ongoing feasibility work and investigations, it is possible that the NGET Substation could be built in another location. The DCO Application will include consent for the Grid Connection Corridor from the Project Substation to the NGET Substation, however the NGET Substation will be consented separately.

BESS

- 5.2.25 The Battery Energy Storage System is designed to provide peak generation and grid balancing services to the National Grid Electricity Transmission System (NETS). It will do this by allowing both electricity generated from the PV Arrays to be stored in batteries and dispatched when required as well as having the ability to import surplus energy from NETS and redistribute when needed. This will comprise batteries which would be housed in containers and the Twin MV Skid which facilitates the bidirectional conversion of electricity from DC to AC and back as needed
- 5.2.26 The BESS system is anticipated to have up to 1.6 GWh import / export capacity.
- 5.2.27 The typical dimensions of the battery containers would measure 15m x 4m and 4m in height located on areas of hard standing. The compound would also contain the Twin MV Skid approximately 12m by 7m and 4.5m in height.
- 5.2.28 The BESS would also include other ancillary infrastructure such as lighting poles up to 4m high which face inwards, ventilation / cooling and fire suppression systems, Access Tracks and hardstanding areas.
- 5.2.29 The Former Oil Depot is the preferred location for the BESS. An alternative site to the east of Llyn Alaw within Maen Hir Central has also been identified as being potentially suitable to accommodate the BESS in the event that the Former Oil Depot is not utilised for the BESS (see the Parameter Plans).

Community Solar Project

- 5.2.30 The Applicant will provide a 5MWp Community Solar Project as part of the Project. It is anticipated that the Community Solar Project will be owned and managed by Menter Môn. Income generated by the Community Solar Project will be used to finance projects that directly benefit local communities and the environment in proximity to the site of the Project.
- 5.2.31 The location of the Community Solar Project will be a distinct area within the wider Project but not physically different from the rest of the Project.

Fencing, security and Ancillary Infrastructure

- 5.2.32 A fence will enclose the operational areas of the Solar PV Site as well as the Construction and decommissioning Compounds. The fence is likely to be a 'deer fence' (wooden or metal posts with a wire mesh) and up to 2m in height. Palisade fencing up to 3.5m in height would be required around the perimeter of the 132kV Substations, the Project Substation and the BESS.
- 5.2.33 Pole mounted 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 and Construction and decommissioning Compounds. Access gates will be of similar construction and height as the perimeter fencing.
- 5.2.34 The lighting of the Project Substation would be in accordance with health and safety requirements. All lighting would seek to limit any impact on sensitive receptors. No areas are proposed to be permanently lit.

Construction Compounds

- 5.2.35 Temporary Construction and decommissioning Compounds will be located within the Project. It is anticipated that there will be one main construction compound (with an approximate footprint of 250m by 250m) and up to seven smaller compounds (with an approximate footprint of 100m by 100m) across the Solar PV Site.
- 5.2.36 The main construction compound may contain offices, mobile welfare units, canteens, storage and waste skips, construction worker car parking areas and space for storage, laydown and turning area. Temporary construction lighting, in the form of mobile lighting towers, will be required in areas where natural lighting

is unable to reach (sheltered/confined areas), and during core working hours within winter months.

Construction Access Strategy

- 5.2.37 The preferred strategy is to have two main construction access routes to the PEIR Boundary from the north and the south. This would avoid the need for routing any construction vehicles with the exception of a very limited number of Abnormal Indivisible Load (AIL) movements through settlements such as Llannerch-y-medd.

Highway Works

- 5.2.38 To facilitate construction access there is the potential need for Highway Works on public highways. The extent of highways which may be subject to works are shown on the Parameter Plans. Where practicable, construction haul routes will be internalised within the Solar PV Site to avoid the need for highway works. Highway Works are likely to comprise new access points, road widening, hedgerow removal and junction works to facilitate the safe movement of Heavy Goods Vehicles (HGVs) and AILs.

Access Tracks

- 5.2.39 It is anticipated that onsite Access Tracks will follow the alignment of the existing agricultural tracks, where practicable. 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 junctions will be a minimum of 6m wide to facilitate access for construction vehicles.

Green Infrastructure

- 5.2.40 The existing hedgerows, cloddiau, woodland, ditches, ponds and field margins will be retained within the layout of the Project where practicable, except for removal and/or crossings required for new or upgraded Access Tracks, perimeter fencing and cabling. Accesses will be designed to use existing agricultural gateways/tracks between the fields where practicable. The width of any new accesses will be reduced as far as practicable.

Proposed development on the Former Oil Depot

- 5.2.41 As part of the DCO Application, the Applicant is proposing BESS and PV Arrays (and potentially the Community Solar Project) with Ancillary Infrastructure on part

of the Former Oil Depot in Rhosgoch. The Project has potential to support future employment-generating uses on the Former Oil Depot with a reliable source of renewable energy; this would be via a private wire to the BESS. The Applicant's ambition is that the infrastructure delivered by the Project could support economic development on the Former Oil Depot.

- 5.2.42 The works required to bring forward the Construction Compound, and to develop the BESS and Community Solar Project, will involve direct infrastructure improvements that could help unlock the wider Former Oil Depot to support future development and employment opportunities (beyond the Project itself). This infrastructure includes, but is not limited to, improved site accessibility, remediation where required, ground works and drainage, and security.

Construction Programme

- 5.2.43 Construction phasing for the Project is currently being developed in response to evolving technical requirements including but not limited to Grid Connection timescales. The Project could be delivered in up to two phases.
- 5.2.44 Under a single-phase construction programme, enabling works could start in Q4 2026, with the Project being energised in Q4 2028. It is anticipated the construction phase for this scenario would be approximately 24 months long.
- 5.2.45 Under a two-phase construction programme, enabling works for the first phase could start in Q4 2026, with the first phase being energised in Q4 2028. The second phase would be constructed at a later date and energised at a date to be agreed with NGET and not later than 2037. In this scenario, part of the Project would be constructed and operational before the remaining part. It is anticipated that each of the construction phases under this scenario would be approximately 24 months long.
- 5.2.46 For the purposes of the assessment in the PEIR, worst-case scenarios for the duration of the construction phase have been considered for each technical discipline. The final programme will be dependent on the detailed design, potential environmental constraints, and grid connection date(s) for the Project and will be detailed and assessed in the ES.

Construction Traffic

- 5.2.47 There will be 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 total HGV peak during construction would be 95 two-way movements per day and the daily LGV peak would be 191 two-way movements per day.

Working Hours

- 5.2.48 Working hours for all construction activities during the week (Monday – Friday) will be 07:00-19:00 and 08:00-13:00 on Saturdays. On Saturday afternoon/evenings (13:00 – 18:00), all activities may be undertaken except for HGV deliveries and works likely to generate substantial levels of noise. On Sundays and Bank holidays there will be no construction activities.
- 5.2.49 HDD drilling or Pipe Jacking is an exception to the above where it may be necessary to continue works for technical and safety reasons outside of these working hours. If other works are required outside of the construction working hours, this would be agreed with the local planning authority.
- 5.2.50 Commissioning works (see description below) may also need to take place outside the construction working hours.

Project Parameters and the Rochdale Envelope

- 5.2.51 In order to maintain flexibility in the design and layout at this stage in the process, the assessment of the Project in the PEIR has adopted the Rochdale Envelope approach, as described in Advice Note Nine 'Rochdale Envelope' as published by the Planning Inspectorate (PINS) in July 2018. This involves specifying parameter ranges, including details of the maximum, and where relevant the minimum, size (footprint, width, and height relative to above ordnance datum (AOD)), technology, and locations of the different elements of the Project, where flexibility needs to be retained.
- 5.2.52 The use of the Rochdale Envelope approach has therefore been adopted to present a likely worst-case assessment of the potential environmental effects of

the Project. The list of parameters is presented in tabular form in Appendix 5-1 of the PEIR, which can be read alongside the Parameter Plans, which set the spatial extent of the Project components.

5.3 Operation, Maintenance and Replacement

- 5.3.1 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, management of vegetation and the replacement of equipment as and when required.
- 5.3.2 The land underneath and around the PV Arrays would be managed through sheep grazing and/or mechanical cutting in order to maintain the field vegetation during the operational phase of the Project.
- 5.3.3 During operation of the Project, various solar infrastructure and BESS components may require replacement based on their design life. As components approach the end of their design life, there will be an evaluation to determine if they require replacement. It is not anticipated that wholesale replacement of the Project in one stage would be required; it would be programmed in stages acknowledging that the generation capacity of the Project may be relatively reduced whilst elements were replaced. The ES will include further details of the replacement activities and appropriate management controls will be developed as part of the DCO Application.

5.4 Decommissioning

- 5.4.1 Decommissioning is anticipated to take approximately 6 to 12 months. During the Decommissioning Phase, all the solar infrastructure including PV Arrays, inverters, Transformers, Switchgear, fencing, Ancillary Infrastructure, 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 practicable. All waste will be disposed of in accordance with the legislation at the time of decommissioning. Underground cabling is anticipated to be decommissioned in situ.

5.5 Environmental Management

- 5.5.1 A suite of environmental management plans will be prepared in support of the DCO Application which will be informed by the EIA process and developed alongside the Environmental Statement.
- 5.5.2 The following environmental management plans will be prepared in support of the ES and DCO Application following further assessment and design evolution:
- Outline Construction Traffic Management Plan (oCTMP)
 - Outline Construction Environmental Management Plan (oCEMP)
 - Outline Landscape and Ecological Management Plan (oLEMP)
 - Outline Operational Environmental Management Plan (oOEMP)
 - Outline Soil Management Plan (oSMP)
 - Outline Employment, Skills and Supply Chain Plan (oESSCP)
 - Outline Decommissioning Environmental Management Plan (oDEMP)

5.6 Design Principles

- 5.6.1 The Project has developed a series of Design Principles that underpin the design process and integration of the Project into its context. The Design Principles govern the design development and enable delivery of the Project Outcomes, which are highlighted below:

1 Ecosystem Resilience

Society benefits greatly from services provided by healthy resilient ecosystems. This Project creates an opportunity to strengthen existing ecosystems at a landscape scale

2 Cultural Places

The landscape of Anglesey is ancient and unique. The Project creates the opportunity to support the ongoing and historic dialogue between people and place.

3 A Thriving Landscape

Over time north-east Anglesey has seen dynamic shifts in land use. The Project provides an opportunity to create a multifunctional landscape that accommodates energy generation, continued agriculture, and space for natural processes.

4 Decarbonisation

One of the drivers for development of renewable energy is to de-carbonise energy generation. The Project will support a transition to net zero in a sustainable way that gives people a new future that is better than the present.

6 Preliminary Assessment of Likely Significant Effects

6.1 Introduction

6.1.1 This section provides a summary of the preliminary assessment of likely significant effects across all of the technical chapters in the PEIR. Each section provides a brief introduction, an overview of the assessment approach and a summary of the baseline conditions, mitigation and preliminary likely significant effects.

6.2 Landscape and Visual

Introduction

6.2.1 This section considers the potential for likely significant effects of the Project on Landscape and Visual receptors. This includes potential effects during construction, operation and decommissioning on landscape character, designated landscapes and visual receptors including settlements, PRow, roads and cycleways.

Assessment Approach

6.2.2 A Zone of Theoretical Visibility (ZTV) has been produced to understand the extent at which the Project may be visible (see Figure 6-1). A ZTV is a model that uses information on the maximum heights of the different components of the Project, as well as data on the topography of the surrounding area and the location of settlements and woods, to calculate the extent to which the Project may be visible. The ZTV was used to determine which landscape and visual receptors are likely to be affected and merit detailed assessment, and those which are unlikely to experience any visibility. Based on the ZTV and consideration of the potential for likely significant effects of receptors within the ZTV a 3km Study Area around the PEIR Boundary (excluding the Highways Works) was adopted (see Figure 6-1).

Baseline Conditions

Receptors

Landscape Receptors

6.2.3 The IoACC LCAs considered within the assessment are:

- LCA 4, Arfordir y Gogledd Orllewin / North West Coast;
- LCA 5, Gogledd Orllewin Yny Mon / North West Anglesey;

- LCA 6, Amlwch a'r Cyffiniau / Amlwch and Environs;
- LCA 7, Mynydd Parys / Parys Mountain;
- LCA 8, Cefnwlad Bae Dulas / Dulas Bay Hinterland; and
- LCA 17, Gorllewin Canol Ynys Mon / West Central Anglesey.

6.2.4 The designated landscapes considered within the assessment are:

- Anglesey National Landscape Area of Outstanding Natural Beauty (AONB);
- Parys Mountain and Slopes SLA; and
- Mynydd Mechell and Surrounds SLA.

Visual Receptors

6.2.5 The different groups of people who may experience views of the Project assessed within the PEIR encompass local residents; people using key routes such as roads; cycleways, people within accessible or recreational landscapes; people using Public Rights of Way; or people visiting key viewpoints. Figure 6-1 shows the 51 viewpoints considered in the assessment, comprising 24 representative viewpoints, 2 specific viewpoints and 26 illustrative viewpoints.

6.2.6 The following roads have been identified as visual receptors for assessment:

- A5025 between Cemaes, Burwen, Bull Bay, Amlwch and Penysarn – 1.3km north of Maen Hir North;
- B5111 between Amlwch, Parys Mountain, Rhosybol, Llanerch-y-medd, Rhosmeirch and Llangefni – 1.01km east of Maen Hir North, 0.59km east of Maen Hir Central, and directly west of Maen Hir South A and B; and
- B5112 between Carmel and Llanerch-y-medd – 0.46km south-west of Main Hir South A and 3.09km west of Main Hir South B.

6.2.7 The following long distance walking routes and accessible and recreational landscapes were identified as visual receptors for assessment:

- Parys Mountain Geotrail Walk – 1.7km east of Maen Hir North; and
- Mynydd Bodafon Geotrail Walk – 2.47km east of Maen Hir South A and 1.89km north-east of Maen Hir South B.
- Bull Bay Golf Course – 0.97km north-east of Maen Hir North;
- Amlwch Cemetery – 0.76km north-east of Maen Hir North;
- Penwerthyr Nature Area to south of the Llyn Alaw reservoir – 0.98km south of Maen Hir Central;

- Porth Wen Open Access Land (OAL) – 2.1km north of Maen Hir North;
- Parys Mountain OAL – 1.7km east of Maen Hir North; and
- Mynydd Bodafon OAL – 2.47km east of Maen Hir South A and 1.89km north-east of Maen Hir South B.

Embedded Mitigation

Design

6.2.8 Subject to ongoing detailed design and statutory consultation, key measures that have been incorporated into the design of the Project may include:

- avoidance of visually exposed summits of geomorphological features;
- Utilising natural screening and topography in siting key components;
- provision of visual breaks and separation between solar arrays;
- offsets from the northern and eastern shores of Llyn Alaw;
- enhancements to the diversity, extent, condition and connectivity of landscape features (including hedgerows, woodlands and cloddiau);
- improvements to access and the green and natural spaces; and containment of the solar arrays within undulating landform in the southern parcel.

6.2.9 Additionally, the following offsets have been applied from key sensitive receptors, in order to reduce the impact on these specific features:

- Hedgerows, cloddiau, drystone walls – 10 metres;
- Llyn Alaw reservoir edge – 50 metres;
- Residential properties – 15 metres;
- PRow – 15 metres; and
- Roads – 6 metres.

6.2.10 New landscape features will also be introduced as part of the Green Infrastructure Strategy Plan, to replace any unavoidable losses and contribute to the visual screening of the Project. Key measures include:

- new areas of woodland, hedges, cloddiau, drystone walling, wildflower meadows and wetlands;
- existing hedges and cloddiau would be infilled and ‘gapped-up’ where appropriate;
- defunct or collapsed sections of drystone walling or cloddiau would be made good where appropriate;

- PRow within the PEIR Boundary and passing through the Project would be buffered within hedge-lined corridors.

6.2.11 An oLEMP will be prepared as part of the DCO Application which will manage existing and proposed vegetation throughout the lifetime of the Project.

Construction and Decommissioning

6.2.12 The oCEMP and oDEMP will set out measures to minimise the landscape and visual impacts of the Project during the construction and decommissioning phases. These measures would include:

- retention of existing landscape features such as localised rocky outcrops, cloddiau, drystone walling, hedgerows, woodland, ditches, watercourses, regenerating scrub, unimproved grassland, wildflower meadows, mire and fen via exclusion zones and protective fencing where practicable;
- ensuring a tidy and neat working area, covering of stockpiles and road sweeping along construction routes;
- hoardings in a suitable neutral green or brown colour to aid their integration in the landscape; and

Preliminary Assessment of Likely Significant Effects

Construction and Decommissioning

6.2.13 The construction phase is considered to be Short-Term in duration. During this period, construction traffic movement including HGVs, plant, machinery, temporary lighting, passing places and highway works would be visible. During the decommissioning phase, which is anticipated to take up to 12 months and is considered to be Short-Term in duration, the above ground components will be removed and as such landscape and visual effects would be reversible.

6.2.14 Due to the physical and visual separation between the Solar PV Sites, the effects during construction and decommissioning would intermittent and temporary in nature. As such, operation is considered to represent the worst-case scenario.

Operation

6.2.15 During the operational phase of up to 60 years, the Project would result in Long-Term duration of effects, which are defined as changes being in place for 10 to 60 years. After the 60-year operational phase, the Project will be decommissioned and the landscape returned to its pre-development state.

6.2.16 During the early part of the operation phase, the effects are likely to be at their greatest prior to the establishment of the landscape mitigation and management measures. Depending on the location and context of the receptor and visual relationship with the Project, the scale of effects may reduce during operation between years 1 to 15.

Effects on Landscape Character

6.2.17 Large scale effects would occur within the Solar PV Site where there would be a physical and visual change at close proximity to the above ground components. The Project would change the perception of the primary land use from pastoral farmland and the Former Oil Depot to a Solar PV development in some viewpoints.

6.2.18 Medium scale effects would occur in the immediate context up to approximately 1km from the Solar PV Sites. Within this area, the Project would form a noticeable change to landscape character in some viewpoints, albeit partly screened by intervening landform, vegetation or infrastructure.

6.2.19 Small scale effects would be anticipated beyond the immediate context of the Project within the ZTV, where visibility of the key components is permitted to a limited degree although the intrinsic or prevailing characteristics of the landscape would remain largely unaffected.

6.2.20 Beyond the extent of the ZTV, the effects on landscape character would generally be of Negligible scale. Whilst the Project would be perceptible at a limited number of viewpoints, the Project would form a very minor component of the views such that the baseline characteristics would remain unaffected.

Visual Effects on Representative Viewpoints

6.2.21 The extent of Large scale visual effects, where the Project would form a major alteration to key elements, features, qualities and characteristics of the view such that the baseline will be fundamentally changed, would generally be limited to locations within or immediately adjacent to the Solar PV Site; and

- 6.2.22 Beyond the Solar PV Site, the extent of Medium scale effects is limited due to the partial screening effects provided by existing landform, vegetation or built infrastructure in close proximity to the development parcels.
- 6.2.23 Beyond approximately 1km from the Solar PV Site, the scale of effects would reduce from Medium to Small. There are exceptions from a number of elevated viewpoints within the study area including from Parys Mountain to the north-east, Penymorwydd to the north-west, Mynydd Mechell to the north-west, Pen y Foel near Llannerch-y-medd towards the centre and Mynydd Bodafon to the south-east of the study area. Within these elevated views, the Project would appear subdivided, compartmentalised and fragmented by the prevailing landform and field pattern, also visible in the context of existing infrastructure and settlement at certain locations.

Visual Effects on Roads

- 6.2.24 Maen Hir North would be barely perceptible to drivers travelling in the east and westbound directions along the A5025 due to the distance, intervening landform and location of Porth Wen Solar Farm at closer proximity
- 6.2.25 Maen Hir South A would be visible directly to the east of the B5111 over a relatively short section of approximately 300 metres within an area to the north of Llannerch-y-medd.
- 6.2.26 Maen Hir Central would be distantly perceptible at a number of isolated points along the B5112 between Carmel and Llannerch-y-medd although not at close proximity or within the direct line of travel such that it would affect the drivers' overall experience.
- 6.2.27 The Project would have Minimal to Slight (Not Significant) adverse effects during operation year 1 and Minimal adverse effects across all the roads by year 15, following the establishment of the mitigation measures.

Long Distance Walking Routes

- 6.2.28 Maen Hir North and Maen Hir Central would be distantly perceptible from the western and northern sections of the Parys Mountain Geotrail Walk. However, these distant views towards Maen Hir North would appear subdivided and

fragmented by the undulating drumlin fields and forestry enclosing the Former Oil Depot. Maen Hir Central, South A and B would be partially visible from a short stretch along the western section of the Mynydd Bodafon Geotrail Walk with semi-elevated views overlooking interior areas of Anglesey.

- 6.2.29 The Project would have Moderate (Not Significant) adverse effects during operation year 1. By operation year 15, the adverse visual effects are likely to reduce to Slight (Not Significant).

National Cycle Routes

- 6.2.30 Maen Hir North would be visible over a relatively short length of approximately 0.5km between Pen y Fynwent, Hafodllin Fawr and Rhosbeirio. Maen Hir South A would be partially visible directly to the east and south of Copper Trail (NCR 500) over two short stretches equating to 0.8km between Llanerch-y-medd and Capel Parc. Maen Hir South B would be visible at close proximity over two relatively short stretches of North Wales Coastal Route (NCR 5) approximately 0.8km between Bachau and Cwyr Bach to the north and between Cae Fabli and Capel Coch approximately 0.6km to the east. Maen Hir South B would be distantly perceptible to a limited degree to the east of National Cycle Route 566 although would be generally screen by undulating landform, hedgerows and woodland to limit the effects overall experience.

- 6.2.31 The Project would have **Minimal** to **Slight** (Not Significant) adverse effects during operation year 1. By operation year 15, the adverse visual effects are likely to reduce to **Minimal** (Not Significant).

Accessible and Recreational Landscapes

- 6.2.32 Maen Hir North would be partially and distantly perceptible from Bull Bay Golf Course. Maen Hir North would be partially visible from Amlwch Cemetery to a limited degree although generally screened by the intervening landform and vegetation. The Project would have **Minimal** (Not Significant) adverse effects during operation year 1 and 15.
- 6.2.33 Maen Hir Central would be visible from Penwerthyr Nature Area in the midground view across the reservoir on the northern and eastern fringes of Llyn Alaw. The

Project would have **Moderate** (Significant) adverse effects during operation year 1 and 15.

6.2.34 A limited area of the Porth Wen Open Access Land (OAL) would be affected by the Project at isolated highpoints at Graig Wen. The Project would have **Slight** (Not Significant) adverse effects during operation year 1 and 15. Maen Hir North and Maen Hir Central would be perceptible in midground and distant views from the northern and western slopes of Parys Mountain Open Access Land. The Project would have **Moderate** (Not Significant) adverse effects during operation year 1. By operation year 15, the adverse visual effects are likely to reduce to **Slight** (Not Significant).

6.2.35 Maen Hir Central and South A and B would be visible to varying degrees from Mynydd Bodafon OAL covering dome shaped escarpment at Mynydd Bodafon. Within the elevated panoramic views towards interior areas to the west of Mynydd Bodafon, Maen Hir South A and B would be partially visible within lower lying areas within the midground and distant view. The Project would have **Major-Moderate** (Significant) adverse effects during operation year 1. By operation year 15, the adverse visual effects are likely to reduce to **Moderate** (Significant).

Designated Landscapes

6.2.36 The Project would have **Slight** (Not Significant) adverse effects on Anglesey National Landscape during operation year 1 and 15.

6.2.37 The Project would have **Moderate** (Not Significant) adverse effects on Parys Mountain and Slopes SLA and Mynydd Mechell and Surrounds SLA during operation year 1. By operation year 15, the visual effects are likely to reduce to **Slight** (Not Significant) Adverse.

6.3 Ecology and Biodiversity

Introduction

6.3.1 This section considers the potential for likely significant effects of the Project on Ecology and Biodiversity. This includes potential effects during construction, operation and decommissioning phases on features including designated sites, habitats, protected species and invasive non-native species.

Assessment Approach

6.3.2 A range of study areas (30km – 2km) were defined depending on the ecological features likely to be at risk from direct and indirect impacts that might arise from the Project. A combination of desk-based data searches and field surveys have been undertaken to inform the baseline conditions within the study areas for the basis of assessment.

6.3.3 The aim of the impact assessment undertaken was to:

- Identify important ecological features, such as designated sites protected habitats and species which may be impacted by the Project;
- Provide a scientifically rigorous and transparent assessment of the likely ecological impacts and resultant likely significant effects of the Project;
- Facilitate scientifically rigorous and transparent determination of the consequences of the Project in terms of national, regional and local policies relevant to nature conservation and biodiversity, where the level of detail provided is proportionate to the scale of the development and the complexity of its potential impacts; and
- Set out what steps will be taken to adhere to legal requirements relating to the relevant ecological features.

6.3.4 This involves identifying the Project's potential direct and indirect impacts and effects on important ecological features and their contribution to local, and if appropriate County, regional and national, biodiversity.

Baseline Conditions

Designated Sites

6.3.5 There are twelve sites statutory designated for their biodiversity value at an international level and within the 10 km study area (see Figure 6-2). These are:

- Corsydd Môn a Llyn/Anglesey and Llyn Fens Ramsar;
- Corsydd Mon/Anglesey Fens Special Area of Conservation (SAC);
- Anglesey Terns/Morwenoliaid Ynys Môn Special Protection Area (SPA);
- North Anglesey Marine/Gogledd Môn Forol SAC;
- Liverpool Bay/Bae Lerpwl (Wales) SPA;
- Llyn Dinam SAC;
- Bae Cemlyn/Cemlyn Bay SAC;
- Y Fenai a Bae Conwy/Menai Strait and Conwy Bay SAC;

- Y Twyni o Abermenai i Aberffraw/Abermenai to Aberffraw Dunes SAC;
- Glannau Mon: Cors heli/Anglesey Coast: Saltmarsh SAC;
- Glannau Ynys Gybi/Holy Island Coast SPA and SAC;
- Glan-traeth SAC;
- Traeth Lafan/Lavan Sands SAC and SPA; and
- Glynllifon SAC.

6.3.6 Statutory designated sites located greater than 10 km include:

- Traeth Lafan/Lavan Sands, Conway Bay SAC and SPA (ornithological importance within 15 km of the PEIR Boundary); and
- Glynllifon SAC (bats within 30 km of the PEIR Boundary).

6.3.7 There are 30 statutory sites designated for their biodiversity value at a national level within the 5 km study area.

6.3.8 There are 22 non-statutory sites designated for their biodiversity value identified within 5 km study area (see Figure 6-3). These sites have been designated as Local Wildlife Sites for their biodiversity value at a local level and are known to have supporting value to a wide variety of protected or notable species and/or habitats.

Habitats

6.3.9 The land within the Solar PV Site is predominantly improved grassland, with a significant amount of semi-improved grassland and the fields being intersected by a network of drainage ditches and hedgerows. Other habitats include neutral grassland, marshy grassland, mature trees and hedgerows, and woodland habitats. The surrounding habitat is mainly pasture, with small pockets of mature broadleaved woodland (plantation and semi-natural). Surveys within the Solar PV Site are ongoing. Habitats within the Cable Route Corridor, Grid Connection Corridor and Highway Works Land have not yet been confirmed by field surveys but it has initially been identified that these areas lie predominantly within or adjacent to improved and semi-improved grassland.

Protected and Notable Species and Invasive Non-Native Species

6.3.10 The protected, notable and Invasive Non-Native Species that have been identified within the Solar PV Site and relevant survey areas include:

- Bats, badger, riparian mammals, red squirrel and other mammals;
- Ornithology;
- Reptiles, great crested newt and other amphibians;
- Terrestrial invertebrates;
- Fish, aquatic macroinvertebrates and aquatic macrophytes; and
- Invasive non-native species.

Embedded Mitigation

Design

6.3.11 The following key buffers are integrated into the design so that impacts upon important habitats are avoided or reduced:

- All woodland - at least 15 m (increased to at least 20 m for ancient woodland);
- Veteran trees - 15x stem diameter, protected by clearly defined root protection areas, concordant with the requirements for each individual tree;
- Watercourses (standing and running) (where practicable and open trenching is not required during construction) - at least 10 m from the bank-top of the watercourse;
- Llyn Alaw Reservoir - at least 50 m from the edge of the Reservoir (exact distance to be determined upon completion of surveys); and
- Statutory and Local Wildlife Sites - at least 20 m.

6.3.12 The design of the Project will retain existing habitat, replace/reinstate habitat upon completion of construction works, and create new areas of habitat within the Solar PV Site including grassland and woodland.

Construction

6.3.13 Pre-construction checks for protected species will be carried out and inform appropriate mitigation. A perimeter fence will be implemented during the construction phase to secure the Solar PV Site and prevent construction activity in proximity to peripheral habitats. Clearances above ground or mammal gates will be included to permit the passage of wildlife where required.

6.3.14 The oCEMP includes the standard embedded good practice measures that will be implemented during construction of the Project to mitigate construction-related effects on biodiversity associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration.

Preliminary Assessment of Likely Significant Effects

Construction and Decommissioning

6.3.15 The potential for likely significant effects during construction and decommissioning is set out in Table 6-1. These will be further defined by ongoing ecological surveys and the implementation of mitigation.

Table 6-1 Potential for Ecological Likely Significant Effects During Construction and Decommissioning

IEF	Description of Potential Impact	Potential for a Significant Effect?
Glannau Ynys Gybi/ Holy Island Coast SPA, SAC	Direct impact upon foraging and roosting habitat for chough associated with the SPA, SAC, although the exact habitats affected (as a result of limited survey information at the time of writing this PEIR) are yet to be defined.	Yes – pending further surveys on Chough
Llyn Alaw SSSI	Due to loss of wetland habitat, outside the SSSI boundary there will be changes to the runoff characteristic and water quality entering the SSSI. Direct impact upon foraging and roosting habitats for whooper swan associated with the SSSI.	Yes
Mynydd Parys LWS	Potential (likely minor) direct habitat loss due to road widening in Highways Works Land.	No
(A3.1) Broadleaved Parkland / scattered trees and (A3.3) Mixed Parkland/ Scattered trees including veteran or ancient trees	Permanent loss of individual trees. It has been assumed that any medium importance trees (mature/ veteran/ ancient trees) can be avoided.	No
(A2.1) Dense/continuous scrub and Scattered Scrub	Permanent loss of a large area of habitat.	No
(B5) Marsh/marshy grassland	Permanent loss of a large area of habitat.	Yes

IEF	Description of Potential Impact	Potential for a Significant Effect?
(D1) Heathland	Possible permanent loss of habitat.	No
(G2) Running water	Permanent loss of small sections of habitat.	No
(J2.1.1) Intact hedge – native species-rich, (J2.1.2) intact hedge species-poor and (J2.3.2) intact hedge - with trees - species-poor	Permanent loss of sections of habitat.	Yes
(J4) Bare ground (Open Mosaic Habitats on Previously Developed Land)	Permanent loss of large area of habitat.	Yes
Bats - roosting	Severance and disturbance to bat roosts.	No
Bats - activity	Loss of foraging habitat used by bats.	Yes
Riparian mammals	The Project design has embedded mitigation measures to avoid accidental killing/injury of reptiles. However, there is potential for permanent and temporary loss and fragmentation of habitat.	Yes
Ornithology – breeding (excluding chough and barn owl)	Loss of breeding habitat and foraging areas used by birds during the breeding season. Chough do not use the area during the breeding season.	No
Ornithology – wintering birds (excluding Greenland white-fronted goose and whooper swan)	Loss of foraging and roosting areas under panels during construction and operation.	No
Ornithology – chough – non-breeding	Loss of foraging habitat used by birds associated with the SPA during the non-breeding season	Yes – Survey work is ongoing, and the final Project design has not been determined; however embedded Project buffers around foraging areas are

IEF	Description of Potential Impact	Potential for a Significant Effect?
		likely to avoid significant effects.
Ornithology – Greenland white fronted goose	Temporary and permanent loss of foraging areas and potential for disturbance of roosting areas on Llyn Alaw during construction.	No, however it is noted that survey work is ongoing. As the species has not yet been recorded during the surveys, the Applicant considers that impacts are unlikely.
Ornithology – whooper swan	Temporary and permanent loss of foraging areas and potential for disturbance of roosting areas on Llyn Alaw during construction.	Yes
Ornithology – barn owl	Loss of foraging habitat used by birds if present.	Yes, however it is noted that survey work for barn owl is ongoing and if breeding pairs are found to be present then mitigation will be designed accordingly.
Reptiles	The Project design has embedded mitigation measures to avoid accidental killing/injury of reptiles. However, there is potential for permanent and temporary destruction, damage and disturbance to their habitats.	No
Great crested newt	The Project design has embedded mitigation measures to avoid and buffer the majority of ditches and watercourses potentially supporting GCN; however, there is potential for permanent and temporary terrestrial habitat loss.	No
Terrestrial invertebrates	Permanent and temporary habitat loss during site preparation/construction, resulting in species mortality.	No, however, it is noted that survey work for terrestrial work is ongoing.
Fish; Aquatic macroinvertebrates; and Aquatic macrophytes	Permanent and temporary habitat loss during site preparation/construction, resulting in species mortality.	Yes, however, it is noted that survey work for aquatic habitats is ongoing. Significance of effect will be

IEF	Description of Potential Impact	Potential for a Significant Effect?
		determined in the ES, based on the final Project design and surveys have been undertaken.

Operation

6.3.16 Table 6-2 sets out the potential for likely significant effects during operation.

Table 6-2 Potential for Ecological Likely Significant Effects During Construction and Decommissioning

IEF	Description of Impact	Potential for a Significant Effect?
Glannau Ynys Gybi/Holy Island Coast SPA, SAC	There is potential to impact foraging habitat for foraging chough associated with the SPA, SAC, although the exact habitats affected (as a result of limited survey information at the time of writing this PEIR) are yet to be defined.	Yes
Llyn Alaw SSSI	There is potential to impact foraging and roosting habitat for whooper swan associated with the SSSI.	Yes
Bats - activity	Loss and displacement of foraging and commuting habitat for bats, including Annex II species, by the presence of Solar PV Panels.	Yes
Birds – breeding (excluding chough and barn owl)	Loss and displacement of breeding bird assemblage during construction offset by habitat creation to a degree.	No
Chough (non-breeding)	Loss of foraging areas outside of the breeding season.	Yes, pending further survey
Barn owl	Loss of foraging habitat used by birds if present.	Yes
Winter Bird (excluding Greenland white-fronted goose and whooper swan)	Loss of foraging habitat.	No
Greenland white-fronted goose and Whooper swan	Temporary and permanent loss of foraging areas and potential for disturbance of roosting areas on Llyn Alaw during construction.	Yes

IEF	Description of Impact	Potential for a Significant Effect?
Aquatic habitats and associated species and hydrologically connected designated sites	Surface runoff, panel cleaning, pollution incidents and flooding impacting habitats	No
Fish	Disturbance to fish behaviour due to EMF from cables under watercourse. If cables are buried at a sufficient depth under watercourse, the impact on fish would be negligible.	Yes
Aquatic macroinvertebrates	<p>Reflection of light from solar PV panels attracting macroinvertebrates in their aerial phase from their usual dispersal routes.</p> <p>Some aquatic insects are attracted to solar PV panels although this is an unusual event dependent on the coincidence of a number of suitable conditions to trigger such behaviour. The likelihood of aquatic insects from the local aquatic habitat being attracted to large open areas of shiny surfaces is medium to low given that such species will preferentially use smaller shiny surfaces. This is more likely to impact Odonata of which there are a number of notable species within the Project</p>	Yes
Aquatic macrophytes	There are currently no impact pathways during operation which could affect aquatic macrophytes.	No

6.3.17 Surveys for ecology are ongoing and at this stage and the extent of any additional mitigation required is not yet confirmed. The Project will seek measures to reduce the potential significance of these effects where practicable. Any additional mitigation measures will be clearly set out in the ES.

6.4 Heritage

Introduction

6.4.1 This section considers the potential for likely significant effects of the Project on cultural heritage. Cultural heritage encompasses buried archaeological remains; historic buildings, structures and monuments; and historic landscapes, which can be either designated historic assets (Scheduled Monuments, Listed Buildings

etc.) or non-designated historic assets (historic buildings of some limited architectural interest, most buried archaeological remains etc).

Assessment Approach

6.4.2 The study areas for archaeology and designated historic assets are 1km and 5km from the PEIR Boundary, for archaeological and designated heritage assets, respectively. A Desk Based Assessment has been undertaken which has informed the scope of the assessment. This has also formed the basis of consultation with Heneb: Gwynedd Archaeology (formerly Gwynedd Archaeological Planning Service). Through this consultation the scope of geophysical survey which will be a magnetometer survey of the entire Solar PV Site. The results of 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 further characterised, investigated and recorded.

6.4.3 In terms of the setting on heritage assets, the assessment has included the consideration of issues such 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.

Baseline Conditions

Designated Assets

6.4.4 Four designated historic assets of archaeological interest (Scheduled Monuments) are situated within the PEIR Boundary (see Figure 6-4):

- Maen Chwyf prehistoric chambered tomb situated within Maen Hir South A; and
- Three prehistoric standing stones situated within the Cable Route Corridors: Bodewryd, Llys Einion and Carreg Leidr.

6.4.5 Located within the 5km study area are a further 37 Scheduled Monuments (see Figure 6-4). These include, prehistoric standing stones, enclosures, hillforts and round barrows, a Roman settlement, early medieval and medieval enclosure and settlement sites, and the 18th/19th century industrial remains at Parys Mountain.

6.4.6 An additional 16 Scheduled Monuments are located within 5km around the PEIR Boundary (including Highway Works).

Non-designated archaeological remains

6.4.7 There is no evidence of Palaeolithic activity within the 1km study area and there is considered to be a low potential for remains of this date to be affected by the Project. Mesolithic activity in the 1km study area and the wider landscape is represented by a findspot of worked flint recovered along the northern shore of Llyn Alaw. There is evidence of Neolithic activity within the PEIR Boundary and in the 1km study area. Funerary remains are represented principally by the Scheduled Maen Chwyf prehistoric chambered tomb.

6.4.8 There is extensive evidence of Bronze Age activity within the PEIR boundary, the 1km study area and the wider landscape, comprising remains associated with settlement, funerary and ceremonial activity, as well as findspots. There is extensive Iron Age settlement and activity within the PEIR Boundary, in the 1km study area and the wider landscape, in particular around Maen Hir North and within Maen Hir South A and B.

Embedded Mitigation

Design

6.4.9 The majority of the hedgerows, earthwork boundaries and tree-lines defining historic field systems will be retained, within which the Project will be contained. Retention and management of these features would serve to minimise the effect of the Project upon historic landscape features. The oLEMP will contain measures to mitigate heritage impacts.

Additional Mitigation

6.4.10 Further research will ensure that any sensitive remains can be identified, assessed and appropriately safeguarded. The detailed design process will allow for important buried archaeological remains to be protected from harmful disturbance. This could include areas devoid of development or in exceptional cases utilising non-ground disturbing construction techniques.

Preliminary Likely Significant Effects

Archaeology

Operation

- 6.4.11 Archaeological impacts occur as a result of below ground disturbance. The Project does not involve any below ground disturbance activities during its operation, so there are no operational effects.

Construction

- 6.4.12 Buried archaeological remains within the PEIR Boundary could be affected by the Project during construction work that disturbs the ground, which have the potential to physically impact upon any surviving buried archaeological remains. However, construction activities relating to the installation of Solar PV Arrays typically result in relatively very minor below-ground disturbance (compared to other forms of development which require foundations and extensive landscaping). As a result, significant effects are not likely.

- 6.4.13 The other elements of the Project, particularly the Project Substation, BESS and underground cabling, have the potential to result in damage to or loss of buried archaeological remains. Whilst these areas encompass only a small percentage of the PEIR Boundary overall, there is potential for significant effects on archaeological remains present within the footprint of such in the absence of additional mitigation that will be informed by the field investigations.

Decommissioning

- 6.4.14 Whilst removal of piles, cables, foundations or access tracks may impact archaeological remains which survive just outside the areas of disturbance caused during the construction works, appropriate methodology will be agreed within the oDEMP to minimise those effects. Therefore, it is likely there will be no additional disturbance to buried archaeological remains during this phase.

Built Heritage and Historic Landscape

Construction and Decommissioning

- 6.4.15 Potential effects upon 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, traffic and dust. Construction and

decommissioning operations are temporary by nature, and the impacts associated with these works would not be likely to cause significant effects to designated historic assets. As above, such impacts would be temporary and unlikely to cause any significant effects.

Operation

- 6.4.16 The Project would change the character of land parcels within the setting of a number of designated historic assets (historic buildings, structures and monuments, and Registered Historic Landscape). However, it is considered that for all of the designated historic assets (Listed Buildings, Scheduled Monuments and Registered Historic Landscape) their historic value is largely derived from their physical fabric, which will not be affected by the Project. As such, no significant effects are likely.

6.5 Transport

Introduction

- 6.5.1 This section considers the potential likely significant effects of the Project on Transport and Access during the construction and decommissioning phases. It was agreed with the Planning Inspectorate that the operation phase is unlikely to result in significant impacts and therefore has been scoped out.

Baseline Conditions

Highway Network

- 6.5.2 It is expected that the vast majority of deliveries will travel into Anglesey from the south-east via the Britannia Bridge, with a small number of abnormal indivisible loads also travelling from the Holyhead Port to the west. Access to the PEIR Boundary during the construction phase for HGVs and potentially also for Abnormal Indivisible Load deliveries has been identified via two primary routes, as shown on Figure 6-5 and set out below:

- Route 1 - Northern Route: Access to / from the north, via Britannia Bridge - A5025 - B5111 - Unclassified Road towards Penbol - Rhos-goch; and
- Route 2 - Southern Route: Access to / from the south, via Britannia Bridge - A55 - Junction 6 of the A5 - Holyhead Road - B4422 - B5109 - Lon Sardis - NCR5.

Walking and Cycling Network

6.5.3 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 PEIR Boundary. There are no dedicated cycle lanes within the vicinity of the Project; however, there are several designated cycle routes within the wider area. There are a number of Public Right of Ways in proximity to and passing through the PEIR Boundary.

Assessment Approach

6.5.4 The study area for transport effects has been defined as the routes from the Strategic Road Network via the Local Road Network that traffic movements associated with the Project are expected to utilise. Traffic generated during the construction and decommissioning of the Project has been 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.

6.5.5 The potential effects assessed during the construction phase are as follows:

- Severance – the 'perceived division that can occur within a community when it becomes separated by a major traffic artery';
- Driver Delay – any delay which may occur to motorists;
- Pedestrian Delay – other non-motorised user delay when crossing a road;
- Non-motorised User Amenity – 'the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic';
- Fear and Intimidation – 'a further environmental impact that affects people is the fear and intimidation created by all moving objects'; and
- Road Safety – the use of collision rates and identification of collision clusters to assess the implications of a development.

Embedded Mitigation

6.5.6 The embedded mitigation measures that have been integrated into the design of the Project are as follows:

- Construction Access Routes: the routes to the Project have been identified through a review of the Local Road Network to identify suitable locations in

highway safety terms, including being sufficient to accommodate HGVs and allow appropriate visibility angles.

- Compound Location and Consolidation: use of construction compounds and consolidation hubs to allow direct access to the Project and reduce the need to larger deliveries.
- Internal routing: internal access routes will be provided within the PEIR Boundary to minimise vehicles needing to use the Local Road Network where possible.
- Highway improvements within the PEIR Boundary: permanent improvements will be made to assist with the movement of vehicles within the PEIR Boundary.
- Staff Shuttle: the use of a shuttle bus service for staff who will park within the relevant construction compound and then transferred to the relevant area of construction across the Project.

6.5.7 In addition, a number of management plans to control traffic and reduce transport and access impacts, during the construction, operation, and decommissioning phases, will be prepared.

Preliminary Assessment of Likely Significant Effects

Construction and Decommissioning

Severance

6.5.8 The construction phase of the Project would lead to a local, temporary, medium term and negligible magnitude of change on the severance of non-motorised users of the Local Road Network and PRoW network. There would be no permanent closures or diversions in relation to the PRoW network. However, temporary closures and / or diversions may be required. On that basis, the effects on severance on non-motorised users are considered to be negligible adverse and not significant.

Driver Delay

6.5.9 It is intended that the vehicle trips associated with the Project would all take place outside of the typical network peak hours (assumed as 08:00-09:00 and 17:00-18:00). Overall, it has been assessed that the daily vehicle movement uplift across the majority of links does not exceed 10%, a threshold recognised within the relevant and appropriate guidance as the typical level of daily traffic fluctuation.

As such, it is considered that the Project would lead to a local, temporary, medium term and negligible adverse effect on driver delay which is not significant.

Pedestrian Delay

6.5.10 Across the majority of the study area, it has been assessed that the construction phase of the Project will lead to less than a 10% increase in daily vehicle movements which is considered to fall within the typical levels of daily traffic fluctuations and be not significant.

6.5.11 There may be changes in pedestrian delay to non-motorised users of the local highway network through temporary road closures or temporary traffic management. However, any changes would be temporary in nature and mitigated through appropriate signage and alternative provisions for non-motorised users being made. As a result, the Project would lead to a local, temporary, medium term and negligible adverse effect on non-motorised user delay which is not significant.

Non-Motorised User Amenity

6.5.12 With respect to HGVs, the construction of the Project would lead to an increase above a quarter of the baseline flow on ten of the links within the transport study area. In particular, two of the links are subject to percentage uplifts in HGVs of over 100% (doubling of HGV flow), indicating a large magnitude of change. However, all these links are considered to be of low sensitivity and not located close to any sensitive receptors, alongside low baseline levels of HGV activity (<15 daily vehicle movements) which makes the percentage change more pronounced. As such, the Project would lead to a local, temporary, medium term and negligible adverse effect on Non-Motorised User Amenity which is not significant.

Fear and Intimidation

6.5.13 Due to the rural nature of the Project, the majority of the Local Road Network does not benefit from any footway or dedicated cycleway provisions, meaning non-motorised users are not segregated from traffic. However, the volume of non-motorised users using the Local Road Network is also considered to be low. With respect to the relevant thresholds, the Project will not exceed an uplift on any link

greater than 150 total vehicles or 68 HGVs, falling below the 400 daily vehicle threshold for a 'step' change in Fear and Intimidation and resulting in a negligible adverse effect.

Road Safety

- 6.5.14 An initial review of collision data has identified that no junctions within the vicinity of the PEIR Boundary have experienced five or more serious / fatal collisions over the three-year period. It is also acknowledged that the routes close to the PEIR Boundary that are to be used contain minimal pedestrian and cyclist desire lines and are likely to be scarcely used by vulnerable road users. Overall, the effect of the Project on road safety is therefore likely to be local, temporary, medium term and negligible adverse which is not significant.

6.6 Noise and Vibration

Introduction

- 6.6.1 This section considers the potential for likely significant effects of the Project on noise and vibration during construction, operation and decommissioning. During construction and decommissioning noise and vibration from onsite activities, tranquillity and road traffic noise is considered. During operation, noise from fixed plant and equipment including low frequency noise and tranquillity is considered.

Assessment Approach

- 6.6.2 Noise sensitive receptors (NSRs) have been identified within approximately 500m of the boundary of the Solar PV Site. Construction traffic noise impacts will be localised and temporary in character, therefore a notional receptor distance of 10m from the edge of the affected road has been used.
- 6.6.3 Noise and vibration levels are predicted at nearby existing NSRs, based on a typical construction plant. The significance of effect on noise sensitive receptors is determined in accordance with the ABC method detailed in BS 5228-1:2009+A1:2014, set out in full in Appendix 10-2 of the PEIR.

Baseline Conditions

- 6.6.4 A site walkover was undertaken in August 2023 which observed the noise climate within the PEIR Boundary 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.

6.6.5 There are statutory ecologically designated sites within 500m of the PEIR Boundary. There is a network of Public Rights of Way (PRoW) within PEIR Boundary and the surrounding area (see Figure 6-5 in the PEIR).

6.6.6 It is considered that the nearest existing noise-sensitive receptors consist of isolated residential properties, with more densely populated settlements along road networks within 500m of the Solar PV Site.

Embedded Mitigation

6.6.7 The layout of the Project has been developed to generally maximise where practicable the distance between areas where noise-generating plant may be located and NSRs.

6.6.8 Working hours for all construction activities during the week (Monday – Friday) will be 07:00-19:00 and 08:00-13:00 on Saturdays. On Saturday afternoon/evenings (13:00 – 18:00), all activities may be undertaken except for HGV deliveries, percussive piling and works likely to generate substantial levels of noise. On Sundays and Bank holidays there will be no construction activities.

6.6.9 HDD drilling or Pipe Jacking is an exception to the above where it may be necessary to continue works outside of these working hours. If other works are required outside of the construction working hours, this would be agreed with the local planning authority.

6.6.10 The oCEMP will also include standard good practice measures such as use of Best Practical Means to reduce disturbance associated with noise and vibration during construction as far as reasonably practicable, with reference to relevant guidance in BS 5228.

Preliminary Likely Significant Effects***Construction and Decommissioning***

- 6.6.11 Noise and vibration from the construction of the Project will involve the use of plant that have the potential to generate noise and vibration effects at NSRs. Such activities will generally be limited both in intensity and/or duration.

Onsite Noise

- 6.6.12 For NSRs within 50m of any noise generative works, there is likely to be a medium to high impact, leading to short-term, temporary, moderate to major adverse effects. In comparison, NSRs 150m or more away from noise generative works are generally likely to be exposed to a low or very low impact, leading to short-term, temporary, minor or negligible adverse effects.

Onsite Vibration

- 6.6.13 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 Project this would likely be for limited periods such that significant vibration levels are unlikely.
- 6.6.14 Minor or negligible adverse effects of a short-term, temporary nature are anticipated from distances of more than 17m from the source before mitigation is considered. For properties at distances of between 2.5m and 17m there is likely to be a temporary, moderate adverse effect in the short-term, prior to the consideration of any mitigation measures. Given that it is highly unlikely that vibration generative activities will take place within 2.5m of a property, there are unlikely to be any major adverse effects. A more focussed study across specific phases of construction (e.g. piling) and buffers will be completed for the ES.

Project Generated Road Traffic Noise

- 6.6.15 The increase in traffic on the road network due to construction traffic generated by the Project (see Chapter 9: Transport) is not considered to be acoustically significant and is therefore considered to lead to a negligible adverse magnitude of change across the majority of the road links and a low/small magnitude of change on two links (Links 7 (Ty-Coch) and 23 (Bodewryd)).

6.6.16 As such, it is considered unlikely that construction traffic will generate any significant adverse effects. However, construction traffic noise will be assessed within the ES based on further calculations using the methodology set out in DMRB LA111 guidance, once detailed traffic flow information is available to inform this.

Operation

6.6.17 The potential for operational noise effects would be from electrical and mechanical plant associated with the Project. Transformers, batteries and inverters can generate noise, some of which may contain distinguishable characteristics, making it potentially more noticeable. The Project Substation will include larger electrical plant, as well as ancillary cooling units.

33kV Substations, String Inverters and 132kV Substations

6.6.18 For NSRs located beyond 200m there is anticipated to be a permanent and long-term minor adverse effect, which is not significant. For NSRs located closer than 200m, there would be a permanent and long-term moderate to major adverse effect, which is significant, before context and mitigation is taken in consideration.

6.6.19 For NSRs located up to beyond 100m from operational noise sources, there would be a permanent and long-term minor adverse effect, which is not significant. For NSRs located closer than 100m, there would be a permanent and long-term moderate to major adverse effect, which is significant, before context and mitigation is taken in consideration.

Project Substation and BESS

6.6.20 The candidate equipment for the BESS is Elementa and the test report shows that it can generate 63dB at 1m in some directions. The nearest residential receptor to the proposed location for the BESS in Maen Hir North is located approximately 470m away. The nearest residential receptor to the proposed location for the BESS in Maen Hir Central is located approximately 60m away. This could result in a major adverse effect, without mitigation in place. However, physical barriers and the topography of the area will provide self-screening and the final configuration of the equipment will likely reduce noise levels breaking out from the Solar PV Site. In addition to this, there is likely to be the opportunity to include

boundary mitigation in the form of acoustic fencing. The final predicted noise output will be provided in the ES, but it is likely with these mitigation strategies, the residual effect could be minor adverse and not significant.

Low Frequency Noise

- 6.6.21 Low frequency noise can be very difficult to predict with a high level of certainty and similarly hard to identify and resolve if present. This is because it can be generated by the unexpected interactions between system components and can be amplified by the geometry of the Project and receptor buildings. The issue of low frequency noise will therefore be considered once plans reach a more detailed stage. The noise can be minimised through design, or appropriately mitigated (isolation and attenuation measures) where appropriate at the ES Stage.

Tranquillity Assessment

- 6.6.22 At the time of writing, the approach to tranquillity is being considered in consultation with stakeholders but will necessarily draw on the results of the construction/decommissioning and operational phase plant noise assessment, therefore at the PEIR stage it is considered that information is not sufficiently developed to allow a detailed tranquillity assessment, and this will be presented in the ES Chapter. However, taking into account the mitigation measures that could be deployed, it is considered that significant noise effects are unlikely.

6.7 Ground Conditions

Introduction

- 6.7.1 This section considers the potential likely significant environmental effects of the Project on ground conditions during construction, operation and decommissioning. Considering that the PEIR Boundary is principally greenfield in nature, the assessment focussed on the Former Oil Depot in Maen Hir North, a small former landfill Maen Hir South A, and the area's geological importance as part of the GeoMôn GeoPark.

Assessment Approach

- 6.7.2 The existing soil and groundwater conditions have been established through the Geo-Environmental Desk Study and an existing Ground Investigation Report for the Former Oil Depot, to inform the assessment of likely significant effects on the

environment. Any risks considered to be greater than 'low', are carried through for assessment. Potential geotechnical risks have also been assessed.

6.7.3 The assessment draws from an intrusive ground investigation within the Former Oil Depot in Rhosgoch which this topic author has had sight of. The Applicant does not currently have permission to publish that report and therefore further intrusive investigations may be required at the Former Oil Depot which will be reported on in the ES.

6.7.4 Environmental effects relating to ground contamination are assessed by first identifying contaminant linkages. A contaminant 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. This is called the 'source-pathway-receptor contaminant linkage'.

6.7.5 The extent of the Ground Conditions study area is the PEIR Boundary and the immediate surrounding area (i.e. 250m from the PEIR Boundary).

Baseline Conditions

6.7.6 The PEIR Boundary predominantly comprises agricultural land largely used for grazing livestock with some areas of crop cultivation. Several watercourses are present across the PEIR Boundary and Llyn Alaw, a reservoir, is to the south-west of Maen Hir Central.

6.7.7 The British Geological Survey indicates that the PEIR Boundary is predominantly underlain by superficial deposits of Devensian Till with Alluvium locally adjacent to watercourses. The whole island of Anglesey falls within a UNESCO designated Geopark (GeoMôn) 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.

- 6.7.8 Historically the PEIR Boundary has remained largely undeveloped and has been utilised for agricultural purposes. The Former Oil Depot in Maen Hir North, a small former landfill in Maen Hir South A and several, very small, localised quarries, represent the only significant brownfield land uses within the PEIR Boundary.
- 6.7.9 The PEIR Boundary is not located within a Mineral Safeguarding Area, with the dormant Mynydd Parys mine located approximately 850m east, the only mineral safeguarded area nearby.

Embedded Mitigation

Design

- 6.7.10 The following key mitigation measures relating to the hydrological environment are embedded into the design and construction of the Project:
- There will be a 10m buffer from watercourse banks except for watercourse crossings along access tracks. The Project will utilise existing access road and tracks already in place at this location, this will help to minimise ground disturbance and requirement for further watercourse crossings.
 - Existing access roads and tracks will be utilised to minimise ground disturbance where practicable.
 - Onsite access tracks will follow the alignment of the existing agricultural tracks, where possible, limiting the requirement for new drainage ditch crossings, disturbance to soils and habitat removal.
 - Where drainage is required, a ditch or a swale, with check dams, may be located downhill of the internal access track to control any potential for surface water run-off.

Construction and Decommissioning

- 6.7.11 The oCEMP, oWMP, and oDEMP will secure mitigation measures to control the risk to the environmental receptors and the health of construction workers.

Preliminary Assessment of Likely Significant Effects

Construction

Risk to Human Health

- 6.7.12 Due to the predominantly greenfield and agricultural nature of the PEIR Boundary, currently and historically, it is unlikely that there will be widespread soil and/or groundwater contamination present that could present a risk to human health or

controlled waters receptors. As such, the overall significance of effect would be negligible adverse and not significant.

- 6.7.13 In relation to the Former Oil Depot, and potentially the former landfill site, there will be an increased potential for direct human exposure to potential contamination identified in shallow soils through ingestion, direct contact or inhalation of contaminated soil or dust by construction workers in the short-term during construction works. Localised hydrocarbon and arsenic impact have been recorded in the Made Ground soils which could represent a risk to human health. The potential effect of contaminated soils on construction workers in this area is considered to be of moderate adverse and significant.

Risks to Controlled Waters

- 6.7.14 There is a low likelihood that localised contamination may be mobilised during construction/decommissioning, where soils are excavated, and rainfall leaches soluble contaminants. However, the risk is increased where groundworks are required within the Former Oil Depot and landfill. It is possible that the Made Ground will contain leachable contaminants. The significance of effect is considered to be moderate adverse and significant.
- 6.7.15 The potential impact on the local surface water surrounding the Former Oil Depot is considered to have the potential for a moderate adverse effect, which is significant. A detailed quantitative risk assessment will be undertaken to assess the level of risk to controlled waters to inform whether specific remediation/mitigation measures will be required.

Risks to Geology, Buildings and Structures

- 6.7.16 Subject to the detailed design, a cut and fill strategy will be implemented across the site, mainly focussed on the substation and BESS compounds, which will conserve mineral resources by utilising excavated material on-site. This is likely to result in a Minor Adverse effect, which is not significant. Where earthworks are required, a cut and fill balance will be sought to avoid importation or export of materials.

Operation

Risks to Human Health

- 6.7.17 The Project will involve a small number of personnel undertaking maintenance activities on solar infrastructure and mechanical cutting of vegetation where this is not grazed. Therefore, there is a low likelihood of future site users being exposed to any soil or groundwater contamination. As such, there would be a moderate adverse effect, which is not significant.
- 6.7.18 Low levels of ground gas have been recorded in the Former Oil Depot. Areas of Alluvium represent a potential source of ground gas, whilst naturally elevated radon levels are present. Given the lack of enclosed spaces proposed as part of the Project, elevated ground gasses/radon are considered to represent a minor adverse effect, which is not significant.

Risks to Controlled Waters

- 6.7.19 The presence of increased hardstanding will reduce the infiltration of rainfall and subsequent leaching of any localised soluble contamination in shallow soils into underlying groundwater (Secondary Aquifers) and surface waters.
- 6.7.20 Limited risks to controlled water are anticipated during the operation phase, likely limited to low quantities of heavy metals and hydrocarbons associated with runoff from vehicle parking areas. The effect on Controlled Waters from these sources during operation across the PEIR Boundary are considered to be of negligible adverse effect, which is not significant.

Risks to Geology, Buildings and Structures

- 6.7.21 The entirety of Anglesey forms part of GeoMôn Geopark, due to the unique bedrock geology. The Project will involve minimal excavations into the underlying bedrock, thereby having a negligible adverse effect, which is not significant.

6.8 Soils and Agriculture

Introduction

- 6.8.1 This section considers the potential for likely significant effects of the Project on soils and agriculture during construction, operation and decommissioning. This

discipline considers effects on agricultural land quality, soil structure/quality and agricultural enterprises and land use.

Assessment Approach

- 6.8.2 The Study Area covers the Solar PV Site, Mitigation and Enhancement Areas and Cable Route Corridor. Agricultural land is classified in terms of its value (known as Agricultural Land Classification (ALC)), which relates to the quality of the land and its ability and/or potential for growing higher value/quality crops. The value of agricultural land is attributed in Grades, from 1 (highest value) to 5 (lowest value); Grade 3 has two categories; Grade 3a and 3b. Planning Policy Wales defines land of Grades 1, 2 and 3a as the 'best and most versatile' (BMV) land.
- 6.8.3 The assessment is based on a detailed ALC survey, the scope of which was agreed with Welsh Government's Agricultural Land Use and Soil Policy Advisor. The assessment approach considers the impact that the Project would have on soil qualities, and in particular whether the construction, operation and decommissioning will result in any sealing or permanent downgrading of agricultural land. The study area is the Solar PV Site and Mitigation and Enhancement Areas and Cable Route Corridor.
- 6.8.4 The following potential effects are considered in the assessment:
- Potential effect on agricultural land quality from any works involving the physical moving or sealing of land during construction;
 - 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 vehicle movements, and the extent to which these could affect soil structure during construction;
 - Potential effect on farm businesses, and any effects on agricultural enterprises and land use during construction, operation and decommissioning;
 - Potential effects on soils and land quality during operation; and
 - The potential effects on soils and on agricultural land quality during decommissioning.

Baseline Conditions

- 6.8.5 Land within the Solar PV Site, Mitigation and Enhancement Areas and Cable Route Corridor is predominately used for agriculture. This is mostly used for cattle and sheep grazing with some also mown as forage. Periodically fields in the area are cultivated and reseeded.
- 6.8.6 The soils are shown on the Soil Survey of England and Wales 'Soils of Wales' as falling mostly in soils described as slowly permeable seasonally waterlogged fine silty and clayey soils, with some fine silty and fine loamy soils with slowly permeable subsoils. Land to the north of Rhos-goch is shown as being slowly permeable seasonally waterlogged fine loamy soils. There are patches of other types of soils.
- 6.8.7 The detailed ALC survey that was undertaken to classify the land ALC Grade as follows:
- Grade 2 very good: 26ha – 2.0%
 - Grade 3a good: 296ha – 22.7%
 - Grade 3b moderate: 289ha – 22.1%
 - Grade 4 poor: 371ha – 28.4%
 - Shown not to be BMV on the Predictive ALC Map: 282ha – 21.6%
 - Non-agricultural: 42ha – 3.2%

Embedded Mitigation

- 6.8.8 Good soil management practices such as avoiding travelling across and handling soils when wet and restoring soils into trenches in the same order they came out will be adhered to during the construction and decommissioning phase of the Project in accordance with the oSMP. All works will be undertaken in accordance with appropriately worded management plans to mitigate effects.

Preliminary Likely Significant Effects

Construction

Construction Compounds

- 6.8.9 The creation of Construction Compounds requires the removal of topsoil and laying down of a stone temporary surface. At this stage the location of potential Construction Compounds has not been identified. At the end of the construction

period the stone is removed, the matting removed, the subsoil loosened by agricultural machinery and the topsoil replaced. Therefore, the temporary construction effects from the construction compounds are considered to be Negligible adverse and not significant.

Access Tracks and 33kV/132kV Substations

- 6.8.10 The tracks and substation bases are constructed similarly to the Construction Compounds. Based on a worst case assumption on the area of agricultural land affected by the Access Tracks and 33kV Substations in addition the 6.2ha of subgrade 3a that would potentially be affected by the 132kV Substations, it is estimated that an area of between 5 and 20ha of land of BMV quality is likely to be affected in total. This is expected to result in a Large Adverse effect, which is significant.

Project Substation and BESS

- 6.8.11 The preferred location for the BESS and Project Substation is within the Former Oil Depot and therefore on non-agricultural land. There will be no effect on agricultural land as a result. A possible alternative for the BESS and Project Substation is in Maen Hir Central, in an area that potentially includes about 5.5ha of agricultural land, some of which being BMV. If the Project Station and BESS could not be micro sited to avoid this BMV then there would be a large temporary adverse effect, which is significant.

PV Arrays

- 6.8.12 The PV modules will be mounted onto piles, or on concrete blocks, subject to ground conditions. The processes involved in this do not involve any digging or mixing of the soils. Whilst the Solar PV Arrays are installed over a large area, the quantum of land either sealed or irreversibly downgraded as a consequence of the works, is negligible. The resultant effects range in scale, but none are considered to be significant.

Vehicle Movements

- 6.8.13 Construction of the Project will necessitate vehicle travel over agricultural land. Use will be made so far as possible of the internal tracks for the main haulage. There is the potential for the soil to be adversely affected by vehicular movement

if not managed properly, but management plans will be in place to ensure the proper management and mitigation of effects to soils. The quantum of land of high or medium sensitivity that will be affected from vehicular damage will be negligible, resulting in an effect of slight or neutral adverse significance, which is not significant.

Electrical Cabling

- 6.8.14 The installation of cabling around the PV modules does not cause a significant effect on soils due to the method of installation. A larger cable connection will be required in the Cable Route Corridor and the Grid Connection Corridor. The ES will consider this in greater depth once further details are known, but the effect is expected to be Slight Adverse and not significant.

Disturbances to Farm Enterprises

- 6.8.15 In respect of the proposed PV Arrays, the farms involved have entered into option agreements for the Project. The construction will take place in a pre-planned and phased manner and with due advance notice to those involved there are not expected to be any significant adverse construction phase effects on farm enterprises and businesses, and dependent labour. Further details will be provided in the ES.

Operation

Land quality and soils

- 6.8.16 Most land under and around the PV Arrays will be kept in grassland use with the potential for the land to be farmed by the grazing of sheep or production of fodder. As such, there will be no significant adverse effects on soil resources or agricultural land quality during operation from land management.
- 6.8.17 Overall, the expected adverse impact from the operational phase on agricultural land and soil, is neutral to slight. There is no requirement for soil movement, except in small and localised areas, and land will not be sealed.

Decommissioning

Soils and land quality

- 6.8.18 The decommissioning works will involve the removal of the fixed infrastructure, with the exception of some deeper cables below the depth of agricultural machinery operations, and the reinstatement of soil that has been stored for replacement. For the relatively limited areas of land that have been disturbed, the land will all be restored to the equivalent grade as it was initially. The removal of the infrastructure associated with the Project will not result in any significant effects to soils.

Farm businesses

- 6.8.19 Decommissioning will potentially have short term disruptive effects on farm businesses if they are occupying the site for grazing, but the works will have been planned in advance and any effects will be Negligible adverse and not significant.

6.9 Water Resources

- 6.9.1 This section considers the potential likely significant environmental effects of the Project on the water environment, including flood risk, drainage, water quality and water supply during construction, operation and decommissioning.

Methodology

- 6.9.2 The following receptors are scoped in across all phases of the Project:
- Flood risk;
 - Surface water quantity;
 - Water quality;
 - Potable water; and
 - Foul water - quantity and quality.
- 6.9.3 The assessment considers the construction, operation and maintenance, and decommissioning phases of the Project and will take account of the potential influence of climate change on the surface water and flood risk receptors.
- 6.9.4 The Study Area for the Water Resources assessment is defined by the hydrology within the PEIR Boundary and the surrounding area.

Baseline Conditions

Hydrology

6.9.5 The following watercourses flow through the PEIR Boundary as shown on Figure 6-6:

- Afon Wygyr;
- Afon Tregynrig;
- Afon Glasgraig Fawr;
- Afon Wen;
- Afon Goch;
- Afon Alaw;
- Afon Glasgraig Fawr;
- Afon Llandyfrydog;
- Afon Alaw;
- Afon Ynys Fawr;
- Afon Cefni;
- Afon Ysgoldy; and
- Several ordinary watercourses and ditches located across the area.

Flood Risk

6.9.6 The following subsections describes the flood risk level within the Solar PV Site and Mitigation and Enhancement Areas as shown on Figure 6-6.

6.9.7 Most of the Maen Hir North area is located within Flood Zone 1 (Low Probability of flooding). There is an area of Flood Zone 2 (Medium Probability of flooding) and 3 (High Probability of flooding) located within the centre of the area, associated with the Afon Wygyr.

6.9.8 Most of the Maen Hir Central area is located within Flood Zone 1. There are areas of Flood Zones 2 and 3 located within the centre of the area, associated with Afon Alaw and Llyn Alaw. There are areas of Flood Zone 2 and 3 towards the western extent of the Water Resources Study Area associated with the Afon Tan 'Rallt and the Afon Fferam Uchaf.

6.9.9 Most of the Maen Hir South A area is located within Flood Zone 1. There are areas of Flood Zones 2 and 3 located within the area associated with the Afon Llandyfrydog and the Afon Aalaw.

6.9.10 Most of the Maen Hir South B is located within Flood Zone 1. There are areas of Flood Zones 2 and 3 located within the centre of the area associated with the Afon Cefni, the Afon Ysgoldy and the Afon Ynys Fawr.

Reservoirs

6.9.11 The west of the Study Area is partially located within the flood risk zone from reservoir extent associated with Llyn Alaw. The Study Area is not located within any areas shown to be at risk of flooding from Llyn Cefni. Although extents associated with Llyn Alaw are marginally located within the Study Area, they are located at least 1km downstream of the Solar PV Site and are, therefore, not considered further in the PEIR.

Surface Water – Quantity

6.9.12 A desktop review of available information shows that the majority of the Study Area is covered by permeable surfacing and not served by any positive surface water drainage systems, other than informal land drainage systems. Existing highways may be served by highway drainage and/or a surface water network. Rainfall is believed to infiltrate into the ground 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 waterbodies.

Groundwater

6.9.13 The Study Area is not indicated to be within a Groundwater Source Protection Zone and there is no Groundwater Protection Zone within at least a 1km radius of the Study Area. There are several private groundwater supplies located within the Study Area. Further detail will be provided in the ES.

Water Quality

Surface Water Quality

6.9.14 Seven of the watercourses listed above are Water Framework Directive river waterbody catchments. The two reservoirs identified above are both Water Framework Directive lake waterbodies.

6.9.15 There are no drinking water protected river catchment areas within the Study Area. However, Llyn Alaw and Llyn Cefni are designated as a Drinking Water

Protected Area (Lake) and are both assessed as 'at risk' due to Algae, Nutrients, Taste and Odour and Pesticides.

Groundwater Quality

- 6.9.16 The Study Area is located within the Ynys Mon Secondary Groundwater Drinking Water Protected Area which has been assessed to be 'not at risk' of failing to meet drinking water quality objectives.

Other Designations

- 6.9.17 Within and adjacent to the Study Area there are six ecologically designated sites which have hydrological connectivity to the Study Area. Two of the designated sites are also designated as groundwater dependent ecosystems.

Foul Water

- 6.9.18 The Water Resources Study Area is located within Welsh Water's sewerage area, although it is not believed to be currently served by a positive foul water drainage system.

Embedded Mitigation

Design

- 6.9.19 The following offsets are implemented from water resources to mitigate against flood risk, minimise ground disturbance and mobilisation of sediment and pollutants into the watercourse, and to allow access to watercourses for maintenance:
- 10m watercourse buffers except for watercourse crossings along access tracks;
 - Avoid Solar PV Arrays within Flood Zones 2 and 3;
 - 10m buffer from ponds; and
 - 50m buffer from the edge of Llyn Alaw.
- 6.9.20 The following mitigation will also be embedded into the Project design:
- The Solar PV Site will utilise existing access road and tracks and watercourse crossings already in place, where practicable.
 - Where new crossings are required, or existing crossings replaced, these will be designed so as to not adversely impact on flow;

- Horizontal Directional Drilling will also be utilised, where possible, to direct cabling underneath watercourses; and
- Where drainage is required for Solar PV Arrays, PV Modules and associated transformers, measures will be put in place to intercept any potential surface water runoff and promote infiltration of surface water.

6.9.21 The Project Substation, BESS and community solar where they will be potentially located within the Former Oil Depot would be located within Flood Zones 2 and 3; however, this risk will be mitigated through the outline Surface Water Drainage Strategy embedded within the Project design.

Construction, Operation and Decommissioning

6.9.22 Measures to control surface water runoff, drain areas of hardstanding, and prevent pollution, have been incorporated into various management plans that will be implemented during the construction, operation and decommissioning phases of the Project. A management plan will also be put in place to ensure that the appropriate fire reduction and protection measures are in place in relation to the BESS.

Preliminary Assessment of Likely Significant Effects

Construction

6.9.23 This section describes the likely significant effects from water resource matters during the construction activities of the Project. Impacts on water resources resulting from the construction stage include:

- Changes to surface water runoff, groundwater and flood risk;
- Accidental spillages or releases of contaminants; and
- Increased sediment.

6.9.24 It is expected that the effects of decommissioning would be of a lesser magnitude than those during construction as construction vehicles will use existing tracks, where practicable, and activities such as piling and new watercourse crossings would not be required.

Flood Risk

6.9.25 Relevant research and guidance conclude 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 Solar PV Site will not have a significant effect in relation to increasing flood risk onsite and to the downstream catchment.

- 6.9.26 Other elements of the Project, such as the Project Substation, BESS, Access Tracks, Construction Compounds and the Parcel Substations, may increase the impermeable area within the Solar PV Site. However, these areas will be served by a drainage system, embedded within the Project design, which incorporates Sustainable Drainage Systems features to prevent an increase in surface water runoff. Therefore, the effect of the Solar PV Site on flood risk is Negligible adverse and not significant.

Obstruction or Alteration to Flows

- 6.9.27 The use of existing access routes and designing new crossings to avoid any adverse impact on flows, as set out in the embedded mitigation, will minimise the potential for obstruction of flow compared to the baseline conditions, and subsequently any negative effect such as sediment transport and channel migration. Therefore, the effect of the Solar PV Site on surface water flow is considered Negligible and not significant.

Water Quality

- 6.9.28 The construction phase has the potential to adversely affect water quality in receiving waterbodies through uncontrolled release of substances used or stored onsite. Groundworks required within the Former Oil Depot may result in the mobilisation of localised contamination.
- 6.9.29 Any release of these substances either directly into Llyn Alaw or Llyn Cefni, or into the watercourses feeding the reservoirs, would adversely affect the quality of the water, not just for potable water supply but also for the ecology utilising the reservoirs. However, the offsets from watercourses and implementation of measures secured through appropriate management plans will mitigate the effects from uncontrolled release of substances and suspended solids.
- 6.9.30 The mitigation embedded into the design of the Solar PV Site are such that the effect of the construction of the Solar PV Site on water quality is considered to be **Negligible and not significant.**

Potable Water Supply

- 6.9.31 At this stage, it is not known what potable water will be required for construction. Potential for likely significant effects on potable water supplies will be assessed in the ES when the Project design has developed further.

Foul Water - Quantity and Quality

- 6.9.32 At this stage, it is not known what foul infrastructure will be required for construction. The details of any foul infrastructure will be determined as the Project progresses and will be included in the ES chapter.

Operational Phase

- 6.9.33 The potential likely significant effects of the operation of the Solar PV Site are similar to those discussed under the construction phase and include:

- Changes to surface water runoff, groundwater and flood risk;
- Accidental spillages or releases of contaminants; and
- Increased sediment.

- 6.9.34 However, the magnitude of the impacts is expected to be less during operation due to there being less activity and ground disturbance. The replacement of Solar PV Modules and the replacement of batteries within the BESS is unlikely to involve any groundworks.

Flood Risk

- 6.9.35 The mitigation embedded into the design of the Solar PV Site, such as the outline Surface Water Drainage Strategy, appropriate management plans are such that the effect of the operation of the Solar PV Site on flood risk is considered to be Negligible and not significant. There may be Minor Beneficial effects in the form of a reduced risk of flooding in more extreme events because of reduced rates of discharge from the BESS and Project Substation sites into local watercourses because of the outline Surface Water Drainage Strategy, which would be not significant.

Water Quality

- 6.9.36 In the unlikely event of a fire during the operational phase, the embedded design of the Solar PV Site provided mitigation against pollutants entering waterbodies or groundwater.

- 6.9.37 The fire mitigation embedded within the Project design will capture any potentially contaminated water within the site in the event of a fire. Therefore, the effect of a fire on water quality is considered to be Negligible adverse and not significant.
- 6.9.38 Where land parcels are currently arable agricultural uses in the baseline, a Minor Beneficial effect may be seen because of a reduction in agricultural pesticides that would otherwise have the potential to enter the water environment and these reservoirs, which is not significant.

Potable Water Supply

- 6.9.39 At this stage, it is not known what potable water will be required for operation. The details of any potable infrastructure will be determined as the Project progresses and will be included in the ES chapter.

Foul Water - Quantity and Quality

- 6.9.40 At this stage, it is not known what foul infrastructure will be required for operation. The details of any foul infrastructure will be determined as the Project progresses and will be included in the ES chapter.

6.10 Climate Change

Introduction

- 6.10.1 This section considers the potential for likely significant effects on climate change during the construction, operation and decommissioning of the Project. It also considers the impact of Climate Change on the Project and on receptors in the surrounding environment as identified by the relevant technical disciplines.

Baseline Conditions

Greenhouse Gas Emissions

- 6.10.2 The baseline condition for the lifecycle greenhouse gas (GHG) assessment is a 'business as usual' scenario where the Project does not go ahead. The current land use within the PEIR Boundary and the local area consists predominately of grassland mainly utilised for grazing which is associated with relatively low levels of GHG emissions.

6.10.3 The GHG assessment assumes the emissions associated with the operation of a combined cycle gas turbine as the future baseline scenario for electricity generation.

Climate Change Resilience and Adaptation and In-combination Climate Change Impacts (ICCI)

6.10.4 The existing baseline condition is the historic and current climate as defined in terms of temperature, rainfall and other climatic factors. Historic climatic factors from the nearest climate station (Valley, Isle of Anglesey) to the Project for the 30-year baseline period of 1981 to 2010, have been used to inform the assessment baseline.

6.10.5 The future baseline is expected to differ from the present-day baseline. UK Climate Projections 2018 (UKCP18) data provides probabilistic Climate Change projections for pre-defined 30-year periods for annual, seasonal and monthly changes to mean climatic conditions over the 25 km grid square within which the PEIR Boundary is located. For the purpose of the assessments, UKCP18 probabilistic projections for pre-defined 30-year periods for key climate variables.

6.10.6 UKCP18 data presents a wide range of possible future climate scenarios. The assessment within the PEIR has used the most conservative (i.e. worst-case) data to inform the assessment of climate change impacts.

Assessment Approach

Greenhouse Gas Emissions

6.10.7 The GHG assessment comprises of potential adverse impacts on the global climate through emissions generated by the Project and beneficial impacts from any net carbon reductions achieved by the Project.

6.10.8 The assessment has considered GHGs in terms of tonnes of Carbon Dioxide equivalent (tCO_{2e}), which accounts for seven gases with the potential to contribute to global warming. 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, has been quantified and used in the assessment.

6.10.9 GHG emissions from the Project have been put into context by comparing them with other likely alternative sources of electricity generation. The assessment has therefore measured any savings in emissions due to the generation of the electricity via solar PV relative to other electricity generation methods such as a combined cycle gas turbine.

Climate Change Resilience and Adaptation and ICCI

6.10.10 The Climate Change Resilience assessment considers the vulnerability of the Project to extreme weather events and changes in temperature, precipitation and wind patterns. The ICCI assessment identifies the impact of the Project, in-combination with climatic changes, on receptors identified by other environmental disciplines. Sea level rise has not been assessed as the Project is not in an area susceptible to sea level rise.

6.10.11 The assessment has considered Climate Projections over a 60-year period from the Project's completion.

6.10.12 The current baseline has been established by understanding the historic/current climate in the location of the Project by reviewing historic climate data obtained from the Met Office website. The climate baseline has been developed using historic Met Office data obtained from the meteorological station closest to the PEIR Boundary (Valley, Isle of Anglesey), located approximately 15km south-west of the Project. The future baseline has been established using UKCP18.

6.10.13 The receptor for Climate Change Resilience and Adaptation is the Project itself, including workers and infrastructure, throughout its construction, operation and maintenance, and decommissioning stages. The Climate Change Resilience and Adaptation assessment has provided a description of how the Project has been designed to be more resilient to the effects of climate change.

6.10.14 The receptors for 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.

6.10.15 The assessment will identify the extent to which identified receptors in the surrounding environment are potentially vulnerable to and affected by ICCI.

Embedded Mitigation

Greenhouse Gas Emissions

Design

6.10.16 Where reasonably practicable, the Project will be designed, constructed and implemented in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon, such as locally sourced products and materials with a higher recycled content.

Construction and Decommissioning

6.10.17 Embedded measures relevant to the construction and decommissioning phase and secured through the oCEMP and oDEMP could include the following:

- Increasing recyclability by segregating construction waste to be re-used and recycled where reasonably practicable;
- Constructing and implementing the Project in such a way as to minimise the creation of waste and maximise the use of alternative materials with lower embodied carbon;
- Reusing suitable infrastructure and resources where possible to minimise the use of natural resources and unnecessary materials; and
- Implementing an oCTMP to reduce the volume of construction and decommissioning staff and employee trips to the Project, while encouraging the use of lower carbon modes of transport.

Operation

6.10.18 The following control measures could be included in the oOEMP to mitigate greenhouse gas emissions:

- Routine maintenance and servicing activities of the Project to optimise efficiency of the Project;
- Operating the Project in such a way as to reduce the creation of waste and increase the use of materials with lower embodied carbon such as locally sourced products and materials with a higher recycled content;
- Implementing a Travel Plan to encourage the use of lower carbon modes of transport by identifying and communicating local bus connections and

pedestrian and cycle access routes to/from the Project to all staff, and providing appropriate facilities for the safe storage of cycles;

Climate Change Resilience and Adaptation and ICCI

Design

- 6.10.19 All of solar infrastructure is proposed to be located outside Flood Zone 2 and 3. PV Arrays have been removed from areas at risk of flooding during a 1 in 100-year rainfall event. This accounts for increases in rainfall and fluvial flows associated with climate change. Adaptation measures to reduce the effect of projected temperature increases on electrical equipment over the course of the Project's design life have been taken into account.

Construction and Decommissioning

- 6.10.20 The following mitigation will be embedded into the Project through the oCEMP and oDEMP:
- Named person(s) will be responsible to be familiar with the climate change risks and remains vigilant to news reports relating to extreme weather events, Environment Agency flood warnings and water levels of the local waterways. Weather forecasts and Environment Agency flood alerts will be monitored to allow works to be planned and carried out accordingly to manage extreme weather conditions, such as storms and flooding;
 - Health and safety plans developed for construction activities will be required to account for potential climate change impacts on workers, such as flooding and heatwaves. To include measures such as toolbox talks on raining on dangers of extreme weather conditions; and
 - Storing materials outside of flood extent as far as reasonably practicable.

Operation

- 6.10.21 The following control measures could be secured through the oOEMP to mitigate the adverse effects of climate change on the Project:
- Monitoring of weather forecasts to anticipate extreme temperatures and ensure cooling or heating plant are operating effectively. In the event that cooling or heating plant are anticipated to fail then plant will be temporarily shutdown until maintenance has taken place; and

- Monitoring and maintenance of infrastructure to ensure it remains in adequate condition to provide resilience against the increased frequency and severity of extreme weather events associated with climate change.

Preliminary Assessment of Likely Significant Effects

Greenhouse Gas Emissions

6.10.22 The Greenhouse Gas effects associated with the construction, operation (including maintenance), and decommissioning of the Project are outlined in the sections below.

Construction

- 6.10.23 The greatest GHG impacts would occur during the construction phase from the manufacture of the materials and components required for the Project. The manufacture of the BESS and Solar PV Panels will carry the greatest embodied carbon impact. These components are assumed to be manufactured abroad and therefore also have associated transportation emissions that reflect this.
- 6.10.24 Other sources of emissions during construction within the scope of the GHG assessment include the manufacture of other components, water, energy, and fuel use for construction activities including fuel consumed by construction plant and machinery, fuel use for the transportation of construction materials for the Project, transportation of construction workers to and from the Project, and the transportation and disposal of waste.
- 6.10.25 The impact from land use change is assumed to be negligible as the land within the Project would be returned to the landowners control at the end of the 60-year operational phase.
- 6.10.26 Total GHG emissions from the construction phase are estimated at 313,912 tCO_{2e}. GHG emissions from construction have been assessed to identify the significance of their effect. Considering the estimated construction emissions against the carbon budget period during which they are expected to arise (the 4th UK carbon budget, 2023 to 2027), the Project would contribute 0.04% and 0.05% to the 4th and 5th budgets respectively.

Operation

- 6.10.27 The operational emissions over the design life of the Project are estimated at 719,434 tCO₂e under the worst-case scenario. A total of 99.2% of this figure results from the supply of replacement components, with the remaining 0.8% the result of ongoing operational emissions.
- 6.10.28 The Project is expected to be operational by no earlier than 2028, therefore operational emissions up to 2037 (the end of the 6th UK Carbon Budget) will fall under the 5th and 6th UK Carbon Budgets, beyond which point no Carbon Budgets have yet been legislated for. The estimated operational emissions would be 0.003% and 0.006% of the 5th and 6th budgets respectively.

Decommissioning

- 6.10.29 Greenhouse Gas emissions from the Project during decommissioning are subject to a very high degree of uncertainty, as the conditions that will apply over 60 years into the future. However, the worst-case scenario for the emissions expected to result from the decommissioning phase results in 2,658 tCO₂e.

Overall GHG Impact and Significance

- 6.10.30 The Project's GHG impact across construction has been determined to be Minor Adverse and not significant.
- 6.10.31 The Project directly supports the emerging policy environment of decarbonising electricity generation by upscaling the role of solar in power sector. The National Electricity Transmission System cannot and will not decarbonise without investments in low-carbon electricity generation projects such as the Project. The Project's operational phase indirectly causes a reduction in atmospheric Greenhouse Gas concentrations compared to the without-project baseline and aligns with a trajectory towards Net Zero. The Greenhouse Gas emissions impact of the operational phase is therefore considered to be Beneficial and **significant** when compared to the future baseline.
- 6.10.32 Greenhouse Gas emissions from the decommissioning phase are therefore considered to have a Minor Adverse effect on climate change which is not significant effect.

Climate Change Resilience and Adaptation and ICCI

- 6.10.33 Potential climate risks to the construction, operation and decommissioning phase, including the likelihood, consequence and significance are summarised as follows.

Effects of Climate Change on the Project

Construction

- 6.10.34 The risks assessed in the Climate Change Resilience and Adaptation assessment at the construction phase of the Project predominantly cover workforce exposure to dangerous working conditions and damage to physical structures/asset damage.
- 6.10.35 Major climatic variables contributing to these risks include, but are not limited to, precipitation and extreme weather events.
- 6.10.36 As a result of the embedded climate change mitigation measures, it is concluded that all climate change risks during the construction phase have been identified to be low and not significant.

Operation

- 6.10.37 The risks assessed in relation to Climate Change Resilience and Adaptation at the operational phase of the Project predominantly encapsulate asset damage from extreme weather conditions and changes in annual precipitation and temperatures, as well as workforce exposure to dangerous working conditions. Major climatic variables contributing to these risks are temperatures, precipitation, and extreme weather events.
- 6.10.38 As a result of the embedded climate change mitigation measures, it has been concluded that all climate change risks during the operation phase have been identified to be low and not significant.

Decommissioning

- 6.10.39 The risks assessed in the Climate Change Resilience and Adaptation assessment at the decommissioning phase of the Project are mainly made up of risks to the workforce. These risks are driven by climatic variables like temperatures, rainfall, and extreme weather events.

6.10.40 As a result of the embedded climate change mitigation measures, it has been concluded that all climate change risks during the construction phase have been identified to be low and not significant.

In-Combination Effects of Climate Change and the Project on Environmental Receptors

6.10.41 Potential climate risks to the construction, operation and decommissioning phase, including the likelihood, consequence and significance are summarised as follows.

Effects of Climate Change on the Project

6.10.42 The risks assessed at the construction phase of the Project predominantly cover workforce exposure to dangerous working conditions and damage to physical structures/asset damage.

6.10.43 Major climatic variables contributing to these risks include, but are not limited to, precipitation and extreme weather events.

6.10.44 As a result of the embedded climate change mitigation measures, it is concluded that all climate change risks during the construction phase have been identified to be low and not significant.

6.10.45 The risks assessed at the operational phase of the Project predominantly encapsulate asset damage from extreme weather conditions and changes in annual precipitation and temperatures, as well as workforce exposure to dangerous working conditions.

6.10.46 Major climatic variables contributing to these risks are temperatures, precipitation, and extreme weather events.

6.10.47 As a result of the embedded climate change mitigation measures, it has been concluded that all climate change risks during the operation phase have been identified to be low and not significant.

6.10.48 The risks assessed at the decommissioning phase of the Project are mainly made up of risks to the workforce. These risks are driven by climatic variables like temperatures, rainfall, and extreme weather events.

6.10.49 As a result of the embedded climate change mitigation measures, it has been concluded that all climate change risks during the construction and decommissioning phases have been identified to be low and not significant.

In-Combination Effects of Climate Change and the Project on Environmental Receptors

6.10.50 The assessment of potential cumulative effects of climate change during construction, operation (including maintenance), and decommissioning will be undertaken alongside the further development of the Project design as it progresses and will be examined by other disciplines with their assessment results to be obtained from ongoing surveys and monitoring. The results of the assessment will be presented in the ES.

6.11 Other Matters

Introduction

6.11.1 This section collates collate the assessment of other environmental topics that do not warrant individual chapters in the PEIR:

- Air Quality;
- Glint and Glare;
- Major Accidents and Disasters; and
- Waste.

Air Quality

Introduction

6.11.2 This section summarises the assessment of the potential likely significant effects of the Project on air quality (including dust) during the construction and decommissioning phases.

Baseline Conditions

6.11.3 IoACC undertake air quality monitoring for Nitrogen Oxide (NO₂) and Particulate Matter (PM₁₀ and PM_{2.5}). The air quality monitoring results show that the air quality in the Isle of Anglesey is generally good, with road traffic being the main source of emissions.

Assessment Approach

6.11.4 The air quality assessment has been undertaken in line with all relevant guidance and has focussed on road traffic emissions and dust emissions during the construction phase.

Embedded Mitigation

6.11.5 An oCTMP and an oCEMP will be prepared in support of the DCO application. These will include measures such as:

- Sheeting of vehicles carrying dusty substrates;
- Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on un-surfaced haul roads and work areas;
- Use enclosed chutes, conveyors and covered skips, where practicable;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Ensure equipment is readily available onsite to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Preliminary Assessment of Likely Significant Effects

6.11.6 The construction phase of the Project will involve a number of activities which have the potential to impact pollutant concentrations. There is potential for adverse effects on human and ecological receptors, but with sufficient mitigation measures in place to minimise the emission of dust, the potential effects from the construction phase are considered to be not significant.

6.11.7 Traffic generated by the Project during the construction and decommissioning phases has the potential to give rise to additional emissions of NO₂, PM₁₀ and PM_{2.5}. However, due to the level of construction traffic expected, and the low volume of traffic on the intended routes in the baseline, no significant adverse effects are anticipated.

Glint and Glare

Introduction

6.11.8 This section of the NTS summarises the key findings of the glint and glare assessment. Glint and glare can be produced as a reflection of the sun from the surface of PV Panels.

Baseline Conditions

6.11.9 There are a number of isolated dwellings and roads in to the immediate area of the Solar PV Site, that could be affected by glint and glare. There are six aerodromes within the study area.

Assessment Approach

6.11.10 The following receptors are proposed to be scoped into the Glint and Glare Assessment during the operation phase:

- Residential Receptors within 1km of the Solar PV Site;
- Road Receptors within 1km of the Solar PV Site; and
- Aviation Receptors within 30km of the Solar PV Site.

6.11.11 The assessment has been undertaken in line with the relevant policy and guidance.

Mitigation

6.11.12 Planting/infilling of native hedgerows to a height of at least 3m will be embedded into the design of the Project. During operation the hedgerows will be maintained at the 3m height.

Preliminary Assessment of Likely Significant Effects

6.11.13 The reflective characteristics of modern solar PV panels are similar to commonly encountered sources within an outdoor environment including still water, greenhouses and windows on buildings.

6.11.14 Solar reflections are possible at the residential receptors assessed within the 1km study area. However, with the embedded mitigation in place, no significant adverse effects have been identified on residential receptors.

6.11.15 Public roads within the vicinity of the Solar PV Site are generally well screened with intermittent/partial views into the Solar PV Site, particularly among those

roads that border the Solar PV Site. Taking the embedded mitigation into account, no significant adverse effects on road receptors are anticipated.

- 6.11.16 There are a number of aviation receptors located within 30km of the Solar PV Site. The assessment undertaken, which included a detailed assessment for RAF Mona, concluded no significant adverse effects are anticipated.

Major Accidents and Disasters

Introduction

- 6.11.17 This section of the NTS summarises the consideration of the potential likely significant effects generated by the Project during construction, operation and decommissioning in relation to Major Accidents and Disasters.
- 6.11.18 As agreed with the Planning Inspectorate, only fire risk related to the BESS required consideration in the context of Major Accidents and Disasters.

Approach to Assessment

- 6.11.19 A qualitative approach has been taken, based on professional judgement, in assessing the potential for likely significant effects. The approach follows best practice guidance, as relevant.

Mitigation

- 6.11.20 The construction, operation and decommissioning phases would be undertaken in accordance with applicable legislation and policy guidance.
- 6.11.21 The operational phase of the Project would involve routine maintenance and servicing of equipment to ensure the safe operation of equipment. Appropriate management plans will be implemented detailing fire hazard mitigation measures relating to the BESS.

Preliminary Assessment of Likely Significant Effects

- 6.11.22 The BESS proposed as part of the Project has potential fire risk associated with the battery components likely to be included. With the mitigation measures in place to manage the fire risk of the BESS, it is anticipated that significant effects are not likely to occur as a result of the Project.

Waste

Introduction

- 6.11.23 This section of the NTS summarises the assessment of the likely significant effects of the Project on waste streams through consumption, generation and disposal during the construction, operational and decommissioning phases.

Embedded Mitigation

- 6.11.24 The nature of the waste to be produced during construction, operation and decommissioning will mean it will be managed by appropriately permitted carriers and facilities in line with the appropriate environmental permits and requirements. The Applicant is committed to recycling all PV panels during all phases of the Project.
- 6.11.25 An oCEMP, oOEMP and oDEMP will be developed and implemented to ensure the appropriate management of waste during the construction and decommissioning phases.
- 6.11.26 During decommissioning all PV Arrays including modules, mounting structures, Inverters and Transformers, the BESS and Project Substation would be removed and recycled in accordance with good practice following the waste hierarchy.

Preliminary Assessment of Likely Significant Effects

- 6.11.27 Given the nature of the Project, significant quantities of waste are not anticipated during the construction phase. With embedded mitigation in place and the appropriate control measures followed, no significant effects associated with this waste are anticipated.
- 6.11.28 During the operational phase of the Project, waste arisings including those generated by component replacement are expected to be minimal and, as they would be considered to be commercial waste, this will be managed by appropriately permitted carriers and facilities in line with the appropriate environmental permits and requirements. As such, no significant adverse effects are anticipated. All the solar infrastructure would be removed and recycled or disposed of in accordance with good practice during the decommissioning phase.

6.12 Socio-economics

Introduction

6.12.1 This section considers the potential for likely significant effects of the Project on socio-economics that could occur from the construction, operation and decommissioning of the Project.

Assessment Approach

6.12.2 The approach to the socio-economic assessment is based on professional judgement, previous experience and good practice, informed by planning policy requirements.

6.12.3 The assessment of impacts during the construction and decommissioning phases has considered the following:

- Direct and indirect construction jobs supported by the delivery of the Project;
- Provision of education, skills, training and supply chain;
- Changes in demand for temporary workers accommodation; and
- Changes to land uses.

6.12.4 The assessment of impacts during the operational phase has considered the following:

- Operational employment (direct, indirect and induced) supported by the Project;
- Provision of education, skills and training;
- Impact on community power;
- Changes to land uses; and
- Changes to local tourism assets.

6.12.5 Depending on the nature of the effect, the study area varies in the assessment. The geographical study areas used in the assessment of socio-economic effects in the PEIR are:

- National – Wales;
- Labour Catchment Area – 60-minute travel time to PEIR Boundary;
- Local Authority – the IoACC;
- Northern and Central Anglesey – comprising the four wards surrounding PEIR Boundary; and

- The PEIR Boundary.

6.12.6 The receptors identified for assessment are:

- Residents;
- Workers;
- Visitors; and
- Businesses.

Baseline Conditions

Construction and Decommissioning

Jobs

6.12.7 In the Labour Catchment Area, there are 6,800 resident construction workers, which represents 6% of all resident workers in the area, which, for comparison, is lower than the Wales average of 7%. Over the last decade, the proportion of Labour Catchment Area residents working in construction has decreased by two percentage points.

6.12.8 Unemployment is low in the Labour Catchment Area, with just 4.0% of economically active working-age residents (aged between 16 and 64 years old) considered unemployed as of 2023, which is lower than the Local Authority rate of 5.3%, but marginally higher than the national rate of 3.8%.

Provision of Education, Skills, Training and Supply Chain

6.12.9 Qualifications levels across the Local Authority present a mixed picture. Whilst the Local Authority has a higher proportion of residents without qualifications (20%, compared to 18% in all other study areas), it also possesses 32% of residents with Level 4 qualifications or above, the highest level, equivalent to a degree or higher.

6.12.10 Several challenges have been highlighted focussed on the construction skills of the energy and environment sector:

- Skills shortages are causing recruitment problems in the energy sector and technical skills are in demand;
- Skills shortages are in engineering and technicians' occupations with STEM qualifications as well as quantity surveyors, data scientists, cyber security and project management expert roles; and

- Challenges of defining skills needs for net zero transition.

6.12.11 North Anglesey's historically dominant industries that were key to the local economy have declined, suggesting a need to upskill residents to support their growing industries.

Changes in Demand for Temporary Worker Accommodation

6.12.12 The baseline amount of temporary accommodation for construction workers to use has been informed by a review of the tourism stock (including caravan sites) and bed space occupancy from the Welsh Government websites, and a review of Airbnb data from the Office for National Statistics.

6.12.13 The review of this data has shown that, in the current baseline, there are 1,740 bedspaces in the Local Authority, and 10,785 bedspaces in the Labour Catchment Area.

Changes to Land Uses

6.12.14 The majority of the PEIR Boundary (96%) is agricultural land and there is also a small element of brownfield land.

6.12.15 The land within the PEIR Boundary is mostly actively farmed, with the majority of the land grassland, used for agricultural purposes and farming activities, such as sheep grazing.

Operation

Operational Employment Supported by the Project

6.12.16 In 2022 there were a total of 105,000 jobs in the Labour Catchment Area. Since 2015, employment growth in the Labour Catchment Area has been relatively low at 1%, below comparators with the Local Authority and Wales experiencing employment growth of 3% and 2%, respectively.

Provision of Education, Skills and Training

6.12.17 The following challenges have been identified in terms of skills, of which most are around jobs related to renewable energy and a green economy:

- Skills shortages are causing recruitment problems in the energy sector and technical skills are in demand;

- Skills shortages are in engineering and technicians' occupations with STEM (Science, Technology, Engineering and Mathematics) qualifications as well as quantity surveyors, data scientists, cyber security and project management expert roles; and
- Challenges of defining skills needs for net zero transition.

6.12.18 There is an identified skills shortage in with a number of hard to fill vacancies in North Wales (including the Local Authority), higher than the national average. Notably, 70% of regional employers are facing skills shortages, particularly in trades, associate and technical occupations and professional occupations.

6.12.19 It has been identified that that a lack high-paid job opportunities on the island is creating an increasing risk around residents moving or commuting elsewhere.

Changes to Local Tourism Assets

6.12.20 Tourism is a significant economic driver for the Local Authority, comprising 20% of total employment. The Local Authority is the second most visited in Wales, with 49% of visitors to Anglesey citing the island's landscapes, countryside, and beaches as their primary motivation for visiting.

6.12.21 The Local Authority features a diverse range of tourism assets distributed across its main settlements and coasts. Natural attractions, including parks, gardens, and nature trails, comprise the largest proportion (50%) of tourist attractions. In close proximity to the PEIR Boundary, there are multiple trails surrounding the area, with Llyn Alaw Reservoir to the west offering a walk which overlooks the old railway line. To the east of the PEIR Boundary lies Parys Mountain and Wildlife Cors Erddreiniog, the largest of the Three Fen National Nature Reserves, providing numerous walking routes, and Parys Mountain.

6.12.22 Natural attractions, historical and heritage sites constitute 19% of all attractions in the LA, primarily located along the coast and within settlements. However, the Rhosgoch Standing Stone, one of Anglesey's tallest standing stones, is positioned north of the PEIR Boundary, accessible via several PRoW.

Embedded Mitigation

6.12.23 The following embedded mitigation measures are integrated into the design of the Project:

- A community solar scheme of 5MW capacity is proposed to be located on the Former Oil Depot;
- The Project will seek to create green infrastructure that delivers multiple beneficial outcomes for people and nature;
- The Project will look to support the continued agricultural landscape and enable a transition amongst landowners to more resilient and sustainable land management approaches; and
- The Project will seek to employ the use of a shuttle bus service for staff who will park within the relevant construction compound;

6.12.24 The Applicant is considering making a range of broad commitments towards supporting local jobs and skills, including supporting apprenticeship opportunities during the duration of the Project, engaging local education providers to maximise opportunities for local residents, and offering local procurement opportunities to businesses.

Preliminary Likely Significant Effects

Construction and Decommissioning

- 6.12.25 It is estimated that the construction phase would support a peak of approximately 650 construction jobs, totalling at 1,320 jobs throughout the construction phase. There will be opportunities for local employment of residents within the respective study area during construction. The overall effect on Labour Catchment Residents working in construction is considered to be Major Beneficial, which is significant.
- 6.12.26 The construction of the Project will support local jobs and provide opportunities for local residents to acquire new skills and training within the construction industry. Overall, this is considered to result in a Moderate Beneficial effect related to the provision of education, skills, training and supply chain, which is significant.
- 6.12.27 It is estimated that between 50-75% of the construction workers would come from outside of the Labour Catchment Area and therefore may require temporary accommodation during the construction phase. Applying a worst-case approach, the additional demand on accommodation during the construction phase is considered to be Minor Adverse, which is not significant.

Operation

- 6.12.28 The operational phase of the Project will last 60-years, supporting direct jobs as well as indirect and induced jobs. Overall, the Project would, support around 10-12 direct jobs. This is considered to be a Minor Beneficial effect, which is not significant.
- 6.12.29 The Project will support operational employment opportunities, that consist of operation and maintenance crews, landscaping, and occasional repair teams. The jobs supported would also support long-term skills development for local residents, which would contribute to addressing identified skills shortages in the green and low carbon sector. This will be reviewed for the ES once more information is available but is considered to result in a Minor Beneficial effect, which is not significant.
- 6.12.30 The community solar scheme is expected to have capacity of approximately 5MW with an operational life of up to 60 years. More detail will be provided in the ES, and the effect on community power will be determined in the ES, given the beneficiaries of the community power scheme are not yet known.
- 6.12.31 Whilst the Project has the potential to reduce agricultural incomes for farm businesses affected during the operational stage, this is countered by the alternative incomes received by the leasing of the land for the Project, which would lead to an overall beneficial impact for these landowners. The conclusion of the impact on the changes to land uses effect during the operational phase of the Proposed Development will be considered in further detail in the ES.
- 6.12.32 It is unlikely that changes to recreational and visual amenity associated with local tourism assets and PRow would affect overall tourist visits to the Local Authority. At this stage, it is conservatively assumed that the effect on overall local tourism assets on current and future residents, visitors and businesses is Moderate Adverse, which is significant.

6.13 Health

Introduction

- 6.13.1 This section considers the potential for likely significant effects of the Project on health that could result from the construction, operation and decommissioning

phases of the Project. In the assessment, changes to mental health outcomes are considered alongside changes to physical health outcomes.

Assessment Approach

6.13.2 The following aspects of health have been assessed in the PEIR for construction, operation and decommissioning:

- Diet and nutrition;
- Community, identity, culture, resilience and influence;
- Education and training;
- Employment and income; and
- Noise and Vibration.

6.13.3 The following aspects of health have been assessed in the PEIR for construction and decommissioning phases only:

- Housing;
- Transport modes, access and connections;
- Water quality or availability; and
- Health and social care services.

6.13.4 The following aspects of health have been assessed in the PEIR for the operational phase only:

- Open space, leisure and play;
- Climate change and adaptation;
- Radiation;
- Electromagnetic fields; and
- Wider societal infrastructure and resources.

6.13.5 Depending on the nature of the effect, the study area varies in the assessment. The geographical study areas used in the assessment of health effects in the PEIR are:

- The PEIR Boundary;
- Neighbourhood Impact Area – 3km radius from the PEIR Boundary;
- Northern and Central Anglesey – comprising the four wards surrounding PEIR Boundary;
- Local Authority – the IoACC; and
- National – Wales.

6.13.6 The receptor groups identified for assessment are:

- Existing and future residents;
- Existing and future workers;
- 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);
- Single-parent families;
- Ethnic minority groups; and
- Religious groups.

6.13.7 The assessment of health is based on ‘determinants’ or ‘indicators’ of health, which are numerically measurable, allowing the impact of the Project on health to be assessed in a quantifiable manner.

Baseline Conditions

Current Baseline

6.13.8 Overall, the Local Authority population generally performs marginally better than the national average on most health indicators. However, there are key issues which have been identified in policy and through engagement such as child obesity, an ageing population, and poverty rates.

6.13.9 The Local Authority performs on par with the national averages with respect to life expectancy, with residents generally reporting relatively fewer behaviours that expose them to poor health (smoking, harmful level of alcohol consumption etc.).

6.13.10 However, there is a marginally higher percentage of children living in poverty than the national average, as well as higher rates of child obesity. Given the cost-of-living crisis and rising prices for energy costs, poverty is identified as a priority for addressing well-being in the Local Authority.

6.13.11 The Local Authority has an ageing population, with a rising number of adults receiving some form of care. There is also a rising number of individuals with health conditions and disabilities, reflected in rising numbers of patients registered at GP practices with a chronic health condition. Additionally, there are high rates

of loneliness in the Local Authority, particularly the case in Holyhead and the areas to the west.

Embedded Mitigation

6.13.12 The following embedded mitigation measures have been integrated into the design of the Project that are relevant to health, during construction:

- Construction Staff Shuttle: The Project will seek to employ the use of a shuttle bus service for staff who will park within the relevant construction compound which will contain a designated parking area;
- Siting of the Solar PV Arrays, Project BESS and Substation, and the 132kV Substation away from sensitive landscape and visual receptors;
- The cabling within the Grid Connection Corridor will be buried underground at a suitable depth and set back from sensitive receptors;
- Noise-generating construction plant will be sited to avoid noise sensitive receptors;

6.13.13 The following embedded mitigation measures relate to the operational phase:

- The community solar scheme of 5MW capacity is proposed to be located on the Former Oil Depot;
- Public Rights of Way within the PEIR Boundary and passing through the Solar PV Site would be buffered within hedge-lined corridors;
- Improvements to access and the green and natural spaces by enhancing existing PRow and creating new permissive routes that are connected to communities;
- Creation of green infrastructure that delivers multiple beneficial outcomes for people and nature; and
- The Project will look to support the continued agricultural landscape and enable a transition to more resilient and sustainable land management approaches.

6.13.14 Embedded mitigation measures relevant to the technical topics considered in this PEIR that also influence health effects (e.g. noise mitigation) have not been replicated here but have been considered in the assessment of health effects.

Preliminary Likely Significant Effects

Construction and Decommissioning

- 6.13.15 As the majority of the agricultural land within the PEIR Boundary is grazed by livestock with some areas of crop cultivation it is not expected that the cessation of agricultural production during construction and decommissioning has the potential to affect diet and nutrition of IoACC residents. As a result, the effect on diet and nutrition is considered to be Negligible and not significant.
- 6.13.16 In terms of access to affordable housing, the number of construction workers requiring temporary accommodation is small compared to the number of households in the study area. Given the temporary nature of the construction phase, it is unlikely that construction workers would purchase homes; instead, they would primarily seek rental accommodations. As such, it concludes that the changes in temporary workers' accommodation would result in a temporary, Minor Adverse effect on housing affordability, which is considered not significant.
- 6.13.17 There will be a temporary and localised increase in traffic affecting non-motorised road users and pedestrians, as well as other drivers. This is anticipated to result in minor changes to quality-of-life for a small minority of the population. This is expected to result in a Minor Adverse effect which is considered not significant.
- 6.13.18 Community identity, culture, resilience and influence may experience changes as a result of temporary construction workers in the area, changes to landscape character and visual impacts, and impacts on cultural assets and community. Whilst there is expected to be some impact, this will be temporary, and the effect is assessed to be Minor Adverse and not significant.
- 6.13.19 The construction of the Project will support local jobs and provide opportunities for upskilling and training, which will provide an opportunity for local residents to acquire new skills and training within the construction industry. To create legacy benefits, the Project will focus on providing residents in the Local Authority with transferable skills that they can take to future opportunities coming forward. The effect on education is considered to be Moderate Beneficial, which is significant.
- 6.13.20 The construction and decommissioning stages of the Project would result in the creation of new employment opportunities both on and off-site. During the

construction period, the Project would support between 330-660 direct jobs in within the Labour Catchment Area. This would result in a Moderate Beneficial effect, which is significant.

- 6.13.21 Regarding water quality, the construction phase poses risks from accidental spillages of chemicals and increased sedimentation. With appropriate mitigation in place, the impact on water quality and flood risk is considered negligible and not significant, implying minimal health risks to residents.
- 6.13.22 The Project has the potential to result in the generation of new noise and vibration during the construction and decommissioning stage through the generation of new vehicle traffic and the use of on-site machinery. Overall, it is not likely that the changes in noise will have a significant impact on health. This is considered to result in a Negligible effect on health at the Neighbourhood Impact Area level, which is not significant.
- 6.13.23 The additional workers on-site could affect local demand for healthcare through additional use of local healthcare, additional use of emergency and healthcare as a result of accidents on-site, or additional registration and use of other forms of health and social care services. It has been assessed that any additional demand placed on local healthcare would be minimal, due to the number of construction workers and average accident rate. Given the temporary nature of the construction workforce, the impact on other healthcare services is not expected to be material. The effect is therefore considered to the Negligible and not significant.

Operational Effects

- 6.13.24 Throughout the operational phase, agricultural uses would still be supported. It is considered most of the land is used for sheep grazing and therefore the possible impact on diet and nutrition is likely to be low. The effect of the Project on changes in diet and nutrition is deemed negligible during the operational phase, which is not significant.
- 6.13.25 Due to the lack of visibility and the distance between the PEIR Boundary and local open spaces, no effects on their recreational amenity are anticipated. Therefore, they are not considered further, and no significant effects are expected.

- 6.13.26 There is potential for the Project to improve access to Public Rights of Way and to green and natural spaces by enhancing pathways and creating new permissive routes that are connected to communities. This will be confirmed in the ES. Any improved pathways would encourage more active travel through the PEIR Boundary and have a positive impact on health. This is considered to be a Negligible and not significant effect.
- 6.13.27 While the Project is expected to result in both positive and negative changes to the community, the influence on health outcomes related to community identity, culture, resilience, and influence is, at this preliminary stage, most conservatively described as negative. The operational impacts are predominantly adverse due to changes in landscape character, visual impacts, and potential disruptions to the visibility of cultural assets. The overall effect, at this stage, is considered to be Minor Adverse and not significant.
- 6.13.28 The generation of additional renewable energy would have a measurable impact at the national level on the use of non-renewable energy sources once complete. This would contribute to reducing the amount of greenhouse gas emissions, and the subsequent impact of climate change. This results in a Minor Beneficial effect at the national level, which is not significant.
- 6.13.29 The electricity produced by the Project once operational could enable many aspects of everyday life that either protect or promote good health. The Project would have the capacity to generate more than 350MW of renewable energy, contributing to energy security at the national level. This results in a Minor Beneficial effect at the national level, which is not significant.
- 6.13.30 The operation of the Project would result in the creation of new sources of Electro Magnetic Fields. The Grid Connection Cable and Project Substation, which form a part of the Project, are likely to exceed 132kV and have the potential to cause electromagnetic fields with potential for adverse effects on human health. At approximately 1-2 metres from the substation, however, the magnetic field is usually lower than the field found in homes and the Grid Connection Cable will be buried underground at a suitable depth. Therefore, electromagnetic fields will not have any adverse effects on residential receptors and are not significant.

6.14 Cumulative Effects

Introduction

- 6.14.1 This section considers the potential for likely significant effects resulting from cumulative effects with other Committed Developments that could occur from the construction, operation and decommissioning of the Project. Committed Developments are defined as 'other existing and/or approved development' (PINS Advice Note 17), that have the potential for cumulative effects. Cumulative effects may occur when the Project, in-combination with other developments, generate additive effects which together have an increased effect on the same receptors.
- 6.14.2 Interactions between effects ('Effect Interactions') have been considered within the technical assessments and are not discussed here.

Methodology

- 6.14.3 The first step is to prepare a list of other Committed Developments with the potential to have cumulative effects with the Project. The Committed Development list is developed based on the appropriate Zones of Influence (ZOI) for each topic discipline. Based on the ZOIs, the Isle of Anglesey was selected as the study area.
- 6.14.4 Of the Committed Developments within the Isle of Anglesey, criteria are applied to ensure that only development which has the potential to result in significant cumulative effects are included. The following criteria was applied to produce the long list of Committed Developments:
- Constitutes EIA Development;
 - Potential for overlap in construction, operation and/or decommissioning phases; and
 - Professional judgement.
- 6.14.5 Following a review of the potential long list Committed Developments, the following the developments were identified to be carried forward for assessment:
- Alaw Mon Solar Farm – 160MW solar PV farm with a battery energy storage system facility on a 268.8ha site 1.7km to the west.
 - Carrog Battery Storage – 660MWh battery energy storage system on a 15.6ha site 2.3km to the north-west.

- Holyhead Breakwater Refurbishment Scheme – refurbishment / repair of the breakwater structure together with formation of a temporary concrete batching plant 13.5km to the west.
- Holyhead Waterfront Regeneration Scheme – mixed-use development consisting of a new marina, residential properties (including conversion (and partial demolition) of the listed Soldiers Point House and Porth-y-Felin House), commercial, leisure and retail uses 14.2km to the west.

6.14.6 The proposed NGET 400kV Substation (which will enable export of the electricity from the Project to the National Grid) will be considered in the cumulative effects chapter of the ES when details of its location are available.

Preliminary Likely Significant Effects

Landscape

6.14.7 Given the overlap of some receptors between the Project and Alaw Mon Solar Farm, there is potential for cumulative visual and landscape character effects. The proposed embedded mitigation, and the physical and visual separation of the Alaw Mon Solar Farm and Maen Hir Central by the Llyn Alaw waterbody and undulating landform minimises the potential for significant cumulative effects on some, but not all receptors. The ES will assess the cumulative effects for the receptors where there is a potential for significant cumulative effects.

Ecology

6.14.8 Surveys to fully characterise the ecological baseline are still ongoing and so the assessment presented in this chapter of the PEIR has been undertaken based on the ecological data available at the time of writing. It is expected that with further refinement of the ecological baseline and the subsequent implementation of appropriate mitigation measures, that the significance of effects will reduce further, therefore minimising the potential for cumulative effects.

6.14.9 Before the completion of ongoing surveys is considered that there is potential for cumulative effects on bird and bat species due to the loss and displacement of foraging, commuting and roosting habitat associated with the Project and Alaw Mon Solar Farm during construction, operation and decommissioning. These potential effects will be assessed further in the ES based on a complete survey data set.

Cultural Heritage

- 6.14.10 Archaeological remains present within the PEIR Boundary may experience adverse impacts as a result of the construction works. These impacts will be limited to any archaeological remains within the PEIR Boundary and, as there are no Committed Developments immediately adjacent to the PEIR Boundary, there is no opportunity for cumulative effects to any affected archaeological remains. In the absence of any potential effects on archaeological remains during operation and decommissioning of the Project, there is no potential for any cumulative effects during these periods.
- 6.14.11 The cumulative effects of the operational phase of the Project and the Committed Developments would result in a perceptible change to the principally agricultural landscape. However, through a combination of intervening distance, existing built form and vegetation, only a small number of assets may share intervisibility between the Project and the Committed Developments.
- 6.14.12 The Project would not have any likely significant effects on designated historic assets during construction, operation and decommissioning. The Historic Environment Desk Based Assessment (DBA) for the proposed Alaw Mon Solar Farm considered designated historic assets within 5km. A small number were scoped into more detailed stage 2 assessment for Alaw Mon Solar Farm and none of those assets, which included Scheduled Monuments and a Grade II Listed Building, are sensitive receptors identified for the Project. As such, there would likely be no cumulative effect on the designated historic assets from the Project and the Alaw Mon Solar Farm.

Transport and Access

- 6.14.13 The Transport and Access assessment has used Department for Transport ('DfT') Trip End Model Presentation Program (TEMPro) Growth Factors to establish a future baseline scenario. The TEMPro Growth Factor has been developed to consider how future transport flows change in line with the Project and future conditions, accounting for future changes in employment and housing numbers. The assessment of Transport and Access impacts presented in Chapter 9: Transport has therefore inherently assessed the cumulative effects of the Project and the Committed Developments.

6.14.14 Furthermore, there is no proposed overlap or interaction between the Project's proposed construction programme or routing and that of Alaw Mon Solar Farm and Carrog Battery Storage on any roads within the Local Road Network (LRN) where there is potential for significant adverse cumulative effects.

Noise and Vibration

6.14.15 All of the Committed Developments (with the exception of the proposed NGET Substation) are sufficiently distanced from the noise sensitive receptors that have the potential to be affected by the Project such that cumulative effects from noise generated within the Solar PV Site are very unlikely during construction, operation or decommissioning.

6.14.16 When the location of the NGET Substation is determined this will inform the Project design to avoid any cumulative noise effects generated by this Committed Development and the Project Substation and BESS.

6.14.17 The construction routing for the Project is not anticipated to be shared with any of the identified Committed Developments until construction traffic would reach the A55. Due to this, it is not considered that there is the potential for cumulative noise effects as a result of construction generated road traffic.

Ground Conditions

6.14.18 All of the Committed Developments are sufficiently distanced from the Project and will incorporate appropriate mitigation measures to avoid residual significant adverse effects. Therefore, significant cumulative effects would likely be avoided. Furthermore, land contamination is subject to the same national guidance and all developments must meet a common standard for safe development with a requirement to undertake a phased investigation of the site including Phase 1 preliminary risk assessment, a Phase 2 intrusive investigation and a remediation strategy.

Soils and Agriculture

6.14.19 The components of the Project that would entirely remove land from agricultural production (Access Tracks, 33kV/132kV Substations, Project Substation and BESS) for the duration of the operation phase (60 years) are anticipated to affect less than 20ha of BMV land.

6.14.20 The Committed Developments would result in a combined loss of approximately 2ha of BMV land. The cumulative loss of BMV land from agricultural production during operation of all of the Project and all of the Committed Developments is anticipated to be more less than 20ha. This effect is considered to be a temporary Moderate Adverse effect, which is **significant**. However, in the context of agricultural land in Anglesey, of which there is an estimated 65,088ha, 34,615ha (53.2%) being BMV, contextually the effect is considered Negligible Adverse and not significant.

Water Resources

6.14.21 Carrog Battery Storage is approximately 2.5km downstream of the closest part of the PEIR Boundary and is the only Committed Development within the Water Resources Study Area. As such, it has the potential for cumulative effects with the Project on the same catchment area. However, significant cumulative effects are unlikely given that there are no significant adverse effects anticipated for the Project and Carrog Battery Storage. With the appropriate measures in place to ensure no significant residual effects, it can be concluded that there would be no significant cumulative effects.

Climate Change

6.14.22 The UK Carbon Budgets are nationally set targets to align the UK Governments Net-Zero targets. These are determined at a national scale and are designed to consider all development coming forward. The assessment of the Project's carbon emissions relative to the UK Carbon Budget is therefore inherently cumulative, as all other developments need to align with the UK Carbon Budget.

6.14.23 The Project directly supports policy on decarbonising electricity generation by upscaling the role of solar in the energy sector, as would other Committed Developments that propose low-carbon electricity generation. The Project indirectly causes a reduction in atmospheric GHG concentration compared to the without-project baseline and aligns with a trajectory towards Net Zero. The GHG impact of the Project in combination with the other Committed Developments that incorporate renewable energy is therefore considered to be beneficial and significant.

Major Accidents and Disasters

- 6.14.24 Both Alaw Mon Solar Farm and Carrog Battery Storage comprise batteries which also have the limited potential for fire risk. However, the Project is sufficiently distanced from the these Committed Developments such that there are no receptors that could be subject to significant cumulative effects relating to fire risk. Additionally, fire risk related to the BESS will be controlled through a Battery Safety Management Plan (BSMP), further reducing the potential for significant cumulative effects.

Glint and Glare

- 6.14.25 RAF Mona (located 4.27km south of the PEIR Boundary) has the potential to be subject to Glint and Glare effects from both the Project and Alaw Mon Solar Farm. However, as modelling for both projects predict no potential for any adverse effects on the receptor, there is no potential for any cumulative effects.
- 6.14.26 A review of the potentially affected residential properties as a result of the Project shows that there are not shared residential receptors that could experience a cumulative effect.

Air Quality

- 6.14.27 All of the Committed Developments are sufficiently distanced from the Project such that there is no potential for any cumulative dust effects on the same receptors. The dust impacts from the Committed Developments will also be mitigated so as to not result in significant adverse effects. There is no overlap or interaction between the Project's construction programme or construction routing and that of Alaw Mon Solar Farm and Carrog Battery Storage on any roads within the Local Road Network (LRN) where there is potential for significant adverse cumulative air quality effects.

Waste

- 6.14.28 The assessment of waste arisings during the construction, operation, and decommissioning phases of the Project will be undertaken in the ES once the design is fully developed, and the quantities of waste arisings are fully understood. The assessment will use waste capacity projections provided by the relevant waste authority for the type of waste produced, which are inherently cumulative

and based on future projections of waste arisings in line with anticipated developments coming forward. This approach will be revisited prior to the preparation of the ES, once details of waste arisings are fully understood.

Socio-economics

- 6.14.29 In the case of employment effects, the assessment is considered inherently cumulative as impacts are assessed against a future baseline that includes employment projections. These projections will implicitly include the impacts of other schemes being brought forward in the relevant study area.
- 6.14.30 The effect of future developments is therefore considered through a combination of projections and plans for future developments in the future baseline. Effects are considered against this future baseline so a separate assessment of the cumulative impact of future schemes would risk double counting. The assessment of the following effects are inherently cumulative:
- Direct and indirect construction jobs supported by the delivery of the Project during construction and decommissioning;
 - Provision of education, skills, training and supply chain during construction and decommissioning;
 - Operational employment (direct, indirect and induced) supported by the Project; and
 - Provision of education, skills and training during operation.
- 6.14.31 As such, there is no potential for any significant cumulative effects not already considered in the socio-economics assessment.
- 6.14.32 The assessment of the following effects is not inherently cumulative:
- Changes in demand for temporary workers accommodation during construction and decommissioning;
 - Changes to land uses during construction, operation and decommissioning;
 - Impact on community power during operation;
 - Changes to local tourism assets during operation.
- 6.14.33 Considering the scale and nature of the other Commitment Development and that there will be no overlap in construction periods, it is considered unlikely that there is potential for any significant cumulative effects but this will be assessed further in the ES.

Health

- 6.14.34 Wales is integrated into the UK food system which is heavily influenced by trade. Therefore, diet and nutrition on the Island are largely influenced by trade as opposed availability or quality of agricultural land and therefore it is unlikely that any of the Committed Developments will have cumulative effects on diet and nutrition.
- 6.14.35 The construction phase of Alaw Mon Solar Farm will not overlap with the Project's construction phase, and therefore, so there is no potential for significant cumulative effects relating to temporary worker accommodation, transport modes, access, connections, community identity and health and social care services. It is currently considered unlikely that the combined impact of the Committed Developments and the Project will put additional pressure on local accommodation stock, given the availability of temporary accommodation identified in Chapter 16. However, this will be revisited at the ES stage.
- 6.14.36 Chapter 17: Health found that the Project is expected to result in positive and negative changes to the community, with the influence on health outcomes conservatively described as negative. However, the impact was found to be localised in discrete areas at particular times. The construction effect will also be short term and temporary in nature. The Committed Developments are not expected to materially change this conclusion, so the cumulative effect remains the same as the Project specific conclusion of minor adverse and not significant at the LA level.
- 6.14.37 The Project is expected to result in a moderate adverse (significant) health effect due to negative visual impacts on cultural assets and the landscape, which could affect residents' sense of place and community cohesion. The Committed Developments are not expected to materially change this conclusion, as described above, so the cumulative effect remains the same as the Project specific conclusion of moderate adverse and significant at the LA level.
- 6.14.38 It is expected that there would be positive cumulative effects on the Welsh Language through the measures identified by the Committed Developments. However, due to the scale of the developments, it is not likely to be significant.

- 6.14.39 The assessment of education and training and employment and income are inherently cumulative so there is no potential for any significant cumulative effects not already considered in the socio-economics assessment.
- 6.14.40 There are no significant cumulative effects expected on Open space, leisure and play, as both Alaw Mon Solar Farm and the Project have committed to retain all six public rights of way.
- 6.14.41 Although the Project's contribution to health improvements through climate change mitigation is beneficial, these effects are not expected to be significant when considered at the national level in combination.
- 6.14.42 The assessment of cumulative effects for wider societal infrastructure and resources identified that the cumulative impact, particularly regarding the support for energy infrastructure through increased electricity generation, is likely to be beneficial and significant. While these improvements in energy infrastructure can lead to positive cumulative health effects, they are not expected to be significant at the national level cumulatively.
- 6.14.43 Alaw Mon Solar Farm confirmed that its substation complies with EMF exposure guidelines. Therefore, the Project, in combination with Alaw Mon Solar Farm, is not expected to change the effects presented in Chapter 17: Health. As the EMF exposure remains within guidelines it is likely that there would be no significant health cumulative effects.
- 6.14.44 The assessment of cumulative effects for water resources finds that Carrog Battery Storage is the only committed development within the Water Resources Study Area. Significant cumulative effects are unlikely given that there are no significant adverse effects anticipated for the Project and Carrog Battery Storage.
- 6.14.45 The assessment of cumulative effects for noise and vibration identifies that there is no potential for noise sensitive receptors to experience cumulative construction noise and/or vibration effects from both the Project and the Committed Developments. Additionally, the Project's construction routing is not expected to coincide with those of other identified developments until it reaches the A55, further reducing the potential for cumulative noise effects. As no cumulative

effects are expected, it is not likely that there would be significant health cumulative effects in relation to noise.

Figures

